MARITIME AND PORT AUTHORITY OF SINGAPORE
SHIPPING CIRCULAR TO SHIPOWNERS NO. 20 OF 2011

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Applicable to: Ship owners, managers, operators, masters, crew members, surveyors, shipyards and the Shipping Community.

RESOLUTIONS ADOPTED BY THE 61ST AND 62ND SESSIONS OF THE MARITIME ENVIRONMENT PROTECTION COMMITTEE (MEPC) OF IMO

1. This circular informs the Shipping Community on the resolutions adopted by the 61st and 62nd sessions of the Marine Environment Protection Committee (MEPC) of IMO and urges the Community to prepare for the implementation of these resolutions.

2. The details of the resolutions can be found in the final reports of MEPC on the MPA website.

3. The mandatory resolutions include the following:

a. Resolution MEPC.193(61) – Amendments to Annex III of MARPOL 73/78 (Revised MARPOL Annex III) (applicable from 1 Jan 2014);

MARPOL Annex III is revised to bring in line the criteria defining marine pollutants in Annex III with the revised Globally Harmonized System (GHS) and to align certain documentation provisions in the Annex with proposed amendments to SOLAS regulation VII/4.6.5.

b. Resolution MEPC.194(61) – Amendments to Annex VI of MARPOL 73/78 (Revised form of Supplement to the IAPP Certificate) (applicable from 1 Feb 2012);

The amendment to Annex VI is to revise the Supplement to the IAPP Certificate for clearly documenting the ship's compliance with the fuel

sulphur requirements or alternative equivalent arrangement according to the timeframe under Regulation 14.

c. Resolution MEPC.200(62) – Amendments to Annex IV of MARPOL 73/78 (Special area provisions and the designation of the Baltic Sea as a Special area under MARPOL Annex IV) (applicable from 1 Jan 2013);

The amendment establishes special areas under Annex IV and to designate the Baltic Sea as a special area. It will regulate the discharge of sewage from passenger ships within a special area.

d. Resolution MEPC.201(62) – Amendments to Annex V of MARPOL 73/78 (Revised MARPOL Annex V) (applicable from 1 Jan 2013);

MARPOL Annex V is completely revised and will now also regulate the discharge of animal carcasses, cargo residues and cooking oil.

e. Resolution MEPC.202(62) – Amendments to Annex VI of MARPOL 73/78 (Designation of the United States Caribbean Sea Emission Control Area and exemption of certain ships operating in the North American Emission Control Area and the United States Caribbean Sea Emission Control Area under Regulations 13 and 14 and Appendix VII of MARPOL Annex VI) (applicable from 1 Jan 2013);

The amendment designates the US Caribbean Sea as an ECA in addition to the North American ECA which was designated in 2010.

f. Resolution MEPC.203(62) – Amendments to Annex VI of MARPOL 73/78 (Inclusion of regulations on energy efficiency for ships in MARPOL Annex VI) (applicable from 1 Jan 2013);

A new chapter is added to Annex VI to include regulations intending to improve energy efficiency for ships and reducing emissions though a set of technical performance standards.

g. Resolution MEPC.204(62) – Designation of the Strait of Bonifacio as a Particularly Sensitive Sea Area (Pending adoption of associated protective measure with final adoption date to be circulated).

The Strait of Bonifacio is designated as a PSSA and will be applicable pending adoption of its APM by MSC 90.

4. The non-mandatory resolutions include the following:

a. Resolution MEPC.192(61) – 2010 Guidelines for monitoring the worldwide average sulphur content of fuel oils supplied for use on board ships (for information) *(revokes MEPC.183(59))*;

b. Resolution MEPC.195(61) – 2010 Guidelines for survey and certification of anti-fouling systems on ships (for guidance) *(revokes MEPC.102(48))*;

c. Resolution MEPC.196(62) – 2011 Guidelines for the Development of the Ship Recycling Plan (for voluntary compliance);

d. Resolution MEPC.197(62) – 2011 Guidelines for the Development of the Inventory of Hazardous Materials (for voluntary compliance) *(revokes MEPC.179(59))*;

e. Resolution MEPC.198(62) – 2011 Guidelines addressing additional aspects to the NOx Technical Code 2008 with regard to particular requirements related to marine diesel engines fitted with selective catalytic reduction (SCR) systems (for guidance);

f. Resolution MEPC.199(62) – 2011 Guidelines for reception facilities under MARPOL Annex VI (for guidance);

g. Resolution MEPC.205(62) – 2011 Guidelines and specifications for add-on equipment for upgrading resolution MEPC.60(33)-Compliant oil filtering equipment (for voluntary compliance);

h. Resolution MEPC.206(62) – Procedure for approving other methods of ballast water management in accordance with Regulation B-3.7 of the BWM Convention (for guidance);

i. Resolution MEPC.207(62) – 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (for voluntary compliance);

j. Resolution MEPC.208(62) – 2011 Guidelines for inspection of anti-fouling systems on ships (for guidance) *(revokes MEPC.105(49))*.

5. In addition to the adoption of resolutions, the following Unified Interpretations (UI) of MARPOL were also approved:

a. MEPC 61/24, Annex 14 – Unified Interpretation to regulations 12.2, 3 and 4 of MARPOL Annex I;

The UI brings up to date existing interpretations and provides clarification for arrangements relating to oil residues (sludge) tanks.

b. MEPC.1/Circ.735 – Unified Interpretations to MARPOL Annex VI: Scope of application of regulations 15.6 and 15.7 of MARPOL Annex VI (VOC Management Plan);

The UI clarifies that the requirement of the VOC Management Plan applies only to tankers carrying crude oil.

c. MEPC.1/Circ.753 – Amendments to Unified Interpretation to regulation 12.2 of MARPOL Annex I.

The UI clarifies the application of the requirements for interconnection between the sludge tank discharge piping and bilge water piping using common piping leading to the standard discharge connection.

6. Resolution MEPC.193(61) will be implemented through the IMDG Code under the Merchant Shipping (Safety Convention) Regulations from 1 January 2014. Resolution MEPC.194(61) will be given effect through the Prevention of Pollution of the Sea (Air) (Amendment No. 2) Regulations 2011 from 1 February 2012. Resolutions MEPC.200(62), MEPC.201(62), MEPC.202(62) and MEPC.203(62) will be implemented through the Prevention of Pollution of the Sea (Sewage) Regulations, Prevention of Pollution of the Sea (Garbage) Regulations and Prevention of Pollution of the Sea (Air) Regulations respectively from 1 January 2013. Additional information on the United States Caribbean Sea ECA can be found at Circular MEPC.1/Circ.755.

7. The Unified Interpretations (UI) listed in paragraph 5 are acceptable to MPA and should be applied with immediate effect.

8. The Shipping Community is urged to take early action to comply with the requirements on or before the date of entry into force of the amendments/resolutions.

6. Any queries relating to this circular should be directed to Mr Zafrul Alam (Tel: 6375 6204) or Mr Princet Ang (Tel: 6375 6259).

CHEONG KENG SOON
DIRECTOR OF MARINE
MARITIME AND PORT AUTHORITY OF SINGAPORE

RESOLUTION MEPC.192(61)

Adopted on 1 October 2010

2010 GUIDELINES FOR MONITORING THE WORLDWIDE AVERAGE SULPHUR CONTENT OF FUEL OILS SUPPLIED FOR USE ON BOARD SHIPS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the function of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution,

RECALLING ALSO that revised MARPOL Annex VI entered into force on 1 July 2010,

RECALLING FURTHER resolution MEPC.183(59) by which the Committee adopted the 2009 Guidelines for monitoring the worldwide average sulphur content of residual fuel oils supplied for use on board ships,

NOTING that regulation 14.2 of the revised MARPOL Annex VI requires monitoring of the worldwide average sulphur content of residual fuel oil supplied for use on board ships, taking into account guidelines developed by the Organization,

RECOGNIZING the need to revise the 2009 Guidelines for monitoring the worldwide average sulphur content of residual fuel oils supplied for use on board ships, to expand the monitoring programme to all petroleum fuel types covered by the revised MARPOL Annex VI,

HAVING CONSIDERED the 2010 Guidelines for monitoring the worldwide average sulphur content of fuel oils supplied for use on board ships prepared by the Sub-Committee on Bulk Liquids and Gases at its fourteenth session,

1. ADOPTS the 2010 Guidelines for monitoring the worldwide average sulphur content of fuel oils supplied for use on board ships, as set out in the Annex to the present resolution;

2. URGES Member Governments and interested organizations to make available the resources and expertise necessary for the implementation of the Guidelines from 1 January 2011; and

3. REVOKES the Guidelines adopted by resolution MEPC.183(59), as from this date.

ANNEX

2010 GUIDELINES FOR MONITORING THE WORLDWIDE AVERAGE SULPHUR CONTENT OF FUEL OILS SUPPLIED FOR USE ON BOARD SHIPS

Preface

1 The primary objective of the Guidelines is to establish an agreed method to monitor the average sulphur content of fuel oils supplied for use on board ships taking into account the different sulphur limits as required by regulation 14 of the revised MARPOL Annex VI.

Introduction

2 The basis for these Guidelines is provided in regulation 14.2 of the revised Annex VI of MARPOL and in Conference Resolution 4 (in MP/CONF.3/35), on monitoring the worldwide average sulphur content of residual fuel supplied for use on board ships, and document MEPC 59/24. Among the emissions addressed by Annex VI are emissions resulting from the combustion of fuel oils containing sulphur. An upper limit for the sulphur content of fuel oils was set and it was further decided to monitor the average sulphur content of fuel oils. Monitoring of the worldwide average sulphur content of distillate fuel supplied for use on board ships is not specified in regulation 14.2 of the Annex VI. However, in the meantime, it was agreed to monitor the average sulphur content of distillate fuel.

3 The independent testing companies analyse over 100,000 samples annually, which cover between 25% and 35% of all deliveries. From the data gathered by these testing services, the current average figures for the sulphur content of residual fuels can be derived. These figures are publicized regularly and are currently in the order of 2.4% by mass[1].

Definitions

4 For the purpose of these Guidelines the following definitions should apply:

.1 *Residual fuel*:

Fuel oil for combustion purposes delivered to and used on board ships with a kinematic viscosity at 40˚C greater than 11.00 centistokes[2] (mm^2/s).

.2 *Distillate fuel*:

Fuel oil for combustion purposes delivered to and used on board ships with a kinematic viscosity at 40˚C lower than or equal to 11.00 centistokes[2] (mm^2/s).

.3 *Provider of sampling and testing services*:

A company that, on a commercial basis, provides testing and sampling services of bunker fuels delivered to ships for the purpose of assessing quality parameters of these fuels, including the sulphur content.

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1 See document MEPC 61/4.

2 Reference is made to ISO Standard 8217, 2010.

.4 *Reference value A_{wr}*:

The value of the worldwide average sulphur content in residual fuels supplied for use on board ships, based on the first three years of data collected and as determined on the basis of paragraphs 5 to 11 of these Guidelines.

.5 *Reference value A_{wd}*:

The value of the worldwide average sulphur content in distillate fuels supplied for use on board ships, based on the first three years of data collected and as determined on the basis of paragraphs 5 to 11 of these Guidelines.

Monitoring and calculation of yearly and three-year rolling averages

Monitoring

5 Monitoring should be based on calculation of average sulphur content of residual and distillate fuels on the basis of sampling and testing by independent testing services. Every year the average sulphur content of residual and distillate fuels should be calculated. After three years the reference value for monitoring will be set as described in paragraph 11.

Calculation of yearly averages

6 At the basis of monitoring is the calculation, on an annual basis, of the average sulphur content of residual and distillate fuel.

7 The calculation of the average sulphur content is executed as follows:

For a certain calendar year, the sulphur contents of the samples analysed[3] (one sample for each delivery of which the sulphur content is determined by fuel oil analysis) are recorded. The sulphur contents of the samples analysed are multiplied by the corresponding mass of fuel oils added up and then divided by the total mass of bunker analysed. The outcome of that division is the average sulphur content of residual and distillate fuels for that year.

8 As a basis for well-informed decisions a graphical representation of the distribution of the global sulphur content plotted against the quantity of fuel oils associated with each incremental sulphur content range should be made available by 31 January of each year:

.1 residual fuels: in terms of the % sulphur in increments of 0.5% sulphur;

.2 distillate fuel for sulphur content below 0.5%: in terms of the % sulphur in increments of 0.1%; and

.3 distillate fuels for sulphur content above 0.5%: in terms of the % sulphur in increments of 0.5%.

9 The mathematical formula for the method of calculation described is given in the appendix to these Guidelines.

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[3] Reference is made to ISO Standard 8754, 2003.

Three-year rolling average

10 A three-year rolling average should be calculated as follows:

$A_{cr} = (A_{c1} + A_{c2} + A_{c3})/3$

in which:

A_{cr} = rolling average S-content of all deliveries tested over a three-year period

A_{c1}, A_{c2}, A_{c3} = individual average S-contents of all deliveries tested for each year under consideration

A_{cr} is to be recalculated each year by adding the latest figure for A_c and deleting the oldest.

For the calculation of yearly average of distillate fuels, any fuel oils less than 0.05% of sulphur should be calculated as 0.03%.

Setting of the reference values

11 The reference value of the world wide average sulphur content of residual and distillate fuels supplied for use on board ships should be A_{wx}, where x=r, r_{ECA}, d, d_{ECA} and $A_{wx} = A_{cr}$ as calculated in January of the year following the first three years in which data were collected on the basis of these Guidelines. A_w should be expressed as a percentage.

Providers of sampling and testing services

12 There are presently three providers of sampling and testing services under these Guidelines.

13 Any additional providers of sampling and testing services will be approved by the MEPC in accordance with the following criteria:

.1 be subject to the approval of the Marine Environment Protection Committee, which should apply these criteria;

.2 be provided with a technical and managerial staff of qualified professionals providing adequate geographical coverage and local representation to ensure quality services in a timely manner;

.3 provide services governed by a documented Code of Ethics;

.4 be independent as regards commercial interest in the outcome of monitoring;

.5 implement and maintain an internationally recognized quality system, certified by an independent auditing body, which ensures reproducibility and repeatability of services which are internally audited, monitored and carried out under controlled conditions;

.6 take a significant number of samples on an annual basis for the purpose of globally monitoring average sulphur content of residual and distillate fuels.

Standardized method of calculation

14 Each of the providers of sampling and testing services should provide the necessary information for the calculation of the average sulphur content of the residual and distillate fuels to the Secretariat of IMO or another agreed third party on the basis of a mutually agreed format, approved by MEPC. This party will process the information and will provide the outcome in the agreed format to MEPC. From the viewpoint of competitive positions the information involved should be considered sensitive.

APPENDIX

CALCULATION OF AVERAGE SULPHUR CONTENT BASED ON QUANTITY

Note: wherever "all deliveries" are mentioned, this is meant to refer to all deliveries sampled and tested for sulphur and being taken into account for the purpose of monitoring.

Calculation weighted for quantity

$$Acj = \frac{\sum_{i=1}^{i=N_j} a_i \cdot m_i}{\sum_{i=1}^{i=N_j} m_i}$$

in which:

A_{cj} = the average sulphur content of all deliveries sampled worldwide in year j

a_i = the sulphur content of individual sample for delivery i

N_j = total number of samples taken in year j

m_i = the mass of fuel oils with a sulphur content of a_i.

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RESOLUTION MEPC.193(61)

Adopted on 1 October 2010

AMENDMENTS TO THE ANNEX OF THE PROTOCOL OF 1978 RELATING TO THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973

(Revised MARPOL Annex III)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution,

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention") and article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol") which together specify the amendment procedure of the 1978 Protocol and confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 Protocol (MARPOL 73/78),

HAVING CONSIDERED draft amendments to Annex III of MARPOL 73/78,

1. ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, the amendments to Annex III of MARPOL 73/78, the text of which is set out at annex to the present resolution;

2. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on 1 July 2013 unless, prior to that date, not less than one third of the Parties or Parties the combined merchant fleets of which constitute not less than 50 per cent of the gross tonnage of the world's merchant fleet, have communicated to the Organization their objection to the amendments;

3. INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, the said amendments shall enter into force on 1 January 2014 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to MARPOL 73/78 certified copies of the present resolution and the text of the amendments contained in the Annex;

5. REQUESTS FURTHER the Secretary-General to transmit to the Members of the Organization which are not Parties to MARPOL 73/78 copies of the present resolution and its Annex.

ANNEX

AMENDMENTS TO MARPOL ANNEX III

The existing text of MARPOL Annex III, as adopted by resolution MEPC.156(55), is replaced by the following:

REGULATIONS FOR THE PREVENTION OF POLLUTION BY HARMFUL SUBSTANCES CARRIED BY SEA IN PACKAGED FORM

Regulation 1
Application

1 Unless expressly provided otherwise, the regulations of this Annex apply to all ships carrying harmful substances in packaged form.

.1 For the purpose of this Annex, "harmful substances" are those substances which are identified as marine pollutants in the International Maritime Dangerous Goods Code (IMDG Code)* or which meet the criteria in the Appendix of this Annex.

.2 For the purposes of this Annex, "packaged form" is defined as the forms of containment specified for harmful substances in the IMDG Code.

2 The carriage of harmful substances is prohibited, except in accordance with the provisions of this Annex.

3 To supplement the provisions of this Annex, the Government of each Party to the Convention shall issue, or cause to be issued, detailed requirements on packing, marking, labelling, documentation, stowage, quantity limitations and exceptions for preventing or minimizing pollution of the marine environment by harmful substances.*

4 For the purposes of this Annex, empty packagings which have been used previously for the carriage of harmful substances shall themselves be treated as harmful substances unless adequate precautions have been taken to ensure that they contain no residue that is harmful to the marine environment.

5 The requirements of this Annex do not apply to ship's stores and equipment.

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* Refer to the IMDG Code adopted by the Organization by resolution MSC.122(75), as amended by the Maritime Safety Committee.

Regulation 2
Packing

Packages shall be adequate to minimize the hazard to the marine environment, having regard to their specific contents.

Regulation 3
Marking and labelling

1 Packages containing a harmful substance shall be durably marked or labelled to indicate that the substance is a harmful substance in accordance with the relevant provisions of the IMDG Code.

2 The method of affixing marks or labels on packages containing a harmful substance shall be in accordance with the relevant provisions of the IMDG Code.

Regulation 4[*]
Documentation

1 Transport information relating to the carriage of harmful substances shall be in accordance with the relevant provisions of the IMDG Code and shall be made available to the person or organization designated by the port State authority.

2 Each ship carrying harmful substances shall have a special list, manifest or stowage plan setting forth, in accordance with the relevant provisions of the IMDG Code, the harmful substances on board and the location thereof. A copy of one of these documents shall be made available before departure to the person or organization designated by the port State authority.

Regulation 5
Stowage

Harmful substances shall be properly stowed and secured so as to minimize the hazards to the marine environment without impairing the safety of the ship and persons on board.

Regulation 6
Quantity limitations

Certain harmful substances may, for sound scientific and technical reasons, need to be prohibited for carriage or be limited as to the quantity which may be carried aboard any one ship. In limiting the quantity, due consideration shall be given to size, construction and equipment of the ship, as well as the packaging and the inherent nature of the substances.

[*] Reference to "documents" in this regulation does not preclude the use of electronic data processing (EDP) and electronic data interchange (EDI) transmission techniques as an aid to paper documentation.

Regulation 7
Exceptions

1 Jettisoning of harmful substances carried in packaged form shall be prohibited, except where necessary for the purpose of securing the safety of the ship or saving life at sea.

2 Subject to the provisions of the present Convention, appropriate measures based on the physical, chemical and biological properties of harmful substances shall be taken to regulate the washing of leakages overboard, provided that compliance with such measures would not impair the safety of the ship and persons on board.

Regulation 8
Port State control on operational requirements[*]

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

2 Where there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the prevention of pollution by harmful substances, the Party shall take such steps, including carrying out detailed inspection and, if required, 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.

[*] Refer to the Procedures for port State control adopted by the Organization by resolution A.787(19) and amended by resolution A.882(21).

APPENDIX TO ANNEX III

Criteria for the identification of harmful substances in packaged form

For the purposes of this Annex, substances identified by any one of the following criteria are harmful substances*:

(a) Acute (short-term) aquatic hazard

Category: Acute 1	
96 hr LC_{50} (for fish)	≤ 1 mg/l and/or
48 hr EC_{50} (for crustacea)	≤ 1 mg/l and/or
72 or 96 hr ErC_{50} (for algae or other aquatic plants)	≤ 1 mg/l

(b) Long-term aquatic hazard

(i) Non-rapidly degradable substances for which there are adequate chronic toxicity data available

Category Chronic 1:	
Chronic NOEC or EC_x (for fish)	≤ 0.1 mg/l and/or
Chronic NOEC or EC_x (for crustacea)	≤ 0.1 mg/l and/or
Chronic NOEC or EC_x (for algae or other aquatic plants)	≤ 0.1 mg/l
Category Chronic 2:	
Chronic NOEC or EC_x (for fish)	≤ 1 mg/l and/or
Chronic NOEC or EC_x (for crustacea)	≤ 1 mg/l and/or
Chronic NOEC or EC_x (for algae or other aquatic plants)	≤ 1 mg/l

(ii) Rapidly degradable substances for which there are adequate chronic toxicity data available

Category Chronic 1:	
Chronic NOEC or EC_x (for fish)	≤ 0.01 mg/l and/or
Chronic NOEC or EC_x (for crustacea)	≤ 0.01 mg/l and/or
Chronic NOEC or EC_x (for algae or other aquatic plants)	≤ 0.01 mg/l
Category Chronic 2:	
Chronic NOEC or EC_x (for fish)	≤ 0.1 mg/l and/or
Chronic NOEC or EC_x (for crustacea)	≤ 0.1 mg/l and/or
Chronic NOEC or EC_x (for algae or other aquatic plants)	≤ 0.1 mg/l

* The criteria are based on those developed by the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS), as amended.

For definitions of acronyms or terms used in this appendix, refer to the relevant paragraphs of the IMDG Code.

(iii) Substances for which adequate chronic toxicity data are not available

Category Chronic 1:	
96 hr LC_{50} (for fish)	≤ 1 mg/l and/or
48 hr EC_{50} (for crustacea)	≤ 1 mg/l and/or
72 or 96 hr ErC_{50} (for algae or other aquatic plants)	≤ 1 mg/l
and the substance is not rapidly degradable and/or the experimentally determined BCF is ≥ 500 (or, if absent the log K_{ow} ≥ 4).	
Category Chronic 2:	
96 hr LC_{50} (for fish)	>1 mg/l but ≤ 10 mg/l and/or
48 hr EC_{50} (for crustacea)	>1 mg/l but ≤ 10 mg/l and/or
72 or 96 hr ErC_{50} (for algae or other aquatic plants)	>1 mg/l but ≤ 10 mg/l
and the substance is not rapidly degradable and/or the experimentally determined BCF is ≥ 500 (or, if absent, the log K_{ow} ≥ 4).	

Additional guidance on the classification process for substances and mixtures is included in the IMDG Code.

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RESOLUTION MEPC.194(61)

Adopted on 1 October 2010

AMENDMENTS TO THE ANNEX 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 RELATING THERETO

(Revised form of Supplement to the IAPP Certificate)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution,

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention"), article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol") and article 4 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 relating thereto (herein after referred to as the "1997 Protocol"), which together specify the amendment procedure of the 1997 Protocol and confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 and 1997 Protocols,

NOTING ALSO that, by the 1997 Protocol, Annex VI entitled Regulations for the Prevention of Air Pollution from Ships was added to the 1973 Convention (hereinafter referred to as "Annex VI"),

NOTING FURTHER that the revised Annex VI was adopted by resolution MEPC.176(58) and entered into force on 1 July 2010,

HAVING CONSIDERED draft amendments to the revised Annex VI,

1. ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, the amendments to Annex VI, the text of which is set out at annex to the present resolution;

2. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on 1 August 2011, unless prior to that date, not less than one third of the Parties or Parties the combined merchant fleets of which constitute not less than 50 per cent of the gross tonnage of the world's merchant fleet, have communicated to the Organization their objection to the amendments;

3. INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, the said amendments shall enter into force on 1 February 2012 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to the 1973 Convention, as modified by the 1978 and 1997 Protocols, certified copies of the present resolution and the text of the amendments contained in the Annex;

5. REQUESTS FURTHER the Secretary-General to transmit to the Members of the Organization which are not Parties to the 1973 Convention, as modified by the 1978 and 1997 Protocols, copies of the present resolution and its Annex.

ANNEX

AMENDMENTS TO APPENDIX I OF THE REVISED MARPOL ANNEX VI

(REVISED FORM OF SUPPLEMENT TO THE INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE)

Paragraph 2.3 of the form of Supplement to the International Air Pollution Prevention Certificate is amended as follows:

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

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

.1 fuel oil with a sulphur content as documented by bunker delivery notes that does not exceed the limit value of:

- 4.50% m/m (not applicable on or after 1 January 2012); or ·· ☐
- 3.50% m/m (not applicable on or after 1 January 2020); or ·· ☐
- 0.50% m/m, and/or ····· ☐

.2 an equivalent arrangement approved in accordance with regulation 4.1 as listed in 2.6 that is at least as effective in terms of SO_x emission reductions as compared to using a fuel oil with a sulphur content limit value of:

- 4.50% m/m (not applicable on or after 1 January 2012); or ·· ☐
- 3.50% m/m (not applicable on or after 1 January 2020); or ·· ☐
- 0.50% m/m ····· ☐

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

.1 fuel oil with a sulphur content as documented by bunker delivery notes that does not exceed the limit value of:

- 1.00% m/m (not applicable on or after 1 January 2015); or ·· ☐
- 0.10% m/m, and/or ····· ☐

.2 an equivalent arrangement approved in accordance with regulation 4.1 as listed in 2.6 that is at least as effective in terms of SO_x emission reductions as compared to using a fuel oil with a sulphur content limit value of:

- 1.00% m/m (not applicable on or after 1 January 2015); or ·· ☐
- 0.10% m/m ····· ☐

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RESOLUTION MEPC.195(61)

Adopted on 1 October 2010

2010 GUIDELINES FOR SURVEY AND CERTIFICATION OF ANTI-FOULING SYSTEMS ON SHIPS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on the Control of Harmful Anti-fouling Systems for Ships, 2001, held in October 2001, adopted the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001 (the AFS Convention) together with four Conference resolutions,

NOTING that Article 10 of the AFS Convention prescribes that ships shall be surveyed and certified in accordance with the regulations of annex 4 of the Convention,

NOTING ALSO that regulation 1(4)(a) of annex 4 of the AFS Convention refers to the guidelines to be developed by the Organization and Conference resolution 2 urges the Organization to develop these guidelines as a matter of urgency for them to be adopted before the entry into force of the Convention,

NOTING FURTHER that, by resolution MEPC.102(48), it adopted on 11 October 2002 the Guidelines for Survey and Certification of Anti-fouling Systems on Ships,

RECOGNIZING the need to revise the 2002 Guidelines,

HAVING CONSIDERED a revised text of the Guidelines for Survey and Certification of Anti-fouling Systems on Ships prepared by the Sub-Committee on Flag State Implementation at its eighteenth session,

1. ADOPTS the 2010 Guidelines for Survey and Certification of Anti-fouling Systems on Ships, as set out in the Annex to this resolution;

2. INVITES Governments to apply the 2010 Guidelines;

3. RECOMMENDS that the Guidelines be reviewed on a regular basis; and

4. REVOKES resolution MEPC.102(48).

ANNEX

2010 GUIDELINES FOR SURVEY AND CERTIFICATION OF ANTI-FOULING SYSTEMS ON SHIPS

1 General

1.1 Article 10 of the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001, hereinafter referred to as "the Convention", prescribes that ships shall be surveyed and certified in accordance with the regulations of annex 4 of the Convention. The purpose of this document is to provide the Guidelines for Surveys and Certification of Anti-fouling Systems on Ships referred to in regulation 1(4)(a) of annex 4, hereinafter referred to as the "Guidelines", that will assist the Administrations and recognized organizations, in the uniform application of the provisions of the Convention and assist companies, shipbuilders, manufacturers of anti-fouling systems, as well as other interested parties to understand the process of the surveys and issuance and endorsement of the certificates.

1.2 These Guidelines provide the procedures for survey to ensure that a ship's anti-fouling system complies with the Convention, and those necessary for issuance and endorsement of an International Anti-fouling System Certificate. A guidance for compliant anti-fouling systems is given in the Appendix I to this annex.

1.3 These Guidelines apply to surveys of ships of 400 gross tonnage and above engaged in international voyages, excluding fixed or floating platforms, floating storage units (FSUs), and floating production storage and off-loading units (FPSOs), as specified in regulation 1(1) of annex 4 to the Convention.

1.4 The sole purpose of the survey activities described in these Guidelines is to verify compliance with the provisions of the Convention. Consequently, such surveys do not relate to any aspect not regulated by the Convention even if such aspects relate to the performance of an anti-fouling system on the hull of a ship, including the quality of workmanship during the application process.

1.5 In the event that a new survey method is developed, or in the event that the use of a certain anti-fouling system is prohibited and/or restricted, or in the light of experience gained, these Guidelines may need to be revised in the future.

2 Definitions

For the purposes of these Guidelines:

2.1 "Administration" means the Government of the State under whose authority the ship is operating. With respect to a ship entitled to fly a flag of a State, the Administration is the Government of that State. With respect to fixed or floating platforms engaged in exploration and exploitation of the sea-bed and subsoil thereof adjacent to the coast over which the coastal State exercises sovereign rights for the purposes of exploration and exploitation of their natural resources, the Administration is the Government of the coastal State concerned.

2.2 "Anti-fouling system" means a coating, paint, surface treatment, surface, or device that is used on a ship to control or prevent attachment of unwanted organisms.

2.3 "Company" means the owner of the ship or any other organization or person such as the manager or the bareboat charterer, who has assumed the responsibility for the operation of the ship from the owner of the ship and who, on assuming such responsibility, has agreed to take over all duties and responsibilities imposed by the International Safety Management (ISM) Code.

2.4 "Gross tonnage" means the gross tonnage calculated in accordance with the tonnage measurement regulations contained in annex 1 to the International Convention on Tonnage Measurement of Ships, 1969, or any successor convention.

2.5 "International voyage" means a voyage by a ship entitled to fly the flag of one State to or from a port, shipyard, or offshore terminal under the jurisdiction of another State.

2.6 "Length" means the length as defined in the International Convention on Load Lines, 1966, as modified by the Protocol of 1988 relating thereto, or any successor convention.

2.7 "Ship" means a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft, fixed or floating platforms, floating storage units (FSUs) and floating production storage and off-loading units (FPSOs).

3 General requirements for surveys

3.1 An initial survey covering at least the scope as in paragraph 1 of appendix II of these Guidelines should be held before the ship is put into service and the International Anti-fouling System Certificate required under regulation 2 or 3 of annex 4 to the Convention is issued for the first time.

3.2 A survey should be carried out whenever an anti-fouling system is changed or replaced. Such surveys should cover the scope as in paragraph 2 of appendix II to these Guidelines.

3.3 A major conversion affecting the anti-fouling system of a ship may be considered as a newbuilding as determined by the Administration.

3.4 Repairs generally do not require a survey. However, repairs affecting approximately twenty-five (25) per cent or more of the anti-fouling system, should be considered as a change or replacement of the anti-fouling system.

3.5 A non-compliant anti-fouling system controlled under annex 1 of the Convention, that undergoes repair must be repaired, or replaced with a compliant anti-fouling system.

4 Request for survey

4.1 Prior to any survey, a request for survey should be submitted by the Company to the Administration, or to a recognized organization along with the ship's data required in the International Anti-fouling System Certificate as listed:

.1 Name of ship

.2 Distinctive number or letters

.3 Port of registry

.4 Gross tonnage

.5 IMO number.

4.2 A request for survey should be supplemented by a declaration and supporting information from the anti-fouling system manufacturer, confirming that the anti-fouling system applied, or intended to be applied to the ship is in compliance with the requirements of the Convention (with an identification of the version of the Convention referred to). Such declaration should provide the following information contained in the Record of Anti-fouling System, as can be found in appendix 1 to annex 4 to the Convention:

.1 Type of anti-fouling system*

.2 Name of anti-fouling system manufacturer

.3 Name and colour of anti-fouling system

.4 Active ingredient(s) and their Chemical Abstract Service Registry Number (CAS number(s)).

Information required by the surveyor regarding compliance of product with the Convention should be found in a declaration from the anti-fouling system manufacturer which may be provided on the anti-fouling system container and/or on supportive documentation (such as Material Safety Data Sheets (MSDSs), or similar). A link between the supportive documentation and the relevant container should exist.

5 Conduct of surveys

5.1 **Initial Surveys** (Surveys in accordance with regulation 1(1)(a) of annex 4 to the Convention)

.1 The initial survey should verify that all applicable requirements of the Convention are complied with.

.2 As part of the survey, it should be verified that the anti-fouling system specified by the documentation submitted with the request for survey complies with the Convention. The survey should include verification that the anti-fouling system applied is identical to the system specified in the request for survey.

.3 Taking into account experience gained and the prevailing circumstances, the initial survey should include the tasks as listed in paragraph 1 of appendix II to these Guidelines.

.4 The verification tasks set out in paragraph 5.1.2 should be conducted at any time, either before, during, or after the anti-fouling system has been applied to the ship, as deemed necessary to verify compliance. No checks or tests must affect the integrity, structure or operation of the anti-fouling system.

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* *Examples of suitable wording could be: Organotin-free self polishing type, Organotin-free ablative type, Organotin-free conventional, Biocide-free silicon type paint, others. In the case of an anti-fouling system containing no active ingredients, the words "biocide-free" should be used.*

5.2 **Surveys when the anti-fouling systems are changed or replaced** (Surveys in accordance with regulation 1(1)(b) of Annex 4 to the Convention)

.1 If the existing anti-fouling system is confirmed by an International Anti-fouling System Certificate not to be controlled under annex 1 of the Convention, the provisions described in paragraph 5.1 apply.

.2 If the existing anti-fouling system is declared not to be controlled under annex 1 of the Convention, without being documented by an International Anti-fouling System Certificate, a verification should be carried out to confirm that the anti-fouling system complies with the requirements of the Convention. This verification may be based on sampling and/or testing and/or reliable documentation, as deemed necessary based on experience gained and the existing circumstances. Documentation for verification could, e.g., be MSDSs, or similar, a declaration of compliance from the anti-fouling system manufacturer, invoices from the shipyard and/or the anti-fouling system manufacturer. To verify the new anti-fouling system, the provisions described in paragraph 5.1 apply.

.3 If the existing anti-fouling system has been removed, the removal should be verified in addition to the provisions described in paragraph 5.1.

.4 If a sealer coat has been applied, a verification should be carried out to confirm that the name, type and colour of the sealer coat applied to the ship match those specified in the request for survey, and that the existing anti-fouling system has been covered with that sealer coat. Additionally the provisions described in paragraph 5.1 apply.

.5 An existing anti-fouling system controlled under annex 1 of the Convention:

.1 applied on/after 1 January 2003 or a later date if specified by the Administration, should be removed according to subparagraph 5.2.3;

.2 applied before 1 January 2003 or a later date if specified by the Administration, should be removed or covered by a sealer coat according to subparagraph 5.2.4.

.6 The survey should include the tasks as listed in paragraph 2 of Appendix II to these Guidelines.

5.3 **Surveys of existing ships requesting only an International Anti-fouling System Certificate**

.1 If the existing anti-fouling system is declared not to be controlled under annex 1 of the Convention, a verification should be carried out to confirm that the anti-fouling system complies with the requirements of the Convention. This verification may be based on sampling and/or testing and/or reliable documentation, as deemed necessary based on experience gained and the existing circumstances. Such documentation could be MSDSs or similar, a declaration of compliance from the anti-fouling system manufacturer, invoices from the shipyard and/or the anti-fouling system manufacturer. If this information raises no reasonable doubt that the system applied is compliant with annex 1 of the Convention, the International Anti-fouling System Certificate may be issued on this basis.

6 Issuing or endorsing the International Anti-fouling System Certificate

6.1 The International Anti-fouling System Certificate along with the Record of Anti-fouling Systems should be:

.1 issued upon satisfactory completion of the initial survey;

.2 issued upon acceptance of another Party's International Anti-fouling System Certificate; or

.3 endorsed upon satisfactory completion of a survey for change or replacement of an anti-fouling system.

* * *

Appendix I

Guidance for compliant anti-fouling systems

For the purpose of compliance with annex 1 of the Convention, small quantities of organotin compounds acting as a chemical catalyst (such as mono- and di- substituted organotin compounds) are allowed, provided that they are present at a level which does not provide a biocidal effect to the coating. On a practical level, when used as a catalyst, an organotin compound should not be present above 2,500 mg total tin per kilogram of dry paint.

* * *

Appendix II

Guidance for surveys under the International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS 2001)

(FI) 1 **Initial survey** (AFS 2001, annex 4, regulation 1(1)(a))

(FI) 1.1 confirming that a Declaration and supporting information from the anti-fouling system manufacturer, specifying that the anti-fouling system and, where applicable, the sealer coat intended to be applied to the ship are in compliance with the requirements of the Convention, is provided (AFS 2001);

(FI) 1.2 verifying that the relevant containers of the anti-fouling system show same data as the supporting information (AFS 2001);

(FI) 1.3 confirming that the existing anti-fouling system, controlled under annex 1 of the Convention has been removed or that a sealer coat has been applied (AFS 2001);

(FI) 1.4 verifying, where applicable, that the relevant containers of the sealer coat applied show same data as the supporting information (AFS 2001);

(FI) 1.5 where supporting information from the anti-fouling system manufacturer is not available or does not provide sufficient information, sampling or testing or other checks conducted on site, of the anti-fouling system;

(FI) 1.6 for ship of 24 m or more in length but less than 400 GT and engaged in international voyages, confirming that the owner or owner's authorized agent has completed a Declaration on Anti-fouling System (AFS 2001).

(FR) 2 **Surveys when anti-fouling systems are changed or replaced** (AFS 2001, annex 4, regulation 1(1)(b))

(FR) 2.1 confirming that a Declaration and supporting information from the anti-fouling system manufacturer, specifying that the anti-fouling system and, where applicable, the sealer coat intended to be applied to the ship are in compliance with the requirements of the Convention, is provided (AFS 2001);

(FR) 2.2 verifying that the relevant containers of the anti-fouling system show same data as the supporting information (AFS 2001);

(FR) 2.3 confirming that the existing anti-fouling system, controlled under annex 1 of the Convention has been removed or that a sealer coat has been applied (AFS 2001);

(FR) 2.4 verifying, where applicable, that the relevant containers of the sealer coat applied show same data as the supporting information (AFS 2001);

(FR) 2.5 for ship of 24 m or more in length but less than 400 GT, confirming that the owner or owner's authorized agent has completed a Declaration on Anti-fouling System (AFS 2001);

(FR) 2.6 endorsement of the Record of Anti-fouling Systems.

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RESOLUTION MEPC.196(62)

Adopted on 15 July 2011

2011 GUIDELINES FOR THE DEVELOPMENT OF THE SHIP RECYCLING PLAN

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on the Safe and Environmentally Sound Recycling of Ships held in May 2009 adopted the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (the Hong Kong Convention) together with six Conference resolutions,

NOTING that regulation 9 of the Annex to the Hong Kong Convention requires that a ship-specific Ship Recycling Plan shall be developed by the Ship Recycling Facility(ies) prior to any recycling of a ship, taking into account the guidelines developed by the Organization,

BEARING IN MIND that the International Conference on the Safe and Environmentally Sound Recycling of Ships, in its resolution 4, invited the Organization to develop Guidelines for global, uniform and effective implementation and enforcement of the relevant requirements of the Convention as a matter of urgency,

HAVING CONSIDERED, at its sixty-second session, the draft 2011 Guidelines for the development of the ship recycling plan, developed by the Working Group on Guidelines for Ship Recycling,

1. ADOPTS the 2011 Guidelines for the development of the ship recycling plan, as set out in the annex to this resolution;

2. INVITES Governments to bring the Guidelines to the attention of shipowners, ship operators and ship recycling facilities and to encourage their application as soon as possible; and to apply them when the Hong Kong Convention becomes applicable to them; and

3. REQUESTS the Committee to keep the Guidelines under review.

ANNEX

2011 GUIDELINES FOR THE DEVELOPMENT OF THE SHIP RECYCLING PLAN (SRP)

TABLE OF CONTENTS

1 INTRODUCTION

1.1 Objectives of the guidelines

These guidelines provide stakeholders, particularly Ship Recycling Facilities, with recommendations for the development of a Ship Recycling Plan (SRP) in accordance with the requirements of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (hereafter referred to as "the Convention").

It should be noted that regulation 9 of the annex to the Convention requires the Ship Recycling Facility to develop a ship-specific SRP, taking these guidelines into account.

These guidelines should be used primarily by Ship Recycling Facilities, taking into account information provided by the shipowner. Competent Authorities and Administrations may also find merit in these guidelines with respect to the approval process and implementation of the Convention.

1.2 Approach of the guidelines

Regulation 9 of the Annex to the Convention requires Ship Recycling Facilities to prepare a ship-specific SRP. These guidelines are separated into two parts: general guidance on information that should be gathered and reviewed by the Ship Recycling Facility in order to develop the SRP (section 3: General) and guidance for the recommended content of a ship-specific SRP (section 4: Framework of SRP).

2 DEFINITIONS

The terms used in these guidelines have the same meaning as those defined in the Convention and in the *Guidelines for Safe and Environmentally Sound Ship Recycling* ("Facility Guidelines"). The following additional definition applies to these guidelines only:

"The ship" means the particular ship which a Ship Recycling Facility is going to recycle, and for which an SRP is required.

3 GENERAL

The Convention requires that the SRP should be explicitly or tacitly approved by the Competent Authority and verified as properly reflecting the information contained in the Inventory of Hazardous Materials (IHM) during the final survey before issuance of an International Ready for Recycling Certificate. Preparation of the SRP should therefore begin well before the ship arrives at the Ship Recycling Facility.

As regards the languages of the SRP, in accordance with regulation 9.2 of the annex to the Convention, the shipowner may ask the Administration whether it is acceptable for the Ship Recycling Facility to use a language other than English, French or Spanish, and convey the decision of the Administration to the Ship Recycling Facility accordingly.

3.1 Review of ship-specific information

For each ship that is to be recycled, the Ship Recycling Facility should, in accordance with regulation 8.4 of the Annex to the Convention, cooperate with the shipowner in order to prepare a SRP that incorporates all relevant information about the ship that may affect its safe and environmentally sound recycling.

The IHM is essential to the Ship Recycling Facility for planning and executing the removal and management of Hazardous Materials. The Ship Recycling Facility should obtain the completed IHM, including Part II and Part III, taking into account possible variations resulting from the ship's subsequent operations.

Examples of ship-specific information that is useful to the Ship Recycling Facility when developing a SRP include finished drawings and final specifications such as: general arrangement, capacity plan, shell expansion plan, fire control plan, trim and stability calculation, and light weight distribution or calculation table. Also the following may provide useful information: midship section, construction profile (including longitudinal sections, deck, inner bottom and deckhouse), longitudinal and transverse bulkhead principal transverse sections, fore and aft construction, superstructures, accommodation plan, hydrostatic curve or table, deck piping system, general arrangement of ventilators and air ducts, painting scheme, joiner works, engine room arrangement (if appropriate) and bilge piping system of pump room, pump room arrangement, engine room piping diagram, ballast piping and cargo piping diagram and manufacturers' finished drawings of major equipment. Such information could be useful in planning the ship recycling sequence in its entirety.

3.2 Comparison of ship-specific information with the Ship Recycling Facility Plan (SRFP) and/or Document of Authorization to conduct Ship Recycling (DASR)

For each ship to be recycled, the ship-specific information obtained from the shipowner should be evaluated in the context of the capabilities and limitations specified in the Ship Recycling Facility Plan (SRFP) and/or Document of Authorization to conduct Ship Recycling (DASR). The SRP will need to address any ship-specific considerations that are not covered in the SRFP or that will require special procedures.

4 FRAMEWORK OF SRP

The responsibility for developing a comprehensive SRP rests with the Ship Recycling Facility, although development of the SRP is a cooperative effort between the Ship Recycling Facility and the shipowner. The Ship Recycling Facility is best placed to understand and describe the methods and procedures that it uses in its recycling operations and it has knowledge of the available facilities and capabilities for the safe and environmentally sound management of all Hazardous Materials and wastes generated during recycling, of the skills and capabilities of its workforce and the availability of local support services, and of the relevant national laws and regulations that apply to the facility and its activities, including the activities which it is approved to perform under its DASR. A sample cover page for the SRP is included in the appendix. The body of the SRP should include a more detailed narrative of the ship-specific recycling elements.

The SRP should describe how the Ship Recycling Facility will recycle the specific ship in a safe and environmentally sound manner, covering the recycling process steps and their sequence over the entire process. Any processes or procedures that deviate from the SRFP and are specific to the ship should be described in detail in the SRP.

Where more than one Ship Recycling Facility is used, SRPs should be prepared separately, in principle, by each of the Facilities involved, according to their respective duties and indicate the order in which the activities will occur.

4.1 Pre-arrival elements

The SRP should include a description of any specific preparatory work that should be carried out. The SRP should clarify whether and to what extent any preparatory work – such as

pre-treatment, identification of potential hazards and removal of stores – will take place at a location other than the Ship Recycling Facility identified in the SRP. The extent to which such preparatory work will be covered in the SRP will depend upon the capability of the authorized Ship Recycling Facility and the scope of the agreement with the shipowner. In the case of a tanker, the ship should arrive at the Ship Recycling Facility with cargo tanks and pump room(s) in a condition that is ready for certification as Safe-for-entry, or Safe-for-hot work, or both.

The Ship Recycling Facility should plan appropriately for the ship's arrival. The SRP should include the location where the ship will be placed during recycling operations and a concise plan for the arrival and safe placement of the specific ship to be recycled.

4.2 Arrival of ship

The SRP should describe the procedures that the Ship Recycling Facility will follow to conduct a walk-through (on-board check) of the vessel in an effort to identify any potential environmental or safety issues. The Ship Recycling Facility should verify whether safe access and egress have been provided for and that the SRP is in place throughout the ship recycling process.

It is recommended that the Ship Recycling Facility should mark the location of the known Hazardous Materials. Any specific items or locations on board whose hazardous characteristics are uncertain should be marked for additional sampling as necessary.

4.3 Management of Hazardous Materials

The SRP should include information on how the type and amount of Hazardous Materials will be managed, as required by regulation 9.3 of the Convention and specify the facility's approach for managing each Hazardous Material. Special attention should be paid to the types and quantities of Hazardous Materials on the ship. If ship-specific conditions require deviation from normal practices for managing Hazardous Materials, the appropriate ship-specific measures should be described in detail in the SRP. In order to avoid confusion, it is recommended that the SRP should use the same nomenclature and identification scheme as those included in the IHM.

The SRP should also contain additional information on the management of Hazardous Materials as required in Appendix 5 of the Convention (also known as the DASR). Specifically, the SRP should describe where the Hazardous Materials are to be processed or disposed of if the operation is not being conducted at the Ship Recycling Facility. The SRP should state that the removal of Hazardous Materials will be undertaken by responsible personnel who are trained and authorized to do so.

4.4 Safe-for-entry and Safe-for-hot-work procedures

Regulation 9 of the Convention requires the SRP to include information concerning the establishment, maintenance and monitoring of Safe-for-entry and Safe-for-hot-work procedures. The Ship Recycling Facility is encouraged to review the Facility Guidelines, as they contain specific technical recommendations to address these important safety issues.

While the SRFP will describe general procedures on how the Ship Recycling Facility will achieve safe atmospheric conditions during the ship recycling process, the SRP should describe in detail how Safe-for-entry and Safe-for-hot-work procedures will be implemented on the specific ship, taking account of such features as its structure, configuration, and previous cargo.

4.5 Dismantling sequence

An important component of the dismantling sequence is the removal of Hazardous Materials to the maximum extent practicable prior to and during cutting activities. Depending on a number of factors, including the age of the ship and the quantity of Hazardous Materials present, it may be impossible to remove all Hazardous Materials prior to the start of cutting activities. The SRP should include a dismantling sequence that is ship-specific and takes into account the cutting operations and locations of Hazardous Materials.

4.6 Other necessary elements

In addition to the elements described above, the SRP should include any ship specific processes and/or procedures that will be necessary to recycle the ship and that are not fully covered in the SRFP. For example, a Ship Recycling Facility may need to use additional workers or subcontractors, or they may need additional equipment to deal with unique aspects of the ship. Such ship-specific processes/procedures may take into account the technical guidance manual to be developed by the Organization.

4.7 Attaching a copy of DASR

The Ship Recycling Facility should attach a copy of the DASR to the SRP.

5 VERIFICATION OF COMPETENT AUTHORITY APPROVAL

Article 16.6 of the Convention stipulates that a State shall declare whether it requires tacit or explicit approval of the SRP before a ship may be recycled. The Ship Recycling Facility should be familiar with the procedures implemented by the Competent Authority for approval of the SRP. The Competent Authority's approval process will, at a minimum, include written acknowledgement of receipt of the SRP and may include further written documentation of approval or denial for the ship-specific recycling. The written acknowledgement and/or documentation of approval should be appended to the SRP immediately upon availability and made available to appropriate authorities and stakeholders as necessary.

APPENDIX

SAMPLE COVER PAGE

Ship Recycling Plan
Summary of information on ship and Ship Recycling Facility

This Ship Recycling Plan was developed in accordance with the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (the Convention).

