MARITIME AND PORT AUTHORITY OF SINGAPORE
SHIPPING CIRCULAR TO SHIPOWNERS NO. 11 OF 2013

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31 July 2013

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

RESOLUTIONS ADOPTED BY THE 65TH SESSION OF THE MARITIME ENVIRONMENT PROTECTION COMMITTEE (MEPC 65) OF IMO

1. This circular informs the Shipping Community on the outcome, including the resolutions adopted/approved by the 65th session of the Marine Environment Protection Committee (MEPC 65) 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 MEPC 65 final report which is available from the MPA website.

3. The mandatory resolution includes the following:

a. Resolution MEPC.235(65) – Amendments to Annex I of MARPOL 73/78 (Amendments to Form A and Form B of Supplements to the IOPP Certificate under MARPOL Annex I);

Form A and Form B of the Supplements to the IOPP Certificate are amended by deleting the recording of incinerator's capacity.

The amendments to MARPOL Annex I will enter into force on 1 October 2014, and will be given effect through amendments to the Prevention of Pollution of the Sea (Oil) Regulations.

b. Resolution MEPC.236(65) – Amendments to the Condition Assessment Scheme under MARPOL Annex I;

The Condition Assessment Scheme (CAS) under MARPOL Annex I is amended to replace references to A.744(18) with the International Code

on the enhanced programme of inspections during surveys of bulk carriers and tankers, 2011 (2011 ESP Code) following adoption of the Code.

The amendments will enter into force on 1 October 2014, and will be implemented through the CAS under the Prevention of Pollution of the Sea (Oil) Regulations.

c. Resolution MEPC.237(65)* – Adoption of the Code For Recognized Organizations (RO Code);

The resolution adopts the RO Code which provides Flag States with an international standard that will assist in achieving harmonized and consistent global implementation of requirements for the assessment and authorization of Recognized Organizations (ROs).

The RO Code will enter into force on 1 January 2015, and will be implemented under the Prevention of Pollution of the Sea (Oil) Regulations and the Prevention of Pollution of the Sea (Noxious Liquid Substances in Bulk) Regulations.

* The text of the RO Code will be issued together under Resolution MSC.349(92).

d. Resolution MEPC.238(65) – Amendments to Annexes I and II of MARPOL 73/78 (Amendments to MARPOL Annexes I and II to make the RO Code mandatory).

The resolution amends MARPOL Annexes I and II in order to make the RO Code mandatory.

The amendments to MARPOL Annexes I and II will enter into force on 1 January 2015, and will be given effect through amendments to the Prevention of Pollution of the Sea (Oil) Regulations and Prevention of Pollution of the Sea (Noxious Liquid Substances in Bulk) Regulations respectively.

4. MEPC 65 also adopted the following resolutions:

a. Resolution MEPC.228(65) – Information Reporting on Type Approved Ballast Water Management Systems (*revokes MEPC175(58)*);

The resolution provides guidance on the reporting of information to IMO following the type approval of ballast water management systems in accordance with the G8 procedure.

b. Resolution MEPC.229(65) – Promotion of Technical Co-operation and Transfer of Technology relating to the Improvement of Energy Efficiency of Ships;

The resolution urges Administrations to promote the transfer of technology and to provide support to developing States that request technical assistance in accordance with Regulation 23 of MARPOL Annex VI.

c. Resolution MEPC.230(65) – 2013 Guidelines as required by Regulation 13.2.2 of MARPOL Annex VI in respect of Non-Identical Replacement Engines not required to meet the Tier III Limit;

The guidelines specify the criteria when a replacement non-identical engine being installed onboard is not required to meet the NOx Tier III limit following the applicable date of entry of the Tier III requirements.

d. Resolution MEPC.231(65) – 2013 Guidelines for Calculation of Reference Lines for use with the Energy Efficiency Design Index (EEDI) (*revokes MEPC.215(63)*);

The guidelines provide the calculation method for reference line which is required under Regulation 21 of MARPOL Annex VI and is amended due to the extension of the application of EEDI to LNG carrier, ro-ro cargo ship (vehicle carrier), ro-ro cargo ship and ro-ro passenger ship.

e. Resolution MEPC.232(65) – 2013 Interim Guidelines for Determining Minimum Propulsion Power to maintain the Manoeuvrability of Ships in Adverse Conditions (*revokes MSC-MEPC.2/Circ.11)*);

Regulation 21.5 of MARPOL Annex VI requires that the installed propulsion power to be not less than the propulsion power needed to maintain the manoeuvrability of ships in adverse conditions. The interim guidelines will assist Administrations and Classification Societies in verifying that ships have the sufficient capability.

f. Resolution MEPC.233(65) – 2013 Guidelines for Calculation of Reference Lines for use with the Energy Efficiency Design Index (EEDI) for Cruise Passenger Ships having Non-Conventional Propulsion;

The guidelines provide the calculation method for reference line which is applicable only to cruise passenger ships having non-conventional propulsion, including diesel-electric propulsion, turbine propulsion and hybrid propulsion systems.

g. Resolution MEPC.234(65) – Amendments to 2012 Guidelines on Survey and Certification of the Energy Efficiency Design Index (EEDI) (Resolution MEPC.214(63)), as amended;

The resolution provides amendments to the survey and certification guidelines for EEDI by including the ITTC Recommended Procedure in the final verification of attained EEDI at sea trial.

h. Resolution MEPC.239(65) – Amendments to the 2012 Guidelines for the implementation of MARPOL Annex V;

The resolution provides amendments to the guidelines for implementing MARPOL Annex V by providing guidance to the disposal of electronic wastes generated onboard during normal operations of vessels.

i. Resolution MEPC.240(65) – 2013 Amendments to the Revised Guidelines and Specifications for Oil Discharge Monitoring and Control Systems for Oil Tankers (Resolution MEPC.108(49));

The resolution provides editorial amendments to the cross-referencing of MARPOL Annex I regulation numbers and the incorporation of requirements relating to the carriage of bio-fuel blends.

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

a. MEPC.1/Circ.753/Rev.1 – Amendments to Unified Interpretation to Regulation 12.2 of MARPOL Annex I;

The UI clarifies that the use of Screw-down non return valves arranged in lines connecting to common piping leading to the standard discharge connection can be considered as equivalent to the "no inter-connection between sludge and bilge piping" arrangement specified in Regulation 12.2 of MARPOL Annex I.

b. MEPC.1/Circ.812 – Unified Interpretation to MARPOL Annex VI: Time of replacement of an engine;

The UI clarifies the common date to be used for determining the applicable NOx Tier standards for engines that are added or non-identical engines that are replaced onboard a ship under Regulation 13.2.2 of MARPOL Annex VI.

c. MEPC.1/Circ.813 – Unified Interpretation to MARPOL Annex VI: Identical replacement engines;

The UI provides the definition of an "identical engine" for an engine undergoing major conversion as referred to in Regulation 13 of MARPOL Annex VI.

d. MEPC.1/Circ.814 – Unified Interpretation to MARPOL Annex VI: Shipboard Energy Efficiency Management Plan (SEEMP).

The UI provides amendments to MEPC.1/Circ.795 by clarifying that ships without any means of propulsion are not subjected to the SEEMP requirements.

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

7. The IMO has also disseminated the IMO Circular Letter No. 3370, which consolidates draft amendments to MARPOL, the BCH Code, the IBC Code and the NOx Technical Code 2008, which are expected to be adopted at MEPC 66 (Apr 2014). The Shipping Community is urged to consider the draft amendments and invited to provide comments and feedback as necessary.

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.

9. 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

ANNEX 1

RESOLUTION MEPC.228(65)

Adopted on 17 May 2013

**INFORMATION REPORTING ON
TYPE APPROVED BALLAST WATER MANAGEMENT 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 conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

RECALLING FURTHER that, on entry into force, the Ballast Water Management Convention will require ships to install ballast water management systems, which meet the D-2 standard stipulated therein,

RECOGNIZING that the collection and dissemination of accurate information on type-approved ballast water management systems (BWMS) will be beneficial for all interested stakeholders,

NOTING resolution MEPC.175(58) by which the Committee adopted the Information reporting on type-approved ballast water management systems,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Bulk Liquids and Gases at its seventeenth session, on the need to revise resolution MEPC.175(58),

1. INVITES Member States, when approving a ballast water management system in accordance with the Guidelines for approval of ballast water management systems (G8), to report the following information to the Organization:

.1 approval date;

.2 name of the Administration;

.3 name of the BWMS;

.4 a copy of the Type Approval Certificate and any appendices which includes details on all imposed limiting conditions on the operation of the BWMS in accordance with paragraph 6.1 of the Guidelines for approval of ballast water management systems (G8) (resolution MEPC.174(58)) as follows: Such limiting conditions to include any applicable environmental conditions (e.g. salinity, UV transmittance, temperature, etc.) and/or system operational parameters (e.g. min/max pressure, pressure differentials, min/max Total Residual Oxidants (TRO), etc.);

.5 an annex to the Type Approval Certificate which contains the test results of each land-based and shipboard test run. Such test results shall include at least the numerical salinity, temperature, flow rates, and where appropriate UV transmittance. In addition, these test results shall include all other relevant variables;

.6 the protocol according to which testing was undertaken, including details on:

.1 whether ambient, cultured or a mixture of test organisms have been used (including a species-level identification for cultured organisms, and an identification to the lowest possible taxonomic level for ambient organisms);

.2 the shipboard test protocol including the operating parameters of the system during successful treatment operations, for example dosage rates, UV intensity and electrical current applied;

.3 energy consumption of the BWMS under normal or tested Treatment Rated Capacity (TRC), if available;

.4 the full test report of the land-based test including all unsuccessful, failed and invalid tests;

.5 the full test report of the shipboard test including all unsuccessful, failed and invalid tests, and detailed information of the test set up and actual flow rate at each test cycle;

.6 QA/QC documentation of the testing facility or body; and

.7 national accreditation of the test facility, if appropriate;

.7 a description of the Active Substance(s), if employed; and

.8 identification of the specific MEPC report and paragraph number granting Final Approval in accordance with the Procedure for approval of ballast water management systems that make use of Active Substances (G9), adopted by resolution MEPC.169(57);

2. INSTRUCTS the Secretariat to make such information available by an appropriate means;

3. REVOKES resolution MEPC.175(58).

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ANNEX 4

RESOLUTION MEPC.229(65)

Adopted on 17 May 2013

PROMOTION OF TECHNICAL CO-OPERATION AND TRANSFER OF TECHNOLOGY RELATING TO THE IMPROVEMENT OF ENERGY EFFICIENCY OF SHIPS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization (the 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 from ships,

HAVING ADOPTED, by resolution MEPC.203(62), the amendments to MARPOL Annex VI for inclusion of regulations on energy efficiency for ships,

BEING COGNIZANT of the principles enshrined in the Convention on the Organization, including the principle of non-discrimination, as well as the principle of no more favourable treatment enshrined in MARPOL and other IMO Conventions,

BEING COGNIZANT ALSO of the principles enshrined in the UNFCCC and its Kyoto Protocol including the principle of common but differentiated responsibilities and respective capabilities,

BEING AWARE that Parties to MARPOL Annex VI are expected to give full and complete effect to chapter 4 of MARPOL Annex VI,

1 REQUESTS the Organization, through its various programmes, to provide technical assistance to Member States to enable cooperation in the transfer of energy efficient technologies to developing countries in particular; and further assist in the sourcing of funding for capacity-building and support to States, in particular developing States, which have requested technology transfer;

2 INVITES international and regional organizations, non-governmental organizations and the industry to contribute in any manner possible and as appropriate to enhancing the effective implementation of chapter 4 of MARPOL Annex VI;

3 DECIDES to establish, with full stakeholder participation, an Ad hoc Expert Working Group on facilitation of Transfer of Technology for ships (AHEWG-TT) with a mandate to:

.1 assess the potential implications and impacts of the implementation of the regulations in chapter 4 of MARPOL Annex VI, in particular, on developing States, as a means to identify their technology transfer and financial needs, if any;

.2 identify and create an inventory of energy efficiency technologies for ships; identify barriers to transfer of technology, in particular to developing States, including associated costs, and possible sources of funding and make recommendations, including the development of a model agreement enabling the transfer of financial and technological resources and capacity-building between Parties, for the implementation of the regulations in chapter 4 of MARPOL Annex VI; and

.3 report to MEPC;

4 RECOGNIZES that the transfer of technology needs to respect property rights, including intellectual property rights, and to be on mutually agreed terms and conditions;

5 REQUESTS Member States, in cooperation with the Organization and other international bodies, other interested countries and industry programmes, to promote the provision directly, or through the Organization, of support to States, in particular to developing States, that need and request technical assistance for the assessment of the implications of becoming a Party to the regulations in chapter 4 of MARPOL Annex VI;

6 URGES also Member States with an ability to do so, and subject to their respective national laws, regulations and policies, to promote the provision directly, or through the Organization, of support especially to developing States and including, but not limited with regard to:

.1 transfer of energy efficiency technologies for ships;

.2 research and development for the improvement of energy efficiency of ships;

.3 training of personnel, for the effective implementation and enforcement of the regulations in chapter 4 of MARPOL Annex VI; and

.4 the exchange of information and technical co-operation relating to the improvement of energy efficiency for ships;

7 INVITES the Secretary-General of the Organization to make adequate provisions in its integrated Technical Co-operation Programme (ITCP) related to the effective implementation and enforcement of the requirements of chapter 4 of MARPOL Annex VI by developing countries, particularly the Least Developed Countries (LDCs) and Small Islands Developing States (SIDS); and

8 AGREES to keep under review the implementation of measures for the promotion of technical cooperation related to the energy efficiency of ships, as set out in this resolution.

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ANNEX 8

MEPC RESOLUTION MEPC.230(65)

Adopted on 17 May 2013

2013 GUIDELINES AS REQUIRED BY REGULATION 13.2.2 OF MARPOL ANNEX VI IN RESPECT OF NON-IDENTICAL REPLACEMENT ENGINES NOT REQUIRED TO MEET THE TIER III LIMIT

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 significantly strengthens the emission limits for nitrogen oxides (NO_x) in light of technological improvements and implementation experience,

NOTING that regulation 13.2.2 of MARPOL Annex VI specifies which NO_x emission standard shall be applied when a marine diesel engine is replaced with a non-identical marine diesel engine,

RECOGNIZING the need to develop guidelines to set forth the criteria of when it is not possible for a replacement engine to meet the standards in regulation 13.5.1.1 (Tier III),

HAVING CONSIDERED, at its sixty-fifth session, the guidelines as required by regulation 13.2.2 in respect of non-identical replacement engines not required to meet the Tier III limit, proposed by the Sub-Committee on Bulk Liquids and Gases at its seventeenth session,

1. ADOPTS the Guidelines as required by regulation 13.2.2 in respect of non-identical replacement engines not required to meet the Tier III limit, as set out at annex to the present resolution;

2. INVITES Administrations to take the annexed Guidelines into account when certifying a marine diesel engine which is replaced with a non-identical marine diesel engine;

3. REQUESTS the *Parties* to MARPOL Annex VI and other Member Governments to bring the annexed Guidelines 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.

GUIDELINES AS REQUIRED BY REGULATION 13.2.2 IN RESPECT OF NON-IDENTICAL REPLACEMENT ENGINES NOT REQUIRED TO MEET THE TIER III LIMIT

1 When it becomes necessary to replace an engine to which regulation 13 of MARPOL Annex VI applies in principle (power output of more than 130 kW) the non-identical replacement engine shall comply with the standards set forth in paragraph 5.1.1 of the respective regulation (Tier III) when operating in an area designated under regulation 13.6 of MARPOL Annex VI if the replacement takes place on or after 1 January 2016 unless:

.1 a replacement engine of similar rating complying with Tier III is not commercially available; or

.2 the replacement engine, in order to be brought into Tier III compliance, needs to be equipped with a NO_x reducing device which due to:

.1 size cannot be installed in the limited space available on board; or

.2 extensive heat release could have adverse impact on the ships structure, sheeting, and/or equipment whilst additional ventilation and/or insulation of the engine-room/compartment will not be possible.

2 In making the determination that a Tier III engine is not a feasible replacement engine for a ship, it should be necessary to evaluate not just engine dimensions and weight but may also include other pertinent ship characteristics. These pertinent characteristics could include:

.1 downstream ship components such as drive shafts, reduction gears, cooling systems, exhaust and ventilation systems, and propeller shafts;

.2 electrical systems for diesel generators (indirect drive engines); and

.3 such other ancillary systems and ship equipment that would affect the choice of an engine.

3 Restrictions should also be considered concerning engine adjustment/matching needed to meet boundary conditions and performance data necessary for SCR operation at all relevant mode points.

