INTERNATIONAL MARITIME ORGANIZATION

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REPORT OF THE MARINE ENVIRONMENT PROTECTION COMMITTEE ON ITS SEVENTY-NINTH SESSION

Attached are the annexes to the report of the Marine Environment Protection Committee on its seventy-ninth session (MEPC 79/15).

LIST OF ANNEXES

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ANNEX 1

RESOLUTION MEPC.359(79)
(adopted on 16 December 2022)

AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973, AS MODIFIED BY THE PROTOCOL OF 1978 RELATING THERETO

Amendments to MARPOL ANNEXES I, II and IV

(Regional reception facilities within Arctic waters and Form of IOPP Certificate and Supplements)

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 from ships,

RECALLING ALSO article 16 of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL), which specifies the amendment procedure and confers upon the appropriate body of the Organization the function of considering amendments thereto for adoption by the Parties,

HAVING CONSIDERED, at its seventy-ninth session, proposed amendments to MARPOL Annexes I, II and IV concerning regional reception facilities within Arctic waters and Form of IOPP Certificate and Supplements**,** which were circulated in accordance with article 16(2)(a) of MARPOL,

1 ADOPTS, in accordance with article 16(2)(d) of MARPOL, amendments to MARPOL Annexes I, II and IV, 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 MARPOL, that the amendments shall be deemed to have been accepted on 1 November 2023 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% 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 MARPOL, the said amendments shall enter into force on 1 May 2024 upon their acceptance in accordance with paragraph 2 above;

4 REQUESTS the Secretary-General, for the purposes of article 16(2)(e) of MARPOL, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Parties to MARPOL;

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

ANNEX

AMENDMENTS TO MARPOL ANNEXES I, II AND IV

(Regional reception facilities within Arctic waters and Form of IOPP Certificate and Supplements)

AMENDMENTS TO MARPOL ANNEX I

Regulation 38 – Reception facilities

1 Paragraph 4 is replaced by the following:

"4 The following States may satisfy the requirements in paragraphs 1 to 3 of this regulation through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements:

.1 small island developing States; and

.2 States the coastline of which borders on Arctic waters, provided that regional arrangements shall cover only ports within Arctic waters of those States.

Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, taking into account the guidelines developed by the Organization.[*]

The Government of each Party participating in the arrangement shall consult with the Organization, for circulation to the Parties of the present Convention, on:

.1 how the Regional Reception Facilities Plan takes into account the guidelines developed by the Organization;[*]

.2 particulars of the identified Regional Ships Waste Reception Centres taking into account the guidelines developed by the Organization;[*] and

.3 particulars of those ports with only limited facilities."

2 Paragraph 6 is replaced by the following:

"6 The following States may satisfy the requirements in paragraph 5 of this regulation through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements:

.1 small island developing States; and

[*] Refer to the *2012 Guidelines for the development of a Regional Reception Facilities Plan* (resolution MEPC.221(63)), as amended by resolution MEPC.363(79).

.2 States the coastline of which borders on Arctic waters, provided that regional arrangements shall cover only ports within Arctic waters of those States.

Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, taking into account the guidelines developed by the Organization.*

The Government of each Party participating in the arrangement shall consult with the Organization, for circulation to the Parties of the present Convention, on:

.1 how the Regional Reception Facilities Plan takes into account the guidelines developed by the Organization,*

.2 particulars of the identified Regional Ships Waste Reception Centres taking into account the guidelines developed by the Organization;* and

.3 particulars of those ports with only limited facilities."

Appendix II

Form of IOPP Certificate and Supplements

Form B of the Supplement to the International Oil Pollution Prevention Certificate (IOPP Certificate)

3 The title of section 5 is replaced by the following:

"**5 – Construction (regulations 18, 19, 20, 21, 22, 23, 26, 27, 28 and 33)**"

AMENDMENTS TO MARPOL ANNEX II

Regulation 18 – Reception facilities and cargo unloading terminal arrangements

4 Paragraph 3 is replaced by the following:

"3 The following States may satisfy the requirements in paragraphs 1, 2 and 6 of this regulation through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements:

.1 small island developing States; and

.2 States the coastline of which borders on Arctic waters, provided that regional arrangements shall cover only ports within Arctic waters of those States.

* Refer to the *2012 Guidelines for the development of a Regional Reception Facilities Plan* (resolution MEPC.221(63)), as amended by resolution MEPC.363(79).

Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, taking into account the guidelines developed by the Organization.*

The Government of each Party participating in the arrangement shall consult with the Organization, for circulation to the Parties of the present Convention, on:

.1 how the Regional Reception Facilities Plan takes into account the guidelines developed by the Organization;*

.2 particulars of the identified Regional Ships Waste Reception Centres taking into account the guidelines developed by the Organization;* and

.3 particulars of those ports with only limited facilities."

AMENDMENTS TO MARPOL ANNEX IV

Regulation 12 – Reception facilities

5 Paragraph 2 is replaced by the following:

"2 The following States may satisfy the requirements in paragraph 1 of this regulation through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements:

.1 small island developing States; and

.2 States the coastline of which borders on Arctic waters, provided that regional arrangements shall cover only ports within Arctic waters of those States.

Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, taking into account the guidelines developed by the Organization.*

The Government of each Party participating in the arrangement shall consult with the Organization, for circulation to the Parties of the present Convention, on:

.1 how the Regional Reception Facilities Plan takes into account the guidelines developed by the Organization;*

.2 particulars of the identified Regional Ships Waste Reception Centres taking into account the guidelines developed by the Organization;* and

.3 particulars of those ports with only limited facilities."

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* Refer to the *2012 Guidelines for the development of a Regional Reception Facilities Plan* (resolution MEPC.221(63)), as amended by resolution MEPC.363(79).

ANNEX 2

RESOLUTION MEPC.360(79)
(adopted on 16 December 2022)

AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973, AS MODIFIED BY THE PROTOCOL OF 1978 RELATING THERETO

MARPOL ANNEX V

(Regional reception facilities within Arctic waters and Garbage Record Book)

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 from ships,

RECALLING ALSO article 16 of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL), which specifies the amendment procedure and confers upon the appropriate body of the Organization the function of considering amendments thereto for adoption by the Parties,

HAVING CONSIDERED, at its seventy-ninth session, proposed amendments to MARPOL Annex V concerning regional reception facilities within Arctic waters and Garbage Record Book, which were circulated in accordance with article 16(2)(a) of MARPOL,

1 ADOPTS, in accordance with article 16(2)(d) of MARPOL, amendments to MARPOL Annex V, 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 MARPOL, that the amendments shall be deemed to have been accepted on 1 November 2023 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% 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 MARPOL, the said amendments shall enter into force on 1 May 2024 upon their acceptance in accordance with paragraph 2 above;

4 REQUESTS the Secretary-General, for the purposes of article 16(2)(e) of MARPOL, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Parties to MARPOL;

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

ANNEX

AMENDMENTS TO MARPOL ANNEX V

(Regional reception facilities within Arctic waters and Garbage Record Book)

Regulation 8 – Reception facilities

1 In the first sentence of paragraph 2.2, the words "sub-paragraph 3.1" are replaced by the words "paragraph 2.1".

2 Paragraph 3 is replaced by the following:

"3 The following States may satisfy the requirements in paragraphs 1 and 2.1 of this regulation through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements:

.1 small island developing States; and

.2 States the coastline of which borders on Arctic waters, provided that regional arrangements shall cover only ports within Arctic waters of those States.

Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, taking into account the guidelines developed by the Organization.*

The Government of each Party participating in the arrangement shall consult with the Organization, for circulation to the Parties of the present Convention, on:

.1 how the Regional Reception Facilities Plan takes into account the guidelines developed by the Organization;*

.2 particulars of the identified Regional Ships Waste Reception Centres, taking into account the guidelines developed by the Organization;* and

.3 particulars of those ports with only limited facilities."

Regulation 10 – Placards, garbage management plans and garbage record-keeping

3 The first sentence of the chapeau of paragraph 3 is replaced by the following:

"3 Every ship of 100 gross tonnage and above and every ship which is certified to carry 15 or more persons engaged in voyages to ports or offshore terminals under the jurisdiction of another Party to the Convention and every fixed or floating platform shall be provided with a Garbage Record Book."

* Refer to the *2012 Guidelines for the development of a Regional Reception Facilities Plan* (resolution MEPC.221(63)), as amended by resolution MEPC.363(79).

4 Paragraph 3.6 is replaced by the following:

".6 In the event of any discharge or accidental loss referred to in regulation 7 of this annex an entry shall be made in the Garbage Record Book, or in the case of any ship of less than 100 gross tonnage, an entry shall be made in the ship's official logbook of the date and time of occurrence, port or position of the ship at time of occurrence (latitude, longitude and water depth if known), the reason for the discharge or loss, details of the items discharged or lost, categories of garbage discharged or lost, estimated amount for each category in cubic metres, reasonable precautions taken to prevent or minimize such discharge or accidental loss and general remarks."

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ANNEX 3

RESOLUTION MEPC.361(79)
(adopted on 16 December 2022)

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

(Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter)

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 from ships,

RECALLING ALSO article 16 of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocols of 1978 and 1997 relating thereto (MARPOL), which specifies the amendment procedure and confers upon the appropriate body of the Organization the function of considering amendments thereto for adoption by the Parties,

HAVING CONSIDERED, at its seventy-ninth session, proposed amendments to MARPOL Annex VI, concerning the Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter, which were circulated in accordance with article 16(2)(a) of MARPOL,

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

2 DETERMINES, in accordance with article 16(2)(f)(iii) of MARPOL, that the amendments shall be deemed to have been accepted on 1 November 2023 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% 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 MARPOL, the said amendments shall enter into force on 1 May 2024 upon their acceptance in accordance with paragraph 2 above;

4 ALSO INVITES the Parties to note that, in accordance with regulation 14.7 of MARPOL Annex VI, ships operating in the Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter are exempt from the requirements in paragraphs 4 and 6 of regulation 14 of MARPOL Annex VI and from the requirements of paragraph 5 of that regulation insofar as they relate to paragraph 4 of that regulation until 1 May 2025;

5 INVITES coastal States of the Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter to ratify and effectively implement MARPOL Annex VI, as soon as possible, if they have not yet done so, at least by the date of entry into force of the said amendments;

6 REQUESTS the Secretary-General, for the purposes of article 16(2)(e) of MARPOL, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Parties to MARPOL;

7 ALSO REQUESTS the Secretary-General to transmit copies of the present resolution and its annex to Members of the Organization which are not Parties to MARPOL.

ANNEX

AMENDMENTS TO MARPOL ANNEX VI

(Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter)

Regulation 14
Sulphur oxides (SO_X) and particulate matter

1 At the end of paragraph 3.3, the word "and" is deleted. At the end of paragraph 3.4, "." is replaced by "; and". A new paragraph 3.5 is added as follows:

".5 the Mediterranean Sea Emission Control Area, which means the area described by the coordinates provided in appendix VII to this annex."

Appendix VII
Emission control areas (regulations 13.6 and 14.3)

2 A new paragraph 4 is inserted, as follows:

"4 In respect of the application of regulation 14.4, the Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter includes all waters bounded by the coasts of Europe, Africa and Asia, and is described by the following coordinates:

.1 the western entrance to the Straits of Gibraltar, defined as a line joining the extremities of Cape Trafalgar, Spain (36°11'.00 N, 6°02'.00 W) and Cape Spartel, Morocco (35°48'.00 N, 5°55'.00 W);

.2 the Strait of Canakkale, defined as a line joining Mehmetcik Burnu (40°03'N, 26°11'E) and Kumkale Burnu (40°01'.00 N, 26°12'.00 E); and

.3 the northern entrance to the Suez Canal excluding the area enclosed by geodesic lines connecting points 1-4 with the following coordinates:

Point	Latitude	Longitude
1	31˚29'.00 N	32°16'.00 E
2	31˚29'.00 N	32°28'.48 E
3	31˚14'.00 N	32°32'.62 E
4	31˚14'.00 N	32°16'.00 E

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ANNEX 4

MEPC RESOLUTION MEPC.362(79)
(adopted on 16 December 2022)

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

Amendments to MARPOL Annex VI (Regional reception facilities within Arctic waters, information to be included in the bunker delivery note (BDN) and information to be submitted to the IMO Ship Fuel Oil Consumption Database)

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 from ships,

RECALLING ALSO article 16 of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocols of 1978 and 1997 relating thereto (MARPOL), which specifies the amendment procedure and confers upon the appropriate body of the Organization the function of considering amendments thereto for adoption by the Parties,

HAVING CONSIDERED, at its seventy-ninth session, proposed amendments to MARPOL Annex VI concerning regional reception facilities within Arctic waters, information to be included in the bunker delivery note (BDN) and information to be submitted to the IMO Ship Fuel Oil Consumption Database, which were circulated in accordance with article 16(2)(a) of MARPOL,

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

2 DETERMINES, in accordance with article 16(2)(f)(iii) of MARPOL, that the amendments shall be deemed to have been accepted on 1 November 2023 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% 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 MARPOL, the said amendments shall enter into force on 1 May 2024 upon their acceptance in accordance with paragraph 2 above;

4 ALSO INVITES the Parties to consider the early application of the amendments to appendix IX with regard to information to be submitted to the IMO Ship Fuel Oil Consumption Database from 1 January 2024;

5 REQUESTS the Secretary-General, for the purposes of article 16(2)(e) of MARPOL, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Parties to MARPOL;

6 ALSO REQUESTS the Secretary-General to transmit copies of the present resolution and its annex to Members of the Organization which are not Parties to MARPOL.

ANNEX

AMENDMENTS TO MARPOL ANNEX VI

(Regional reception facilities within Arctic waters, information to be included in the bunker delivery note (BDN) and information to be submitted to the IMO Ship Fuel Oil Consumption Database)

Regulation 17
Reception facilities

1 Paragraph 2 is replaced by the following:

"2 The following States may satisfy the requirements in paragraph 1 of this regulation through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements:

.1 small island developing States; and

.2 States the coastline of which borders on Arctic waters, provided that regional arrangements shall cover only ports within Arctic waters of those States.

Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, taking into account the guidelines developed by the Organization.*

The Government of each Party participating in the arrangement shall consult with the Organization, for circulation to the Parties of the present Convention, on:

.1 how the Regional Reception Facilities Plan takes into account the guidelines developed by the Organization;*

.2 particulars of the identified Regional Ships Waste Reception Centres taking into account the guidelines developed by the Organization;* and

.3 particulars of those ports with only limited facilities."