Ship information

Name of ship	
Distinctive number or letters	
Port of registry	
Gross tonnage	
IMO number	
Name and address of shipowner	
IMO-registered owner identification number	
IMO company identification number	
Telephone number	
E-mail address	

Ship Recycling Facility information

Name of Ship Recycling Facility	
Distinctive Recycling Company identity No.	
Full address of Ship Recycling Facility	
Primary contact person	
Telephone number	
E-mail address	
Name, address and contact information of ownership company	
Working language(s)	

Projected schedule for ship recycling

Date of ship arrival at Ship Recycling Facility	
Date of commencement of ship recycling	
Date of Completion of ship recycling	
Date of completion of sale/disposal of all components	

…… ……

(Date) *(Signature of Ship Recycling Facility owner/operator)*

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RESOLUTION MEPC.197(62)

Adopted on 15 July 2011

2011 GUIDELINES FOR THE DEVELOPMENT OF THE INVENTORY OF HAZARDOUS MATERIALS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on the Safe and Environmentally Sound Recycling of Ships held in May 2009 adopted the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (the Hong Kong Convention) together with six Conference resolutions,

NOTING that regulations 5.1 and 5.2 of the Annex to the Hong Kong Convention require that ships shall have on board an Inventory of Hazardous Materials which shall be prepared and verified taking into account Guidelines, including any threshold values and exemptions contained in those Guidelines, developed by the Organization,

NOTING ALSO resolution MEPC.179(59) by which the Committee adopted the Guidelines for the development of the inventory of Hazardous Materials,

NOTING FURTHER that, by resolution MEPC.179(59), the Committee resolved to keep the Guidelines under review,

HAVING CONSIDERED, at its sixty-second session, the recommendation made by the Working Group on Guidelines for Ship Recycling,

1. ADOPTS the 2011 Guidelines for the development of the Inventory of Hazardous Materials as set out in the Annex to this resolution;

2. INVITES Member Governments to apply the 2011 Guidelines as soon as possible, or when the Convention becomes applicable to them;

3. AGREES to keep the 2011 Guidelines for the development of the Inventory of Hazardous Materials under review in the light of experience gained;

4. REVOKES the Guidelines adopted by resolution MEPC.179(59).

ANNEX

2011 GUIDELINES FOR THE DEVELOPMENT OF THE INVENTORY OF HAZARDOUS MATERIALS

1 Introduction

1.1 Objectives of the Guidelines

These Guidelines provide recommendations for developing the Inventory of Hazardous Materials (hereinafter referred to as "the Inventory") to assist compliance with regulation 5 (Inventory of Hazardous Materials) of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (hereinafter referred to as "the Convention").

1.2 Application of the Guidelines

These Guidelines have been developed to provide relevant stakeholders (e.g., shipbuilders, equipment suppliers, repairers, shipowners and ship management companies) with the essential requirements for practical and logical development of the Inventory.

1.3 Objectives of the Inventory

The objectives of the Inventory are to provide ship-specific information on the actual Hazardous Materials present on board, in order to protect health and safety and to prevent environmental pollution at Ship Recycling Facilities. This information will be used by the Ship Recycling Facilities in order to decide how to manage the types and amounts of materials identified in the Inventory of Hazardous Materials (regulation 9).

2 Definitions

The terms used in these Guidelines have the same meaning as those defined in the Convention, with the following additional definitions which apply to these Guidelines only.

"Homogeneous material" means a material of uniform composition throughout that cannot be mechanically disjointed into different materials, meaning that the materials cannot, in principle, be separated by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes.

"Product" means machinery, equipment, materials and applied coatings on board a ship.

"Supplier" means a company which provides products; which may be a manufacturer, trader or agency.

"Supply chain" means the series of entities involved in the supply and purchase of materials and goods, from raw materials to final product.

"Threshold level" is defined as the concentration value in homogeneous materials.

3 Requirements for the Inventory

3.1 Scope of the Inventory

The Inventory consists of:

Part I: Materials contained in ship structure or equipment;
Part II: Operationally generated wastes; and
Part III: Stores.

3.2 Materials to be listed in the Inventory

Appendix 1 of the Guidelines, "Items to be listed in the Inventory of Hazardous Materials", provides information on the Hazardous Materials that may be found on board a ship. Materials set out in appendix 1 should be listed in the Inventory. Each item in appendix 1 of these Guidelines is classified under "Table A", "Table B", "Table C" or "Table D" according to its properties:

.1 Table A comprises the materials listed in appendix 1 of the Convention;

.2 Table B comprises the materials listed in appendix 2 of the Convention;

.3 Table C (Potentially hazardous items) comprises items which are potentially hazardous to the environment and human health at Ship Recycling Facilities; and

.4 Table D (Regular Consumable Goods potentially containing Hazardous Materials) comprises goods which are not integral to a ship and are unlikely to be dismantled or treated at a Ship Recycling Facility.

Table A and Table B correspond to Part I of the Inventory. Table C corresponds to Parts II and III and Table D corresponds to Part III.

3.3 Materials not required to be listed in the Inventory

Materials listed in Table B that are inherent in solid metals or metal alloys, provided they are used in general construction, such as hull, superstructure, pipes, or housings for equipment and machinery are not required to be listed in the Inventory.

3.4 Standard format of the Inventory of Hazardous Materials

The Inventory should be developed on the basis of the standard format set out in appendix 2 of these Guidelines: "Standard format of the Inventory of Hazardous Materials". Examples of how to complete the Inventory are provided for guidance purposes only.

4 Requirements for development of the Inventory

4.1 Development of Part I of the Inventory for new ships

4.1.1 Part I of the Inventory for new ships should be developed at the design and construction stage.

4.1.2 Checking of materials listed in Table A

During the development of the Inventory (Part I), the presence of materials listed in Table A of appendix 1 should be checked and confirmed; the quantity and location of Table A materials should be listed in Part I of the Inventory. If such materials are used in compliance with the Convention, they should be listed in Part I of the Inventory. Any spare parts containing materials listed in Table A are required to be listed in Part III of the Inventory.

4.1.3 Checking of materials listed in Table B

If materials listed in Table B of appendix 1 are present in products above the threshold levels provided in Table B, the quantity and location of the products and the contents of the materials present in them should be listed in Part I of the Inventory. Any spare parts containing materials listed in Table B are required to be listed in Part III of the Inventory.

4.1.4 Process for checking of materials

The checking of materials as provided in paragraphs 4.1.2 and 4.1.3 above should be based on the "Material Declaration" furnished by the suppliers in the shipbuilding supply chain (e.g., equipment suppliers, parts suppliers, material suppliers).

4.2 Development of Part I of the Inventory for existing ships

In order to achieve comparable results for existing ships with respect to Part I of the Inventory, the following procedure should be followed.

The procedure is based on the following steps:

.1 collection of necessary information;

.2 assessment of collected information;

.3 preparation of visual/sampling check plan;

.4 onboard visual check and sampling check; and

.5 preparation of Part I of the Inventory and related documentation.

The determination of Hazardous Materials present on board existing ships should, as far as practicable, be conducted as prescribed for new ships, including the procedures described in section 6 and 7 of these Guidelines. Alternatively the procedures described in subsection 4.2 may be applied for existing ships, but these procedures should not be used for any new installation resulting from the conversion or repair of existing ships after the initial preparation of the Inventory.

The procedures described in subsection 4.2 should be carried out by the shipowner, who may draw upon expert assistance. Such an expert or expert party should not be the same as the person or organization authorized by the Administration to approve the Inventory.

Please refer to appendix 4: "Flow diagram for developing Part I of the Inventory for existing ships"; and appendix 5: "Typical example of development process for Part I of the Inventory for existing ships".

4.2.1 Collection of necessary information (Step 1)

The shipowner should identify, research, request, and procure all reasonably available documentation regarding the ship. Information that will be useful includes maintenance, conversion, and repair documents; certificates, manuals, ship's plans, drawings, and technical specifications; product information data sheets (such as Material Declarations); and hazardous material inventories or recycling information from sister ships. Potential sources of information could include previous shipowners, the ship builder, historical societies, classification society records, and ship recycling facilities with experience working with similar ships.

4.2.2 Assessment of collected information (Step 2)

The information collected in Step 1 above should be assessed. The assessment should cover all materials listed in Table A of appendix 1; materials listed in Table B should be listed as far as practicable. The results of the assessment should be reflected in the visual/sampling check plan.

4.2.3 Preparation of visual/sampling check plan (Step 3)

To specify the materials listed in appendix 1 of these Guidelines a visual/sampling check plan should be prepared taking into account the collated information and any appropriate expertise. The visual/sampling check plan based on the following three lists:

- List of equipment, system and/or area for visual check (any equipment, system and/or area specified regarding the presence of the materials listed in appendix 1 by document analysis should be entered in the List of equipment, system and/or area for visual check);

- List of equipment, system and/or area for sampling check (any equipment, system and/or area which cannot be specified regarding the presence of the materials listed in appendix 1 by document or visual analysis should be entered in the List of equipment, system and/or area as requiring sampling check. A sampling check is the taking of samples to identify the presence or absence of Hazardous Material contained in the equipment, systems, and/or areas, by suitable and generally accepted methods such as laboratory analysis); and

- List of equipment, system and/or area classed as "potentially containing Hazardous Material" (any equipment, system and/or area which cannot be specified regarding the presence of the materials listed in appendix 1 by document analysis may be entered in the List of equipment, system and/or area classed as "potentially containing Hazardous Material" without the sampling check. The prerequisite for this classification is a comprehensible justification such as the impossibility of conducting sampling without compromising the safety of the ship and its operational efficiency).

Visual/sampling checkpoints should be all points where:

- the presence of materials to be considered for the Inventory Part I as listed in appendix 1 is likely;

- the documentation is not specific; or

- materials of uncertain composition were used.

4.2.4 Onboard visual/sampling check (Step 4)

The onboard visual/sampling check should be carried out in accordance with the visual/sampling check plan. When a sampling check is carried out, samples should be taken and the sample points should be clearly marked on the ship plan and the sample results referenced. Materials of the same kind may be sampled in a representative manner. Such materials are to be checked to ensure that they are of the same kind. The sampling check should be carried out drawing upon expert assistance.

Any uncertainty regarding the presence of Hazardous Materials should be clarified by a visual/sampling check. Checkpoints should be documented in the ship's plan and may be supported by photographs.

If the equipment, system and/or area of the ship are not accessible for a visual check or sampling check, they should be classified as "potentially containing Hazardous Material". The prerequisite for such classification should be the same prerequisite as in section 4.2.3. Any equipment, system and/or area classed as "potentially containing Hazardous Material" may be investigated or subjected to a sampling check at the request of the shipowner during a later survey (e.g., during repair, refit or conversion).

4.2.5 Preparation of Part I of the Inventory and related documentation (Step 5)

If any equipment, system and/or area is classed as either "containing Hazardous Material" or "potentially containing Hazardous Material", their approximate quantity and location should be listed in Part I of the Inventory. These two categories should be indicated separately in the remarks column of the Inventory of Hazardous Materials.

4.2.6 Testing methods

Samples may be tested by a variety of methods. "Indicative" or "field tests" may be used when:

- the likelihood of a hazard is high;
- the test is expected to indicate that the hazard exists; and
- the sample is being tested by "specific testing" to show that the hazard is present.

Indicative or field tests are quick, inexpensive and useful onboard the ship or on site, but they cannot be accurately reproduced or repeated, and cannot identify the hazard specifically, and therefore cannot be relied upon except as "indicators".

In all other cases, and in order to avoid dispute, "specific testing" should be used. Specific tests are repeatable, reliable and can demonstrate definitively whether a hazard exists or not. They will also provide a known type of the hazard. The methods indicated are found qualitative and quantitative appropriate and only testing methods to the same effect can be used. Specific tests are to be carried out by a suitably accredited laboratory, working to international standards[†] or equivalent, which will provide a written report that can be relied upon by all parties.

Specific test methods for appendix 1 materials are provided in appendix 9.

[†] For example ISO 17025.

4.2.7 Diagram of the location of Hazardous Materials on board a ship

Preparation of a diagram showing the location of the materials listed in Table A is recommended in order to help Ship Recycling Facilities gain a visual understanding of the Inventory.

4.3 Maintaining and updating Part I of the Inventory during operations

4.3.1 Part I of the Inventory should be appropriately maintained and updated, especially after any repair or conversion or sale of a ship.

4.3.2 Updating of Part I of the Inventory in the event of new installation

If any machinery or equipment is added to, removed or replaced or the hull coating is renewed, Part I of the Inventory should be updated according to the requirements for new ships as stipulated in subsections 4.1.2 to 4.1.4. Updating is not required if identical parts or coatings are installed or applied.

4.3.3 Continuity of Part I of the Inventory

Part I of the Inventory should belong to the ship and the continuity and conformity of the information it contains should be confirmed, especially if the flag, owner or operator of the ship changes.

4.4 Development of Part II of the Inventory (operationally generated waste)

4.4.1 Once the decision to recycle a ship has been taken, Part II of the Inventory should be developed before the final survey, taking into account that a ship destined to be recycled shall conduct operations in the period prior to entering the Ship Recycling Facility in a manner that minimizes the amount of cargo residues, fuel oil and wastes remaining on board (regulation 8.2).

4.4.2 Operationally generated wastes to be listed in the Inventory

If the wastes listed in Part II of the Inventory provided in "Table C (Potentially hazardous items)" of appendix 1 are intended for delivery with the ship to a Ship Recycling Facility, the quantity of the operationally generated wastes should be estimated and their approximate quantities and locations should be listed in Part II of the Inventory.

4.5 Development of Part III of the Inventory (stores)

4.5.1 Once the decision to recycle has been taken, Part III of the Inventory should be developed before the final survey, taking into account the fact that a ship destined to be recycled shall minimize the wastes remaining on board (regulation 8.2). Each item listed in Part III should correspond to the ship's operations during its last voyage.

4.5.2 Stores to be listed in the Inventory

If the stores to be listed in Part III of the Inventory provided in Table C of appendix 1 are to be delivered with the ship to a Ship Recycling Facility, the unit (e.g., capacity of cans and cylinders), quantity and location of the stores should be listed in Part III of the Inventory.

4.5.3 Liquids and gases sealed in ship's machinery and equipment to be listed in the Inventory

If any liquids and gases listed in Table C of appendix 1 are integral in machinery and equipment on board a ship, their approximate quantity and location should be listed in Part III of the Inventory. However, small amounts of lubricating oil, anti-seize compounds and grease which are applied to or injected into machinery and equipment to maintain normal performance do not fall within the scope of this provision. For subsequent completion of Part III of the Inventory during the recycling preparation processes, the quantity of liquids and gases listed in Table C of appendix 1 required for normal operation, including the related pipe system volumes, should be prepared and documented at the design and construction stage. This information belongs to the ship, and continuity of this information should be maintained if the flag, owner or operator of the ship changes.

4.5.4 Regular consumable goods to be listed in the Inventory

Regular consumable goods, as provided in Table D of appendix 1should not be listed in Part I or Part II but should be listed in Part III of the Inventory if they are to be delivered with the ship to a Ship Recycling Facility. A general description including the name of item (e.g., TV set), manufacturer, quantity and location should be entered in Part III of the Inventory. The check on materials provided for in paragraphs 4.1.2 and 4.1.3 of the Guidelines does not apply to regular consumable goods.

4.6 Description of location of Hazardous Materials on board

The locations of Hazardous Materials on board should be described and identified using the name of location (e.g., second floor of Engine-room, Bridge DK, APT, No.1 Cargo Tank, Frame number) given in the plans (e.g., General Arrangement, Fire and Safety Plan, Machinery Arrangement or Tank Arrangement).

4.7 Description of approximate quantity of Hazardous Materials

In order to identify the approximate quantity of Hazardous Materials, the standard unit used for the of Hazardous Materials should be kg, unless other units (e.g., m^3 for materials of liquid or gases, m^2 for materials used in floors or walls) are considered more appropriate. An approximate quantity should be rounded up to at least two significant figures.

5 Requirements for ascertaining the conformity of the Inventory

5.1 Design and construction stage

The conformity of Part I of the Inventory at the design and construction stage should be ascertained by reference to the collected "Supplier's Declaration of Conformity" described in section 7 and the related "Material Declarations" collected from suppliers.

5.2 Operational stage

Shipowners should implement the following measures in order to ensure the conformity of Part I of the Inventory:

.1 designate a person as responsible for maintaining and updating the Inventory (the designated person may be employed ashore or on board);

.2 the designated person, in order to implement subsection 4.3.2, should establish and supervise a system to ensure the necessary updating of the Inventory in the event of new installation;

.3 to maintain the Inventory including dates of changes or new deleted entries and the signature of the designated person; and

.4 provide related documents as required for the survey or sale of the ship.

6 Material Declaration

6.1 General

Suppliers to the shipbuilding industry should identify and declare whether or not the materials listed in Table A or Table B are present above the threshold level specified in appendix 1 of these Guidelines. However, this provision does not apply to chemicals which do not constitute a part of the finished product.

6.2 Information required in the declaration

At a minimum the following information is required in the Material Declaration:

.1 date of declaration;

.2 Material Declaration identification number;

.3 supplier's name;

.4 product name (common product name or name used by manufacturer);

.5 product number (for identification by manufacturer);

.6 declaration of whether or not the materials listed in Table A and Table B of appendix 1 of these Guidelines are present in the product above the threshold level stipulated in appendix 1 of these Guidelines; and

.7 mass of each constituent material listed in Table A and/or Table B of appendix 1 of these Guidelines if present above threshold level.

An example of a Material Declaration is shown in appendix 6.

7 Supplier's Declaration of Conformity

7.1 Purpose and scope

The purpose of the Supplier's Declaration of Conformity is to provide assurance that the related Material Declaration conforms to section 6.2, and to identify the responsible entity.

The Supplier's Declaration of Conformity remains valid as long as the products are present on board.

The supplier compiling the Supplier's Declaration of Conformity should establish a company policy[‡]. The company policy on the management of the chemical substances in products which the supplier manufactures or sells should cover:

.a Compliance with law:

The regulations and requirements governing the management of chemical substances in products should be clearly described in documents which should be kept and maintained; and

.b Obtaining of information on chemical substance content:

In procuring raw materials for components and products, suppliers should be selected following an evaluation, and the information on the chemical substances they supply should be obtained.

7.2 Contents and format

The Supplier's Declaration of Conformity should contain the following:

.1 unique identification number;

.2 name and contact address of the issuer;

.3 identification of the subject of the Declaration of Conformity (e.g., name, type, model number, and/or other relevant supplementary information);

.4 statement of conformity;

.5 date and place of issue; and

.6 signature (or equivalent sign of validation), name and function of the authorized person(s) acting on behalf of the issuer.

An example of the Supplier's Declaration of Conformity is shown in appendix 7.

8 List of appendices

Appendix 1: Items to be listed in the Inventory of Hazardous Materials

Appendix 2: Standard format of the Inventory of Hazardous Materials

Appendix 3: Example of the development process for Part I of the Inventory for new ships

Appendix 4: Flow diagram for developing Part I of the Inventory for existing ships

Appendix 5: Example of the development process for Part I of the Inventory for existing ships

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‡ A recognized quality management system may be utilized.

APPENDIX 1

ITEMS TO BE LISTED IN THE INVENTORY OF HAZARDOUS MATERIALS

TABLE A* Materials listed in appendix 1 of the Annex to the Convention

No.	Materials		Inventory			Threshold level
			Part I	Part II	Part III	
A-1	Asbestos		x			no threshold level
A-2	Polychlorinated biphenyls (PCBs)		x			no threshold level
A-3	Ozone Depleting Substances	CFCs	x			no threshold level
		Halons	x			
		Other fully halogenated CFCs	x			
		Carbon tetrachloride	x			
		1,1,1-Trichloroethane (Methyl chloroform)	x			
		Hydrochlorofluorocarbons	x			
		Hydrobromofluorocarbons	x			
		Methyl bromide	x			
		Bromochloromethane	x			
A-4	Anti-fouling systems containing organotin compounds as a biocide		x			2500 mg total tin/kg

TABLE B* Materials listed in appendix 2 of the Annex to the Convention

No.	Materials	Inventory			Threshold level
		Part I	Part II	Part III	
B-1	Cadmium and cadmium compounds	x			100 mg/kg
B-2	Hexavalent chromium and hexavalent chromium compounds	x			1,000 mg/kg
B-3	Lead and lead compounds	x			1,000 mg/kg
B-4	Mercury and mercury compounds	x			1,000 mg/kg
B-5	Polybrominated biphenyl (PBBs)	x			1,000 mg/kg
B-6	Polybrominated diphenyl ethers (PBDEs)	x			1,000 mg/kg
B-7	Polychlorinated naphthalenes (more than 3 chlorine atoms)	x			no threshold level
B-8	Radioactive substances	x			no threshold level§
B-9	Certain shortchain chlorinated paraffins (Alkanes, C10-C13, chloro)	x			1%

* For materials in this Table with no threshold level, quantities occurring as unintentional trace contaminants should not be listed in Material Declarations and in the Inventory.

§ However, note that, in order to identify amounts of radioactive substances which could be exempted from the need for regulatory control, "exemption criteria" were established in the IAEA Safety Standards (Safety Series No.115, International Basic Safety Standards for the Protection against Ionizing Radiation and for the Safety of Radiation Sources, Schedule I, p. 81-89; Vienna, 1996. IAEA is currently in the process of updating IAEA Safety Series No.115). For practical purposes, the IAEA defined values (e.g., "exemption levels") that could be considered as "thresholds" below which the substances could be automatically exempted from any control without further consideration. National Regulatory Authorities normally establish exemption levels for radioactive sources and other radioactive materials.

TABLE C Potentially hazardous items

No.	Properties		Goods	Inventory		
				Part I	Part II	Part III
C-1	Liquid	Oiliness	Kerosene			x
C-2			White spirit			x
C-3			Lubricating oil			x
C-4			Hydraulic oil			x
C-5			Anti-seize compounds			x
C-6			Fuel additive			x
C-7			Engine coolant additives			x
C-8			Antifreeze fluids			x
C-9			Boiler and feed water treatment and test re-agents			x
C-10			De-ioniser regenerating chemicals			x
C-11			Evaporator dosing and descaling acids			x
C-12			Paint stabilizers/rust stabilizers			x
C-13			Solvents/thinners			x
C-14			Paints			x
C-15			Chemical refrigerants			x
C-16			Battery electrolyte			x
C-17			Alcohol, methylated spirits			x
C-18	Gas	Explosives/ inflammables	Acetylene			x
C-19			Propane			x
C-20			Butane			x
C-21			Oxygen			x
C-22		Green House Gases	CO_2			x
C-23			Perfluorocarbons (PFCs)			x
C-24			Methane			x
C-25			Hydrofluorocarbon (HFCs)			x
C-27			Nitrous oxide(N_2O)			x
C-28			Sulfur hexafluoride (SF_6)			x
C-29	Liquid	Oiliness	Bunkers: fuel oil			x
C-30			Grease			x
C-31			Waste oil (sludge)		x	
C-32			Bilge and/or waste water generated by the after-treatment systems fitted on machineries		x	
C-33			Oily liquid cargo tank residues		x	
C-34			Ballast water		x	
C-35			Raw sewage		x	
C-36			Treated sewage		x	
C-37			Non-oily liquid cargo residues		x	
C-38	Gas	Explosibility/ inflammability	Fuel gas			x

TABLE C Potentially hazardous items

No.	Properties	Goods	Inventory		
			Part I	Part II	Part III
C-39	Solid	Dry cargo residues		x	
C-40		Medical waste/infectious waste		x	
C-41		Incinerator ash[2)]		x	
C-42		Garbage[2)]		x	
C-43		Fuel tank residues		x	
C-45		Oily solid cargo tank residues		x	
C-45		Oily or chemical contaminated rags		x	
C-46		Batteries (incl. lead acid batteries)			x
C-47		Pesticides/insecticide sprays			x
C-48		Extinguishers			x
C-49		Chemical cleaner (incl. electrical equipment cleaner, carbon remover)			x
C-50		Detergent/bleacher (could be a liquid)			x
C-51		Miscellaneous medicines			x
C-52		Fire fighting clothing and Personal protective equipment			x
C-53		Dry tank residues		x	
C-54		Cargo residues		x	
C-55		Spare parts which contain materials listed in Table A or Table B			x

2) Definition of garbage is identical to that in MARPOL Annex V. However, incinerator ash is classified separately because it may include hazardous substances or heavy metals.

TABLE D• Regular consumable goods potentially containing Hazardous Materials

No.	Properties	Example	Inventory		
			Part I	Part II	Part III
D-1	Domestic and accommodation appliances	Computers, refrigerators, printers, scanners, television sets, radio sets, video cameras, video recorders, telephones, consumer batteries, fluorescent lamps, filament bulbs, lamps			x

• This Table does not include ship-specific equipment integral to ship operations, which has to be listed in Part I of the Inventory.

APPENDIX 2

STANDARD FORMAT OF THE INVENTORY OF HAZARDOUS MATERIALS

Part I HAZARDOUS MATERIALS CONTAINED IN THE SHIP'S STRUCTURE AND EQUIPMENT

I-1 Paints and coating systems containing materials listed in Table A and Table B of appendix 1 of the Guidelines

No.	Application of paint	Name of paint	Location	Materials (classification in appendix 1)	Approx. quantity		Remarks
1	Anti-drumming compound	Primer, xx Co., xx primer #300	Hull part	Lead	35.00	kg	
2	Anti-fouling	xx Co., xx coat #100	Underwater parts	TBT	120.00	kg	

I-2 Equipment and machinery containing materials listed in Table A and Table B of appendix 1 of the Guidelines

No.	Name of equipment and machinery	Location	Materials (classification in appendix 1)	Parts where used	Approx. quantity		Remarks
1	Switch board	Engine control room	Cadmium	Housing coating	0.02	kg	
			Mercury	Heat gauge	<0.01	kg	less than 0.01kg
2	~~Diesel engine, xx Co., xx #150~~	~~Engine room~~	~~Cadmium~~	~~Bearing~~	~~0.02~~	~~kg~~	
3	Diesel engine, xx Co., xx #200	Engine-room	Cadmium	Bearing	0.01	kg	Revised by XXX on Oct. XX, 2008
4	Diesel generator (x 3)	Engine-room	Lead	Ingredient of copper compounds	0.01	kg	

I-3 Structure and hull containing materials listed in Table A and Table B of appendix 1 of the Guidelines

No.	Name of structural element	Location	Materials (classification in appendix 1)	Parts where used	Approx. quantity		Remarks
1	Wall panel	Accommodation	Asbestos	Insulation	2,500.00	kg	
2	Wall insulation	Engine control room	Lead	Perforated plate	0.01	kg	cover for insulation material
			Asbestos	Insulation	25.00	kg	under perforated plates
3							

Part II OPERATIONALLY GENERATED WASTE

No.	Location[1)]	Name of item (classification in appendix 1) and detail (if any) of the item	Approx. quantity		Remarks
1	Garbage locker	Garbage (food waste)	35.00	kg	
2	Bilge tank	Bilgewater	15.00	m^3	
3	No.1 cargo hold	Dry cargo residues (iron ore)	110.00	kg	
4	No.2 cargo hold	Waste oil (sludge) (crude)	120.00	kg	
5	No.1 ballast tank	Ballast water	2,500.00	m^3	
		Sediments	250.00	kg	

Part III STORES

III-1 Stores

No.	Location[1)]	Name of item (classification in appendix 1)	Unit quantity		Figure		Approx. quantity		Remarks[2)]
1	No.1 fuel oil tank	Fuel oil (heavy fuel oil)	-		-		100.00	m^3	
2	CO_2 room	CO_2	100.00	kg	50	bottles	5,000.00	kg	
3	Workshop	Propane	20.00	kg	10	pcs	200.00	kg	
4	Medicine locker	Miscellaneous medicines	-		-		-		Details are shown in the attached list.
5	Paint stores	Paint, xx Co., #600	20.00	kg	5	pcs	100.00	kg	Cadmium containing.

III-2 Liquids sealed in ship's machinery and equipment

No.	Type of liquids (classification in appendix 1)	Name of machinery or equipment	Location	Approx. quantity		Remarks
1	Hydraulic oil	Deck crane hydraulic oil system	Upper deck	15.00	m^3	
		Deck machinery hydraulic oil system	Upper deck and bosun store	200.00	m^3	
		Steering gear hydraulic oil system	Steering gear room	0.55	m^3	
2	Lubricating oil	Main engine system	Engine-room	0.45	m^3	
3	Boiler water treatment	Boiler	Engine-room	0.20	m^3	

III-3 Gases sealed in ship's machinery and equipment

No.	Type of gases (classification in appendix 1)	Name of machinery or equipment	Location	Approx. quantity		Remarks
1	HFC	AC system	AC room	100.00	kg	
2	HFC	Refrigerated provision chamber machine	AC room	50.00	kg	

III-4 Regular consumable goods potentially containing Hazardous Materials

No.	Location[1)]	Name of item	Quantity	Remarks
1	Accommodation	Refrigerators	1	
2	Accommodation	Personal computers	2	

1) The location of a Part II or Part III item should be entered in order based on its location, from a lower level to an upper level and from a fore part to an aft part. The location of Part I items is recommended to be described similarly, as far as practicable.
2) In column "Remarks" for Part III items, if Hazardous Materials are integrated in products, the approximate amount of the contents should be shown as far as possible.

APPENDIX 3

EXAMPLE OF THE DEVELOPMENT PROCESS FOR PART I OF THE INVENTORY FOR NEW SHIPS

1 Objective of the typical example

This example has been developed to give guidance and to facilitate understanding of the development process for Part I of the Inventory of Hazardous Materials for new ships.

2 Development flow for Part I of the Inventory

Part I of the Inventory should be developed using the following 3 steps. However, the order of these steps is flexible and can be changed depending on the schedule of shipbuilding:

.1 collection of Hazardous Materials information;
.2 utilization of Hazardous Materials information; and
.3 preparation of the Inventory (by filling out standard format).

3 Collection of Hazardous Materials information

3.1 Data collection process for Hazardous Materials

Materials Declaration (MD) and Supplier's Declaration of Conformity (SDoC) for products from suppliers (tier 1 suppliers) should be requested and collected by the shipbuilding yard. Tier 1 suppliers may request from their suppliers (tier 2 suppliers) the relevant information if they cannot develop the MD based on the information available. Thus the collection of data on Hazardous Materials may involve the entire shipbuilding supply chain (Figure 1).

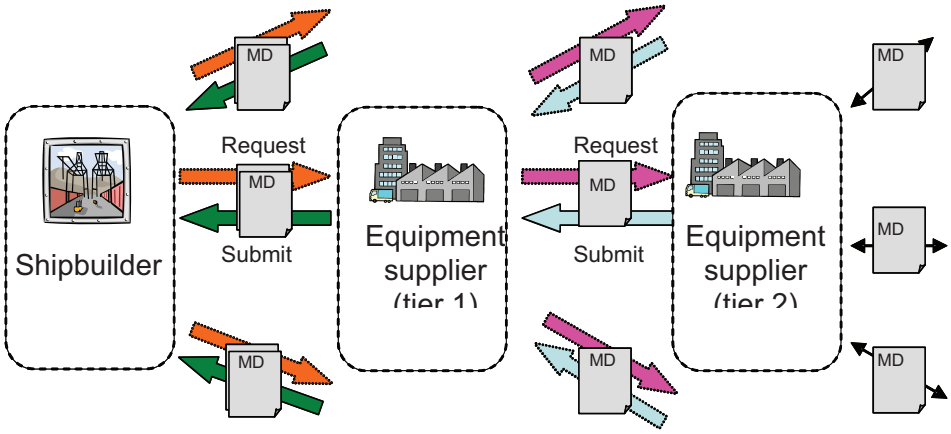


Figure 1 – Process of MD (and SDoC) collection showing involvement of supply chain

3.2 Declaration of Hazardous Materials

Suppliers should declare whether or not the Hazardous Materials listed in Table A and Table B in the MD are present in concentrations above the threshold levels specified for each "homogeneous material" in a product.

3.2.1 Materials listed in Table A

If one or more materials listed in Table A are found to be present in concentrations above the specified threshold level according to the MD, the products which contain these materials shall not be installed on a ship. However, if the materials are used in a product in accordance with an exemption specified by the Convention (e.g., new installations containing hydrochlorofluorocarbons (HCFCs) before 1 January 2020), the product should be listed in the Inventory.

3.2.2 Materials listed in Table B

If one or more materials listed in Table B are found to be present in concentrations above the specified threshold level according to the MD, the products should be listed in the Inventory.

3.3 Example of "Homogeneous Materials"

Figure 2 shows an example of four homogeneous materials which constitute a cable. In this case, sheath, intervention, insulator and conductor are all individual homogeneous materials.

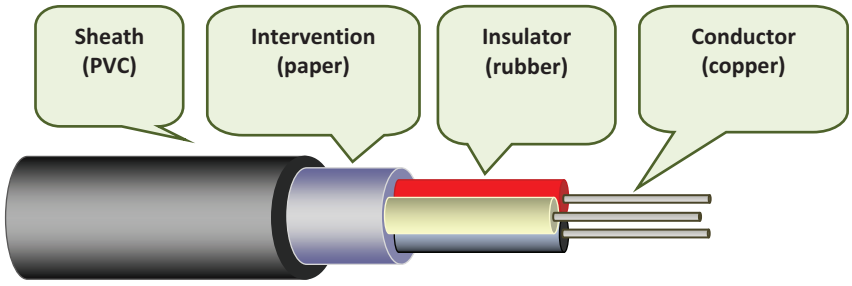


Figure 2 – Example of Homogeneous Materials (cable)

4 Utilization of Hazardous Materials information

Products which contain Hazardous Materials in concentrations above the specified threshold levels should be clearly identified in the MD. The approximate quantity of the Hazardous Materials should be calculated if the mass data for Hazardous Materials are declared in the MD using a unit which cannot be directly utilized in the Inventory.

5 Preparation of Inventory (by filling out standard format)

The information received for the Inventory, as contained in Table A and Table B of appendix 1of these Guidelines, ought to be structured and utilized according to the following categorization for Part I of the Inventory:

1.1 Paints and coating systems;
1.2 Equipment and machinery; and
1.3 Structure and hull.

5.1 "Name of equipment and machinery" column

5.1.1 Equipment and machinery

The name of each equipment or machinery should be entered in this column. If more than one Hazardous Material is present in the equipment or machinery, the row relating to that equipment or machinery should be appropriately divided such that all of the Hazardous Materials contained in the piece of equipment or machinery are entered. If more than one item of equipment or machinery is situated in one location, both name and quantity of the equipment or machinery should be entered in the column. For identical common or mass-produced items, such as bolts, nuts and valves, there is no need to list each item individually. An example is shown in Table 1.

Table 1 – Example showing more than one item of equipment or machinery situated in one location

No.	Name of equipment and machinery	Location	Materials (classification in appendix 1)	Parts where used	Approx. quantity		Remarks
	Main engine	Engine-room	Lead	Piston pin bush	0.75	kg	
			Mercury	Thermometer charge air temperature	0.01	kg	
	Diesel generator (x 3)	Engine-room	Mercury	Thermometer	0.03		

5.1.2 Pipes and cables

The names of pipes and of systems, including electric cables, which are often situated in more than one compartment of a ship, should be described using the name of the system concerned.
A reference to the compartments where these systems are located is not necessary as long as the system is clearly identified and properly named.

5.2 "Approximate quantity" column

The standard unit for approximate quantity of solid Hazardous Materials should be kg. If the Hazardous Materials are liquids or gases, the standard unit should be either m^3 or kg. An approximate quantity should be rounded up to at least two significant figures. If the Hazardous Material is less than 10 g, the description of the quantity should read "<0.01 kg".

Table 2 – Example of a switchboard

No.	Name of equipment and machinery	Location	Materials (classification in appendix 1)	Parts where used	Approx. quantity		Remarks
	Switchboard	Engine control room	Cadmium	Housing coating	0.02	kg	
			Mercury	Heat gauge	<0.01	kg	less than 0.01 kg

5.3 "Location" column

5.3.1 Example of a location list

It is recommended to prepare a location list which covers all compartments of a ship based on the ship's plans (e.g., General Arrangement, Engine-room Arrangement, Accommodation and Tank Plan) and on other documentation on board, including certificates or spare parts' lists. The description of the location should be based on a location such as a deck or room to enable easy identification. The name of the location should correspond to the ship's plans so as to ensure consistency between the Inventory and the ship's plans. Examples of names of locations are shown in Table 3.

Table 3 – Examples of location names

(A) Primary classification	(B) Secondary classification	(C) Name of location
All over the ship		
Hull part	Fore part	Bosun store
		…
	Cargo part	No.1 Cargo Hold/Tank
		No.1 Garage deck
		…
	Tank part	Fore Peak Tank
		No.1 WBT
		No.1 FOT
		…
		Aft Peak Tank
	Aft part	Steering Gear Room
		Emergency Fire Pump Space
		…
	Superstructure	Accommodation
		Compass deck
		Nav. Bridge deck
		…
		Wheel House
		Engine Control Room
		Cargo Control Room
		…
	Deck house	Deck House
		…

(A) Primary classification	(B) Secondary classification	(C) Name of location
Machinery part	Engine-room	Engine-room
		Main Floor
		2nd Floor
		…
		Generator Space/Room
		Purifier Space/Room
		Shaft Space/Room
		Engine Casing
		Funnel
		Engine Control Room
		…
	Pump-room	Pump-room
		…
Exterior part	Superstructure	Superstructure
	Upper deck	Upper deck
	Hull shell	Hull shell
		bottom
		under waterline
		…

5.3.2 Description of location of pipes and electrical systems

Locations of pipes and systems, including electrical systems and cables situated in more than one compartment of a ship, should be described for each system concerned. If they are situated in a number of compartments, the most practical of the following two options should be used:

a) listing of all components in the column; or

b) description of the location of the system using an expression such as those shown under "primary classification" and "secondary classification" in Table 3.

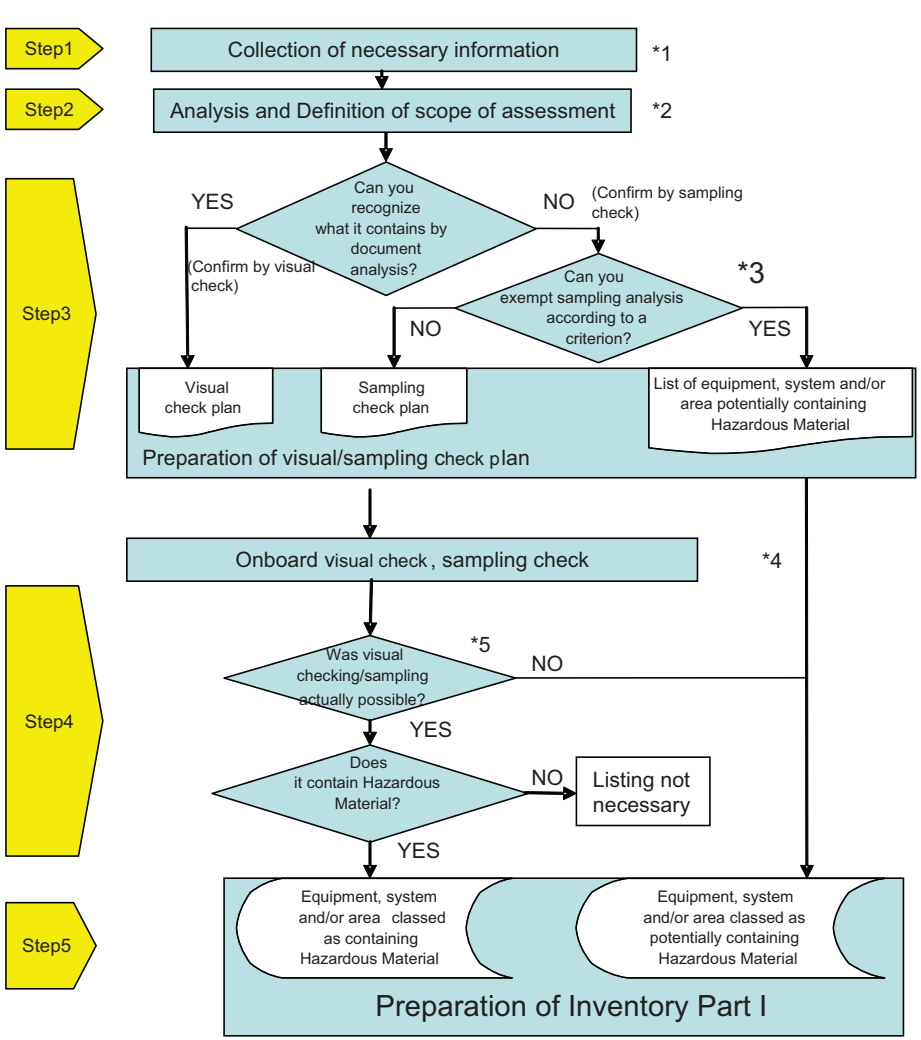
A typical description of a pipe system is shown in Table 4.

Table 4 – Example of description of a pipe system

No.	Name of equipment and machinery	Location	Materials (classification in appendix 1)	Parts where used	Approx. quantity	Remarks
	Ballast water system	Engine-room, Hold parts				

APPENDIX 4

FLOW DIAGRAM FOR DEVELOPING PART I OF THE INVENTORY FOR EXISTING SHIPS



*1 : Documents may include any certificates, manuals, ship's plans drawings, technical specifications and information from sister and/or similar ships.

*2 : The assessment should cover all materials listed in Table A of Appendix 1 of the Guideline; the materials listed in Table B should be listed as far as practicable.
It is impossible to assess all equipment and areas including those which are assumed not to contain Hazardous Materials described above.
Using analysis of available documents based on knowledge and experience, it must be made clear which equipment and/or area should be included in the scope of the assessment.

*3 : Equipment, system and/or areas which cannot be specified as containing materials listed in appendix 1 of these guidelines on the basis of documents can be listed in the List of equipment, system and/or area classed as "potentially containing Hazardous Material" without the sampling check. The prerequisite for this classification is a comprehensible justification of the conclusion, such as the impossibility to conduct samplings without compromising ship safety and operational efficiency.

*4 : Sampling Check. This means sampling and identification of Hazardous Material contained in the equipment, systems, and/or areas, by laboratory analysis. The sampling check should be applied where the presence of Prohibited and Restricted Hazardous Material is assumed but cannot be recognized by analysis of the available documentation.

*5 : When equipment, systems and/or areas of a ship are not accessible for visual check or sampling check, this equipment, system and/or area is classified as "potentially containing Hazardous Material".

APPENDIX 5

EXAMPLE OF THE DEVELOPMENT PROCESS FOR PART I OF THE INVENTORY FOR EXISTING SHIPS

1 Introduction

In order to develop Part I of the Inventory of Hazardous Materials for existing ships, documents of the individual ship as well as the knowledge and experience of specialist personnel (experts) is required. An example of the development process for Part I of the Inventory of Hazardous Materials for existing ships is useful to understand the basic steps as laid out in the Guidelines and to ensure a unified application. However, attention should be paid to variations in different types of ships[1)].

Compilation of Part I of the Inventory of Hazardous Material for existing ships involves the following 5 steps which are described in paragraph 4.2 and appendix 4 of these Guidelines.

Step 1: Collection of necessary information;
Step 2: Assessment of collected information;
Step 3: Preparation of visual/sampling check plan;
Step 4: Onboard visual/sampling check; and
Step 5: Preparation of Part I of the Inventory and related documentation.

---

1) The example of a 28,000 gross tonnage bulk carrier constructed in 1985 is used in this appendix.

2 Step 1: Collection of necessary information

2.1 Sighting of available documents

A practical first step is to collect detailed documents for the ship. The shipowner should try to collate documents normally retained onboard the ship or by the shipping company as well as relevant documents that the shipyard, manufacturers, or classification society may have. The following documents should be used when available:

Ship's specification
General Arrangement
Machinery Arrangement
Spare Parts and Tools List
Piping Arrangement
Accommodation Plan
Fire Control Plan
Fire Protection Plan
Insulation Plan (Hull and Machinery)
International Anti-Fouling System Certificate
Related manuals and drawings
Information from other inventories and/or sister or similar ships, machinery, equipment, materials and coatings
Results of previous visual/sampling checks and other analysis

If the ship has undergone conversions or major repair work, it is necessary to identify as far as possible the modifications from the initial design and specification of the ship.

2.2 Indicative list

It is impossible to check all equipment, systems, and/or areas on board the ship to determine the presence or absence of Hazardous Materials. The total number of parts on board may exceed several thousand. In order to take a practical approach, an "Indicative list" should be prepared that identifies the equipment, system, and/or area on board that is presumed to contain Hazardous Materials. Field interviews with the shipyard and suppliers may be necessary to prepare such lists. A typical example of an "Indicative list" is shown below:

2.2.1 Materials to be checked and documented

Hazardous Materials, as identified in appendix 1 of these Guidelines, should be listed in Part I of the Inventory for existing ships. Appendix 1 of the Guidelines contains all the materials concerned. Table A shows those which are required to be listed and Table B shows those which should be listed as far as practical.

2.2.2 Materials listed in Table A

Table A lists the following four materials:

Asbestos
Polychlorinated biphenyls (PCBs)
Ozone depleting substances
Anti-fouling systems containing organotin compounds as a biocide

2.2.2.1 Asbestos

Field interviews were conducted with over 200 Japanese shipyards and suppliers regarding the use of asbestos in production. "Indicative lists" for asbestos developed on the basis of this research are shown below:

Structure and/or equipment	Component
Propeller shafting	Packing with low pressure hydraulic piping flange
	Packing with casing
	Clutch
	Brake lining
	Synthetic stern tubes
Diesel engine	Packing with piping flange
	Lagging material for fuel pipe
	Lagging material for exhaust pipe
	Lagging material turbocharger
Turbine engine	Lagging material for casing
	Packing with flange of piping and valve for steam line, exhaust line and drain line
	Lagging material for piping and valve of steam line, exhaust line and drain line

Structure and/or equipment	Component
Boiler	Insulation in combustion chamber
	Packing for casing door
	Lagging material for exhaust pipe
	Gasket for manhole
	Gasket for hand hole
	Gas shield packing for soot blower and other hole
	Packing with flange of piping and valve for steam line, exhaust line, fuel line and drain line
	Lagging material for piping and valve of steam line, exhaust line, fuel line and drain line
Exhaust gas economizer	Packing for casing door
	Packing with manhole
	Packing with hand hole
	Gas shield packing for soot blower
	Packing with flange of piping and valve for steam line, exhaust line, fuel line and drain line
	Lagging material for piping and valve of steam line, exhaust line, fuel line and drain line
Incinerator	Packing for casing door
	Packing with manhole
	Packing with hand hole
	Lagging material for exhaust pipe
Auxiliary machinery (pump, compressor, oil purifier, crane)	Packing for casing door and valve
	Gland packing
	Brake lining
Heat exchanger	Packing with casing
	Gland packing for valve
	Lagging material and insulation
Valve	Gland packing with valve, sheet packing with piping flange
	Gasket with flange of high pressure and/or high temperature
Pipe, duct	Lagging material and insulation
Tank (fuel tank, hot water, tank, condenser), other equipments (fuel strainer, lubricant oil strainer)	Lagging material and insulation
Electric equipment	Insulation material
Airborne asbestos	Wall, ceiling
Ceiling, floor and wall in accommodation area	Ceiling, floor, wall
Fire door	Packing, construction and insulation of the fire door
Inert gas system	Packing for casing, etc.
Air-conditioning system	Sheet packing, lagging material for piping and flexible joint

Structure and/or equipment	Component
Miscellaneous	Ropes Thermal insulating materials Fire shields/fire proofing Space/duct insulation Electrical cable materials Brake linings Floor tiles/deck underlay Steam/water/vent flange gaskets Adhesives/mastics/fillers Sound damping Moulded plastic products Sealing putty Shaft/valve packing Electrical bulkhead penetration packing Circuit breaker arc chutes Pipe hanger inserts Weld shop protectors/burn covers Fire-fighting blankets/clothing/equipment Concrete ballast

2.2.2.2 Polychlorinated biphenyl (PCBs)

Worldwide restriction of PCBs began on 17 May 2004 as a result of the implementation of the Stockholm Convention, which aims to eliminate or restrict the production and use of persistent organic pollutants. In Japan, domestic control began in 1973, with the prohibition of all activities relating to the production, use and import of PCBs. Japanese suppliers can provide accurate information concerning their products. The "Indicative list" of PCBs has been developed as shown below:

Equipment	Component of equipment
Transformer	Insulating oil
Condenser	Insulating oil
Fuel heater	Heating medium
Electric cable	Covering, insulating tape
Lubricating oil	
Heat oil	Thermometers, sensors, indicators
Rubber/felt gaskets	
Rubber hose	
Plastic foam insulation	
Thermal insulating materials	
Voltage regulators	
Switches/reclosers/bushings	
Electromagnets	
Adhesives/tapes	
Surface contamination of machinery	
Oil-based paint	
Caulking	
Rubber isolation mounts	
Pipe hangers	

Equipment	Component of equipment
Light ballasts (component within fluorescent light fixtures)	
Plasticizers	
Felt under septum plates on top of hull bottom	

2.2.2.3 Ozone depleting substances

The "Indicative list" for Ozone depleting substances is shown below. Ozone depleting substances have been controlled according to the Montreal Protocol and MARPOL Convention. Although almost all substances have been banned since 1996, HCFC can still be used until 2020.

Materials	Component of equipment	Period for use of ODS in Japan
CFCs (R11, R12)	Refrigerant for refrigerators	Until 1996
CFCs	Urethane formed material	Until 1996
	Blowing agent for insulation of LNG carriers	Until 1996
Halons	Extinguishing agent	Until 1994
Other fully halogenated CFCs	The possibility of usage in ships is low	Until 1996
Carbon tetrachloride	The possibility of usage in ships is low	Until 1996
1,1,1-Trichloroethane (Methyl chloroform)	The possibility of usage in ships is low	Until 1996
HCFC (R22, R141b)	Refrigerant for refrigerating machine	It is possible to use it until 2020
HBFC	The possibility of usage in ships is low	Until 1996
Methyl bromide	The possibility of usage in ships is low	Until 2005

2.2.2.4 Organotin compounds

Organotin compounds include Tributyl tins (TBT), Triphenyl tins (TPT) and Tributyl tin oxide (TBTO). Organotin compounds have been used as anti-fouling paint on ships' bottoms and the International Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS Convention) stipulates that all ships shall not apply or re-apply organotin compounds after 1 January 2003, and that, after 1 January 2008, all ships shall either not bear such compounds on their hulls or shall bear a coating that forms a barrier preventing such compounds from leaching into the sea. The above-mentioned dates may have been extended by permission of the Administration bearing in mind that the AFS Convention entered into force on 17 September 2008.

2.2.3 Materials listed in Table B

For existing ships it is not obligatory for materials listed in Table B to be listed in Part I of the Inventory. However, if they can be identified in a practical way, they should be listed in the Inventory, because the information will be used to support ship recycling processes. The Indicative list of materials listed in Table B is shown below:

Materials	Component of equipment
Cadmium and cadmium compounds	Nickel-cadmium battery, plating film, bearing
Hexavalent chromium compounds	Plating film
Mercury and mercury compounds	Fluorescent light, mercury lamp, mercury cell, liquid-level switch, gyro compass, thermometer, measuring tool, manganese cell, pressure sensors, light fittings, electrical switches, fire detectors
Lead and lead compounds	Lead-acid storage battery, corrosion-resistant primer, solder (almost all electric appliances contain solder), paints, preservative coatings, cable insulation, lead ballast, generators
Polybrominated biphenyls (PBBs)	Non-flammable plastics
Polybrominated diphenyl ethers (PBDE)	Non-flammable plastics
Polychlorinated naphthalenes	Paint, lubricating oil
Radioactive substances	Fluorescent paint, ionic type smoke detector, level gauge
Certain shortchain chlorinated paraffins	Non-flammable plastics

3 Step 2: Assessment of collected information

Preparation of a checklist is an efficient method for developing the Inventory for existing ships in order to clarify the results of each step. Based on collected information including the "Indicative list" mentioned in Step 1, all equipment, systems, and/or areas onboard assumed to contain Hazardous Materials listed in Tables A and B should be included in the checklist. Each listed equipment, system, and/or area on board should be analysed and assessed for its Hazardous Materials content.