4 If the replacement engine is part of a multi-engine (twin-engine) arrangement and it is replacing an engine that is not a Tier III compliant engine due to it having been installed prior to the Tier III implementation date, a need to match a replacement engine within a multi-engine arrangement should be part of the criteria to be considered. In such cases, if it were decided to exempt a replacement engine in multi-engine arrangements it must be clear that is where engines are installed as matched pairs (or more) as propulsion engines and that matching is necessary to ensure comparable manoeuvring/drive response rather than where multiple engines are installed such as in the case of generators.

5 A replacement engine that meets the Tier III limit should be installed provided it does not incur an increase in the ship's electrical demand beyond the installed capacity.

6 In no case should modification to the ship's structure be allowed which weakens its structural stability below the acceptable level.

7 The Administration should consider how far the shipowner's specification of the device will determine whether a non-identical replacement engine is not required to meet the Tier III limit (for example, by requiring an excessive urea storage capacity – relative to bunker capacity – or that the SCR device is not to increase engine weight/volume by more than an unjustifiably low percentage).

8 There may be differences between a Tier III and a Tier II engine that should **not** affect the determination of whether a non-identical replacement engine should not be required to meet the Tier III limit, such as:

.1 warranty period or life expectancy;

.2 cost; or

.3 production lead time.

9 The shipowner should provide evidence to the Administration that a Tier III engine cannot be installed and should report specifically what prevents a Tier III compliant engine from being installed, taking into account the provisions of these guidelines. The shipowner should document the search for compliant Tier III engines and explain why the closest available engine with respect to size or performance is not appropriate for the ship. The search should include engines produced by manufacturers other than the original engine's manufacturer. This documentation, duly endorsed by the Administration, should be kept with the replacement engine's EIAPP Certificate.

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ANNEX 14

RESOLUTION MEPC. 231(65)

Adopted on 17 May 2013

2013 GUIDELINES FOR CALCULATION OF REFERENCE LINES FOR USE WITH THE ENERGY EFFICIENCY DESIGN INDEX (EEDI)

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 sixty-second session, the Committee adopted, by resolution MEPC.203(62), 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),

NOTING that regulation 21 (required EEDI) of MARPOL Annex VI, as amended, requires reference lines to be established for each ship type to which regulation 21 is applicable,

NOTING ALSO that Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI) were adopted at its sixty-third session,

HAVING CONSIDERED, at its sixty-fifth session, the draft amendments to Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI) for extension of the application of the EEDI to LNG carrier, ro-ro cargo ship (vehicle carrier), ro-ro cargo ship and ro-ro passenger ship,

1. ADOPTS the *2013 Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI)*, as set out at annex to the present resolution;

2. AGREES to keep these Guidelines under review in light of the experience gained; and

3. REVOKES the Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI), adopted by resolution MEPC.215(63), as from this date.

2013 GUIDELINES FOR CALCULATION OF REFERENCE LINES FOR USE WITH THE ENERGY EFFICIENCY DESIGN INDEX (EEDI)

1 The reference lines are established for each ship type to which regulation 21 (Required EEDI) of MARPOL Annex VI is applicable. The purpose of the EEDI is to provide a fair basis for comparison, to stimulate the development of more efficient ships in general and to establish the minimum efficiency of new ships depending on ship type and size. Hence, the reference lines for each ship type is calculated in a transparent and robust manner.

2 Ship types are defined in regulation 2 of MARPOL Annex VI. The reference line for each ship type is used for the determination of the required EEDI as defined in regulation 21 of MARPOL Annex VI.

3 These guidelines apply to the following ships types: bulk carrier, gas carrier, tanker, containership, general cargo ship, refrigerated cargo carrier, combination carrier, ro-ro cargo ship, ro-ro cargo ship (vehicle), ro-ro passenger ship and LNG carrier. It is noted that a method of calculating reference lines has not been established for passenger ships other than cruise passenger ship having non-conventional propulsion.

Definition of a reference line

4 A reference line is defined as a curve representing an average index value fitted on a set of individual index values for a defined group of ships.

5 One reference line is developed for each ship type to which regulation 21 of MARPOL Annex VI is applicable, ensuring that only data from comparable ships are included in the calculation of each reference line.

6 The reference line value is formulated as $Reference\ line\ value = a\ (100\%\ deadweight)^{-c}$ where "a" and "c" are parameters determined from the regression curve fit.

7 Input data for the calculation of the reference lines is filtered through a process where data deviating more than two standard deviations from the regression line are discarded. The regression is then applied again to generate a corrected reference line. For the purpose of documentation, discarded data is listed with the ships IMO number.

Data sources

8 IHS Fairplay (IHSF) database is selected as the standard database delivering the primary input data for the reference line calculation. For the purpose of the EEDI reference line calculations, a defined version of the database is archived as agreed between the Secretariat and IHSF.

9 For the purpose of calculating the reference lines, data relating to existing ships of 400 GT and above from the IHSF database delivered in the period from 1 January 1999 to 1 January 2009 are used. For ro-ro cargo and ro-ro passenger ships, data relating to existing ships of 400 GT and above from the IHSF database delivered in the period from 1 January 1998 to 1 January 2010 are used.

10 The following data from the IHSF database on ships with conventional propulsion systems is used when calculating the reference lines:

.1 data on the ships' capacity is used as *Capacity* for each ship type as defined in MEPC.212(63);

.2 data on the ships' service speed is used as reference speed V_{ref}; and

.3 data on the ships' total installed main power is used as $MCR_{ME(i)}$.

11 For some ships, some data entries may be blank or contain a zero (0) in the database. Datasets with blank power, capacity and/or speed data should be removed from the reference line calculations. For the purpose of later references, the omitted ships should be listed with their IMO number.

12 To ensure a uniform interpretation, the association of ship types defined in regulation 2 of MARPOL Annex VI, with the ship types given by the IHSF database and defined by the so-called Stat codes, is shown in the appendix to this guideline. Table 1 in the appendix 1 lists the ship types from IHSF used for the calculation of reference lines. Table 2 lists the IHSF ship types not used when calculating the reference lines.

Calculation of reference lines

13 To calculate the reference line, an estimated index value for each ship contained in the set of ships per ship type is calculated using the following assumptions:

.1 the carbon emission factor is constant for all engines, i.e. $C_{F,ME} = C_{F,AE} = CF$ = 3.1144 g CO_2/g fuel;

.2 the specific fuel consumption for all ship types is constant for all main engines, i.e. $SFC_{ME} = 190$ g/kWh;

.3 $P_{ME(i)}$ is 75% of the total installed main power ($MCR_{ME(i)}$);

.4 the specific fuel consumption for all ship types is constant for all auxiliary engines, i.e. $SFC_{AE} = 215$ g/kWh;

.5 P_{AE} is the auxiliary power and is calculated according to paragraphs 2.5.6.1 and 2.5.6.2 of the annex to MEPC.212(63);

.6 for ro-ro passenger ships, P_{AE} is calculated as follows:

$$P_{AE} = 0.866 \cdot GT^{0.732}$$

.7 no correction factors are used except for f_{jRoRo} and f_{cRoPax}; and

.8 innovative mechanical energy efficiency technology, shaft motors and other innovative energy efficient technologies are all excluded from the reference line calculation, i.e. $P_{AEeff} = 0$, $P_{PTI} = 0$, $P_{eff} = 0$.

14 The equation for calculating the estimated index value for each ship (excluding containerships and ro-ro cargo ships (vehicle carrier) – see paragraph 15) is as follows:

$$Estimated\ \ Index\ Value = 3.1144 \cdot \frac{190 \cdot \sum_{i=1}^{NME} P_{MEi} + 215 \cdot P_{AE}}{Capacity \cdot V_{ref}}$$

15 For containerships, 70 per cent of the deadweight (70% DWT) is used as *capacity* for calculating the estimated index value for each containership as follows:

$$Estimated\ \ Index\ Value = 3.1144 \cdot \frac{190 \cdot \sum_{i=1}^{NME} P_{MEi} + 215 \cdot P_{AE}}{70\%\mathrm{DWT} \cdot V_{ref}}$$

16 For ro-ro cargo ship (vehicle carrier), the following equation is used:

$$Estimated\ Index\ Value = \ f_{roroV} \cdot 3.1144 \cdot \frac{190 \cdot \sum_{i=1}^{nME} P_{MEi} + 215 \cdot P_{AE}}{Capacity \cdot V_{ref}}$$

Where:

$$f_{roroV} = \frac{-15571 \cdot F_n^2 + 5538.4 \cdot F_n - 132.67}{287}$$

17 For ro-ro cargo ships the estimated index value for each individual ship is calculated as follows:

$$Estimated\ Index\ Value = \frac{3.1144 \cdot (f_{jRoRo} \cdot 190 \cdot \sum_{i=1}^{nME} P_{MEi} + 215 \cdot P_{AE}}{Capacity \cdot V_{ref}}$$

18 For ro-ro passenger ships the estimated index value for each individual ship is calculated as follows:

$$Estimated\ Index\ Value = \frac{3.1144 \cdot (\mathrm{f_{jRoRo}} \cdot 190 \cdot \sum_{i=1}^{nME} P_{MEi} + 215 \cdot P_{AE}}{f_{cRoPax} \cdot Capacity \cdot V_{ref}}$$

19 For LNG carriers, the equation set out in appendix 2 is used.

Calculation of reference line parameters "a" and "c"

20 For all ship types to which these guidelines apply except for ro-ro passenger ships, parameters "a" and "c" are determined from a regression analysis undertaken by plotting the calculated estimated index values against 100 per cent deadweight (100% DWT).

21 For ro-ro passenger ships, parameters "a" and "c" are determined from a regression analysis undertaken by plotting the calculated estimated index values against corrected deadweight, DWT, for ships to which the capacity correction factor, f_{cRoPax}, applies and against 100 per cent deadweight (100% DWT) for ships to which the capacity correction factor does not apply.

Documentation

22 For purposes of transparency, the ships used in the calculation of the reference lines should be listed with their IMO numbers and the numerator and denominator of the index formula, as given in paragraphs 14 to 19. The documentation of the aggregated figures preserves the individual data from direct access but offers sufficient information for possible later scrutiny.

* * *

Appendix 1

1 To ensure a uniform interpretation, ship types defined in regulation 2 of MARPOL Annex VI are compared to the ship types given in the IHSF database.

2 The IHSF Stat code system provides several levels of definition as follows:

.1 Highest level:

A	Cargo carrying
B	Work vessel
W	Non-seagoing merchant ships
X	Non-merchant
Y	Non-propelled
Z	Non-ship structures

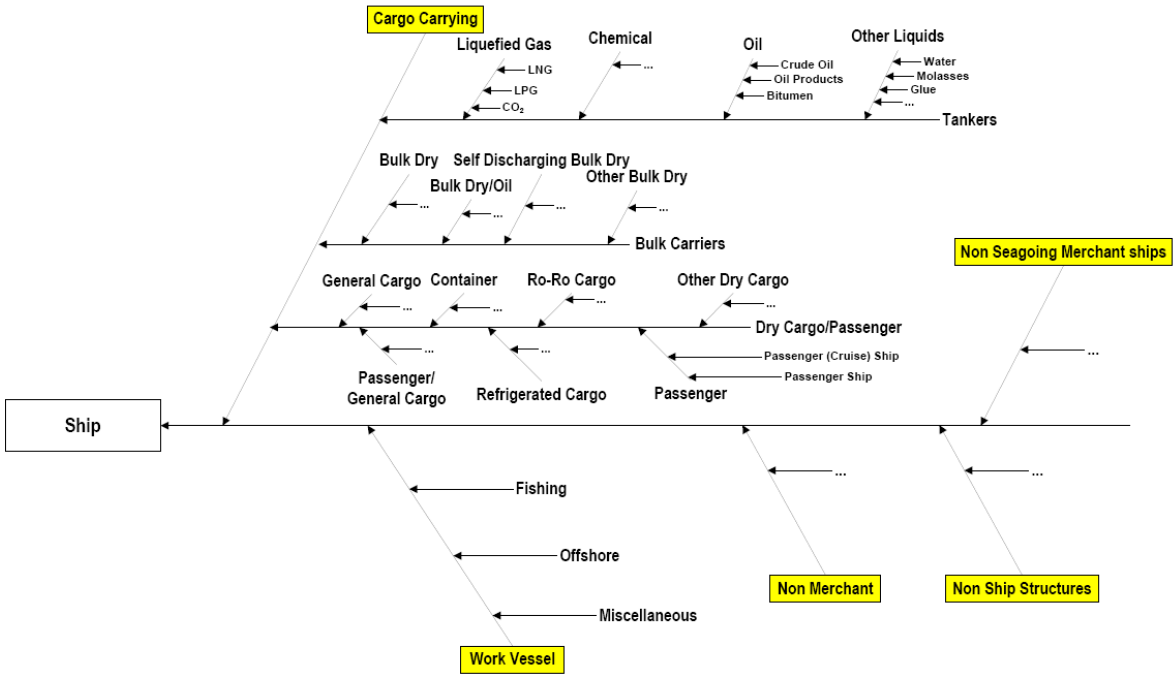
For the purpose of the EEDI, only group "A cargo carrying" needs to be considered. A graphical representation of this is given below.

.2 The next level comprises:

A1	Tankers
A2	Bulk carriers
A3	Dry cargo/passenger

There are further differentiations until level five, e.g. "A31A2GX General Cargo Ship", and each category is described.

The complete list is attached.



3 The ship types from the IHSF Stat code 5 (Statcode5v1075) used for the calculation of reference lines for the following ship types: bulk carrier, gas carrier, tanker, containership, general cargo ship, refrigerated cargo carrier and combination carrier, are set out in table 1. The IHSF database ship types, not used in the calculation of reference lines for the specific ship types, are set out in table 2, e.g. ships built for sailing on the Great Lakes and landing craft.

Table 1: Ship types from IHSF used for the calculation of reference lines for use with the EEDI

.1 Bulk carrier	Bulk dry	A21A2BC	Bulk carrier	A single deck cargo vessel with an arrangement of topside ballast tanks for the carriage of bulk dry cargo of a homogeneous nature.
	Bulk dry	A21B2BO	Ore carrier	A single deck cargo ship fitted with two longitudinal bulkheads. Ore is carried in the centreline holds only.
	Self-discharging bulk dry	A23A2BD	Bulk cargo carrier, self-discharging	A bulk carrier fitted with self-trimming holds, a conveyor belt (or similar system) and a boom which can discharge cargo alongside or to shore without the assistance of any external equipment.
	Other dry bulk	A24A2BT	Cement carrier	A single deck cargo vessel fitted with pumping arrangements for the carriage of cement in bulk. There are no weather deck hatches. May be self-discharging.
		A24B2BW	Wood chips carrier, self-unloading	A single deck cargo vessel with high freeboard for the carriage of wood chips. May be self-discharging.
		A24C2BU	Urea carrier	A single deck cargo vessel for the carriage of urea in bulk. May be self-discharging.
		A24D2BA	Aggregates carrier	A single deck cargo vessel for the carriage of aggregates in bulk. Also known as a sand carrier. May be self-discharging.
		A24E2BL	Limestone carrier	A single deck cargo vessel for the carriage of limestone in bulk. There are no weather deck hatches. May be self-discharging.
.2 Gas carrier	Liquefied gas	A11A2TN	LNG tanker	A tanker for the bulk carriage of liquefied natural gas (primarily methane) in independent insulated tanks. Liquefaction is achieved at temperatures down to -163 deg C.
		A11B2TG	LPG tanker	A tanker for the bulk carriage of liquefied petroleum gas in insulated tanks, which may be independent or integral. The cargo is pressurized (smaller vessels), refrigerated (larger vessels) or both ("semi-pressurized") to achieve liquefaction.
		A11C2LC	CO_2 tanker	A tanker for the bulk carriage of liquefied carbon dioxide.
		A11A2TQ	CNG tanker	A tanker for the bulk carriage of compressed natural gas. Cargo remains in gaseous state but is highly compressed.