Appendix V
Information to be included in the bunker delivery note (regulation 18.5)

2 The following new item 9 and associated footnote are added to the list, below item 8 "Sulphur content (% m/m)":

"The flashpoint (°C) specified in accordance with standards acceptable to the Organization,* or a statement that the flashpoint has been measured at or above 70ºC;"

* ISO 2719:2016, Determination of flash point – Pensky-Martens closed cup method, Procedure A (for Distillate Fuels) or Procedure B (for Residual Fuels)."

3 Existing item 9 is renumbered as new item 10 in the list.

* Refer to the *2012 Guidelines for the development of a Regional Reception Facilities Plan* (resolution MEPC.221(63)), as amended by resolution MEPC.363(79).

Appendix IX
Information to be submitted to the IMO Ship Fuel Oil Consumption Database (regulation 27)

4 Appendix IX is replaced by the following:

" Appendix IX

Information to be submitted to the IMO Ship Fuel Oil Consumption Database (regulation 27)

Identity of the ship

IMO number ……

Period of calendar year for which the data is submitted

Start date (dd/mm/yyyy) …….

End date (dd/mm/yyyy) ……..

Technical characteristics of the ship

Year of delivery……..……

Ship type, as defined in regulation 2 of this annex or other (to be stated) ……..

Gross tonnage (GT)[1] ……...

Net tonnage (NT)[2] ……

Deadweight tonnage (DWT)[3] …….

Power output (rated power) [4] of main and auxiliary reciprocating internal combustion engines over 130 kW (to be stated in kW) ……

Attained EEDI[5] (if applicable)……..……..……

Attained EEXI[6] (if applicable)……..

Ice class[7]……...

1 Gross tonnage should be calculated in accordance with the International Convention on Tonnage Measurement of Ships, 1969.

2 Net tonnage should be calculated in accordance with the International Convention on Tonnage Measurement of Ships, 1969. If not applicable, note "N/A".

3 DWT means the difference in tonnes between the displacement of a ship in water of relative density of 1,025 kg/m^3 at the summer load draught and the lightweight of the ship. The summer load draught should be taken as the maximum summer draught as certified in the stability booklet approved by the Administration or an organization authorized by it. If not applicable, note "N/A".

4 Rated power means the maximum continuous rated power as specified on the nameplate of the engine.

5 Refer to the *2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships* (resolution MEPC.308(73), as amended by resolutions MEPC.322(74) and MEPC.332(76)), and as may be further amended.

6 Refer to the *2022 Guidelines on the method of calculation of the attained Energy Efficiency Existing Ship Index (EEXI)* (resolution MEPC.350(78)).

7 Ice class should be consistent with the definition set out in the International Code for Ships Operating in Polar Waters (Polar Code) (resolutions MEPC.264(68) and MSC.385(94)). If not applicable, note "N/A".

Fuel oil consumption, by fuel oil type in metric tonnes and methods used for collecting fuel oil consumption data ……

Distance travelled ……

Hours under way……

For ships to which regulation 28 of MARPOL Annex VI applies:

Applicable CII:[8] ☐AER ☐cgDIST

Required annual operational CII[9]……

Attained annual operational CII before any correction[10]……
Attained annual operational CII[11]……Operational carbon intensity rating:[12]
☐A ☐B ☐C ☐D ☐E

CII for trial purpose (none, one or more on voluntary basis):[13]

☐ EEPI (gCO_2/t•nm): ……

☐ cbDIST (gCO_2/berth•nm): ……

☐ clDIST (gCO_2/m•nm): ……

☐ EEOI (gCO_2/t•nm or others)[14]: ……."

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8 Refer to the *2022 Guidelines on operational carbon intensity indicators and the calculation methods (CII guidelines, G1)* (resolution MEPC.352(78)).

9 Refer to the *2022 Guidelines on the reference lines for use* with operational carbon intensity indicators *(CII reference lines guidelines, G2)* (resolution MEPC.353(78)) and *2021 Guidelines on the* operational carbon intensity *reduction factors relative to reference lines (CII reduction factors guidelines, G3)* (resolution MEPC.338(76)).

10 As calculated in accordance with the *2022 Guidelines on operational carbon intensity indicators and the calculation methods* (*CII guidelines, G1*) (resolution MEPC.352(78)) before any correction using *Interim guidelines on correction factors and voyage adjustments for CII calculations (G5)* (resolution MEPC.355(78)).

11 As calculated in accordance with the *2021 Guidelines on operational carbon intensity indicators and the calculation methods* (*CII guidelines, G1*) (resolution MEPC.352(78)) and having been corrected taking into account *Interim guidelines on correction factors and voyage adjustments for CII calculations (G5)* (resolution MEPC.355(78)).

12 Refer to the *2022 Guidelines on the operational carbon intensity rating of ships (CII rating guidelines, G4)* (resolution MEPC.354(78)).

13 Refer to the *2022 Guidelines on operational carbon intensity indicators and the calculation methods* (*CII guidelines, G1*) (resolution MEPC.352(78)).

14 Refer to the *Guidelines for voluntary use of the ship energy efficiency operational indicator (EEOI))* (MEPC.1/Circ.684).

ANNEX 5

RESOLUTION MEPC.363(79)
(adopted on 16 December 2022)

AMENDMENTS TO THE 2012 GUIDELINES FOR THE DEVELOPMENT OF A REGIONAL RECEPTION FACILITIES PLAN (RESOLUTION MEPC.221(63))

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 from ships,

NOTING resolution MEPC.221(63), by which it adopted the *2012 Guidelines for the development of a Regional Reception Facilities Plan* (2012 Guidelines),

NOTING ALSO resolutions MEPC.359(79), MEPC.360(79) and MEPC.362(79), by which it adopted amendments to MARPOL Annexes I, II, IV, V and VI, respectively, to provide for regional arrangements as an acceptable way to satisfy MARPOL obligations to provide port reception facilities for States the coastline of which borders on Arctic waters, provided that regional arrangements shall cover only ports within Arctic waters of those States, where a Regional Reception Facilities Plan has been developed taking into account the Guidelines developed by the Organization,

RECOGNIZING the need to align the relevant provisions of the 2012 Guidelines with the above-mentioned amendments to MARPOL Annexes I, II, IV, V and VI,

HAVING CONSIDERED, at its seventy-ninth session, proposed amendments to the 2012 Guidelines,

1 ADOPTS amendments to the *2012 Guidelines for the development of a Regional Reception Facilities Plan*, the text of which is set out in the annex to the present resolution;

2 INVITES Governments to apply the 2012 Guidelines, as amended, when considering the development of a Regional Reception Facilities Plan, upon the entry into force of the amendments to MARPOL Annexes I, II, IV, V and VI on regional reception facilities within Arctic waters.

ANNEX

AMENDMENTS TO THE 2012 GUIDELINES FOR THE DEVELOPMENT OF A REGIONAL RECEPTION FACILITIES PLAN (RESOLUTION MEPC.221(63))

Part 1 – Development of a Regional Reception Facilities Plan (RRFP)

1 Paragraphs 4 and 5 are replaced by the following:

"4 *Identification of the region to be covered by a RRFP* – For the purposes of an RRFP, a region should include the participating States and the ports that will be covered by the plan. A map should be provided, clearly showing the participating States and all ports within the region. The majority of States participating in an RRFP should be either (i) small island developing States (SIDS) or (ii) States the coastline of which borders on Arctic waters, provided that regional arrangements shall cover only ports within Arctic waters of those States. Although non-SIDS *and States with ports adjacent to Arctic waters* may participate, they should do so only so far as their ports may be Regional Waste Reception Centres. The obligations of non-SIDS or States with ports adjacent to Arctic waters to provide adequate reception facilities in all its ports and terminals will not be satisfied by RAs.

5 *Identification of the nature of the unique circumstances that impact on the ability to provide adequate port reception facilities* – A clear understanding of such unique circumstances will lead to a logical approach to designing RAs that most efficiently address those circumstances. Generally, such circumstances will include practical difficulties on the part of a State to manage its own domestic waste, or a disproportionate additional burden from ships to the domestic waste stream. Distances between ports and suitable waste processing facilities may result in unacceptable costs for transport which may increase the risk of inappropriate treatment. A State's small geographical size may limit the space available to process or dispose of ship-generated wastes and cargo residues, as may geomorphology (for example high water table, unstable land areas on low-lying islands or melting permafrost and coastal erosion in Arctic States). Ports in Arctic waters subject to closure during winter months or to substantial seasonal operational limitations due to ice conditions may result in challenges to establishing and managing PRFs in such areas. A small population may limit the ability to provide staff to receive and process ship-generated wastes and cargo residues at times convenient to ships. In addition to these examples, other unique circumstances may be present and should be fully described in the RRFP."

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ANNEX 6

DRAFT AMENDMENTS TO APPENDIX II OF THE ANNEX TO THE BWM CONVENTION

Appendix II
Form of Ballast Water Record Book

1 Appendix II is replaced by the following:

"**BALLAST WATER RECORD BOOK**

INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF

SHIPS' BALLAST WATER AND SEDIMENTS

Name of ship ……..……...

IMO number, distinctive numbers or letters ……..……

Gross tonnage ……

Flag ……

Total ballast water capacity (in cubic metres) …….

Number of the International Ballast Water Management Certificate ……

Period From: ….……. To: ……

A diagram identifying the ballast tanks of the ship, corresponding to the ballast water management plan, including any multi-use tank, space or compartment designed to allow carriage of ballast water, is integral to and shall be a part of this Ballast Water Record Book.

Introduction

In accordance with regulation B-2 of the Annex to the International Convention for the Control and Management of Ships' Ballast Water and Sediments, a record is to be kept of each ballast water operation. This includes discharges at sea and to reception facilities.

"Ballast water" means water with its suspended matter taken on board a ship to control trim, list, draught, stability or stresses of a ship. Management of ballast water shall be in accordance with an approved ballast water management plan and taking into account guidelines developed by the Organization.

The Ballast Water Record Book entries should be completed taking into account any guidelines to be developed by the Organization.

The volume of ballast water on board should be estimated in cubic metres. It is recognized that the accuracy of estimating volumes of ballast is left to interpretation.

ENTRIES IN THE BALLAST WATER RECORD BOOK

Entries in the Ballast Water Record Book shall be made on each of the following occasions:

(A) When ballast water is taken on board from the aquatic environment (ballasting operation)

.1 Start time and location (port of uptake or latitude/longitude)

.2 Completion time and location (port of uptake or latitude/longitude and minimum depth of water during uptake)

.3 The identity of the tanks affected

.4 Estimated volume of uptake and final total quantity retained in cubic metres

.5 Whether conducted in accordance with the approved ballast water management plan

.6 Ballast water treatment method

(B) When ballast water is discharged into the aquatic environment (deballasting operation)

.1 Start time and location (port of discharge or latitude/longitude)

.2 Completion time and location (port of discharge or latitude/longitude and minimum depth of water during discharge)

.3 The identity of the tanks affected

.4 Estimated volume of discharge and final total quantity retained in cubic metres

.5 Whether conducted in accordance with the approved ballast water management plan

.6 Ballast water treatment method

(C) Whenever ballast water is exchanged, circulated or treated for ballast water management purposes

1 Ballast water exchange

.1 Start time and location (latitude/longitude)

.2 Completion time and location (latitude/longitude)

.3 Minimum distance from the nearest land and minimum depth of water during the exchange or, if applicable, identify the designated exchange area in accordance with regulation B-4.2

.4 Whether conducted in accordance with the ballast water management plan and state the ballast water exchange method (Sequential or Flow-through or Dilution) used

.5 The identity of the tanks affected

.6 Total quantity exchanged and final total quantity on board in cubic metres

.7 Treatment method for the incoming ballast water

2 Ballast water internal circulation for treatment or in-tank treatment

.1 Start time

.2 Completion time

.3 The identity of the tanks affected (identifying source and destination tanks if applicable)

.4 Total quantity treated (through circulation or in tank) in cubic metres

.5 Ballast water treatment method

(D) Uptake or discharge of ballast water from/to a port-based or reception facility

.1 Start time and location of uptake/discharge (state facility name)

.2 Completion time

.3 Operation carried out (whether uptake or discharge)

.4 The identity of the tanks affected

.5 Total quantity in cubic metres and final quantity retained on board

.6 Whether conducted in accordance with the approved ballast water management plan

.7 Onboard ballast water treatment method

(E) Accidental discharge/ingress or other exceptional uptake or discharge of ballast water

.1 Start time and location of ingress/uptake/discharge (port name or latitude/longitude)

.2 Completion time

.3 Operation carried out (whether ingress, uptake or discharge)

.4 The identity of the tanks affected

.5 Total quantity of ballast water in cubic metres

.6 State the circumstances of ingress, uptake, discharge or loss, the reason thereof, any treatment method used and general remarks

(F) Failures and inoperabilities[*] of the ballast water management system

.1 Time and location (port name or latitude/longitude) of failure of the ballast water management system

.2 Operation carried out (state whether uptake or discharge)

.3 Description of the issue (e.g. kind of alarm or other description of circumstances)

.4 Time and location (port name or latitude/longitude) when the ballast water management system has been made operational

(G) Ballast tank cleaning/flushing, removal and disposal of sediments

.1 Time and ship's location on commencement of ballast tank cleaning/flushing, removal or disposal of sediments (port name or latitude/longitude)

.2 Time and ship's location on completion of ballast tank cleaning/flushing, removal or disposal of sediments (port name or latitude/longitude)

.3 Tank(s) identification (name of the ballast tanks as per the ballast water management plan)

.4 Discharge or disposal to a reception facility (state quantity in cubic metres and name of the facility)

.5 Disposal or discharge to the aquatic environment as per ballast water management plan (state quantity in cubic metres, minimum distance from the nearest land in nm and minimum depth of water in metres)

[*] Failures and inoperabilities include malfunctions, shutdowns or critical alarms indicating a failure of the ballast water management system which may indicate non-compliance with the D-2 standard (except routine information and warnings).

(H) Additional operational procedures and general remarks

Sample Ballast Water Record Book Page

Name of ship…………………………………………………………………………………..