The existence and volume of Hazardous Materials may be judged and calculated from the Spare parts and tools list and the Maker's drawings. The existence of asbestos contained in floors, ceilings and walls may be identified from Fire Protection Plans, while the existence of TBT in coatings can be identified from the International Anti-Fouling System Certificate, Coating scheme and the History of Paint.

Example of weight calculation

No.	Hazardous Materials	Location/Equipment/ Component	Reference	Calculation
1.1-2	TBT	Flat bottom/paint	History of coatings	
1.2-1	Asbestos	Main engine/ Exh. pipe packing	Spare parts and tools list	250 g x 14 sheet = 3.50 kg
1.2-3	HCFC	Ref. provision plant	Maker's drawings	20 kg x 1 cylinder = 20 kg
1.2-4	Lead	Batteries	Maker's drawings	6 kg x 16 unit = 96 kg
1.3-1	Asbestos	Engine-room ceiling	Accommodation plan	

When a component or coating is determined to contain Hazardous Materials, a "Y" should be entered in the column for "Result of document analysis" in the checklist, to denote "Contained". Likewise, when an item is determined not to contain Hazardous Materials, the entry "N" should be made in the column to denote "Not contained". When a determination cannot be made as to the Hazardous Materials content, the column should be completed with the entry "Unknown".

Checklist (Step 2)

ANALYSIS AND DEFINITION OF SCOPE OF ASSESSMENT FOR "SAMPLE SHIP"

No.	Tbl A/B	Hazardous Materials *1	Location	Name of equipment	Component	Quantity			Manufacturer/brand name	Result of DOC *2	Procedure of check *3	Result of check *4	Reference/DWG No.
						Unit (kg)	No.	Total (kg)					
Inventory Part I-1													
1	A	TBT	Top side	Painting & coating	A/F paints			NIL	Paints Co./marine P1000	N			On Aug. 200X, sealer coat applied to all over submerged area before tin free coating.
2	A	TBT	Flat bottom				3000m^2		Unknown AF	Unknown			
Inventory Part I-2													
1	A	Asbestos	Lower deck	Main engine	Exh.pipe packing	0.25	14		Diesel Co.	Y			M-100
2	A	Asbestos	3rd deck	Aux.boiler	Lagging		12		Unknown lagging	Unknown			M-300
3	A	Asbestos	Engine room	Piping/flange	Packing					PCHM			
4	A	HCFC	2nd deck	Ref. provision plant	Refrigerant (R22)	20.00	1		Reito Co.	Y			Maker's dwg
5	B	Lead	Nav. Br.deck	Batteries		6	16		Denchi Co.	Y			E-300
Inventory Part I-3													
1	A	Asbestos	Upper deck	Back deck ceilings	Engine room ceiling		20m^2		Unknown ceiling	Unknown			D-25

Notes

*1 Hazardous Materials: Material classification

*2 Result of documents analysis: Y=Contained, N=Not contained, Unknown, PCHM=potentially containing Hazardous Material.

*3 Procedure of check: V=Visual check, S=Sampling check

*4 Result of check: Y=Contained, N=Not contained, PCHM

4 Step 3: Preparation of visual/sampling check plan

Each item classified as "Contained" or "Not contained" in Step 2 should be subjected to a visual check on board, and the entry "V" should be made in the "Check procedure" column to denote "Visual check".

For each item categorized as "unknown", a decision should be made as to whether to apply a sampling check. However, any item categorized as "unknown" may be classed as "potentially containing Hazardous Material" provided comprehensive justification is given, or if it can be assumed that there will be little or no effect on disassembly as a unit and later ship recycling and disposal operations. For example, in the following checklist, in order to carry out a sampling check for "Packing with aux. boiler" the shipowner needs to disassemble the auxiliary boiler in a repair yard. The costs of this check are significantly higher than the later disposal costs at a Ship Recycling Facility. In this case, therefore, the classification as "potentially containing Hazardous Material" is justifiable.

Checklist (Step 3)

ANALYSIS AND DEFINITION OF SCOPE OF ASSESSMENT FOR "SAMPLE SHIP"

No.	Tbl A/B	Hazardous Materials *1	Location	Name of Equipment	Component	Quantity			Manufacturer/Brand name	Result of DOC *2	Procedure of check *3	Result of check *4	Reference/DWG No.
						Unit (kg)	No.	Total (kg)					
Inventory Part I-1													
1	A	TBT	Top side	Painting & coating	A/F paints			NIL	Paints Co./marine P1000	N	V		On Aug. 200X, sealer coat applied to all over submerged area before tin free coating.
2	A	TBT	Flat bottom				3000m^2		Unknown AF	Unknown	S		
Inventory Part I-2													
1	A	Asbestos	Lower deck	Main engine	Exh.pipe packing	0.25	14		Diesel Co.	Y	V		M-100
2	A	Asbestos	3rd deck	Aux.boiler	Lagging		12		Unknown lagging	Unknown	S		M-300
3	A	Asbestos	Engine room	Piping/flange	Packing					PCHM	V		
4	A	HCFC	2nd deck	Ref. provision plant	Refrigerant (R22)	20.00	1		Reito Co.	Y	V		Maker's dwg
5	B	Lead	Nav. Br.deck	Batteries		6	16		Denchi Co.	Y	V		E-300
Inventory Part I-3													
1	A	Asbestos	Upper deck	Back deck ceilings	Engine room ceiling		20m^2		Unknown ceiling	Unknown	S		C-25

Notes

*1 Hazardous Materials: Material classification
*2 Result of documents analysis: Y=Contained, N=Not contained, Unknown, PCHM=potentially containing Hazardous Material
*3 Procedure of check: V=Visual check, S=Sampling check
*4 Result of check: Y=Contained, N=Not contained, PCHM

Before any visual/sampling check on board is conducted, a "visual/sampling check plan" should be prepared. An example of such a plan is shown below.

To prevent any incidents during the visual/sampling check, a schedule should be established to eliminate interference with other ongoing work on board. To prevent potential exposure to Hazardous Materials during the visual/sampling check, safety precautions should be in place on board. For example, sampling of potential asbestos containing materials could release fibres into the atmosphere. Therefore, appropriate personnel safety and containment procedures should be implemented prior to sampling.

Items listed in the visual/sampling check should be arranged in sequence so that the onboard check is conducted in a structured manner (e.g., from a lower level to an upper level and from a fore part to an aft part).

Example of visual/sampling check plan

Name of ship	XXXXXXXXXX
IMO Number	XXXXXXXXXX
Gross Tonnage	28,000 GT
L x B x D	xxx.xx × xx.xx × xx.xx m
Date of delivery	dd.mm.1987
Shipowner	XXXXXXXXXX
Contact point (Tel.,Fax, E-mail, address)	XXXXXXXXXX Tel: XXXX-XXXX Fax: XXXX-XXXX E-mail: abcdefg@hijk.co.net
Check schedule	Visual check： dd, mm, 20XX Sampling check：dd, mm, 20XX
Site of check	XX shipyard, No. Dock
In charge of check	XXXX XXXX
Check engineer	XXXX XXXX, YYYY YYYY, ZZZZ ZZZZ
Sampling engineer	Person with specialized knowledge of sampling
Sampling method and anti-scattering measure for asbestos	Wet the sampling location prior to cutting and allow it to harden after cutting to prevent scatter. Notes: Workers performing sampling activities shall wear protective equipment.
Sampling of fragments of paints	Paints suspected to contain TBT should be collected and analysed from load line, directly under bilge keel and flat bottom near amidships.
Laboratory	QQQQ QQQQ
Chemical analysis method	Method by ISO/DIS 22262-1 Bulk materials--Part 1: Sampling and qualitative determination of asbestos in commercial bulk materials and ISO/CD 22262-2 Bulk materials – Part 2: Quantitative determination of asbestos by gravimetric and microscopic methods. ICP Luminous analysis (TBT)
Location of visual/sampling check	Refer to lists for visual/sampling check

Listing for equipment, system and/or area for visual check
See attached "Analysis and definition of scope of investigation for sample ship"

List of equipment, system and/or area for sampling check				
Location	Equipment, machinery and/or zone	Name of parts	Materials	Result of doc. checking
Upper Deck	Back deck ceilings	Engine-room ceiling	Asbestos	Unknown
Engine-room	Exhaust gas pipe	Insulation	Asbestos	Unknown
Engine-room	Pipe/flange	Gasket	Asbestos	Unknown
Refer to attached "Analysis and definition of scope of investigation for sample ship" and "Location plan of Hazardous Materials for sample ship"				

List of equipment, system and/or area classed as PCHM				
Location	Equipment, machinery and/or zone	Name of part	Material	Result of doc. checking
Floor	Propeller cap	Gasket	Asbestos	PCHM
Engine-room	Air operated shut-off valve	Gland packing	Asbestos	PCHM
Refer to attached "Analysis and definition of scope of investigation for sample ship" and "Location plan of Hazardous Materials for sample ship"				

This plan is established in accordance with the Guidelines for the development of the Inventory of
Hazardous Materials

Prepared by : XXXX XXXX

Tel. : YYYY-YYYY

E-Mail : XXXX@ZZZZ.co.net

・Document check・date/place:
dd, mm, 20XX at XX Lines Co. Ltd.

・Preparation date of plan: dd. mm, 20XX

5 Step 4: Onboard visual/sampling check

The visual/sampling check should be conducted according to the plan. Check points should be marked in the ship's plan or recorded with photographs.

A person taking samples should be protected by the appropriate safety equipment relevant to the suspected type of hazardous materials encountered. Appropriate safety precautions should also be in place for passengers, crewmembers and other persons on board, to minimize the potential exposure to hazardous materials. Safety precautions could include the posting of signs or other verbal or written notification for personnel to avoid such areas during sampling. The personnel taking samples should ensure compliance with relevant national regulations.

The results of visual/sampling checks should be recorded in the checklist. Any equipment, systems and/or areas of the ship that cannot be accessed for checks should be classified as "potentially containing Hazardous Material". In this case, the entry in the "Result of check" column should be "PCHM".

6 Step 5: Preparation of Part I of the Inventory and related documentation

6.1 Development of Part I of the Inventory

The results of the check and the estimated quantity of Hazardous Materials should be recorded on the checklist. Part I of the Inventory should be developed with reference to the checklist.

6.2 Development of location diagram of Hazardous Materials

With respect to Part I of the Inventory, the development of a location diagram of Hazardous Materials is recommended in order to help the Ship Recycling Facility gain a visual understanding of the Inventory.

Checklist (Step 4 and Step 5)

ANALYSIS AND DEFINITION OF SCOPE OF ASSESSMENT FOR "SAMPLE SHIP"

No.	Tbl A/B	Hazardous Materials *1	Location	Name of equipment	Component	Quantity			Manufacturer/brand name	Result of DOC *2	Procedure of check *3	Result of check *4	Reference/DWG No.
						Unit (kg)	No.	Total (kg)					
Inventory Part I-1													
1	A	TBT	Top side	Painting & coating	A/F paints			NIL	Paints Co./marine P1000	N	V	N	On Aug. 200X, sealer coat applied to all over submerged area before tin free coating.
2	A	TBT	Flat bottom			0.02	3000m^2	60.00	Unknown AF	Unknown	S	Y	
Inventory Part I-2													
1	A	Asbestos	Lower deck	Main engine	Exh.pipe packing	0.25	14	3.50	Diesel Co.	Y	V	Y	M-100
2	A	Asbestos	3rd deck	Aux.boiler	Lagging		12		Unknown lagging	Unknown	S	N	M-300
3	A	Asbestos	Engine room	Piping/flange	Packing					PCHM	V	PCHM	
4	A	HCFC	2nd deck	Ref. provision plant	Refrigerant (R22)	20.00	1	20.00	Reito Co.	Y	V	Y	Maker's dwg
5	B	Lead	Nav. Br.deck	Batteries		6	16	96.00	Denchi Co.	Y	V	Y	E-300
Inventory Part I-3													
1	A	Asbestos	Upper deck	Back deck ceilings	Engine room ceiling	0.19	20m^2	3.80	Unknown ceiling	Unknown	S	Y	C-25

Notes

*1 Hazardous Materials: Material classification
*2 Result of documents analysis: Y=Contained, N=Not contained, Unknown, PCHM=potentially containing Hazardous Material
*3 Procedure of check: V=Visual check, S=Sampling check
*4 Result of check: Y=Contained, N=Not contained, PCHM

Example of the Inventory for existing ships

Inventory of Hazardous Materials
for "Sample Ship"

Particulars of the "Sample Ship"

Distinctive number or letters	XXXXNNN
Port of registry	Port of World
Type of vessel	Bulk carrier
Gross Tonnage	28,000 GT
IMO number Name of shipbuilder	NNNNNNN xx Shipbuilding Co. Ltd
Name of shipowner	yy Maritime SA
Date of delivery	MM/DD/1988

This inventory was developed in accordance with the Guidelines for the development of the Inventory of Hazardous Materials.

Attachment:
1: Inventory of Hazardous Materials
2: Assessment of collected information
3: Location diagram of Hazardous Materials

* Prepared by XYZ (Name & address)(mm/dd/20XX)

Inventory of Hazardous Materials: "Sample Ship"

Part I HAZARDOUS MATERIALS CONTAINED IN THE SHIP'S STRUCTURE AND EQUIPMENT

I-1 Paints and coating systems containing materials listed in Table A and Table B of appendix 1 of the Guidelines

No.	Application of paint	Name of paint	Location *1	Materials (classification in appendix 1)	Approx. quantity		Remarks
1	AF paint	Unknown paints	Flat bottom	TBT	60.00	kg	Confirmed by sampling
2							
3							

I-2 Equipment and machinery containing materials listed in Table A and Table B of appendix 1 of the Guidelines

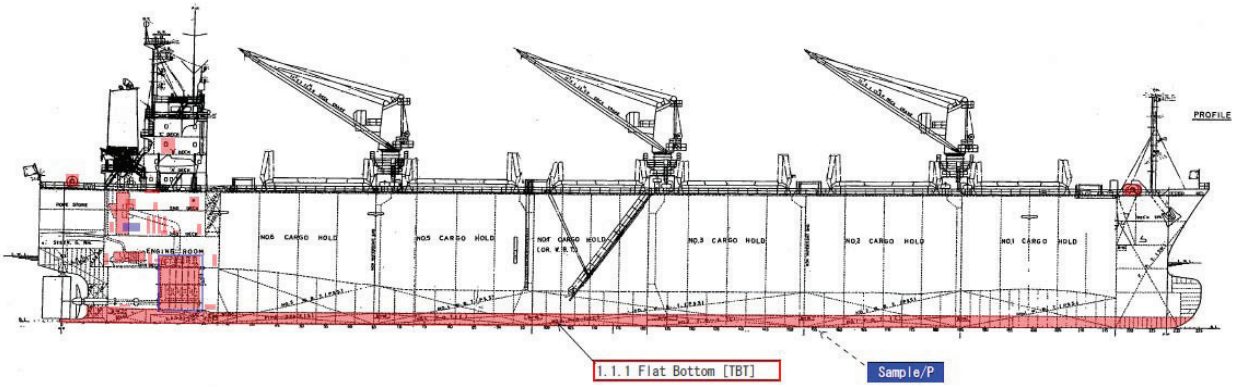
No.	Name of equipment and machinery	Location *1	Materials (classification in appendix 1)	Parts where used	Approx. quantity		Remarks
1	Main engine	Lower floor	Asbestos	Exh. pipe packing	3.50	kg	
2	Aux. boiler	3rd deck	Asbestos	Unknown packing	10.00	kg	PCHM (potentially containing Hazardous Material)
3	Piping/flange	Engine-room	Asbestos	Packing	50.00	kg	PCHM
4	Ref. provision plant	2nd deck	HCFC	Refrigerant (R22)	20.00	kg	
5	Batteries	Navig. Bridge deck	Lead		96.00	kg	

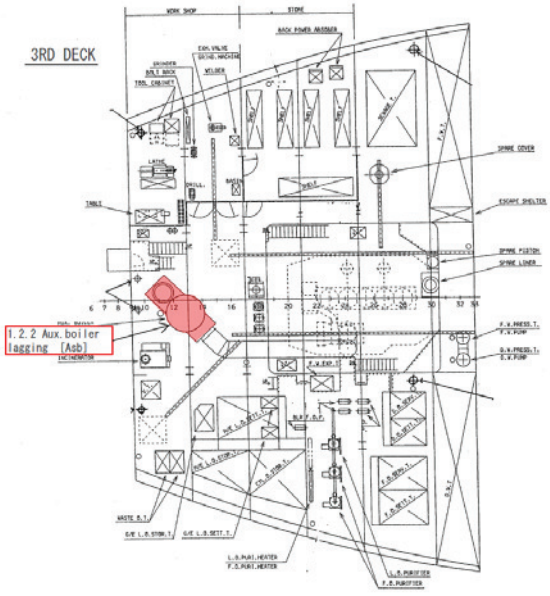
I-3 Structure and hull containing materials listed in Table A and Table B of appendix 1 of the Guidelines

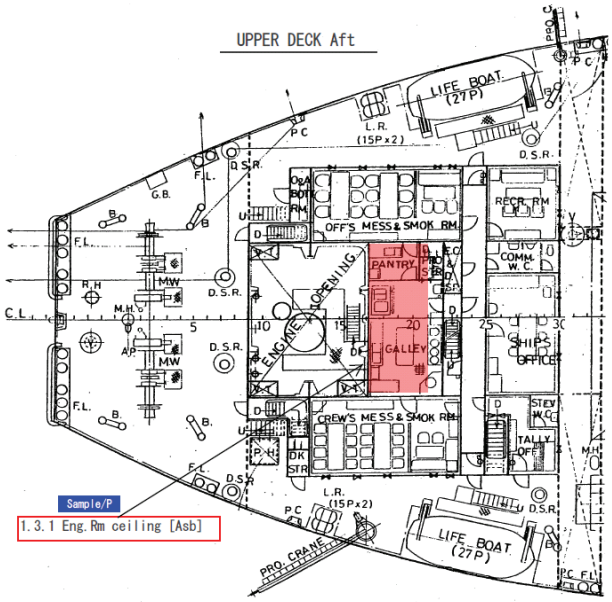
No.	Name of structural element	Location *1	Materials (classification in appendix 1)	Parts where used	Approx. quantity		Remarks
1	Back deck ceiling	Upper deck	Asbestos	Engine-room ceiling (A class)	3.80	kg	Confirmed by sampling
2							
3							

*1 Each item should be entered in order based on its location, from a lower level to an upper level and from a fore part to an aft part.

Example of location diagram of Hazardous Materials







APPENDIX 6

FORM OF MATERIAL DECLARATION

<Date of declaration>

Date	

<MD ID number>

MD- ID-No.	

<Other information>

Remark 1	
Remark 2	
Remark 3	

<Supplier (respondent) information>

Company name	
Division name	
Address	
Contact person	
Telephone number	
Fax number	
E-mail address	
SDoC ID no.:	

<Product information>

Product name	Product number	Delivered unit			Product information
		Amount	Unit		

<Materials information>

	Unit
This materials information shows the amount of hazardous materials contained in 1	(unit: piece, kg, m, m^2, m^3, etc) of the product.

Table	Material name		Threshold level	Present above threshold level	If yes, material mass		If yes, information on where it is used
				Yes / No	Mass	Unit	
Table A (materials listed in appendix 1 of the Convention)	Asbestos	Asbestos	no threshold level				
	Polychlorinated biphenyls (PCBs)	Polychlorinated biphenyls (PCBs)	no threshold level				
	Ozone depleting substance	Chlorofluorocaobons (CFCs)	no threshold level				
		Halons					
		Other fully halogenated CFCs					
		Carbon tetrachloride					
		1,1,1-Trichloroethane					
		Hydrochlorofluorocaobons					
		Hydrobromofluorocaobons					
		Methyl bromide					
		Bromochloromethane					
	Anti-fouling systems containing organotin compounds as a biocide		2,500 mg total tin/kg				

Table	Material name	Threshold level	Present above threshold level	If yes, material mass		If yes, information on where it is used
			Yes / No	Mass	Unit	
Table B (materials listed in appendix 2 of the Convention)	Cadmium and cadmium compounds	100 mg/kg				
	Hexavalent chromium and hexavalent chromium compounds	1,000 mg/kg				
	Lead and lead compounds	1,000 mg/kg				
	Mercury and mercury compounds	1,000 mg/kg				
	Polybrominated biphenyl (PBBs)	1,000 mg/kg				
	Polybrominated dephenyl ethers (PBDEs)	1,000 mg/kg				
	Polychloronaphthalenes (Cl >= 3)	no threshold level				
	Radioactive substances	no threshold level				
	Certain shortchain chlorinated paraffins	1%				

APPENDIX 7

FORM OF SUPPLIER'S DECLARATION OF CONFORMITY

Supplier's Declaration of Conformity for Material Declaration management

1) Identification number: _____

2) Issuer's name: _____

Issuer's address: _____

3) Object(s) of the declaration: _____

_____

_____

4) The object(s) of the declaration described above is in conformity with the following documents :

	Document No.:	Title:	Edition/date of issue
5)	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

6) Additional information : _____

_____

Signed for and on behalf of:

_____

_____

(Place and date of issue)

7) _____ _____

(Name, function) (Signature)

APPENDIX 8

EXAMPLES OF TABLE A AND TABLE B MATERIALS OF APPENDIX 1 WITH CAS NUMBERS

*This list is developed with reference to Joint Industry Guide No.101.

* This list is not exhaustive; it represents examples of chemicals with known CAS numbers and may require periodical updating.

Table	Material Category	Substances	CAS Numbers
Table A (materials listed in appendix 1 of the Convention)	Asbestos	Asbestos	1332-21-4
		Actinolite	77536-66-4
		Amosite (Grunerite)	12172-73-5
		Anthophyllite	77536-67-5
		Chrysotile	12001-29-5
		Crocidolite	12001-28-4
		Tremolite	77536-68-6
	Polychlorinated biphenyls (PCBs)	Polychlorinated biphenyls	1336-36-3
		Aroclor	12767-79-2
		Chlorodiphenyl (Aroclor 1260)	11096-82-5
		Kanechlor 500	27323-18-8
		Aroclor 1254	11097-69-1
	Ozone depleting substances/ isomers (they may contain isomers that are not listed here)	Trichlorofluoromethane (CFC11)	75-69-4
		Dichlorodifluoromethane (CFC12)	75-71-8
		Chlorotrifluoromethane (CFC 13)	75-72-9
		Pentachlorofluoroethane (CFC 111)	354-56-3
		Tetrachlorodifluoroethane (CFC 112)	76-12-0
		Trichlorotrifluoroethane (CFC 113)	354-58-5
		1,1,2 Trichloro-1,2,2 trifluoroethane	76-13-1
		Dichlorotetrafluoroethane (CFC 114)	76-14-2
		Monochloropentafluoroethane (CFC 115)	76-15-3
		Heptachlorofluoropropane (CFC 211)	422-78-6
			135401-87-5
		Hexachlorodifluoropropane (CFC 212)	3182-26-1
		Pentachlorotrifluoropropane (CFC 213)	2354-06-5
			134237-31-3
		Tetrachlorotetrafluoropropane (CFC 214) 1,1,1,3-Tetrachlorotetrafluoropropane	29255-31-0 2268-46-4
		Trichloropentafluoropropane (CFC 215) 1,1,1-Trichloropentafluoropropane 1,2,3-Trichloropentafluoropropane	1599-41-3 4259-43-2 76-17-5
		Dichlorohexafluoropropane (CFC 216)	661-97-2
		Monochloroheptafluoropropane (CFC 217)	422-86-6
		Bromochlorodifluoromethane (Halon 1211)	353-59-3
		Bromotrifluoromethane (Halon 1301)	75-63-8
		Dibromotetrafluoroethane (Halon 2402)	124-73-2
		Carbon tetrachloride (Tetrachloromethane)	56-23-5
		1,1,1, - Trichloroethane (methyl chloroform) and its isomers except 1,1,2-trichloroethane	71-55-6
		Bromomethane (Methyl bromide)	74-83-9
		Bromodifluoromethane and isomers (HBFC's)	1511-62-2
		Dichlorofluoromethane (HCFC 21)	75-43-4
		Chlorodifluoromethane (HCFC 22)	75-45-6
		Chlorofluoromethane (HCFC 31)	593-70-4
		Tetrachlorofluoroethane (HCFC 121) 1,1,1,2-tetrachloro-2-fluoroethane (HCFC 121a) 1,1,2,2-tetracloro-1-fluoroethane	134237-32-4 354-11-0 354-14-3
		Trichlorodifluoroethane (HCFC 122) 1,2,2-trichloro-1,1-difluoroethane	41834-16-6 354-21-2

*This list is developed with reference to Joint Industry Guide No.101.

* This list is not exhaustive; it represents examples of chemicals with known CAS numbers and may require periodical updating.

Table	Material Category	Substances	CAS Numbers
		Dichlorotrifluoroethane(HCFC 123)	34077-87-7
		Dichloro-1,1,2-trifluoroethane	90454-18-5
		2,2-dichloro-1,1,1-trifluroethane	306-83-2
		1,2-dichloro-1,1,2-trifluroethane (HCFC-123a)	354-23-4
		1,1-dichloro-1,2,2-trifluroethane (HCFC-123b)	812-04-4
		2,2-dichloro-1,1,2-trifluroethane (HCFC-123b)	812-04-4
		Chlorotetrafluoroethane (HCFC 124)	63938-10-3
		2-chloro-1,1,1,2-tetrafluoroethane	2837-89-0
		1-chloro-1,1,2,2-tetrafluoroethane (HCFC 124a)	354-25-6
		Trichlorofluoroethane (HCFC 131)	27154-33-2; (134237-34-6)
		1-Fluoro-1,2,2-trichloroethane	359-28-4
		1,1,1-trichloro-2-fluoroethane (HCFC131b)	811-95-0
		Dichlorodifluoroethane (HCFC 132)	25915-78-0
		1,2-dichloro-1,1-difluoroethane (HCFC 132b)	1649-08-7
		1,1-dichloro-1,2-difluoroethane (HFCF 132c)	1842-05-3
		1,1-dichloro-2,2-difluoroethane	471-43-2
		1,2-dichloro-1,2-difluoroethane	431-06-1
		Chlorotrifluoroethane (HCFC 133)	1330-45-6
		1-chloro-1,2,2-trifluoroethane	1330-45-6
		2-chloro-1,1,1-trifluoroethane (HCFC-133a)	75-88-7
		Dichlorofluoroethane(HCFC 141)	1717-00-6; (25167-88-8)
		1,1-dichloro-1-fluoroethane (HCFC-141b)	1717-00-6
		1,2-dichloro-1-fluoroethane	430-57-9
		Chlorodifluoroethane (HCFC 142)	25497-29-4
		1-chloro-1,1-difluoroethane (HCFC142b)	75-68-3
		1-chloro-1,2-difluoroethane (HCFC142a)	25497-29-4
		Hexachlorofluoropropane (HCFC 221)	134237-35-7
		Pentachlorodifluoropropane (HCFC 222)	134237-36-8
		Tetrachlorotrifluropropane (HCFC 223)	134237-37-9
		Trichlorotetrafluoropropane (HCFC 224)	134237-38-0
		Dichloropentafluoropropane, (Ethyne, fluoro-) (HCFC 225)	127564-92-5; (2713-09-9)
		2,2-Dichloro-1,1,1,3,3-pentafluoropropane(HCFC 225aa)	128903-21-9
		2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC 225ba)	422-48-0
		1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225bb)	422-44-6
		3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC 225ca)	422-56-0
		1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC 225cb)	507-55-1
		1,1-Dichloro-1,2,2,3,3-pentafluoropropane(HCFC 225cc)	13474-88-9
		1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC 225da)	431-86-7
		1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225ea)	136013-79-1
		1,1-Dichloro-1,2,3,3,3-pentafluoropropane(HCFC 225eb)	111512-56-2
		Chlorohexafluoropropane (HCFC 226)	134308-72-8
		Pentachlorofluoropropane (HCFC 231)	134190-48-0
		Tetrachlorodifluoropropane (HCFC 232)	134237-39-1
		Trichlorotrifluoropropane (HCFC 233)	134237-40-4
		1,1,1-Trichloro-3,3,3-trifluoropropane	7125-83-9
		Dichlorotetrafluoropropane (HCFC 234)	127564-83-4
		Chloropentafluoropropane (HCFC 235)	134237-41-5
		1-Chloro-1,1,3,3,3-pentafluoropropane	460-92-4
		Tetrachlorofluoropropane (HCFC 241)	134190-49-1
		Trichlorodifluoropropane (HCFC 242)	134237-42-6
		Dichlorotrifluoropropane (HCFC 243)	134237-43-7
		1,1-dichloro-1,2,2-trifluoropropane	7125-99-7
		2,3-dichloro-1,1,1-trifluoropropane	338-75-0
		3,3-Dichloro-1,1,1-trifluoropropane	460-69-5
		Chlorotetrafluoropropane (HCFC 244)	134190-50-4
		3-chloro-1,1,2,2-tetrafluoropropane	679-85-6

*This list is developed with reference to Joint Industry Guide No.101.

* This list is not exhaustive; it represents examples of chemicals with known CAS numbers and may require periodical updating.

Table	Material Category	Substances	CAS Numbers
		Trichlorofluoropropane (HCFC 251)	134190-51-5
		1,1,3-trichloro-1-fluoropropane	818-99-5
		Dichlorodifluoropropane (HCFC 252)	134190-52-6
		Chlorotrifluoropropane (HCFC 253)	134237-44-8
		3-chloro-1,1,1-trifluoropropane (HCFC 253fb)	460-35-5
		Dichlorofluoropropane (HCFC 261)	134237-45-9
		1,1-dichloro-1-fluoropropane	7799-56-6
		Chlorodifluoropropane (HCFC 262)	134190-53-7
		2-chloro-1,3-difluoropropane	102738-79-4
		Chlorofluoropropane (HCFC 271)	134190-54-8
		2-chloro-2-fluoropropane	420-44-0
	Organotin compounds (tributyl tin, triphenyl tin, tributyl tin oxide)	Bis(tri-n-butyltin) oxide	56-35-9
		Triphenyltin N,N'-dimethyldithiocarbamate	1803-12-9
		Triphenyltin fluoride	379-52-2
		Triphenyltin acetate	900-95-8
		Triphenyltin chloride	639-58-7
		Triphenyltin hydroxide	76-87-9
		Triphenyltin fatty acid salts (C=9-11)	47672-31-1
		Triphenyltin chloroacetate	7094-94-2
		Tributyltin methacrylate	2155-70-6
		Bis(tributyltin) fumarate	6454-35-9
		Tributyltin fluoride	1983-10-4
		Bis(tributyltin) 2,3-dibromosuccinate	31732-71-5
		Tributyltin acetate	56-36-0
		Tributyltin laurate	3090-36-6
		Bis(tributyltin) phthalate	4782-29-0
		Copolymer of alkyl acrylate, methyl methacrylate and tributyltin methacrylate(alkyl; C=8)	-
		Tributyltin sulfamate	6517-25-5
		Bis(tributyltin) maleate	14275-57-1
		Tributyltin chloride	1461-22-9
		Mixture of tributyltin cyclopentanecarboxylate and its analogs (Tributyltin naphthenate)	-
		Mixture of tributyltin 1,2,3,4,4a, 4b, 5,6,10,10adecahydro-7-isopropyl-1, 4a-dimethyl-1-phenanthlenecarboxylate and its analogs (Tributyltin rosin salt)	-
		Other tributyl tins & triphenyl tins	-
Table B (Materials listed in appendix 2 of the Convention)	Cadmium/ cadmium compounds	Cadmium	7440-43-9
		Cadmium oxide	1306-19-0
		Cadmium sulfide	1306-23-6
		Cadmium chloride	10108-64-2
		Cadmium sulfate	10124-36-4
		Other cadmium compounds	-
	Chromium VI compounds	Chromium (VI) oxide	1333-82-0
		Barium chromate	10294-40-3
		Calcium chromate	13765-19-0
		Chromium trioxide	1333-82-0
		Lead (II) chromate	7758-97-6
		Sodium chromate	7775-11-3
		Sodium dichromate	10588-01-9
		Strontium chromate	7789-06-2
		Potassium dichromate	7778-50-9
		Potassium chromate	7789-00-6
		Zinc chromate	13530-65-9
		Other hexavalent chromium compounds	-

*This list is developed with reference to Joint Industry Guide No.101.

* This list is not exhaustive; it represents examples of chemicals with known CAS numbers and may require periodical updating.

Table	Material Category	Substances	CAS Numbers
	Lead/lead compounds	Lead	7439-92-1
		Lead (II) sulfate	7446-14-2
		Lead (II) carbonate	598-63-0
		Lead hydrocarbonate	1319-46-6
		Lead acetate	301-04-2
		Lead (II) acetate, trihydrate	6080-56-4
		Lead phosphate	7446-27-7
		Lead selenide	12069-00-0
		Lead (IV) oxide	1309-60-0
		Lead (II,IV) oxide	1314-41-6
		Lead (II) sulfide	1314-87-0
		Lead (II) oxide	1317-36-8
		Lead (II) carbonate basic	1319-46-6
		Lead hydroxidcarbonate	1344-36-1
		Lead (II) phosphate	7446-27-7
		Lead (II) chromate	7758-97-6
		Lead (II) titanate	12060-00-3
		Lead sulfate, sulphuric acid, lead salt	15739-80-7
		Lead sulphate, tribasic	12202-17-4
		Lead stearate	1072-35-1
		Other lead compounds	-
	Mercury/ mercury compounds	Mercury	7439-97-6
		Mercuric chloride	33631-63-9
		Mercury (II) chloride	7487-94-7
		Mercuric sulfate	7783-35-9
		Mercuric nitrate	10045-94-0
		Mercuric (II) oxide	21908-53-2
		Mercuric sulfide	1344-48-5
		Other mercury compounds	-
	Polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs)	Bromobiphenyl and its ethers	2052-07-5 (2-Bromobiphenyl)
			2113-57-7 (3-Bromobiphenyl
			92-66-0 (4-Bromobiphenyl)
			101-55-3 (ether)
		Decabromobiphenyl and its ethers	13654-09-6
			1163-19-5 (ether)
		Dibromobiphenyl and its ethers	92-86-4
			2050-47-7 (ether)
		Heptabromobiphenylether	68928-80-3
		Hexabromobiphenyl and its ethers	59080-40-9
			36355-01-8 (hexabromo-1,1'-biphenyl)
			67774-32-7 (Firemaster FF-1)
			36483-60-0 (ether)
		Nonabromobiphenylether	63936-56-1
		Octabromobiphenyl and its ethers	61288-13-9
			32536-52-0 (ether)
		Pentabromobidphenyl ether (note: commercially available PeBDPO is a complex reaction mixture containing a variety of brominated diphenyloxides.	32534-81-9 (CAS number used for commercial grades of PeBDPO)
		Polybrominated biphenyls	59536-65-1
		Tetrabromobiphenyl and its ethers	40088-45-7
			40088-47-9 (ether)
		Tribromobiphenyl ether	49690-94-0
	Polychlorinated naphthalenes	Polychlorinated naphthalenes	70776-03-3
		Other polychlorinated naphthalenes	-

*This list is developed with reference to Joint Industry Guide No.101.

* This list is not exhaustive; it represents examples of chemicals with known CAS numbers and may require periodical updating.

Table	Material Category	Substances	CAS Numbers
	Radioactive substances	Uranium	-
		Plutonium	-
		Radon	-
		Americium	-
		Thorium	-
		Cesium	7440-46-2
		Strontium	7440-24-6
		Other radioactive substances	-
	Certain shortchain chlorinated paraffins (with carbon length of 10-13 atoms)	Chlorinated paraffins (C10-13)	85535-84-8
		Other short chain chlorinated paraffins	-

APPENDIX 9

SPECIFIC TEST METHODS

1 Asbestos

Types to test for: as per resolution MEPC.179(59); Actinolite CAS 77536-66-4 Amosite (Grunerite) CAS 12172-73-5 Anthophyllite CAS 77536-67-5 Chrysotile CAS 12001-29-5 Crocidolite CAS 12001-28-4 Asbestos Tremolite CAS 77536-68-6.

Specific testing techniques: Polarized Light Microscopy (PLM), electron microscope techniques and/or X-Ray Diffraction (XRD) as applicable.

Specific reporting information: The presence/no presence of asbestos, indicate the concentration range, and state the type when necessary.

Notes:

.1 The suggested three kinds of testing techniques are most commonly used methods when analysing asbestos and each of them has its limitation. Laboratories should choose the most suitable methods to determine, and in most cases, two or more techniques should be utilized together.

.2 The quantification of asbestos is difficult at this stage, although the XRD technique is applicable. Only a few laboratories conduct the quantification rather than the qualification, especially when a precise number is required. Considering the demand from the operators and ship recycling parties, the precise concentration is not strictly required. Thereby, the concentration range is recommended to report, and the recommended range division according to standard VDI 3866 is as follows:

- Asbestos not detected
- Traces of asbestos detected
- Asbestos content approx. 1% to 15% by mass
- Asbestos content approx. 15% to 40% by mass
- Asbestos content greater than 40% by mass

Results that specified more precisely must be provided with a reasoned statement on the uncertainty.

.3 As to the asbestos types, to distinguish all six different types is time consuming and in some cases not feasible by current techniques; while on the practical side, the treatment of different types of asbestos is the same. Therefore, it is suggested to report the type when necessary.

2 Polychlorinated biphenyls (PCBs)

Note: there are 209 different congeners (forms) of PCB of it is impracticable to test for all. Various organizations have developed lists of PCBs to test for as indicators. In this instance two alternative approaches are recommended. Method 1 identifies the seven congeners used by the International Council for the Exploration of the Sea (ICES). Method 2 identifies 19 congeners and 7 types of aroclor (PCB mixtures commonly found in solid shipboard materials containing PCBs). Laboratories should be familiar with the requirements and consequences for each of these lists.

Types to test for: Method 1: ICES7 congeners (28, 52, 101, 118, 138, 153, 180). Method 2: 19 congeners and 7 types of aroclor, using the US EPA 8082a test.

Specific testing technique: GC-MS (congener specific) or GC-ECD or GC-ELCD for applicable mixtures such as aroclors. Note: standard samples must be used for each type.

Sample Preparation: It is important to properly prepare PCB samples prior to testing. For solid materials (cables, rubber, paint, etc.), it is especially critical to select the proper extraction procedure in order to release PCBs since they are chemically bound within the product.

Specific reporting information: PCB congener, ppm per congener in sample, and for Method 2, ppm per aroclor in sample should also be reported.

Notes:

1 Certain field or indicator tests are suitable for detecting PCBs in liquids or surfaces. However, there are currently no such tests that can accurately identify PCBs in solid shipboard materials. It is also noted that many of these tests rely on the identification of free chlorine ions and are thus highly susceptible to chlorine contamination and false readings in a marine environment where all surfaces are highly contaminated with chlorine ions from the sea water and atmosphere.

2 Several congeners are tested for as "indicator" congeners. They are used because their presence often indicates the likelihood of other congeners in greater quantities (many PCBs are mixes, many mixes use a limited number of PCBs in small quantities, therefore the presence of these small quantities indicates the potential for a mix containing far higher quantities of other PCBs).

3 Many reports refer to "total PCB", which is often a scaled figure to represent likely total PCBs based on the sample and the common ratios of PCB mixes. Where this is done the exact scaling technique must be stated, and is for information only and does not form part of the specific technique.

3 Ozone Depleting Substances

Types to test for: as per appendix 8 of these guidelines all the listed CFCs, Halons, HCFCs and other listed substance as required by Montreal Protocol.

Specific testing technique: Gas Chromatography-Mass Spectrometry (GC-MS), coupled Electron Capture Detectors (GC-ECD) and Electrolytic Conductivity Detectors (GC-ELCD).

Specific reporting information: Type and concentration of ODS.

4 Anti-fouling systems containing organotin compounds as a biocide

Types to test for: Anti-fouling compounds and systems regulated under Annex I to the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001 (AFS Convention), including: Tributyl tins (TBT), Triphenyl tins (TPT) and Tributyl tin oxide (TBTO).

Specific testing technique: As per resolution MEPC.104(49) (Guidelines for Brief Sampling of Anti-Fouling Systems on Ships), adopted 18 July 2003, using ICPOES, ICP, AAS, XRF, GC-MS as applicable.

Specific reporting information: Type and concentration of organotin compound.

Note: For "field" or "indicative" testing it may be acceptable to simply identify presence of tin, due to the expected good documentation on anti fouling systems.

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RESOLUTION MEPC.198(62)

Adopted on 15 July 2011

2011 GUIDELINES ADDRESSING ADDITIONAL ASPECTS TO THE NO_x TECHNICAL CODE 2008 WITH REGARD TO PARTICULAR REQUIREMENTS RELATED TO MARINE DIESEL ENGINES FITTED WITH SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEMS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution,

RECALLING ALSO that, at its fifty-eighth session, the Committee adopted, by resolution MEPC.176(58), a revised MARPOL Annex VI (hereinafter referred to as "MARPOL Annex VI") and, by resolution MEPC.177(58), a revised Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (hereinafter referred to as "the NO_x Technical Code 2008"),

NOTING regulation 13 of MARPOL Annex VI which makes the NO_x Technical Code 2008 mandatory under that Annex,

NOTING ALSO that the use of NO_x-reducing devices is envisaged in the NO_x Technical Code 2008 and that selective catalytic reduction systems (hereinafter referred to as "SCR systems") are such NO_x-reducing devices for compliance with the Tier III NO_x limit,

HAVING CONSIDERED, at its sixty-second session, the guidelines addressing additional aspects to the NO_x Technical Code 2008 with regard to particular requirements related to marine diesel engines fitted with SCR systems, developed by the Sub-Committee on Bulk Liquids and Gases at its fifteenth session,

1. ADOPTS the 2011 Guidelines addressing additional aspects to the NO_x Technical Code 2008 with regard to particular requirements related to marine diesel engines fitted with Selective Catalytic Reduction (SCR) Systems, as set out at annex to the present resolution;

2. INVITES Administrations to take the annexed Guidelines into account when certifying engines fitted with SCR systems;

3. REQUESTS Parties to MARPOL Annex VI and other Member Governments to bring the annexed Guidelines related to the NO_x Technical Code to the attention of shipowners, ship operators, shipbuilders, marine diesel engine manufacturers, and any other interested groups; and

4. AGREES to keep these Guidelines under review in light of the experience gained.

ANNEX

2011 GUIDELINES ADDRESSING ADDITIONAL ASPECTS TO THE NO_x TECHNICAL CODE 2008 WITH REGARD TO PARTICULAR REQUIREMENTS RELATED TO MARINE DIESEL ENGINES FITTED WITH SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEMS

TABLE OF CONTENTS

1 INTRODUCTION

1.1 The use of NO_x-reducing devices is envisaged in the NO_x Technical Code 2008 (NTC 2008) as given in section 2.2.5 and a Selective Catalytic Reduction (SCR) system is one of such devices.

1.2 NTC 2008 contains two ways for pre-certification of engine systems fitted with NO_x-reducing devices:

.1 engine fitted with SCR: Approval in accordance with paragraph 2.2.5.1 of the NTC 2008. Test according to chapter 5 of the NTC 2008; and

.2 the simplified measurement method in accordance with section 6.3 of the NTC 2008 as regulated in paragraph 2.2.5.2 (Primary failure case) of the NTC 2008.

1.3 According to paragraph 2.2.5.1 of the NTC 2008 the engine system fitted with SCR should be tested on a test bed (Scheme A). Where that is not appropriate, given reasons as outlined under paragraph 3.1.1 of these guidelines; the provisions of Scheme B as set out in these guidelines should be applied.

1.4 Administrations are invited to take these guidelines into account when certifying engines fitted with SCR.

2 GENERAL

2.1 Purpose

2.1.1 The purpose of these guidelines is to provide guidance in addition to the requirements of the NTC 2008 for design, testing, surveys and certification of marine diesel engines fitted with an SCR system to ensure its compliance with the requirements of regulation 13 of MARPOL Annex VI.

2.2 Application

2.2.1 These guidelines apply to marine diesel engines fitted with SCR for compliance with regulation 13 of MARPOL Annex VI.

2.3 Definitions

2.3.1 Unless provided otherwise, the terms in these guidelines have the same meaning as the terms defined in regulation 2 of MARPOL Annex VI and in section 1.3 of the NTC 2008.

2.3.2 "Engine system fitted with SCR" means a system consisting of a marine diesel engine, an SCR chamber and a reductant injection system. When a control device on NO_x-reducing performance is provided, it is also regarded as a part of the system.

2.3.3 "Catalyst block" means a block of certain dimension through which exhaust gas passes and which contains catalyst composition on its inside surface to reduce NO_x from exhaust gas.

2.3.4 "SCR chamber" means an integrated unit, which contains the catalyst block(s), and into which flows exhaust gas and reductant.

2.3.5 "Reductant injection system" means a system, which consists of the pump(s) to supply reductant to the nozzle(s), the nozzle(s) spraying reductant into the exhaust gas stream and control device(s) of the spray.

2.3.6 "AV (area velocity) value" means a value of the exhaust gas flow rate passing through the catalyst blocks (m^3/h) per total active surface area of the catalyst blocks in the SCR chamber (m^2). Therefore, unit of AV value is (m/h). The exhaust gas flow volume is the volume defined at 0°C and 101.3 kPa.

2.3.7 "SV (space velocity) value" means a value of the exhaust gas flow rate passing through the catalyst block(s) (m^3/h) per total volume of the catalyst block(s) in the SCR chamber (m^3). Therefore, unit of SV value is (1/h). The exhaust gas flow volume is the volume defined at 0°C and 101.3 kPa.

2.3.8 "Total volume of the catalyst block" means the volume (m^3) based on outer dimensions of the catalyst block.

2.3.9 "LV (linear velocity) value" means a value of the exhaust gas flow rate passing through the catalyst blocks (m^3/h) per catalyst block's section (m^2) in a normal direction of exhaust gas flow. Therefore, unit of LV value is (m/h). The exhaust gas flow volume is the volume defined at 0°C and 101.3 kPa.

2.3.10 "Block section" means the cross-sectional area (m^2) of the catalyst block based on the outer dimensions.

2.3.11 "NO_x reduction rate η" means a value deriving from the following formula. Unit of η is (%):

$$\eta = \frac{(c_{inlet} - c_{outlet})}{c_{inlet}} \cdot 100$$

Where: c_{inlet} is NO_x concentration (ppm) as measured at the inlet of the SCR chamber;

c_{outlet} is NO_x concentration (ppm) as measured at the outlet of the SCR chamber.

3 PRE-CERTIFICATION PROCEDURE

3.1 General

3.1.1 Engine systems fitted with SCR should be certified in accordance with chapter 2 of the NTC 2008. In cases where combined engine/SCR systems can neither be tested on a test bed due to their size, construction and other restrictions nor an on board test can be performed fully complying with the requirements of chapter 5 of the NTC 2008 the procedures provided by Scheme B of these guidelines should be applied.

3.1.2 The applicant for certification should be the entity responsible for the complete system "Engine system fitted with SCR", e.g., the engine manufacturer.

3.1.3 The applicant should supply all necessary documentation, including the Technical File for the complete system, a description of the required on board NO_x verification procedure and, where applicable, the description of the confirmation test procedure.

3.2 Technical File and on board NO_x verification procedures

3.2.1 In addition to the information supplied in paragraph 3.1.3 of these guidelines and items in section 2.4 of the NTC 2008, engine systems fitted with SCR should include the following information in its Technical File:

.1 reductant: component/type and concentration;

.2 reductant injection system including critical dimensions and supply volume;

.3 design features of SCR specific components in the exhaust duct from the engine exhaust manifold to the SCR chamber;

.4 catalyst block specification and arrangement in the SCR chamber;

.5 inlet parameters including allowable exhaust gas temperature (maximum and minimum) at the inlet of the SCR chamber;

.6 cross-unit parameters: allowable pressure loss (Δp) between inlet and outlet of SCR chamber and in the exhaust duct caused by SCR components;

.7 aspects related to the fuel oil quality resulting in continued compliance of the engine with the applicable NO_x emission limit;

.8 factors related to the deterioration rate of SCR performance, e.g., exchange condition for SCR blocks and recommended exchange time of SCR blocks;

.9 controlling arrangements and settings of the SCR, e.g., model, specification of control device;

.10 measures to minimize reductant slip;

.11 parameter check method as the verification procedure: with regard to the application of the parameter check method, requirements given in paragraph 2.3.6 of the NTC 2008 and guidance given in appendix VII, paragraph 2 of the NTC 2008 should be taken into account in assessing the adequacy of a proposed procedure with analysers meeting or exceeding the requirements of appendix III of the NTC 2008; and

.12 any other parameter(s) specified by the manufacturer.

3.3 Measures to minimize reductant slip

3.3.1 When SCR uses urea solution, ammonia solution or ammonia gas as reductant, measures to prevent reductant slip should be provided to avoid the supply of an excessive amount of reductant in the system. The reductant injection system should be designed to prevent emissions of any harmful substance from the system.

3.4 Pre-certification procedure

3.4.1 Test and pre-certification of an engine system fitted with SCR should be conducted either by Scheme A (as given in section 5 of these guidelines), or by Scheme B (as given in sections 6 and 7 of these guidelines), as appropriate.

3.5 EIAPP certificate

3.5.1 An Engine International Air Pollution Prevention (EIAPP) Certificate (see appendix I of the NTC 2008) should be issued by the Administration after approval of the Technical File.

3.5.2 When an applicant chooses the Scheme B for pre-certification, the IAPP initial survey should not be completed until the on board initial confirmation test provides compliant results. The applicant remains the responsible entity until final acceptance of the system.

4 FAMILY AND GROUP CONCEPTS FOR ENGINE SYSTEMS FITTED WITH SCR

4.1 Requirements in chapter 4 of the NTC 2008 apply equally to engine systems fitted with SCR.

5 TEST PROCEDURES FOR SCHEME A

5.1 General

5.1.1 A test for a combined system of an engine fitted with an SCR in Scheme A is to ensure compliance with the applicable NO_x emission limits of MARPOL Annex VI, as required. The test bed measurement procedures of chapter 5 of the NTC 2008 should apply.