.3 Tanker	Chemical	A12A2LP	Molten sulphur tanker	A tanker for the bulk carriage of molten sulphur in insulated tanks at a high temperature.
		A12A2TC	Chemical tanker	A tanker for the bulk carriage of chemical cargoes, lube oils, vegetable/animal oils and other chemicals as defined in the International Bulk Chemical Code. Tanks are coated with suitable materials which are inert to the cargo.
		A12B2TR	Chemical/ products tanker	A chemical tanker additionally capable of the carriage of clean petroleum products.
		A12C2LW	Wine tanker	A cargo ship designed for the bulk transport of wine in tanks. Tanks will be stainless steel or lined. New vessels will be classified as chemical carriers.
		A12D2LV	Vegetable oil tanker	A cargo ship designed for the bulk transport of vegetable oils in tanks. Tanks will be stainless steel or lined. New vessels will be classified as chemical carriers.
		A12E2LE	Edible oil tanker	A cargo ship designed for the bulk transport of edible oils in tanks. Tanks will be stainless steel or lined. New vessels will be classified as chemical carriers.
		A12F2LB	Beer tanker	A tanker for the bulk carriage of beer.
		A12G2LT	Latex tanker	A tanker for the bulk carriage of latex.
		A12H2LJ	Fruit juice tanker	A tanker for the bulk carriage of fruit juice concentrate in insulated tanks.
	Oil	A13A2TV	Crude oil tanker	A tanker for the bulk carriage of crude oil.
		A13A2TW	Crude/oil products tanker	A tanker for the bulk carriage of crude oil but also for carriage of refined oil products.
		A13B2TP	Products tanker	A tanker for the bulk carriage of refined petroleum products, either clean or dirty.
		A13B2TU	Tanker (unspecified)	A tanker whose cargo is unspecified.
		A13C2LA	Asphalt/ Bitumen tanker	A tanker for the bulk carriage of asphalt/bitumen at temperatures between 150 and 200 deg C.
		A13E2LD	Coal/oil mixture tanker	A tanker for the bulk carriage of a cargo of coal and oil mixed as a liquid and maintained at high temperatures.
	Other liquids	A14A2LO	Water tanker	A tanker for the bulk carriage of water.
		A14F2LM	Molasses tanker	A tanker for the bulk carriage of molasses.
		A14G2LG	Glue tanker	A tanker for the bulk carriage of glue.
		A14H2LH	Alcohol tanker	A tanker for the bulk carriage of alcohol.
		A14N2LL	Caprolactam tanker	A tanker for the bulk carriage of caprolactam, a chemical used in the plastics industry for the production of polyamides.
	Chemical	A12A2TL	Parcels tanker	A chemical tanker with many segregated cargo tanks to carry multiple grades of chemicals as defined in the International Bulk Chemical Code. Typically these can have between 10 and 60 different tanks.

.4 Containership	Container	A33A2CC	Containership (fully cellular)	A single deck cargo vessel with boxed holds fitted with fixed cellular guides for the carriage of containers.
.5 General cargo ship	General cargo	A31A2GX	General cargo ship	A single or multi-deck cargo vessel for the carriage of various types of dry cargo. Single deck vessels will typically have box-shaped holds. Cargo is loaded and unloaded through weather deck hatches.
	Other dry cargo	A38H2GU	Pulp carrier	A vessel designed for carrying paper pulp.
.6 Refrigerated cargo carrier	Refrigerated cargo	A34A2GR	Refrigerated cargo ship	A multi-deck cargo ship for the carriage of refrigerated cargo at various temperatures.
.7 Combination carrier	Bulk dry/oil	A22A2BB	Bulk/oil carrier (OBO)	A bulk carrier arranged for the alternative (but not simultaneous) carriage of crude oil.
	Bulk dry/oil	A22B2BR	Ore/oil carrier	An ore carrier arranged for the alternative (but not simultaneous) carriage of crude oil.
	Bulk dry/oil	A22A2BP	Ore/bulk/ products carrier	A bulk carrier arranged for the alternative (but not simultaneous) carriage of oil products.

Table 2: Ship types from IHSF not included in the calculation of reference lines for use with the EEDI

.1 Bulk carrier	Bulk dry	A21A2BG	Bulk carrier, laker only	A single deck cargo vessel with dimensions suited to the limitations of Great Lakes of North America trade, unsuitable for open sea navigation. Hatches are more numerous than standard bulk carriers, and much wider than they are long.
	Bulk dry	A21A2BV	Bulk carrier (with vehicle decks)	A bulk carrier with movable decks for the additional carriage of new vehicles.
	Bulk dry/oil	A22A2BB	Bulk/oil carrier (OBO)	A bulk carrier arranged for the alternative (but not simultaneous) carriage of crude oil.
	Bulk dry/oil	A22B2BR	Ore/oil carrier	An ore carrier arranged for the alternative (but not simultaneous) carriage of crude oil.
	Bulk dry/oil	A22A2BP	Ore/bulk/products carrier	A bulk carrier arranged for the alternative (but not simultaneous) carriage of oil products.
	Self-discharging bulk dry	A23A2BK	Bulk cargo carrier, self-discharging, laker	A Great Lakes bulk carrier fitted with a conveyor belt (or similar system) and a boom which can discharge cargo alongside or to shore without the assistance of any external equipment.
	Other bulk dry	A24H2BZ	Powder carrier	A single deck cargo vessel for the carriage of fine powders such as fly ash. There are no weather deck hatches.
	Other bulk dry	A24G2BS	Refined sugar carrier	A single deck cargo vessel for the carriage of refined sugar. Sugar is loaded in bulk and bagged in transit (BIBO – Bulk In – Bag Out).
.2 Gas carrier	Liquefied gas	A11B2TH	LPG/chemical tanker	An LPG tanker additionally capable of the carriage of chemical products as defined in the International Bulk Chemical Code.
.3 Tanker	Oil	A13A2TS	Shuttle tanker	A tanker for the bulk carriage of crude oil specifically for operation between offshore terminals and refineries. Is typically fitted with bow loading facilities.
.4 Containership	Container	A33B2CP	Passenger/ containership	A containership with accommodation for the carriage of more than 12 passengers.

.5 General cargo ship	General cargo	A31A2GO	Open hatch cargo ship	A large single deck cargo vessel with full width hatches and boxed holds for the carriage of unitized dry cargo such as forest products and containers. Many are fitted with a gantry crane.
	General cargo	A31A2GS	General cargo/tanker (container/oil/bulk – COB ship)	A general cargo ship with reversible hatch covers; one side is flush and the other is fitted with baffles for use with liquid cargoes. Containers can be carried on the hatch covers in dry cargo mode.
	General cargo	A31A2GT	General cargo/tanker	A general cargo ship fitted with tanks for the additional carriage of liquid cargo.
	General cargo	A31C2GD	Deck cargo ship	A vessel arranged for carrying unitized cargo on deck only. Access may be by use of a ro-ro ramp.
	Passenger/general cargo	A32A2GF	General cargo/ passenger ship	A general cargo ship with accommodation for the carriage of more than 12 passengers.
	Other dry cargo	A38A2GL	Livestock carrier	A cargo vessel arranged for the carriage of livestock.
	Other dry cargo	A38B2GB	Barge carrier	A cargo vessel arranged for the carriage of purpose built barges (lighters) loaded with cargo. Typically loading is by way of a gantry crane. Also known as Lighter Aboard SHip vessels (LASH).
	Other dry cargo	A38C3GH	Heavy load carrier, semi-submersible	A heavy load carrier which is semi-submersible for the float on loading/unloading of the cargoes.
	Other dry cargo	A38C3GY	Yacht carrier, semi-submersible	A semi-submersible heavy load carrier specifically arranged for the carriage of yachts.
	Other dry cargo	A38D2GN	Nuclear fuel carrier	A cargo vessel arranged to carry nuclear fuel in flasks.
	Other dry cargo	A38D2GZ	Nuclear fuel carrier (with ro-ro facility)	A nuclear fuel carrier which is loaded and unloaded by way of a ro-ro ramp.
	Other dry cargo	A38B3GB	Barge carrier, semi-submersible	A barge carrier which is semi-submersible for the float on loading/unloading of the barges.
	Other dry cargo	A38C2GH	Heavy load carrier	A cargo vessel able to carry heavy and/or outsized individual cargoes. Cargo may be carried on deck or in holds and may be loaded by crane and/or ro-ro ramps.

* * *

Appendix 2

EQUATION FOR CALCULATING THE INDEX VALUE OF REFERENCE LINE FOR LNG CARRIERS

	Direct Drive Diesel	Dual Fuel Diesel – Electronic (DFDE)	Steam Turbine
Margins	$Engine: 10\%$ $Sea: 20\%$	$Engine: -$ $Sea: 20\%$	$Engine: -$ $Sea: 20\%$
Design Margin	$M \arg in = \frac{0.9}{1.2}$ $M \arg in = 75\%$	$M \arg in = \frac{1}{1.2}$ $M \arg in = 83\%$	$M \arg in = \frac{1}{1.2}$ $M \arg in = 83\%$
P_{ME} Formula[1]	$P_{ME(i)} = 0.75 \cdot \left(MCR_{ME(i)} - P_{PTO(i)}\right)$	$P_{ME(i)} = 0.83 \cdot \frac{MPP_{(i)}}{\eta_{Electrical(i)}}$	$P_{ME(i)} = 0.83 \cdot \left(MCR_{ME(i)} - P_{PTO(i)}\right)$
SFC_{ME} in g/kWh (Fuel)	190 (HFO)	175 (FBO)	285 (FBO)
P_{AE} Formula[2]	$P_{AE} = 0.025 \cdot \sum_{i=1}^{nME} MCR_{ME(i)} + 250 + Capacity \cdot BOR \cdot 15$	$P_{AE} = (0.025 + 0.02) \cdot \sum_{i=1}^{nME} P_{ME(i)} + 250$	$P_{AE} = 0$
Index Formulae	$3.1144 \cdot \frac{190 \cdot \sum_{i=1}^{nME} P_{ME(i)} + 215 \cdot P_{AE}}{Capacity \cdot V_{ref}}$	$2.75 \cdot \frac{175 \cdot \sum_{i=1}^{nME} P_{ME(i)} + 175 \cdot P_{AE}}{Capacity \cdot V_{ref}}$	$2.75 \cdot \frac{285 \cdot \sum_{i=1}^{nME} P_{ME(i)}}{Capacity \cdot V_{ref}}$

NOTES:

1 $MPP_{(i)}$ of DFDE is calculated as 66% of MCR of engines.

2 BOR of Direct Drive Diesel is 0.15 (%/day).

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ANNEX 16

RESOLUTION MEPC.232(65)

Adopted on 17 May 2013

2013 INTERIM GUIDELINES FOR DETERMING MINIMUM PROPULSION POWER TO MAINTAIN THE MANOEUVRABILITY OF SHIPS IN ADVERSE CONDITIONS

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 sixty-second session, the Committee adopted, by resolution MEPC.203(62), 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),

NOTING that the amendments to MARPOL Annex VI adopted at its sixty-second session by inclusion of a new chapter 4 for regulations on energy efficiency for ships, entered into force on 1 January 2013,

NOTING ALSO that regulation 21.5 of MARPOL Annex VI, as amended, requires that 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,

RECOGNIZING that the amendments to MARPOL Annex VI requires the adoption of relevant guidelines for smooth and uniform implementation of the regulations and to provide sufficient lead time for industry to prepare,

HAVING CONSIDERED, at its sixty-fifth session, the draft *2013 Interim Guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions*,

1. ADOPTS the *2013 Interim Guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions*, 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 20 of MARPOL Annex VI, as amended;

3. REQUESTS the Parties to MARPOL Annex VI and other Member Governments to bring the annexed Guidelines related to the Energy Efficiency Design Index (EEDI) to the attention of shipowners, ship operators, shipbuilders, ship designers and any other interested groups;

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

5. REVOKES the Interim Guidelines circulated by MSC-MEPC.2/Circ.11, as from this date.

ANNEX

2013 INTERIM GUIDELINES FOR DETERMINING MINIMUM PROPULSION POWER TO MAINTAIN THE MANOEUVRABILITY OF SHIP IN ADVERSE CONDITIONS

0 Purpose

The purpose of these interim guidelines is to assist Administrations and recognized organizations in verifying that ships, complying with EEDI requirements set out in regulations on Energy Efficiency for Ships, have sufficient installed propulsion power to maintain the manoeuvrability in adverse conditions, as specified in regulation 21.5 in chapter 4 of MARPOL Annex VI.

1 Definition

1.1 "Adverse conditions" mean sea conditions with the following parameters:

Significant wave height h_s, m	Peak wave period T_P, s	Mean wind speed V_w, m/s
5.5	7.0 to 15.0	19.0

JONSWAP sea spectrum with the peak parameter of 3.3 is to be considered for coastal waters.

1.2 The following adverse condition should be applied to ships defined as the following threshold value of ship size.

Ship length, m	Significant wave height h_s, m	Peak wave period T_P, s	Mean wind speed V_w, m/s
Less than 200	4.0	7.0 to 15.0	15.7
$200 \leq L_{pp} \leq 250$	Parameters linearly interpolated depending on ship's length		
More than L_{pp} = 250	Refer to paragraph 1.1		

2 Applicability*

2.1 These guidelines should be applied in the case of all new ships of types as listed in table 1 of appendix required to comply with regulations on Energy Efficiency for Ships according to regulation 21 of MARPOL Annex VI.

2.2 Notwithstanding the above, these guidelines should not be applied to the ships with un-conventional propulsion system such as pod propulsion.

2.3 These guidelines are intended for ships in unrestricted navigation; for other cases, the Administration should determine appropriate guidelines, taking the operational area and relevant restrictions into account.

* These Interim Guidelines are applied to ships required to comply with regulations on Energy Efficiency for Ships according to regulation 21 of MARPOL Annex VI during Phase 0 (i.e. for those ship types as in table 1 of appendix with the size of equal or more than 20,000 DWT).

3 Assessment procedure

3.1 The assessment can be carried out at two different levels as listed below:

.1 Minimum power lines assessment; and

.2 Simplified assessment.

3.2 The ship should be considered to have sufficient power to maintain the manoeuvrability in adverse conditions if it fulfils one of these assessment levels.

4 Assessment level 1 – minimum power lines assessment

4.1 If the ship under consideration has installed power not less than the power defined by the minimum power line for the specific ship type, the ship should be considered to have sufficient power to maintain the manoeuvrability in adverse conditions.

4.2 The minimum power lines for the different types of ships are provided in the appendix.

5 Assessment level 2 – simplified assessment

5.1 The methodology for the simplified assessment is provided in the appendix.

5.2 If the ship under consideration fulfils the requirements as defined in the simplified assessment, the ship should be considered to have sufficient power to maintain the manoeuvrability in adverse conditions.

6 Documentation

6.1 Test documentation should include at least, but not be limited to, a:

.1 description of the ship's main particulars;

.2 description of the ship's relevant manoeuvring and propulsion systems;

.3 description of the assessment level used and results; and

.4 description of the test method(s) used with references, if applicable.

* * *

Appendix

ASSESSMENT PROCEDURES TO MAINTAIN THE MANOEUVRABILITY UNDER ADVERSE CONDITIONS, APPLICABLE DURING PHASE 0 OF THE EEDI IMPLEMENTATION

1 Scope

1.1 The procedures as described below are applicable during Phase 0 of the EEDI implementation as defined in regulation 21 of MARPOL Annex VI (see also paragraph 0 – Purpose of these interim guidelines).

2 Minimum power lines

2.1 The minimum power line values of total installed MCR, in kW, for different types of ships should be calculated as follows:

$$\text{Minimum Power Line Value} = a \times (DWT) + b$$

Where:

DWT is the deadweight of the ship in metric tons; and
a and *b* are the parameters given in table 1 for tankers, bulk carriers and combination carriers.

Table 1: Parameters a and b for determination of the minimum power line values for the different ship types

Ship Type	a	b
Bulk Carriers	0.0687	2924.4
Tankers	0.0689	3253.0
Combination Carriers	see tankers above	

The total installed MCR of all main propulsion engines should not be less than the minimum power line value, where MCR is the value specified on the EIAPP Certificate.

3 Simplified assessment

3.1 The simplified assessment procedure is based on the principle that, if the ship has sufficient installed power to move with a certain advance speed in head waves and wind, the ship will also be able to keep course in waves and wind from any other direction. The minimum ship speed of advance in head waves and wind is thus selected depending on ship design, in such a way that the fulfilment of the ship speed of advance requirements means fulfilment of course-keeping requirements. For example, ships with larger rudder areas will be able to keep course even if the engine is less powerful; similarly, ships with a larger lateral windage area will require more power to keep course than ships with a smaller windage area.

3.2 The simplification in this procedure is that only the equation of steady motion in longitudinal direction is considered; the requirements of course-keeping in wind and waves are taken into account indirectly, by adjusting the required ship speed of advance in head wind and waves.

3.3 The assessment procedure consists of two steps:

.1 definition of the required advance speed in head wind and waves, ensuring course-keeping in all wave and wind directions; and

.2 assessment whether the installed power is sufficient to achieve the required advance speed in head wind and waves.

Definition of required ship speed of advance

3.4 The required ship advance speed through the water in head wind and waves, V_s, is set to the larger of:

.1 minimum navigational speed, V_{nav}; or

.2 minimum course-keeping speed, V_{ck}.

3.5 The minimum navigational speed, V_{nav}, facilitates leaving coastal area within a sufficient time before the storm escalates, to reduce navigational risk and risk of excessive motions in waves due to unfavourable heading with respect to wind and waves. The minimum navigational speed is set to 4.0 knots.