IMO number, distinctive numbers or letters……………………………………………………

Date	Code (letter)	Item (number)	Record of operations / signature of officer in charge

"

***

ANNEX 7

UNIFIED INTERPRETATIONS TO THE BWM CONVENTION AND THE BWMS CODE (REGULATION E-1 AND THE FORM OF THE INTERNATIONAL BALLAST WATER MANAGEMENT CERTIFICATE, AND PARAGRAPH 4.10 OF THE BWMS CODE)

Requirements for the calibration of the BWMS components that take measurements

Paragraph 4.10 of the BWMS Code reads as follows:

> "4.10 Facilities shall be provided for checking, at the renewal surveys and according to the manufacturer's instructions, the performance of the BWMS components that take measurements. A calibration certificate certifying the date of the last calibration check shall be retained on board for inspection purposes. Only the manufacturer or persons authorized by the manufacturer shall perform the accuracy checks."

Interpretation:

For BWMS components that take measurements, the interval for an accuracy check/calibration (or replacement of a sensor, in case it cannot be calibrated) should not be mandatorily linked to the survey scheme for the BWMS, even though a validity check of calibration certificates should be conducted at BWM annual/intermediate/renewal surveys. The accuracy check/calibration of BWMS components that take measurements should be performed in accordance with the calibration procedure at intervals specified in the manufacturer's instructions.

Date to be used for determining the implementation of mandatory commissioning testing of individual ballast water management systems in accordance with resolution MEPC.325(75)

Regulation E-1
Surveys

Regulations E-1.1.1 and E-1.1.5 read as follows:

> "1 An initial survey before the ship is put in service or before the Certificate required under regulation E-2 or E-3 is issued for the first time. This survey shall verify that the ballast water management plan required by regulation B-1 and any associated structure, equipment, systems, fittings, arrangements and material or processes comply fully with the requirements of this Convention. This survey shall confirm that a commissioning test has been conducted to validate the installation of any ballast water management system by demonstrating that its mechanical, physical, chemical and biological processes are working properly, taking into account the guidelines developed by the Organization.*
>
> 5 An additional survey, either general or partial, according to the circumstances, shall be made after a change, replacement or significant repair of the structure, equipment, systems, fittings, arrangements and material necessary to achieve full compliance with this Convention. The survey shall be such as to ensure that any such change, replacement or significant repair has been effectively made, so that the ship complies with the requirements of this Convention. When an additional survey is undertaken for the installation of any ballast water management system, this survey shall confirm that a commissioning test has been conducted to validate the installation of the system by demonstrating that its mechanical, physical, chemical and biological processes are working properly, taking into account the guidelines developed by the Organization.*

* Refer to the *2020 Guidance for the commissioning testing of ballast water management systems* (BWM.2/Circ.70/Rev.1), as amended."

Revised interpretation:

1 Irrespective of new ships under construction subject to regulation E-1.1.1 or existing ships retrofitting ballast water management system(s) (BWMS) on board subject to regulation E-1.1.5, the commissioning testing of individual BWMS, taking into account the guidelines developed by the Organization,* should be conducted if the initial or additional survey is completed on or after 1 June 2022. If the initial or additional survey is completed before 1 June 2022, the commissioning testing of individual BWMS remains subject to the specific requirements of the Administration(s).

2 In case an installed BWMS on board a ship undergoes an upgrade or change to a major component as defined under paragraph 3.9 of the BWMS Code, the BWMS should be regarded as a newly installed BWMS. A commissioning test should be conducted in accordance with regulation E-1.1.5 of the BWM Convention and an International Ballast Water Management Certificate (IBWMC) for that ship should be reissued accordingly.

"Date installed" in relation to "Method of ballast water management used"

Appendix I
Form of the International Ballast Water Management Certificate

The following information regarding "Details of ballast water management method(s) used" is to be provided on the certificate:

"Method of ballast water management used .....
Date installed (if applicable) (dd/mm/yyyy) .....
Name of manufacturer (if applicable) ....."

Revised interpretation:

1 For the purpose of completing the International Ballast Water Management Certificate, the date when the latest commissioning has been completed in accordance with section 8 of the BWMS Code (resolution MEPC.300(72)) should be used.

2 Notwithstanding the above, it should be noted that, with regard to the deadline for installing a ballast water management system, operative paragraph 5 of resolution MEPC.300(72) (*Code for Approval of Ballast Water Management Systems*) is as follows:

> "5 RESOLVES that, for the purpose of operative paragraph 4 of this resolution, the word "installed" means the contractual date of delivery of the ballast water management system to the ship. In the absence of such a date, the word "installed" means the actual date of delivery of the ballast water management system to the ship;"

3 Consequently, two dates, i.e. the contractual date of delivery or the actual date of delivery, and the date following the latest commissioning and operation, may exist in relation to installing a ballast water management system.

***

ANNEX 8

UNIFIED INTERPRETATIONS TO MARPOL ANNEX VI (REGULATIONS 2.1.14, 8.3, 18.3, 18.3.2.2, 22.3, 26.3.1, 27.1, 28.7, 28.9 AND APPENDIX IX)

1 Application of regulation 18.3 for biofuel and synthetic fuel[1]

Regulation 18
Fuel oil availability and quality

Regulation 18.3 reads as follows:

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

Interpretation

1.1 A fuel oil which is a blend of not more than 30% by volume of biofuel or synthetic fuel should meet the requirements of regulation 18.3.1 of MARPOL Annex VI. A fuel oil which is a blend of more than 30% by volume of biofuel or synthetic fuel should meet the requirements of regulation 18.3.2 of MARPOL Annex VI. For the purposes of this interpretation, a biofuel is a fuel oil which is derived from biomass and hence includes, but is not limited to, processed used cooking oils, fatty-acid-methyl-esters (FAME) or fatty-acid-ethyl-esters (FAEE), straight vegetable oils (SVO), hydrotreated vegetable oils (HVO), glycerol or other biomass to liquid (BTL) type products. For the purposes of this interpretation, a synthetic fuel is a fuel oil from synthetic or renewable sources similar in composition to petroleum distillate fuels. The Product Name, as entered onto the bunker delivery note, should be of sufficient detail to identify whether, and to what extent, a biofuel or a synthetic fuel is blended into the product as supplied.

Regulation 18.3.2.2 reads as follows:

> "fuel oil for combustion purposes derived by methods other than petroleum refining shall not cause an engine to exceed the applicable NO_x emission limit set forth in paragraphs 3, 4, 5.1.1 and 7.4 of regulation 13."

Interpretation

1.2 A marine diesel engine certified in accordance with the requirements of regulation 13 of MARPOL Annex VI, which can operate on a biofuel or a synthetic fuel or blends containing these fuels without changes to its NO_x critical components or settings/operating values outside those as given by that engine's approved Technical File, should be permitted to use such a fuel oil without having to undertake the assessment as given by regulation 18.3.2.2 of MARPOL Annex VI. For the purposes of this interpretation, parent engine emissions tests undertaken on DM or RM grade fuels to the ISO 8217:2005 standard, as required by paragraph 5.3.2 of the NO_x Technical Code, should be valid for all DM or RM grade fuels used in operation, or that the engine may be designed for, or capable of operation on, including those meeting the ISO 8217 standards superseding ISO 8217:2005.

[1] The unified interpretation replaces the unified interpretation in section 13 of the annex to MEPC.1/Circ.795/Rev.6.

1.3 Where fuel oils are derived from methods other than petroleum refining, or where a fuel oil is a blend of more than 30% by volume of biofuel or synthetic fuel and does not fall under 1.2 of this unified interpretation, or where other fuels required to undertake the assessment as given by regulation 18.3.2.2 of MARPOL Annex VI have not been specifically certified in accordance with the regulation 13 limits at test bed for that specific fuel and Engine Group/Family, the following is interpreted as an acceptable route to demonstrate compliance with regulation 18.3.2.2:

.1 the ship's IAPP Certificate may continue to be issued where the overall NO_x emissions performance has been verified to not cause the specified engine to exceed the applicable NO_x emissions limit when burning said fuels using the onboard simplified measurement method in accordance with 6.3 of the NO_x Technical Code 2008, or the direct measurement and monitoring method in accordance with 6.4 of the NO_x Technical Code 2008, or by reference to relevant test-bed testing. For the purposes of this interpretation and demonstration of compliance with regulation 18.3.2.2 of MARPOL Annex VI, and as applicable to possible deviations when undertaking measurements on board, an allowance of 10% of the applicable limit may be accepted.

2 Boil-off gas consumed on board ships[2]

Regulation 2
Definitions

Regulation 2.1.14 reads as follows:

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

Regulation 27
Collection and reporting of ship fuel oil consumption data

Regulation 27.1 reads as follows:

"From calendar year 2019, each ship of 5,000 gross tonnage and above shall collect the data specified in appendix IX to this Annex, for that and each subsequent calendar year or portion thereof, as appropriate, according to the methodology included in the SEEMP."

Appendix IX
Information to be submitted to the IMO Ship Fuel Oil Consumption Database

Appendix IX reads as follows:

"Fuel oil consumption, by fuel oil type in metric tonnes and methods used for collecting fuel oil consumption data"

[2] The unified interpretation replaces the unified interpretation in section 15 of the annex to MEPC.1/Circ.795/Rev.6.

Interpretation:

2.1 Data relating to boil-off gas (BOG) consumed on board the ship for propulsion or operation (e.g. BOG used for propulsion, operational needs such as in a boiler, or burned in a gas combustion unit (GCU) for cargo tank pressure control or other operational purposes) is required to be collected and reported as fuel as part of the ship fuel oil consumption Data Collection System.

3 Requirements for reporting attained EEDI and relevant information[3]

Regulation 22
Attained Energy Efficiency Design Index (attained EEDI)

Regulation 22.3 reads as follows:

> "For each ship subject to regulation 24 of this Annex, the Administration or any organization duly authorized by it shall report to the Organization the required and attained EEDI values and relevant information, taking into account the guidelines developed by the Organization, via electronic communication:
>
> .1 within seven months of completing the survey required under regulation 5.4 of this Annex; or
>
> .2 within seven months following 1 April 2022 for a ship delivered prior to 1 April 2022."

Interpretation:

3.1 For new ships that have completed the initial survey required in regulation 5.4.1 of MARPOL Annex VI on or after 1 April 2022, the EEDI data and relevant information shall be submitted within seven months after the completion date of the initial survey (in accordance with regulation 22.3.1).

3.2 For new ships that have completed the initial survey required in regulation 5.4.1 of MARPOL Annex VI prior to 1 April 2022:

.1 if they have not undergone a major conversion specified in regulation 5.4.2 or 5.4.3, the EEDI data and relevant information shall be submitted within seven months after 1 April 2022 (in accordance with regulation 22.3.2);

.2 if they have undergone a major conversion specified in regulation 5.4.2 or 5.4.3 on or after 1 April 2022, the EEDI data and relevant information of the major conversion shall be submitted within seven months after the completion date of general or partial survey required in regulation 5.4.2 or the initial survey required in regulation 5.4.3 (in accordance with regulation 22.3.1); and

.3 if they have completed a major conversion specified in regulation 5.4.2 or 5.4.3 prior to 1 April 2022, the EEDI data and relevant information of the major conversion shall be submitted within seven months after 1 April 2022 (in accordance with regulation 22.3.2).

[3] The unified interpretation will be added in a new section 17 of the annex to MEPC.1/Circ.795/Rev.7.

3.3 For existing ships that have completed the initial survey required in regulation 5.4.3 of MARPOL Annex VI on or after 1 April 2022, the EEDI data and relevant information shall be submitted within seven months after the completion date of the initial survey (in accordance with regulation 22.3.1).

3.4 For existing ships that have completed the initial survey required in regulation 5.4.3 of MARPOL Annex VI prior to 1 April 2022, the EEDI data and relevant information shall be submitted within seven months after 1 April 2022 (in accordance with regulation 22.3.2).

3.5 For ships for which up-to-date EEDI data have already been reported to the Organization prior to 1 April 2022, the reporting of EEDI data and information shall not be required on or after 1 April 2022.

4 Inclusion of the annual operational CII and rating in the Statement of Compliance[4]

Regulation 8
Form of Certificates and Statements of Compliance related to fuel oil consumption reporting and operational carbon intensity rating

Regulation 8.3 reads as follows:

> "The Statement of Compliance pursuant to regulations 6.6 and 6.7 of this Annex shall be drawn up in a form corresponding to the model given in appendix X to this Annex and shall be at least in English, French or Spanish. If an official language of the issuing Party is also used, this shall prevail in case of a dispute or discrepancy."

Interpretation:

4.1 The Statement of Compliance form given in appendix X of MARPOL Annex VI has been updated to include the attained annual operational CII and the rating for ships to which regulation 28 applies. The new form should be used from the entry-into-force date (1 November 2022), however the new parts for the attained CII and rating will not be populated until 2024 when the relevant values are available.

5 Ship Energy Efficiency Management Plan (SEEMP) Part III[5]

Regulation 26
Ship Energy Efficiency Management Plan (SEEMP)

Regulation 26.3.1 reads as follows:

> "In the case of a ship of 5,000 gross tonnage and above, which falls into one or more of the categories in regulations 2.2.5, 2.2.7, 2.2.9, 2.2.11, 2.2.14 to 2.2.16, 2.2.22, and 2.2.26 to 2.2.29 of this Annex:

[4] The unified interpretation will be added in a new section 18 of the annex to MEPC.1/Circ.795/Rev.7.

[5] The unified interpretation will be added in a new section 19 of the annex to MEPC.1/Circ.795/Rev.7.

.1 On or before 1 January 2023 the SEEMP shall include:

.1 a description of the methodology that will be used to calculate the ship's attained annual operational CII required by regulation 28 of this Annex and the processes that will be used to report this value to the ship's Administration;

.2 the required annual operational CII, as specified in regulation 28 of this Annex, for the next three years;

.3 an implementation plan documenting how the required annual operational CII will be achieved during the next three years; and

.4 a procedure for self-evaluation and improvement."

Interpretation:

5.1 A ship delivered after 1 January 2023 should comply with regulation 26.3.1 of MARPOL Annex VI at delivery. If delivered on 1 October or later, the following year will then be the first year of the three-year implementation plan and an inferior rating given, in accordance with regulation 28.6 of MARPOL Annex VI, for the remainder of the calendar year of delivery needs not to be counted in for the determination of whether the ship should develop a Corrective Action Plan required by regulation 26.3.2 of MARPOL Annex VI. Nothing in this interpretation relieves any ship of its reporting obligations under regulations 27 and 28 of MARPOL Annex VI.