5.2 Calculation of gaseous emissions

5.2.1 The calculation method in section 5.12 of the NTC 2008 is also applied to engine systems fitted with SCR. No allowance is made for the reductant solution injected into the exhaust gas stream in respect of its effect on exhaust gas mass flow rate calculation (appendix VI) or dry/wet correction factor (equation (11), paragraph 5.12.3.2.2 of the NTC 2008). The NO_x correction factor for humidity and temperature (equations (16) or (17), paragraphs 5.12.4.5 and 5.12.4.6, respectively, of the NTC 2008) should not be applied.

5.2.2 For an engine system fitted with SCR, the following parameters should be measured and recorded in the engine test report in accordance with section 5.10 of the NTC 2008:

.1 injection rate of reductant at each load point (kg/h);

.2 exhaust gas temperature at the inlet and outlet of the SCR chamber (°C);

.3 pressure loss (kPa): it is necessary to measure the pressure at inlet and at outlet of the SCR chamber and to calculate pressure loss Δp. If the manufacturer sets an allowable limit of Δp, it should be confirmed; and

.4 other parameter(s) as specified by the Administration.

6 TEST PROCEDURES FOR SCHEME B

6.1 General

6.1.1 A test for an engine system fitted with SCR in Scheme B is to ensure that the system complies with the applicable NO_x emission limits in MARPOL Annex VI, as required. The test procedures in Scheme B are as follows:

.1 an engine is tested to obtain the NO_x emission value (g/kWh) in accordance with paragraph 6.2.1 of these guidelines;

.2 the SCR NO_x reduction rate may be calculated by modelling tools, taking into account geometrical reference conditions, chemical NO_x conversion models as well as other parameters to be considered;

.3 an SCR chamber, not necessarily to full scale, is to be tested in accordance with section 6.3 of these guidelines in order to generate data for the calculation model as that used in paragraph 6.1.1.2 of these guidelines;

.4 the NO_x emission from the engine system fitted with SCR, which is calculated in accordance with section 6.4 of these guidelines using the NO_x emission value from the engine and the NO_x reduction rate of SCR chamber. At this point the Technical File will be completed and this NO_x emission value will be entered into the supplement of the EIAPP certificate; and

.5 the NO_x emission performance of the engine combined with the SCR is verified by a confirmation test in accordance with the procedure in paragraph 7.5 of these guidelines.

6.2 Verification test procedures for an engine

6.2.1 The purpose of the test of an engine is to establish the emission values for use in section 6.4 of these guidelines. These measurements should be in accordance with chapter 5 of the NTC 2008.

6.2.2 Paragraph 5.9.8.1 of the NTC 2008 requires engine conditions to be measured at each mode point, for an engine system. This equally applies in the case of an engine fitted with SCR. Additionally, exhaust gas temperature at the intended inlet of the SCR chamber should be determined and recorded in the test report as required by section 5.10 of the NTC 2008.

6.3 Test procedures for SCR chambers

6.3.1 General

6.3.1.1 The SCR chamber for validation testing may be either a full scale SCR chamber or a scaled version. A SCR chamber should demonstrate the reduction in NO_x concentrations (ppm) expected in exhaust gas measured in section 6.2 of these guidelines. Therefore, NO_x reduction rate of the SCR chamber should be determined for each individual mode point. Where undertaken on a scaled version of the SCR chamber the scaling process should be validated to the satisfaction of the Administration.

6.3.2 Test conditions at each mode point

6.3.2.1 Exhaust gas, catalyst, reductant and an injection system should satisfy the following conditions at each mode point:

.1 Exhaust gas flow
Exhaust gas flow rate for the test should be scaled accordingly to account for the dimension of the catalyst model.

.2 Exhaust gas component
Exhaust gas for the test should either be diesel engine exhaust gas or simulated gas.

Where diesel exhaust gas is used it should correspond, in terms of concentrations, to the exhaust gas in section 6.2 of these guidelines, in terms of NO_x, O_2, CO_2, H_2O, and SO_2 (±5% of the required concentration for each emission species).

Where simulated gas is used it should correspond, in terms of concentrations, to the exhaust gas in section 6.2 of these guidelines, in terms of NO, NO_2, O_2, CO_2, H_2O, and SO_2 (±5% of the required concentration for each emission species) balance N_2.

.3 Exhaust gas temperature
The temperature of exhaust gas used for the test should correspond to the temperatures obtained from testing in section 6.2 of these guidelines, ensuring that the SCR chamber is activated at every load point, other than as provided for by 3.1.4 of the NTC 2008, and that no ammonia bisulphate formation, or reductant destruction, takes place.

.4 Catalyst blocks and AV,SV value
The catalyst blocks used in the test should be representative of the catalyst blocks to be used in the SCR chamber in service. AV,SV or LV value should, in the case of full scale tests, be within a range of ±20% of the required value as obtained in testing from section 6.2 of these guidelines. In the case of scaled tests it should correspond to the above.

.5 Reductant
The reductant concentration should be representative of the reductant concentration in the exhaust gas during actual operation.

6.3.3 Stability for measurement

6.3.3.1 All measurements should be recorded after they have stabilized.

6.3.4 List of data to be derived from the model

6.3.4.1 Operating data which is to be given in the Technical File should be derived from the modelling process or otherwise justified.

6.3.4.2 Exhaust gas analysers should be in accordance with appendix III and appendix IV of the NTC 2008 or otherwise to the satisfaction of the Administration.

6.3.5 Test report for SCR chamber

6.3.5.1 Data recorded under paragraph 6.3.1.1 of these guidelines should be recorded in the test report as required by section 5.10 of the NTC 2008.

6.4 Calculation of the specific emission

6.4.1 The NO_x emission value of the engine system fitted with SCR should be calculated as follows:

$$\mathrm{gas}_x = \frac{\sum_{i=1}^{i=n} \left((100 - \eta_i)/100 \right) \cdot q_{mgas_i} \cdot W_{F_i}}{\sum_{i=1}^{i=n} \left(P_{\mathrm{i}} \cdot W_{F_i} \right)}$$

Where: η_i = NO_x reduction rate (%) derived in accordance with section 6.3 of these guidelines;

$q_{\mathrm{mgas_i}}$ = Mass flow of NO_x gas measured in accordance with section 6.2 of these guidelines;

W_{F_i} = Weighting factor;

P_{i} = Measured power at individual mode points in accordance with section 6.2 of these guidelines.

The weighting factors and number of modes (n) used in above calculation shall be according to the provisions of section 3.2 of the NTC 2008.

6.4.2 The NO_x emission value (g/kWh) calculated in accordance with paragraph 6.4.1 of these guidelines should be compared to the applicable emission limit. This emission value is entered into 1.9.6 of the Supplement to the EIAPP certificate (appendix I of the NTC 2008).

6.5 Test report to be submitted to the Administration

6.5.1 The test report referenced under paragraphs 6.2.2 and 6.3.5.1 of these guidelines, together with the data from section 6.4 of these guidelines should be consolidated into the overall documentation to be submitted to the Administration.

7 ON BOARD CONFIRMATION TEST FOR SCHEME B

7.1 After installation on board of an engine system fitted with SCR and before entry into service an initial confirmation test should be performed on board.

7.2 The engine system fitted with the SCR should be verified as corresponding to the description given in the Technical File.

7.3 The confirmation test should be undertaken as close as possible to 25%, 50% and 75% of rated power, independent of test cycle.

7.4 At each mode point of the confirmation test the operating values as given in the Technical File should be verified.

7.5 NO_x emission concentrations should be measured at the inlet and outlet of the SCR chamber. The NO_x reduction rate should be calculated. Both values should either be dry or wet. The value obtained for NO_x reduction rate should be compared to the initial confirmation test required value at each mode point as given in the Technical File. Reduction efficiency values obtained at each of the test points should not be less than the corresponding values as given in the Technical File by more than 5%.

7.6 The NO_x analyser should meet the requirements of chapter 5 of the NTC 2008.

7.7 When an engine system fitted with SCR is in a group defined in chapter 4 of these guidelines, the confirmation test should be conducted only for the parent engine system of the group.

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RESOLUTION MEPC.199(62)

Adopted on 15 July 2011

2011 GUIDELINES FOR RECEPTION FACILITIES UNDER MARPOL ANNEX VI

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution,

RECALLING ALSO that, at its fifty-eighth session, the Committee adopted, by resolution MEPC.176(58), a revised MARPOL Annex VI (hereinafter referred to as "MARPOL Annex VI") which includes mandatory provisions that Ozone Depleting Substances and equipment containing such substances be delivered to appropriate reception facilities when removed from ships,

NOTING that regulation 17 of MARPOL Annex VI specifies two types of wastes for which Parties must ensure the provision of reception facilities for ships calling at their ports,

NOTING ALSO that adequate MARPOL Annex VI reception facilities shall meet the needs of ships calling at a port or terminal without causing undue delay,

HAVING CONSIDERED, at its sixty-second session, the 2011 Guidelines for reception facilities under MARPOL Annex VI, developed by the Sub-Committee on Bulk Liquids and Gases at its fifteenth session,

1. ADOPTS the 2011 Guidelines for reception facilities under MARPOL Annex VI, as set out at annex to the present resolution;

2. INVITES Administrations to take the annexed Guidelines into account when developing and enacting national laws which give force to and implement provisions set forth in regulation 17 of MARPOL Annex VI;

3. REQUESTS the Parties to MARPOL Annex VI and other Member Governments to bring the annexed Guidelines to the attention of port and terminal operators and ship repair and ship recycling facilities, and any other interested groups; and

4. AGREES to keep these Guidelines under review in light of the experience gained.

ANNEX

2011 GUIDELINES FOR RECEPTION FACILITIES UNDER MARPOL ANNEX VI

1 INTRODUCTION

1.1 The main objectives of these Guidelines are to:

.1 assist Governments in developing and enacting domestic laws which give force to and implement provisions set forth in regulation 17, Reception Facilities, of MARPOL Annex VI;

.2 assist port and terminal operators and ship repair ports, and ship recycling facilities in assessing the need for and providing adequate reception facilities for Ozone Depletion Substances (ODS) and equipment containing ODS; and

.3 assist port and terminal operators in assessing the need for, and providing adequate reception facilities for exhaust gas cleaning residues.

1.2 Adequate MARPOL Annex VI reception facilities shall meet the needs of ships calling at a port or terminal without causing undue delay.

1.3 MARPOL Annex VI, regulation 17 specifies two types of wastes that Parties must ensure the provision of reception facilities for ships calling at their ports:

.1 Ozone Depleting Substances are those defined in MARPOL Annex VI, regulation 2.16; and

.2 Exhaust gas cleaning residues are ship-generated residues that may range from liquid to solid.

2 DEFINITIONS

With reference to regulation 17 of MARPOL Annex VI:

2.1 *Remotely located port or terminal* means a port or terminal as informed to the Organization under regulation 17.2 of MARPOL Annex VI.

2.2 *Manage and process* means actions related to the collection, storage, transport, treatment and disposal of ODS and/or exhaust gas cleaning residues such that they are rendered in a safe and environmentally benign condition in accordance with best available practices.

2.3 *Appropriate action* means those actions taken by informed Parties to communicate to ships under their control that the advised ports cannot handle certain ODS and/or exhaust gas cleaning residues and those actions ships will need to take necessary to manage or process those substances in an alternative manner. Such alternatives could include arranging for collection before or after visiting the affected port, and in the latter case, ensuring adequate on board storage exists for those substances.

2.4 *EGCS residues* are a product of the water treatment process. The residue can be formed and removed from the water with different treatment techniques. Such residues contain sulphates, ash/soot, metals and hydrocarbons removed from the water.

2.5 *ODS and equipment containing ODS* are as defined in regulation 2.16 and equipment as referred to in regulation 12.4.

3 GENERAL REQUIREMENTS FOR MARPOL ANNEX VI RECEPTION FACILITIES

3.1 Treatment and disposal of ODS and EGCS residues

Taking into consideration its own local and national environmental laws and regulations as well as applicable international regulations and treaties, a Party should adopt strategies for collection, storage, transport, treatment and disposal of ODS and EGCS residues. Strategies for managing MARPOL Annex VI wastes should be safe and environmentally benign and based on industry best practices and best available technologies, and taking into account the local infrastructure. Parties are highly encouraged to make regular updates to the availability of Annex VI reception facilities in the Global Integrated Shipping Information System (GISIS) at: http://gisis.imo.org/Public/.

3.2 Composition of EGCS residues

Residues may contain sulphates, ash/soot, metals and hydrocarbons removed from the wash water. Specifically it may contain sulphite salts ($CaSO_x$) and may also include other metal sulphites ($NaSO_x$ and KSO_x) and metal oxides and including Vanadium (V), Nickel (Ni), Magnesium (Mg), Aluminium (Al), Iron (Fe), and Silicon (Si).

3.3 Training/certification of personnel

Taking into consideration its own local and national laws and regulations Parties should ensure that personnel who process ODS have been properly trained in all personal protective measures to ensure safe handling of such materials and prevent the release of ODS to the atmosphere. Administrations should develop a certification system whereby letters or certificates are issued to qualified shore side personnel attesting to proper training for handling ODS and equipment containing ODS and operating disposal equipment. Such equipment should comply with rigorous standards for operation and be certified and/or approved.

3.4 Sufficient capacity for the throughput of trade and the likely volumes to be handled

Parties should undertake to evaluate the types and capacities of ships using their ports and terminals to determine the quantities of ODS and EGCS residues likely to be generated. Parties should ensure that ports and terminals have the capacity to collect and store, if necessary, ODS and EGCS residues from any and all ships that use its ports terminals. If capacity from several ports or terminals, including remotely located ports or terminals, is to be pooled then a Party should ensure that the capacity of such a pooled resource is sufficient for all facilities using it.

3.5 Provision of documentation for custody transfer from ship to reception facility

The Organization published MEPC.1/Circ.671, A Guide to Good Practice for Port Reception Facility Providers and Users. This user friendly guidance includes Appendix 2, MEPC.1/Circ.644, Advance Notification Form (ANF); and MEPC.1/Circ.645 Waste Delivery Receipt (WDR). These standard forms may be used by ship masters and port reception facility operators to document the transfer of wastes by type and quantity from ships to shore side reception facilities. When providing advanced notification to a port or terminal that Annex VI reception facilities will be required, the ANF may be used. Where reception facility operators are required to provide to the ship a receipt for ODS and/or EGCS residues, the WDR may be used.

4 GENERAL REQUIREMENTS APPLICABLE WHEN MARPOL ANNEX VI RECEPTION FACILITIES ARE NOT AVAILABLE

4.1 Where reception facilities are not provided

Parties must notify the Organization in the event that a port or terminal cannot provide ODS or EGCS residue reception facilities. In addition Parties must notify the Organization where such facilities are, alternatively, provided. Parties are highly encouraged to make regular updates to the availability of Annex VI reception facilities in the Global Integrated Shipping Information System (GISIS) at: http://gisis.imo.org/Public/. Parties that inform the Organization of ports that cannot accept ODS or EGCS residues are encouraged to provide an explanation as to the specific reasons that necessitate such notification.

4.2 Use of regional/bi-lateral agreements

The concept of regional arrangements is encouraged as a possible alternative for ensuring adequacy of reception facilities. Parties could enter into a regional or bi-lateral arrangement with other Parties in a region that would provide reception facilities to ships travelling in the region. It has been recognized by the Organization that waste management planning on a regional basis and the establishment of regional arrangements can provide an alternative solution for ensuring that ships do not have an incentive to discharge waste into the environment, including the atmosphere, and that ports and terminals within a region can meet the requirements of regulation 17 of MARPOL Annex VI.

4.3 Alternative facilities (required to be reported in accordance with regulation 17.2)

A Party shall report to the Organization when any alternative arrangement is made by a port or terminal to provide ODS or EGCS residue reception facilities. Additionally, a Party shall report to the Organization where such adequate reception facilities are provided.

4.4 Criteria for those alternative measures for reception facilities

Criteria for those alternative measures for reception facilities should take into consideration the capacities required to meet the needs of ships calling in their region and without causing undue delay.

4.5 Alternative reception facilities

Alternative reception facilities should have an environmentally acceptable method for processing/handling MARPOL Annex VI wastes as outlined in paragraph 5.1.

5 GENERAL REQUIREMENTS FOR SHIPS USING PORTS WHERE RECEPTION FACILITIES ARE NOT AVAILABLE

5.1 Voyage planning and on board storage

Voyage planning should be part of any waste management planning strategy. Masters of ships should ensure that there is adequate on board capacity for storage of all ODS and EGCS residues that may be generated during the course of voyages which include visits to ports or terminals where reception facilities are not available.

5.2 Notifications (according to regulation 17.3)

The Guide to Good Practice for Port Reception Facility Providers and Users (MEPC.1/Circ.671) contains Appendix 1 Revised Consolidated Format for Reporting Alleged Inadequacy of Port Reception Facilities. This standard form may be used by ship masters to report MARPOL Annex VI reception facility inadequacy to the Organization and to the port State through their own flag State Administration.

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RESOLUTION MEPC.200(62)

Adopted on 15 July 2011

AMENDMENTS TO THE ANNEX OF THE PROTOCOL OF 1978 RELATING TO THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973

(Special Area Provisions and the Designation of the Baltic Sea as a Special Area under MARPOL Annex IV)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution,

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention") and article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol") which together specify the amendment procedure of the 1978 Protocol and confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 Protocol (MARPOL 73/78),

HAVING CONSIDERED draft amendments to Annex IV of MARPOL 73/78,

1. ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, the amendments to Annex IV of MARPOL 73/78, the text of which is set out at annex to the present resolution;

2. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on 1 July 2012 unless, prior to that date, not less than one third of the Parties or Parties the combined merchant fleets of which constitute not less than 50 per cent of the gross tonnage of the world's merchant fleet, have communicated to the Organization their objection to the amendments;

3. INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, the said amendments shall enter into force on 1 January 2013 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to MARPOL 73/78 certified copies of the present resolution and the text of the amendments contained in the Annex;

5. REQUESTS FURTHER the Secretary-General to transmit to the Members of the Organization which are not Parties to MARPOL 73/78 copies of the present resolution and its Annex.

ANNEX

AMENDMENTS TO MARPOL ANNEX IV

1 *New paragraphs 5bis, 7bis, and 7ter are added to regulation 1*:

"5*bis* *Special area* means a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by sewage is required.

The special areas are:

.1 the Baltic Sea area as defined in regulation 1.11.2 of Annex I; and

.2 any other sea area designated by the Organization in accordance with criteria and procedures for designation of special areas with respect to prevention of pollution by sewage from ships[1].

7*bis* A *passenger* means every person other than:

.1 the master and the members of the crew or other persons employed or engaged in any capacity on board a ship on the business of that ship; and

.2 a child under one year of age.

7*ter* A *passenger ship* means a ship which carries more than twelve passengers.

For the application of regulation 11.3, a *new passenger ship* is a passenger ship:

.1 for which the building contract is placed, or in the absence of a building contract, the keel of which is laid, or which is in a similar stage of construction, on or after 1 January 2016; or

.2 the delivery of which is two years or more after 1 January 2016.

An *existing passenger ship* is a passenger ship which is not a new passenger ship."

2 *New paragraph 2 is added to regulation 9*:

"2 By derogation from paragraph 1, every passenger ship which, in accordance with regulation 2, is required to comply with the provisions of this Annex, and for which regulation 11.3 applies while in a special area, shall be equipped with one of the following sewage systems:

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[1] Refer to Assembly resolution A.927(22), Guidelines for the designation of special areas under MARPOL 73/78 and guidelines for the identification and designation of particularly sensitive sea areas.

.1 a sewage treatment plant which shall be of a type approved by the Administration, taking into account the standards and test methods developed by the Organization,[2] or

.2 a holding tank of the capacity to the satisfaction of the Administration for the retention of all sewage, having regard to the operation of the ship, the number of persons on board and other relevant factors. The holding tank shall be constructed to the satisfaction of the Administration and shall have a means to indicate visually the amount of its contents."

3 *Regulation 11 is replaced by the following*:

Regulation 11
Discharge of sewage

"*A Discharge of sewage from ships other than passenger ships in all areas and discharge of sewage from passenger ships outside special areas*

1 Subject to the provisions of regulation 3 of this Annex, the discharge of sewage into the sea is prohibited, except when:

.1 the ship is discharging comminuted and disinfected sewage using a system approved by the Administration in accordance with regulation 9.1.2 of this Annex at a distance of more than 3 nautical miles from the nearest land, or sewage which is not comminuted or disinfected at a distance of more than 12 nautical miles from the nearest land, provided that, in any case, the sewage that has been stored in holding tanks, or sewage originating from spaces containing living animals, shall not be discharged instantaneously but at a moderate rate when the ship is *en route* and proceeding at not less than 4 knots; the rate of discharge shall be approved by the Administration based upon standards developed by the Organization[3]; or

.2 the ship has in operation an approved sewage treatment plant which has been certified by the Administration to meet the operational requirements referred to in regulation 9.1.1 of this Annex, and the effluent shall not produce visible floating solids nor cause discoloration of the surrounding water.

2 The provisions of paragraph 1 shall not apply to ships operating in the waters under the jurisdiction of a State and visiting ships from other States while they are in these waters and are discharging sewage in accordance with such less stringent requirements as may be imposed by such State.

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2 Refer to the [draft 2012] Guidelines on Implementation of Effluent Standards and Performance Tests for Sewage Treatment Plants adopted by the Marine Environment Protection Committee of the Organization by [resolution MEPC….].

3 Refer to the Recommendation on standards for the rate of discharge of untreated sewage from ships adopted by the Marine Environmental Protection Committee of the Organization by resolution MEPC.157(55).

B Discharge of sewage from passenger ships within a special area

3 Subject to the provisions of regulation 3 of this Annex, the discharge of sewage from a passenger ship within a special area shall be prohibited:

a) for new passenger ships on, or after 1 January 2016, subject to regulation 12*bis*, subparagraph 2; and

b) for existing passenger ships on, or after 1 January 2018, subject to regulation 12*bis*, subparagraph 2,

except when the following conditions are satisfied:

the ship has in operation an approved sewage treatment plant which has been certified by the Administration to meet the operational requirements referred to in regulation 9.2.1 of this Annex, and the effluent shall not produce visible floating solids nor cause discoloration of the surrounding water.

C General requirements

4 When the sewage is mixed with wastes or waste water covered by other Annexes of MARPOL, the requirements of those Annexes shall be complied with in addition to the requirements of this Annex."

4 *New regulation 12bis is added as follows*:

"**12*bis* Reception facilities for passenger ships in Special Areas**

.1 Each Party, the coastline of which borders a special area, undertakes to ensure that:

.1 facilities for the reception of sewage are provided in ports and terminals which are in a special area and which are used by passenger ships;

.2 the facilities are adequate to meet the needs of those passenger ships; and

.3 the facilities are operated so as not to cause undue delay to those passenger ships.

.2 The Government of each Party concerned shall notify the Organization of the measures taken pursuant to subparagraph .1 of this regulation. Upon receipt of sufficient notifications in accordance with subparagraph .1 the Organization shall establish a date from which the requirements of regulation 11.3 in respect of the area in question shall take effect. The Organization shall notify all Parties of the date so established no less than twelve months in advance of that date. Until the date so established, ships while navigating in the special area shall comply with the requirements of regulation 11.1 of this Annex."

AMENDMENTS TO THE
FORM OF INTERNATIONAL SEWAGE POLLUTION PREVENTION CERTIFICATE

1 *The following text is added under the heading "Particulars of ship"*:

Type of ship for the application of regulation 11.3:*

New/Existing passenger ship

Ship other than a passenger ship

2 *Amend paragraph *1.1. to read as follows*:

*1.1. Description of the sewage treatment plant:

Type of sewage treatment plant .....

Name of manufacturer .....

The sewage treatment plant is certified by the Administration to meet the effluent standards as provided for in resolution MEPC.2(VI).

The sewage treatment plant is certified by the Administration to meet the effluent standards as provided for in resolution MEPC.159(55).

The sewage treatment plant is certified by the Administration to meet the effluent standards as provided for in [resolution MEPC.…].§

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* Delete as appropriate.

§ The number of the MEPC resolution will be inserted when the standards have been adopted by the MEPC at a future session.

RESOLUTION MEPC.201(62)

Adopted on 15 July 2011

AMENDMENTS TO THE ANNEX OF THE PROTOCOL OF 1978 RELATING TO THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973

(Revised MARPOL Annex V)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution,

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention") and article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol") which together specify the amendment procedure of the 1978 Protocol and confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 Protocol (MARPOL 73/78),

HAVING CONSIDERED draft amendments to Annex V of MARPOL 73/78,

1. ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, the amendments to Annex V of MARPOL 73/78, the text of which is set out at annex to the present resolution;

2. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on 1 July 2012 unless, prior to that date, not less than one third of the Parties or Parties the combined merchant fleets of which constitute not less than 50 per cent of the gross tonnage of the world's merchant fleet, have communicated to the Organization their objection to the amendments;

3. INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, the said amendments shall enter into force on 1 January 2013 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to MARPOL 73/78 certified copies of the present resolution and the text of the amendments contained in the Annex;

5. REQUESTS FURTHER the Secretary-General to transmit to the Members of the Organization which are not Parties to MARPOL 73/78 copies of the present resolution and its Annex.

ANNEX

REVISED MARPOL ANNEX V

REGULATIONS FOR THE PREVENTION OF POLLUTION BY GARBAGE FROM SHIPS

Regulation 1
Definitions

For the purposes of this Annex:

1 *Animal carcasses* means the bodies of any animals that are carried on board as cargo and that die or are euthanized during the voyage.

2 *Cargo residues* means the remnants of any cargo which are not covered by other Annexes to the present Convention and which remain on the deck or in holds following loading or unloading, including loading and unloading excess or spillage, whether in wet or dry condition or entrained in wash water but does not include cargo dust remaining on the deck after sweeping or dust on the external surfaces of the ship.

3 *Cooking oil* means any type of edible oil or animal fat used or intended to be used for the preparation or cooking of food, but does not include the food itself that is prepared using these oils.

4 *Domestic wastes* means all types of wastes not covered by other Annexes that are generated in the accommodation spaces on board the ship. Domestic wastes does not include grey water.

5 *En route* means that the ship is underway at sea on a course or courses, including deviation from the shortest direct route, which as far as practicable for navigational purposes, will cause any discharge to be spread over as great an area of the sea as is reasonable and practicable.

6 *Fishing gear* means any physical device or part thereof or combination of items that may be placed on or in the water or on the sea-bed with the intended purpose of capturing, or controlling for subsequent capture or harvesting, marine or fresh water organisms.

7 *Fixed or floating platforms* means fixed or floating structures located at sea which are engaged in the exploration, exploitation or associated offshore processing of sea-bed mineral resources.

8 *Food wastes* means any spoiled or unspoiled food substances and includes fruits, vegetables, dairy products, poultry, meat products and food scraps generated aboard ship.

9 *Garbage* means all kinds of food wastes, domestic wastes and operational wastes, all plastics, cargo residues, cooking oil, fishing gear, and animal carcasses generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances which are defined or listed in other Annexes to the present Convention. Garbage does not include fresh fish and parts thereof generated as a result of fishing activities undertaken during the voyage, or as a result of aquaculture activities which involve the transport of fish

including shellfish for placement in the aquaculture facility and the transport of harvested fish including shellfish from such facilities to shore for processing.

10 *Incinerator ashes* means ash and clinkers resulting from shipboard incinerators used for the incineration of garbage.

11 *Nearest land.* The term "from the nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with international law, except that, for the purposes of the present Annex, "from the nearest land" off the north-eastern coast of Australia shall mean from a line drawn from a point on the coast of Australia in:

latitude 11°00´ S, longitude 142°08´ E
to a point in latitude 10°35´ S, longitude 141°55´ E,
thence to a point latitude 10°00´ S, longitude 142°00´ E,
thence to a point latitude 09°10´ S, longitude 143°52´ E,
thence to a point latitude 09°00´ S, longitude 144°30´ E,
thence to a point latitude 10°41´ S, longitude 145°00´ E,
thence to a point latitude 13°00´ S, longitude 145°00´ E,
thence to a point latitude 15°00´ S, longitude 146°00´ E,
thence to a point latitude 17°30´ S, longitude 147°00´ E,
thence to a point latitude 21°00´ S, longitude 152°55´ E,
thence to a point latitude 24°30´ S, longitude 154°00´ E,
thence to a point on the coast of Australia in
latitude 24°42´ S, longitude 153°15´ E.

12 *Operational wastes* means all solid wastes (including slurries) not covered by other Annexes that are collected on board during normal maintenance or operations of a ship, or used for cargo stowage and handling. Operational wastes also includes cleaning agents and additives contained in cargo hold and external wash water. Operational wastes does not include grey water, bilge water, or other similar discharges essential to the operation of a ship, taking into account the guidelines developed by the Organization.

13 *Plastic* means a solid material which contains as an essential ingredient one or more high molecular mass polymers and which is formed (shaped) during either manufacture of the polymer or the fabrication into a finished product by heat and/or pressure. Plastics have material properties ranging from hard and brittle to soft and elastic. For the purposes of this annex, "all plastics" means all garbage that consists of or includes plastic in any form, including synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products.

14 *Special area* means a sea area where for recognized technical reasons in relation to its oceanographic and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by garbage is required.

For the purposes of this Annex the special areas are the Mediterranean Sea area, the Baltic Sea area, the Black Sea area, the Red Sea area, the Gulfs area, the North Sea area, the Antarctic area and the Wider Caribbean Region, which are defined as follows:

.1 The Mediterranean Sea area means the Mediterranean Sea proper including the gulfs and seas therein with the boundary between the Mediterranean and the Black Sea constituted by the 41º N parallel and bounded to the west by the Straits of Gibraltar at the meridian 5°36´ W.

.2 The Baltic Sea area means the Baltic Sea proper with the Gulf of Bothnia and the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57º 44.8´ N.

.3 The Black Sea area means the Black Sea proper with the boundary between the Mediterranean and the Black Sea constituted by the parallel 41º N.

.4 The Red Sea area means the Red Sea proper including the Gulfs of Suez and Aqaba bounded at the south by the rhumb line between Ras si Ane (12º 28.5´ N, 43º 19.6´ E) and Husn Murad (12º 40.4´ N, 43º 30.2´ E).

.5 The Gulfs area means the sea area located north-west of the rhumb line between Ras al Hadd (22º 30´ N, 59º 48´ E) and Ras al Fasteh (25º 04´ N, 61º 25´ E).

.6 The North Sea area means the North Sea proper including seas therein with the boundary between:

.1 the North Sea southwards of latitude 62º N and eastwards of longitude 4º W;

.2 the Skagerrak, the southern limit of which is determined east of the Skaw by latitude 57º 44.8´ N; and

.3 the English Channel and its approaches eastwards of longitude 5º W and northwards of latitude 48º 30´ N.

.7 The Antarctic area means the sea area south of latitude 60º S.

.8 The Wider Caribbean Region means the Gulf of Mexico and Caribbean Sea proper including the bays and seas therein and that portion of the Atlantic Ocean within the boundary constituted by the 30° N parallel from Florida eastward to 77°30´ W meridian, thence a rhumb line to the intersection of 20° N parallel and 59° W meridian, thence a rhumb line to the intersection of 7°20' N parallel and 50° W meridian, thence a rhumb line drawn southwesterly to the eastern boundary of French Guiana.

Regulation 2
Application

Unless expressly provided otherwise, the provisions of this Annex shall apply to all ships.

Regulation 3
General prohibition on discharge of garbage into the sea

1 Discharge of all garbage into the sea is prohibited, except as provided otherwise in regulations 4, 5, 6 and 7 of this Annex.

2 Except as provided in regulation 7 of this Annex, discharge into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products is prohibited.

3 Except as provided in regulation 7 of this Annex, the discharge into the sea of cooking oil is prohibited.

Regulation 4
Discharge of garbage outside special areas

1 Subject to the provisions of regulations 5, 6, and 7 of this Annex, discharge of the following garbage into the sea outside special areas shall only be permitted while the ship is en route and as far as practicable from the nearest land, but in any case not less than:

.1 3 nautical miles from the nearest land for food wastes which have been passed through a comminuter or grinder. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 mm.

.2 12 nautical miles from the nearest land for food wastes that have not been treated in accordance with subparagraph .1 above.

.3 12 nautical miles from the nearest land for cargo residues that cannot be recovered using commonly available methods for unloading. These cargo residues shall not contain any substances classified as harmful to the marine environment, taking into account guidelines developed by the Organization.

.4 For animal carcasses, discharge shall occur as far from the nearest land as possible, taking into account the guidelines developed by the Organization.

2 Cleaning agents or additives contained in cargo hold, deck and external surfaces wash water may be discharged into the sea, but these substances must not be harmful to the marine environment, taking into account guidelines developed by the Organization.

3 When garbage is mixed with or contaminated by other substances prohibited from discharge or having different discharge requirements, the more stringent requirements shall apply.

Regulation 5
Special requirements for discharge of garbage from fixed or floating platforms

1 Subject to the provisions of paragraph 2 of this regulation, the discharge into the sea of any garbage is prohibited from fixed or floating platforms and from all other ships when alongside or within 500 m of such platforms.

2 Food wastes may be discharged into the sea from fixed or floating platforms located more than 12 nautical miles from the nearest land and from all other ships when alongside or within 500 m of such platforms, but only when the wastes have been passed through a comminuter or grinder. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 mm.

Regulation 6
Discharge of garbage within special areas

1 Discharge of the following garbage into the sea within special areas shall only be permitted while the ship is en route and as follows:

.1 Discharge into the sea of food wastes as far as practicable from the nearest land, but not less than 12 nautical miles from the nearest land or the nearest ice shelf. Food wastes shall be comminuted or ground and shall be capable

of passing through a screen with openings no greater than 25 mm. Food wastes shall not be contaminated by any other garbage type. Discharge of introduced avian products, including poultry and poultry parts, is not permitted in the Antarctic area unless it has been treated to be made sterile.

.2 Discharge of cargo residues that cannot be recovered using commonly available methods for unloading, where all the following conditions are satisfied:

.1 Cargo residues, cleaning agents or additives, contained in hold washing water do not include any substances classified as harmful to the marine environment, taking into account guidelines developed by the Organization;

.2 Both the port of departure and the next port of destination are within the special area and the ship will not transit outside the special area between those ports;

.3 No adequate reception facilities are available at those ports taking into account guidelines developed by the Organization; and

.4 Where the conditions of subparagraphs 2.1, 2.2 and 2.3 of this paragraph have been fulfilled, discharge of cargo hold washing water containing residues shall be made as far as practicable from the nearest land or the nearest ice shelf and not less than 12 nautical miles from the nearest land or the nearest ice shelf.

2 Cleaning agents or additives contained in deck and external surfaces wash water may be discharged into the sea, but only if these substances are not harmful to the marine environment, taking into account guidelines developed by the Organization.

3 The following rules (in addition to the rules in paragraph 1 of this regulation) apply with respect to the Antarctic area:

.1 Each Party at whose ports ships depart en route to or arrive from the Antarctic area undertakes to ensure that as soon as practicable adequate facilities are provided for the reception of all garbage from all ships, without causing undue delay, and according to the needs of the ships using them.

.2 Each Party shall ensure that all ships entitled to fly its flag, before entering the Antarctic area, have sufficient capacity on board for the retention of all garbage, while operating in the area and have concluded arrangements to discharge such garbage at a reception facility after leaving the area.

4 When garbage is mixed with or contaminated by other substances prohibited from discharge or having different discharge requirements, the more stringent requirements shall apply.

Regulation 7
Exceptions

1 Regulations 3, 4, 5 and 6 of this Annex shall not apply to:

.1 The discharge of garbage from a ship necessary for the purpose of securing the safety of a ship and those on board or saving life at sea; or

.2 The accidental loss of garbage resulting from damage to a ship or its equipment, provided that all reasonable precautions have been taken before and after the occurrence of the damage, to prevent or minimize the accidental loss; or

.3 The accidental loss of fishing gear from a ship provided that all reasonable precautions have been taken to prevent such loss; or

.4 The discharge of fishing gear from a ship for the protection of the marine environment or for the safety of that ship or its crew.

2 Exception of *en route*:

.1 The *en route* requirements of regulations 4 and 6 shall not apply to the discharge of food wastes where it is clear the retention on board of these food wastes presents an imminent health risk to the people on board.

Regulation 8
Reception facilities

1 Each Party undertakes to ensure the provision of adequate facilities at ports and terminals for the reception of garbage without causing undue delay to ships, and according to the needs of the ships using them.

2 Each Party shall notify the Organization for transmission to the Contracting Parties concerned of all cases where the facilities provided under this regulation are alleged to be inadequate.

3 Reception facilities within special areas

.1 Each Party, the coastline of which borders a special area, undertakes to ensure that as soon as possible, in all ports and terminals within the special area, adequate reception facilities are provided, taking into account the needs of ships operating in these areas.

.2 Each Party concerned shall notify the Organization of the measures taken pursuant to subparagraph 3.1 of this regulation. Upon receipt of sufficient notifications the Organization shall establish a date from which the requirements of regulation 6 of this Annex in respect of the area in question are to take effect. The Organization shall notify all Parties of the date so established no less than twelve months in advance of that date. Until the date so established, ships that are navigating in a special area shall comply with the requirements of regulation 4 of this Annex as regards discharges outside special areas.

Regulation 9
Port State control on operational requirements[1]

1 A ship when in a port or an offshore terminal 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 pollution by garbage.

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 10
Placards, garbage management plans[2] *and garbage record-keeping*

1 .1 Every ship of 12 m or more in length overall and fixed or floating platforms shall display placards which notify the crew and passengers of the discharge requirements of regulations 3, 4, 5 and 6 of this Annex, as applicable.

.2 The placards shall be written in the working language of the ship's crew and, for ships engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention, shall also be in English, French or Spanish.

2 Every ship of 100 gross tonnage and above, and every ship which is certified to carry 15 or more persons, and fixed or floating platforms shall carry a garbage management plan which the crew shall follow. This plan shall provide written procedures for minimizing, collecting, storing, processing and disposing of garbage, including the use of the equipment on board. It shall also designate the person or persons in charge of carrying out the plan. Such a plan shall be based on the guidelines developed by the Organization[2] and written in the working language of the crew.

3 Every ship of 400 gross tonnage and above and every ship which is certified to carry 15 or more persons engaged in voyages to ports or offshore terminals under the jurisdiction of another Party to the Convention and every fixed or floating platform shall be provided with a Garbage Record Book. The Garbage Record Book, whether as a part of the ship's official log-book or otherwise, shall be in the form specified in the appendix to this Annex:

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1 Refer to the Procedures for port State control adopted by the Organization by resolution A.787(19) and amended by A.882(21); see IMO sales publication IA650E.

2 Refer to the Guidelines for the development of garbage management plans adopted by the Marine Environment Protection Committee of the Organization by resolution MEPC.71(38); see MEPC/Circ.317 and IMO sales publication IA656E.

.1 Each discharge into the sea or to a reception facility, or a completed incineration, shall be promptly recorded in the Garbage Record Book and signed for on the date of the discharge or incineration by the officer in charge. Each completed page of the Garbage Record Book shall be signed by the master of the ship. The entries in the Garbage Record Book shall be at least in English, French or Spanish. Where the entries are also made in an official language of the State whose flag the ship is entitled to fly, the entries in that language shall prevail in case of a dispute or discrepancy;

.2 The entry for each discharge or incineration shall include date and time, position of the ship, category of the garbage and the estimated amount discharged or incinerated;

.3 The Garbage Record Book shall be kept on board the ship or the fixed or floating platform, and in such a place as to be readily available for inspection at all reasonable times. This document shall be preserved for a period of at least two years from the date of the last entry made in it;

.4 In the event of any discharge or accidental loss referred to in regulation 7 of this Annex an entry shall be made in the Garbage Record Book, or in the case of any ship of less than 400 gross tonnage, an entry shall be made in the ship's official log-book, of the location, circumstances of, and the reasons for the discharge or loss, details of the items discharged or lost, and the reasonable precautions taken to prevent or minimize such discharge or accidental loss.

4 The Administration may waive the requirements for Garbage Record Books for:

.1 Any ship engaged on voyages of one (1) hour or less in duration which is certified to carry 15 or more persons; or

.2 Fixed or floating platforms.

5 The competent authority of the Government of a Party to the Convention may inspect the Garbage Record Books or ship's official log–book on board any ship to which this regulation applies while the ship is in its ports or offshore terminals and may make a copy of any entry in those books, and may require the master of the ship to certify that the copy is a true copy of such an entry. Any copy so made, which has been certified by the master of the ship as a true copy of an entry in the ship's Garbage Record Book or ship's official log-book, shall be admissible in any judicial proceedings as evidence of the facts stated in the entry. The inspection of a Garbage Record Book or ship's official log-book and the taking of a certified copy by the competent authority under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

6 The accidental loss or discharge of fishing gear as provided for in regulations 7.1.3 and 7.1.3*bis* which poses a significant threat to the marine environment or navigation shall be reported to the State whose flag the ship is entitled to fly, and, where the loss or discharge occurs within waters subject to the jurisdiction of a coastal State, also to that coastal State.

APPENDIX

FORM OF GARBAGE RECORD BOOK

Name of ship: _____

Distinctive number or letters: _____

IMO No.: _____

Period:_____ From: _____ To: _____

1 Introduction

In accordance with regulation 10 of Annex V of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL), a record is to be kept of each discharge operation or completed incineration. This includes discharges into the sea, to reception facilities, or to other ships, as well as the accidental loss of garbage.

2 Garbage and garbage management

Garbage means all kinds of food wastes, domestic wastes and operational wastes, all plastics, cargo residues, cooking oil, fishing gear, and animal carcasses generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances which are defined or listed in other Annexes to the present Convention. Garbage does not include fresh fish and parts thereof generated as a result of fishing activities undertaken during the voyage, or as a result of aquaculture activities which involve the transport of fish including shellfish for placement in the aquaculture facility and the transport of harvested fish including shellfish from such facilities to shore for processing.

The Guidelines for the Implementation of Annex V of MARPOL[3] should also be referred to for relevant information.

3 Description of the garbage

Garbage is to be grouped into categories for the purposes of the Garbage Record Book (or ship's official log-book) as follows:

A Plastics

B Food wastes

C Domestic Wastes

D Cooking Oil

E Incinerator ashes

F Operational wastes

[3] Refer to the Guidelines for the Implementation of Annex V of MARPOL 73/78, as amended by resolutions.

G Cargo residues

H Animal Carcass(es)

I Fishing Gear[4]

4 Entries in the Garbage Record Book

4.1 Entries in the Garbage Record Book shall be made on each of the following occasions:

4.1.1 When garbage is discharged to a reception facility[5] ashore or to other ships:

.1 Date and time of discharge
.2 Port or facility, or name of ship
.3 Categories of garbage discharged
.4 Estimated amount discharged for each category in cubic metres
.5 Signature of officer in charge of the operation.

4.1.2 When garbage is incinerated:

.1 Date and time of start and stop of incineration
.2 Position of the ship (latitude and longitude) at the start and stop of incineration
.3 Categories of garbage incinerated
.4 Estimated amount incinerated in cubic metres
.5 Signature of the officer in charge of the operation.

4.1.3 When garbage is discharged into the sea in accordance with regulations 4, 5 or 6 of Annex V of MARPOL:

.1 Date and time of discharge
.2 Position of the ship (latitude and longitude). Note: for cargo residue discharges, include discharge start and stop positions.
.3 Category of garbage discharged
.4 Estimated amount discharged for each category in cubic metres
.5 Signature of the officer in charge of the operation.

4.1.4 Accidental or other exceptional discharges or loss of garbage into the sea, including in accordance with regulation 7 of Annex V of MARPOL:

.1 Date and time of occurrence
.2 Port or position of the ship at time of occurrence (latitude, longitude and water depth if known)
.3 Categories of garbage discharged or lost
.4 Estimated amount for each category in cubic metres
.5 The reason for the discharge or loss and general remarks.

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4 Refer to Guidelines to be developed by the Organization.

5 Ship's masters should obtain from the operator of the reception facilities, which includes barges and trucks, a receipt or certificate specifying the estimated amount of garbage transferred. The receipts or certificates must be kept together with the Garbage Record Book.

4.2 Amount of garbage

The amount of garbage on board should be estimated in cubic metres, if possible separately according to category. The Garbage Record Book contains many references to estimated amount of garbage. It is recognized that the accuracy of estimating amounts of garbage is left to interpretation. Volume estimates will differ before and after processing. Some processing procedures may not allow for a usable estimate of volume, e.g., the continuous processing of food waste. Such factors should be taken into consideration when making and interpreting entries made in a record.

RECORD OF GARBAGE DISCHARGES

Ship's name: _____

Distinctive No., or letters: _____

IMO No.: _____

Garbage categories:

A. Plastics
B. Food wastes
C. Domestic wastes (e.g., paper products, rags, glass, metal, bottles, crockery, etc.)
D. Cooking oil
E. Incinerator Ashes
F. Operational wastes
G. Cargo residues
H. Animal Carcass(es)
I. Fishing gear

NEW TABLE LAYOUT AS BELOW:

Date/ Time	Position of the Ship/Remarks (e.g., accidental loss)	Category	Estimated Amount Discharged or Incinerated	To Sea	To Reception Facility	Incineration	Certification/ Signature

Master's signature:_____ Date: _____

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RESOLUTION MEPC.202(62)

Adopted on 15 July 2011

AMENDMENTS TO THE ANNEX 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 RELATING THERETO

(Designation of the United States Caribbean Sea Emission Control Area and exemption of certain ships operating in the North American Emission Control Area and the United States Caribbean Sea Emission Control Area under regulations 13 and 14 and Appendix VII of MARPOL Annex VI)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution,

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention"), article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol") and article 4 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 relating thereto (hereinafter referred to as the "1997 Protocol"), which together specify the amendment procedure of the 1997 Protocol and confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 and 1997 Protocols,

NOTING ALSO that, by the 1997 Protocol, Annex VI entitled Regulations for the Prevention of Air Pollution from Ships was added to the 1973 Convention (hereinafter referred to as "Annex VI"),

NOTING FURTHER that the revised Annex VI was adopted by resolution MEPC.176(58) and entered into force on 1 July 2010,

HAVING CONSIDERED draft amendments to the revised Annex VI,

1. ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, the amendments to Annex VI, the text of which is set out at annex to the present resolution;

2. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on 1 July 2012, unless prior to that date, not less than one third of the Parties or Parties the combined merchant fleets of which constitute not less than 50 per cent of the gross tonnage of the world's merchant fleet, have communicated to the Organization their objection to the amendments;

3. INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, the said amendments shall enter into force on 1 January 2013 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to the 1973 Convention, as modified by the 1978 and 1997 Protocols, certified copies of the present resolution and the text of the amendments contained in the Annex;

5. REQUESTS FURTHER the Secretary-General to transmit to the Members of the Organization which are not Parties to the 1973 Convention, as modified by the 1978 and 1997 Protocols, copies of the present resolution and its Annex.

ANNEX

AMENDMENTS TO REGULATIONS 13 AND 14 AND APPENDIX VII OF THE REVISED MARPOL ANNEX VI

1 Paragraph 6 of regulation 13 is replaced by the following:

"6 For the purpose of this regulation, emission control areas shall be:

.1 the North American area, which means the area described by the coordinates provided in Appendix VII to this Annex;

.2 the United States Caribbean Sea area, which means the area described by the coordinates provided in Appendix VII to this Annex; and

.3 any other 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."

2 Paragraph 7.3 of regulation 13 is amended to read as follows:

"7.3 With regard to 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 paragraph 7.2 of this regulation."

3 Paragraph 3 of regulation 14 is replaced by the following:

"3 For the purpose of this regulation, emission control areas shall include:

.1 the Baltic Sea area as defined in regulation 1.11.2 of Annex I and the North Sea area as defined in regulation 1.12.6 of Annex V;

.2 the North American area as described by the coordinates provided in Appendix VII to this Annex;

.3 the United States Caribbean Sea area as described by the coordinates provided in Appendix VII to this Annex; and

.4 any other 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."

4 A new subparagraph 4 is added to paragraph 4 of regulation 14 to read as follows:

".4 Prior to 1 January 2020, the sulphur content of fuel oil referred to in paragraph 4 of this regulation shall not apply to ships operating in the North American area or the United States Caribbean Sea area defined in paragraph 3, built on or before 1 August 2011 that are powered by propulsion boilers that were not originally designed for continued operation on marine distillate fuel or natural gas."

5 Paragraph 7 of regulation 14 is replaced by the following:

"7 During the first twelve months immediately following entry into force of an amendment designating a specific emission control area under paragraph 3 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[1]."

[1] The 12 month exemption provided by paragraph 7 will apply for the North American emission control area until 1 August 2012.

The 12 month exemption provided by paragraph 7 will apply for the United States Caribbean Sea emission control area until 1 January 2014.

6 Appendix VII is amended as follows:

"***Appendix VII***
Emission Control Areas
(regulation 13.6 and regulation 14.3)

.1 The boundaries of emission control areas designated under regulations 13.6 and 14.3, other than the Baltic Sea and the North Sea areas, are set forth in this appendix.