3.6 The minimum course-keeping speed in the simplified assessment, $V_{ck,}$ is selected to facilitate course-keeping of the ships in waves and wind from all directions. This speed is defined on the basis of the reference course-keeping speed $V_{ck,\ ref}$, related to ships with the rudder area A_R equal to 0.9 per cent of the submerged lateral area corrected for breadth effect, and an adjustment factor taking into account the actual rudder area:

$$V_{ck} = V_{ck,\ ref} - 10.0 \times (A_{R\%} - 0.9) \quad (1)$$

where V_{ck} in knots, is the minimum course-keeping speed, $V_{ck,\ ref}$ in knots, is the reference course-keeping speed, and $A_{R\%}$ is the actual rudder area, A_R, as percentage of the submerged lateral area of the ship corrected for breadth effect, $A_{LS,\ cor}$, calculated as $A_{R\%} = A_R/A_{LS,\ cor} \cdot 100\%$. The submerged lateral area corrected for breadth effect is calculated as $A_{LS,\ cor} = L_{pp}T_m(1.0+25.0(B_{wl}/L_{pp})^2)$, where L_{pp} is the length between perpendiculars in m, B_{wl} is the water line breadth in m and T_m is the draft a midship in m. In case of high-lift rudders or other alternative steering devices, the equivalent rudder area to the conventional rudder area is to be used.

3.7 The reference course-keeping speed $V_{ck,\ ref}$ for bulk carriers, tankers and combination carriers is defined, depending on the ratio A_{FW}/A_{LW} of the frontal windage area, A_{FW}, to the lateral windage area, A_{LW}, as follows:

.1 9.0 knots for A_{FW}/A_{LW} =0.1 and below and 4.0 knots for A_{FW}/A_{LW}=0.40 and above; and

.2 linearly interpolated between 0.1 and 0.4 for intermediate values of A_{FW}/A_{LW}.

Procedure of assessment of installed power

3.8 The assessment is to be performed in maximum draught conditions at the required ship speed of advance, V_s, defined above. The principle of the assessment is that the required propeller thrust, T in N, defined from the sum of bare hull resistance in calm water

R_{cw}, resistance due to appendages R_{app}, aerodynamic resistance R_{air}, and added resistance in waves R_{aw}, can be provided by the ship's propulsion system, taking into account the thrust deduction factor t:

$$T = (R_{cw} + R_{air} + R_{aw} + R_{app})/(1-t) \quad (2)$$

3.9 The calm-water resistance for bulk carriers, tankers and combination carriers can be calculated neglecting the wave-making resistance as $R_{cw} = (1+k)C_F \frac{1}{2}\rho S V_s^2$, where k is the form factor, $C_F = \frac{0.075}{(\log_{10}\mathrm{Re}-2)^2}$ is the frictional resistance coefficient, $\mathrm{Re} = V_s L_{pp}/\nu$ is the Reynolds number, ρ is water density in kg/m^3, S is the wetted area of the bare hull in m^2, V_s is the ship advance speed in m/s, and ν is the kinematic viscosity of water in m^2/s.

3.10 The form factor k should be obtained from model tests. Where model tests are not available the empirical formula below may be used:

$$k = -0.095 + 25.6\frac{C_B}{(L_{pp}/B_{wl})^2\sqrt{B_{wl}/T_m}} \quad (3)$$

where C_B is the block coefficient based on L_{pp}.

3.11 Aerodynamic resistance can be calculated as $R_{air} = C_{air}\frac{1}{2}\rho_a A_F V_{w,rel}^2$, where C_{air} is the aerodynamic resistance coefficient, ρ_a is the density of air in kg/m^3, A_F is the frontal windage area of the hull and superstructure in m^2, and $V_{w\,rel}$ is the relative wind speed in m/s, defined by the adverse conditions in paragraph 1.1 of the interim guidelines, V_w, added to the ship advance speed, V_s. The coefficient C_{air} can be obtained from model tests or empirical data. If none of the above is available, the value 1.0 is to be assumed.

3.12 The added resistance in waves, R_{aw}, defined by the adverse conditions and wave spectrum in paragraph 1 of the interim guidelines, is calculated as:

$$R_{aw} = 2\int_0^\infty \frac{R_{aw}(V_s,\omega)}{\zeta_a^2} S_{\zeta\zeta}(\omega)\,d\omega \quad (4)$$

where $R_{aw}(V_s,\omega)/\zeta_a^2$ is the quadratic transfer function of the added resistance, depending on the advance speed V_s in m/s, wave frequency ω in rad/s, the wave amplitude, ζ_a in m and the wave spectrum, $S_{\zeta\zeta}$ in m^{2}s. The quadratic transfer function of the added resistance can be obtained from the added resistance test in regular waves at the required ship advance speed V_s as per ITTC procedures 7.5-02 07-02.1 and 7.5-02 07-02.2, or from equivalent method verified by the Administration.

3.13 The thrust deduction factor t can be obtained either from model tests or empirical formula. Default conservative estimate is t=0.7w, where w is the wake fraction. Wake fraction w can be obtained from model tests or empirical formula; default conservative estimates are given in table 2.

Table 2: Recommended values for wake fraction *w*

Block coefficient	One propeller	Two propellers
0.5	0.14	0.15
0.6	0.23	0.17
0.7	0.29	0.19
0.8 and above	0.35	0.23

3.14 The required advance coefficient of the propeller is found from the equation:

$$T = \rho u_a^2 D_P^2 K_T(J)/J^2 \quad (5)$$

where D_P is the propeller diameter, $K_T(J)$ is the open water propeller thrust coefficient, $J = u_a/nD_P$, and $u_a = V_s(1-w)$. J can be found from the curve of K_T(J)/J^2.

3.15 The required rotation rate of the propeller, *n*, in revolutions per second, is found from the relation:

$$n = u_a/(JD_P) \quad (6)$$

3.16 The required delivered power to the propeller at this rotation rate *n*, P_D in watts, is then defined from the relation:

$$P_D = 2\pi\rho n^3 D_P^5 K_Q(J) \quad (7)$$

where $K_Q(J)$ is the open water propeller torque coefficient curve. Relative rotative efficiency is assumed to be close to 1.0.

3.17 For diesel engines, the available power is limited because of the torque-speed limitation of the engine, $Q \le Q_{max}(n)$, where $Q_{max}(n)$ is the maximum torque that the engine can deliver at the given propeller rotation rate *n*. Therefore, the required minimum installed MCR is calculated taking into account:

.1 torque-speed limitation curve of the engine which is specified by the engine manufacturer; and

.2 transmission efficiency η_s which is to be assumed 0.98 for aft engine and 0.97 for midship engine, unless exact measurements are available.

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ANNEX 17

RESOLUTION MEPC.233(65)

Adopted on 17 May 2013

2013 GUIDELINES FOR CALCULATION OF REFERENCE LINES FOR USE WITH THE ENERGY EFFICIENCY DESIGN INDEX (EEDI) FOR CRUISE PASSENGER SHIPS HAVING NON-CONVENTIONAL PROPULSION

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 sixty-second session, the Committee adopted, by resolution MEPC.203(62), 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),

NOTING that regulation 21 (required EEDI) of MARPOL Annex VI, as amended, requires reference lines to be established for each ship type to which regulation 21 is applicable,

HAVING CONSIDERED, at its sixty-fifth session, the draft 2013 Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI) for cruise passenger ships having non-conventional propulsion for extension of the application of the EEDI to these ship type,

1. ADOPTS the 2013 Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI) for cruise passenger ships having non-conventional propulsion, as set out at annex to the present resolution; and

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

2013 GUIDELINES FOR CALCULATION OF REFERENCE LINES FOR USE WITH THE ENERGY EFFICIENCY DESIGN INDEX (EEDI) FOR CRUISE PASSENGER SHIPS HAVING NON-CONVENTIONAL PROPULSION

Introduction

1 Reference lines are established for each ship type to which regulation 21 (required EEDI) of MARPOL Annex VI is applicable.

2 A reference line is defined as a curve representing an average index value fitted on a set of individual index values for a defined group of ships. One reference line will be developed for each ship type to which regulation 21 of MARPOL Annex VI is applicable, ensuring that only data from comparable ships are included in the calculation of each reference line.

3 The purpose of the EEDI is to provide a fair basis for comparison, to stimulate development of more efficient ships in general and to establish the minimum efficiency of new ships depending on ship type and size. Hence, the reference lines for each ship type must be calculated in a transparent and robust manner.

4 Ship types are defined in regulation 2 of MARPOL Annex VI. The reference line for each ship type is used for calculation of the required EEDI as defined in regulation 21 of MARPOL Annex VI.

Applicability

5 These guidelines apply to cruise passenger ships having non-conventional propulsion, including diesel-electric propulsion, turbine propulsion, and hybrid propulsion systems.

6 For other ship types, refer to the *Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI)* in resolution MEPC.215(63).

Reference line value

7 The reference line value for cruise passenger ships having non-conventional propulsion is formulated as

$$\textit{Reference line value} = 170.84 \cdot b^{-0.214}$$

where b is the gross tonnage of the ship.

Calculating the reference line

8 To calculate the reference line, an index value for each cruise passenger ship having non-conventional propulsion is calculated using the following assumption:

.1 The carbon emission factor is constant for all engines, including engines for diesel-electric and hybrid propulsion cruise passenger ships, i.e. $C_{F,ME} = C_{F,AE} = C_F = 3.1144$ g CO_2/g fuel.

The carbon factor for hybrid propulsion ships equipped with gas turbines $C_{F,AE}$ is calculated as an average of the carbon factors of auxiliary engines (i.e. 3.1144 g CO_2/g fuel) and the carbon factor of gas turbines (i.e. 3.206 g CO_2/g fuel) weighted with their installed rated power.

.2 $P_{ME(i)}$ is reflected as 75 % of the rated installed main power ($MCR_{ME(i)}$). Where a ship only has electric propulsion $P_{ME(i)}$ is zero (0).

.3 The specific fuel consumption for all ship types, including diesel-electric and hybrid propulsion cruise passenger ships, is constant for all auxiliary engines, i.e. SFC_{AE}=215g/kWh.

The specific fuel consumption for hybrid propulsion cruise passenger ships equipped with gas turbines SFC_{AE} is calculated as an average of the specific fuel oil consumption of the auxiliary engines (i.e. 215 g/kWh) and the specific fuel oil consumption of the gas turbines (i.e. 250 g/kWh) weighted according to their installed rated power.

.4 P_{AE} is calculated according to paragraph 2.5.6.3 of the *2012 Guidelines on the Method of Calculation of the Attained Energy Efficiency Design Index (EEDI) for new ships* (resolution MEPC.212(63)) considering a given average efficiency of generator(s) weighted by power of 0.95.

.5 Innovative mechanical energy efficiency technology, shaft generators and other innovative energy efficient technologies are all excluded from the reference line calculation, i.e. $P_{AE,eff}$ = 0 and P_{eff} = 0.

.6 $P_{PTI(i)}$ is 75% of the rated power consumption of each shaft motor divided by a given efficiency of generators of 0.95 and divided by a given propulsion chain efficiency of 0.92.

9 The equation for calculating the index value for cruise passenger ships having non-conventional propulsion is as follows:

$$Estimated\,Index\,Value = \frac{3.1144 \cdot 190 \cdot \sum_{i=1}^{nME} P_{ME(i)} + C_{F,AE} \cdot SFC_{AE} \cdot \left(P_{AE} + \sum_{i=1}^{nPTI} P_{PTI(i)}\right)}{Gross\,tonnage \cdot V_{ref}}$$

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ANNEX 18

RESOLUTION MEPC.234(65)

Adopted on 17 May 2013

AMENDMENTS TO THE 2012 GUIDELINES ON SURVEY AND CERTIFICATION OF THE ENERGY EFFICIENCY DESIGN INDEX (EEDI) (RESOLUTION MEPC.214(63)), AS AMENDED

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 sixty-second session, the Committee adopted, by resolution MEPC.203(62), 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),

NOTING the amendments to MARPOL Annex VI adopted at its sixty-second session by inclusion of a new chapter 4 for regulations on energy efficiency for ships entered into force on 1 January 2013,

NOTING ALSO that regulation 5 (Surveys) of MARPOL Annex VI, as amended, requires ships to which chapter 4 applies shall also be subject to survey and certification taking into account guidelines developed by the Organization,

NOTING FURTHER that the *2012 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)* were adopted at its sixty-third session,

RECOGNIZING that the amendments to MARPOL Annex VI requires the adoption of relevant guidelines for smooth and uniform implementation of the regulations and to provide sufficient lead time for industry to prepare,

HAVING CONSIDERED, at its sixty-fifth session, draft amendments to the *2012 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)*,

1. ADOPTS the amendments to the *2012 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)*, as set out in the 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 5 of MARPOL Annex VI, as amended;

3. REQUESTS the Parties to MARPOL Annex VI and other Member Governments to bring the annexed *Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)* to the attention of masters, seafarers, shipowners, ship operators and any other interested groups;

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

AMENDMENTS TO GUIDELINES ON SURVEY AND CERTIFICATION OF THE ENERGY EFFICIENCY DESIGN INDEX (EEDI) (RESOLUTION MEPC.214(63)), AS AMENDED

Paragraphs 4.3.5, 4.3.6 and 4.3.8 are amended as follows:

"4.3.5 Sea conditions should be measured in accordance with ITTC Recommended Procedure 7.5-04-01-01.1 Speed and Power Trials, part 1; 2012 revision 1 or ISO 15016:2002*.

4.3.6 Ship speed should be measured in accordance with ITTC Recommended Procedure 7.5-04-01-01 Speed and Power Trials, part 1; 2012 revision 1 or ISO 15016:2002*, and at more than two points of which range includes the power of the main engine as specified in paragraph 2.5 of the EEDI Calculation Guidelines.

4.3.8 The submitter should develop power curves based on the measured ship speed and the measured output of the main engine at sea trial. For the development of the power curves, the submitter should calibrate the measured ship speed, if necessary, by taking into account the effects of wind, tide, waves, shallow water and displacement in accordance with ITTC Recommended Procedure 7.5-04-01-01.2 Speed and Power Trials, part 2; 2012 revision 1 or ISO 15016:2002*. Upon agreement with the shipowner, the submitter should submit a report on the speed trials including details of the power curve development to the verifier for verification."

(Annexes 19 to 48 are contained in documents MEPC 65/22/Add.1 and Add.2)

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* ITTC Recommended Procedure 7.5-04-01-01 is considered as preferable standard available from URL at ITTC.SNAME.ORG. Revised version of ISO 15016 should be available by early 2014.

ANNEX 21

RESOLUTION MEPC.235(65)

Adopted on 17 May 2013

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

(Amendments to Form A and Form B of Supplements to the IOPP Certificate under MARPOL Annex I)

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,

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),

HAVING CONSIDERED draft amendments to Form A and Form B of Supplements to the IOPP Certificate under Annex I of MARPOL,

1. ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, the amendments to Form A and Form B of Supplements to the IOPP Certificate under Annex I of MARPOL, 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 April 2014 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 October 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 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 copies of the present resolution and its Annex.

* * *

ANNEX

AMENDMENTS TO FORM A AND FORM B OF SUPPLEMENTS TO THE IOPP CERTIFICATE UNDER MARPOL ANNEX I

1 Amendments to the Supplement to the IOPP Certificate (Form A)

The existing paragraph 3.2.1 is replaced by the following:

"3.2.1 Incinerator for oil residues (sludge)……..□"

2 Amendments to the Supplement to the IOPP Certificate (Form B)

The existing paragraph 3.2.1 is replaced by the following:

"3.2.1 Incinerator for oil residues (sludge)……..□"

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ANNEX 22

RESOLUTION MEPC.236(65)

Adopted on 17 May 2013

AMENDMENTS TO THE CONDITION ASSESSMENT SCHEME UNDER MARPOL ANNEX I

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,

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),

NOTING ALSO that regulation 20.6 of Annex I of MARPOL specifies that the Condition Assessment Scheme, adopted by resolution MEPC.94(46), as may be amended, provided such amendments shall be adopted, brought into force and take effect in accordance with the provisions of article 16 of the 1973 Convention relating to amendment procedures applicable to an appendix to an annex,

RECALLING ALSO resolutions MEPC.99(48), MEPC.112(50), MEPC.131(53) and MEPC.155(55) by which the Committee adopted amendments to the Condition Assessment Scheme, in accordance with the provisions of article 16 of the 1973 Convention relating to amendment procedures applicable to an appendix to an annex,

RECOGNIZING the need to amend the Condition Assessment Scheme, replacing references to resolution A.744(18) in view of the adoption by the Assembly, at its twenty-seventh session, of the International Code on the enhanced programme of inspections during surveys of bulk carriers and oil tankers, 2011 (2011 ESP Code) by resolution A.1049(27),

HAVING CONSIDERED at its sixty-fifth session, the proposed amendments to the Condition Assessment Scheme,

1. ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, the amendments to the Condition Assessment Scheme, 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 April 2014, unless, prior to that date, not less than one third of the Parties to MARPOL 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 notified to the Organization their objections to the amendments;

3. INVITES Parties to MARPOL to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, the said amendments shall enter into force on 1 October 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 certified copies of the present resolution and the text of the amendments contained in the annex;

5. REQUESTS FURTHER the Secretary-General to transmit copies of this resolution and its annex to Members of the Organization which are not Parties to MARPOL; and

6. INVITES the Maritime Safety Committee to note the amendments to the Condition Assessment Scheme.

* * *

ANNEX

AMENDMENTS TO THE CONDITION ASSESSMENT SCHEME (RESOLUTION MEPC.94(46), AS AMENDED)

1 After paragraph 1.5, the following new paragraph is inserted:

"1.6 The Assembly, at its twenty-seventh session, adopted the *International Code on the enhanced programme of inspections during surveys of bulk carriers and oil tankers, 2011 (2011 ESP Code)* (resolution A.1049(27)) and the Maritime Safety Committee, at its ninetieth session, adopted, by resolution MSC.325 (90), amendments to SOLAS regulation XI-1/2, replacing "resolution A.744(18)" with "the 2011 ESP Code" and thereby making the Code mandatory. Therefore, the references to "resolution A.744(18)" in the CAS are replaced by references to "the 2011 ESP Code (resolution A.1049(27))"."