5.2 A ship changing company, or changing from one Administration to another and from one company to another concurrently, after 1 January 2023 should comply with regulation 26.3.1 at change of company and a new SEEMP III will be required. The year of change should be the first year of the next three-year implementation plan.

5.3 In order to document how the required annual operational CII will be achieved during the next three years, the SEEMP Part III should be a rolling three-year plan, YYYY (first year of implementation plan), YYYY+1 and YYYY+2.

5.4 In the case of updating the SEEMP Part III on the elements in regulation 26.3.1 of MARPOL Annex VI, the original three-year plan may remain.

6 Plan of corrective actions to achieve the required annual operational CII[6]

Regulation 28
Operational carbon intensity

Regulation 28.7 reads as follows:

"A ship rated as D for three consecutive years or rated as E shall develop a plan of corrective actions to achieve the required annual operational CII."

Regulation 28.9 reads as follows:

"A ship rated as D for three consecutive years or rated as E shall duly undertake the planned corrective actions in accordance with the revised SEEMP."

[6] The unified interpretation will be added in a new section 17 of the annex to MEPC.1/Circ.795/Rev.7.

Interpretation:

6.1 In case an inferior rating is given for data collected in calendar year YYYY, the revised SEEMP, including the plan of corrective actions, should be verified in year YYYY+1, and it should be developed to achieve the required annual operational CII for data collected in the calendar year YYYY+2.

***

ANNEX 9

RESOLUTION MEPC.364(79)

2022 GUIDELINES ON THE METHOD OF CALCULATION OF THE ATTAINED ENERGY EFFICIENCY DESIGN INDEX (EEDI) FOR NEW SHIPS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

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

NOTING that regulation 22 (Attained Energy Efficiency Design Index (attained EEDI)) of MARPOL Annex VI, as amended, requires that the EEDI shall be calculated taking into account the guidelines developed by the Organization,

NOTING ALSO that the Committee adopted, at its seventy-third session, *2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships* (resolution MEPC.308(73)),

NOTING FURTHER that, at its seventy-fourth and seventy-sixth sessions, it adopted, by resolutions MEPC.322(74) and MEPC.332(76), respectively, amendments to the *2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships*,

HAVING NOTED, at its seventy-ninth session, the need to further amend the *2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships* (resolution MEPC.308(73), as amended),

1 ADOPTS the *2022 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships,* as set out in the annex to the present resolution;

2 INVITES Administrations to implement the 2022 EEDI Calculation Guidelines when developing and enacting national laws which give force to, and implement provisions set forth in regulation 22 of MARPOL Annex VI, as amended;

3 REQUESTS the Parties to MARPOL Annex VI and other Member Governments to bring the amendments to the attention of shipowners, ship operators, shipbuilders, ship designers and any other interested parties;

4 AGREES to keep these Guidelines, as amended, under review, in light of experience gained with their implementation;

5 AGREES that these Guidelines supersede the *2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships* (resolution MEPC.308(73), as amended by resolutions MEPC.322(74) and MEPC.332(76)).

ANNEX

2022 GUIDELINES ON THE METHOD OF CALCULATION OF THE ATTAINED ENERGY EFFICIENCY DESIGN INDEX (EEDI) FOR NEW SHIPS

CONTENTS

2.2.10 f_{eff} ; Factor of each innovative energy efficiency technology

2.2.11 f_i ; Capacity factor for technical/regulatory limitation on capacity

2.2.11.1 f_i ; Capacity correction factor for ice-class ships

2.2.11.2 $f_{i\,VSE}$; Ship-specific voluntary structural enhancement

2.2.11.3 f_{iCSR} ; Ships under Common Structural Rules (CSR)

2.2.11.4 f_i for other ship types

2.2.12 f_c ; Cubic capacity correction factor

2.2.12.1 f_c for chemical tankers

2.2.12.2 f_c for gas carriers

2.2.12.3 f_c for ro-ro passenger ships (f_{cRoPax})

2.2.12.4 f_c for bulk carriers having R of less than 0.55 ($f_{c\ bulk\ carriers\ designed\ to\ carry\ light\ cargoes}$)

2.2.13 Lpp ; Length between perpendiculars

2.2.14 f_l ; Factor for general cargo ships equipped with cranes and other cargo-related gear

2.2.15 d_s ; Summer load line draught

2.2.16 B_s ; Breadth

2.2.17 ∇ ; Volumetric displacement

2.2.18 g ; Gravitational acceleration

2.2.19 f_m ; Factor for ice-classed ships having IA Super and IA

APPENDIX 1 A generic and simplified power plant

APPENDIX 2 Guidelines for the development of electric power tables for EEDI (EPT-EEDI)

APPENDIX 3 A generic and simplified marine power plant for a cruise passenger ship having non-conventional propulsion

APPENDIX 4 EEDI calculation examples for use of dual-fuel engines

1 Definitions

1.1 MARPOL means the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocols of 1978 and 1997 relating thereto, as amended.

1.2 For the purpose of these Guidelines, the definitions in chapter 4 of MARPOL Annex VI, as amended, apply.

2 Energy Efficiency Design Index (EEDI)

2.1 EEDI formula

The attained new ship Energy Efficiency Design Index (EEDI) is a measure of ships' energy efficiency (g/t · nm) and calculated by the following formula:

$$\frac{\left(\prod_{j=1}^{n} f_j\right)\left(\sum_{i=1}^{nME} P_{ME(i)} \cdot C_{FME(i)} \cdot SFC_{ME(i)}\right) + \left(P_{AE} \cdot C_{FAE} \cdot SFC_{AE}*\right) + \left(\left(\prod_{j=1}^{n} f_j \cdot \sum_{i=1}^{nPTI} P_{PTI(i)} - \sum_{i=1}^{neff} f_{eff(i)} \cdot P_{AEeff(i)}\right) C_{FAE} \cdot SFC_{AE}\right) - \left(\sum_{i=1}^{neff} f_{eff(i)} \cdot P_{eff(i)} \cdot C_{FME} \cdot SFC_{ME}**\right)}{f_i \cdot f_c \cdot f_l \cdot Capacity \cdot f_w \cdot V_{ref} \cdot f_m}$$

* If part of the Normal Maximum Sea Load is provided by shaft generators, SFC_{ME} and C_{FME} may – for that part of the power – be used instead of SFC_{AE} and C_{FAE}

** In case of $P_{PTI(i)} > 0$, the average weighted value of (SFC_{ME} · C_{FME}) and (SFC_{AE} · C_{FAE}) to be used for calculation of P_{eff}

Note: This formula may not be applicable to a ship having diesel electric propulsion, turbine propulsion or hybrid propulsion system, except for cruise passenger ships and LNG carriers.

2.2 Parameters

For the calculation of EEDI by the formula in paragraph 2.1, the following parameters apply.

2.2.1 C_F ; Conversion factor between fuel consumption and CO_2 emission

C_F is a non-dimensional conversion factor between fuel consumption measured in g and CO_2 emission also measured in g based on carbon content. The subscripts $_{ME(i)}$ and $_{AE(i)}$ refer to the main and auxiliary engine(s) respectively. C_F corresponds to the fuel used when determining *SFC* listed in the applicable test report included in a Technical File as defined in paragraph 1.3.15 of the NO_x Technical Code ("test report included in a NO_x Technical File" hereafter). The value of C_F is as follows:

Type of fuel	Reference	Lower calorific value (kJ/kg)	Carbon content	C_F (t-CO_2/t-Fuel)
1 Diesel/Gas Oil	ISO 8217 Grades DMX through DMB	42,700	0.8744	3.206
2 Light Fuel Oil (LFO)	ISO 8217 Grades RMA through RMD	41,200	0.8594	3.151
3 Heavy Fuel Oil (HFO)	ISO 8217 Grades RME through RMK	40,200	0.8493	3.114
4 Liquefied Petroleum Gas (LPG)	Propane	46,300	0.8182	3.000
	Butane	45,700	0.8264	3.030
5 Ethane		46,400	0.7989	2.927

Type of fuel	Reference	Lower calorific value (kJ/kg)	Carbon content	C_F (t-CO_2/t-Fuel)
6 Liquefied Natural Gas (LNG)		48,000	0.7500	2.750
7 Methanol		19,900	0.3750	1.375
8 Ethanol		26,800	0.5217	1.913

In the case of a ship equipped with a dual-fuel main or auxiliary engine, the C_F factor for gas fuel and the C_F factor for fuel oil should apply and be multiplied with the specific fuel oil consumption of each fuel at the relevant EEDI load point. Meanwhile, it should be identified whether gas fuel is regarded as the "primary fuel" in accordance with the formula below:

$$f_{DFgas} = \frac{\sum_{i=1}^{ntotal} P_{total(i)}}{\sum_{i=1}^{ngasfuel} P_{gasfuel(i)}} \times \frac{V_{gas} \times \rho_{gas} \times LCV_{gas} \times K_{gas}}{\left(\sum_{i=1}^{nLiquid} V_{liquid(i)} \times \rho_{liquid(i)} \times LCV_{liquid(i)} \times K_{liquid(i)} \right) + V_{gas} \times \rho_{gas} \times LCV_{gas} \times K_{gas}}$$

$f_{DFliquid} = 1 - f_{DFgas}$

where,

f_{DFgas} is the fuel availability ratio of gas fuel corrected for the power ratio of gas engines to total engines; f_{DFgas} should not be greater than 1;

V_{gas} is the total net gas fuel capacity on board in m^3. If other arrangements, like exchangeable (specialized) LNG tank-containers and/or arrangements allowing frequent gas refuelling are used, the capacity of the whole LNG fuelling system should be used for V_{gas}. The boil-off rate (BOR) of gas cargo tanks can be calculated and included in V_{gas} if it is connected to the fuel gas supply system (FGSS);

V_{liquid} is the total net liquid fuel capacity on board in m^3 of liquid fuel tanks permanently connected to the ship's fuel system. If one fuel tank is disconnected by permanent sealing valves, V_{liquid} of the fuel tank can be ignored;

ρ_{gas} is the density of gas fuel in kg/m^3;

ρ_{liquid} is the density of each liquid fuel in kg/m^3;

LCV_{gas} is the low calorific value of gas fuel in kJ/kg;

LCV_{liquid} is the low calorific value of liquid fuel in kJ/kg;

K_{gas} is the filling rate for gas fuel tanks;

K_{liquid} is the filling rate for liquid fuel tanks;

P_{total} is the total installed engine power, P_{ME} *and* P_{AE} in kW;

$P_{gasfuel}$ is the dual-fuel engine installed power, P_{ME} *and* P_{AE} in kW;

.1 If the total gas fuel capacity is at least 50% of the fuel capacity dedicated to the dual-fuel engines , namely $f_{DFgas} \geq 0.5$, then gas fuel is regarded as the "Primary fuel," and $f_{DFgas} = 1$ and $f_{DFliquid} = 0$ for each dual-fuel engine.

.2 If $f_{DFgas} < 0.5$, gas fuel is not regarded as the "primary fuel." The C_F and *SFC* in the EEDI calculation for each dual-fuel engine (both main and auxiliary engines) should be calculated as the weighted average of C_F and *SFC* for liquid and gas mode, according to f_{DFgas} and $f_{DFliquid}$, such as the original item of $P_{ME(i)} \cdot C_{FME(i)} \cdot SFC_{ME(i)}$ in the EEDI calculation is to be replaced by the formula below.

$$P_{ME(i)} \cdot (f_{DFgas(i)} \cdot (C_{FME\ pilot\ fuel(i)} \cdot SFC_{ME\ pilot\ fuel(i)} + C_{FME\ gas(i)} \cdot SFC_{ME\ gas(i)}) + f_{DFliquid(i)} \cdot C_{FME\ liquid(i)} \cdot SFC_{ME\ liquid(i)})$$

2.2.2 V_{ref} ; Ship speed

V_{ref} is the ship speed, measured in nautical miles per hour (knot), on deep water in the condition corresponding to the *capacity* as defined in paragraphs 2.2.3.1 and 2.2.3.3 (in the case of passenger ships and cruise passenger ships, this condition should be summer load draught as provided in paragraph 2.2.4) at the shaft power of the engine(s) as defined in paragraph 2.2.5 and assuming the weather is calm with no wind and no waves.

2.2.3 *Capacity*

Capacity is defined as follows.

2.2.3.1 For bulk carriers, tankers, gas carriers, LNG carriers, ro-ro cargo ships (vehicle carriers), ro-ro cargo ships, ro-ro passenger ships, general cargo ships, refrigerated cargo carrier and combination carriers, deadweight should be used as *capacity*.

2.2.3.2 For passenger ships and cruise passenger ships, gross tonnage in accordance with the International Convention of Tonnage Measurement of Ships 1969, annex I, regulation 3, should be used as *capacity*.

2.2.3.3 For containerships, 70% of the deadweight (DWT) should be used as *capacity*. EEDI values for containerships are calculated as follows:

.1 attained EEDI is calculated in accordance with the EEDI formula using 70% deadweight for *capacity*;

.2 estimated index value in the Guidelines for calculation of the reference line is calculated using 70% deadweight as:

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

.3 parameters a and c for containerships in table 2 of regulation 24 of MARPOL Annex VI are determined by plotting the estimated index value against 100% deadweight, i.e. a = 174.22 and c = 0.201 were determined;

.4 required EEDI for a new containership is calculated using 100% deadweight as:

$$\text{Required EEDI} = (1\text{-}X/100) \cdot a \cdot 100\%\ \text{deadweight}^{-c}$$

where X is the reduction factor (in percentage) in accordance with table 1 in regulation 24 of MARPOL Annex VI relating to the applicable phase and size of new containership.

2.2.4 *Deadweight*

Deadweight means the difference in tonnes between the displacement of a ship in water of relative density of 1,025 kg/m^3 at the summer load draught and the lightweight of the ship. The summer load draught should be taken as the maximum summer draught as certified in the stability booklet approved by the Administration or an organization recognized by it.

2.2.5 *P ;* Power of main and auxiliary engines

P is the power of the main and auxiliary engines, measured in kW. The subscripts $_{ME(i)}$ and $_{AE(i)}$ refer to the main and auxiliary engine(s), respectively. The summation on *i* is for all engines with the number of engines ($_{nME}$) (see diagram in appendix 1).