.2 (Existing text for the North American area)

.3 The United States Caribbean Sea area includes:

.1 the sea area located off the Atlantic and Caribbean coasts of the Commonwealth of Puerto Rico and the United States Virgin Islands, enclosed by geodesic lines connecting the following coordinates:

POINT	LATITUDE	LONGITUDE
1	17º 18′ 37″ N.	67º 32′ 14″ W.
2	19º 11′ 14″ N.	67º 26′ 45″ W.
3	19º 30′ 28″ N.	65º 16′ 48″ W.
4	19º 12′ 25″ N.	65º 6′ 8″ W.
5	18º 45′ 13″ N.	65º 0′ 22″ W.
6	18º 41′ 14″ N.	64º 59′ 33″ W.
7	18º 29′ 22″ N.	64º 53′ 51″ W.
8	18º 27′ 35″ N.	64º 53′ 22″ W.
9	18º 25′ 21″ N.	64º 52′ 39″ W.
10	18º 24′ 30″ N.	64º 52′ 19″ W.
11	18º 23′ 51″ N.	64º 51′ 50″ W.
12	18º 23′ 42″ N.	64º 51′ 23″ W.
13	18º 23′ 36″ N.	64º 50′ 17″ W.
14	18º 23′ 48″ N.	64º 49′ 41″ W.
15	18º 24′ 11″ N.	64º 49′ 0″ W.
16	18º 24′ 28″ N.	64º 47′ 57″ W.
17	18º 24′ 18″ N.	64º 47′ 1″ W.
18	18º 23′ 13″ N.	64º 46′ 37″ W.
19	18º 22′ 37″ N.	64º 45′ 20″ W.
20	18º 22′ 39″ N.	64º 44′ 42″ W.
21	18º 22′ 42″ N.	64º 44′ 36″ W.
22	18º 22′ 37″ N.	64º 44′ 24″ W.
23	18º 22′ 39″ N.	64º 43′ 42″ W.
24	18º 22′ 30″ N.	64º 43′ 36″ W.
25	18º 22′ 25″ N.	64º 42′ 58″ W.
26	18º 22′ 26″ N.	64º 42′ 28″ W.
27	18º 22′ 15″ N.	64º 42′ 3″ W.
28	18º 22′ 22″ N.	64º 38′ 23″ W.
29	18º 21′ 57″ N.	64º 40′ 60″ W.
30	18º 21′ 51″ N.	64º 40′ 15″ W.
31	18º 21′ 22″ N.	64º 38′ 16″ W.
32	18º 20′ 39″ N.	64º 38′ 33″ W.
33	18º 19′ 15″ N.	64º 38′ 14″ W.
34	18º 19′ 7″ N.	64º 38′ 16″ W.
35	18º 17′ 23″ N.	64º 39′ 38″ W.
36	18º 16′ 43″ N.	64º 39′ 41″ W.
37	18º 11′ 33″ N.	64º 38′ 58″ W.
38	18º 3′ 2″ N.	64º 38′ 3″ W.
39	18º 2′ 56″ N.	64º 29′ 35″ W.
40	18º 2′ 51″ N.	64º 27′ 2″ W.
41	18º 2′ 30″ N.	64º 21′ 8″ W.
42	18º 2′ 31″ N.	64º 20′ 8″ W.
43	18º 2′ 3″ N.	64º 15′ 57″ W.
44	18º 0′ 12″ N.	64º 2′ 29″ W.
45	17º 59′ 58″ N.	64º 1′ 4″ W.
46	17º 58′ 47″ N.	63º 57′ 1″ W.
47	17º 57′ 51″ N.	63º 53′ 54″ W.
48	17º 56′ 38″ N.	63º 53′ 21″ W.
49	17º 39′ 40″ N.	63º 54′ 53″ W.
50	17º 37′ 8″ N.	63º 55′ 10″ W.
51	17º 30′ 21″ N.	63º 55′ 56″ W.
52	17º 11′ 36″ N.	63º 57′ 57″ W.
53	17º 4′ 60″ N.	63º 58′ 41″ W.
54	16º 59′ 49″ N.	63º 59′ 18″ W.
55	17º 18′ 37″ N.	67º 32′ 14″ W.

"

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RESOLUTION MEPC.203(62)

Adopted on 15 July 2011

AMENDMENTS TO THE ANNEX 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 RELATING THERETO

(Inclusion of regulations on energy efficiency for ships in MARPOL Annex VI)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution,

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention"), article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol") and article 4 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 relating thereto (hereinafter referred to as the "1997 Protocol"), which together specify the amendment procedure of the 1997 Protocol and confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 and 1997 Protocols,

NOTING ALSO that, by the 1997 Protocol, Annex VI entitled Regulations for the Prevention of Air Pollution from Ships was added to the 1973 Convention (hereinafter referred to as "Annex VI"),

NOTING FURTHER that the revised Annex VI was adopted by resolution MEPC.176(58) and entered into force on 1 July 2010,

RECOGNIZING that the amendments to Annex VI and inclusion of a new chapter 4 intend to improve energy efficiency for ships through a set of technical performance standards, which would result in reduction of emissions of any substances that originate from fuel oil and its combustion process, including those already controlled by Annex VI,

RECOGNIZING ALSO that adoption of the amendments to Annex VI in no way prejudges the negotiations held in other international fora, such as the United Nations Framework Convention on Climate Change (UNFCCC), nor affect the positions of the countries that participate in such negotiation,

HAVING CONSIDERED draft amendments to the revised Annex VI for inclusion of regulations on energy efficiency for ships,

1. ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, the amendments to Annex VI, the text of which is set out in the annex to the present resolution;

2. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on 1 July 2012, unless prior to that date, not less than one third of the Parties or Parties the combined merchant fleets of which constitute not less than 50 per cent of the gross tonnage of the world's merchant fleet, have communicated to the Organization their objection to the amendments;

3. INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, the said amendments shall enter into force on 1 January 2013 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to the 1973 Convention, as modified by the 1978 and 1997 Protocols, certified copies of the present resolution and the text of the amendments contained in the Annex;

5. REQUESTS FURTHER the Secretary-General to transmit to the Members of the Organization which are not Parties to the 1973 Convention, as modified by the 1978 and 1997 Protocols, copies of the present resolution and its Annex; and

6. INVITES the Parties to MARPOL Annex VI and other Member Governments to bring the amendments to MARPOL Annex VI to the attention of shipowners, ship operators, shipbuilders, ship designers, marine diesel engine and equipment manufacturers as well as any other interested groups.

ANNEX

AMENDMENTS TO MARPOL ANNEX VI ON REGULATIONS FOR THE PREVENTION OF AIR POLLUTION FROM SHIPS BY INCLUSION OF NEW REGULATIONS ON ENERGY EFFICIENCY FOR SHIPS

CHAPTER 1

GENERAL

Regulation 1

Application

1 The regulation is amended as follows:

"The provisions of this Annex shall apply to all ships, except where expressly provided otherwise in regulations 3, 5, 6, 13, 15, 16, 18, 19, 20, 21, 22 and 23 of this Annex."

Regulation 2

Definitions

2 Paragraph 21 is amended as follows:

"21 *Tanker* in relation to regulation 15 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."

3 The following is added at the end of regulation 2:

"For the purpose of chapter 4:

22 "Existing ship" means a ship which is not a new ship.

23 "New ship" means a ship:

.1 for which the building contract is placed on or after 1 January 2013; or

.2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 July 2013; or

.3 the delivery of which is on or after 1 July 2015.

24 "Major Conversion" means in relation to chapter 4 a conversion of a ship:

.1 which substantially alters the dimensions, carrying capacity or engine power of the ship; or

.2 which changes the type of the ship; or

.3 the intent of which in the opinion of the Administration is substantially to prolong the life of the ship; or

.4 which otherwise so alters the ship that, if it were a new ship, it would become subject to relevant provisions of the present Convention not applicable to it as an existing ship; or

.5 which substantially alters the energy efficiency of the ship and includes any modifications that could cause the ship to exceed the applicable required EEDI as set out in regulation 21.

25 "Bulk carrier" means a ship which is intended primarily to carry dry cargo in bulk, including such types as ore carriers as defined in SOLAS chapter XII, regulation 1, but excluding combination carriers.

26 "Gas carrier" means a cargo ship constructed or adapted and used for the carriage in bulk of any liquefied gas.

27 "Tanker" in relation to chapter 4 means an oil tanker as defined in MARPOL Annex I, regulation 1 or a chemical tanker or an NLS tanker as defined in MARPOL Annex II, regulation 1.

28 "Container ship" means a ship designed exclusively for the carriage of containers in holds and on deck.

29 "General cargo ship" means a ship with a multi-deck or single deck hull designed primarily for the carriage of general cargo. This definition excludes specialized dry cargo ships, which are not included in the calculation of reference lines for general cargo ships, namely livestock carrier, barge carrier, heavy load carrier, yacht carrier, nuclear fuel carrier.

30 "Refrigerated cargo carrier" means a ship designed exclusively for the carriage of refrigerated cargoes in holds.

31 "Combination carrier" means a ship designed to load 100% deadweight with both liquid and dry cargo in bulk.

32 "Passenger ship" means a ship which carries more than 12 passengers.

33 "Ro-ro cargo ship (vehicle carrier)" means a multi deck roll-on-roll-off cargo ship designed for the carriage of empty cars and trucks.

34 "Ro-ro cargo ship" means a ship designed for the carriage of roll-on-roll-off cargo transportation units.

35 "Ro-ro passenger ship" means a passenger ship with roll-on-roll-off cargo spaces.

36 "Attained EEDI" is the EEDI value achieved by an individual ship in accordance with regulation 20 of chapter 4.

37 "Required EEDI" is the maximum value of attained EEDI that is allowed by regulation 21 of chapter 4 for the specific ship type and size."

CHAPTER 2

SURVEY, CERTIFICATION AND MEANS OF CONTROL

Regulation 5

Surveys

4 Paragraph 1 is amended as follows:

"1 Every ship of 400 gross tonnage and above and every fixed and floating drilling rig and other platforms shall to ensure compliance with chapter 3 be subject to the surveys specified below:

.1 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 chapter 3;

.2 A 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 chapter 3;

.3 An intermediate survey within three months before or after the second anniversary date or within three months before or after the third anniversary date of the certificate which shall take the place of one of the annual surveys specified in 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 chapter 3 and are in good working order. Such intermediate surveys shall be endorsed on the IAPP Certificate issued under regulation 6 or 7 of this Annex;

.4 An 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 5 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 IAPP Certificate issued under regulation 6 or 7 of this Annex; and

.5 An 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 5 of this regulation or after a repair resulting from investigations prescribed in paragraph 6 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 chapter 3."

5 Paragraph 2 is amended as follows:

"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 chapter 3 are complied with."

6 A new paragraph 4 is added after existing paragraph 3 as follows:

"4 Ships to which chapter 4 applies shall also be subject to the surveys specified below, taking into account Guidelines adopted by the Organization[1]:

.1 An initial survey before a new ship is put in service and before the International Energy Efficiency Certificate is issued. The survey shall verify that the ship's attained EEDI is in accordance with the requirements in chapter 4, and that the SEEMP required by regulation 22 is on board;

.2 A general or partial survey, according to the circumstances, after a major conversion of a ship to which this regulation applies. The survey shall ensure that the attained EEDI is recalculated as necessary and meets the requirement of regulation 21, with the reduction factor applicable to the ship type and size of the converted ship in the phase corresponding to the date of contract or keel laying or delivery determined for the original ship in accordance with regulation 2.23;

.3 In cases where the major conversion of a new or existing ship is so extensive that the ship is regarded by the Administration as a newly constructed ship, the Administration shall determine the necessity of an initial survey on attained EEDI. Such a survey, if determined necessary, shall ensure that the attained EEDI is calculated and meets the requirement of regulation 21, with the reduction factor applicable corresponding to the ship type and size of the converted ship at the date of the contract of the conversion, or in the absence of a contract, the commencement date of the conversion. The survey shall also verify that the SEEMP required by regulation 22 is on board; and

.4 For existing ships, the verification of the requirement to have a SEEMP on board according to regulation 22 shall take place at the first intermediate or renewal survey identified in paragraph 1 of this regulation, whichever is the first, on or after 1 January 2013."

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[1] Refer to Guidelines on Survey and Certification of the Energy Efficiency Design Index.

7 Paragraph 4 is renumbered paragraph 5.

8 Paragraph 5 is renumbered paragraph 6.

Regulation 6

Issue or endorsement of a Certificate

9 The heading is amended as follows:

"***Issue or endorsement of Certificates***"

10 The following sub-heading is added at the beginning of the regulation:

"International Air Pollution Prevention Certificate"

11 Paragraph 2 is amended as follows:

"2 A ship constructed before the date Annex VI enters into force for that particular 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."

12 The following is added at the end of the regulation:

"International Energy Efficiency Certificate

4 An International Energy Efficiency Certificate for the ship shall be issued after a survey in accordance with the provisions of regulation 5.4 to any ship of 400 gross tonnage and above before that ship may engage in voyages to ports or offshore terminals under the jurisdiction of other Parties.

5 The certificate shall be issued or endorsed either by the Administration or any organization duly authorized by it[2]. In every case, the Administration assumes full responsibility for the certificate."

Regulation 7

Issue of a Certificate by another Party

13 Paragraph 1 is amended as follows:

"1 A Party may, at the request of the Administration, cause a ship to be surveyed and, if satisfied that the applicable provisions of this Annex are complied with, shall issue or authorize the issuance of an International Air Pollution Prevention Certificate or an International Energy Efficiency Certificate to the ship,

[2] 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.

and where appropriate, endorse or authorize the endorsement of such certificates on the ship, in accordance with this Annex."

14 Paragraph 4 is amended as follows:

"4 No International Air Pollution Prevention Certificate or International Energy Efficiency 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

15 The heading is amended as follows:

"***Form of Certificates***"

16 The following subheading is added, and the existing regulation is renumbered as paragraph 1:

"International Air Pollution Prevention Certificate"

17 The following new paragraph 2 is added at the end of the regulation:

"International Energy Efficiency Certificate

2 The International Energy Efficiency Certificate shall be drawn up in a form corresponding to the model given in appendix VIII to this Annex and shall be at least in English, French or Spanish. If an official language of the issuing Party is also used, this shall prevail in case of a dispute or discrepancy."

Regulation 9

Duration and Validity of Certificate

18 The heading is amended as follows:

"***Duration and Validity of Certificates***"

19 The following subheading is added at the beginning of the regulation:

"International Air Pollution Prevention Certificate"

20 The following is added at the end of the regulation:

"International Energy Efficiency Certificate

10 The International Energy Efficiency Certificate shall be valid throughout the life of the ship subject to the provisions of paragraph 11 below.

11 An International Energy Efficiency Certificate issued under this Annex shall cease to be valid in any of the following cases:

.1 if the ship is withdrawn from service or if a new certificate is issued following major conversion of the ship; or

.2 upon transfer of the ship to the flag of another State. 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 chapter 4. 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

21 A new paragraph 5 is added at the end of the regulation as follows:

"5 In relation to chapter 4, any port State inspection shall be limited to verifying, when appropriate, that there is a valid International Energy Efficiency Certificate on board, in accordance with article 5 of the Convention."

22 A new chapter 4 is added at the end of the Annex as follows:

"**CHAPTER 4**

REGULATIONS ON ENERGY EFFICIENCY FOR SHIPS

Regulation 19

Application

1 This chapter shall apply to all ships of 400 gross tonnage and above.

2 The provisions of this chapter shall not apply to:

.1 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. However, each Party should ensure, by the adoption of appropriate measures, that such ships are constructed and act in a manner consistent with chapter 4, so far as is reasonable and practicable.

3 Regulation 20 and regulation 21 shall not apply to ships which have diesel-electric propulsion, turbine propulsion or hybrid propulsion systems.

4 Notwithstanding the provisions of paragraph 1 of this regulation, the Administration may waive the requirement for a ship of 400 gross tonnage and above from complying with regulation 20 and regulation 21.

5 The provision of paragraph 4 of this regulation shall not apply to ships of 400 gross tonnage and above:

.1 for which the building contract is placed on or after 1 January 2017; or

.2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 July 2017; or

.3 the delivery of which is on or after 1 July 2019; or

.4 in cases of a major conversion of a new or existing ship, as defined in regulation 2.24, on or after 1 January 2017, and in which regulation 5.4.2 and regulation 5.4.3 of chapter 2 apply.

6 The Administration of a Party to the present Convention which allows application of paragraph 4, or suspends, withdraws or declines the application of that paragraph, to a ship entitled to fly its flag shall forthwith communicate to the Organization for circulation to the Parties to the present Protocol particulars thereof, for their information.

Regulation 20

Attained Energy Efficiency Design Index (Attained EEDI)

1 The attained EEDI shall be calculated for:

.1 each new ship;

.2 each new ship which has undergone a major conversion; and

.3 each new or existing ship which has undergone a major conversion, that is so extensive that the ship is regarded by the Administration as a newly constructed ship

which falls into one or more of the categories in regulations 2.25 to 2.35. The attained EEDI shall be specific to each ship and shall indicate the estimated performance of the ship in terms of energy efficiency, and be accompanied by the EEDI technical file that contains the information necessary for the calculation of the attained EEDI and that shows the process of calculation. The attained EEDI shall be verified, based on the EEDI technical file, either by the Administration or by any organization[3] duly authorized by it.

2 The attained EEDI shall be calculated taking into account guidelines[4] developed by the Organization.

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[3] 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.

[4] Guidelines on the method of calculation of the Energy Efficiency Design Index for new ships.

Regulation 21

Required EEDI

1 For each:

.1 new ship;

.2 new ship which has undergone a major conversion; and

.3 new or existing ship which has undergone a major conversion that is so extensive that the ship is regarded by the Administration as a newly constructed ship

which falls into one of the categories defined in regulation 2.25 to 2.31 and to which this chapter is applicable, the attained EEDI shall be as follows:

$$\text{Attained EEDI} \leqq \text{Required EEDI} = (1\text{-}X/100) \times \text{Reference line value}$$

where X is the reduction factor specified in Table 1 for the required EEDI compared to the EEDI Reference line.

2 For each new and existing ship that has undergone a major conversion which is so extensive that the ship is regarded by the Administration as a newly constructed ship, the attained EEDI shall be calculated and meet the requirement of paragraph 21.1 with the reduction factor applicable corresponding to the ship type and size of the converted ship at the date of the contract of the conversion, or in the absence of a contract, the commencement date of the conversion.

Table 1. Reduction factors (in percentage) for the EEDI relative to the EEDI Reference line

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

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

* Reduction factor to be linearly interpolated between the two values dependent upon vessel size. The lower value of the reduction factor is to be applied to the smaller ship size.

n/a means that no required EEDI applies.

3 The Reference line values shall be calculated as follows:

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

where a, b and c are the parameters given in Table 2.

Table 2. Parameters for determination of reference values for the different ship types

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

4 If the design of a ship allows it to fall into more than one of the above ship type definitions, the required EEDI for the ship shall be the most stringent (the lowest) required EEDI.

5 For each ship to which this regulation applies, the installed propulsion power shall not be less than the propulsion power needed to maintain the manoeuvrability of the ship under adverse conditions as defined in the guidelines to be developed by the Organization.

6 At the beginning of Phase 1 and at the midpoint of Phase 2, the Organization shall review the status of technological developments and, if proven necessary, amend the time periods, the EEDI reference line parameters for relevant ship types and reduction rates set out in this regulation.

Regulation 22

Ship Energy Efficiency Management Plan (SEEMP)

1 Each ship shall keep on board a ship specific Ship Energy Efficiency Management Plan (SEEMP). This may form part of the ship's Safety Management System (SMS).

2 The SEEMP shall be developed taking into account guidelines adopted by the Organization.

Regulation 23

Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships

1 Administrations shall, in co-operation with the Organization and other international bodies, promote and provide, as appropriate, support directly or through the Organization to States, especially developing States, that request technical assistance.

2 The Administration of a Party shall co-operate actively with other Parties, subject to its national laws, regulations and policies, to promote the development and transfer of technology and exchange of information to States which request technical assistance, particularly developing States, in respect of the implementation of measures to fulfil the requirements of chapter 4 of this annex, in particular regulations 19.4 to 19.6."

23 A new appendix VIII is added at the end of the Annex as follows:

"APPENDIX VIII

Form of International Energy Efficiency (IEE) Certificate

INTERNATIONAL ENERGY EFFICIENCY CERTIFICATE

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

.....
(Full designation of the Party)

by .....
(Full designation of the competent person or organization
authorized under the provisions of the Convention)

Particulars of ship[5]

Name of ship .....

Distinctive number or letters .....

Port of registry .....

Gross tonnage .....

IMO Number[6] .....

THIS IS TO CERTIFY:

1 That the ship has been surveyed in accordance with regulation 5.4 of Annex VI of the Convention; and

2 That the survey shows that the ship complies with the applicable requirements in regulation 20, regulation 21 and regulation 22.

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

Issued at .....
(Place of issue of certificate)

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

(Seal or stamp of the authority, as appropriate)

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

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

Supplement to the International Energy Efficiency Certificate (IEE Certificate)

RECORD OF CONSTRUCTION RELATING TO ENERGY EFFICIENCY

Notes:

1 This Record shall be permanently attached to the IEE Certificate. The IEE Certificate shall be available on board the ship at all times.

2 The Record shall be at least in English, French or Spanish. If an official language of the issuing Party is also used, this shall prevail in case of a dispute or discrepancy.

3 Entries in boxes shall be made by inserting either: a cross (x) for the answers "yes" and "applicable"; or a dash (-) for the answers "no" and "not applicable", as appropriate.

4 Unless otherwise stated, regulations mentioned in this Record refer to regulations in Annex VI of the Convention, and resolutions or circulars refer to those adopted by the International Maritime Organization.

1 Particulars of ship

1.1 Name of ship .....

1.2 IMO number .....

1.3 Date of building contract .....

1.4 Gross tonnage .....

1.5 Deadweight .....

1.6 Type of ship* .....

2 Propulsion system

2.1 Diesel propulsion ..... ☐

2.2 Diesel-electric propulsion ..... ☐

2.3 Turbine propulsion ..... ☐

2.4 Hybrid propulsion ..... ☐

2.5 Propulsion system other than any of the above ..... ☐

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

3 Attained Energy Efficiency Design Index (EEDI)

3.1 The Attained EEDI in accordance with regulation 20.1 is calculated based on the information contained in the EEDI technical file which also shows the process of calculating the Attained EEDI. …. .....☐

The Attained EEDI is: ..... grams-CO_2/tonne-mile

3.2 The Attained EEDI is not calculated as:

3.2.1 the ship is exempt under regulation 20.1 as it is not a new ship as defined in regulation 2.23 ..... ☐

3.2.2 the type of propulsion system is exempt in accordance with regulation 19.3 …. .....☐

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

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

4 Required EEDI

4.1 Required EEDI is: ..... grams-CO_2/tonne-mile

4.2 The required EEDI is not applicable as:

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

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

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

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

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

5 Ship Energy Efficiency Management Plan

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

6 EEDI technical file

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

6.2 The EEDI technical file identification/verification number .....

6.3 The EEDI technical file verification date .....

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

Issued at .....
(Place of issue of the Record)

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

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

***

RESOLUTION MEPC.204(62)

Adopted on 15 July 2011

DESIGNATION OF THE STRAIT OF BONIFACIO AS A PARTICULARLY SENSITIVE SEA AREA

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

BEING AWARE of the ecological, socio-economic and scientific attributes of the Strait of Bonifacio, as well as its vulnerability to damage by international shipping activities and the steps taken by France and Italy to address that vulnerability,

NOTING the Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas adopted by resolution A.982(24) (PSSA Guidelines) and the Revised Guidance Document for Submission of PSSA Proposals to IMO set forth in MEPC.1/Circ.510,

HAVING CONSIDERED the proposal made by the Governments of France and Italy that the Strait of Bonifacio be designated as a Particularly Sensitive Sea Area,

HAVING AGREED that the criteria for the identification and designation of a Particularly Sensitive Sea Area provided in resolution A.982(24) are fulfilled for the Strait of Bonifacio,

HAVING NOTED that the Sub-Committee on Safety of Navigation, at its fifty-seventh session, approved the Recommendation on navigation through the Strait of Bonifacio as an associated protective measure for the application of the Strait of Bonifacio as a Particularly Sensitive Sea Area aiming at improving the safety of navigation and the protection of the marine environment,

1. DESIGNATES the Strait of Bonifacio described in annex 1 as a Particularly Sensitive Sea Area pending the final adoption of the associated protective measure for the PSSA, as set out in annex 2 to document NAV 57/15;

2. INVITES Member Governments to recognize the ecological, socio-economic, and scientific attributes of the area, set forth in annex 2, as well as its vulnerability to damage by international shipping activities, as described in annex 3; and

3. FURTHER INVITES Member Governments to note the associated protective measure established to address the area's vulnerability, the details of which are contained in annex 4, which is expected to enter into force following final adoption on a date to be circulated by the Organization to all Member Government, and request ships flying their flag that they act in accordance with such measures.

ANNEX 1

DESCRIPTION OF THE STRAIT OF BONIFACIO PSSA*

Description of the Particularly Sensitive Sea Area for the Strait of Bonifacio

To avoid the risk of damage from ship groundings and pollution damage by international shipping activities and the destruction and degradation of this unique, diverse, and significant habitats and ecosystem, mariners should exercise extreme care when navigating in the area bounded by a line connecting the following geographical positions which is designated as a Particularly Sensitive Sea Area:

- To the north: a line linking point 41° 45' 00" N – 008° 01' 48" E to point 41° 45' 00" N – 009° 48' 30" E passing the French coast (Cap Muro to the west and Anse de Tarcu to the east);

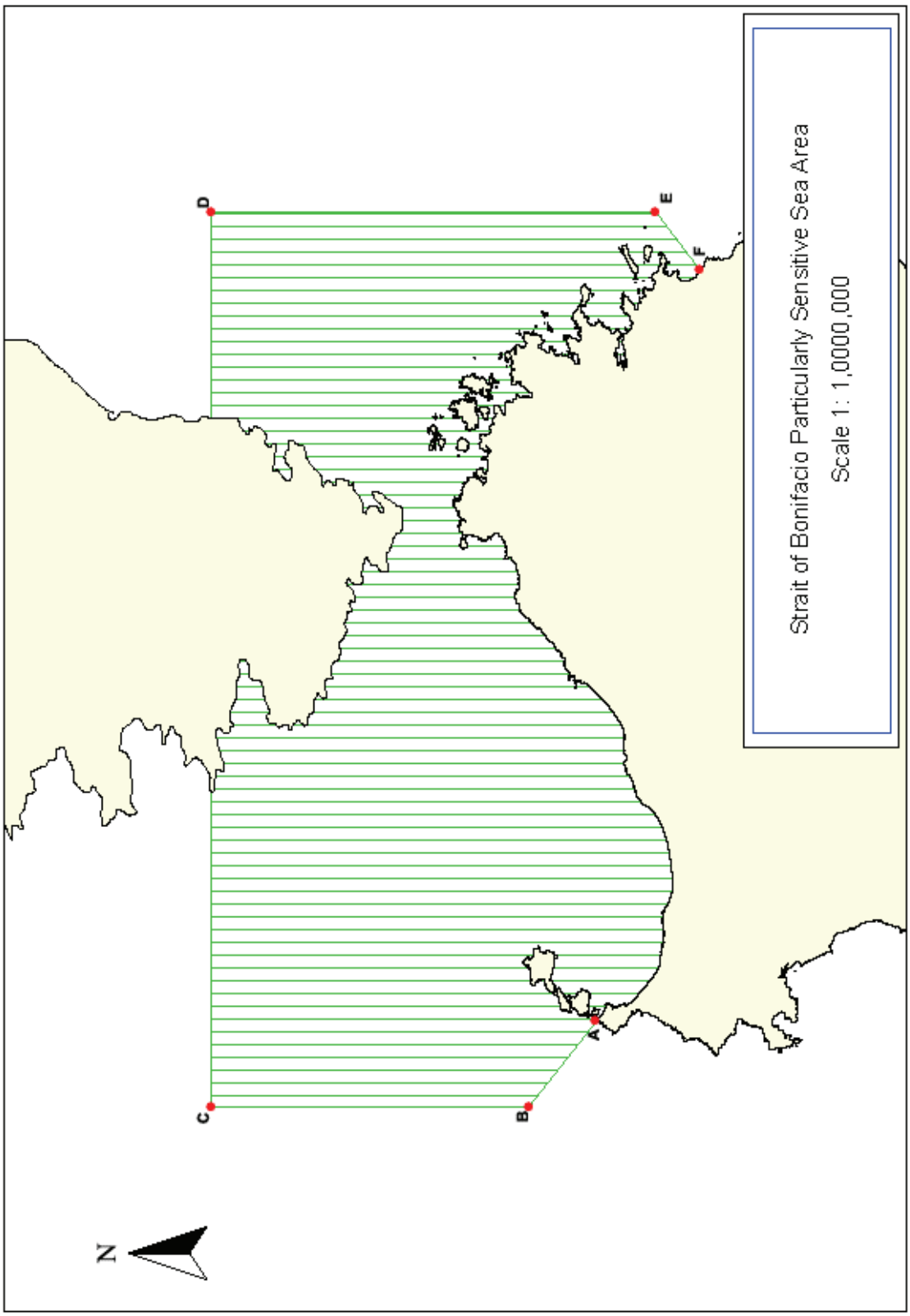
- On the western side: a line linking points 41° 45' 00" N – 008° 01' 48" E; 41° 06' 36" N – 008° 01' 48" E and 40° 58' 00" N – 008° 12' 00" E on the Italian coast; and

- On the eastern side, a line linking points 41° 45' 00" N – 009° 48' 30" E; 40° 41' 08" N – 009° 48' 30" E and 40° 45' 56" N – 009° 41' 42" E on the Italian coast to the south.

The Particularly Sensitive Sea Area is bounded by the points A, B, C, D, E, and F as set out in the chartlet below.

* The text in this annex is taken from the submission by France and Italy contained in documents MEPC 61/9 and MEPC 61/INF.26.

CHARTLET


Strait of Bonifacio Particularly Sensitive Sea Area
Scale 1: 1,0000,000
D
E
F
A
B
C
N

ANNEX 2

ECOLOGICAL, SOCIO-ECONOMIC, AND SCIENTIFIC ATTRIBUTES OF THE STRAIT OF BONIFACIO PSSA*

1 Ecological criteria

1.1 The ecological significance of the Strait of Bonifacio region was internationally recognized when it was granted the status of specially protected area of Mediterranean importance (SPAMI) at the sixteenth session of the Conference of Contracting Parties to the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution, which took place from 3 to 5 November 2009 in Marrakesh.

1.2 The ecological significance of the French part of the Strait of Bonifacio is recognized by a number of official listings involving a total of 104,000 ha of mainly marine environment:

- Listing as a nature reserve by a decree of 23 September 1999 (80,000 ha);

- Listing as a Natura 2000 site, these being a network of European Union areas which, owing to their great environmental value, need the protection of States:

  - a special protection area under directive No. 79/409/EEC (Birds), "Lavezzi Islands, Strait of Bonifacio", covering 98, 941 ha, designated by inter-ministerial decree of 30 October 2008;

  - three sites of Community importance under directive 92/43/EEC (Habitat) concerning the conservation of natural habitats and wild fauna and flora:

    Strait of Bonifacio, Monk Islands (94, 612 ha);
    Cerbical Islands and coastal strip (3,698 ha);
    Pertusato/Bonifacio plateau and Lavezzi Islands (6,071 ha).

1.3 The ecological significance of the Italian part of the Strait of Bonifacio is recognized by several listings, as follows:

The La Maddalena archipelago national park, by decree of the President of the Republic dated 17 May 1996, covering 5,100 ha on land and 15,046 ha at sea;

The Asinara national park, by decree of the President of the Republic dated 13 October 2002, covering 5,170 ha on land;

The Isola Asinara protected marine area, by ministerial decree of 12 August 2002, covering 10,732 ha at sea;

The Tavolara Punta Coda Cavallo protected marine area, by ministerial decree of 12 December 1997, amended by ministerial decree of 28 November 2001, covering 15,357 ha;

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* The text in this annex is taken from the submission by France and Italy contained in documents MEPC 61/9 and MEPC 61/INF.26.

Listings of Natura 2000 sites, as follows:

Six special protection areas under directive No. 79/409/EEC (Birds):

Isola Asinara (9,669 ha)
Isola Piana – Golfo dell'Asinara (399 ha)
Stagno di Pilo, Casaraccio e Saline di Stintino (1,290 ha)
Arcipelago La Maddalena (20,955 ha)
Isole del Nord-Est tra Capo Ceraso e Stagno di San Teodoro (18,174 ha)
Capo Figari, Cala Sabina, Punta Canigione e Isola Figarolo (4,053 ha)

Twelve sites of Community significance under directive No. 92/43/EEC (Habitat), in connection with the conservation of natural habitats and wild fauna and flora:

Coste e Isolette a Nord Ovest della Sardegna (3, 731 ha)
Isola Asinara (9,669 ha)
Isola Piana (510 ha)
Stagno di Pilo e di Casaraccio (1,879 ha)
Stagno e ginepreto di Platamona (1,618 ha)
Foci del Coghinas (2, 267 ha)
Isola Rossa – Costa Paradiso (5,409 ha)
Monte Russu (1,971 ha)
Capo Testa (1,217 ha)
Arcipelago La Maddalena (20,955 ha)
Isola Tavolara, Molara e Molarotto (3,764 ha)
Capo Figari e Isola Figarolo (851 ha).

1.4 The European Commission approved the above-mentioned list of sites of Community importance by its decision of 22 December 2009 in relation to the Mediterranean biogeographical region enforceable under Directive No. 92/43/EEC.

1.5 The following information is taken from the declaration forms of the Natura 2000 sites mentioned above and from the biological evaluation of the Strait of Bonifacio nature reserve for the 2007-2011 management plan.

1.6 This sector is also covered by the Pelagos Agreement for the Creation of a Mediterranean Sanctuary for Marine Mammals, signed in Rome on 25 November 1999 by France, Italy and the Principality of Monaco. The aim of the agreement is to maintain a level of conservation beneficial to marine mammal populations, and to that end monitor the cetacean populations, strengthen the application of the existing external legislation for certain types of fishing and to reduce pollution, regulate the numbers of tourists who come to observe cetaceans, and improve the information provided for the public. The bottlenose dolphin is a regular visitor to the edges of this area.

1.7 The exceptional ecological wealth of the area comprises a wide range of marine environments, including:

- inclines and rocky shallows harbouring varied fauna and flora;

- well preserved Posidonia beds;

- near Figari, a rare estuary system in which areas emerge at low tide on the island.

1.8 Species and habitats whose rarity or significance are recognized at national, Community or international level find the environmental conditions ideal here.

Uniqueness or rarity

1.9 The Strait of Bonifacio area contains 37 per cent of species of Mediterranean importance (SPAMI Annex II and III, Barcelona Convention). The flora includes some 15 endemic species (Corsican or Corsican-Sardinian or Corsican/Sardinian/ Balearic), with one endemic to the island of Lavezzu.

1.10 The area contains between 40 and 50 per cent of the sites for *Silene velutina*, a small endemic flower whose distribution is limited to the extreme south of Corsica and the north of Sardinia. Another protected plant belonging to the first rank in terms of floral heritage is *Limonium lambinonii*, which is endemic to Lavezzu island.

1.11 The leatherback turtle has not been seen here since the 1960s, but the loggerhead turtle has been spotted more regularly in the Strait of Bonifacio in the past decade. In October 2001 its nests were even discovered on the beaches of Palombaggia, south of the Cerbicale archipelago.

1.12 While the alga *Goniolothon byssoides* is difficult not to notice, sightings are very rare. It appears to be vulnerable, given the small number of sites where it can be found. Also, its pads detach very easily, making it highly vulnerable to trampling by fishermen and swimmers (Boudouresque *et al*., 1990). Verlaque (1991) noted its presence around the Lavezzi Islands.

Critical habitat

1.13 This area offers great potential for the conservation of a large number of nationally important habitats and species. Certain species (the European shag, the giant limpet *Patella ferruginea*) are present in numbers which provide the nucleus of genetically stable populations that may be considered source populations capable of providing the starting point for colonization (natural or artificial) of potential habitats, to differing degrees, depending on the manner in which the larvae and individual representatives of those species are distributed. This area of the Strait of Bonifacio is thus of vital importance for declining populations or small sub-populations of species. For example, conservation of the national gene pool of threatened meta-populations of species such as the giant limpet could allow it to be reintroduced into areas of the Mediterranean where it is now extinct.

1.14 The care of this area is also very important to marine avifauna. This is a major site for the European shag (*Phalacrocorax aristotelis aristotelis*) and for sizeable numbers of Cory's shearwater (*Calonectris diomedea*). The Strait of Bonifacio is also a main point for the passage, roosting and feeding of the Yelkouan shearwater. The whole area is a feeding ground for these species.

1.15 The European shag population does not exceed 10,000 pairs across the whole of its small area of distribution in the Mediterranean. The Strait of Bonifacio has high priority in the conservation of this species. In 2001, the nesting population of the Strait of Bonifacio represented more than 50 per cent of the French population and 7 per cent of the world population. The main problems for this species are disturbance to nesting sites, accidental capture during small-scale fishing and the disappearance of habitats owing to the expansion of tourism.

1.16 The nesting population of Cory's shearwater accounts for 40 per cent of the national nesting total. With 345 pairs, the Lavezzu island colony is the most numerous in France. This species is on the decline owing to the introduction of allocthonous species (dogs, cats and rats), the removal of eggs from certain colonies and the development of tourism, which disturbs colonies and destroys habitat.

1.17 With around 200 nesting pairs within the perimeter of the area, the population of the highly unobtrusive storm petrel (*Hydrobates pelagicus*) represents around one third of the French Mediterranean population and between 15 and 18 per cent of the French population including Atlantic birds. Europe's smallest marine bird (15 cm) is in steep decline in the Mediterranean, mainly owing to the introduction of predators such as the black rat (*Rattus rattus*). The colonies are now highly localized and concentrated, making them very vulnerable.

Dependency

1.18 The main ecosystems of the Strait of Bonifacio area, whether deep-sea or coastal, are closely interconnected: pelagic open-water systems, gulfs, intertidal zone, supralittoral environments, islets and lagoons.

1.19 Being an open system, the marine environment does not experience fragmentation of habitats to the same degree as the land environment. In the Strait of Bonifacio the long-protected areas of the Lavezzi, the fish confinement areas and the decreed biotopes of the Monk and Bruzzi islands shelter balanced populations which embrace all age-groups and assure the reproduction of larvae (fish, crustaceans, ...) and their diffusion to more recently established nature reserves. Plankton production and the gathering of animal larvae condition the introduction of both marine and littoral trophic chains. By virtue of its geographical position and the existence of violent currents which facilitate larva distribution, the Strait of Bonifacio could play a not inconsiderable role in coastal fishing management in the north-western Mediterranean.

1.20 While the plankton-eating organisms are an indispensable resource for large pelagic species, seriolae and tuna, not to mention cetaceans (particularly bottlenose dolphins), they are also attractive to the marine birds present (European shag, Cory's shearwater, seagulls).

Representativeness

1.21 Beds of *Posidonia oceanica*, high-priority protected habitats, are widely represented. A Posidonia bed is a very valuable ecosystem from the biodiversity point of view, and is also very important to fishing, coastal protection and the enrichment of certain other coastal ecosystems. It is an excellent indicator of the overall quality of the natural environment. In many parts of the Mediterranean, it has been seriously affected by human activities, and some beds are in serious decline. Beds of *Posidonia oceanica* are characteristic of the infralittoral stage in the Mediterranean. Those in the Strait of Bonifacio area cover more than 5,000 ha and are in excellent condition. They play a leading role in the area's productivity and provide sites for breeding, spawning and raising young.

1.22 The alga *Lithophyllum lichenoides* found in belts in the intertidal zone is included in annex I of the "Habitat" directive. This species is well represented along the battered granite and limestone coasts of the Strait of Bonifacio. The oldest and largest belts are found along the cliffs at Bonifacio and in the Lavezzi Islands.

1.23 Like other algae typical of sheltered sites in the infralittoral stage, certain types of *Cystoseira* have become rare because its habitat is suffering from pollution or eutrophication or has been destroyed by coastal management. Overgrazing by sea urchins, whose predators have been partially eliminated by man, also has to be taken into account. The *Cystoseira* are very well represented in the strait and certain species such as *C. Funkii* are seen on rare occasions at near-surface depths (Ballesteros & Pineda, 2003).

Diversity

1.24 The number of species recorded to date in the Strait of Bonifacio is 1,745. Among the 977 species of fauna are 18 mammals, 165 birds, seven reptiles, two amphibians, 187 fish, 11 protochordates, 13 echinoderms, 262 insects, 11 arachnids, six bryozoans, 103 crustaceans, 143 molluscs, seven annelids, 23 cnidarians and 19 spongarians.

1.25 Considering the faunistic taxons as a whole, it should be noted that:

- Twenty-three animal species are of Community significance. Care of this area is particularly important for two amphibians (*Discoglossus sardus* and *Hyla arborea sarda*), the bottlenose dolphin (*Tursiops truncatus*), chiroptera, marine molluscs, the fish *Aphanius fasciatus*, the loggerhead turtle *Caretta caretta*, the gecko *Phyllodactylus europaeus*, the lizards *Podarcis tiliguerta* and *Lacerta bedriagae* and the snake *Coluber viridiflavus*. Among the animal species of Community significance whose capture in natural surroundings and cultivation can be managed, only the red coral *Corallium rubrum*, can be and is being cultivated;

- Seventy-seven taxons are listed in the "Birds" directive (all annexes combined). Among these birds are 16 species nesting in the area (including 10 from annex I), 24 regular migrants, 30 occasional migrants and five accidental migrants;

- The taxons strictly protected under the Berne Convention (annex II) amount to 139, with 70 other species being considered as protected species whose exploitation must be regulated (annex III);

- Three migratory species are in danger of extinction, namely the Audouin's gull *Larus audouinii* and the loggerhead and leatherback turtles *Caretta caretta* and *Demochelys coriacea*, which require strict protection under annex I of the Bonn Convention. Sixty-seven other species (reptiles, mammals and birds) are considered to be in a poor state of conservation under that convention. All these species are also listed under the Berne Convention;

- Thirty-seven rare species are listed in the three annexes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington Convention), for example the peregrine falcon *Falco peregrinus*, the loggerhead turtle *Caretta caretta*, the bottlenose dolphin *Tursiops truncates*, and Hermann's Tortoise (*Testudo hermanii*);

- Thirty-three species are identified as endangered or threatened under the Barcelona Protocol concerning specially protected areas of Mediterranean importance (SPAMI) (annex II) and 14 as requiring control over their exploitation. These species are also listed in the annexes to the Berne Convention. Among the exploited species, we note two large fish: the swordfish *Xiphias gladius* and the red tuna *Thunnus thynnus*;

- There are 148 wildlife taxons protected at national level, of which the great majority comprises birds (121 species). Nineteen of these nest in the Strait of Bonifacio area. Thirteen mammals present are protected at national level: seven cetaceans, four bats, the hedgehog *Ericeanus europeus italicus* and the weasel *Mustella nivalis corsicana*. Also protected are four land reptiles, two amphibians, two marine turtles and one fish, namely the Mediterranean shad (*Alosa fallax nilotica).* Among the marine species the needle-spined sea urchin *Centrostephanus longispinus,* the Mediterranean slipper lobster *Scyllarides latus*, the pen shell *Pinna nobilis* and the limpet *Patella ferruginea* are protected;

- In the context of the International Union for Conservation of Nature (IUCN) Red List, the leatherback turtle *Demochelys coriacea*, observed only a few times in the past 50 years, is classified as critically endangered and four species, the fin whale *Balaenoptera physalus*, the loggerhead turtle *Caretta caretta*, the dusky grouper *Epinephelus marginatus* and the common seabream *Pagrus pagrus*, as endangered. Nine species are considered vulnerable, i.e. as facing a high risk of extinction in the wild. These include the gecko *Phyllodactus europaeus*, the long-fingered bat *Myotis capaccini* and certain threatened cartilaginous fish: the great white shark *Carcharodon carcharias*, the basking shark *Cetorhinus maximus*, the manta ray *Mobula mobular*, the liver-oil shark *Galeorhinus galeus*, and the angel shark *Squatina squatina*. Lastly, the status of 161 species is considered to be of concern (10 mammals, 143 birds, one amphibian, two reptiles and four fish);

- Seventy species feature in the red lists of the French Natural History Museum in Paris. The endangered species number 13 including the loggerhead turtle *Caretta caretta* and the Mediterranean slipper lobster *Scyllarides latus*. The following are considered to be vulnerable in France: the pen shell *Pinna nobilis,* the limpet *Patella ferruginea*, the brown meagre *Sciaena umbra* and the nursehound *Scyliorhinus stellaris*.

1.26 Among the floral taxons:

- Eight are included in annex I of the Berne Convention, including *Silene velutina* and *Posidonia oceanica*;

- Five algae are also included in SPAMI Annex III;

- Fifteen plant species are protected at national level, including 12 terrestrial species. The marine species include *Posidonia oceanica* and another marine phanerogam, namely the seagrass *Cymodocea nodosa*, which is also well represented in the Strait of Bonifacio;

- Four species are considered to be vulnerable by the IUCN: *Helicodiceros muscivorus, Drimia fugax, Nananthea perpusilla* and *Silene velutina*. They all enjoy protected status.

1.27 The diversity and complementarity found among the various littoral ecological compartments can be considered a major asset for this area. There are around fifty elementary habitats, with ecosystems ranging from coastal scrub to salt grass and from lagoons to the depths of the circalittoral zone.

1.28 The coastal, littoral and salty habitats, such as the mobile and fixed dunes of the Mediterranean shores where *Crucianella maritima* is found, and halophilous scrub, conceal all the floral taxons of major heritage importance.

1.29 At sea, the major "reefs" type of habitat brings together rocky habitats of the mediolitteral zone as well as all the fauna and flora of the intertidal zone. Biocoenoses of photophilous algae and coral are also integrated into this major type of habitat. All the types of gorgonia, cystoseira and the large bryozoans are also important elements of the area's rich heritage and require special protection against the impact of underwater activities and of global changes relating to rise in sea temperature.

Productivity

1.30 The large expanse of sea and strong currents, as well as the richness of the fish stocks, widely recognized by Mediterranean ichthyologists, give this protected marine area a major role in the dispersion of larvae throughout the western Mediterranean. That role is essential for the threatened species in a good state of preservation in the Strait of Bonifacio, such as the dusky grouper *Epinephelus marginatus*, but also for other species of importance in the heritage and fishing contexts.

Spawning or breeding grounds

1.31 The waters of the lagoon habitats (Pisciu Cane, Testarella and Ventilègne), rich in nutritive salts carried from the drainage basins across which they pass, stimulate the growth of lagoon phytoplankton. These lagoons nourish and shelter many marine species. The dense plant growth, adapted to the complementary influences of sea and land, is home to many aquatic and avian species. These biotopes provide ideal shelter for nesting and reproduction and are an important source of food. Yellow-legged gulls, grey herons, little egrets and even young ospreys are regularly observed there. The mosaic of vegetation and the presence of smooth stretches of standing water make it possible for certain wintering or migrating anatidae to come here on an irregular basis (mallard ducks, pintails, Northern shovellers, common teals and garganeys ...), as well as migrating shorebirds (common snipes, jack snipes, sandpipers, black-tailed godwits, little stints). Mallards, moorhens and water rails occasionally nest on Testarella lake. As mentioned above, the Posidonia beds play a major role in the area's productivity and provide areas for breeding, spawning and the raising of young.

Fragility

1.32 Many habitats are important, in terms of heritage, by virtue of their representativity in the Mediterranean context and the direct and indirect threats they face.

1.33 For 15,000 years man has been exerting his influence as an integral part of the ecological system of the Strait of Bonifacio. Man-induced factors (sample-captures, alteration or destruction of habitat, disturbances, introduction of species...), whether old or more recent, direct or indirect, are exerting an increasing impact as methods of navigation and sampling techniques evolve. Those factors are responsible for the disappearance of the monk seal (*Monachus monachus*) and the reduced populations of the limpet *Patella ferruginea*, a process which has been affecting that mollusc since prehistoric times, and the grouper *Epinephelus marginatus* for 30 years.

1.34 It is also quite clear that climate change, especially the increases in air and sea temperatures, as well as fishing activities across the Mediterranean, is exerting an ever increasing influence on the overall functioning of the Strait of Bonifacio.

1.35 Increase in seawater temperature triggers significant changes in the ways that pelagic communities (tropicalization of plankton production) or benthic communities function in the north-west Mediterranean. It benefits tropical species, such as the yellowmouth barracuda *Sphyraena viridensis,* to the detriment of certain Mediterranean species that cannot support the rise in temperature. In this regard, the spectacular rise in mortality rates since 1998 among gorgonias is cause for concern.

1.36 Man-induced activities also generate cascade effects. Such occurrences may be confined to the territory of a protected marine area or affect its periphery. Thus, the destabilization of *Posidonia oceanica* owing to increased numbers of unregulated anchorages or sediment erosion is leading to a reduction in the populations of species associated with this habitat, in particular the pen shell *Pinna nobilis*. Failure to manage household waste and the existence of open-air public landfill sites for over 30 years have brought about an increase in the population of yellow-legged gulls (*Larus cachinnans*) and a serious deterioration in the micro-insular systems of southern Corsica (destabilization of vegetation by the action of nitro-phosphates on floristic corteges, and inter-species competition between the very rare Audouin's gull (*Larus audouinii*) and the yellow-legged gull, to the latter's advantage).

1.37 Waste from purification plants undergoing repair is also likely to affect the existing habitats. Large-scale recreational use of the location also produces effluent and larger waste products, particularly plastic bags, which become mixed in with schools of jellyfish and are then consumed by loggerhead turtles and bottlenose dolphins, causing obstruction of their digestive systems.

1.38 The habitat known as "silty sands in sheltered areas (Mediterranean) biocoenosis" in the large creeks and shallow bays of Lavezzi, Cavallu, Ventilegne, Santa Manza, Porto Novo and Rondinara remain under the influence of the nutrients and pollutants which arrive from the drainage basins, bringing the risk of hypoxia or anoxia owing to the low water renewal rate. This habitat can also prove to be a good indicator of anthropization level in the drainage basins themselves.

1.39 The habitats of submerged or semi-submerged sea caves are extremely sensitive to the impact of man. The Sdragonato cave and undersea caves used in diving are areas of particular sensitivity.

1.40 In France, the belts of *Lithophyllum lichenoides* have receded in polluted areas. The situation of the algal limestone belts, like that of L. Lichenoides at the mediolittoral level, and their porous structure, makes these formations highly vulnerable to surface pollution by effluents, oily film on the water and other agents. The loss of even a little salinity in the water prevents them from forming. There could also be a threat from phosphate ions and detergents (LABOREL, unpublished, in Boudouresque *et al*., 1990). A belt appears to take an exceptionally long time to build up (several centuries) and it is imperative to protect the existing ones (Boudouresque *et al*., 1990).

2 Scientific and educational criteria

2.1 Baseline for monitoring studies

2.1.1 In considering the importance of preserving the habitats and meta-populations mentioned above, their vulnerability must be assessed with caution. Long-term observation of reliable scientific indicators will help distinguish between natural cycles and genuine man-induced disturbances.

2.1.2 This area can also play a role in the transfer of ecological engineering in relation to sustainable resource management. The length of time that protection measures have been in place in southern Corsica, differences in regulations and hence in the pressures from fishing activities inside this protected area in Corsica and in Sardinia, the conservation of reference areas (areas of strict protection) and finally the long-standing acquisition of reliable scientific data are factors which can be used in establishing sustainable development models for Mediterranean coastal areas.

ANNEX 3

VULNERABILITY TO DAMAGE BY INTERNATIONAL SHIPPING ACTIVITIES*

1 Natural factors

1.1 Hydrographical

1.1.1 The hydrographical conditions in the Strait of Bonifacio are strongly influenced by the region's landscape and climate. In particular, there are frequent very strong currents (3-4 knots) largely determined by the winds. These strong currents have already, on two occasions, caused the South Lavezzi signalling buoy to shift. They derive from cyclonic and anti-cyclonic conditions and are responsible for surface changes among the Tyrrhenian and Algero-Provencal water masses. Movements originating in the Atlantic and Tyrrhenian systems, being less subject to the vagaries of the weather where water masses of permanent density are concerned, also affect the bathymetric layer between 50 and 100 m. This situation explains (Romano, 2004), at least for surface waters, the existence of strong currents, especially as the strait between Corsica and Sardinia is characterized by a rise in depths.