2 In paragraphs 3.10, 6.2.1.3, 6.2.2.9, 7.3.1, 7.3.4, 7.3.7 and 8, the reference to "resolution A.744(18), as amended" is replaced by a reference to "the 2011 ESP Code".

3 In appendix 2, in the section "Inspections by the Company", the reference to "resolution A.744(18), as amended" is replaced by a reference to "the 2011 ESP Code".

4 In appendix 3, in section 8, the reference to "resolution A.744(18), as amended" is replaced by a reference to "the 2011 ESP Code".

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ANNEX 23

RESOLUTION MEPC.237(65)

Adopted on 17 May 2013

ADOPTION OF THE CODE FOR RECOGNIZED ORGANIZATIONS

(RO CODE)

Text of the Code for Recognized Organizations is contained in document MEPC 65/22/Add.2, which will be issued after the adoption of the same code by MSC 92.

***.

ANNEX 24

RESOLUTION MEPC.238(65)

Adopted on 17 May 2013

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

(Amendments to MARPOL Annexes I and II to make the RO Code mandatory)

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,

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),

HAVING CONSIDERED the draft amendments to Annexes I and II of MARPOL to make the RO Code mandatory,

1. ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, the amendments to Annexes I and II of MARPOL, 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 2014 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 2015 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 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 copies of the present resolution and its annex.

* * *

ANNEX

AMENDMENTS TO MARPOL ANNEXES I AND II

Amendments to MARPOL Annex I

Regulation 6

The existing text of the last sentence of paragraph 3.1 is replaced by the following:

"Such organizations, including classification societies, shall be authorized by the Administration in accordance with the provisions of the present Convention and with the Code for Recognized Organizations (RO Code), consisting of part 1 and part 2 (the provisions of which shall be treated as mandatory) and part 3 (the provisions of which shall be treated as recommendatory), as adopted by the Organization by resolution [MEPC…], as may be amended by the Organization, provided that:

.1 amendments to part 1 and part 2 of the RO Code are adopted, brought into force and take effect in accordance with the provisions of article 16 of the present Convention concerning the amendment procedures applicable to this annex;

.2 amendments to part 3 of the RO Code are adopted by the Marine Environment Protection Committee in accordance with its Rules of Procedure; and

.3 any amendments referred to in .1 and .2 adopted by the Maritime Safety Committee and the Marine Environment Protection Committee are identical and come into force or take effect at the same time, as appropriate."

Amendments to MARPOL Annex II

Regulation 8

The existing text of paragraph 2.2 is replaced by the following:

"Such organizations, including classification societies, shall be authorized by the Administration in accordance with the provisions of the present Convention and with the Code for Recognized Organizations (RO Code), consisting of part 1 and part 2 (the provisions of which shall be treated as mandatory) and part 3 (the provisions of which shall be treated as recommendatory), as adopted by the Organization by resolution [MEPC…], as may be amended by the Organization, provided that:

.1 amendments to part 1 and part 2 of the RO Code are adopted, brought into force and take effect in accordance with the provisions of article 16 of the present Convention concerning the amendment procedures applicable to this annex;

.2 amendments to part 3 of the RO Code are adopted by the Marine Environment Protection Committee in accordance with its Rules of Procedure; and

.3 any amendments referred to in .1 and .2 adopted by the Maritime Safety Committee and the Marine Environment Protection Committee are identical and come into force or take effect at the same time, as appropriate."

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ANNEX 28

RESOLUTION MEPC.239(65)

Adopted on 17 May 2013

AMENDMENTS TO THE 2012 GUIDELINES FOR THE IMPLEMENTATION OF 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 the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that Annex V of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL) relating thereto provides regulations for the prevention of pollution by garbage from ships,

NOTING that the Committee, at its sixty-second session, adopted the revised MARPOL Annex V by resolution MEPC.201(62), which entered into force on 1 January 2013,

NOTING ALSO that the Committee, at its sixty-third session, adopted the *2012 Guidelines for the Implementation of MARPOL Annex V* by resolution MEPC.219(63),

HAVING CONSIDERED, at its sixty-fifth session, the proposed amendments to the *2012 Guidelines for the Implementation of MARPOL Annex V*,

1. ADOPTS the amendments to the *2012 Guidelines for the Implementation of MARPOL Annex V*, the text of which is set out in the annex to this resolution;

2. INVITES Governments, in implementation of the provisions of the revised MARPOL Annex V, to take into account the *2012 Guidelines for the Implementation of MARPOL Annex V*, as amended by this resolution; and

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

* * *

ANNEX

AMENDMENTS TO THE 2012 GUIDELINES FOR THE IMPLEMENTATION OF MARPOL ANNEX V

1 In paragraph 2.4.3, a new bullet point is inserted at the end as follows:

- E-waste generated on board (e.g. electronic cards, gadgets, instruments, equipment, computers, printer cartridges, etc.)."

2 A new paragraph 5.2.8 is added as follows:

"E-waste such as electronic cards, gadgets, equipment, computers, printer cartridges, etc."

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ANNEX 30

RESOLUTION MEPC.240(65)

Adopted on 17 May 2013

2013 AMENDMENTS TO THE REVISED GUIDELINES AND SPECIFICATIONS FOR OIL DISCHARGE MONITORING AND CONTROL SYSTEMS FOR OIL TANKERS (RESOLUTION MEPC.108(49))

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,

NOTING resolution MEPC.108(49) by which the Committee adopted the Revised Guidelines and Specifications for Oil Discharge Monitoring and Control Systems for Oil Tankers,

NOTING ALSO that the revised MARPOL Annex I was adopted by resolution MEPC.117(52) and entered into force on 1 January 2007,

HAVING CONSIDERED, at its sixty-fifth session, proposed amendments to the Revised Guidelines and Specifications for Oil Discharge Monitoring and Control Systems for Oil Tankers, prepared by the Sub-Committee on Bulk Liquids and Gases at is seventeenth session,

1. ADOPTS the 2013 Amendments to the Revised Guidelines and Specifications for Oil Discharge Monitoring and Control Systems for Oil Tankers, the text of which is set out in the annex to this resolution;

2. RECOMMENDS Governments to apply the annexed amendments when approving oil discharge monitoring and control systems being installed under regulation 31 of MARPOL Annex I on oil tankers constructed on or after 1 January 2005.

*** * ***

ANNEX

2013 AMENDMENTS TO THE REVISED GUIDELINES AND SPECIFICATIONS FOR OIL DISCHARGE MONITORING AND CONTROL SYSTEMS FOR OIL TANKERS

REVISED GUIDELINES AND SPECIFICATIONS FOR OIL DISCHARGE MONITORING AND CONTROL SYSTEMS FOR OIL TANKERS

1 In the Table of Contents, a new entry 3.7 is added, as follows:

"3.7 Bio-fuels"

2 In paragraphs 1.1.1 and 1.1.2.1, the references "regulation 15(3)(a) of Annex I of MARPOL" are replaced by the references "regulation 31 of MARPOL Annex I.

3 Paragraph 1.1.3 is replaced by the following:

"1.1.3 These Guidelines and Specifications also apply to oil content monitoring systems used for monitoring each individual bio-fuel blend containing 75 per cent or more of petroleum oil, carried in accordance with paragraph 4.1 of MEPC.1/Circ.761. Wherever in these Guidelines and Specifications reference is made to oil being monitored, this applies likewise to bio-fuel blends."

4 In paragraph 2.1, the references "Annex I of MARPOL" and "regulation 15(3)(a)" are replaced by the references "MARPOL Annex I " and "regulation 31", respectively.

5 In paragraph 2.2, the references "regulation 15" and "regulation 9(1)(a)" are replaced by the references "regulation 31" and "regulation 34.1", respectively.

6 In section 3, a new definition is added, as follows:

"3.7 Bio-fuels

Bio-fuels are products as recorded in annex 11 of the MEPC.2/Circular which are intended for blending with petroleum oil and may be shipped as blends in accordance with MEPC.1/Circ.761, as amended."

7 A new paragraph 5.7 is added, as follows:

"5.7 Manufacturer recommended spares for the ODME should be carried to ensure the operation of the equipment."

8 The existing paragraph 5.7 is renumbered as paragraph 5.8.

9 In paragraph 6.1.1, the reference "regulation 18" is replaced by the reference "regulation 30".

10 The footnote associated with paragraph 6.1.6 is replaced by the following:

"* As specified in IEC publication 92 or an equivalent standard acceptable to the administration."

11 In paragraph 6.8.2, the references "regulation 9(1)(a)(iv) and (v)" are replaced by the references "regulation 31.1.4 and 31.1.5".

12 The chapeau of paragraph 6.11.1 and subparagraph .1 is replaced by the following:

"6.11.1 The alternative means of obtaining information in the event of a failure in the monitoring system should follow the requirements in MARPOL Annex I, regulation 31.4 and the operational manual as approved by the Administrations and should be as follows:

.1 oil content meter or sampling system: location and measurement of the oil/water interface using the equipment as required in regulation 32, visual observation of the surface of the water adjacent to the effluent discharge and recording the relevant data for the discharge accurately in the Oil Record Book Part II in sections H and I;".

13 In the footnote associated with subparagraph 6.12.2, the reference "regulation 9(1)(a)(5)" is replaced by the reference "regulation 34.1.5".

14 In paragraph 7.2.2, after the words "white products", insert the words ", individual biofuel blends".

15 In subparagraph 8.3.3, the references "regulations 9(1)(a)(iv) and (v)" are replaced by the references "regulations 34.1.4 and 34.1.5".

ANNEX, PART 1 – TEST AND PERFORMANCE SPECIFICATIONS FOR TYPE APPROVAL OF OIL CONTENT METERS

16 In the table under paragraph 1.2.6, under the column "Parameters Tolerance" and row "6", the text "RMG 35 Parameters as per ISO 8217:1996 (table 2)" is replaced by the following text:

"RMG 35 Parameters as per ISO 8217:2010/Corr 1:2011 (tables 1 and 2)"

17 In paragraph 1.2.7, the reference standard "ISO 8217:1996 (table 1)" is replaced by the referenced standard "ISO 8217:2010/Corr 1:2011 (tables 1 and 2)".

18 New paragraph 1.2.8 is added, as follows:

"1.2.8 If the meter is to be considered suitable for an individual biofuel blend containing 75 per cent or more of petroleum oil, it should also be tested against each such substance for which approval is required, in a manner similar to the tests set out in paragraphs 1.2.5 and 1.2.6. The high shear pump shown in figure 1 should be kept in operation at high speed during this test to assist in dissolving the appropriate fraction of the substance in the water stream."

19 New paragraph 1.2.9 is added, as follows:

"1.2.9 Individual Biofuel blends should be tested at 75 per cent and 99 per cent petroleum oil."

20 The existing paragraphs 1.2.8 to 1.2.19 are renumbered as paragraphs 1.2.10 to 1.2.21.

APPENDIX, CERTIFICATE OF TYPE APPROVAL FOR OIL CONTENT METERS INTENDED FOR MONITORING THE DISCHARGE OF OIL-CONTAMINATED WATER FROM THE CARGO TANK AREAS OF OIL TANKERS

21 Under the "The oil content meter is acceptable for the following applications:", the text "*Oil-like noxious liquid substances, other products, or applications, listed below" is replaced by the following:

"* Individual biofuel blends containing 75 per cent or more of petroleum oil, other products, or applications, listed below"

APPENDIX, TEST DATA AND RESULTS OF TESTS CONDUCTED ON AN OIL CONTENT METER IN ACCORDANCE WITH PART 1 OF THE ANNEX TO THE GUIDELINES AND SPECIFICATIONS CONTAINED IN IMO RESOLUTION MEPC.108(49)

22 The table for "OIL LIKE noxious liquid substances, other products or applications" is deleted, and tables for "INDIVIDUAL BIOFUEL BLENDS AND CONCENTRATIONS" and "OTHER PRODUCTS OR APPLICATIONS" are added, as follows:

INDIVIDUAL BIOFUEL BLENDS AND CONCENTRATIONS*

		READINGS (ppm)			
		Indicated	Measured	Grab sample	***REMARKS***
Bio-Fuel Blend 75% Petroleum Oil		……	……	……	
Name of Bio-fuel and petroleum oil components					
…… %					
…… %					
……	15	……	……	……	
	100	……	……	……	
90% M.F.S.V. =		……	……	……	
RECORDED ZERO		……			RE-ZERO YES/NO**
					TIME mins
					RECALIBRATE YES/NO**
					TIME mins
					CLEAN YES/NO**
		……	……	……	TIME mins
Bio-Fuel Blend 99% Petroleum Oil					
Name of Bio-fuel and petroleum oil components					
…… %					
…… %					
……	15	……	……	……	
	100	……	……	……	
90% M.F.S.V. =		……	……	……	
RECORDED ZERO		……			RE-ZERO YES/NO**
					TIME mins
					RECALIBRATE YES/NO**
					TIME mins
					CLEAN YES/NO**
					TIME mins

RESPONSE TIMES

		Seconds
First detectable reading		……
	63 ppm	……1
	90 ppm	……
Stabilized maximum reading or 100 ppm	….. ppm	……
First detectable drop		……
	37 ppm	……2
	10 ppm	……
Stabilized minimum reading	….. ppm	……
RESPONSE TIME = $\frac{1+2}{2}$	=	……

* This page should be included in the certificate only if the oil content meter has been tested against bio-fuel blends.

** Delete as appropriate.

OTHER PRODUCTS OR APPLICATIONS*

	READINGS (ppm)				
	Indicated	Measured	Grab sample	***REMARKS***	
Name of product	……	……	……		
…… 15	……	……	……		
100	……	……	……		
90% M.F.S.V. =	……	……	……		
RECORDED ZERO	……			RE-ZERO	YES/NO**
				TIME	Mins
				RECALIBRATE	YES/NO**
				TIME	Mins
				CLEAN	YES/NO**
	……	……	……	TIME	Mins
Name of product					
…… 15	……	……	……		
100	……	……	……		
90% M.F.S.V. =	……	……	……		
RECORDED ZERO	……			RE-ZERO	YES/NO**
				TIME	Mins
				RECALIBRATE	YES/NO**
				TIME	Mins
				CLEAN	YES/NO**
				TIME	Mins

***

* This page should be included in the certificate only if the oil content meter has been tested against other products and applications substances.

** Delete as appropriate.

INTERNATIONAL MARITIME ORGANIZATION

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MEPC.1/Circ.753/Rev.1
20 June 2013

AMENDMENTS TO UNIFIED INTERPRETATION TO REGULATION 12.2 OF MARPOL ANNEX I

1 The Marine Environment Protection Committee, at its sixty-fifth session (13 to 17 May 2013), approved the amendments to the Unified Interpretations to regulation 12.2 of MARPOL Annex I (MEPC 65/22, paragraph 11.39), 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 THE 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.

4 Screw-down non-return valves arranged in lines connecting to common piping leading to the standard discharge connection required by regulation 13, to prevent sludge from discharging to the bilge system, oily bilge water holding tank(s), tank top or oily water separators, provide a means equivalent to an arrangement that has "no interconnection" or "no discharge connections" as so specified in regulation 12.2 and the Unified Interpretation referenced by paragraph 2.

5 It is understood that the common piping may serve only one purpose and that is to connect the discharge lines of the bilge and sludge pumps to the standard discharge connection referred to in regulation 13, or any other approved means of disposal.

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[*] 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.812
10 June 2013

UNIFIED INTERPRETATION TO MARPOL ANNEX VI

Time of replacement of an engine

1 The Marine Environment Protection Committee, at its sixty-fifth session (13 to 17 May 2013), approved a Unified Interpretation to MARPOL Annex VI on the time of replacement of an engine (MEPC 65/22, paragraph 4.46).