2.2.5.1 $P_{ME(i)}$; Power of main engines

$P_{ME(i)}$ is 75% of the rated installed power (MCR[1]) for each main engine (*i*).

For LNG carriers having diesel electric propulsion system, $P_{ME(i)}$ should be calculated by the following formula:

$$P_{ME(i)} = 0.83 \times \frac{MPP_{Motor(i)}}{\eta_{(i)}}$$

Where:

$MPP_{Motor(i)}$ is the rated output of motor specified in the certified document.

$\eta_{(i)}$ is to be taken as the product of electrical efficiency of generator, transformer, converter and motor, taking into consideration the weighted average as necessary.

The electrical efficiency, $\eta_{(i)}$, should be taken as 91.3% for the purpose of calculating attained EEDI. Alternatively, if the value more than 91.3% is to be applied, the $\eta_{(i)}$ should be obtained by measurement and verified by method approved by the verifier.

For LNG carriers having steam turbine propulsion systems, $P_{ME(i)}$ is 83% of the rated installed power ($MCR_{SteamTurbine}$) for each steam turbine$_{(i)}$.

The influence of additional shaft power take off or shaft power take in is defined in the following paragraphs.

2.2.5.2 $P_{PTO(i)}$; Shaft generator

Where shaft generators are installed, $P_{PTO(i)}$ is 75% of the rated electrical output power of each shaft generator. In the case of shaft generators installed with a steam turbine, $P_{PTO(i)}$ is 83% of the rated electrical output power and the factor of 0.75 should be replaced by 0.83.

For calculating the effect of shaft generators, two options are available:

[1] The value of MCR specified on the EIAPP certificate should be used for calculation. If the main engines are not required to have an EIAPP certificate, the MCR on the nameplate should be used.

Option 1:

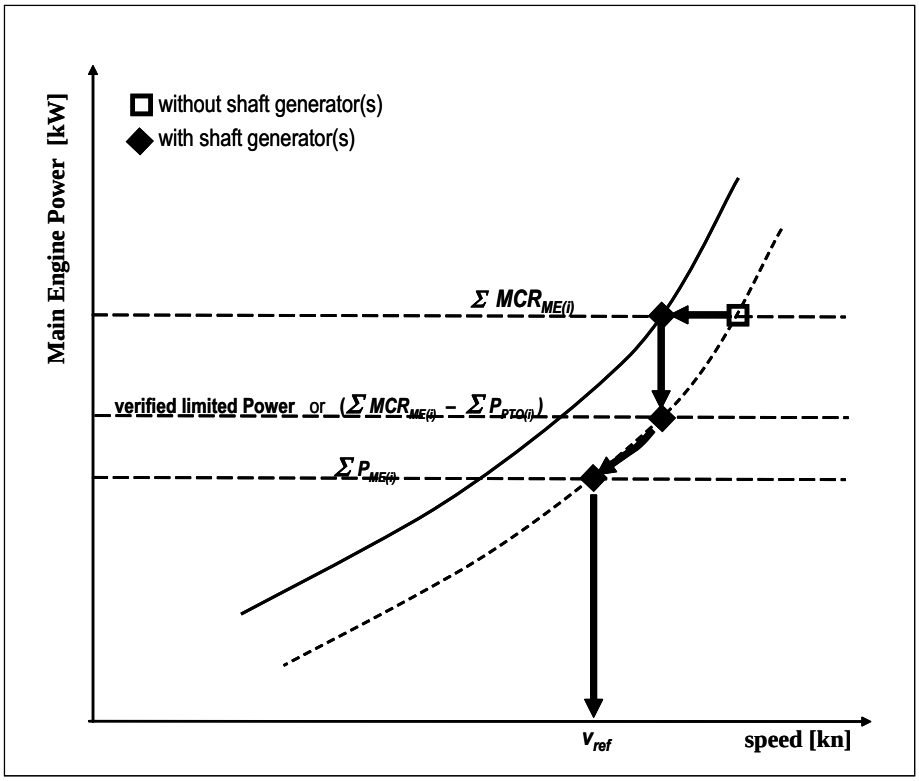
The maximum allowable $P_{PTO(i)}$ deduction should be no more than P_{AE}/0.75 with P_{AE} as defined in paragraph 2.2.5.6. For this case, $\Sigma P_{ME(i)}$ is calculated as:

$$\sum_{i=1}^{nME} P_{ME(i)} = 0.75 \times \sum MCR_{ME(i)} - 0.75 \times \sum P_{PTO(i)} \quad with \quad \sum P_{PTO(i)} \leq \frac{P_{AE}}{0.75}$$

or

Option 2:

Where an engine is installed with a higher rated power output than that which the propulsion system is limited to by verified technical means, then the value of $\Sigma P_{ME(i)}$ is 75% of that limited power for determining the reference speed, V_{ref} and for EEDI calculation. The following figure gives guidance for determination of $\Sigma P_{ME(i)}$:



2.2.5.3 $P_{PTI(i)}$; Shaft motor

Where shaft motors are installed, $P_{PTI(i)}$ is 75% of the rated power consumption of each shaft motor divided by the weighted average efficiency of the generator(s), as follows:

$$\sum P_{PTI(i)} = \frac{\sum \left(0.75 \cdot P_{SM,\max(i)}\right)}{\eta_{\overline{Gen}}}$$

Where:

$P_{SM,\max(i)}$ is the rated power consumption of each shaft motor

$\eta_{\overline{Gen}}$ is the weighted average efficiency of the generator(s)

Where shaft motors are installed with a steam turbine, $P_{PTI(i)}$ is 83% of the rated power consumption and the factor of 0.75 should be replaced to 0.83.

The propulsion power at which V_{ref} is measured, is:

$$\sum P_{ME(i)} + \sum P_{PTI(i),Shaft}$$

Where:

$$\sum P_{PTI(i),Shaft} = \sum \left(0.75 \cdot P_{SM,\max(i)} \cdot \eta_{PTI(i)}\right)$$

$\eta_{PTI(i)}$ is the efficiency of each shaft motor installed

Where the total propulsion power as defined above is higher than 75% of the power the propulsion system is limited to by verified technical means, then 75% of the limited power is to be used as the total propulsion power for determining the reference speed, V_{ref} and for EEDI calculation.

In the case of combined PTI/PTO, the normal operational mode at sea will determine which of these is to be used in the calculation.

Note: The shaft motor's chain efficiency may be taken into consideration to account for the energy losses in the equipment from the switchboard to the shaft motor, if the chain efficiency of the shaft motor is given in a verified document.

2.2.5.4 $P_{eff(i)}$; Innovative mechanical energy-efficient technology for main engine

$P_{eff(i)}$ is the output of the innovative mechanical energy-efficient technology for propulsion at 75% main engine power.

Mechanical recovered waste energy directly coupled to shafts need not be measured, since the effect of the technology is directly reflected in the V_{ref}.

In the case of a ship equipped with a number of engines, the C_F and *SFC* should be the power-weighted average of all the main engines.

In the case of a ship equipped with dual-fuel engine(s), the C_F and *SFC* should be calculated in accordance with paragraphs 2.2.1 and 2.2.7.

2.2.5.5 P_{AEeff} ; Innovative mechanical energy-efficient technology for auxiliary engine

$P_{AEeff\ (i)}$ is the auxiliary power reduction due to innovative electrical energy-efficient technology measured at $P_{ME(i)}$.

2.2.5.6 P_{AE} ; Auxiliary engine power

P_{AE} is the required auxiliary engine power to supply normal maximum sea load including necessary power for propulsion machinery/systems and accommodation, e.g. main engine pumps, navigational systems and equipment and living on board, but excluding the power not for propulsion machinery/systems, e.g. thrusters, cargo pumps, cargo gear, ballast pumps, maintaining cargo, e.g. reefers and cargo hold fans, in the condition where the ship engaged in voyage at the speed (V_{ref}) under the condition as mentioned in paragraph 2.2.2.

2.2.5.6.1 For ships whose total propulsion power ($\sum MCR_{ME(i)} + \frac{\sum P_{PTI(i)}}{0.75}$) is 10,000 kW or above, P_{AE} is defined as:

$$P_{AE\ (\Sigma MCR_{ME(i)} \geq 10,000\,kW)} = \left(0.025 \times \left(\sum_{i=1}^{nME} MCR_{ME(i)} + \frac{\sum_{i=1}^{nPTI} P_{PTI(i)}}{0.75} \right) \right) + 250$$

2.2.5.6.2 For ships whose total propulsion power ($\sum MCR_{ME(i)} + \frac{\sum P_{PTI(i)}}{0.75}$) is below 10,000 kW, P_{AE} is defined as:

$$P_{AE\ (\Sigma MCR_{ME(i)} < 10,000\,kW)} = \left(0.05 \times \left(\sum_{i=1}^{nME} MCR_{ME(i)} + \frac{\sum_{i=1}^{nPTI} P_{PTI(i)}}{0.75} \right) \right)$$

2.2.5.6.3 For LNG carriers with a reliquefaction system or compressor(s), designed to be used in normal operation and essential for maintaining the LNG cargo tank pressure below the maximum allowable relief valve setting of a cargo tank in normal operation, the following terms should be added to above P_{AE} formula in accordance with 2.2.5.6.3.1, 2.2.5.6.3.2 or 2.2.5.6.3.3 as below:

.1 For ships having reliquefaction system:

$$+ CargoTankCapacity_{LNG} \times BOR \times COP_{reliquefy} \times R_{reliquefy}$$

Where:

CargoTankCapacity$_{LNG}$ is the LNG Cargo Tank Capacity in m^3.

BOR is the design rate of boil-off gas of entire ship per day, which is specified in the specification of the building contract.

COP$_{reliquefy}$ is the coefficient of design power performance for reliquefying boil-off gas per unit volume, as follows:

$$COP_{reliquefy} = \frac{425\,(kg/m^3) \times 511\,(kJ/kg)}{24\,(h) \times 3600\,(\mathrm{sec}) \times COP_{cooling}}$$

COP$_{cooling}$ is the coefficient of design performance of reliquefaction and 0.166 should be used. Another value calculated by the manufacturer and verified by the Administration or an organization recognized by the Administration may be used.

$R_{reliquefy}$ is the ratio of boil-off gas (BOG) to be reliquefied to entire BOG, calculated as follows:

$$R_{reliquefy} = \frac{BOG_{reliquefy}}{BOG_{total}}$$

.2 For LNG carriers with direct diesel driven propulsion system or diesel electric propulsion system, having compressor(s) which are used for supplying high-pressured gas derived from boil-off gas to the installed engines (typically intended for 2-stroke dual-fuel engines):

$$+ COP_{comp} \times \sum_{i=1}^{nME} SFC_{ME(i),gasmode} \times \frac{P_{ME(i)}}{1000}$$

Where:

COP_{comp} is the design power performance of compressor and 0.33 (kWh/kg) should be used. Another value calculated by the manufacturer and verified by the Administration or an organization recognized by the Administration may be used.

.3 For LNG carriers with direct diesel driven propulsion system or diesel electric propulsion system, having compressor(s) which are used for supplying low-pressured gas derived from boil-off gas to the installed engines (typically intended for 4-stroke dual-fuel engines):

$$+ 0.02 \times \sum_{i=1}^{nME} P_{ME(i)}$$ [2]

2.2.5.6.4 For LNG carriers having diesel electric propulsion system, $MPP_{Motor(i)}$ should be used instead of $MCR_{ME(i)}$ for P_{AE} calculation.

2.2.5.6.5 For LNG carriers having a steam turbine propulsion system and whose electric power is primarily supplied by turbine generator closely integrated into the steam and feed water systems, P_{AE} may be treated as 0(zero) instead of taking into account electric load in calculating $SFC_{SteamTurbine}$.

2.2.5.7 Use of electric power table

For ships where the P_{AE} value calculated by paragraphs 2.2.5.6.1 to 2.2.5.6.3 is significantly different from the total power used at normal seagoing, e.g. in cases of passenger ships (see NOTE under the formula of EEDI), the P_{AE} value should be estimated by the consumed electric power (excluding propulsion) in conditions when the ship is engaged in a voyage at reference speed (V_{ref}) as given in the electric power table,[3] divided by the average efficiency of the generator(s) weighted by power (see appendix 2).

[2] With regard to the factor of 0.02, it is assumed that the additional energy needed to compress BOG for supplying to a 4-stroke dual fuel engine is approximately equal to 2% of P_{ME}, compared to the energy needed to compress BOG for supplying to a steam turbine.

[3] The electric power table should be examined and validated by the verifier. Where ambient conditions affect any electrical load in the power table, such as that for heating ventilation and air conditioning systems, the contractual ambient conditions leading to the maximum design electrical load of the installed system for the ship in general should apply.

2.2.6 Consistency of parameters V_{ref}, *Capacity* and *P*

V_{ref}, *Capacity* and *P* should be consistent with each other. As for LNG carries having diesel electric or steam turbine propulsion systems, V_{ref} is the relevant speed at 83% of MPP_{Motor} or $MCR_{SteamTubine}$ respectively.

2.2.7 *SFC;* Certified specific fuel consumption

SFC is the certified specific fuel consumption, measured in g/kWh, of the engines or steam turbines.

2.2.7.1 *SFC* for main and auxiliary engines

The subscripts $_{ME(i)}$ and $_{AE(i)}$ refer to the main and auxiliary engine(s), respectively. For engines certified to the E2 or E3 test cycles of the NO_X Technical Code 2008, the engine specific fuel consumption ($SFC_{ME(i)}$) is that recorded in the test report included in a NO_x Technical File for the engine(s) at 75% of MCR power of its torque rating. For engines certified to the D2 or C1 test cycles of the NO_x Technical Code 2008, the engine specific fuel consumption ($SFC_{AE(i)}$) is that recorded on the test report included in a NO_x Technical File at the engine(s) 50% of MCR power or torque rating. If gas fuel is used as primary fuel in accordance with paragraph 4.2.3 of the *Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)*, *SFC* in gas mode should be used. Where installed engines have no approved NO_X Technical File tested in gas mode, the *SFC* of gas mode should be submitted by the manufacturer and confirmed by the verifier.

The *SFC* should be corrected to the value corresponding to the ISO standard reference conditions using the standard lower calorific value of the fuel oil (42,700kJ/kg), referring to ISO 15550:2002 and ISO 3046-1:2002.