1.1.2 The tides are semidiurnal with diurnal inequality, with a tidal range of less than 0.5 m.

1.2 Meteorological

1.2.1 Having a sub-humid Mediterranean climate, with temperate winters, the Strait of Bonifacio region is also particularly windy. Data recorded by the Pertusato semaphore station on the Bonifacio plateau show that the wind blows on 328 days per year (171 days of wind >16 m/s or 57.6 km/h). There is high frequency of winds of a speed faster than 8 m/s, almost exclusively from two directions: west (280°) and east (80°).

1.2.2 Given the hydrographical, topographical and meteorological conditions (shoals, strong winds and currents), the major risk to the Strait of Bonifacio area relates to accidental pollution from all forms of navigation in the Strait itself (several merchant ships have sunk in the past 30 years), and also on its periphery. The risk of collision with a bottlenose dolphin is also a threat identified by the Pelagos sanctuary for Mediterranean marine mammals.

2 Vessel Traffic characteristics

2.1 In 2009, Bonifacio Trafic (the Franco-Italian service) received 2,984 mandatory ship reports. Among them were 180 abnormalities (breaches of IMO Assembly resolution A.766(18)) of which 108 were for transport of dangerous goods, amounting to 147,013 tonnes (141,867 tonnes in 2008). The offences included 55 cases of sending a mandatory report after entering the system, 19 relating to ships found to be following a route that was not recommended (down by 33% on 2008) and 108 relating to ships carrying dangerous goods (+9%).

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* The text in this annex is taken from the submission by France and Italy contained in documents MEPC 61/9 and MEPC 61/INF.26.

2.2 In 2009 a total of 157 ships carrying dangerous goods passed through the Strait of Bonifacio:

- 70 container ships;
- 61 ro-ro ships;
- 13 bulk carriers;
- five chemical carriers;
- three oil tankers;
- three gas tankers;
- two ferries.

2.3 The 2,984 vessels which navigated in the Strait of Bonifacio in 2009 were distributed as follows:

European Union

Italy 831; France 371; Malta 251; Netherlands 152; Portugal 78; United Kingdom 67; Cyprus 50.

Non-EU

Turkey 100; Antigua 183; Bahamas 165; Panama 143.

2.4 The status that the Strait of Bonifacio enjoys as an international strait and the provisions of IMO resolution A.766(18) contribute to making it, although it is apart from the major shipping routes (3,000 ships per year) and its dangerousness is well known, an area in which the coastal authorities are confined to the role of spectator, waiting for a maritime accident to happen.

ANNEX 4

ASSOCIATED PROTECTIVE MEASURE FOR THE STRAIT OF BONIFACIO PSSA

Description of the Area

The Strait of Bonifacio separates the Italian island of Sardinia from the French island of Corsica; they are only 11 km apart. The Strait takes its name from Bonifacio, the southernmost town of Corsica. It enables passage from the Sea of Sardinia in the west to the Tyrrhenian Sea in the east. Its width varies from eight to ten nautical miles and its maximum depth is 100 m.

At the eastern end lies the Italian archipelago of La Maddalena, and Cavallo island and the Lavezzi Islands, belonging to France. This is a sensitive area for navigation. In the northern part of the Strait, ships have to avoid the reefs of Perduto and the Lavezzi Islands, while in the south lie the Sardinian islands of Razzoli and Persa. Navigation is possible along a narrow three-mile wide stretch and ships are asked to take a recommended route wide just over one mile.

Recommendation on navigation through the Strait of Bonifacio*

1 Use of ships' routeing

Vessels navigating in the Strait shall exercise full diligence and regard for the requirements of the existing recommended two-way route in the Strait of Bonifacio. Due to the narrowness of the Strait, masters of vessels shall ensure that an appropriate monitoring of the ship's route is done on board in order to avoid groundings and collisions.

2 Ship reporting and navigation information

Ships of 300 GT and over entering the Strait shall participate in the mandatory ship reporting system (BONIFREP) established by the competent authorities as described in IMO's publication on Ships' Routeing (Section G I/8).

3 Pilotage

Masters of vessels passing through the Strait are recommended to avail themselves of the services of a qualified pilot.

3.1 Categories of ships concerned

Ships for which the IMO Assembly recommends in its resolution A.766(18) of 17 November 1993 to Governments to prohibit or at least strongly discourage the transit in the Strait of Bonifacio: laden oil tankers and ships carrying dangerous chemicals or substances in bulk, as listed in the annex to resolution MEPC.49(31) adopted on 4 July 1991.

* The text on this APM is directly taken from document NAV 57/15, annex 2.

3.2 Description of the applicable procedure for requesting a pilot

Vessels wishing to order a Bonifacio Strait pilot should, as much as possible, send by e-mail or by fax the following information to the service named "Bonifacio Strait pilotage":

- ship's name and call sign;
- type of vessel and gross tonnage;
- draught;
- destination port/name and address of the local agent;
- boarding position and ETA.

24 hours prior to arrival, vessels should inform or confirm their ETA to the head office of the Bonifacio Strait pilotage service.

Once on Bonifacio Strait road, vessels should confirm their ETA 2 hours prior to arrival calling "Bonifacio Traffic" on VHF 10.

3.3 Description of the pilotage service

The pilotage area covers the Strait and its approaches. Usually the vessels entering the Strait board their pilots out of the "BONIFREP" zone.

The boarding positions are the following (WGS 84):

- Eastern boarding position: 41° 24′.80 N 009° 30′.00 E;
- Western boarding position: 41° 17′.28 N 008° 58′.50 E.

4.1 Relevant rules and regulations in force in the area

The Strait of Bonifacio falls into the category of "Straits used for international navigation" regulated by the "United Nations Convention on the Law of the Sea" (UNCLOS) better known as the Montego Bay Convention (10 December 1982).

The maritime traffic is represented mainly by merchant ships that cross the Strait along east-west direction (several dozens of ships per day). Considering the traffic that occurs in the direction north-south, it concerns mainly passenger ships (approximately ten daily connections) is very intense and growing during the summer, especially between Bonifacio (Corsica) and Santa Teresa di Gallura (Sardinia). In addition, there are about 5,000 pleasure craft crossing this area during the summer season.

Regulation applied to navigation on the Strait of Bonifacio is based on resolution A.766(18) adopted in 1993 by IMO. This text urges ships carrying hazardous materials to avoid along this seaway. It has been complemented by circulars of IMO SN/Circ.198 and 201 (26 May 1998) concerning "routeing measures other than traffic separation schemes" and "mandatory ship reporting systems" applicable to the Bouches of Bonifacio from 1 December 1998 at 00:00 a.m.

France and Italy have implemented these provisions through the establishment of the rule "Bonifacio Trafic", that represents a more restrictive device; inasmuch as the French and Italian ships carrying hazardous materials are banned entirely from transit of the "Bouches of Bonifacio".

For this reason, in 1993, both Italy, with the Decree of 26 February 1993 of the Italian Ministry of Merchant Marine, and France, by ordinance of 15 February of the Prefecture of Toulon, have banned the transit of tankers flying Italian or French flag that carrying hydrocarbons and other hazardous and noxious substances, as defined by international conventions in force in both countries[1].

On the basis of these decrees, the prohibition of navigation in the Strait does not apply to merchant ships flying flags of third countries and to Italian and French ships empty or those that carry different cargoes, which, even if properly ballasted, however represent an environmental risk factor in case of accident for the presence of fuel in their tanks. This ban has led to a reduction of marine traffic, but at the same time, it leaves the possible passage of ships flying other flags and often these ships are in unsafe conditions (especially the lack of double hull or similar technologies) and poor maintenance.

Moreover, the arrêté n° 84/98 of 3 November 1998 of the Prefecture Maritime of Toulon[2] (amended by the arrêté 56/2003 of the Prefecture Maritime of Toulon) disciplines the navigation in the Strait of Bonifacio to prevent accidental episodes of marine pollution.

It institutes areas of caution at the extreme of bearings recommended double sense of movement, and the creation of the system of monitoring of ships from a radius of 20 miles from the Strait of Bonifacio. In parallel, the Decree of Italian Ministry of Transport and Navigation on the organization of traffic in the Bonifacio's Strait establishes the same procedures contained in the Decree n° 84/98.

Furthermore, a technical agreement between Italy and France to implement the reporting system of the ships in the Bouches of Bonifacio (Bonifacio Trafic) was signed in Rome on 3 June 1999.

Moreover, in order to restrict dangerous maritime traffic through Bonifacio Strait, it was drawn up in Italy the "*Accordo volontario per l'attuazione di una serie di interventi finalizzati al conseguimento di più elevati standard di sicurezza ambientale in materia di trasporti marittimi di sostanze pericolose*" (Voluntary agreement to carrying out a series of interventions aimed at the achievement of higher security environmental standards concerning the maritime transport of dangerous substances), signed by the Italian Ministry of the Environment, Land and Sea, by the Italian Ministry of Transportation and Navigation, by Confindustria, by Assoporti, by some environmental organizations and by unions (Rome, 1 June 2001).

Inter alia, the sixth article of the agreement foresaw the commitment by companies to use from 1 July 2001 ships carrying dangerous substances listed in Annexes I and II of MARPOL 73/78 solely based on contracts that explicitly exclude the transit in the Strait of Bonifacio, against a number of other compensations by government, including the engagement in an international venue for the encouragement of a PSSA in the Strait of Bonifacio.

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1 Particularly, the Decree n°1/93 (signed in Toulon on 15 February 1993) of the Prefecture maritime de la Mediterranée, applicable only to French ships, prohibits in the Bouches of Bonifacio the circulation of tankers that carrying hydrocarbon and ships carrying hazardous or toxic materials. The annex of the Decree lists the hydrocarbons and the substances in question, in reference to the MARPOL Convention. At the same time, the Decree of the Italian merchant marine of 26 February 1993 prohibits the movement of Italian tanker carrying hydrocarbon and ships carrying hazardous or toxic materials.

2 Arrêté Prefectoral n. 84/94 del 3 novembre 1998 della Prefettura Marittima di Tolone – "Réglementant la navigation dans le Strait of Bonifacio en vue de prévenir les pollution marines accidentelles".

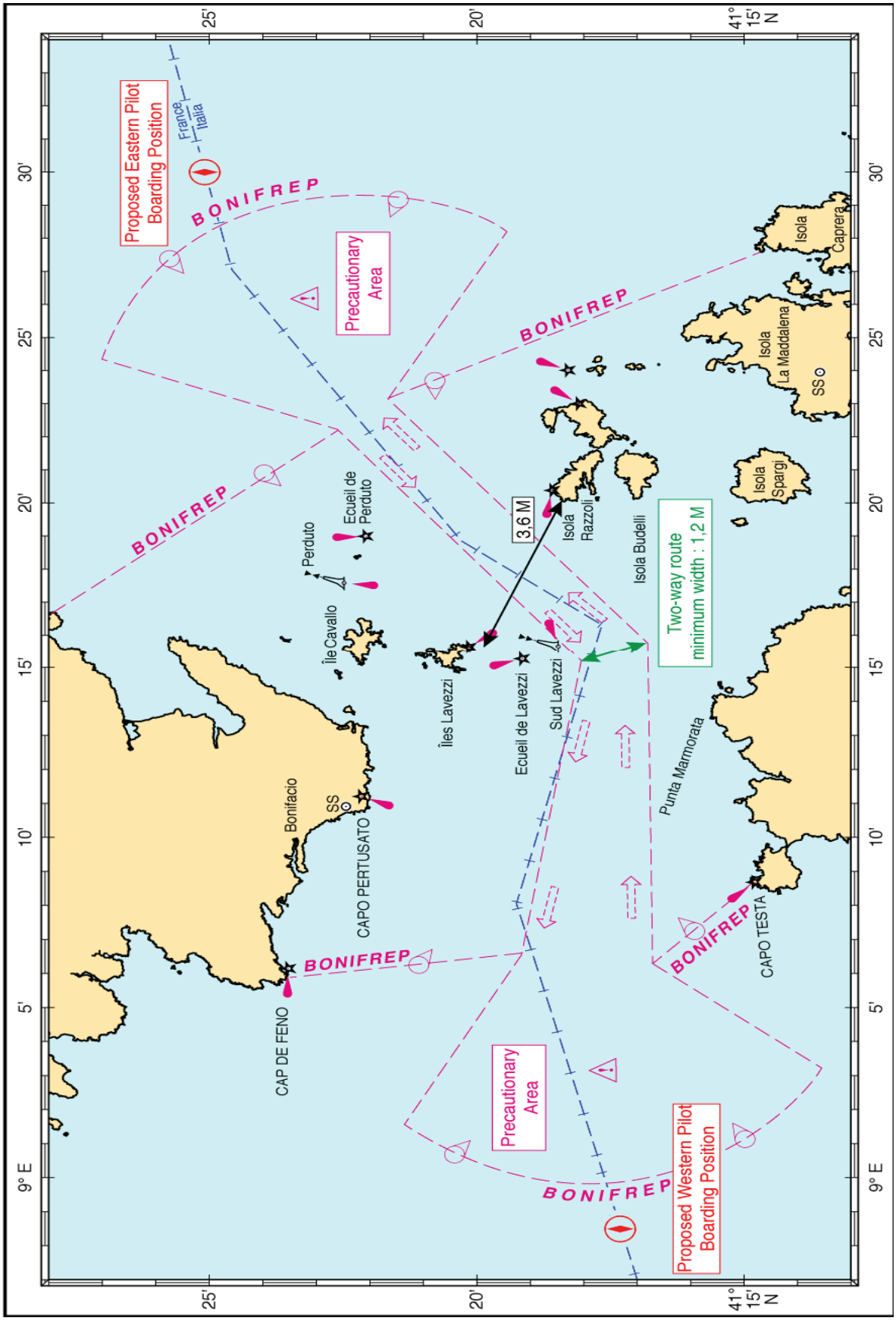
Particularly, the sixth article of the Voluntary Agreement provides that:

> "6.1 – Confindustria and the interested industrial sectors undertake to promote immediately the insertion in the charter party for the use of ships carrying dangerous substances listed in Annexes I and II of MARPOL 73/78 of clauses that expressly exclude the transit in the Strait of Bonifacio.
>
> 6.2 – From 1 July 2001, Confindustria and the interested industrial sectors, also on behalf of firms and associated companies, undertake to use ships carrying dangerous substances listed in Annexes I and II of MARPOL 73/78 solely based on contracts that explicitly exclude the transit in the Strait of Bonifacio
>
> 6.3 – The government engages to act in all EU and international venues to achieve the elimination of dangerous substances traffic in the Strait of Bonifacio, starting by defining by IMO the Strait of Bonifacio as Particularly Sensitive Sea Area (PSSA). Moreover, the government engages to promote every type of voluntary adherence of the EU member and candidate states to the above-mentioned elimination of dangerous substances traffic in the Strait of Bonifacio."

In the end, by the Decree of the Italian Ministry of Infrastructures and Transport of 29 July 2008 "definition of the control of maritime traffic area in the Bouches of Bonifacio and activation of the relevant control centre at the Harbour Office of La Maddalena", was activated the centre VTS (Vessel Traffic Services) of the Bouches of Bonifacio, whose international name is "Bonifacio Trafic" and whose headquarters is located at the area Guardia Vecchia, under the authority of the Harbour Office – Coast Guard of La Maddalena.

Existing routeing measures and mandatory systems are set out in the chartlet, below.

CHART OF THE EXISTING ROUTEING MEASURES AND MANDATORY SHIP REPORTING SYSTEM



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RESOLUTION MEPC.205(62)

Adopted on 15 July 2011

2011 GUIDELINES AND SPECIFICATIONS FOR ADD-ON EQUIPMENT FOR UPGRADING RESOLUTION MEPC.60(33)-COMPLIANT OIL FILTERING EQUIPMENT

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Committee,

NOTING resolution MEPC.107(49), adopted on 18 July 2003, by which the Marine Environment Protection Committee adopted, at its forty-ninth session, the current revised Guidelines and Specifications for Pollution Prevention Equipment for Machinery Space Bilges of Ships and invited Governments to adopt and apply them to the maximum possible extent which they found reasonable and practicable and to report to the Organization the results of such application,

NOTING FURTHER the provisions of regulation 14.6 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL), in which reference is made to the above-mentioned revised Guidelines and Specifications,

HAVING CONSIDERED, at its sixty-second session, the Guidelines and Specifications for add-on equipment for upgrading resolution MEPC.60(33)-compliant oil filtering equipment, developed by the Sub-Committee on Ship Design and Equipment,

1. ADOPTS the 2011 Guidelines and Specifications for add-on equipment for upgrading resolution MEPC.60(33)-compliant oil filtering equipment, the text of which is set out in the annex to this resolution;

2. INVITES Governments to:

   (a) consider the Guidelines and Specifications and encourage their application so that add-on equipment voluntarily installed on board ships to upgrade existing oil filtering equipment compliant with the provisions of the revised Guidelines and Specifications for Pollution Prevention Equipment for Machinery Space Bilges of Ships adopted by resolution MEPC.60(33) meets these Guidelines and Specifications for add-on equipment; and

   (b) provide the Organization with information on experience gained from their application and, in particular, on successful testing of equipment against the Specifications;

3. REQUESTS the Secretariat, on the basis of information received, to maintain and update a list of approved equipment and to make it available through the Global Integrated Shipping Information System (GISIS);

4. FURTHER INVITES Governments to issue an appropriate "Certificate of type approval" as referred to in paragraph 4.2.1 of the Specifications and to recognize such certificates issued under the authority of other Governments as having the same validity as certificates issued by them.

ANNEX

2011 GUIDELINES AND SPECIFICATIONS FOR ADD-ON EQUIPMENT FOR UP-GRADING RESOLUTION MEPC.60(33)-COMPLIANT OIL FILTERING EQUIPMENT

TABLE OF CONTENTS

1 INTRODUCTION

1.1 General

1.1.1 In 2003, the Marine Environment Protection Committee adopted the Revised guidelines and specifications for pollution prevention equipment for machinery space bilges of ships (resolution MEPC.107(49)). The main purpose of this revision of the specifications of oil filtering equipment was to improve their capability of treating emulsified oil.

1.1.2 The present Guidelines have been developed to provide further assistance for upgrading systems installed on board ships prior to 1 January 2005, and of which oil filtering equipment was approved under resolution MEPC.60(33).

1.1.3 It has been recognized that the best measure to prevent pollution resulting from oily bilge water is installation of Integrated Bilge Water Treatment System (IBTS) in accordance with MEPC.1/Circ.642 as may be amended. IBTS prevents generation of oily bilge water. Although it may not be easy or practicable to fit complete IBTS on existing ships, pre-cleaning of oily bilge water, e.g., provision of a primary tank between bilge wells and bilge tank, should be seriously considered in order to remove impurities in bilge through surfacing or sedimentation, which is an effective way of preventing clogging of bilge separators.

1.2 Scope

These guidelines apply to add-on post-treatment equipment for resolution MEPC.60(33)-compliant oil filtering equipment in order to improve their capabilities of treating emulsified oil so that emulsion-breaking performance of oily bilge separators to be achieved by installation of add-on equipment could be equivalent to that of resolution MEPC.107(49)-compliant equipment.

1.3 Up–grading options

Equipment for upgrading existing oil filtering equipment are the following two types:

.1 equipment which could upgrade specific make of oil filtering equipment. Such equipment should be tested in accordance with Part 1 of the test specifications contained in the annex hereto, connected to a resolution MEPC.60(33) oil filtering equipment and type approved for use in conjunction with that specific make of oil filtering equipment tested, subject to: 1) environmental testing contained in Part 3 of the annex to resolution MEPC.107(49) and 2) the limiting conditions of the certification of the upgraded equipment.

.2 equipment which could upgrade any make of resolution MEPC.60(33)-compliant oil filtering equipment. Such equipment should be tested in accordance with Part 2 of the test specifications contained in the annex hereto and type approved for use in conjunction with any make of oil filtering equipment, subject to: 1) environmental testing contained in Part 3 of the annex to resolution MEPC.107(49) and 2) the limiting conditions of the certification of the upgraded equipment.

2 DEFINITIONS

Unless otherwise specified, definitions of the terms used in the Revised guidelines and specifications for pollution prevention equipment for machinery space bilges of ships (resolution MEPC.107(49)) apply to these Guidelines.

3 TECHNICAL SPECIFICATIONS

3.1 The add-on equipment should be strongly constructed and suitable for shipboard use, bearing in mind its intended location on the ship.

3.2 It should, if intended to be fitted in locations where flammable atmospheres may be present, comply with the relevant safety regulations for such spaces. Any electrical equipment which forms part of the add-on equipment should be based in a non-hazardous area, or should be certified by the Administration as safe for use in a hazardous area. Any moving parts which are fitted in hazardous areas should be arranged so as to avoid the formation of static electricity.

3.3 The add-on equipment should be so designed that it functions automatically in conjunction with the existing equipment.

3.4 The add-on equipment should require the minimum of attention to bring it into operation. In the case of equipment used for engine room bilges, there should be no need for any adjustment to valves and other equipment to bring the add-on equipment into operation. The equipment should be capable of operating for at least 24 hours of normal duty without attention.

3.5 It should be understood that the complete type approval with the test fluid C should be performed without interruption to attend, clean or maintain the bilge water separator. This test would be regarded as a simulation of the 24 hours of unattended operation not requiring any crew attention.

3.6 It should be understood that the 15 ppm bilge separator should operate continuously and automatically without any interruptions. It should be assured that back flushing if performed during the certification test does not cause:

.1 dilution of the test fluid C, or

.2 dilution of the test sample sent to the laboratory for analysis.

3.7 If input flow of test fluid C is interrupted during the performance of the test it should be assured that the total quantities of test fluid C processed automatically are not less than the nominal flow of the tested equipment multiplied by the specified test duration of 150 minutes (2.5 hours). While all the time, the tested equipment operates continuously and automatically without human intervention.

3.8 The continuous and automatic operation should apply to the performance tests with the test fluid C according to the test result diagrams in the appendix to appendix 1 of resolution MEPC.107(49) as it relates to test fluid C. However, if due to the separation process any interruption in feeding the test fluid with nominal flow rate, e.g., for back flushing, is deemed necessary, the time for these interruptions should be added to the required time of the test step which was interrupted during the performance test. While all the time, the tested equipment operates continuously and automatically without human intervention.

3.9 All working parts of the add-on equipment which are liable to wear or to damage should be easily accessible for maintenance.

4 SPECIFICATION FOR TYPE APPROVAL TESTING OF ADD-ON EQUIPMENT

4.1 Testing requirements

4.1.1 The production model of add-on equipment, for which the approval will apply, should be identical to the equipment, type-tested in accordance with the performance and test specifications contained in part 1 or 2 of the annex to these Guidelines. The equipment should also be type-tested in accordance with the specifications for environmental testing contained in part 3 of the annex to resolution MEPC.107(49).

4.1.2 Where a range of add-on equipment of the same design, but of different capacities, requires certification in accordance with these specifications, the Administration may accept tests in two capacities within the range, in lieu of tests on every size, providing that the two tests actually performed are from the lowest quarter and highest quarter of the range.

4.2 Approval and certification procedures

Add-on equipment which in every respect fulfils the provisions of these Guidelines may be approved by the Administration for fitting on board ships. The approval should take the form of a certificate of type approval specifying the main particulars of the apparatus and any limiting conditions on its usage necessary to ensure its proper performance. Such certificate should be issued in the format shown in part 3 of the annex.

5 INSTALLATION REQUIREMENTS

5.1 Before installation of add-on equipment, it is important to ascertain that the existing oil filtering equipment is well maintained and in good working condition and that the rated capacity match that of add-on equipment.

5.2 The add-on equipment should be installed between the existing oil filtering equipment and the sampling point provided for inspection purposes on board ship.

5.3 The add-on equipment should be fitted with a permanently attached plate giving any operational or installation limits considered necessary by the manufacturer or by the Administration.

5.4 A vessel fitted with an add-on equipment should, at all times, have on board a copy of the operating and maintenance manuals.

5.5 For inspection purposes on board ship, a sampling point should be provided in a vertical section of the water effluent piping as close as is practicable to the 15 ppm bilge separator and add-on equipment outlet. Re-circulating facilities should be provided, after and adjacent to the overboard outlet of the stopping device to enable the 15 ppm bilge separator system, including the 15 ppm bilge alarm and the automatic stopping device where fitted, to be tested with the overboard discharge closed.

5.6 Where fitted, the bilge alarm should be approved according to resolution MEPC.107(49).

ANNEX

TEST AND PERFORMANCE SPECIFICATIONS FOR TYPE APPROVAL OF ADD-ON EQUIPMENT FOR UPGRADING RESOLUTION MEPC.60(33)-COMPLIANT OIL FILTERING EQUIPMENT

PART 1

ADD-ON EQUIPMENT TO BE FITTED TO SPECIFIC OIL FILTERING EQUIPMENT APPROVED UNDER RESOLUTION MEPC.60(33)

1 General

1.1 These test and performance specifications for type approval relate to add-on equipment for oil filtering equipment type approved in accordance with resolution MEPC.60(33) (hereinafter referred to as "oil filtering equipment"). In addition, the electrical and electronic systems of the add-on equipment should be tested in accordance with the specifications for environmental testing contained in part 3 of resolution MEPC.107(49).

1.2 The test of add-on equipment should be carried out in combination with oil filtering equipment to which add-on equipment being tested is intended to be added on.

2 Test specifications

2.1 These specifications relate to add-on equipment for oil filtering equipment. A set of oil filtering equipment and add-on equipment should be capable of producing an effluent for discharge to the sea containing not more than 15 ppm of oil, when 3,000 ppm oil in water emulsions are fed.

2.2 The test rig must be so constructed as to include not only oil filtering equipment and add-on equipment, but also the pumps, valves, pipes and fittings as shown in figure 1:

.1 for the testing of oil filtering equipment having no integral pump, the centrifugal pump "A" (figure 1) is used to feed oil filtering equipment with valves 2 and 4 open, and valve 3 closed. The rate of flow from the centrifugal pump "A" is matched to the design throughput of oil filtering equipment by adjustment of the centrifugal pump's discharge valve;

.2 a centrifugal pump "B" should be fitted to re-circulate the test fluid "C" in the tank to ensure that the test fluid "C" is maintained in a stable condition throughout the testing;

.3 to ensure a good mix of the test fluid and the water, a conditioning pipe as specified in paragraph 2.4 should be fitted immediately before oil filtering equipment;

.4 other valves, flow meters and sample points should be fitted to the test rig as shown in figure 1; and

.5 the pipe work should be designed for a maximum liquid velocity of 3 metres/second.

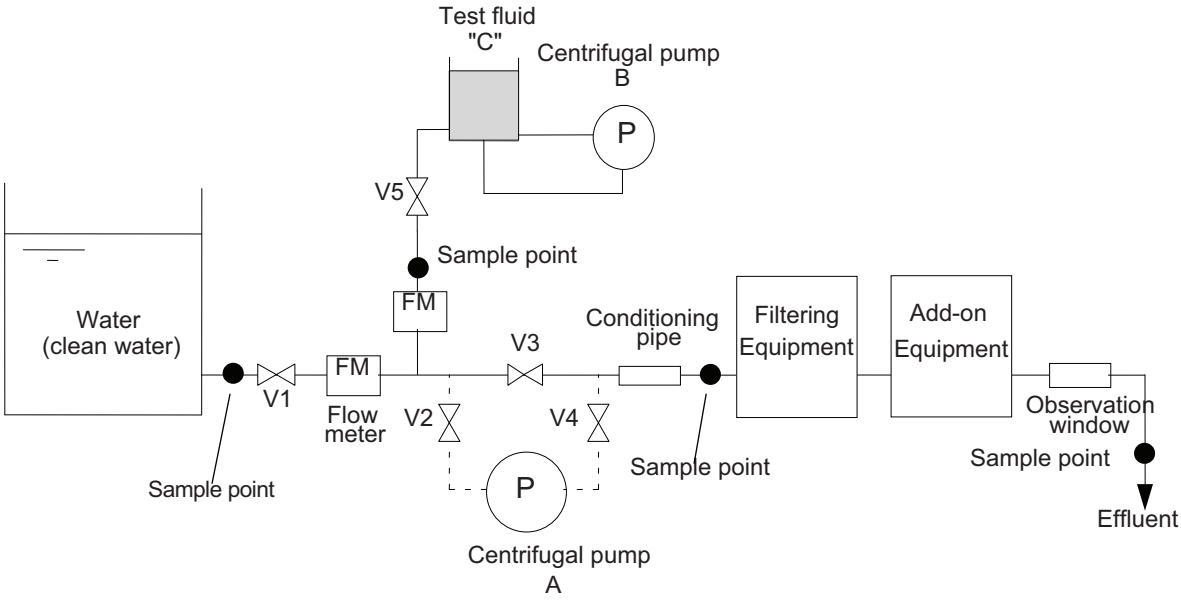

Figure 1 – Test rig

2.3 Tests should be performed using test fluid "C" as defined in resolution MEPC.107(49).

2.4 If oil filtering equipment includes an integrated feed pump, oil filtering equipment and add-on equipment should be tested with that pump supplying the required quantity of test fluid and water to oil filtering equipment at its rated capacity. If oil filtering equipment is to be fed by the ship's pumps, then the unit will be tested by supplying the required quantity of test fluid and water mixture to the inlet of a centrifugal pump operating at not less than 1,000 rpm (see dotted line in figure 1). This pump should have a delivery capacity of not less than 1.1 times the rated capacity of oil filtering equipment at the delivery pressure required for the test. If a centrifugal pump is used, the excess pump capacity should be controlled by a throttle valve on the discharge side of the pump. In all cases, to ensure uniform conditions, the piping arrangements immediately prior to oil filtering equipment should be such that the influent to oil filtering equipment should have a Reynolds number of not less than 10,000 as calculated in fresh water, a liquid velocity of not less than 1 metre per second and the length of the supply pipe from the point of test fluid injection to oil filtering equipment should have a length not less than 20 times its diameter. A mixture inlet sampling point and a thermometer pocket should be provided near oil filtering equipment inlet and an outlet sampling point and observation window should be provided on the discharge pipe.

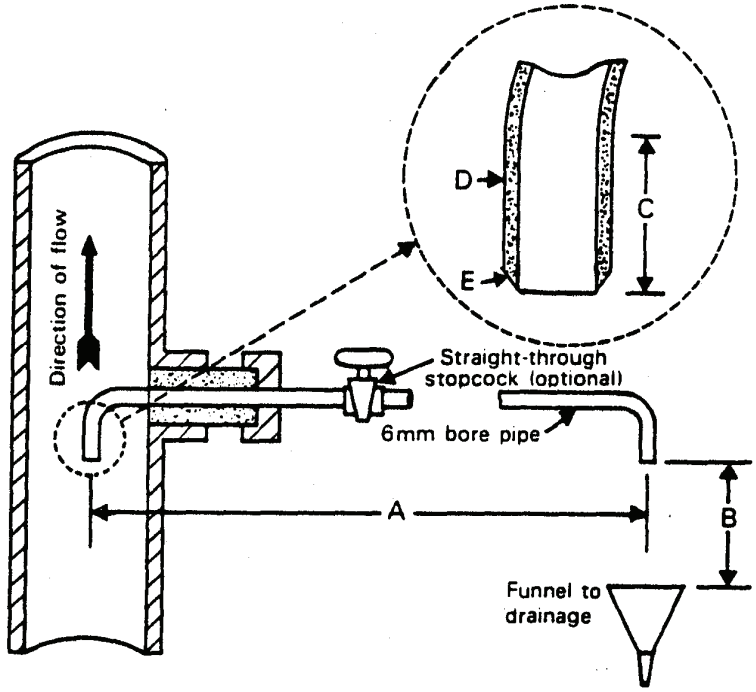

Figure 2 − Diagram of sampling arrangements

A Distance A, not greater than 400 mm
B Distance B, sufficient to insert sampling bottle
C Dimension C, straight length should not be less than 60 mm
D Dimension D, pipe thickness should not be greater than 2 mm
E Detail E, chisel-edged chamfer (30˚)

2.5 In order to approach isokinetic sampling – i.e. the sample enters the sampling pipe at stream velocity – the sampling arrangement should be as shown in figure 2 and, if a cock is fitted, free flow should be effected for at least one minute before any sample is taken. The sampling points should be in pipes running vertically.

2.6 In the case of oil filtering equipment and add-on equipment depending essentially on gravity, the feed to the system of the test water and test fluid mixture should be maintained at a temperature not greater than 40ºC, and heating and cooling coils should be provided where necessary. The water shall have a density of not more than 1.015 at 20ºC. In other forms of separation where the dependence of separation efficiency on temperature is not established, tests should be carried out over a range of influent temperatures representing the normal shipboard operating range of 10ºC to 40ºC or should be taken at a temperature in this range where the separation efficiency is known to be worst.

2.7 In those cases where, for oil filtering equipment and add-on equipment, it is necessary to heat water up to a given temperature and to supply heat to maintain that temperature, the tests should be carried out at the given temperature.

2.8 The tests with test fluid "C" should be carried out as follows:

.1 prior to the test with test fluid "C", oil filtering equipment and add-on equipment should be filled up with water (density of not more than 1.015 at 20ºC);

.2 oil filtering equipment and add-on equipment should be fed with a mixture composed of 6% test fluid "C" and 94% water to have emulsified oil content of 3,000 ppm in the test water until steady conditions have been established. Steady conditions are assumed to be the conditions established after pumping through oil filtering equipment and add-on equipment a quantity of test fluid "C"/water mixture not less than twice the volume of oil filtering and add-on equipment; and

.3 the test should then proceed for 2.5 h. Samples should be taken at the effluent outlet at 50 minutes and 100 minutes after conditioning. At the end of this test, an air cock should be opened on the suction side of the pump and, if necessary, the test fluid "C" and water valves should be slowly closed together, and a sample taken at the effluent discharge as the flow ceases (this point can be checked from the observation window).

2.9 Sampling should be carried out as shown in figure 2 so that the sample taken will suitably represent the fluid issuing from the effluent outlet of add-on equipment.

2.10 Samples should be taken in accordance with ISO 9377–2:2000. The sample is to be extracted on the same day of collection, and be sealed and labelled in the presence of a representative of the national authority and arrangements should be made for analysis as soon as possible and in any case within seven days, provided the samples are being kept between 2ºC and 6ºC at laboratories approved by the Administration.

2.11 The oil content of the samples should be determined in accordance with part 4 of the annex to resolution MEPC.107(49).

2.12 When accurate and reliable oil content meters are fitted at inlet and outlet of add-on equipment, one sample at inlet and outlet taken during each test will be considered sufficient if they verify, to within ±10%, the meter readings noted at the same instant.

PART 2

ADD-ON EQUIPMENT TO BE FITTED TO ANY OIL FILTERING EQUIPMENT

3 General

These test and performance specifications for type approval relate to add-on equipment for any oil filtering equipment type-approved in accordance with resolution MEPC.60(33). In addition, the electrical and electronic systems of the add-on equipment should be tested in accordance with the specifications for environmental testing contained in part 3 of resolution MEPC.107(49).

4 Test specifications

4.1 These specifications relate to add-on equipment. The add-on equipment should be capable of producing an effluent for discharge to the sea containing not more than 15 ppm of oil when 3,000 ppm oil in water emulsions are fed.

4.2 The test rig must be so constructed as to include not only add-on equipment but also the pumps, valves, pipes and fittings as shown in figure 3:

.1 for the testing centrifugal pump "A" (figure 3) is used to feed the add-on equipment. The rate of flow from the centrifugal pump "A" is matched to the design throughput of the add-on equipment by the adjustment of the centrifugal pump's discharge valve;

.2 a centrifugal pump "B" should be fitted to re-circulate the test fluid C in the tank to ensure that the test fluid C is maintained in a stable condition throughput the testing;

.3 to ensure a good mix of the test fluid and the water, a conditioning pipe as specified in paragraph 4.4 should be fitted immediately before add-on equipment;

.4 other valves, flow meters and sample points should be fitted to the test rig as shown in figure 3; and

.5 the pipe work should be designed for a maximum liquid velocity of 3 metres/second.

4.3 Tests should be performed using test fluid "C" as defined in resolution MEPC.107(49).

4.4 The add-on equipment is tested by supplying the required quantity of test fluid and water mixture to the inlet by a centrifugal pump operating at not less than 1,000 rpm. This pump should have a delivery capacity of not less than 1.1 times the rated capacity of add-on equipment at the delivery pressure required for the test. The excess pump capacity should be controlled by a throttle valve on the discharge side of the pump. In all cases, to ensure uniform conditions, the piping arrangements immediately prior to add-on equipment should be such that the influent to add-on equipment should have a Reynolds number of not less than 10,000 as calculated in fresh water, a liquid velocity of not less than 1 metre per second and the length of the supply pipe from the point of test fluid injection to add-on equipment should have a length not less than 20 times its diameter. A mixture inlet sampling point and a thermometer pocket should be provided near add-on equipment inlet and an outlet sampling point and observation window should be provided on the discharge pipe.

4.5 In order to approach isokinetic sampling – i.e. the sample enters the sampling pipe at stream velocity – the sampling arrangement should be as shown in figure 2 and, if a cock is fitted, free flow should be affected for at least one minute before any sample is taken. The sampling points should be in pipes running vertically.

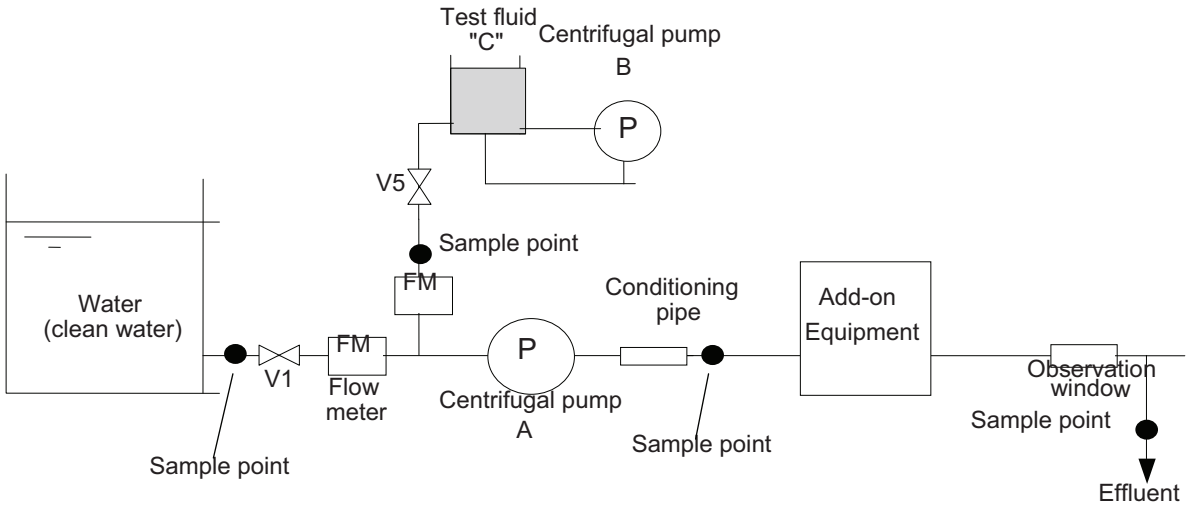

Figure 3 – Test rig

4.6 In the case of add-on equipment depending essentially on gravity, the feed to the add-on equipment of the test water and test fluid mixture should be maintained at a temperature not greater than 40ºC, and heating and cooling coils should be provided where necessary. The water should have a density of not more than 1.015 at 20ºC. In other forms of separation where the dependence of separation efficiency on temperature is not established, tests should be carried out over a range of influent temperatures representing the normal shipboard operating range of 10ºC to 40ºC or should be taken at a temperature in this range where the separation efficiency is known to be worst.

4.7 In those cases where, for add-on equipment, it is necessary to heat water up to a given temperature and to supply heat to maintain that temperature, the tests should be carried out at the given temperature.

4.8 The tests with test fluid "C" should be carried out as follows:

.1 prior to the test with test fluid "C", add-on equipment should be filled up with water (density of not more than 1.015 at 20ºC);

.2 add-on equipment should be fed with a mixture composed of 6% test fluid "C" and 94% water to have emulsified oil content of 3,000 ppm in the test water until steady conditions have been established. Steady conditions are assumed to be the conditions established after pumping through add-on equipment a quantity of test fluid "C"/water mixture not less than twice the volume of add-on equipment; and

.3 the test should then proceed for 2.5 h. Samples should be taken at the effluent outlet at 50 minutes and 100 minutes after conditioning. At the end of this test, an air cock should be opened on the suction side of the pump and, if necessary, the test fluid "C" and water valves should be slowly closed together, and a sample taken at the effluent discharge as the flow ceases (this point can be checked from the observation window).

4.9 Sampling should be carried out as shown in figure 2 so that the sample taken will suitably represent the fluid issuing from the effluent outlet of add-on equipment.

4.10 Samples should be taken in accordance with ISO 9377–2:2000. The sample is to be extracted on the same day of collection, and be sealed and labelled in the presence of a representative of the national authority and arrangements should be made for analysis as soon as possible and in any case within seven days, provided the samples are being kept between 2ºC and 6ºC at laboratories approved by the Administration.

4.11 The oil content of the samples should be determined in accordance with part 4 of the annex to resolution MEPC.107(49).

4.12 When accurate and reliable oil content meters are fitted at inlet and outlet of add-on equipment, one sample at inlet and outlet taken during each test will be considered sufficient if they verify, to within ±10%, the meter readings noted at the same instant.

PART 3

DOCUMENTATION OF APPROVAL

5.1 Satisfactory compliance with all the test requirements enumerated in part 1 or 2 of this annex should be shown in the certificate of type approval issued by the Administration in the format specified in paragraph 5.2 below. An Administration may issue a certificate of type approval based on separate testing or on testing already carried out under supervision by another Administration.

5.2 A certificate of type approval should be in the format shown in the appendix to this annex. The Certificate should identify the type and model of the add-on equipment to which it applies and identify equipment assembly drawings, duly dated. Each drawing should bear the model specification numbers or equivalent identification details. The certificate should include the full performance test protocol on which it is based. If a certificate of type approval is issued by an Administration based on a certificate previously issued by another Administration, the certificate should identify the Administration which conducted the test on add-on equipment and a copy of the original test results should be attached to it.

BADGE
OR
CIPHER

Appendix 1

Certificate of type approval for add-on equipment

Name of Administration

This is to certify that the add-on equipment listed below has been examined and tested in accordance with the requirements of the specifications of the annex to the 2011 Guidelines contained in resolution MEPC.205(62). This certificate is valid only for add-on equipment referred to below.

Add-on equipment supplied by
.....
Under type and model designation .....
and incorporating:
*Add-on equipment manufactured by .....
to specification/assembly drawing No ..... date
*Coalescer/Absorbent/Membrane/Filter manufactured by .....
to specification/assembly drawing No .....
*Control equipment manufactured by .....
to specification/assembly drawing No ..... date
*Other means .....
to specification/assembly drawing No .....

*For installation on oil filtering equipment supplied by
.....
Under type and model designation .....

Maximum throughput of system …… m^3/h ___

Limiting conditions imposed .....
Test date and results attached in the appendix.

Official stamp

Signed .....
Administration of .....
Date this ..... day of ..... 20 .....

* Delete as appropriate.

Appendix 2

Test data and results of tests conducted on add-on equipment in accordance with Part 1 or 2 of the annex to the 2011 Guidelines contained in resolution MEPC.205(62)

Add-on equipment submitted by
.....
Test location .....

Method of sample analysis .....
.....
.....
.....

Samples analysed by .....

Environmental testing of the electrical and electronic sections of the add-on equipment has been carried out in accordance with part 3 of the annex to the 2011 Guidelines contained in resolution MEPC.205(62). The equipment functioned satisfactorily on completion of each test specified on the environmental test protocol.
.....
.....
.....
.....

Test fluid .C.

Surfactant – documentary evidence*

Iron oxides – documentary evidence*

Test water

Density	at 20ºC
Solid matter present	

Test temperatures

Ambient	ºC
Test fluid .C.	ºC
Test water	ºC

Diagram of test rig attached
Diagram of sampling arrangement attached

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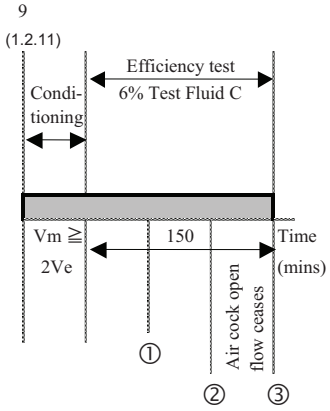
* Certificate or laboratory analysis.

TEST RESULTS (IN PPM) AND TEST PROCEDURES

Test fluid C



	1	2	3
Influent			
Effluent			

Signed …… Date …… Official stamp

(Official stamp or equivalent identification and the date of approval to be placed on all pages of the test protocol.)

***

RESOLUTION MEPC.206(62)

Adopted on 15 July 2011

PROCEDURE FOR APPROVING OTHER METHODS OF BALLAST WATER MANAGEMENT IN ACCORDANCE WITH REGULATION B-3.7 OF THE BWM CONVENTION

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution,

RECALLING ALSO the adoption by the International Conference on Ballast Water Management for Ships, held at the Organization's Headquarters in 2004, of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (hereinafter "the BWM Convention"),

RECALLING FURTHER that regulation A-2 of the BWM Convention requires that discharge of ballast water shell only be conducted through ballast water management in accordance with the provisions of the Annex to the Convention,

NOTING that regulation B-3.7 of the BWM Convention permits the use of "Other Methods" of ballast water management to achieve at least the same level of protection to the environment, human health, property or resources as described in regulations B-3.1 to B-3.5,

RECOGNIZING that such "Other Methods" should take into account safety considerations relating to the ship and the crew, environmental acceptability, practicality, cost-effectiveness, economics and biological effectiveness and should be approved in principle by the Marine Environment Protection Committee,

HAVING CONSIDERED, at its sixty-second session, the draft Procedure for approving Other Methods of ballast water management in accordance with regulation B-3.7 of the BWM Convention, developed by the Sub-Committee on Bulk Liquids and Gases at its fifteenth session,

1. ADOPTS the Procedure for approving Other Methods of ballast water management in accordance with regulation B-3.7 of the BWM Convention, as set out in the annex to the present resolution;

2. INVITES Administrations to apply the annexed Procedure as soon as possible, or when the Convention becomes applicable to them;

3. URGES Member States to bring the annexed Procedure to the attention of shipowners, shipbuilders and manufacturers of ballast water management systems, as well as any other parties concerned; and

4. AGREES to keep the Procedure under review.

ANNEX

PROCEDURE FOR APPROVING OTHER METHODS OF BALLAST WATER MANAGEMENT IN ACCORDANCE WITH REGULATION B-3.7 OF THE BWM CONVENTION

1 INTRODUCTION

1.1 Regulation B-3.7 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the BWM Convention) permits the use of Other Methods of ballast water management to achieve at least the same level of protection to the environment, human health, property or resources as described in regulations B-3.1 to B-3.5, and approved in principle by the MEPC.

1.2 Those developing Other Methods should also take into account: safety considerations relating to the ship and the crew; environmental acceptability (i.e. not causing greater environmental impacts than they solve); practicality (i.e. compatibility with ship design and operations); cost-effectiveness and economics; and biological effectiveness.

1.3 The Procedure for approving Other Methods of ballast water management in accordance with regulation B-3.7 of the BWM Convention (hereafter referred to as "the Procedure"), aims at providing criteria for the evaluation and approval of Other Methods of ballast water management (hereafter referred to as "Other Methods").

1.4 This Procedure has been developed to ensure that these Other Methods provide at least the same level of protection to the environment, human health, property or resources as those methods permitted under regulations B-3.1 to B-3.5.

1.5 Other Methods of ballast water management are to be approved in principle by the Committee prior to approval of an Other Method by the Administration.

1.6 Systems based on an Other Method where Active Substances and Preparations are added to the ballast water, or are generated on board ships by the system, should also be subject to the approval by the Committee in accordance with the Procedure for approval of ballast water management systems that make use of Active Substances (G9).

1.7 All shipboard systems based on an Other Method will also have to gain Type Approval or Prototype Approval, as appropriate, under the Guidelines for approval of ballast water management systems (G8), or Guidelines for approval of prototype ballast water treatment technologies (G10).

1.8 Where an Other Method cannot be type approved due to the nature of the method, the Administration should recommend to the Committee an appropriate method of recognition or certification.

1.9 The environmental impacts of any chemical by-products and/or physical effects formed by an Other Method will also have to be evaluated by the Administration during the approval process, with respect to safety to the environment.

1.10 The Procedure identifies the information to be provided, identifies the responsible parties for providing such information and outlines the approval processes required by the Committee.

1.11 The use of Other Methods of ballast water management should be consistent with the objectives of the Convention – "to prevent, minimize and ultimately eliminate the risks to the environment, human health, property and resources arising from the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments, as well as to avoid unwanted side effects from that control, and to encourage developments in related knowledge and technology". Depending on the new technology used in the Other Method, verifications for approval could be different from those specified in paragraph 1.7 but keep the same level of protection.

1.12 Other Methods using organisms are not within the scope of this Procedure.

2 PURPOSE

2.1 The Procedure aims to ensure that any Other Methods approved provide an equivalent level of protection to the standards contained in the BWM Convention. The Procedure will be kept under review and updated by the Committee in light of the experience gained during its application and as the state of knowledge and technology may require.

2.2 The purpose of the Procedure is to:

.1 provide a uniform interpretation and application of the requirements for the approval of Other Methods permitted under regulation B-3.7;

.2 ensure that Other Methods approved by an Administration are capable of at least achieving equivalence to the level of protection provided by the standards of the BWM Convention with respect to the prevention of the transfer of harmful aquatic organisms and pathogens as required by regulations B-3.1 to B-3.5;

.3 assist in determining the information necessary for the approval in principle of Other Methods under regulation B-3.7 of the BWM Convention and identify the roles and responsibilities in providing such information;

.4 assist Administrations in conducting the approval of an Other Method;

.5 provide guidance to manufacturers, shipowners and other interested parties involved in determining the suitability of an Other Method to meet the requirements of the BWM Convention; and

.6 provide the approval process used by the Committee.

3 DEFINITIONS

3.1 For the purposes of this Procedure, the definitions in the Convention apply and:

.1 **Method** means a process developed and designed to reduce the transfer of harmful aquatic organisms through ships' ballast water to meet the requirements specified under regulations B-3.1 to B-3.5 of the BWM Convention.

.2 **Other Method** means an alternative to a Method defined in paragraph 3.1.1 above, which provides a level of protection equivalent to the requirements specified in regulations B-3.1 to B-3.5 of the BWM Convention.