2 The Unified Interpretation, as approved by the Committee, is set out in the annex hereto.

***

ANNEX

UNIFIED INTERPRETATION TO MARPOL ANNEX VI

Time of replacement of an engine

Regulation 13
Nitrogen oxides (NO_X)

Regulation 13.2.2 reads as follows:

> "For a major conversion involving the replacement of a marine diesel engine with a non-identical marine diesel engine or the installation of an additional marine diesel engine, the standards in this regulation in force at the time of the replacement or addition of the engine shall apply."

Interpretation

The term "time of the replacement or addition" of the engine in regulation 13.2.2 of MARPOL Annex VI is to be taken as the date of:

.1 the contractual delivery date of the engine to the ship*; or

.2 in the absence of a contractual delivery date, the actual delivery date of the engine to the ship*, provided that the date is confirmed by a delivery receipt; or

.3 in the event the engine is fitted on board and tested for its intended purpose on or after 1 July 2016, the actual date that the engine is tested on board for its intended purpose applies in determining the standards in this regulation in force at the time of the replacement or addition of the engine.

The date in paragraphs .1, .2 or .3 above, provided the conditions associated with those dates apply, is the "Date of major conversion – According to regulation 13.2.2" to be entered in the IAPPC Supplement. In this case, the "Date of installation", which applies only for identical replacement engines, shall be filled in with "N.A.".

If the engine is delivered in accordance with either paragraphs .1 or .2 above before 1 January 2016 but not tested before 1 July 2016 due to unforeseen circumstances beyond the control of the shipowner, then the provisions of "unforeseen delay in delivery" may be considered by the Administration in a manner similar to MARPOL Annex I UI4.

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* The engine is to be fitted on board and tested for its intended purpose before 1 July 2016.

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MEPC.1/Circ.813
10 June 2013

UNIFIED INTERPRETATION TO MARPOL ANNEX VI

Identical replacement engines

1 The Marine Environment Protection Committee, at its sixty-fifth session (13 to 17 May 2013), approved a Unified Interpretation to MARPOL Annex VI on identical replacement engines (MEPC 65/22, paragraph 4.50).

2 The Unified Interpretation, as approved by the Committee, is set out in the annex hereto.

***

ANNEX

UNIFIED INTERPRETATION TO MARPOL ANNEX VI

Identical replacement engines

Regulation 13
Nitrogen oxides (NO_x)

Regulation 13.1.1.2 reads as follows:

> ".2 each marine diesel engine with a power output of more than 130 kW which undergoes a major conversion on or after 1 January 2000 except when demonstrated to the satisfaction of the Administration that such engine is an identical replacement to the engine which it is replacing and is otherwise not covered under paragraph 1.1.1 of this regulation."

Regulation 13.2.2 reads as follows:

> "2.2 For a major conversion involving the replacement of a marine diesel engine with a non-identical marine diesel engine or the installation of an additional marine diesel engine, the standards in this regulation in force at the time of the replacement or addition of the engine shall apply."

Interpretation:

In regulation 13.1.1.2 the term "identical" (and hence, by application of the converse, in regulation 13.2.2 the term "non-identical") as applied to engines under regulation 13 is to be taken as:

An "identical engine" is, as compared to the engine being replaced*, an engine which is of the same:

design and model;

rated power;

rated speed;

use;

number of cylinders;

fuel system type (including, if applicable, injection control software); and

(a) for engines without EIAPP certification, have the same NO_x critical components and settings**; or

(b) for engines with EIAPP certification, belonging to the same Engine Group/Engine Family.

---

* In those instances where the replaced engine will not be available to be directly compared with the replacing engine at the time of updating the Supplement to the IAPP Certificate

reflecting that engine change it is to be ensured that the necessary records in respect of the replaced engine are available in order that it can be confirmed that the replacing engine represents "an identical engine".

** For engines without EIAPP Certification there will not be the defining NO_x critical component markings or setting values as usually given in the approved Technical File. Consequently in these instances the assessment of "... same NO_x critical components and settings ..." shall be established on the basis that the following components and settings are the same:

Fuel system:

(a) Fuel pump model and injection timing

(b) Injection nozzle model

Charge air:

(a) Configuration and, if applicable, turbocharger model and auxiliary blower specification

(b) Cooling medium (seawater/freshwater)

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MEPC.1/Circ.814
10 June 2013

UNIFIED INTERPRETATION TO MARPOL ANNEX VI

Ship Energy Efficiency Management Plan (SEEMP)

1 The Marine Environment Protection Committee, at its sixty-fourth session (1 to 5 October 2012), approved several Unified Interpretations to MARPOL Annex VI (MEPC.1/Circ.795).

2 The Marine Environment Protection Committee, at its sixty-fifth session (13 to 17 May 2013), approved an amendment to the Unified Interpretation to regulations 5, 6 and 22 of MARPOL Annex VI on Ship Energy Efficiency Management Plan (SEEMP) (MEPC 65/22, paragraph 4.134.4).

3 The amended Unified Interpretation to regulations 5, 6 and 22 of MARPOL Annex VI, as approved by the Committee, is set out in the annex hereto.

***

ANNEX

UNIFIED INTERPRETATION TO MARPOL ANNEX VI

Ship Energy Efficiency Management Plan (SEEMP)

Regulation 5
Surveys

Regulation 5.4.4 reads as follows:

> ".4 For existing ships, the verification of the requirement to have an 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."

Regulation 6
Issue or endorsement of a Certificate

Regulation 6.4 reads as follows:

> "4 An International Energy Efficiency Certificate for the ship shall be issued after a survey in accordance with the provisions of regulation 5.4 of this annex 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."

Regulation 22
Ship Energy Efficiency Management Plan (SEEMP)

Regulation 22.1 reads as follows:

> "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)."

***Interpretation*:**

1 The International Energy Efficiency Certificate (IEEC) shall be issued for both new and existing ships to which chapter 4 of MARPOL Annex VI applies. Ships which are not required to keep an SEEMP on board are not required to be issued with an IECC.

2 The SEEMP required by regulation 22.1 of MARPOL Annex VI is not required to be placed on board an existing ship to which this regulation applies until such time as the verification survey specified in regulation 5.4.4 of MARPOL Annex VI is carried out.

3 For existing ships, a Ship Energy Efficiency Management Plan (SEEMP) required in accordance with regulation 22 shall be verified on board according to regulation 5.4.4, and an IEEC shall be issued, not later than the first intermediate or renewal MARPOL Annex VI, chapter 2 survey, whichever is the sooner, on or after 1 January 2013, i.e. a survey connected to an intermediate/renewal survey of the IAPP Certificate.

4 The intermediate or renewal survey referenced in 3 relates solely to the timing for the verification of the SEEMP on board, i.e. these IAPPC survey windows will also become the IEEC initial survey date for existing ships. The SEEMP, is however, a survey item solely under the new MARPOL Annex VI, chapter 4, and is not a survey item relating to IAPPC surveys.

5 In the event that the SEEMP is not found on board during the first intermediate/renewal survey of the IAPP Certificate on or after 1 January 2013, then the RO should seek the advice of the Administration concerning the issuance of an IEEC and be guided accordingly. However, the validity of the IAPP Certificate is not impacted by the lack of a SEEMP as the SEEMP is a survey item solely under the new MARPOL Annex VI, chapter 4, and not under the IAPPC surveys.

6 With respect to ships required to keep on board an SEEMP, such ships exclude platforms (including FPSOs and FSUs) and drilling rigs, regardless of their propulsion, and any other ship without means of propulsion.

7 SEEMP should be established in a working language or languages understood by ship's personnel.

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Circular letter No.3370
4 June 2013

To: All IMO Members
Parties to the MARPOL Convention which are not members of IMO

Subject: **Amendments to MARPOL and the BCH Code, the IBC Code and the NO_x Technical Code 2008**

1 MEPC 64 (1 to 5 October 2012) considered and approved the draft amendments to MARPOL Annexes I, II, III, IV, V and VI to make the III Code and auditing mandatory, with a view to adoption at MEPC 66 (after the envisaged adoption of the III Code at A 28).

2 MEPC 65 (13 to 17 May 2013) considered and approved the following draft amendments with a view to adoption at MEPC 66 (31 March to 4 April 2014):

.1 draft amendments to MARPOL Annex I (Mandatory carriage requirements for stability instrument);

.2 draft amendments to MARPOL Annex V (Record of Garbage Discharge);

.3 draft amendments to MARPOL Annex VI and the NO_x Technical Code 2008 (Amendments to regulations 2, 13, 19, 20 and 21, supplement to the IAPP Certificate and the NO_x Technical Code 2008);

.4 draft amendments to the BCH Code (Cargo containment and Form of Certificate of Fitness); and

.5 draft amendments to the IBC Code (General, Ship survival capability and location of cargo tanks, Cargo tank venting and gas-freeing arrangements, Environmental control, Fire protection and fire extinction, Special requirements, Summary of minimum requirements, and Form of Certificate of Fitness).

3 The Secretary-General has the honour to transmit herewith, in accordance with article 16(2)(a) of the MARPOL Convention, the text of the draft amendments referred to above, given in the annex, with a view to their consideration for adoption at MEPC 66 in accordance with article 16(2)(b), (c) and (d) of the said Convention.

***

ANNEX 1

DRAFT AMENDMENTS TO THE ANNEXES OF THE PROTOCOLS OF 1978 AND 1997 RELATING TO THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973

Draft Amendments to MARPOL Annexes I to VI (to make the III Code mandatory)

Amendments to MARPOL Annex I

1 The following is added at the end of regulation 1:

"35 *Audit* means a systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.

36 *Audit Scheme* means the IMO Member State Audit Scheme established by the Organization and taking into account the guidelines developed by the Organization.

37 *Code for Implementation* means the IMO Instruments Implementation Code (III Code) adopted by the Organization by resolution A.[....](28).

38 *Audit Standard* means the Code for Implementation."

2 A new chapter 10 is added to read as follows:

"Chapter 10 – Verification of compliance with the provisions of this Convention

Regulation 44
Verification of compliance

1 Contracting Governments shall apply the provisions of the Code for Implementation in the execution of their obligations and responsibilities contained in the present Convention. For the purpose of this regulation, the requirements of the Code shall be treated as mandatory and its recommendations shall be treated as non-mandatory.

2 Every Contracting Government shall be subject to periodic audits by the Organization of its compliance with the audit standard and the requirements of the present Convention.

3 The Secretary-General of the Organization shall have responsibility for the implementation of the Audit Scheme, based on the guidelines developed by the Organization*.

4 Every Contracting Government shall have responsibility for facilitating the conduct of the audit and implementation of a programme of actions to address the findings, based on the guidelines developed by the Organization*.

* Refer to the Framework and Procedures for the [IMO] Member State Audit Scheme, adopted by the Organization by resolution [A.....(28)].

5 Audit of all Contracting Governments shall be:

.1 based on an overall schedule developed by the Secretary-General of the Organization, taking into account the guidelines developed by the Organization*; and

.2 conducted at periodic intervals, taking into account the guidelines developed by the Organization*."

Amendments to MARPOL Annex II

1 The following is added at the end of regulation 1:

"18 *Audit* means a systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.

19 *Audit Scheme* means the IMO Member State Audit Scheme established by the Organization and taking into account the guidelines developed by the Organization.

20 *Code for Implementation* means the IMO Instruments Implementation Code (III Code) adopted by the Organization by resolution A.[....](28).

21 *Audit Standard* means the Code for Implementation."

2 A new chapter 9 is added to read as follows:

"Chapter 9 – Verification of compliance with the provisions of this Convention

Regulation 19
Verification of compliance

1 Contracting Governments shall apply the provisions of the Code for Implementation in the execution of their obligations and responsibilities contained in the present Convention. For the purpose of this regulation, the requirements of the Code shall be treated as mandatory and its recommendations shall be treated as non-mandatory.

2 Every Contracting Government shall be subject to periodic audits by the Organization of its compliance with the audit standard and the requirements of the present Convention.

3 The Secretary-General of the Organization shall have responsibility for the implementation of the Audit Scheme, based on the guidelines developed by the Organization*.

4 Every Contracting Government shall have responsibility for facilitating the conduct of the audit and implementation of a programme of actions to address the findings, based on the guidelines adopted by the Organization*.

* Refer to the Framework and Procedures for the [IMO] Member State Audit Scheme, adopted by the Organization by resolution [A.....(28)].

5 Audit of all Contracting Governments shall be:

.1 based on an overall schedule developed by the Secretary-General of the Organization, taking into account the guidelines developed by the Organization*; and

.2 conducted at periodic intervals, taking into account the guidelines developed by the Organization*."

Amendments† to MARPOL Annex III

1 A new chapter 1 is added before regulation 1 to read as follows:

"*Chapter 1 – General*"

2 A new regulation 1 is added to read as follows:

"Regulation 1
Definitions

For the purposes of this annex:

1 *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 *Packaged form* is defined as the forms of containment specified for harmful substances in the IMDG Code.

3 *Audit* means a systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.

4 *Audit Scheme* the IMO Member State Audit Scheme established by the Organization and taking into account the guidelines developed by the Organization.

5 *Code for Implementation means* the IMO Instruments Implementation Code (III Code) adopted by the Organization by resolution A.[....](28).

6 *Audit Standard* means the Code for Implementation."

3 Renumber the subsequent regulations accordingly.

4 In regulation 2, Application, subparagraphs 1.1 and 1.2 are deleted.

5 A new chapter 2 is added to read as follows:

"Chapter 2 – Verification of compliance with the provisions of this annex

Regulation 10
Verification of compliance

1 Contracting Governments shall apply the provisions of the Code for Implementation in the execution of their obligations and responsibilities contained in the present annex. For the purpose of this regulation, the requirements of the Code

shall be treated as mandatory and its recommendations shall be treated as non-mandatory.

2 Every Contracting Government shall be subject to periodic audits by the Organization of its compliance with the audit standard and the requirements of the present annex.

3 The Secretary-General of the Organization shall have responsibility for the implementation of the Audit Scheme, based on the guidelines developed by the Organization*.

4 Every Contracting Government shall have responsibility for facilitating the conduct of the audit and implementation of a programme of actions to address the findings, based on the guidelines developed by the Organization*.

5 Audit of all Contracting Governments shall be:

.1 based on an overall schedule developed by the Secretary- General of the Organization, taking into account the guidelines developed by the Organization*; and

.2 conducted at periodic intervals, taking into account the guidelines developed by the Organization*."

Amendments† to MARPOL Annex IV

1 The following is added at the end of regulation 1:

"12 *Audit* means a systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.

13 *Audit Scheme* means the IMO Member State Audit Scheme established by the Organization and taking into account the guidelines developed by the Organization.

14 *Code for Implementation* means the IMO Instruments Implementation Code (III Code) adopted by the Organization by resolution A.[....](28).

15 *Audit Standard* means the Code for Implementation."

2 A new chapter 6 is added to read as follows:

"Chapter 6 – Verification of compliance with the provisions of this annex

Regulation 15
Verification of compliance

1 Contracting Governments shall apply the provisions of the Code for Implementation in the execution of their obligations and responsibilities contained in the present annex. For the purpose of this regulation, the requirements of the Code shall be treated as mandatory and its recommendations shall be treated as non-mandatory.

2 Every Contracting Government shall be subject to periodic audits by the Organization of its compliance with the audit standard and the requirements of the present annex.

3 The Secretary-General of the Organization shall have responsibility for the implementation of the Audit Scheme, based on the guidelines developed by the Organization*.

4 Every Contracting Government shall have responsibility for facilitating the conduct of the audit and implementation of a programme of actions to address the findings, based on the guidelines developed by the Organization*.

5 Audit of all Contracting Governments shall be:

.1 based on an overall schedule developed by the Secretary-General of the Organization, taking into account the guidelines developed by the Organization*; and

.2 conducted at periodic intervals, taking into account the guidelines developed by the Organization*."

Amendments† to MARPOL Annex V

1 A new chapter 1 is added before regulation 1 to read as follows:

"*Chapter 1 – General*"

2 The following is added at the end of regulation 1:

"[15] *Audit* means a systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.

[16] *Audit Scheme* means the IMO Member State Audit Scheme established by the Organization and taking into account the guidelines developed by the Organization.

[17] *Code for Implementation means* the IMO Instruments Implementation Code (III Code) adopted by the Organization by resolution A.[....](28).

[18] *Audit Standard* means the Code for Implementation."

3 Add a new chapter 2 to read as follows:

"Chapter 2 – Verification of compliance with the provisions of this annex

Regulation [11]
Verification of compliance

1 Contracting Governments shall apply the provisions of the Code for Implementation in the execution of their obligations and responsibilities contained in the present annex. For the purpose of this regulation, the requirements of the Code shall be treated as mandatory and its recommendations shall be treated as non-mandatory.

* Refer to the Framework and Procedures for the [IMO] Member State Audit Scheme, adopted by the Organization by resolution [A.....(28)].

2 Every Contracting Government shall be subject to periodic audits by the Organization of its compliance with the audit standard and the requirements of the present annex.