For ships where the P_{AE} value calculated by paragraphs 2.2.5.6.1 to 2.2.5.6.3 is significantly different from the total power used at normal seagoing, e.g. conventional passenger ships, the specific fuel consumption (SFC_{AE}) of the auxiliary generators is that recorded in the test report included in a NO_x Technical File for the engine(s) at 75% of MCR power of its torque rating.

SFC_{AE} is the power-weighted average among $SFC_{AE(i)}$ of the respective engines *i*.

For those engines which do not have a test report included in a NO_x Technical File because their power is below 130 kW, the *SFC* specified by the manufacturer and endorsed by a competent authority should be used.

At the design stage, in case of unavailability of test report in the NO_X file, the *SFC* specified by the manufacturer and endorsed by a competent authority should be used.

For LNG driven engines of which *SFC* is measured in kJ/kWh, the *SFC* value should be corrected to g/kWh using the standard lower calorific value of the LNG (48,000 kJ/kg), referring to the 2006 IPCC Guidelines.

Reference lower calorific values of additional fuels are given in the table in paragraph 2.2.1 of these Guidelines. The reference lower calorific value corresponding to the conversion factor of the respective fuel should be used for calculation.

2.2.7.2 *SFC* for steam turbines (*SFC*$_{SteamTurbine}$)

The *SFC*$_{SteamTurbine}$ should be calculated by the manufacturer and verified by the Administration or an organization recognized by the Administration as follows:

$$SFC_{SteamTurbine} = \frac{FuelConsumption}{\sum_{i=1}^{nME} P_{ME(i)}}$$

Where:

.1 *Fuel consumption* is fuel consumption of boiler per hour (g/h). For ships whose electric power is primarily supplied by turbine generator closely integrated into the steam and feed water systems, not only P_{ME} but also *electric loads* corresponding to paragraph 2.2.5.6 should be taken into account.

.2 The *SFC* should be corrected to the value of LNG using the standard lower calorific value of the LNG (48,000 kJ/kg) at SNAME Condition (condition standard; air temperature 24°C, inlet temperature of fan 38°C, seawater temperature 24°C).

.3 In this correction, the difference of the boiler efficiency based on lower calorific value between test fuel and LNG should be taken into account.

2.2.8 f_j ; Ship-specific design elements

f_j is a correction factor to account for ship-specific design elements:

2.2.8.1 Power correction factor for ice-classed ships

The power correction factor, f_j, for ice-classed ships should be taken as the greater value of f_{j0} and $f_{j,min}$ as tabulated in table 1 but not greater than $f_{j,max}$ = 1.0.

For further information on approximate correspondence between ice classes, see HELCOM Recommendation 25/7.[4]

Table 1: Correction factor for power f_j for ice-classed ships

Ship type	f_{j0}	$f_{j,min}$ depending on the ice class			
		IA Super	IA	IB	IC
Tanker	$\frac{17.444 \cdot DWT^{0.5766}}{\sum_{i=1}^{nME} MCR_{ME(i)}}$	$0.2488 \cdot DWT^{0.0903}$	$0.4541 \cdot DWT^{0.0524}$	$0.7783 \cdot DWT^{0.0145}$	$0.8741 \cdot DWT^{0.0079}$
Bulk carrier	$\frac{17.207 \cdot DWT^{0.5705}}{\sum_{i=1}^{nME} MCR_{ME(i)}}$	$0.2515 \cdot DWT^{0.0851}$	$0.3918 \cdot DWT^{0.0556}$	$0.8075 \cdot DWT^{0.0071}$	$0.8573 \cdot DWT^{0.0087}$
General cargo ship	$\frac{1.974 \cdot DWT^{0.7987}}{\sum_{i=1}^{nME} MCR_{ME(i)}}$	$0.1381 \cdot DWT^{0.1435}$	$0.1574 \cdot DWT^{0.144}$	$0.3256 \cdot DWT^{0.0922}$	$0.4966 \cdot DWT^{0.0583}$
Refrigerated cargo ship	$\frac{5.598 \cdot DWT^{0.696}}{\sum_{i=1}^{nME} MCR_{ME(i)}}$	$0.5254 \cdot DWT^{0.0357}$	$0.6325 \cdot DWT^{0.0278}$	$0.7670 \cdot DWT^{0.0159}$	$0.8918 \cdot DWT^{0.0079}$

[4] HELCOM Recommendation 25/7 may be found at http://www.helcom.fi

Alternatively, if an ice-class ship is designed and constructed based on an open water ship with the same shape and size of hull with EEDI certification, the power correction factor, f_j, for ice-classed ships can be calculated by using propulsion power of the new ice-class ship required by ice-class regulations, $P_{ice\ class}$, and the existing open water ship, P_{ow}, as follows:

$$f_j = \frac{P_{ow}}{P_{ice\ class}}$$

In this case, V_{ref} should be measured at the shaft power of the engine(s) installed on the existing open water ship as defined in paragraph 2.2.5.

2.2.8.2 Power correction factor for shuttle tankers with propulsion redundancy

The power correction factor f_j, for shuttle tankers with propulsion redundancy should be $f_j = 0.77$. This correction factors applies to shuttle tankers with propulsion redundancy between 80,000 and 160,000 dwt. Shuttle tankers with propulsion redundancy are tankers used for loading crude oil from offshore installations equipped with dual-engine and twin-propellers need to meet the requirements for dynamic positioning and redundancy propulsion class notation.

2.2.8.3 Correction factor for ro-ro cargo and ro-ro passenger ships (f_{jRoRo})

For ro-ro cargo and ro-ro passenger ships f_{jRoRo} is calculated as follows:

$$f_{jRoRo} = \frac{1}{F_{n_L}^{\alpha} \cdot \left(\frac{L_{pp}}{B_s}\right)^{\beta} \cdot \left(\frac{B_s}{d_s}\right)^{\gamma} \cdot \left(\frac{L_{pp}}{\nabla^{1/3}}\right)^{\delta}} \quad ; \quad \text{If } f_{jRoRo} > 1 \text{ then } f_j = 1$$

where the Froude number, F_{n_L}, is defined as:

$$F_{n_L} = \frac{0.5144 \cdot V_{ref}}{\sqrt{L_{pp} \cdot g}}$$

and the exponents α, β, γ and δ are defined as follows:

Ship type	Exponent:			
	α	β	γ	δ
Ro-ro cargo ship	2.00	0.50	0.75	1.00
Ro-ro passenger ship	2.50	0.75	0.75	1.00

2.2.8.4 Correction factor for general cargo ships

The factor f_j for general cargo ships is calculated as follows:

$$f_j = \frac{0.174}{Fn_{\nabla}{}^{2.3} \cdot C_b{}^{0.3}} \quad ; \quad \text{If } f_j > 1 \text{ then } f_j = 1$$

Where

$$Fn_{\nabla} = \frac{0.5144 \cdot V_{ref}}{\sqrt{g \cdot \nabla^{\frac{1}{3}}}} \quad ; \quad \text{If } Fn_{\nabla} > 0.6 \text{ then } Fn_{\nabla} = 0.6$$

and

$$C_b = \frac{\nabla}{L_{pp} \cdot B_s \cdot d_s}$$

2.2.8.5 Correction factor for other ship types

For other ship types, f_j should be taken as 1.0.

2.2.9 f_w ; Factor for speed reduction at sea

f_w is a non-dimensional coefficient indicating the decrease of speed in representative sea conditions of wave height, wave frequency and wind speed (e.g. Beaufort Scale 6), and is determined as follows:

2.2.9.1 for the attained EEDI calculated under regulations 22 and 24 of MARPOL Annex VI, f_w is 1.00;

2.2.9.2 when f_w is calculated according to the sub-paragraph 2.2.9.2.1 or 2.2.9.2.2 below, the value for attained EEDI calculated by the formula in paragraph 2.1 using the obtained f_w should be referred to as "*attained EEDI*$_{weather}$";

2.2.9.2.1 f_w can be determined by conducting the ship-specific simulation on its performance at representative sea conditions. The simulation methodology should be based on the Guidelines developed by the Organization[5] and the method and outcome for an individual ship should be verified by the Administration or an organization recognized by the Administration; and

2.2.9.2.2 In cases where a simulation is not conducted, f_w should be taken from the "Standard f_w " table/curve. A "Standard f_w " table/curve is provided in the Guidelines[5] for each ship type defined in regulation 2 of MARPOL Annex VI, and expressed as a function of capacity (e.g. deadweight). The "Standard f_w " table/curve is based on data of actual speed reduction of as many existing ships as possible under the representative sea condition.

2.2.9.3 f_w and *attained EEDI*$_{weather}$, if calculated, with the representative sea conditions under which those values are determined, should be indicated in the EEDI Technical File to distinguish it from the attained EEDI calculated under regulations 22 and 24 of MARPOL Annex VI.

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[5] Refer to *Interim guidelines for the calculation of the coefficient f_w for decrease in ship speed in a representative sea condition for trial use*, approved by the Organization and circulated by MEPC.1/Circ.796.

2.2.10 $f_{eff(i)}$; Factor of each innovative energy efficiency technology

$f_{eff(i)}$ is the availability factor of each innovative energy efficiency technology. $f_{eff(i)}$ for waste energy recovery system should be one (1.0)[6].

2.2.11 f_i ; Capacity factor for technical/regulatory limitation on capacity

f_i is the capacity factor for any technical/regulatory limitation on capacity, and should be assumed to be one (1.0) if no necessity of the factor is granted.

2.2.11.1 Capacity correction factor for ice-classed ships

The capacity correction factor, f_i, for ice-classed ships having DWT as the measure of capacity should be calculated as follows:

$$f_i = f_{i(ice\ class)} \cdot f_{iC_b},$$

where $f_{i(ice\ class)}$ is the capacity correction factor for ice-strengthening of the ship, which can be obtained from Table 2 and f_{iC_b} is the capacity correction factor for improved ice-going capability, which should not be less than 1.0 and which should be calculated as follows:

$$f_{iC_b} = \frac{C_{b\ reference\ design}}{C_b},$$

where $C_{b\ reference\ design}$ is the average block coefficient for the ship type, which can be obtained from Table 3 for bulk carriers, tankers and general cargo ships, and C_b is the block coefficient of the ship. For ship types other than bulk carriers, tankers and general cargo ships,

$$f_{iC_b} = 1.0.$$

[6] EEDI calculation should be based on the normal seagoing condition outside Emission Control Areas designated under regulation 13.6 of MARPOL Annex VI.

Table 2: Capacity correction factor for ice-strengthening of the hull

Ice class[7]	$f_{i(ice\ class)}$
IC	$f_{i(IC)}$ = 1.0041 + 58.5/*DWT*
IB	$f_{i(IB)}$ = 1.0067 + 62.7/*DWT*
IA	$f_{i(IA)}$ = 1.0099 + 95.1/*DWT*
IA Super	$f_{i(IAS)}$ = 1.0151 + 228.7/*DWT*

Table 3: Average block coefficients $C_{b\ reference\ design}$ for bulk carriers, tankers and general cargo ships

	Size categories				
Ship type	below 10,000 DWT	10,000 – 25,000 DWT	25,000 – 55,000 DWT	55,000 – 75,000 DWT	above 75,000 DWT
Bulk carrier	0.78	0.80	0.82	0.86	0.86
Tanker	0.78	0.78	0.80	0.83	0.83
General cargo ship	0.80				

Alternatively, the capacity correction factor for ice-strengthening of the ship ($f_{i(ice\ class)}$) can be calculated by using the formula given for the ship-specific voluntary enhancement correction coefficient ($f_{i\ VSE}$) in paragraph 2.2.11.2. This formula can also be used for other ice classes than those given in Table 2.

2.2.11.2 $f_{i\ VSE}$[8] ; Ship-specific voluntary structural enhancement

$f_{i\ VSE}$ for ship-specific voluntary structural enhancement is expressed by the following formula:

$$f_{iVSE} = \frac{DWT_{referencedesign}}{DWT_{enhanceddesign}}$$

where:

$$DWT_{referencedesign} = \Delta_{ship} - lightweight_{referencedesign}$$

$$DWT_{enhanceddesign} = \Delta_{ship} - lightweight_{enhanceddesign}$$

For this calculation the same displacement (Δ) for reference and enhanced design should be taken.

DWT before enhancements ($DWT_{reference\ design}$) is the deadweight prior to application of the structural enhancements. DWT after enhancements ($DWT_{enhanced\ design}$) is the deadweight following the application of voluntary structural enhancement. A change of material (e.g. from

[7] For further information on approximate correspondence between ice classes, see HELCOM Recommendation 25/7, which can be found at http://www.helcom.fi

[8] Structural and/or additional class notations such as, but not limited to, "strengthened for discharge with grabs" and "strengthened bottom for loading/unloading aground", which result in a loss of deadweight of the ship, are also seen as examples of "voluntary structural enhancements".

aluminium alloy to steel) between reference design and enhanced design should not be allowed for the $f_{i\ VSE}$ calculation. A change in grade of the same material (e.g. in steel type, grades, properties and condition) should also not be allowed.

In each case, two sets of structural plans of the ship should be submitted to the verifier for assessment: one set for the ship without voluntary structural enhancement; the other set for the same ship with voluntary structural enhancement (alternatively, one set of structural plans of the reference design with annotations of voluntary structural enhancement should also be acceptable). Both sets of structural plans should comply with the applicable regulations for the ship type and intended trade.

2.2.11.3 f_{iCSR} ; Ships under the Common Structural Rules (CSR)

For bulk carriers and oil tankers, built in accordance with the Common Structural Rules (CSR) of the classification societies and assigned the class notation CSR, the following capacity correction factor f_{iCSR} should apply:

$$f_{iCSR} = 1 + (0.08 \cdot LWT_{CSR} / DWT_{CSR})$$

Where DWT_{CSR} is the deadweight determined by paragraph 2.2.4 and LWT_{CSR} is the light weight of the ship.

2.2.11.4 f_i for other ship types

For other ship types, f_i should be taken as one (1.0).

2.2.12 f_c ; Cubic capacity correction factor

f_c is the cubic capacity correction factor and should be assumed to be one (1.0) if no necessity of the factor is granted.

2.2.12.1 f_c for chemical tankers

For chemical tankers, as defined in regulation 1.16.1 of MARPOL Annex II, the following cubic capacity correction factor f_c should apply:

$f_c = R^{-0.7} - 0.014$, where R is less than 0.98
or
$f_c = 1.000$, where R is 0.98 and above;

where: R is the capacity ratio of the deadweight of the ship (tonnes) as determined by paragraph 2.2.4 divided by the total cubic capacity of the cargo tanks of the ship (m^3).