4 APPLICABILITY

4.1 The Procedure applies to all Administrations, Parties to the BWM Convention and other IMO Member States, seeking approval in principle for an Other Method under regulation B-3.7 or assessing or granting approval for such Other Methods. This Procedure is also for the use of the Committee when considering approval in principle.

4.2 Equipment manufacturers wanting to seek approval for an Other Method should also consult this Procedure.

4.3 Ballast water management methods subject to regulation A-4.1 of the BWM Convention are not subject to this procedure or to regulation B-3.7.

5 APPLICATION TO THE COMMITTEE FOR APPROVAL IN PRINCIPLE OF AN OTHER METHOD

5.1 The information provided to support the application for approval in principle should be complete, of sufficient quality and in accordance with this Procedure.

5.2 The applicant for approval in principle of an Other Method should provide independently validated and/or operational proof that the Other Method being submitted:

.1 provides a level of protection at least equivalent to that provided by the requirements specified in regulations B-3.1 to B-3.5 of the BWM Convention; and

.2 is capable of providing a consistent level of protection at all times in all environments/locations.

Equivalence and benchmark criteria for an application for approval in principle of an Other Method

5.3 Applications for Other Methods should contain a fully developed independently validated approach for assessing the level of protection provided by that Other Method against the transfer of harmful aquatic organisms and pathogens and its equivalence to the requirements in regulations B-3.1 to B-3.5 of the BWM Convention and the additional requirements outlined in this Procedure, as appropriate. A possible starting point for such an approach could be a comparison of the level of protection ensured by ballast water management in compliance with regulations B-3.1 to B-3.5 and the level of protection ensured by the Other Method if used on comparable ships.

5.4 Other Methods should demonstrate by risk assessment, independently validated physical and biological modelling, operational testing of this modelling and full-scale operational testing, where applicable, that the Other Method is capable of meeting at all times a level of protection that is at least equivalent to the level of protection with respect to the prevention of the transfer of harmful aquatic organisms and pathogens via discharge of ballast water compared to existing requirements. The risk assessment should be at least to the same level of rigour as stipulated in Guidelines (G7).

5.5 Applications for Other Methods should specify the benchmark against which the performance of any systems based on that particular Other Method can be measured. The benchmark would:

.1 enable a transparent comparison by the Committee of the level of protection provided by the Other Method with that provided by the requirements in regulations B-3.1 to B-3.5 of the BWM Convention;

.2 be measurable and able to be evaluated for approval (similar to the requirements of the Convention, i.e. D-1 being a process evaluation, while D-2 is a measurable performance standard);

.3 be verifiable by port and flag States through sampling, records or other processes (to be properly defined, listed and technically explained/clarified, in the pertinent application, in terms of proposed verifications for flag State or port State control inspections to be carried out on board);

.4 need to be contained in the application, agreed by the Committee and then be used for consideration of approval through compliance testing by Port State Control;

.5 provide an assurance that systems based on an Other Method are providing the same level of protection for the environment as the Other Method that has received the approval in principle from the Committee; and

.6 be based on a recognized international standard, where appropriate, so long as they can be proved as equivalent to the existing requirements.

5.6 An Other Method may provide the same level of protection for the environment, human health, property or resources where:

.1 the ballasting and de-ballasting process does not transfer harmful aquatic organisms and pathogens; or

.2 the ballast water discharge contains no harmful aquatic organisms and pathogens.

Sampling protocol criteria for an application for approval in principle of an Other Method

5.7 The application for an Other Method should contain a ballast water sampling and analysis protocol that should be consistent with the Guidelines for ballast water sampling (G2).

Ship and personnel safety criteria for an application for approval in principle of an Other Method

5.8 The application should include a Formal Safety Assessment or a Safety Case to ensure that the Other Method or system based on an Other Method is safe for installation on board ship and any risks to the ship's crew resulting from the system are identified and adequately addressed. This Formal Safety Assessment or Safety Case should be consistent with part 3 of the annex to the Guidelines for approval of ballast water management systems (G8) and approved by the Administration.

6 SUBMISSION PROCESS

6.1 The applicant should evaluate the Other Method against the benchmark according to a protocol that is approved by an Administration.

6.2 The applicant should then prepare an application for the Other Method and submit it to the Member State concerned.

6.3 The Administration should review the application to ensure it is satisfactory (i.e. contains all of the information that is required and the information provided is of a sufficient standard to enable a decision to be made by the Committee). If the application is satisfactory, the Member State should submit a proposal for approval in principle to the Committee taking into account the deadlines prior to the MEPC at which approval in principle is to be sought.

6.4 When in session, the Committee should decide if the proposal is acceptable for consideration by the Committee and set the time frame for the evaluation of the proposal as follows:

.1 the Committee may commission an independent review of the risk assessment method, data and assumptions in order to ensure that a scientifically rigorous analysis has been conducted. The review should be undertaken by independent experts with ecological, aquatic biology, ship design and operation, and risk assessment expertise; and

.2 the reviewers' report should be in written form and circulated to the Parties, Members of the Organization, the United Nations and its Specialized Agencies, intergovernmental organizations having agreements with the Organization and non-governmental organizations in consultative status with the Organization, prior to its consideration by the Committee.

6.5 All proprietary data should be treated as confidential by the Committee, the competent authorities involved, and the independent reviewers, if any. However, all information related to safety and environmental protection, including physical/chemical properties and data on environmental fate and toxicity, should be treated as non-confidential.

6.6 The Committee should evaluate the application for approval in principle of an Other Method in accordance with this Procedure.

7 ASSESSMENT OF EQUIVALENCE

7.1 The Committee should review the benchmarks detailed in the application and, as appropriate, take them into account when assessing equivalence to the level of protection for the environment, human health, property or resources as provided for in regulations B-3.1 to B-3.5.

7.2 Other Methods designed to provide at least an equivalent level of protection with respect to the prevention of the transfer of harmful aquatic organisms and pathogens via discharge of ballast water should demonstrate by risk assessment, independently validated physical and biological modelling, operational testing of this modelling and full-scale operational testing, where applicable, that the Other Method is capable of meeting a level of protection at all times that is, at least equivalent to, or better than, the applicable requirements contained in the BWM Convention.

7.3 Risk assessment is the logical process for assigning the likelihood and consequences of specific events, such as entry, establishment or spread of harmful aquatic organisms and pathogens in situations where a direct comparison of application benchmarks with the D-1 and D-2 standards is not possible.

7.4 In undertaking risk assessment to consider and evaluate the equivalence of an Other Method with the existing standards, the risk assessment principles outlined in the Guidelines for risk assessment under regulation A-4 of the BWM Convention (G7) should be carefully applied. The lack of full scientific certainty should be carefully considered in the decision-making process.

Equivalence with the D-1 standard

7.5 Other Methods designed to provide equivalence to the D-1 standard can be used only until the ship type, under the BWM Convention, is required to comply with the D-2 standard (unless the system proves it can also provide equivalence to the D-2 standard):

.1 these methods should demonstrate through risk assessment, independently validated physical and biological modelling, operational testing of this modelling and full-scale operational testing of systems based on Other Methods, where applicable, that the Other Method is capable of meeting at all times a level of protection that is, at least equivalent to, or better than, regulation D-1 of the BWM Convention;

.2 if there is a question about the environmental impact of an Other Method during its development, such approval should be split in the same way as it is in Procedure (G9). That is, Other Methods should be approved by the Administration and Committee based on independently validated data prior to being tested at sea; and

.3 the relevant water quality parameters (e.g., suspended solids, salinity, oxygen concentration, particulate organic matter) should be reasonably the same in the incoming as well as in the outflowing water.

Equivalence with the D-2 standard

7.6 Other Methods designed to provide equivalence to the D-2 standard should demonstrate through risk assessment, independently validated physical and biological modelling, operational testing of this modelling and full-scale operational testing of systems based on Other Methods, where applicable, that the Other Method is capable of meeting at all times a level of protection that is at least equivalent to, or better than, regulation D-2 of the BWM Convention, as follows:

.1 where appropriate, benchmarks should be based on recognized international standards as long as they can be proven to provide an equivalent level of protection to the D-2 standard;

.2 the description of the main characteristics of the ballast water as well as the absence/presence of harmful aquatic organisms is to be supported by independent verification; and

.3 onboard test results, equipment specification and quality assurance should be available.

8 APPROVAL

8.1 The approval takes place in two steps:

.1 an approval in principle of the Other Method following review and evaluation by the Committee (regulation B-3.7); and

.2 an approval of the Other Method in a manner analogous to Guidelines (G8) and (G10), by the Administration.

Assessment for approval in principle

8.2 The application for approval in principle should be assessed by the Committee to ascertain whether:

.1 the application for approval in principle is complete, of sufficient quality, and in accordance with this Procedure;

.2 the Other Method does not cause any unacceptable adverse effects to environment, human health, property or resources;

.3 the Other Method does not contravene other regulations in the BWM Convention, or any other convention or code applicable to the ship type;

.4 the Other Method ensures at least the same level of protection to the environment, human health, property or resources as those methods permitted under regulations B-3.1 to B-3.5; and

.5 the Procedure for approval set out by the Administration is appropriate.

8.3 The application should not be granted approval in principle when there is absence of information or significant uncertainty.

8.4 The Committee should decide whether to approve in principle the proposal, introduce any modifications thereto, if appropriate, taking into account the reviewers' report.

8.5 The Administration that submitted the application to the Committee should inform in writing the applicant about the decision made with regard to the Other Method.

Approval by the Administration

8.6 An Other Method, having received approval in principle from the Committee, is to be approved by an Administration.

8.7 A shipboard system may need to be assessed for Type Approval.

8.8 The Administration should evaluate an Other Method for safety to the environment, human health, property, or resources.

9 NOTIFICATION OF APPROVAL

9.1 The Committee will record the approval in principle of Other Methods and circulate the list once a year including the following information:

- the document reference of the approval in principle of the Other Method by the Committee;
- name and brief description of the Other Method;
- name of ballast water management system that makes use of the Other Method if appropriate;
- date of approval;

- name of applicant;

- the benchmark that the Other Method is designed to meet, and the methods of assessing compliance to this benchmark;

- copies of or access routes to test reports, test methods, etc. (as resolution MEPC.175(58)); and

- any other specifications, if necessary.

9.2 Administrations, when approving an Other Method should report to the Committee in a manner consistent with resolution MEPC.175(58) "Information reporting on Type Approved ballast water management systems".

10 MODIFICATION

10.1 The holder of an Other Method approval should report any modifications to the Administration.

10.2 Any modifications to an approved Other Method should be re-evaluated in accordance with this Procedure.

11 WITHDRAWAL OF APPROVAL

11.1 The Committee may withdraw any approval in principle in the following circumstances:

.1 if the Other Method or system based on an Other Method no longer conforms to requirements due to amendments of the BWM Convention;

.2 if any data or test records differ materially from data relied upon at the time of approval and are deemed not to satisfy the approval criteria;

.3 if a request for withdrawal of approval is made by the Administration on behalf of the holder of an Other Method approval; and

.4 if unreasonable harm to environment, human health, property or resources is determined to have been caused by an approved Other Method.

11.2 The decision to withdraw an approval in principle should specify all necessary further details, including the date upon which the withdrawal takes effect.

12 USE ON SHIPS

12.1 Ships using an Other Method under regulation B-3.7 of the BWM Convention, to meet their obligations under this Convention, can only do so once the Other Method has been approved in principle by the Committee and has been approved by an Administration.

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RESOLUTION MEPC.207(62)

Adopted on 15 July 2011

2011 GUIDELINES FOR THE CONTROL AND MANAGEMENT OF SHIPS' BIOFOULING TO MINIMIZE THE TRANSFER OF INVASIVE AQUATIC SPECIES

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38 of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee relating to any matter within the scope of the Organization concerned with the prevention and control of marine pollution from ships,

RECALLING ALSO that Member States of the International Maritime Organization made a clear commitment to minimizing the transfer of invasive aquatic species by shipping in adopting the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004,

RECALLING FURTHER that studies have shown biofouling on ships to be an important means of transferring invasive aquatic species which, if established in new ecosystems, may pose threats to the environment, human health, property and resources,

NOTING the objectives of the Convention on Biological Diversity, 1992, and that the transfer and introduction of aquatic invasive species through ships' biofouling threatens the conservation and sustainable use of biological diversity,

NOTING ALSO that implementing practices to control and manage ships' biofouling can greatly assist in reducing the risk of the transfer of invasive aquatic species,

NOTING FURTHER that this issue, being of worldwide concern, demands a globally consistent approach to the management of biofouling,

HAVING CONSIDERED, at its sixty-second session, the draft Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species, developed by the Sub-Committee on Bulk Liquids and Gases,

1. ADOPTS the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species, as set out in the annex to the present resolution;

2. REQUESTS Member States to take urgent action in applying these Guidelines, including the dissemination thereof to the shipping industry and other interested parties, taking these Guidelines into account when adopting measures to minimize the risk of introducing invasive aquatic species via biofouling, and reporting to the MEPC on any experience gained in their implementation; and

3. AGREES to keep these Guidelines under review in light of the experience gained.

ANNEX

2011 GUIDELINES FOR THE CONTROL AND MANAGEMENT OF SHIPS' BIOFOULING TO MINIMIZE THE TRANSFER OF INVASIVE AQUATIC SPECIES

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1 INTRODUCTION

1.1 In the adoption of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention), Member States of the International Maritime Organization (IMO) made a clear commitment to minimizing the transfer of invasive aquatic species by shipping. Studies have shown that biofouling can also be a significant vector for the transfer of invasive aquatic species. Biofouling on ships entering the waters of States may result in the establishment of invasive aquatic species which may pose threats to human, animal and plant life, economic and cultural activities and the aquatic environment.

1.2 While the International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001 (AFS Convention) addresses anti-fouling systems on ships, its focus is on the prevention of adverse impacts from the use of anti-fouling systems and the biocides they may contain, rather than preventing the transfer of invasive aquatic species.

1.3 The potential for invasive aquatic species transferred through biofouling to cause harm has been recognized by the IMO, the Convention on Biological Diversity (CBD), several UNEP Regional Seas Conventions (e.g., Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution), the Asia Pacific Economic Cooperation forum (APEC), and the Secretariat of the Pacific Region Environmental Program (SPREP).

1.4 All ships have some degree of biofouling, even those which may have been recently cleaned or had a new application of an anti-fouling coating system. Studies have shown that the biofouling process begins within the first few hours of a ship's immersion in water. The biofouling that may be found on a ship is influenced by a range of factors, such as follows:

.1 design and construction, particularly the number, location and design of niche areas;

.2 specific operating profile, including factors such as operating speeds, ratio of time underway compared with time alongside, moored or at anchor, and where the ship is located when not in use (e.g., open anchorage or estuarine port);

.3 places visited and trading routes; and

.4 maintenance history, including: the type, age and condition of any anti-fouling coating system, installation and operation of anti-fouling systems and dry-docking/slipping and hull cleaning practices.

1.5 Implementing practices to control and manage biofouling can greatly assist in reducing the risk of the transfer of invasive aquatic species. Such management practices can also improve a ship's hydrodynamic performance and can be effective tools in enhancing energy efficiency and reducing air emissions from ships. This concept has been identified by the IMO in the "Guidance for the development of a ship energy efficiency management plan (SEEMP)" (MEPC.1/Circ.683).

1.6 These Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (hereafter "the Guidelines") are intended to provide a globally consistent approach to the management of biofouling. As scientific and technological advances are made, the Guidelines will be refined to enable the risk to be more adequately addressed. Port States, flag States, coastal States and other parties that can assist in mitigating the problems associated with biofouling should exercise due diligence to implement the Guidelines to the maximum extent possible.

2 DEFINITIONS

2.1 For the purposes of these Guidelines, the following definitions apply:

AFS Convention means the International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001.

Anti-fouling coating system means the combination of all component coatings, surface treatments (including primer, sealer, binder, anti-corrosive and anti-fouling coatings) or other surface treatments, used on a ship to control or prevent attachment of unwanted aquatic organisms.

Anti-fouling system means a coating, paint, surface treatment, surface, or device that is used on a ship to control or prevent attachment of unwanted organisms.

Biofouling means the accumulation of aquatic organisms such as micro-organisms, plants, and animals on surfaces and structures immersed in or exposed to the aquatic environment. Biofouling can include microfouling and macrofouling (see below).

In-water cleaning means the physical removal of biofouling from a ship while in the water.

Invasive aquatic species means a species which may pose threats to human, animal and plant life, economic and cultural activities and the aquatic environment.

Marine Growth Prevention System (MGPS) means an anti-fouling system used for the prevention of biofouling accumulation in internal seawater cooling systems and sea chests and can include the use of anodes, injection systems and electrolysis.

Member States means States that are Members of the International Maritime Organization.

Macrofouling means large, distinct multicellular organisms visible to the human eye such as barnacles, tubeworms, or fronds of algae.

Microfouling means microscopic organisms including bacteria and diatoms and the slimy substances that they produce. Biofouling comprised of only microfouling is commonly referred to as a slime layer.

Niche areas mean areas on a ship that may be more susceptible to biofouling due to different hydrodynamic forces, susceptibility to coating system wear or damage, or being inadequately, or not, painted, e.g., sea chests, bow thrusters, propeller shafts, inlet gratings, dry-dock support strips, etc.

Organization means the International Maritime Organization.

Port State authority means any official or organization authorized by the Government of a port State to verify the compliance and enforcement of standards and regulations relevant to the implementation of national and international shipping control measures.

Ship means a vessel of any type whatsoever operating in the aquatic environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft, fixed or floating platforms, floating storage units (FSUs) and floating production storage and off-loading units (FPSOs).

States means coastal, port or Member States as appropriate.

Treatment means a process which may use a mechanical, physical, chemical or biological method to remove or render sterile, invasive or potentially invasive aquatic species fouling a ship.

3 APPLICATION

3.1 The Guidelines are intended to provide useful recommendations on general measures to minimize the risks associated with biofouling for all types of ships and are directed to States, shipmasters, operators and owners, shipbuilders, ship cleaning and maintenance operators, port authorities, ship repair, dry-docking and recycling facilities, ship designers, classification societies, anti-fouling paint manufacturers and suppliers and any other interested parties. A State should determine the extent that the Guidelines are applied within that particular State.

3.2 A separate guidance document, based on these Guidelines, provides advice relevant to owners and/or operators of recreational craft less than 24 metres in length, using terminology appropriate for that sector.

3.3 States should inform the Organization of any relevant biofouling regulations, management requirements or restrictions they are applying to international shipping.

4 OBJECTIVES

4.1 The objectives of these Guidelines are to provide practical guidance to States, ship masters, operators and owners, shipbuilders, ship repair, dry-docking and recycling facilities, ship cleaning and maintenance operators, ship designers, classification societies, anti-fouling paint manufacturers and suppliers and any other interested parties, on measures to minimize the risk of transferring invasive aquatic species from ships' biofouling. It is important that biofouling management procedures be effective as well as environmentally safe, practical, designed to minimize costs and delays to the ship, and based upon these Guidelines whenever possible.

4.2 To minimize the transfer of invasive aquatic species, a ship should implement biofouling management practices, including the use of anti-fouling systems and other operational management practices to reduce the development of biofouling. The intent of such practices is to keep the ship's submerged surfaces, and internal seawater cooling systems, as free of biofouling as practical. A ship following this guidance and minimizing macrofouling would have a reduced potential for transferring invasive aquatic species via biofouling.

4.3 The management measures outlined within these Guidelines are intended to complement current maintenance practices carried out within the industry.

5 BIOFOULING MANAGEMENT PLAN AND RECORD BOOK

5.1 Implementation of an effective biofouling management regime is critical for minimizing the transfer of invasive aquatic species. The biofouling management measures to be undertaken on a ship should be outlined in a biofouling management plan, and records of biofouling management practices kept in a biofouling record book, as outlined below.

Biofouling Management Plan

5.2 It is recommended that every ship should have a biofouling management plan. The intent of the plan should be to provide effective procedures for biofouling management. An example of a Biofouling Management Plan is outlined in appendix 1 of these Guidelines. The Biofouling Management Plan may be a stand-alone document, or integrated in part or fully, into the existing ships' operational and procedural manuals and/or planned maintenance system.

5.3 The biofouling management plan should be specific to each ship and included in the ship's operational documentation. Such a plan should address, among other things, the following:

.1 relevant parts of these Guidelines;

.2 details of the anti-fouling systems and operational practices or treatments used, including those for niche areas;

.3 hull locations susceptible to biofouling, schedule of planned inspections, repairs, maintenance and renewal of anti-fouling systems;

.4 details of the recommended operating conditions suitable for the chosen anti-fouling systems and operational practices;

.5 details relevant for the safety of the crew, including details on the anti-fouling system(s) used; and

.6 details of the documentation required to verify any treatments recorded in the Biofouling Record Book as outlined in appendix 2.

5.4 The biofouling management plan should be updated as necessary.

Biofouling Record Book

5.5 It is recommended that a Biofouling Record Book is maintained for each ship. The book should record details of all inspections and biofouling management measures undertaken on the ship. This is to assist the shipowner and operator to evaluate the efficacy of the specific anti-fouling systems and operational practices on the ship in particular, and of the biofouling management plan in general. The record book could also assist interested State authorities to quickly and efficiently assess the potential biofouling risk of the ship, and thus minimize delays to ship operations. The Biofouling Record Book may be a stand-alone document, or integrated in part, or fully, into the existing ships' operational and procedural manuals and/or planned maintenance system.

5.6 It is recommended that the Biofouling Record Book be retained on the ship for the life of the ship.

5.7 Information that should be recorded in a Biofouling Record Book includes the following:

.1 details of the anti-fouling systems and operational practices used (where appropriate as recorded in the Anti-fouling System Certificate), where and when installed, areas of the ship coated, its maintenance and, where applicable, its operation;

.2 dates and location of dry-dockings/slippings, including the date the ship was re-floated, and any measures taken to remove biofouling or to renew or repair the anti-fouling system;

.3 the date and location of in-water inspections, the results of that inspection and any corrective action taken to deal with observed biofouling;

.4 the dates and details of inspection and maintenance of internal seawater cooling systems, the results of these inspections, and any corrective action taken to deal with observed biofouling and any reported blockages; and

.5 details of when the ship has been operating outside its normal operating profile including any details of when the ship was laid-up or inactive for extended periods of time.

5.8 An example of a Biofouling Record Book and information to be recorded is included as appendix 2 to these Guidelines.

6 ANTI-FOULING SYSTEM INSTALLATION AND MAINTENANCE

6.1 Anti-fouling systems and operational practices are the primary means of biofouling prevention and control for existing ships' submerged surfaces, including the hull and niche areas. An anti-fouling system can be a coating system applied to exposed surfaces, biofouling resistant materials used for piping and other unpainted components, marine growth prevention systems (MGPSs) for sea chests and internal seawater cooling systems, or other innovative measures to control biofouling.

6.2 The anti-fouling system used should comply with the AFS Convention, where necessary.

Choosing the anti-fouling system

6.3 Different anti-fouling systems are designed for different ship operating profiles so it is essential that ship operators, designers and builders obtain appropriate technical advice to ensure an appropriate system is applied or installed. If an appropriate anti-fouling system is not applied, biofouling accumulation increases.

6.4 Some factors to consider when choosing an anti-fouling system include the following:

.1 planned periods between dry-docking – including any mandatory requirements for ships survey;

.2 ship speed – different anti-fouling systems are designed to optimize anti-fouling performance for specific ship speeds;

.3 operating profile – patterns of use, trade routes and activity levels, including periods of inactivity, influence the rate of biofouling accumulation;

.4 ship type and construction; and

.5 any legal requirements for the sale and use of the anti-fouling systems.

6.5 Consideration should also be given to the need for tailored, differential installation of anti-fouling coating systems for different areas of the ship to match the required performance and longevity of the coating with the expected wear, abrasion and water flow rates in specific areas, such as the bow, rudder, or internal seawater cooling systems and sea chest interiors.

Installing, re-installing, or repairing the anti-fouling system

6.6 Whether installing, re-installing or repairing the anti-fouling system, care should be taken in surface preparation to ensure all biofouling residues, flaking paint, or other surface contamination is completely removed, particularly in niche areas, to facilitate good adhesion and durability of the anti-fouling system.

6.7 For sea chests the following should be considered when installing, re-installing, or repairing their anti-fouling systems:

.1 inlet grates and the internal surfaces of sea chests should be protected by an anti-fouling coating system that is suitable for the flow conditions of seawater over the grate and through the sea chest;

.2 care should be taken in surface preparation and application of any anti-fouling coating system to ensure adequate adhesion and coating thickness. Particular attention should be paid to the corners and edges of sea chests, blowout pipes, holding brackets and the bars of grates. Grates may require a major refurbishment type of surface preparation at each dry-docking to ensure coating durability; and

.3 the installation of MGPSs is encouraged to assist in treating the sea chest and internal seawater piping as part of the biofouling management plan. A careful evaluation of the consequential effects of MGPSs should be made before installation, including potential effects on the ship and/or the environment and the existence of regulations affecting the use of MGPSs.

6.8 Other niche areas can also be particularly susceptible to biofouling growth. Management measures for niche areas are outlined below.

.1 **Dry-docking support strips** – Positions of dry-docking blocks and supports should be varied at each dry-docking, or alternative arrangements made to ensure that areas under blocks are painted with anti-fouling, at least at alternate dry-dockings. These areas should receive a major refurbishment type of surface preparation and be coated at each dry-docking that they are accessible. Where it is not possible to alternate the position of dry-docking support strips, e.g., in critical weight bearing areas such as under the engine-room, these areas should be specially considered and managed by other means, e.g., the application of specialized coatings or procedures.

.2 **Bow and stern thrusters** – The body and area around bow, stern and any other thrusters prone to coating damage, should be routinely maintained at dry-dockings. Particular attention should be paid to any free flooding spaces which may exist around the thruster tunnel. The housings/recesses, and retractable fittings such as stabilizers and thruster bodies, should have an anti-fouling coating system of adequate thickness for optimal effectiveness.

.3 **Edges and weld joints** – Exposed edges on the hull, such as around bilge keels and scoops, and weld joints, should be faired and coated to ensure adequate coating thickness to optimize system effectiveness.

.4 **Rudder hinges and stabilizer fin apertures** – Recesses within rudder hinges and behind stabilizer fins need to be carefully and effectively cleaned and re-coated at maintenance dry-dockings. Rudders and stabilizer fins should be moved through their full range of motion during the coating process to ensure that all surfaces are correctly coated to the specification of the anti-fouling system. Rudders, rudder fittings and the hull areas around them should also be adequately coated to withstand the increased wear rates experienced in these areas.

.5 **Propeller and shaft** – Propellers and immersed propeller shafts should be coated with fouling release coatings where possible and appropriate, to maintain efficiency and enable self-cleaning, so that the need for regular in-water cleaning and polishing is minimized.

.6 **Stern tube seal assemblies and the internal surfaces of rope guards** – Exposed sections of stern tube seal assemblies and the internal surfaces of rope guards should be carefully painted with anti-fouling coating systems appropriate to the degree of water movement over and around these surfaces.

.7 **Cathodic protection (CP) anodes** – Niche areas for biofouling can be minimized if: anodes are flush-fitted to the hull; a rubber backing pad is inserted between the anode and the hull; or the gap is caulked. Caulking the gap will make the seam or joint watertight. If not flush-fitted, the hull surface under the anode and the anode strap should be coated with an anti-fouling coating system suitable for low water flow to prevent biofouling accumulation. If anodes are attached by bolts recessed into the anode surface, the recess should be caulked to remove a potential niche.

.8 **Pitot tubes** – Where retractable pitot tubes are fitted, the housing should be internally coated with an anti-fouling coating system suitable for static conditions.

.9 **Sea inlet pipes and overboard discharges** – Anti-fouling coating systems should be applied inside the pipe opening and accessible internal areas. The anti-corrosive or primer coating selected should be appropriate to the specific pipe material if this material is different to the hull. Care should be taken in surface preparation and coating application to ensure good adhesion and coating thickness.

Procedures for ship maintenance and recycling facilities

6.9 Ship maintenance and recycling facilities should adopt measures (consistent with applicable national and local laws and regulations) to ensure that viable biofouling organisms or chemical and physical pollutants are not released into the local aquatic environment. These measures include the following:

.1 capturing biological material to minimize the risk of organism survival and establishment and other impacts of biological material being released into the aquatic environment;

.2 treating and/or disposing of captured biological material in an environmentally appropriate manner;

.3 scheduling of ships' arrival and departure at cleaning and maintenance facilities and at locations where ships are moored while waiting for cleaning and maintenance to minimize the risk of fouled ships contaminating other ships and the surrounding environment;

.4 removing biofouling from all underwater surfaces of a ship when in dry-dock, including niche areas; and

.5 lowering or extending retractable equipment such as stabilizers, thrusters, transducers and similar when a ship is in dry-dock or slipped, to permit access for the removal of biofouling from the equipment and its housing.

7 IN-WATER INSPECTION, CLEANING AND MAINTENANCE

7.1 Despite the use of effective anti-fouling systems and operational practices, undesirable amounts of biofouling may still accumulate during the intended lifetime of the anti-fouling system. To maintain a ship as free of biofouling as practical, it may be advisable for the ship to undertake in-water inspection, cleaning and maintenance.

In-water inspection of ships

7.2 In-water inspection can be a useful and flexible means to inspect the condition of anti-fouling systems and the biofouling status of a ship. In-water inspections should be undertaken periodically as a general means of routine surveillance, augmented by specific inspections as necessary to address any situations of elevated risk. Specific occasions when an in-water inspection may be appropriate, include the following:

.1 before and after any planned period of inactivity or significant or unforeseen change to the ship's operating profile;

.2 prior to undertaking in-water cleaning to determine the presence of known or suspected invasive aquatic species or other species of concern on the ship;

.3 after a known or suspected marine pest or other species of concern is discovered in a ship's internal seawater cooling systems; and

.4 following damage to, or premature failure of, the anti-fouling system.

7.3 It is recommended that ship operators identify niche areas on the ship that may accumulate biofouling to enable these areas to be effectively targeted during inspections. Areas may include the following:

- propeller thrusters and propulsion units;
- sea chests;
- rudder stock and hinge;
- stabilizer fin apertures;
- rope guards, stern tube seals and propeller shafts;

- cathodic protection anodes;

- anchor chain and chain lockers;

- free flood spaces inherent to the ships' design;

- sea chest and thruster tunnel grates;

- echo sounders and velocity probes;

- overboard discharge outlets and sea inlets; and

- areas prone to anti-fouling coating system damage or grounding (e.g., areas of the hull damaged by fenders when alongside, leading edges of bilge keels and propeller shaft "y" frames).

7.4 Dive and remotely operated vehicle (ROV) surveys can be practical options for in-water inspections although they do have limitations regarding visibility and available dive time compared with the area to be inspected, and difficulties with effectively accessing many biofouling prone niches. Such surveys should be undertaken by persons who are suitably qualified and experienced and familiar with biofouling and associated invasive aquatic species risks and the safety risks relating to in-water surveys. Regulatory authorities may have recommended or accredited biofouling inspection divers.

In-water cleaning and maintenance

7.5 In-water cleaning can be an important part of biofouling management. In-water cleaning can also introduce different degrees of environmental risk, depending on the nature of biofouling (i.e. microfouling versus macrofouling), the amount of anti-fouling coating system residue released and the biocidal content of the anti-fouling coating system. Relative to macrofouling, microfouling can be removed with gentler techniques that minimize degradation of the anti-fouling coating system and/or biocide release. Microfouling removal may enhance a ship's hull efficiency, reducing fuel consumption and greenhouse gas emissions. It is, therefore, recommended that the ship's hull is cleaned when practical by soft methods if significant microfouling occurs. In-water cleaning can also reduce the risk of spreading invasive aquatic species by preventing macrofouling accumulation.

7.6 It may be appropriate for States to conduct a risk assessment to evaluate the risk of in-water cleaning activities and minimize potential threats to their environment, property and resources. Risk assessment factors could include the following:

.1 biological risk of the biofouling organisms being removed from the ship (including viability of the biofouling organisms or the ability to capture biofouling material);

.2 factors that may influence biofouling accumulation, such as changes to the operating profile of the ship;

.3 geographical area that was the source of the biofouling on the ship, if known; and

.4 toxic effects related to substances within the anti-fouling coating system that could be released during the cleaning activity, and any subsequent damage to the anti-fouling coating system.

7.7 Personnel proposing to undertake in-water cleaning should be aware of any regulations or requirements for the conduct of in-water cleaning, including any regulations regarding the discharge of chemicals into the marine environment and the location of sensitive areas (such as marine protected areas and ballast water exchange areas). Where significant macrofouling growth is detected, it should be removed or treated (if this can be done without damaging the anti-fouling system) in accordance with such regulations. Where available, appropriate technology should be used to minimize the release of both anti-fouling coating or paint debris, and viable adult, juvenile, or reproductive stages of macrofouling organisms. The collected material should be disposed of in a manner which does not pose a risk to the aquatic environment.

7.8 For immersed areas coated with biocidal anti-fouling coatings, cleaning techniques should be used that minimize release of biocide into the environment. Cleaning heavily fouled anti-fouling coating systems can not only generate biofouling debris, but prematurely depletes the anti-fouling coating system and may create a pulse of biocide that can harm the local environment and may impact on future applications by the port authority for the disposal of dredge spoil. Depleted anti-fouling coating systems on hulls will rapidly re-foul. In-water cleaning or scrubbing of hulls for the purpose of delaying dry-dockings beyond the specified service life of the coating is, therefore, not recommended.

7.9 Immersed areas coated with biocide-free anti-fouling coating systems may require regular in-water cleaning as part of planned maintenance to maintain hull efficiency and minimize the risk of transferring invasive aquatic species. Cleaning techniques should be used which do not damage the coating and impair its function.

7.10 Any maintenance or repair activities should take care not to impede future in-service cleaning and/or maintenance, e.g., care should be taken to ensure sea chest grates do not become welded shut during repair work.

7.11 Care should be taken to ensure that any MGPSs installed are operating effectively to prevent accumulation of biofouling.

7.12 Regular polishing of uncoated propellers to maintain operational efficiency will also minimize macrofouling accumulation. Uncoated propeller shafts may require cleaning at the same time as the propeller. As a ship's routine propeller polishing will involve the use of divers, it is recommended that this opportunity is taken to assess sea chests, and other similar areas, for macrofouling.

7.13 Internal seawater cooling systems need to be regularly monitored to ensure effective biofouling control is maintained. Seawater cooling systems that operate while the ship is in port may be vulnerable to biofouling accumulation, and should be closely monitored. If seawater cooling systems become fouled, they should be appropriately treated. Any discharge of treated water from internal seawater cooling systems should be undertaken in accordance with applicable regulations.

8 DESIGN AND CONSTRUCTION

8.1 Initial ship design and construction offers the most comprehensive, effective and durable means by which to minimize ship biofouling risks. In the design and construction of a ship, or when a ship is being significantly altered, the following should be taken into consideration:

.1 Small niches and sheltered areas should be excluded from the ship as far as practical, e.g., flush mounting pipes in sea chests. Where not practical, these should be designed so that they may be easily accessed for inspection, cleaning and application of anti-fouling measures.

.2 Rounding and/or bevelling of corners, gratings and protrusions to promote more effective coverage of anti-fouling coating systems, and hinging of gratings to enable diver access.

.3 Providing the capacity to blank off the sea chest and other areas, such as moon pools, floodable docks and other free flood spaces, for treatment and/or cleaning.

8.2 Internal seawater cooling systems should be designed and made of appropriate material to minimize biofouling and constructed with a minimum of bends, kinks and flanges in seawater piping.

8.3 To avoid creation of avoidable niches while ensuring effective safety and operation of the ship, where practical, particular attention should be given to avoidance of unfilled gaps in all skin fittings and the detailed design of the items as follows:

.1 sea chests – minimize size and number, and use smooth surfaces to maximize flow efficiency, fit MGPS, and steam or hot water cleaning systems, grills and their opening arrangements designed for in-water inspection and maintenance;

.2 retractable fittings and equipment – avoid external reinforcement (such as stiffeners) where possible, design for in-water inspection and maintenance;

.3 tunnel thrusters – tunnels to be above light water line or accessible to divers, grills and their opening arrangements designed for in-water inspection, maintenance and operation;

.4 sponsons and hull blisters – use fully enclosed in preference to free flooding types, with access provisions made for in-water inspection, cleaning and maintenance;

.5 stern tube seal assemblies and rope guards – design for in-water inspection, cleaning and maintenance; and

.6 immersible and seabed equipment – ensure facilities for equipment washdown during retrieval and enclosed washdown areas for cleaning of equipment on board, if necessary, are provided.

9 DISSEMINATION OF INFORMATION

9.1 States are encouraged to maintain and exchange information relevant to these Guidelines through the Organization. Accordingly, States are encouraged to provide the Organization with the information related to the management of biofouling as follows:

.1 copies of current regional, national and local laws, regulations, standards, exemptions or guidelines;

.2 technical and research information, including any studies on the impact and control of invasive aquatic species in ships' biofouling, and on the efficacy and practicality of environmentally protective in-water cleaning technologies;

.3 education materials such as CD's, DVD's or printed materials; and

.4 the location of and the terms of use for cleaning and maintenance services and facilities for ships and equipment that comply with these Guidelines.

9.2 State authorities should provide ships with timely, clear and concise information on biofouling management measures and treatment requirements that are being applied to shipping and ensure these are widely distributed. Shipowners and operators should endeavour to become familiar with all requirements related to biofouling by requesting such information from their port or shipping agents or competent authorities (i.e. State authorities). State authorities should also provide ships with any available information on particular invasive aquatic species that may be present in a port and could attach to a ship as biofouling (e.g., if a particular species of concern is spawning) in a timely manner.

9.3 Organizations or shipping agents representing shipowners and operators should be familiar with the requirements of State authorities with respect to biofouling management and treatment procedures, including information that will be needed to obtain entry clearance. Verification and detailed information concerning State requirements should be obtained by the ship prior to arrival.

9.4 To monitor the effectiveness of these Guidelines, States, as part of the evaluation process could provide to the Organization details of records describing reasons why ships could not apply these Guidelines, e.g., design, construction or operation of a ship, particularly from the view point of ships' safety, or lack of information concerning the Guidelines.

10 TRAINING AND EDUCATION

10.1 Training for ships' masters and crews, in-water cleaning or maintenance facility operators and those surveying or inspecting ships as appropriate should include instructions on the application of biofouling management and treatment procedures, based upon the information contained in these Guidelines. Instruction should also be provided on the following:

.1 maintenance of appropriate records and logs;

.2 impacts of invasive aquatic species from ships' biofouling;

.3 benefits to the ship of managing biofouling and the threats posed by not applying management procedures;

.4 biofouling management measures and associated safety procedures; and

.5 relevant health and safety issues.

10.2 States and industry organizations should ensure that relevant marine training organizations are aware of these Guidelines and include this in their syllabuses as appropriate.

11 OTHER MEASURES

11.1 To the extent practical, States and port authorities should aim to ensure smooth flow of ships going in and out of their ports to avoid keeping ships waiting offshore so that anti-fouling systems can operate as effectively as possible.

11.2 States may apply other measures on ships within their jurisdiction for the purpose of providing additional protection for their marine environment, or in emergency situations. In managing emergency situations for biofouling, States should consider the guidance document for ballast water emergency situations (BWM.2/Circ.17).

11.3 States should take into account these Guidelines when developing other measures and/or restrictions for managing ships' biofouling.

11.4 Where other measures are being applied, States should notify the Organization of the specific requirements, with supporting documentation, for dissemination to other States and non-governmental agencies where appropriate.

11.5 The application of other measures by States should not place the safety of the ship and crew at risk.

12 FUTURE WORK

Research needs

12.1 States and other interested parties should encourage and support research into, and development of technologies for:

.1 minimizing and/or managing both macrofouling and microfouling particularly in niche areas (e.g., new or different anti-fouling systems and different designs for niche areas to minimize biofouling);

.2 in-water cleaning that ensures effective management of the anti-fouling system, biofouling and other contaminants, including effective capture of biological material;

.3 comprehensive methods for assessing the risks associated with in-water cleaning;

.4 shipboard monitoring and detection of biofouling;

.5 reducing the macrofouling risk posed by the dry-docking support strips, (e.g., alternative keel block designs that leave less uncoated hull area);

.6 the geographic distribution of biofouling invasive aquatic species; and

.7 the rapid response to invasive aquatic species incursions, including diagnostic tools and eradication methods.

12.2 Potential operational benefits of such technologies should also be highlighted and relevant information provided to the Organization.

Independent information needs

12.3 Summaries are needed of the different types of anti-fouling systems and other biofouling management measures currently available, how they work and their performance under different operating conditions and situations. This information could assist shipowners and operators when making decisions about the most appropriate coatings and coating systems for their ship type and activity.

APPENDIX 1

BIOFOULING MANAGEMENT PLAN AND RECORD BOOK

Format and content of Biofouling Management Plan

The following information should be considered when developing a Biofouling Management Plan (the Plan). It is important that the Plan be specific to each ship.

The Plan may be a stand-alone document or integrated in part or full in the ships' operational and procedures manuals and/or planned maintenance systems.

INTRODUCTION

This section should contain a brief introduction for the ship's crew, explaining the need for biofouling management, and the importance of accurate record keeping.

The Plan should state that it is to be available for viewing on request by a port State authority and should be written in the working language of the crew.

SHIP PARTICULARS

At least the following details should be included:

- Ship's name.
- Flag.
- Port of registry.
- Gross tonnage.
- Registration number (i.e. IMO number and/or other registration numbers, if applicable).
- Regulation Length.
- Beam.
- Ship type (as classified by Lloyds Register – see Table 1).
- International call sign and Maritime Mobile Service Identity (MMSI).

Table 1: Ship types, as classified by Lloyd's Register

anchor handling fire fighting tug/supply	dredger	lighthouse/tender	roll on roll off
anchor handling tug	drill platform	Liquid Natural Gas Carrier	salvage tug
anchor handling tug/supply	drill ship	Liquid Petroleum Gas Carrier	seismographic research
asphalt tanker	ferry	livestock	semi-sub heavy lift vessel
barge	fire fighting tug	meteorological research	suction dredger
bulk carrier	fire fighting tug/supply	naval auxiliary tanker	supply
bulk carrier with container capacity	fish carrier	naval vessel	support
bulk cement carrier	fish factory	oceanographic research	tank barge
bulk ore carrier	fishery protection	offshore safety	tanker (unspecified)
bunkering tanker	fishing (general)	passenger (cruise)	trailing suction hopper dredger
cable ship	floating gas production	passenger roll on roll off	training
chemical tanker	floating production tanker	patrol ship	trawler (all types)
combined bulk and oil carrier	floating storage tanker	pipe layer	tug
combined chemical and oil tanker	fully cellular containership	pollution control vessel	tug/supply
combined LNG and LPG Gas Carrier	general cargo	pontoon	vehicle carrier
combined ore and oil carrier	general cargo with container capacity	product tanker	whaler
crane barge	grab dredger	pusher tug	wood-chip carrier
crane ship	hopper barge	reefer	yacht
crude oil tanker	hopper dredger	research	
cutter suction dredger	icebreaker	research/supply ship	
diving support	landing craft	roll on roll off with container capacity	

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A table of contents should be included.

PURPOSE

The purpose of the Plan is to outline measures for the control and management of ships' biofouling in accordance with the Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (the Guidelines). It provides operational guidance for the planning and actions required for ships' biofouling management.

DESCRIPTION OF THE ANTI-FOULING SYSTEMS

The Plan should describe the anti-fouling systems in place for different parts of the ship, including as follows:

- type(s) of anti-fouling coating systems applied;
- details of where anti-fouling systems are and are not applied or installed;
- manufacturer and product names of all coatings or products used in the anti-fouling coating systems; and
- anti-fouling system specifications (including dry film thickness for coatings, dosing and frequency for MGPSs, etc.) together with the expected effective life, operating conditions required for coatings to be effective, cleaning requirements and any other specifications relevant for paint performance.

Previous reports on the performance of the ship's anti-fouling systems should be included, if applicable, and the AFS certificate or statement of compliance or other documentation should also be referenced, as appropriate.

DESCRIPTION OF OPERATING PROFILE

The Plan should describe the ship's operating profile that has determined the performance specifications of the ship's anti-fouling systems and operational practices, including:

- typical operating speeds;
- periods underway at sea compared with periods berthed, anchored or moored;
- typical operating areas or trading routes; and
- planned duration between dry-dockings/slippings.

DESCRIPTION OF AREAS ON THE SHIP SUSCEPTIBLE TO BIOFOULING

The Plan should identify the hull areas, niche areas and seawater cooling systems on the ship that are particularly susceptible to biofouling and describe the management actions required for each area. It should also describe the actions to be taken if the ship is operating outside of the desired operating profile, or if excessive unexpected biofouling is observed, and any other actions that can be taken to minimize the accumulation of biofouling on the ship. Table 1 provides an example of an action plan.

Table 2: Biofouling management action plan

Areas of the ship which are particularly susceptible to biofouling	**Management actions required for each area** (e.g., inspections, cleaning, repairs and maintenance)	**Management actions to be undertaken if ship operates outside its usual operating profile**
External hull surfaces: - Vertical sides - Flats - Boottop - Bow dome - Transom		
Hull appendages and fittings: - Bilge keels - A-brackets - Stabilizer fins - CP anodes		

Steering and propulsion:
 	
- Propeller
- Propeller shaft
- Stern tube seal
- Anchor chain
- Chain locker
- Rope guard
- Rudder
- Bow/Stern thrusters
  - Propeller
  - Thruster body
  - Tunnel
- Tunnel grates		

Seawater intakes and internal seawater cooling systems: - Engine cooling system - Sea chests (identify number and position) - Sea chest grate - Internal pipework and heat exchanger - Fire-fighting system - Ballast uptake system - Auxiliary services system		

A diagram of the ship should be included in the Plan to identify the location of those areas of the ship that are particularly susceptible to biofouling (including access points in the internal seawater cooling systems). If necessary these should show both side and bottom views of the ship.

OPERATION AND MAINTENANCE OF THE ANTI-FOULING SYSTEM

This section should contain a detailed description of the operation and maintenance of the anti-fouling system(s) used, including schedule(s) of activities and step-by-step operational procedures.

Timing of operational and maintenance activities

This section should stipulate the schedule of planned inspections, repairs, maintenance and renewal of the anti-fouling systems.

In-water cleaning and maintenance procedures

This section should set out planned maintenance procedures (other than for on board treatment processes) that need to be completed between dry-docking events to minimize biofouling. This should include routine cleaning or other treatments. Details should be provided on the treatment/cleaning to be conducted, the specification of any equipment required, details of the areas to which each specific treatment/cleaning is to be applied, step-by-step operational procedures where relevant and any other details relevant to the processes (e.g., chemicals required for treatment, any discharge standards).

Operation of onboard treatment processes

This section should provide specific advice about MGPS fitted, internal seawater cooling systems covered by the system and any not covered, and the associated maintenance and inspection schedule and procedures. This would include information such as when each MGPS is run, for how long and any cleaning/maintenance requirements of the system once use is finished. This section should also include advice for ship operators on procedures for biofouling management if the MGPS is temporarily out of operation.

SAFETY PROCEDURES FOR THE SHIP AND THE CREW

Details of specific operational or safety restrictions, including those associated with the management system that affects the ship and/or the crew.

Details of specific safety procedures to be followed during ship inspections.

DISPOSAL OF BIOLOGICAL WASTE

This section should contain procedures for the disposal of biological waste generated by treatment or cleaning processes when the cleaning is conducted by, or under the direct supervision of, the shipowner, master or crew.

RECORDING REQUIREMENTS

This section should contain details of the types of documentation to be kept to verify the operations and treatments to be recorded in the Biofouling Record Book as outlined in appendix 2.

CREW TRAINING AND FAMILIARIZATION

This section should contain information on the provision of crew training and familiarization.

APPENDIX 2

BIOFOULING MANAGEMENT PLAN AND RECORD BOOK

Biofouling Record Book Form

2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species

Period From: …… To: .....

Name of Ship .....

Registration number* .....

Gross tonnage .....

Flag .....

* Registration number = IMO number and/or other registration numbers.

The ship is provided with a Biofouling Management Plan ☐

Diagram of ship indicating underwater hull form (showing both side and bottom views of the ship, if necessary) and recognized biofouling niches:

1 Introduction

The Guidelines recommend that a Biofouling Record Book is maintained for each ship, in which should be recorded the details of all inspections and biofouling management measures undertaken on the ship.

2 Entries in the Biofouling Record Book

The following information should be recorded in the Biofouling Record Book:

2.1 After each dry-docking:

a. Date and location that the ship was dry-docked.

b. Date that ship was re-floated.

c. Any hull cleaning that was performed while dry-docked, including areas cleaned, method used for cleaning and the location of dry-dock support blocks.

d. Any anti-fouling coating system, including patch repairs, that was applied while dry-docked. Detail the type of anti-fouling coating system, the area and locations it was applied to, the coating thickness achieved and any surface preparation work undertaken (e.g., complete removal of underlying anti-fouling coating system or application of new anti-fouling coating system over the top of existing anti-fouling coating system).

e. Name, position and signature of the person in charge of the activity for the ship.

2.2 When the hull area, fittings, niches and voids below the waterline have been inspected by divers:

a. Date and location of ship when dive surveyed and reason for survey.

b. Area or side of the ship surveyed.

c. General observations with regard to biofouling (i.e. extent of biofouling and predominant biofouling types, e.g., mussels, barnacles, tubeworms, algae and slime).

d. What action was taken, if any, to remove or otherwise treat biofouling.

e. Any supporting evidence of the actions taken (e.g., report from the classification society or contractor, photographs and receipts).

f. Name, position, signature of the person in charge of the activity.

2.3 When the hull area, fittings, niches and voids below the waterline have been cleaned by divers:

a. Date and location of ship when cleaning/treatment occurred.

b. Hull areas, fittings, niches and voids cleaned/treated.

c. Methods of cleaning or treatment used.

d. General observations with regard to biofouling (i.e. extent of biofouling and predominant biofouling types, e.g., mussels, barnacles, tubeworms, algae and slime).

e. Any supporting evidence of the actions taken (e.g., report from the classification society or contractor, photographs and receipts).

f. Records of permits required to undertake in-water cleaning if applicable.

g. Name, position and signature of the person in charge of the activity.

2.4 When the internal seawater cooling systems have been inspected and cleaned or treated:

a. Date and location of ship when inspection and/or cleaning occurred.

b. General observations with regard to biofouling of internal seawater cooling systems (i.e. extent of biofouling and predominant biofouling types, e.g., mussels, barnacles, tubeworms, algae, slime).

c. Any cleaning or treatment undertaken.

d. Methods of cleaning or treatment used.

e. Any supporting evidence of the actions taken (e.g., report from the classification society or contractor, photographs and receipts).

f. Name, position and signature of the person in charge of the activity.