3 The Secretary-General of the Organization shall have responsibility for the implementation of the Audit Scheme, based on the guidelines developed by the Organization*.

4 Every Contracting Government shall have responsibility for facilitating the conduct of the audit and implementation of a programme of actions to address the findings, based on the guidelines developed by the Organization*.

5 Audit of all Contracting Governments shall be:

.1 based on an overall schedule developed by the Secretary-General of the Organization, taking into account the guidelines developed by the Organization*; and

.2 conducted at periodic intervals, taking into account the guidelines developed by the Organization*."

Amendments† to MARPOL Annex VI

1 The following is added at the end of regulation 2:

"For the purposes of this annex:

[38] *Audit* means a systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.

[39] *Audit Scheme* means the IMO Member State Audit Scheme established by the Organization and taking into account the guidelines developed by the Organization.

[40] *Code for Implementation* means the IMO Instruments Implementation Code (III Code) adopted by the Organization by resolution A.[....](28).

[41] *Audit Standard* means the Code for Implementation."

2 A new chapter [5] is added to read as follows:

"Chapter [5] – Verification of compliance with the provisions of this annex

Regulation [24]
Verification of compliance

(1) Contracting Governments shall apply the provisions of the Code for Implementation in the execution of their obligations and responsibilities contained in the present Annex. For the purpose of this regulation, the requirements of the Code shall be treated as mandatory and its recommendations shall be treated as non-mandatory.

* Refer to the Framework and Procedures for the [IMO] Member State Audit Scheme, adopted by the Organization by resolution [A.....(28)].

(2) Every Contracting Government shall be subject to periodic audits by the Organization of its compliance with the audit standard and the requirements of the present annex.

(3) The Secretary-General of the Organization shall have responsibility for the implementation of the Audit Scheme, based on the guidelines developed by the Organization*.

(4) Every Contracting Government shall have responsibility for facilitating the conduct of the audit and implementation of a programme of actions to address the findings, based on the guidelines developed by the Organization*.

(5) Audit of all Contracting Governments shall be:

.1 based on an overall schedule developed by the Secretary-General of the Organization, taking into account the guidelines developed by the Organization*; and

.2 conducted at periodic intervals, taking into account the guidelines developed by the Organization*."

***

ANNEX 2

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

Draft amendments to MARPOL Annex I
(Mandatory carriage requirements for stability instrument)

Chapter 1 – General

Regulation 1 – Definitions

1 A new paragraph 28.10 is inserted, as follows:

"28.10 Oil tanker delivered on or after [date of entry into force] means an oil tanker:

.1 for which the building contract is placed on or after [date of entry into force]; 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 [date of entry into force]; or

.3 the delivery of which is on or after [date of entry into force]; or

.4 which has undergone a major conversion:

.1 for which the contract is placed on or after [date of entry into force]; or

.2 in the absence of a contract, the construction work of which is begun on or after [date of entry into force]; or

.3 which is completed on or after [date of entry into force]."

Regulation 2 – Application

2 A new paragraph 3(6) is inserted, as follows:

"The Administration may waive the requirements of regulation 28(6) for the following oil tankers if loaded in accordance with the approved conditions*:

.1 tankers which are on a dedicated service, with a limited number of permutations of loading such that all anticipated conditions have been approved in the stability information provided to the master in accordance with regulation 28(5);

.2 tankers where stability verification is made remotely by a means approved by the Administration;

.3 tankers which are loaded within an approved range of loading conditions; or

.4 tankers constructed before [date of entry into force] provided with approved limiting KG/GM curves covering all applicable intact and damage stability requirements.

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* Refer to operational guidance provided in part 2 of the [Guidelines for verification of damage stability requirements for tankers (MSC.1/Circ.…)]."

Chapter 4 – Requirements for the cargo area of oil tankers

Regulation 28 – Subdivision and damage stability

3 The current paragraph 28(6) is renumbered as 28(7).

4 A new paragraph 28(6) is inserted, as follows:

"28(6) Oil tankers, as defined in regulation 1.28.10, to which this regulation applies, shall be fitted with a stability instrument capable of verifying compliance with intact and damage stability requirements, approved by the Administration having regard to the performance standards recommended by the Organization*:

.1 oil tankers constructed before [date of entry into force] shall comply with this regulation at the first scheduled renewal survey of the ship after [date of entry into force] but not later than [five years after date of entry into force];

.2 notwithstanding the requirements of regulation 28(6).1 a stability instrument installed on a ship constructed before [date of entry into force] need not be replaced provided it is capable of verifying compliance with intact and damage stability, to the satisfaction of the Administration; and

.3 for the purposes of control under regulation 11, the Administration shall issue a document of approval for the stability instrument.

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* Refer to part B, chapter 4, of the International Code on Intact Stability, 2008 (2008 IS Code), as amended; the Guidelines for the Approval of Stability Instruments (MSC.1/Circ.1229), annex, section 4, as amended; and the technical standards defined in part 1 of the [Guidelines for verification of damage stability requirements for tankers (MSC.1/Circ.…)]."

Appendix II – Form of IOPP Certificate and Supplements, Form B

5 The following new paragraphs 5.7.5 and 5.7.6 are inserted:

"5.7.5 The ship is provided with an Approved Stability Instrument in accordance with regulation 28(6)……..…….……. ☐"

"5.7.6 The requirements of regulation 28(6) are waived in respect of the ship in accordance with regulation 3.6. Stability is verified by the following means:

.1 loading only to approved conditions defined in the stability information provided to the master in accordance with regulation 28(5)……. ☐

.2 verification is made remotely by a means approved by the Administration:…… ☐

.3 loading within an approved range of loading conditions defined in the stability information provided to the master in accordance with regulation 28(5)…….…..... ☐

.4 loading in accordance with approved limiting KG/GM curves covering all applicable intact and damage stability requirements defined in the stability information provided to the master in accordance with regulation 28(5) ..... ☐"

***

ANNEX 3

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

Draft amendments to MARPOL Annex V (Record of Garbage Discharge)

1 The existing Record of Garbage Discharges contained in the appendix is replaced by the following:

RECORD OF GARBAGE DISCHARGES

Ship's name: _____

Distinctive No. or letters: _____

IMO No.: _____

Garbage categories:

A. Plastics
B. Food wastes
C. Domestic wastes
D. Cooking oil
E. Incinerator Ashes
F. Operational wastes
G. Cargo residues
H. Animal Carcass(es)
I. Fishing gear

Date/time	**Position of the ship (latitude/longitude/port) Remarks: (e.g. accidental loss; water depth if known; cargo residues start/stop position)**	**Category**	**Estimated amount discharged**		**Estimated amount Incinerated (m^3)**	**Certification/Signature**
			Into sea (m^3)	To reception facilities (m^3)		
/						/
/						/

Master's signature: _____ Date: _____

***

ANNEX 4

DRAFT AMENDMENTS TO THE ANNEX OF THE PROTOCOL OF 1997 RELATING TO THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973 AND THE TECHNICAL CODE ON CONTROL OF EMISSION OF NITROGEN OXIDES FROM MARINE DIESEL ENGINES 2008

Draft amendments to MARPOL Annex VI and the NO_x Technical Code 2008 (Amendments to regulations 2, 13, 19, 20 and 21, Supplement to the IAPP Certificate and the NO_x Technical Code 2008)

Amendments to MARPOL Annex VI

Regulation 2

1 Paragraph 2.26 is amended and new paragraphs 2.38 to 2.42 are added as follows:

"26 *Gas carrier* means a cargo ship, other than LNG carrier as defined in paragraph 38, constructed or adapted and used for the carriage in bulk of any liquefied gas.

38 *LNG carrier* means a cargo ship constructed or adapted and used for the carriage in bulk of liquefied natural gas (LNG):

.1 for which the building contract is placed on or after [date of entry into force]; 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 six months after [date of entry into force]; or

.3 the delivery of which is on or after 48 months after [date of entry into force].

39 *Cruise passenger ship* in relation to chapter 4 means a passenger ship not having a cargo deck, designed exclusively for commercial transportation of passengers in overnight accommodations on a sea voyage.

40 *Conventional propulsion* in relation to chapter 4 means a method of propulsion where a main engine is the prime mover and coupled to a propulsion shaft either directly or through a gear box.

41 *Non-conventional propulsion* in relation to chapter 4 means a method of propulsion, other than conventional propulsion, including diesel-electric propulsion, turbine propulsion, and hybrid propulsion systems.

42 *Cargo ship having ice-breaking capability* in relation to chapter 4 means a cargo ship which is designed to break level ice independently with a speed of at least 2 knot when the level ice thickness is 1.0 m or more having ice bending strength at least 500 kPa."

Regulation 13

2 Regulation 13.2.2 is amended as follow:

"2.2 For a major conversion involving the replacement of a marine diesel engine with a non-identical marine diesel engine or the installation of an additional marine diesel engine, the standards in this regulation in force at the time of the replacement or addition of the engine shall apply. On or after 1 January 2021, in the case of replacement engines only, if it is not possible for such a replacement engine to meet the standards set forth in paragraph 5.1.1 of this regulation (Tier III), then that replacement engine shall meet the standards set forth in paragraph 4 of this regulation (Tier II). Guidelines are to be developed by the Organization to set forth the criteria of when it is not possible for a replacement engine to meet the standards in paragraph 5.1.1 of this regulation."

3 Regulation 13.5.1 is amended as follows:

"5.1 Subject to regulation 3 of this annex, the operation of a marine diesel engine that is installed on a ship constructed on or after 1 January 2021:"

Regulation 19

4 A new subparagraph 19.2.2 is added as follows:

".2 Ships not propelled by mechanical means, and platforms including FPSOs and FSUs and drilling rigs, regardless of their propulsion."

5 Paragraph 19.3 is amended as follows:

"3 Regulations 20 and 21 shall not apply to ships which have non-conventional propulsion. However, regulations 20 and 21 shall apply to cruise passenger ships having non-conventional propulsion and LNG carriers having conventional or non-conventional propulsion, constructed on or after [date of entry into force]. Regulations 20 and 21 shall not apply to cargo ships having ice-breaking capability."

Regulation 20

6 Paragraph 20.1 is replaced as follows:

"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, 2.38 and 2.39 of this annex. 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 duly authorized by it[*]."

Regulation 21

7 Paragraph 21.1 is replaced as follows:

"1 For each:

.1 new ship;

.2 new ship which has undergone a major conversion; and

.3 new or existing ship which 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 in regulations 2.25 to 2.31, 2.33 to 2.35, 2.38 and 2.39 and to which this chapter is applicable, the attained EEDI shall be as follows:

Attained EEDI =< Required EEDI = (1-X/100) x reference line value

Where X is the reduction factor specified in table 1 for the required EEDI compared to the EEDI Reference line."

8 New rows are added to Table 1 in regulation 21.2 for ro-ro cargo ships (vehicle carrier), LNG Carrier, cruise passenger ship having non-conventional propulsion, ro-ro cargo ships and ro-ro passenger ships, and mark ** and *** and their explanations are added, as follows:

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**
LNG Carrier***	10,000 DWT and above	n/a	10**	20	30
Ro-ro cargo ship (vehicle carrier)***	10,000 DWT and above	n/a	5**	15	30

[*] 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.

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
Ro-ro cargo ship***	2,000 DWT and above	n/a	5**	20	30
	1,000 – 2,000 DWT	n/a	0-5***	0-20*	0-30*
Ro-ro passenger ship***	4,000 GT and above	n/a	5**	20	30
	1,000 – 4,000 GT	n/a	0-5***	0-20*	0-30*
Cruise passenger ship*** having non-conventional propulsion	85,000 GT and above	n/a	5**	20	30
	25,000 – 85,000 GT	n/a	0-5***	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.

** Phase 1 commences for those ships when the amendments to MARPOL Annex VI come into effect.

*** Reduction rate applies those ships constructed on or after [date of entry into force].

Note: n/a means that no required EEDI applies."

9 New rows are added to Table 2 in regulation 21.3 for ro-ro cargo ship (vehicle carrier), LNG carrier, cruise passenger ship having non-conventional propulsion, ro-ro cargo ships and ro-ro passenger ships as follows:

Ship type defined in regulation 2	a	b	c
2.33 Ro-ro cargo ship (vehicle carrier)	$(DWT/GT)^{-0.7}$ · 780.36 where DWT/GT<0.3 1812.63 where DWT/GT≥0.3	DWT of the ship	0.471
2.34 Ro-ro cargo ship	1405.15	DWT of the ship	0.498
2.35 Ro-ro passenger ship	752.16	DWT of the ship	0.381
2.38 LNG carrier	2253.7	DWT of the ship	0.474
2.39 Cruise passenger ship having non-conventional propulsion	170.84	GT of the ship	0.214

Appendix 1

10 A footnote in Supplement to International Air Pollution Prevention Certificate (IAPP Certificate) in appendix I is amended as follows:

"Completed only in respect of ships constructed on or after 1 January 2021 that are specially designed, and used solely, for recreational purposes and to which, in accordance with regulation 13.5.2.1, the NO_x emission limit as given by regulation 13.5.1.1 will not apply."

Amendments to the NO_x Technical Code 2008

11 In abbreviations, subscripts and symbols, table 4 is replaced by the following:

"**Table 4 – Symbols for fuel composition**

Symbol	Definition	Unit
w_{ALF}*	H content of fuel	% m/m
w_{BET}*	C content of fuel	% m/m
w_{GAM}	S content of fuel	% m/m
w_{DEL}*	N content of fuel	% m/m
w_{EPS}*	O content of fuel	% m/m
α	Molar ratio (H/C)	1

* Subscripts "$_G$" denotes gas-fuel fraction.
"$_L$" denotes liquid-fuel fraction."

12 Paragraph 1.3.10 is replaced by the following:

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

Where an engine is intended to be operated normally in the gas mode, i.e. with the main gas fuel and only a small amount of liquid pilot fuel, the requirements of regulation 13 have to be met only for this operation mode. Operation on pure liquid fuel resulting from restricted gas supply in cases of failures shall be exempted for the voyage to the next appropriate port for the repair of the failure."

13 The existing paragraph 5.3.4 is deleted.

14 New paragraphs 5.3.4, 5.3.5 and 5.3.6 are added after the existing paragraph 5.3.3 as follows:

"5.3.4 The selection of gas fuel for testing for dual fuel depends on the aim of tests. In case where an appropriate standard gas fuel is not available, other gas fuels shall be used with the approval of the Administration. A gas fuel sample shall be collected during the test of the parent engine. The gas fuel shall be analysed to give fuel composition and fuel specification.

5.3.5 Gas fuel temperature shall be measured and recorded together with the measurement point position.

5.3.6 Gas mode operation of dual fuel engines using liquid fuel as pilot or balance fuel shall be tested using maximum liquid-to-gas fuel ratio, such maximum ratio means for the different test cycle modes the maximum liquid-to-gas setting certified. The liquid fraction of the fuel shall comply with 5.3.1, 5.3.2 and 5.3.3."

15 A new sentence is added at the end of existing paragraph 5.12.3.3 as follows:

"In case of using dual fuel, the calculation shall be in accordance with paragraphs 5.12.3.1 to 5.12.3.3. However, q_{mf}, w_{ALF}, w_{BET}, w_{DEL}, w_{EPS}, f_{fw} values shall be calculated in accordance with the following table."

Factors in the formula (6) (7) (8)		**Formula for factors**
q_{mf}	=	$q_{mf\_G}+q_{mf\_L}$
w_{ALF}	=	$\frac{q_{mf\_G} \times w_{ALF\_G} + q_{mf\_L} \times w_{ALF\_L}}{q_{mf\_G} + q_{mf\_L}}$
w_{BET}	=	$\frac{q_{mf\_G} \times w_{BET\_G} + q_{mf\_L} \times w_{BET\_L}}{q_{mf\_G} + q_{mf\_L}}$
w_{DEL}	=	$\frac{q_{mf\_G} \times w_{DEL\_G} + q_{mf\_L} \times w_{DEL\_L}}{q_{mf\_G} + q_{mf\_L}}$
w_{EPS}	=	$\frac{q_{mf\_G} \times w_{EPS\_G} + q_{mf\_L} \times w_{EPS\_L}}{q_{mf\_G} + q_{mf\_L}}$

16 Table 5 is replaced by the following:

"**Table 5 – Coefficient u_{gas} and fuel-specific parameters for raw exhaust gas**

Gas		**NO_x**	**CO**	**HC**	**CO_2**	**O_2**
ρ_{gas} kg/m^3		2.053	1.250	*	1.9636	1.4277
	ρ_e †	Coefficient u_{gas} ‡				
Liquid fuel**	1.2943	0.001586	0.000966	0.000479	0.001517	0.001103
Rapeseed Methyl Ester	1.2950	0.001585	0.000965	0.000536	0.001516	0.001102
Methanol	1.2610	0.001628	0.000991	0.001133	0.001557	0.001132
Ethanol	1.2757	0.001609	0.000980	0.000805	0.001539	0.001119
Natural gas	1.2661	0.001621	0.000987	0.000558	0.001551	0.001128
Propane	1.2805	0.001603	0.000976	0.000512	0.001533	0.001115
Butane	1.2832	0.001600	0.000974	0.000505	0.001530	0.001113

* Depending on fuel.
** Petroleum derived.
† ρ_e is the nominal density of the exhaust gas.
‡ At λ = 2, wet air, 273 K, 101.3 kPa."