2.2.12.2 f_c for gas carriers

for gas carriers having direct diesel driven propulsion system constructed or adapted and used for the carriage in bulk of liquefied natural gas, the following cubic capacity correction factor f_{cLNG} should apply:

$$f_{cLNG} = R^{-0.56}$$

where: R is the capacity ratio of the deadweight of the ship (tonnes) as determined by paragraph 2.2.4 divided by the total cubic capacity of the cargo tanks of the ship (m^3).

Note: This factor is applicable to LNG carriers defined as gas carriers in regulation 2.2.14 of MARPOL Annex VI and should not be applied to LNG carriers defined in regulation 2.2.16 of MARPOL Annex VI.

2.2.12.3 f_c for ro-ro passenger ships (f_{cRoPax})

For ro-ro passenger ships having a DWT/GT-ratio of less than 0.25, the following cubic capacity correction factor, f_{cRoPax}, should apply:

$$f_{cRoPax} = \left(\frac{(DWT/GT)}{0.25}\right)^{-0.8}$$

Where DWT is the Capacity and GT is the gross tonnage in accordance with the International Convention of Tonnage Measurement of Ships 1969, annex I, regulation 3.

2.2.12.4 f_c for bulk carriers having R of less than 0.55 ($f_{c\ bulk\ carriers\ designed\ to\ carry\ light\ cargoes}$)

For bulk carriers having R of less than 0.55 (e.g. woodchip carriers), the following cubic capacity correction factor, $f_{c\ bulk\ carriers\ designed\ to\ carry\ light\ cargoes}$, should apply:

$$f_{c\ bulk\ carriers\ designed\ to\ carry\ light\ cargoes} = R^{-0.15}$$

where R is the capacity ratio of the deadweight of the ship (tonnes) as determined by paragraph 2.2.4 divided by the total cubic capacity of the cargo holds of the ship (m^3).

2.2.13 L_{pp} ; Length between perpendiculars

Length between perpendiculars, L_{pp}, means 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that were greater. In ships designed with a rake of keel the waterline on which this length is measured should be parallel to the designed waterline. L_{pp} should be measured in metres.

2.2.14 f_l ; Factor for general cargo ships equipped with cranes and cargo-related gear

f_l is the factor for general cargo ships equipped with cranes and other cargo-related gear to compensate in a loss of deadweight of the ship.

$$f_l = f_{cranes} \cdot f_{sideloader} \cdot f_{roro}$$

f_{cranes}	= 1	If no cranes are present
$f_{sideloader}$	= 1	If no side loaders are present
f_{roro}	= 1	If no ro-ro ramp is present

Definition of f_{cranes} *:*

$$f_{cranes} = 1 + \frac{\sum_{n=1}^{n}\left(0.0519 \cdot SWL_n \cdot \mathrm{Re}\,ach_n + 32.11\right)}{Capacity}$$

where:

SWL	=	Safe Working Load, as specified by crane manufacturer in metric tonnes
Reach	=	Reach at which the Safe Working Load can be applied in metres
N	=	Number of cranes

For other cargo gear such as side loaders and ro-ro ramps, the factor should be defined as follows:

$$f_{sideloader} = \frac{Capacity_{No\ sideloaders}}{Capacity_{sideloaders}}$$

$$f_{RoRo} = \frac{Capacity_{No\ RoRo}}{Capacity_{RoRo}}$$

The weight of the side loaders and ro-ro ramps should be based on a direct calculation, by analogy with the calculations made for factor f_{ivse}.

2.2.15 d_s ; Summer load line draught

Summer load line draught, d_s , is the vertical distance, in metres, from the moulded baseline at mid-length to the waterline corresponding to the summer freeboard draught to be assigned to the ship.

In the case of a new ship with multiple load line certificates or with a load line certificate containing multiple summer load lines, the maximum summer draught should be used to calculate and verify the required and attained EEDI. For ships that may have previously received multiple EEDI assessments for several deadweights that correspond to multiple load lines, all those EEDI assessments should remain valid.

2.2.16 B_s ; Breadth

Breadth, B_s, is the greatest moulded breadth of the ship, in metres, at or below the load line draught, d_s.

2.2.17 ∇ ; Volumetric displacement

Volumetric displacement, ∇, in cubic metres (m^3), is the volume of the moulded displacement of the ship, excluding appendages, in a ship with a metal shell, and is the volume of displacement to the outer surface of the hull in a ship with a shell of any other material, both taken at the summer load line draught, d_s, as stated in the approved stability booklet/loading manual.

2.2.18 g ; Gravitational acceleration

g is the gravitational acceleration, 9.81m/s^2.

2.2.19 f_m ; Factor for ice-classed ships having IA Super and IA

For ice-classed ships having IA Super or IA, the following factor, f_m, should apply:

f_m = 1.05

For further information on approximate correspondence between ice classes, see HELCOM Recommendation 25/7[9].

[9] HELCOM Recommendation 25/7 may be found at http://www.helcom.fi

3 Mandatory reporting of attained EEDI values and related information

3.1 In accordance with regulation 22.3 of MARPOL Annex VI, for each ship subject to regulation 24, the Administration or any organization duly authorized by it shall report the required and attained EEDI values and relevant information taking into account these Guidelines via electronic communication.

3.2 Information to be reported are as follows:

.1 applicable EEDI phase (e.g. Phase 1, Phase 2);

.2 identification number (IMO Secretariat use only);

.3 ship type;

.4 common commercial size reference[10] (see Note (3) in appendix 5 to these Guidelines), if available;

.5 DWT or GT (as appropriate);

.6 year of delivery;

.7 required EEDI value;

.8 attained EEDI value;

.9 dimensional parameters (length L_{pp} (m), breadth B_s (m), and draught (m));

.10 V_{ref} (knots) and P_{ME} (kW);

.11 use of innovative technologies (4th and 5th terms in the EEDI equation, if applicable);

.12 short statement[10] describing the principal design elements or changes employed to achieve the attained EEDI (as appropriate), if available;

.13 type of fuel used in the calculation of the attained EEDI, and for dual-fuel engines, the f_{DFgas} ratio; and

.14 ice class designation (if applicable).

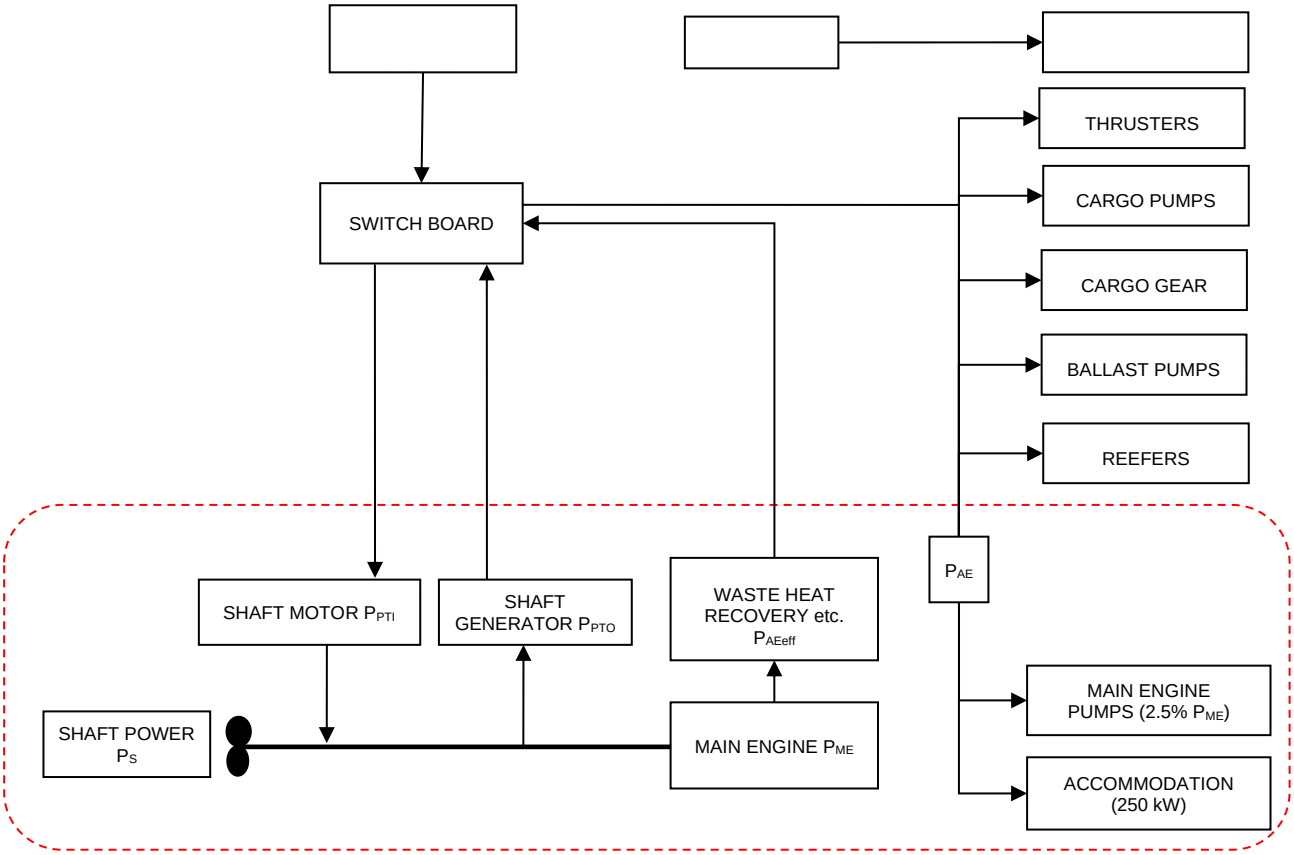
3.3 The information in paragraph 3.2 is not required to be reported for ships for which the required and attained EEDI values had been already reported to the Organization.

3.4 A standardized reporting format for mandatory reporting of attained EEDI values and related information is presented in appendix 5.

[10] Not subject to verification.

APPENDIX 1

A GENERIC AND SIMPLIFIED MARINE POWER PLANT



Note 1: Mechanical recovered waste energy directly coupled to shafts need not be measured, since the effect of the technology is directly reflected in the V_{ref} .

Note 2: In the case of combined PTI/PTO, the normal operational mode at sea will determine which of these to be used in the calculation.

APPENDIX 2

GUIDELINES FOR THE DEVELOPMENT OF ELECTRIC POWER TABLES FOR EEDI (EPT-EEDI)

1 Introduction

This appendix contains a guideline for the document "Electric power table for EEDI" which is similar to the actual shipyards' load balance document, utilizing well defined criteria, providing standard format, clear loads definition and grouping, standard load factors, etc. A number of new definitions (in particular the "groups") are introduced, giving an apparent greater complexity to the calculation process. However, this intermediate step to the final calculation of P_{AE} stimulates all the parties to a deep investigation through the global figure of the auxiliary load, allowing comparisons between different ships and technologies and eventually identifying potential efficiencies improvements.

2 Auxiliary load power definition

P_{AE} is to be calculated as indicated in paragraph 2.2.5.6 of the Guidelines, together with the following additional three conditions:

.1 non-emergency situations (e.g. "no fire", "no flood", "no blackout", "no partial blackout");

.2 evaluation time frame of 24 hours (to account loads with intermittent use); and

.3 ship fully loaded with passengers and/or cargo and crew.

3 Definition of the data to be included in the electric power table for EEDI

The electric power table for EEDI calculation should contain the following data elements, as appropriate:

.1 Load's group;
.2 Load's description;
.3 Load's identification tag;
.4 Load's electric circuit identification;
.5 Load's mechanical rated power "*Pm*" (*kW*);
.6 Load's electric motor rated output power (*kW*);
.7 Load's electric motor efficiency "*e*" (*/*);
.8 Load's rated electric power "*Pr*" (*kW*);
.9 Service factor of load "*kl*" (*/*);
.10 Service factor of duty "*kd*" (*/*);
.11 Service factor of time "*kt*" (*/*);
.12 Service total factor of use "*ku*" (*/*), where *ku=kl·kd·kt;*
.13 Load's necessary power "*Pload*" (*kW*), where *Pload=Pr·ku;*
.14 Notes;
.15 Group's necessary power (*kW*); and
.16 Auxiliaries load's power P_{AE} (*kW*).

4 Data to be included in the electric power table for EEDI

Load groups

4.1 The loads are divided into defined groups, allowing a proper breakdown of the auxiliaries. This eases the verification process and makes it possible to identify those areas where load reductions might be possible. The groups are listed below:

.1 A – Hull, deck, navigation and safety services;
.2 B – Propulsion service auxiliaries;
.3 C – Auxiliary engine and main engine services;
.4 D – Ship's general services;
.5 E – Ventilation for engine-rooms and auxiliaries room;
.6 F – Air conditioning services;
.7 G – Galleys, refrigeration and laundries services;
.8 H – Accommodation services;
.9 I – Lighting and socket services;
.10 L – Entertainment services;
.11 N – Cargo loads; and
.12 M – Miscellaneous.

All the ship's loads should be delineated in the document, excluding only P_{AEeff}, the shaft motors and shaft motors chain (while the propulsion services auxiliaries are partially included below in paragraph 4.1.2 B). Some loads (i.e. thrusters, cargo pumps, cargo gear, ballast pumps, maintaining cargo, reefers and cargo hold fans) still are included in the group for sake of transparency; however, their service factor is zero in order to comply with paragraph 2.2.5.6 of the Guidelines (see rows 4 and 5 of the electric power table contained in this appendix), therefore making it easier to verify that all the loads have been considered in the document and there are no loads left out of the measurement.

4.1.1 A – Hull, deck, navigation and safety services

.1 loads included in the hull services typically are: ICCP systems, mooring equipment, various doors, ballasting systems, bilge systems, stabilizing equipment, etc. Ballasting systems are indicated with service factor equal to zero to comply with paragraph 2.5.6 of the Guidelines (see row 5 of the electric power table contained in this appendix);

.2 loads included in the deck services typically are: deck and balcony washing systems, rescue systems, cranes, etc.;

.3 loads included in the navigation services typically are: navigation systems, navigation's external and internal communication systems, steering systems, etc.; and

.4 loads included in the safety services typically are: active and passive fire systems, emergency shutdown systems, public address systems, etc.