2.5 For ships with a MGPS fitted:

a. Records of operation and maintenance (such as regularly monitoring the electrical and mechanical functions of the systems).

b. Any instances when the system was not operating in accordance with the biofouling management plan.

2.6 Periods of time when the ship was laid up/inactive for an extended period of time:

a. Date and location where ship was laid up.

b. Date when ship returned to normal operations.

c. Maintenance action taken prior to and following the period laid up.

d. Precautions taken to prevent biofouling accumulation (e.g., sea chests blanked off).

2.7 Periods of time when ship operating outside its normal operating profile:

a. Duration and dates when ship not operating in accordance with its normal operating profile.

b. Reason for departure from normal operating profile (e.g., unexpected maintenance required).

2.8 Details of official inspection or review of ship biofouling risk (for ships arriving internationally, if applicable):

a. Date and location of ship when inspection or review occurred.

b. Port State authority conducting the inspection/review and details of procedures followed or protocol adhered to and inspector/s involved.

c. Result of inspection/review.

d. Name, position, signature of the person in charge of the activity for the ship.

2.9 Any additional observations and general remarks:

a. Since the ship was last cleaned, has the ship spent periods of time in locations that may significantly affect biofouling accumulation (e.g., fresh water, high latitude (Arctic and Antarctic) or tropical ports).

Record of Biofouling Management Actions

SAMPLE BIOFOULING RECORD BOOK PAGE

Name of Ship: .....

Registration number: .....

Date	Item (number)	Record of management actions	Signature of officers in charge

Signature of master ……..……

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RESOLUTION MEPC.208(62)

Adopted on 15 July 2011

2011 GUIDELINES FOR INSPECTION OF ANTI-FOULING SYSTEMS ON SHIPS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on the Control of Harmful Anti-fouling Systems for Ships, 2001, held in October 2001, adopted the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001 (the AFS Convention) together with four Conference resolutions,

RECALLING FURTHER that Article 11 of the AFS Convention prescribes that ships to which this Convention applies may, in any port, shipyard, or offshore terminal of a Party, be inspected by officers authorized by that Party for the purpose of determining whether the ship is in compliance with this Convention,

NOTING that Article 3(3) of the AFS Convention prescribes that Parties to this Convention shall apply the requirements of this Convention as may be necessary to ensure that no more favourable treatment is given to ships of non-Parties to this Convention,

NOTING ALSO resolution MEPC.105(49) by which the Committee adopted the Guidelines for inspection of anti-fouling systems on ship on 18 July 2003,

NOTING FURTHER that by resolution MEPC.105(49), the Committee resolved to keep the 2003 Guidelines under review in the light of experience gained,

HAVING CONSIDERED, at its sixty-second session, the draft 2011 Guidelines for inspection of anti-fouling systems on ships developed by the Sub-Committee on Flag State Implementation at its nineteenth session,

1. ADOPTS the 2011 Guidelines for inspection of anti- fouling systems on ships, as set out in the annex to this resolution;

2. INVITES Governments to apply the 2011 Guidelines when exercising port State control inspections;

3. RECOMMENDS that the 2011 Guidelines be adopted as amendments to resolution A.787(19) on Procedures for port State control, as amended;

4. AGREES to keep the 2011 Guidelines under review in the light of experience gained; and

5. REVOKES the Guidelines adopted by resolution MEPC.105(49).

ANNEX

2011 GUIDELINES FOR INSPECTION OF ANTI-FOULING SYSTEMS ON SHIPS

1 INTRODUCTION

1.1 The right of the port State to conduct inspections of anti-fouling systems on ships is in Article 11 of the AFS Convention. The guidelines for conducting these inspections are described below.

1.2 Ships of 400 gross tonnage and above engaged in international voyages (excluding fixed or floating platforms, FSUs and FPSOs) will be required to undergo an initial survey before the ship is put into service or before the International Anti-fouling System Certificate (IAFS) is issued for the first time; and a survey should be carried out when the anti-fouling systems are changed or replaced.

1.3 Ships of 24 metres in length or more but less than 400 gross tonnage engaged in international voyages (excluding fixed or floating platforms, FSUs and FPSOs) will have to carry a Declaration on Anti-fouling Systems signed by the owner or authorized agent. Such declaration shall be accompanied by appropriate documentation (such as a paint receipt or a contractor invoice) or contain appropriate endorsement.

2 INITIAL INSPECTION

2.1 Ships required to carry an IAFS Certificate or Declaration on Anti-Fouling Systems (Parties of the AFS Convention)

2.1.1 The PSCO should check the validity of the IAFS Certificate or Declaration on Anti-Fouling Systems, and the attached Record of Anti-Fouling Systems, if appropriate.

2.1.2 The only practical way to apply paint to the ship's bottom (underwater part) is in a dry dock. This means that the date of application of paint on the IAFS Certificate should be checked by comparing the period of dry-docking with the date on the certificate.

2.1.3 If the paint has been applied during a scheduled dry-dock period, it has to be registered in the ship's logbook (in order to be legal). Furthermore, this scheduled dry-docking can be verified by the endorsement date on the (statutory) Safety Construction Certificate (SOLAS, regulation I/10).

2.1.4 In case of an unscheduled dry-dock period, it could be verified by the registration in the ship's logbook (in order to be legal).

2.1.5 It can be additionally verified by the endorsement date on the (Class) Hull Certificate, the dates on the Manufacturer's Declaration or by confirmation of the shipyard.

2.1.6 The IAFS Certificate includes a series of tick boxes indicating:

.1 if an anti-fouling system controlled under Annex 1 of the AFS Convention has or has not been applied, removed or been covered with a sealer coat;

.2 if an anti-fouling system controlled under Annex 1 of the AFS Convention was applied on the ship prior to 1 January 2003 or a later date if specified by the Administration; and

.3 if an anti-fouling system controlled under Annex 1 of the AFS Convention was applied on the ship on/after 1 January 2003 or a later date if specified by the Administration.

2.1.7 Particular attention should be given to verifying that the survey for issuance of the current IAFS Certificate matches the dry-dock period listed in the ship's log(s) and that only one tick box is marked.

2.1.8 The Record of Anti-Fouling Systems should be attached to the IAFS Certificate and be up to date. The most recent record should agree with the tick box on the front of the IAFS Certificate.

2.2 Ships of non-Parties to the AFS Convention

2.2.1 Ships of non-Parties to the AFS Convention are not entitled to be issued with an IAFS Certificate. Therefore the PSCO should ask for documentation that contains the same information as in an IAFS Certificate and take this into account in determining compliance with the requirements.

2.2.2 If the existing anti-fouling system is declared not to be controlled under Annex 1 of the Convention, without being documented by an International Anti-Fouling System Certificate, verification should be carried out to confirm that the anti-fouling system complies with the requirements of the Convention. This verification may be based on sampling and/or testing and/or reliable documentation, as deemed necessary, based on experience gained and the existing circumstances. Documentation for verification could be, e.g., MSDSs (Material Safety Data Sheets), or similar, a declaration of compliance from the anti-fouling system manufacturer, invoices from the shipyard and/or the anti-fouling system manufacturer.

2.2.3 Ships of non-Parties may have Statements of Compliance issued in order to comply with regional requirements, for example, Regulation (EC) 782/2003 as amended by Regulation (EC) 536/2008, which could be considered as providing sufficient evidence of compliance.

2.2.4 In all other aspects the PSCO should be guided by the procedures for ships required to carry an IAFS Certificate.

2.2.5 The PSCO should ensure that no more favourable treatment is applied to ships of non-Parties to the AFS Convention.

3 MORE DETAILED INSPECTION

3.1 Clear ground

3.1.1 A more detailed inspection may be carried out when there has been clear grounds to believe that the ship does not substantially meet the requirements of the AFS Convention. Clear grounds for a more detailed inspection may be when:

.1 the ship is from a flag of a non-Party to the Convention and there is no AFS documentation;

.2 the ship is from a flag of a Party to the Convention but there is no valid IAFS Certificate;

.3 the painting date shown on the IAFS Certificate does not match the dry-dock period of the ship;

.4 the ship's hull shows excessive patches of different paints; and

.5 the IAFS Certificate is not properly completed.

3.1.2 If the IAFS Certificate is not properly completed, the following questions may be pertinent:

.1 "When was the ship's anti-fouling system last applied?";

.2 "If the anti-fouling system is controlled under Annex 1 to the AFS Convention and was removed, what was the name of the facility and date of the work performed?";

.3 "If the anti-fouling system is controlled under Annex 1 of the AFS Convention and has been covered by a sealer coat, what was the name of the facility and date applied?";

.4 "What is the name of the anti-fouling/sealer products and the manufacturer or distributor for the existing anti-fouling system?"; and

.5 "If the current anti-fouling system was changed from the previous system, what was the type of anti-fouling system and name of the previous manufacturer or distributor?".

3.2 Sampling

3.2.1 A more detailed inspection may include sampling and analysis of the ship's anti-fouling system, if necessary, to establish whether or not the ship complies with the AFS Convention. Such sampling and analysis may involve the use of laboratories and detailed scientific testing procedures.

3.2.2 If sampling is carried out, the time to process the samples cannot be used as a reason to delay the ship.

3.2.3 Any decision to carry out sampling should be subject to practical feasibility or to constraints relating to the safety of persons, the ship or the port (see appendix 1 for sampling procedures; an AFS Inspection Report template for sampling and analysis is attached to the Guidelines).

3.3 Action taken under the AFS Convention

Detention

3.3.1 The port State could decide to detain the ship following detection of deficiencies during an inspection on board.

3.3.2 Detention could be appropriate in any of the following cases:

.1 certification is invalid or missing;

.2 the ship admits it does not comply (thereby removing the need to prove by sampling); and

.3 sampling proves it is non-compliant within the ports jurisdiction.

3.3.3 Further action would depend on whether the problem is with the certification or the anti-fouling system itself.

3.3.4 If there are no facilities in the port of detention to bring the ship into compliance, the port State could allow the ship to sail to another port to bring the anti-fouling system into compliance. This would require an agreement of that port.

Dismissal

3.3.5 The port State could dismiss the ship, meaning that the port State demands that the ship leaves port – for example if the ship chooses not to bring the AFS into compliance but the port State is concerned that the ship is leaching tributyltin (TBTs) into its waters.

3.3.6 Dismissal could be appropriate if the ship admits it does not comply or sampling proves it is non-compliant while the ship is still in port. Since this would also be a detainable deficiency the PSCO can detain first and require rectification before release. However, there may not be available facilities for rectification in the port of detention. In this case the port State could allow the ship to sail to another port to bring the anti-fouling system into compliance. This could require agreement of that port.

3.3.7 Dismissal could be appropriate in any of the following cases:

.1 certification is invalid or missing;

.2 the ship admits it does not comply (thereby removing the need to collect proof by sampling; and

.3 sampling proves that the ship is non-compliant within the ports jurisdiction.

3.3.8 In these cases the ship will probably already have been detained. However, detention does not force the ship to bring the AFS into compliance (only if it wants to depart). In such a situation the port State may be concerned that the ship is leaching TBTs while it remains in its waters.

Exclusion

3.3.9 The port State could decide to exclude the ship to prevent it entering its waters. Exclusion could be appropriate if sampling proves that the ship is non-compliant but the results have been obtained after it has sailed or after it has been dismissed.

3.3.10 Exclusion could be appropriate if sampling proves that the ship is non-compliant but the results have been obtained after it has sailed or after it has been dismissed. Article 11(3) of the AFS Convention only mentions that the "party carrying out the inspection" may take such steps. This means that, if a port State excludes a ship, the exclusion cannot be automatically applied by other port States.

3.3.11 In accordance with Procedures for Port State Control (resolution A.787(19), as amended), where deficiencies cannot be remedied at the port of inspection, the PSCO may allow the ship to proceed to another port, subject to any appropriate conditions determined. In such circumstances, the PSCO should ensure that the competent authority of the next port of call and the flag State are notified.

Reporting to flag State

3.3.12 Article 11(3) of the AFS Convention requires that when a ship is detained, dismissed or excluded from a port for violation of the Convention, the Party taking such action shall immediately inform the flag Administration of the ship and any Recognized Organization which has issued a relevant certificate.

4 AFS REPORT TO FLAG STATE IN RESPONSE TO ALLEGED CONTRAVENTIONS

4.1 Article 11(4) of the AFS Convention allows Parties to inspect ships at the request of another Party, if sufficient evidence that the ship is operating or has operated in violation of the Convention is provided. Article 12(2) permits port States conducting the inspection to send the Administration (flag State) of the ship concerned any information and evidence it has that a violation has occurred. Information sent to the flag State is often inadequate for a prosecution. The following paragraphs detail the sort of information needed.

4.2 The report to the authorities of the port or coastal State should include as much as possible the information listed in section 3. The information in the report should be supported by facts which, when considered as a whole, would lead the port or coastal State to believe a contravention had occurred.

4.3 The report should be supplemented by documents such as:

.1 the port State report on deficiencies;

.2 a statement by the PSCO, including his rank and organization, about the suspected non-conforming anti-fouling system. In addition to the information required in section 3, the statement should include the grounds the PSCO had for carrying out a more detailed inspection;

.3 a statement about any sampling of the anti-fouling system including:

.1 the ship's location;

.2 where the sample was taken from the hull, including the vertical distance from the boot topping;

.3 the time of sampling;

.4 person(s) taking the samples; and

.5 receipts identifying the persons having custody and receiving transfer of the samples;

.4 reports of the analyses of any samples including:

.1 the results of the analyses;

.2 the method employed;

.3 reference to or copies of scientific documentation attesting the accuracy and validity of the method employed;

.4 the names of persons performing the analyses and their experience; and

.5 a description of the quality assurance measures of the analyses;

.5 statements of persons questioned;

.6 statements of witnesses;

.7 photographs of the hull and sample areas; and

.8 a copy of the IAFS Certificate, including copies of relevant pages of the Record of Anti-fouling Systems, log books, MSDS or similar, declaration of compliance from the anti-fouling system manufacturer, invoices from the shipyard and other dry dock records pertaining to the anti-fouling system.

4.4 All observations, photographs and documentation should be supported by a signed verification of their authenticity. All certifications, authentications or verifications should be in accordance with the laws of the State preparing them. All statements should be signed and dated by the person making them, with their name printed clearly above or below the signature.

4.5 The reports referred to under paragraphs 2 and 3 of this section should be sent to the flag State. If the coastal State observing the contravention and the port State carrying out the investigation on board are not the same, the port State carrying out the investigation should also send a copy of its findings to the coastal State.

APPENDIX 1

SAMPLING

Considerations related to brief sampling may be found in section 2.1 of Guidelines for brief sampling of anti-fouling systems on ships (resolution MEPC.104(49)).

Any obligation to take a sample should be subject to practical feasibility or to constraints relating to the safety of persons, the ship or the port.

The PSCO should consider the following:

- liaise with the ship on the location and time needed to take samples; the PSCO should verify that the time required will not unduly prevent the loading/unloading, movement or departure of the ship;

- do not expect the ship to arrange safe access but liaise with the ship over the arrangements that the port State competent authority has made, for example boat, cherry-picker, staging, etc.;

- select sampling points covering representative areas;

- take photographs of the hull, sample areas and sampling process;

- avoid making judgements on the quality of the paint (e.g., surface, condition, thickness, application);

- the need of inviting the ship representative's presence during brief sampling to ensure that the evidence is legally obtained;

- complete and sign the inspection report form together with the included sampling record sheets (to be filled in by the sampler), as far as possible, and leave a copy with the ship as a proof of inspection/sampling;

- inform the next port State where the inspected ship is to call;

- agree with or advise the ship on to whom the ship's copy of the finalized inspection report will be sent in cases when it cannot be completed in the course of the inspection; and

- ensure that receipts identifying the persons having custody and receiving transfer of the samples accompany the samples are filled in to reflect the transfer chain of the samples. PSCOs are reminded that the procedures set in national legislation regarding custody of evidence are not affected by the regulation. These guidelines therefore do not address this issue in detail.

1 Sampling methodologies

It is to the discretion of the port State to choose the sampling methodology. The Guidelines for brief sampling of anti-fouling systems on ships adopted by resolution MEPC.104(49) allow that any other scientifically recognized method of sampling and analysis of AFS controlled by the Convention than those described in the appendix to the Guidelines may be used (subject to the satisfaction of the Administration or the port State). The sampling methodology will depend, *inter alia*, on the surface hardness of the paint, which may vary considerably. The amount of paint mass removed may vary correspondingly.

Sampling procedures, based on the removal of paint material from the hull, require the determination of paint mass. It is important that procedures used are validated, produce unambiguous results and contain an adequate control.

The competent port State authority can decide to contract specialist companies to carry out sampling. In this case the PSCO should attend the ship during the sampling procedure to ensure the liaison and arrangements mentioned above are in place.

If a specialist company is not used, the port State competent authority should provide appropriate training to the PSCO in the available sampling methods and procedures and ensure that agreed procedures are followed.

The following general terms should be observed:

- the PSCO should choose a number of sample points preferably covering all the representative areas of the hull, but it is desirable to have at least eight (8) sample points equally spaced down and over the length of the hull, if possible divided over PS and SB *(*keeping in mind that different parts of the hull may be treated with different anti-fouling systems);

- triplicate specimens of paint at each sampling point should be taken in close proximity to each other on the hull (e.g., within 10 cm of each other);

- contamination of the samples should be avoided, which normally includes the wearing of non-sterilized non-powdered disposable gloves of suitable impervious material – e.g., nitrile rubber;

- the samples should be collected and stored in an inert container (e.g., containers should not consist of materials containing organotins or have the capacity to absorb organotins);

- samples should be taken from an area where the surface of the anti-fouling system is intact, clean and free of fouling;

- loose paint chips coming from detached, peeled or blistered hull areas should not be used for sampling;

- samples should not be taken from a heated or area where the paint is otherwise softened (e.g., heavy fuel tanks); and

- the underlying layers (primers, sealers, TBT containing AFS) should not be sampled if there is no clear evidence of exposure of extended areas.

2 Validity of the sampling

In order to safeguard the validity of the sampling as evidence of non-compliance, the following should be considered:

- only samples taken directly from the hull and free of possible contamination should be used;

- all samples should be stored in containers, marked and annotated on the record sheet. This record sheet should be submitted to the Administration;

- the receipts identifying the persons having custody and receiving transfer of the samples should be filled in and accompany the samples to reflect the transfer chain of the samples;

- the PSCO should verify the validity of the instrument's calibration validity date (according to the manufacturer instruction);

- in cases when a contracted specialist company is used for carrying out sampling, the PSCO should accompany its representative to verify sampling; and

- photographs of the hull, sample areas and sampling process could serve as additional proof.

It is also the case that sampling companies and/or procedures can be certified.

3 Health and safety when sampling

Any obligation to take a sample should be subject to practical feasibility or any constraints relating to the safety of persons, the ship or the port.

The PSCO is advised to ensure their safety taking the following points into account:

- general requirements enforced by the terminal or port authority and national health, safety and environmental policy;

- condition of the ship (ballast condition, ship's operations, mooring, anchorage, etc.);

- surroundings (position of ship, traffic, ships movement, quay operations, barges or other floating vessels alongside);

- safety measures for the use of access equipment (platforms, cherry picker, staging, ladders, railings, climbing harness, etc.), e.g., ISO 18001;

- weather (sea state, wind, rain, temperature, etc.); and

- precautions to avoid falling into the water between the quay and the ship. If in doubt, a lifejacket and if possible a safety line, should be worn when sampling.

Any adverse situation encountered during sampling that could endanger the safety of personnel, shall be reported to the safety coordinator.

Care should be taken to avoid contact of the removed paint with the skin and the eyes, and no particles should be swallowed or come into contact with foodstuffs. Eating or drinking during sampling is prohibited and hands should be cleaned afterwards. Persons carrying out sampling should be aware that the AFS and solvents or other materials used for sampling may be harmful and appropriate precautions should be taken. Personal protection should be considered by using long sleeve solvent-resistant gloves, dust mask, safety glasses, etc.

Standard (and specific, if applicable) laboratory safety procedures should be followed at all times when undertaking the sampling procedures and subsequent analysis.

4 Conducting analyses

The Guidelines for brief sampling of anti-fouling systems on ships envisage a two-stage analysis of samples for both methods presented in the appendix to the Guidelines. The first stage is a basic test, which can be carried out on site as in the case of Method 2. The second stage is carried out when the first stage results are positive. It is noted that in the IMO Guidelines, these stages are referred to as Steps 1 and 2 as in the case of Method 1. It is to the discretion of the port State competent authorities to choose which analysis methods are used.

The following points are presented for port State consideration:

- approval procedure for the recognition of laboratories meeting ISO 17025 standards or other appropriate facilities should be set up by the port State competent authorities. These procedures should define the recognition criteria. Exchange of information between port States on these procedures, criteria and laboratories/facilities would be beneficial, i.e. for the purposes of exchange of best practices and possible cross-border recognition and provision of services;

- the company that undertakes the analysis and/or samples should comply with national regulations and be independent from paint manufacturers;

- the PSCO carrying out the AFS inspection of a ship should verify the validity of the ISO 17025 certificate and/or the recognition of the laboratory;

- if more time is needed for analysis than available considering the ship's scheduled time of departure, the PSCO shall inform the ship and report the situation to the port State competent authority. However, the time needed for analysis does not warrant undue delay of the ship; and

- PSCOs should ensure completion of the record sheets for the sampling procedure as proof of analysis. In cases when the laboratory procedures prescribe presentation of the analyses' results in a different format, this technical report could be added to the record sheets.

5 The first-stage analysis

The first-stage analysis serves to detect the total amount of tin in the AFS applied.

It is to the discretion of the port State competent authority to choose the first-stage analysis methodology. However, the use of a portable X-ray fluorescence analyser (mentioned under Method 2) or any other scientifically justified method allowing the conduction of first-stage analyses on site could be considered best practice.

The port State competent authority has to decide whether the first-stage analysis should be carried out by PSCOs or by contracted companies.

The port State competent authority could provide PSCOs with this equipment (e.g., portable X-ray fluorescence analyser) and provide the appropriate training.

6 The second-stage analysis

The second-stage (final) analysis is used to verify whether or not the AFS system complies with the Convention requirements, i.e. whether organotin compounds are present in the AFS at a level which would act as a biocide.

The port State could consider implementing only a second-stage analysis.

It is to the discretion of the Authority to choose the second-stage analysis methodology. In this respect it is hereby noted that the second-stage analysis methodology for sampling Method 2 provided in the Guidelines is only tentative and "should be thoroughly reviewed by experts based on scientific evidence" (section 5.1 of Method 2).

7 Conclusions on compliance

The Authority should only make conclusions on compliance based on the second-stage analysis of the sample (organotin). In case the results indicate non-compliance at that stage, there are clear grounds to take further steps.

If considered necessary, more thorough sampling can be also carried out in addition or instead of brief sampling.

Sampling results should be communicated as soon as possible to the vessel (as part of the inspection report) and in the case of non-compliance also to the flag State and Recognized Organization acting on behalf of the flag State if relevant.

Authorities should, in accordance with section 5.2 of the Guidelines for brief sampling of anti-fouling systems on ships, develop and adopt procedures to be followed for those cases where compliance with acceptable limits or lack thereof, is unclear, considering additional sampling or other methodologies for sampling.

FORM S/1

REPORT OF INSPECTION of a ship's anti-fouling system (AFS)

SHIP PARTICULARS

1. **Name of ship :** 2. **IMO number :**

3. **Type of ship :** 4. **Call sign :**

5. **Flag of ship :** _____ 6. **Gross tonnage :** _____

7. **Date keel laid / major conversion commenced :** _____

INSPECTION PARTICULARS

8. **Date & time :** _____

9. **Name of facility:**
(dry-dock, quay, location) _____

Place & country: _____

10. **Areas inspected** ☐ **Ship's logbook** ☐ **Certificates** ☐ **Ship's hull**

11. **Relevant certificate(s)**

	(a) title	(b) issuing authority	(c) dates of issue	
1.	*IAFS Cert.*			
2.	*Record of AFS*			
3.	*Declaration of AFS*			
4.				

12. **Dry-dock period AFS applied :** _____

13. **Name of facility AFS applied :** _____

14. **Place & country AFS applied :** _____

15. **AFS samples taken :** ☐ **No** ☐ **Yes** **Nature of sampling :** ☐ **Brief** ☐ **Extent**

16. **Reason for sampling of AFS:**

17. **Record sheet attached :**
(country-code / IMO number / dd-mm-yy) _____

18. **Copy to:** ☐ **PSCO** ☐ **Flag State** ☐ **Recognized Organization**
☐ **Head office** ☐ **Master** ☐ **Other:** _____

PORT STATE PARTICULARS

Reporting authority: _____ **District office:** _____

Address: _____

_____

Telephone/Fax/ Mobile: _____

E-mail: _____

Name:
(duly authorized inspector of reporting authority) _____

Date: _____ **Signature:** _____

FORM S/2

Record sheet for the sampling procedure for compliance with the convention in terms of the presence of organotin acting as a biocide in anti-fouling systems on ship hulls

RECORD NUMBER	

(country-code / IMO number / dd-mm-yy)

Name of ship : _____ **IMO number :** _____

SAMPLING PARTICULARS

1. **Date & time initiated:** 2. **Date & time completed:**
3. **Name of paint manufacturer:**
4. **AFS product name & colour:**
5. **Reason for Sampling:** ☐ **Port State Control** ☐ **Survey & Certification** ☐ **Other flag State compliance inspection**
6. **Sampling Method:** _____
7. **Hull areas sampled:** ☐ **Port Side** ☐ **Starboard Side** ☐ **Bottom**

   Number of sampling points: _____ _____ _____
8. **Back-up samples' storage location:**
   (e.g., Port State inspection office)
9. ☐ **Photos taken of the sample points** **Comments:** _____
10. ☐ **Paint samples (wet)** **Comments:** _____
11. ☐ **First-stage analysis** **Comments:** _____
12. ☐ **Second-stage analysis** **Comments:** _____
13. **Comments concerning sampling procedure**

14. **Sampling company** **Name**

    Date

    Signature

PORT STATE PARTICULARS

Reporting authority: _____ **District office:** _____

Address: _____

_____

Telephone/ Fax/ Mobile: _____

E-mail: _____

Name*:*
(duly authorized inspector of reporting authority) _____

Date: _____ **Signature:** _____

FORM S/3

RECORD NUMBER	

Name of ship: ..... **IMO number:** .....

METHOD 1 ANALYSIS

1.	**Instrument I.D.:**			**Calibration Expire Date:**		
2.	**Specimens "A"** results total number of specimens "A" analysed:					
3.	**No.**	**Sample location** *(Frame & Distance from boot topping)*	**mg Sn/ kg**	**No.**	**Sample location** *(Frame & distance from boot topping)*	**mg Sn/ kg**
	1			**9**		
	2			**10**		
	3			**11**		
	4			**12**		
	5			**13**		
	6			**14**		
	7			**15**		
	8			**16**		
4.	**Results** Number of specimens exceeding 2,500 mg/kg: ☐ Step 2 required 1 or more specimens exceeding 3,000 mg/kg ☐ Yes ☐ No ☐ Compliance, NO further analysis					
5.	**Additional comments concerning analysis of results from Specimens "A"**					
6.	**Company**			**Name** **Date** **Signature**		

7.	**Instrument I.D.:**			**Calibration Expire Date:**				
8.	**Specimens "B"** results total number of specimens "B" analysed :							
9.	**No.**	**organotin** (mg Sn/ kg) as Sn	**No.**	**organotin** (mg Sn/ kg) as Sn	**No.**	**organotin** (mg Sn/ kg) as Sn	**No.**	**organotin** (mg Sn/ kg) as Sn
	1		**5**		**9**		**13**	
	2		**6**		**10**		**14**	
	3		**7**		**11**		**15**	
	4		**8**		**12**		**16**	
10.	**Results** Number of specimens exceeding 2,500 mg/kg: 1 or more specimens exceeding 3,000 mg/kg ☐ Yes ☐ No					☐ Non-compliance assumed ☐ Compliance assumed		
11.	**Additional comments concerning analysis of results from Specimens "B"**							
12.	**Company**			**Name** **Date** **Signature**				

FORM S/4

RECORD NUMBER	

Name of ship: _____ **IMO number:** _____

METHOD 2 FIRST-STAGE ANALYSIS

1. **Instrument I.D.:**	**Calibration Expire Date:**

2. **Sample location** *(Frame & distance from boot topping)*	**Specimen I.D.**	**Sample Disc**	**Content of Tin (mg/ kg)**	**max**	**min**	**Average**
A	A1	☐ abrasive		☐	☐	
	A2	☐ metal		☐	☐	
	A3	☐ others		☐	☐	Average
	A4	☐ abrasive		☐	☐	
	A5	☐ metal		☐	☐	mg/kg
	A6	☐ others		☐	☐	☐ >2,500 mg/kg
	A7	☐ abrasive		☐	☐	☐ >3,000 mg/kg
	A8	☐ metal		☐	☐	
	A9	☐ others		☐	☐	
B	B1	☐ abrasive		☐	☐	
	B2	☐ metal		☐	☐	
	B3	☐ others		☐	☐	Average
	B4	☐ abrasive		☐	☐	
	B5	☐ metal		☐	☐	mg/kg
	B6	☐ others		☐	☐	☐ >2,500 mg/kg
	B7	☐ abrasive		☐	☐	☐ >3,000 mg/kg
	B8	☐ metal		☐	☐	
	B9	☐ others		☐	☐	
C	C1	☐ abrasive		☐	☐	
	C2	☐ metal		☐	☐	
	C3	☐ others		☐	☐	Average
	C4	☐ abrasive		☐	☐	
	C5	☐ metal		☐	☐	mg/kg
	C6	☐ others		☐	☐	☐ >2,500 mg/kg
	C7	☐ abrasive		☐	☐	☐ >3,000 mg/kg
	C8	☐ metal		☐	☐	
	C9	☐ others		☐	☐	
D	D1	☐ abrasive		☐	☐	
	D2	☐ metal		☐	☐	
	D3	☐ others		☐	☐	Average
	D4	☐ abrasive		☐	☐	
	D5	☐ metal		☐	☐	mg/kg
	D6	☐ others		☐	☐	☐ >2,500 mg/kg
	D7	☐ abrasive		☐	☐	☐ >3,000 mg/kg
	D8	☐ metal		☐	☐	
	D9	☐ others		☐	☐	

3.	**Results First-Stage Analysis**	☐ samples out of are above 2,500 mg/kg ☐ Sample(s) is (are) above 3,000 mg/kg	☐ Compliant ☐ Second-stage required
4.	**Comments**		
5.	**Company**	**Name** **Date** **Signature**	

FORM S/5

RECORD NUMBER	

Name of ship: ..... **IMO number:** _____

METHOD 2 SECOND-STAGE ANALYSIS

1. **Instrument ID:**	**Calibration Expire Date:**

2.	**Specimen used** *(Specimen I.D.)*	**Content of Tin First-Stage** (*XRF Analysis*) **(mg Sn/kg)**	**Content of Tin Second-Stage** (as organotin) **(mg Sn/kg)**	**Compliance**
A				
				☐ >2,500mg/kg
				☐ >3,000mg/kg
B				
				☐ >2,500mg/kg
				☐ >3,000mg/kg
C				
				☐ >2,500mg/kg
				☐ >3,000mg/kg
D				
				☐ >2,500mg/kg
				☐ >3,000mg/kg

3. **Results Second-Stage Analysis**		
	☐ Samples out of are above 2,500mg (Sn)/kg (dry paint) ☐ Sample(s) is (are) above 3,000mg(Sn)/kg (dry paint)	☐ Compliant ☐ NOT Compliant

4.	**Comments**	
5.	**Laboratory**	**Name** **Date** **Signature**

PORT STATE PARTICULARS

Reporting authority: _____ **District office:** _____

Address: _____

_____

Telephone/Fax/ Mobile: _____

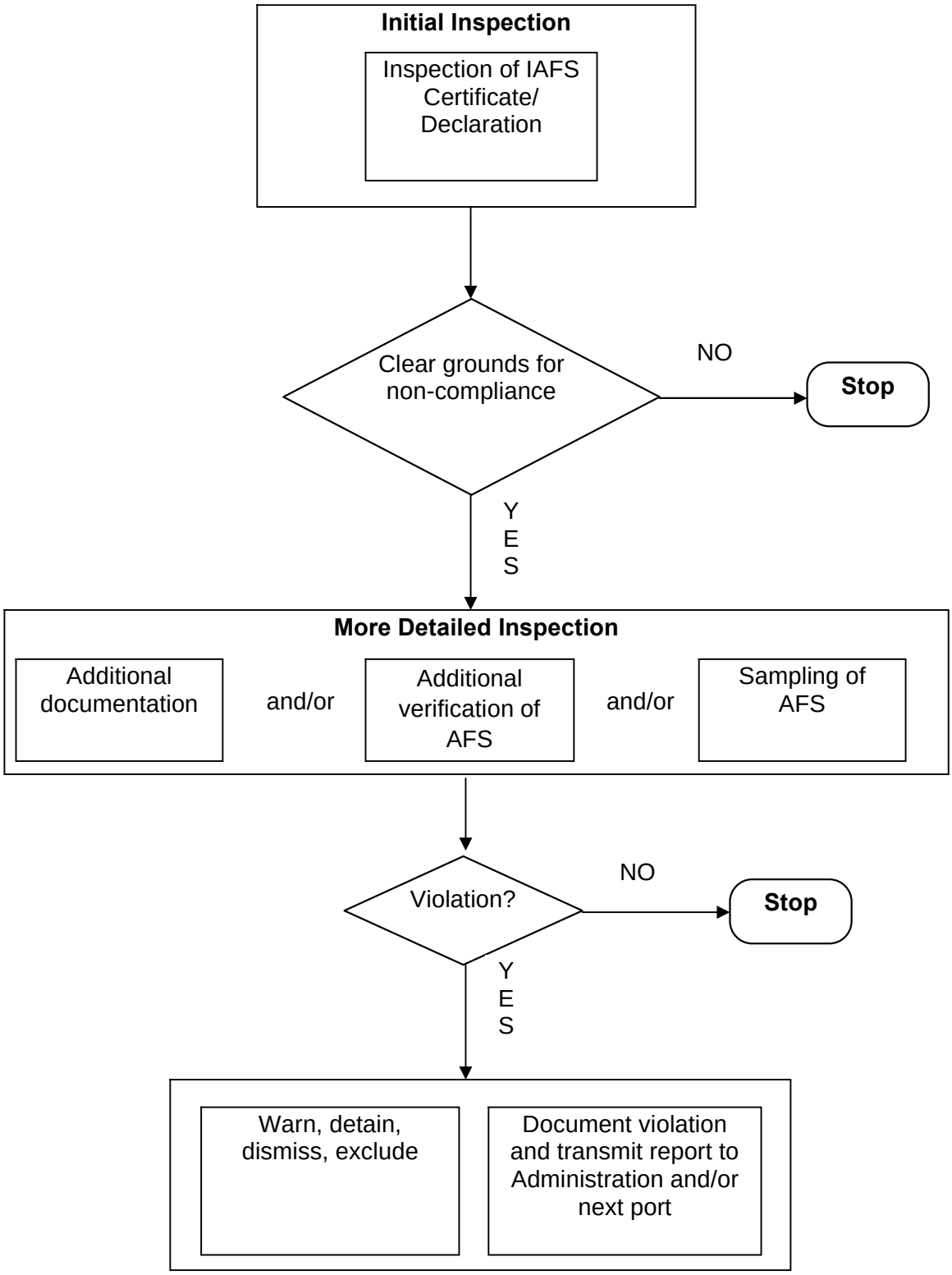
E-mail: _____

Name*:*
(duly authorized inspector of reporting authority) _____

Date: _____ **Signature:** _____

APPENDIX 2

AFS INSPECTION PROCESS



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ANNEX 14

UNIFIED INTERPRETATIONS TO REGULATIONS 12.2, 3 AND 4 OF MARPOL ANNEX I

Regulation 12.2 – Designated pump for disposal

A designated pump should be interpreted as any pump used for the disposal of oil residue (sludge) through the standard discharge connection referred to in regulation 13, or any pump used to transfer oil residue (sludge) to any other approved means of disposal such as an incinerator, auxiliary boiler suitable for burning oil residues (sludge) or other acceptable means which are prescribed in paragraph 3.2 of the Supplement to IOPP Certificate Form A or B.

Regulation 12.3 – Overboard connection of oil residue (sludge) tanks

Ships having piping to and from oil residue (sludge) tanks to overboard discharge outlets, other than the standard discharge connection referred to in regulation 13 installed prior to 4 April 1993 may comply with regulation 12.3 by the installation of blanks in this piping.

Regulation 12.4 – Cleaning of oil residue (sludge) tanks and discharge of residues

To assist Administrations in determining the adequacy of the design and construction of oil residue (sludge) tanks to facilitate their cleaning and the discharge of residues to reception facilities, the following guidance is provided, having effect on ships the keel of which is laid or which is at a similar stage of construction on or after 31 December 1990:

.1 sufficient man-holes should be provided such that, taking into consideration the internal structure of the oil residue (sludge) tanks, all parts of the tank can be reached to facilitate cleaning;

.2 oil residue (sludge) tanks in ships operating with heavy oil, that needs to be purified for use, should be fitted with adequate heating arrangements or other suitable means to facilitate the pump ability and discharge of the tank content;

.3 the oil residue (sludge) tank should be provided with a designated pump for the discharge of the tank content to reception facilities. The pump should be of a suitable type, capacity and discharge head, having regard to the characteristics of the liquid being pumped and the size and position of tank(s) and the overall discharge time.

.4 where any oil residue (sludge) tank (i.e. oil residue (sludge) service tank[*]) that directly supplies oil residue (sludge) to the means of the disposal of oil residues (sludge) prescribed in paragraph 3.2 of the Supplement to IOPP Certificate Form A or B is equipped with suitable means for drainage, the requirements in subparagraph .3 above may not be applied to the oil residue (sludge) tank.

***

[*] "Oil residue (Sludge) Service tank" means a tank for preparation of oil residue (sludge) for incineration as defined in paragraph 5.3.3 of the appendix to the annex to MEPC.1/Circ.642.

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Ref. T5/1.01

MEPC.1/Circ.735
26 October 2010

UNIFIED INTERPRETATIONS TO MARPOL ANNEX VI

Scope of application of regulation 15.6 and 15.7 of MARPOL Annex VI (VOC management plan)

1 The Marine Environment Protection Committee, at its sixty-first session (27 September to 1 October 2010), approved a Unified Interpretation to MARPOL Annex VI on application of VOC management plan (paragraph 4.41 of document MEPC 61/24).

2 The Unified Interpretation, as approved by the Committee, is attached at annex hereto.

***

ANNEX

UNIFIED INTERPRETATION TO MARPOL ANNEX VI ON APPLICATION OF VOC MANAGEMENT PLAN

Regulation 15 – Volatile organic compounds (VOCs)

Regulations 15.6 and 15.7 read as follows:

> "6 A 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:
>
> .1 provide written procedures for minimizing VOC emissions during the loading, sea passage and discharge of cargo;
>
> .2 give consideration to the additional VOC generated by crude oil washing;
>
> .3 identify a person responsible for implementing the plan; and
>
> .4 for 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.
>
> 7 This regulation shall also apply to gas carriers only if the types of loading and containment systems allow safe retention of non-methane VOCs on board or their safe return ashore.[†]"

Interpretation:

> The requirement for a VOC management plan applies only to a tanker carrying crude oil.

[†] Resolution MSC.30(61), International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk.

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MEPC.1/Circ.753
25 August 2011

AMENDMENTS TO UNIFIED INTERPRETATION TO REGULATION 12.2 OF MARPOL ANNEX I

1 The Marine Environment Protection Committee, at its sixty-second session (11 to 15 July 2011), approved the amendments to the Unified Interpretations to regulation 12.2 of MARPOL Annex I (MEPC 62/24, paragraph 7.20), as set out in the annex.

2 Member Governments are invited to use the annexed interpretation when applying the relevant provisions of regulation 12.2 of MARPOL Annex I and to bring it to the attention of all parties concerned.

***

ANNEX

AMENDMENTS TO UNIFIED INTERPRETATION TO REGULATION 12.2 OF MARPOL ANNEX I

1 The existing Unified Interpretation to regulation 12.2 should read as an interpretation to regulation 12.2.1.

2 A new Unified Interpretation to regulation 12.2.2 is added as follows:

Regulation 12.2.2 – Sludge tank discharge piping

1 Regulation 12.2.2 should not be retroactively applied to ships delivered before 1 January 2014*.

2 There should be no interconnections between the sludge tank discharge piping and bilge-water piping other than possible common piping leading to the standard discharge connection referred to in regulation 13.

3 For ships delivered before 1 January 2014*, existing arrangements where the oil residue (sludge) tank(s) have discharge connections to oily bilge water holding tank(s), tank top or oily water separator may be accepted.

---

* Ship delivered before 1 January 2014 means a ship:

.1 for which the building contract is placed before 1 January 2011; or
.2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction before 1 January 2012; or
.3 the delivery of which is before 1 January 2014.

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MEPC.1/Circ.755
2 November 2011

INFORMATION ON THE UNITED STATES CARIBBEAN SEA EMISSION CONTROL AREA UNDER MARPOL ANNEX VI

1 The Marine Environment Protection Committee, at its sixty-second session (11 to 15 July 2011), adopted, by resolution MEPC.202(62), amendments to MARPOL Annex VI to designate the United States Caribbean Sea Emission Control Area for NO_x, SO_x and particulate matter (amendments to regulations 13, 14 and Appendix VII).

2 MEPC 62 agreed to circulate information on the United States Caribbean Sea Emission Control Area (ECA) and requested the Secretariat to disseminate the information as an MEPC Circular (MEPC 62/24, paragraph 6.37.7).

3 Appendix VII to MARPOL Annex VI contains the definition and boundaries with the full coordinates of the United States Caribbean Sea ECA, which is based on the "North American Datum of 1983/World Geodetic System 1984 (NAD83/WGS84)". Diagrams showing the geographical distribution of the United States Caribbean Sea ECA are set out in annex 1 to this circular, and the full list of coordinates may be found in annex 2 to this circular.

4 The above amendments are expected to enter into force on 1 January 2013, upon their deemed acceptance on 1 July 2012.

5 In accordance with the provisions of regulation 14.7 of MARPOL Annex VI, the requirements within the United States Caribbean Sea ECA for SO_x and particulate matter will be effective on 1 January 2014.

6 While ships are operating in the United States Caribbean Sea ECA, the sulphur content of fuel oil used on board ships shall not exceed 1.00% m/m on and after 1 January 2014, and 0.10% m/m on and after 1 January 2015. For ships, built on or before 1 August 2011, that are powered by propulsion boilers that were not originally designed for continued operation on marine distillate fuel or natural gas, the above sulphur requirements may not be applied prior to 1 January 2020 (regulation 14.4.4 of MARPOL Annex VI).

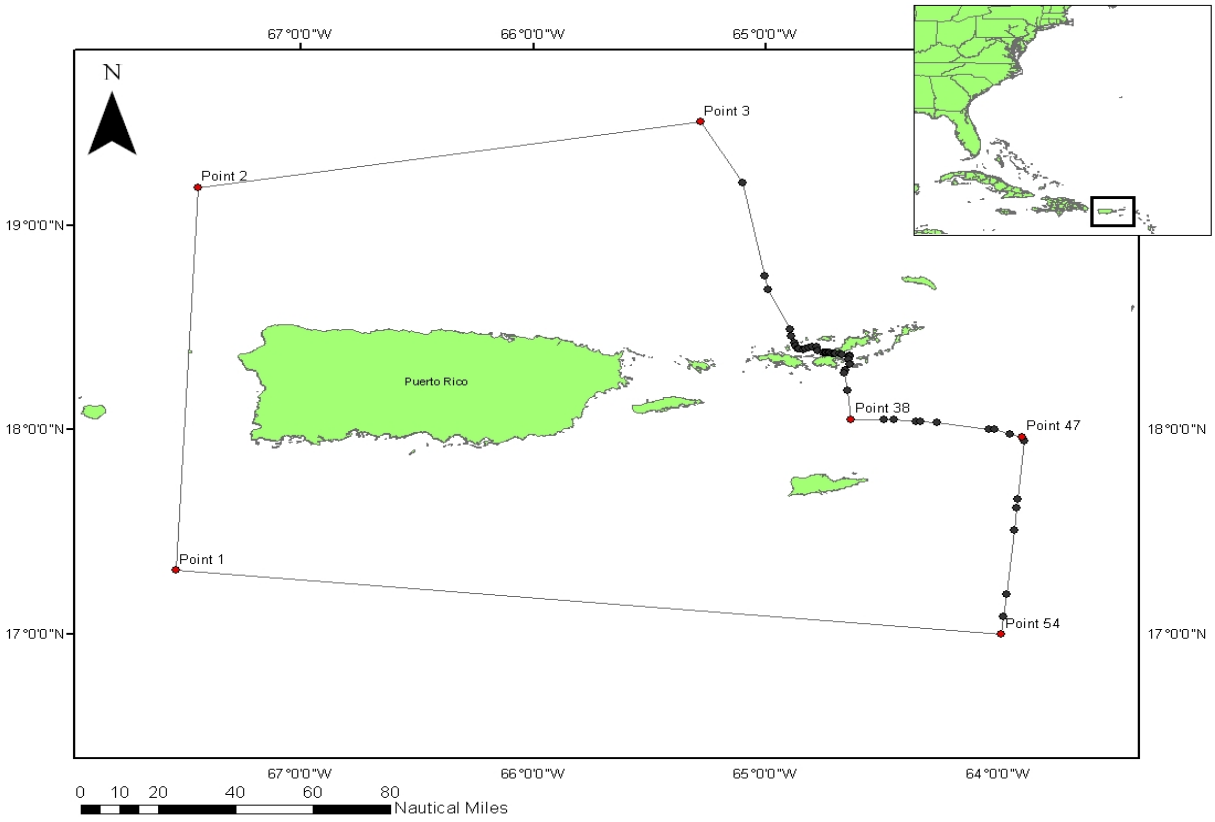
7 Ships constructed on or after 1 January 2016 shall comply with the NO_x emission limits specified in regulation 13.5.1.1, when operating within the United States Caribbean Sea ECA.

8 Member Governments are invited to bring this circular to the attention of their Administrations, relevant shipping organizations, recognized organizations, shipping companies and other stakeholders concerned.

***

ANNEX 1

GEOGRAPHICAL DISTRIBUTION OF THE UNITED STATES CARIBBEAN SEA EMISSION CONTROL AREA



Note: The points correspond to the list of coordinates in annex 2.

***

ANNEX 2

LIST OF COORDINATES FOR THE UNITED STATES CARIBBEAN SEA EMISSION CONTROL AREA

The United States Caribbean Sea area includes the sea area located off the Atlantic and Caribbean coasts of the Commonwealth of Puerto Rico and the United States Virgin Islands, enclosed by geodesic lines connecting the following coordinates:

POINT	LATITUDE	LONGITUDE
1	17º 18′ 37″ N.	67º 32′ 14″ W.
2	19º 11′ 14″ N.	67º 26′ 45″ W.
3	19º 30′ 28″ N.	65º 16′ 48″ W.
4	19º 12′ 25″ N.	65º 6′ 8″ W.
5	18º 45′ 13″ N.	65º 0′ 22″ W.
6	18º 41′ 14″ N.	64º 59′ 33″ W.
7	18º 29′ 22″ N.	64º 53′ 51″ W.
8	18º 27′ 35″ N.	64º 53′ 22″ W.
9	18º 25′ 21″ N.	64º 52′ 39″ W.
10	18º 24′ 30″ N.	64º 52′ 19″ W.
11	18º 23′ 51″ N.	64º 51′ 50″ W.
12	18º 23′ 42″ N.	64º 51′ 23″ W.
13	18º 23′ 36″ N.	64º 50′ 17″ W.
14	18º 23′ 48″ N.	64º 49′ 41″ W.
15	18º 24′ 11″ N.	64º 49′ 0″ W.
16	18º 24′ 28″ N.	64º 47′ 57″ W.
17	18º 24′ 18″ N.	64º 47′ 1″ W.
18	18º 23′ 13″ N.	64º 46′ 37″ W.
19	18º 22′ 37″ N.	64º 45′ 20″ W.
20	18º 22′ 39″ N.	64º 44′ 42″ W.
21	18º 22′ 42″ N.	64º 44′ 36″ W.
22	18º 22′ 37″ N.	64º 44′ 24″ W.
23	18º 22′ 39″ N.	64º 43′ 42″ W.
24	18º 22′ 30″ N.	64º 43′ 36″ W.
25	18º 22′ 25″ N.	64º 42′ 58″ W.
26	18º 22′ 26″ N.	64º 42′ 28″ W.
27	18º 22′ 15″ N.	64º 42′ 3″ W.
28	18º 22′ 22″ N.	64º 38′ 23″ W.

POINT	LATITUDE	LONGITUDE
29	18º 21′ 57″ N.	64º 40′ 60″ W.
30	18º 21′ 51″ N.	64º 40′ 15″ W.
31	18º 21′ 22″ N.	64º 38′ 16″ W.
32	18º 20′ 39″ N.	64º 38′ 33″ W.
33	18º 19′ 15″ N.	64º 38′ 14″ W.
34	18º 19′ 7″ N.	64º 38′ 16″ W.
35	18º 17′ 23″ N.	64º 39′ 38″ W.
36	18º 16′ 43″ N.	64º 39′ 41″ W.
37	18º 11′ 33″ N.	64º 38′ 58″ W.
38	18º 3′ 2″ N.	64º 38′ 3″ W.
39	18º 2′ 56″ N.	64º 29′ 35″ W.
40	18º 2′ 51″ N.	64º 27′ 2″ W.
41	18º 2′ 30″ N.	64º 21′ 8″ W.
42	18º 2′ 31″ N.	64º 20′ 8″ W.
43	18º 2′ 3″ N.	64º 15′ 57″ W.
44	18º 0′ 12″ N.	64º 2′ 29″ W.
45	17º 59′ 58″ N.	64º 1′ 4″ W.
46	17º 58′ 47″ N.	63º 57′ 1″ W.
47	17º 57′ 51″ N.	63º 53′ 54″ W.
48	17º 56′ 38″ N.	63º 53′ 21″ W.
49	17º 39′ 40″ N.	63º 54′ 53″ W.
50	17º 37′ 8″ N.	63º 55′ 10″ W.
51	17º 30′ 21″ N.	63º 55′ 56″ W.
52	17º 11′ 36″ N.	63º 57′ 57″ W.
53	17º 4′ 60″ N.	63º 58′ 41″ W.
54	16º 59′ 49″ N.	63º 59′ 18″ W.
55	17º 18′ 37″ N.	67º 32′ 14″ W.