Values for u given in table 5 are based on ideal gas properties.
In multiple fuel type operation the u_{gas} value used shall be determined from the values applicable to those fuels in the table set out above proportioned in accordance to the fuel ratio used.

17 Paragraph 6.3.1.4 is replaced by the following:

"6.3.1.4 In practical cases, it is often impossible to measure the fuel oil consumption once an engine has been installed on board a ship. To simplify the procedure on board, the results of the measurement of the fuel oil consumption from an engine's pre-certification test-bed testing may be accepted. In such cases, especially concerning residual fuel oil operation (RM-grade fuel oil according to ISO 8217:2005) and dual fuel operation, an estimation with a corresponding estimated error shall be made. Since the fuel oil flow rate used in the calculation (q_{mf}) must relate to the fuel oil composition determined in respect of the fuel sample drawn during the test, the measurement of q_{mf} from the test-bed testing shall be corrected for any difference in net calorific values between the test bed and test fuel oils and gases. The consequences of such an error on the final emissions shall be calculated and reported with the results of the emission measurement."

18 Table 6 is replaced by the following:

"**Table 6 – Engine parameters to be measured and recorded**

Symbol	Term	Unit
H_a	Absolute humidity (mass of engine intake air water content related to mass of dry air)	g/kg
$n_{d,i}$	Engine speed (at the i^{th} mode during the cycle)	min^{-1}
$n_{turb,i}$	Turbocharger speed (if applicable) (at the i^{th} mode during the cycle)	min^{-1}
P_b	Total barometric pressure (in ISO 3046-1:1995: p_x = P_X = site ambient total pressure)	kPa
$P_{C,i}$	Charge air pressure after the charge air cooler (at the i^{th} mode during the cycle)	kPa
P_i	Brake power (at the i^{th} mode during the cycle)	kW
$q_{mf,i}$	Fuel oil (in case of dual fuel engine, it would be fuel oil and gas) (at the i^{th} mode during the cycle)	kg/h
s_i	Fuel rack position (of each cylinder, if applicable) (at the i^{th} mode during the cycle)	
T_a	Intake air temperature at air inlet (in ISO 3046-1:1995: T_x = TTx = site ambient thermodynamic air temperature)	K
$T_{SC,i}$	Charge air temperature after the charge air cooler (if applicable) (at the i^{th} mode during the cycle)	K
T_{caclin}	Charge air cooler, coolant inlet temperature	°C
$T_{caclout}$	Charge air cooler, coolant outlet temperature	°C
$T_{Exh,i}$	Exhaust gas temperature at the sampling point (at the i^{th} mode during the cycle)	°C
T_{Fuel}	Fuel oil temperature before the engine	°C
T_{Sea}	Seawater temperature	°C
T_{Fuel_G}*	Gas fuel temperature before the engine	°C

* only for dual-fuel engine."

19 New paragraph 6.3.4.3 is added after existing paragraph 6.3.4.2 as follows:

"6.3.4.3 In case of dual fuel engine, the gas fuel used shall be the gas fuel available on board."

20 Paragraph 6.3.11.2 is replaced by the following:

"6.3.11.2 The NO_x emission of an engine may vary depending on the ignition quality of the fuel oil and the fuel-bound nitrogen. If there is insufficient information available on the influence of the ignition quality on the NO_x formation during the combustion process and the fuel-bound nitrogen conversion rate also depends on the engine efficiency, an allowance of 10 per cent may be granted for an on board test run carried out on an RM-grade fuel oil (ISO 8217:2005), except that there will be no allowance for the pre-certification test on board. The fuel oil and gas fuel used shall be analysed for its composition of carbon, hydrogen, nitrogen, sulphur and, to the extent given in (ISO 8217:2005) and (ISO 8178-5:2008), any additional components necessary for a specification of the fuel oil and gas fuel."

21 Table 9 is replaced by the following:

"**Table 9 – Default fuel oil parameters**

	Carbon	**Hydrogen**	**Nitrogen**	**Oxygen**
	w_{BET}	w_{ALF}	w_{DEL}	w_{EPS}
Distillate fuel oil (ISO 8217:2005, DM grade)	86.2%	13.6%	0.0%	0.0%
Residual fuel oil (ISO 8217:2005, RM grade)	86.1%	10.9%	0.4%	0.0%
Natural gas	75.0%	25.0%	0.0%	0.0%

For other fuel oils, default value as approved by the Administration."

22 New paragraph 2.5 is added after existing paragraph 2.4 in appendix VI as follows:

"2.5 q_{mf}, w_{ALF}, w_{BET}, w_{DEL}, w_{EPS}, f_{fd} parameters, in formula (1), in case of gas mode operation of dual-fuel engine, shall be calculated as follows:"

Factors in formula (1)		**Formula of factors**
q_{mf}	=	$q_{mf\_G}+q_{mf\_L}$
w_{ALF}	=	$\frac{q_{mf\_G} \times w_{ALF\_G} + q_{mf\_L} \times w_{ALF\_L}}{q_{mf\_G} + q_{mf\_L}}$
w_{BET}	=	$\frac{q_{mf\_G} \times w_{BET\_G} + q_{mf\_L} \times w_{BET\_L}}{q_{mf\_G} + q_{mf\_L}}$
w_{DEL}	=	$\frac{q_{mf\_G} \times w_{DEL\_G} + q_{mf\_L} \times w_{DEL\_L}}{q_{mf\_G} + q_{mf\_L}}$
w_{EPS}	=	$\frac{q_{mf\_G} \times w_{EPS\_G} + q_{mf\_L} \times w_{EPS\_L}}{q_{mf\_G} + q_{mf\_L}}$

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ANNEX 5

DRAFT AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (BCH CODE) (Cargo containment and Form of Certificate of Fitness)

Chapter II – Cargo containment

Part A – Physical protection (Siting of cargo tanks: ship stability)

1 Existing subparagraph 2.2.1 is replaced by the following:

"2.2.1 General: Ships subject to this Code may be assigned the minimum freeboard permitted by the International Convention on Load Lines, 1966. The additional requirements in paragraph 2.2.4, taking into account any empty or partially filled tank as well as the specific gravities of cargoes to be carried, however, should govern the allowed operating draught for any actual condition of loading.

2.2.1.1 All ships engaged in the transport of chemicals in bulk should be supplied with loading and stability manuals for the information and guidance of the master. These manuals should contain details concerning the loaded conditions of full and empty or partially empty tanks, the position of these tanks in the ship, the specific gravities of the various parcels of cargoes carried, and any ballast arrangements in critical conditions of loading. Provisions for evaluating other conditions of loading should be contained in the manuals.

2.2.1.2 All ships, subject to the Code, shall be fitted with a stability instrument, capable of verifying compliance with intact and damage stability requirements, approved by the Administration, having regard to the performance standards recommended by the Organization*:

.1 ships constructed before [date of entry into force] shall comply with this paragraph at the first scheduled renewal survey of the ship after [date of entry into force] but not later than [five years after date of entry into force];

.2 notwithstanding the requirements of 2.2.1.2.1, a stability instrument installed on a ship constructed before [date of entry into force] need not be replaced provided it is capable of verifying compliance with intact and damage stability, to the satisfaction of the Administration; and

.3 for the purposes of control under regulation 11, the Administration shall issue a document of approval for the stability instrument.

* Refer to part B, chapter 4, of the International Code on Intact Stability, 2008 (2008 IS Code), as amended; the Guidelines for the Approval of Stability Instruments (MSC.1/Circ.1229), annex, section 4, as amended; and the technical standards defined in part 1 of the [Guidelines for verification of damage stability requirements for tankers (MSC.1/Circ.…)].

2.2.1.3 The Administration may give special dispensation to the following ships from the requirements of paragraph 2.2.1.2 provided the procedures employed for intact and damage stability verification maintain the same degree of safety as being loaded in accordance with the approved conditions*. Any such dispensation shall be duly noted on the Certificate of Fitness referred to in paragraph 1.6.3:

.1 ships which are on a dedicated service, with a limited number of permutations of loading such that all anticipated conditions have been approved in the stability information provided to the master in accordance with the requirements of paragraph 2.2.1.1;

.2 ships where stability verification is made remotely by a means approved by the Administration;

.3 ships which are loaded within an approved range of loading conditions; or

.4 ships provided with approved limiting KG/GM curves covering all applicable intact and damage stability requirements.

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* Refer to operational guidance provided in part 2 of the [Guidelines for verification of damage stability requirements for tankers (MSC.1/Circ.…)]."

Certificate of Fitness

2 Paragraph 6 is replaced with the following:

"6 That the ship must be loaded:

.1* only in accordance with loading conditions verified compliant with intact and damage stability requirements using the approved stability instrument fitted in accordance with paragraph 2.2.1.2 of the Code;

.2* where a dispensation permitted by paragraph 2.2.1.3 of the Code applies and the approved stability instrument required by paragraph 2.2.1.2 of the Code is not fitted, loading shall be made in accordance with the following approved methods:

(i) in accordance with the loading conditions provided in the approved loading manual, stamped and dated ..... and signed by a responsible officer of the Administration, or of an organization recognized by the Administration; or

(ii) in accordance with loading conditions verified remotely using an approved means ……..……; or

(iii) in accordance with a loading condition which lies within an approved range of conditions defined in the approved loading manual referred to in (i) above; or

(iv) in accordance with a loading condition verified using approved critical KG/GM data defined in the approved loading manual referred to in (i) above;

.3* in accordance with the loading limitations appended to this Certificate.

Where it is required to load the ship other than in accordance with the above instruction, then the necessary calculations to justify the proposed loading conditions shall be communicated to the certifying Administration who may authorize in writing the adoption of the proposed loading condition.

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* Delete as appropriate."

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ANNEX 6

DRAFT AMENDMENTS TO THE INTERNATIONAL CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (IBC CODE)

(General, Ship survival capability and location of cargo tanks, Cargo tank venting and gas-freeing arrangements, Environmental control, Fire protection and fire extinction, Special requirements, Summary of minimum requirements, and Form of Certificate of Fitness)

Chapter 1 – General

1 New paragraphs 1.3.37 and 1.3.38 are added as follows:

"1.3.37 Purging means the introduction of inert gas into a tank which is already in an inert condition with the object of further reducing the oxygen content; and/or reducing the existing hydrocarbon or other flammable vapours content to a level below which combustion cannot be supported if air is subsequently introduced into the tank.

1.3.38 Gas-freeing means the process where a portable or fixed ventilation system is used to introduce fresh air into a tank in order to reduce the concentration of hazardous gases or vapours to a level safe for tank entry."

Chapter 2 – Ship survival capability and location of cargo tanks

2.2 – Freeboard and intact stability

2 The title of section 2.2 is amended to read:

"Freeboard and stability"

3 A new subparagraph 2.2.6 is added as follows:

"2.2.6 All ships, subject to the Code, shall be fitted with a stability instrument, capable of verifying compliance with intact and damage stability requirements, approved by the Administration having regard to the performance standards recommended by the Organization*:

.1 ships constructed before [date of entry into force] shall comply with this requirement at the first scheduled renewal survey of the ship after [date of entry into force] but not later than [five years after date of entry into force];

.2 notwithstanding the requirements of 2.2.6.1, a stability instrument installed on a tanker constructed before [date of entry into force] need not be replaced provided it is capable of verifying compliance with intact and damage stability, to the satisfaction of the Administration; and

.3 for the purposes of control under regulation 11, the Administration shall issue a document of approval for the stability instrument.

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* Refer to part B, chapter 4, of the International Code on Intact Stability, 2008 (2008 IS Code), as amended; the Guidelines for the Approval of Stability Instruments (MSC.1/Circ.1229), annex, section 4, as amended; and the technical standards defined in part 1 of the [Guidelines for verification of damage stability requirements for tankers (MSC.1/Circ.…)]."

4 A new subparagraph 2.2.7 is added as follows:

"2.2.7 The Administration may give special dispensation to the following ships from the requirements of paragraph 2.2.6 provided the procedures employed for intact and damage stability verification maintain the same degree of safety, as being loaded in accordance with the approved conditions*. Any such dispensation shall be duly noted on the International Certificate of Fitness referred to in paragraph 1.5.4:

.1 ships which are on a dedicated service, with a limited number of permutations of loading such that all anticipated conditions have been approved in the stability information provided to the master in accordance with the requirements of paragraph 2.2.5;

.2 ships where stability verification is made remotely by a means approved by the Administration;

.3 ships which are loaded within an approved range of loading conditions; or

.4 ships constructed before [date of entry into force] provided with approved limiting KG/GM curves covering all applicable intact and damage stability requirements.

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* Refer to operational guidance provided in part 2 of the [Guidelines for verification of damage stability requirements for tankers (MSC.1/Circ.…)]."

Chapter 8 – Cargo tank venting and gas-freeing arrangements

5 In paragraph 8.15, the references to "SOLAS regulations II-2/4.5.3 and 4.5.6" are replaced by the references to "SOLAS regulations II-2/4.5.3, 4.5.6 and 16.3.2".

6 A new paragraph 8.5 is inserted as follows:

"8.5 Cargo tank purging

When the application of inert gas is required by 11.1.1, before gas freeing, the cargo tanks shall be purged with inert gas through outlet pipes with cross sectional area such that an exit velocity of at least 20 m/s can be maintained when any three tanks are being simultaneously supplied with inert gas. The outlets shall extend not less than 2 m above the deck level. Purging shall continue until the concentration of hydrocarbon or other flammable vapours in the cargo tanks has been reduced to less than 2 per cent by volume."

7 The existing paragraph 8.5 and subparagraphs 8.5.1, 8.5.2 and 8.5.3 are renumbered as paragraph 8.6 and subparagraphs 8.6.1, 8.6.2 and 8.6.3, respectively.

Chapter 9 – Environmental control

8 The chapeau of paragraph 9.1.3 is replaced by the following:

"9.1.3 Where inerting or padding of cargo tanks is required by this Code in column "h" of chapter 17:"

Chapter 11 – Fire protection and fire extinction*

9 Subparagraph 11.1.1.1 is replaced by the following:

"11.1.1.1 Regulations 10.8 and 10.9 shall not apply;"

Chapter 15 – Special requirements

10 Paragraph 15.13.5 is replaced by the following:

"15.13.5 When a product containing an oxygen dependent inhibitor is to be carried in a ship:

.1 constructed on or after date of entry into force of the new SOLAS IG requirements, and for which inerting is required as per paragraph 11.1.1 of this Code, the application of inert gas shall not take place before loading or during the voyage, but shall be applied before commencement of unloading*;

.2 constructed before the entry into force of the SOLAS amendments for IG, the product shall be carried without inertion (in tanks of a size not greater than 3,000 m^3). Such cargo shall not be carried in a tank requiring inertion under the requirements of SOLAS chapter II-2*.

* When new Arrangements for the carriage of Oxygen dependant inhibitors is agreed."

Chapter 17 – Summary of minimum requirements

11 The explanatory notes for "Tank environment control (column h)" are replaced by the following:

"Tank environmental control (*column h*)	Inert:	inerting (9.1.2.1)
	Pad:	liquid or gas padding (9.1.2.2)
	Dry:	drying (9.1.2.3)
	Vent:	natural or forced ventilation (9.1.2.4)
	No:	no special requirements under this Code (inerting requirements may be required under SOLAS)"

Certificate of Fitness

12 Paragraph 6 is replaced with the following:

"6 That the ship must be loaded:

.1* only in accordance with loading conditions verified compliant with intact and damage stability requirements using the approved stability instrument fitted in accordance with paragraph 2.2.6 of the Code;

.2* where a dispensation permitted by paragraph 2.2.7 of the Code applies and the approved stability instrument required by paragraph 2.2.6 of the Code is not fitted, loading shall be made in accordance with the following approved methods:

(i) in accordance with the loading conditions provided in the approved loading manual, stamped and dated ..... and signed by a responsible officer of the Administration, or of an organization recognized by the Administration; or

(ii) in accordance with loading conditions verified remotely using an approved means ……; or

(iii) in accordance with a loading condition which lies within an approved range of conditions defined in the approved loading manual referred to in (i) above; or

(iv) in accordance with a loading condition verified using approved critical KG/GM data defined in the approved loading manual referred to in (i) above;

.3* in accordance with the loading limitations appended to this Certificate.

Where it is required to load the ship other than in accordance with the above instruction, then the necessary calculations to justify the proposed loading conditions shall be communicated to the certifying Administration who may authorize in writing the adoption of the proposed loading condition.

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* Delete as appropriate."