4.1.2 B – Propulsion service auxiliaries

This group typically includes propulsion secondary cooling systems, such as LT cooling pumps dedicated to shaft motors, LT cooling pumps dedicated to propulsion converters, propulsion UPSs, etc. Propulsion service loads do not include shaft motors (*PTI(i)*) and the auxiliaries

which are part of them (shaft motor own cooling fans and pump, etc.) and the shaft motor chain losses and auxiliaries which are part of them (i.e. shaft motor converters including relevant auxiliaries such as converter own cooling fans and pumps, shaft motor transformers including relevant auxiliaries losses, such as propulsion transformer own cooling fans and pumps, shaft motor harmonic filter including relevant auxiliaries losses, shaft motor excitation system including the relevant auxiliaries consumed power, etc.). Propulsion service auxiliaries include manoeuvring propulsion equipment such as manoeuvring thrusters and their auxiliaries whose service factor is to be set to zero.

4.1.3 C – Auxiliary engine and main engine services

This group includes cooling systems, i.e. pumps and fans for cooling circuits dedicated to alternators or propulsion shaft engines (seawater, technical water dedicated pumps, etc.), lubricating and fuel systems feeding, transfer, treatment and storage, ventilation system for combustion air supply, etc.

4.1.4 D – Ship's general services

This group includes loads which provide general services which can be shared between shaft motor, auxiliary engines and main engine and accommodation support systems. Loads typically included in this group are cooling systems, i.e. pumping seawater, technical water main circuits, compressed air systems, freshwater generators, automation systems, etc.

4.1.5 E – Ventilation for engine-rooms and auxiliaries room

This group includes all fans providing ventilation for engine-rooms and auxiliary rooms that typically are engine-rooms cooling supply-exhaust fans, auxiliary rooms supply and exhaust fans. All the fans serving accommodation areas or supplying combustion air are not included in this group. This group does not include cargo hold fans and garage supply and exhaust fans.

4.1.6 F – Air conditioning services

All loads that make up the air conditioning service that typically are air conditioning chillers, air conditioning cooling and heating fluids transfer and treatment, air conditioning's air handling units ventilation, air conditioning re-heating systems with associated pumping, etc. The air conditioning chillers service factor of load, service factor of time and service factor of duty are to be set as 1 (*kl=1, kt*=1 and *kd*=1) in order to avoid the detailed validation of the heat load dissipation document (i.e. the chiller's electric motor rated power is to be used). However, *kd* is to represent the use of spare chillers (e.g. four chillers are installed and one out four is spare then *kd=0* for the spare chiller and *kd*=1 for the remaining three chillers), but only when the number of spare chillers is clearly demonstrated via the heat load dissipation document.

4.1.7 G – Galleys, refrigeration and laundries services

All loads related to the galleys, pantries refrigeration and laundry services that typically are galleys various machines, cooking appliances, galleys' cleaning machines, galleys auxiliaries, refrigerated room systems including refrigeration compressors with auxiliaries, air coolers, etc.

4.1.8 H – Accommodation services

All loads related to the accommodation services of passengers and crew that typically are crew and passengers' transportation systems, i.e. lifts, escalators, etc. environmental services, i.e. black and grey water collecting, transfer, treatment, storage, discharge, waste systems including collecting, transfer, treatment, storage, etc. accommodation fluids transfers, i.e. sanitary hot and cold water pumping, etc., treatment units, pools systems, saunas, gym equipment, etc.

4.1.9 I – Lighting and socket services

All loads related to the lighting, entertainment and socket services. As the quantity of lighting circuits and sockets within the ship may be significantly high, it is not practically feasible to list all the lighting circuits and points in the EPT for EEDI. Therefore circuits should be grouped into subgroups aimed to identify possible improvements of efficient use of power. The subgroups are:

.1 Lighting for 1) cabins, 2) corridors, 3) technical rooms/stairs, 4) public spaces/stairs, 5) engine-rooms and auxiliaries' room, 6) external areas, 7) garages and 8) cargo spaces. All should be divided by main vertical zones; and

.2 Power sockets for 1) cabins, 2) corridors, 3) technical rooms/stairs, 4) public spaces/stairs, 5) engine-rooms and auxiliaries' room, 6) garages and 7) cargo spaces. All should be divided by main vertical zones.

The calculation criteria for complex groups (e.g. cabin lighting and power sockets) subgroups are to be included via an explanatory note, indicating the load composition (e.g. lights of typical cabins, TV, hair dryer, fridge).

4.1.10 L – Entertainment services

This group includes all loads related to entertainment services, typically public spaces audio and video equipment, theatre stage equipment, IT systems for offices, video games, etc.

4.1.11 N – Cargo loads

This group will contain all cargo loads such as cargo pumps, cargo gear, maintaining cargo, cargo reefers loads, cargo hold fans and garage fans for sake of transparency. However, the service factor of this group is to be set to zero.

4.1.12 M – Miscellaneous

This group will contain all loads which have not been associated with the above-mentioned groups but still are contributing to the overall load calculation of the normal maximum sea load.

Loads description

4.2 This identifies the loads (for example "seawater pump").

Loads identification tag

4.3 This tag identifies the loads according to the shipyard's standards tagging system. For example, the "PTI1 fresh water pump" identification tag is "SYYIA/C" for an example ship and shipyard. This data provides a unique identifier for each load.

Loads electric circuit identification

4.4 This is the tag of the electric circuit supplying the load. Such information enables the data validation process.

***Loads mechanical rated power* "*Pm*"**

4.5 This data is to be indicated in the document only when the electric load is made by an electric motor driving a mechanical load (e.g. a fan or a pump). This is the rated power of the mechanical device driven by an electric motor.

Loads electric motor rated output power (kW)

4.6 The output power of the electric motor as per maker's name plate or technical specification. This data does not take part of the calculation but is useful to highlight potential over-rating of the combination motor-mechanical load.

Loads electric motor efficiency "e" (/)

4.7 This data is to be entered in the document only when the electric load is made by an electric motor driving a mechanical load.

Loads rated electric power "Pr" (kW)

4.8 Typically the maximum electric power absorbed at the load electric terminals at which the load has been designed for its service, as indicated on the maker's name plate and/or maker's technical specification. When the electric load is made by an electric motor driving a mechanical load, the load's rated electric power is: *Pr=Pm/e (kW).*

Service factor of load "kl" (/)

4.9 Provides the reduction from the loads rated electric power to loads necessary electric power that is to be made when the load absorbs less power than its rated power. For example, in the case of an electric motor driving a mechanical load, a fan could be designed with some power margin, leading to the fact that the fan rated mechanical power exceeds the power requested by the duct system it serves. Another example is when a pump rated power exceeds the power needed for pumping in its delivery fluid circuit. Another example is where an electric self-regulating semi-conductors heating system is oversized and the rated power exceeds the power absorbed, according a factor *kl.*

Service factor of duty "kd" (/)

4.10 Factor of duty is to be used when a function is provided by more than one load. As all loads are to be included in the EPT for EEDI, this factor provides a correct summation of the loads. For example when two pumps serve the same circuit and they run in duty/stand-by their *kd* factor will be ½ and ½. When three compressors serve the same circuit and one runs in duty and two in stand-by, then *kd* is 1/3, 1/3 and 1/3.

Service factor of time "kt" (/)

4.11 A factor of time based on the shipyard's evaluation about the load duty along 24 hours of ship's navigation as defined at paragraph 3. For example the Entertainment loads operate at their power for a limited period of time, 4 hours out 24 hours; as a consequence *kt=4/24.* For example, the seawater cooling pumps operate at their power all the time during the navigation at *Vref*. As a consequence *kt=1*.

Service total factor of use "ku" (/)

4.12 The total factor of use that takes into consideration all the service factors: *ku=kl·kd·kt.*

Loads necessary power "Pload" (kW)

4.13 The individual user contribution to the auxiliary load power is *Pload=Pr·ku.*

Notes

4.14 A note, as free text, could be included in the document to provide explanations to the verifier.

Groups necessary power (kW)

4.15 The summation of the "Loads necessary power" from group A to N. This is an intermediate step which is not strictly necessary for the calculation of *PAE*. However, it is useful to allow a quantitative analysis of the *PAE*, providing a standard breakdown for analysis and potential improvements of energy saving.

Auxiliaries load's power PAE (kW)

4.16 Auxiliaries load's power *PAE* is the summation of the "Load's necessary power" of all the loads divided by the average efficiency of the generator(s) weighted by power.

PAE=Σ*Pload(i)*/(*average efficiency of the generator(s) weighted by power*)

Layout and organization of the data indicated in the electric power table for EEDI

5 The document "Electric power table for EEDI" is to include general information (i.e. ship's name, project name, document references, etc.) and a table with:

.1 one row containing column titles;

.2 one column for table row ID;

.3 one column for the groups identification ("A", "B", etc.) as indicated in paragraphs 4.1.1 to 4.1.12 of this appendix;

.4 one column for the group descriptions as indicated in paragraphs 4.1.1 to 4.1.12 of this appendix;

.5 one column each for items in paragraphs 4.2 to 4.14 of this appendix (e.g. "load tag");

.6 one row dedicated to each individual load;

.7 the summation results (i.e. summation of powers) including data from paragraphs 4.15 to 4.16 of this appendix; and

.8 explanatory notes.

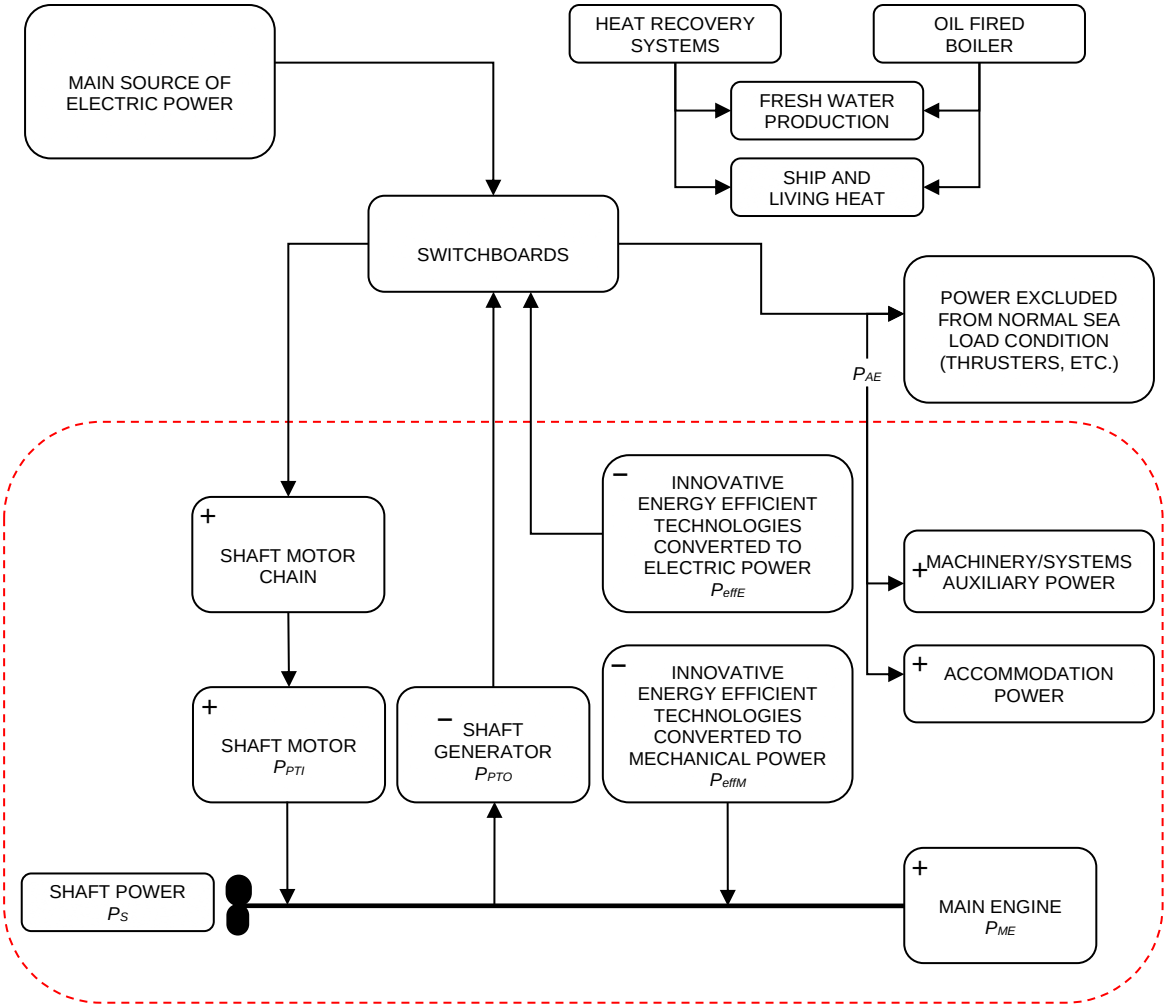
An example of an electric power table for EEDI for a cruise postal ship which transports passengers and has a car garage and reefer holds for fish trade transportation is indicated below. The data indicated and the type of ship are for reference only.

ELECTRIC POWER TABLE FOR EEDI			HULL "EXAMPLE"	PROJECT "EXAMPLE"										(NMSL=Normal Maximun Sea Load)
id	Load group	Load description	Load identification tag	Load electric circuit Identification	Load mechanical rated power "Pm" [kW]	Load electric motor rated output power [kW]	Load electric motor efficiency "e" [/]	Load Rated electric power "Pr" [kW]	service factor of load "kl" [/]	service factor of duty "kd" [/]	service factor of time "kt" [/]	service total factor of use "ku" [/]	Load necessary power "Pload" [kW]	Note
1	A	Hull cathodic protection Fwd	xxx	yyy	n.a.	n.a.	n.a.	5.2	1	1	1*	1	5.2	*in use 24hours/day
2	A	Hull cathodic protection mid	xxx	yyy	n.a.	n.a.	n.a.	7.0	1	1	1*	1	7	*in use 24hours/day
3	A	Hull cathodic protection aft	xxx	yyy	n.a.	n.a.	n.a.	4.8	1	1	1*	1	4.8	*in use 24hours/day
4	A	Ballast pump 3	xxx	yyy	30	36	0.92	32.6	0.9	0.5	1	0*	0	*not in use at **NMSL** see para 2.5.6 of Circ.681
5	A	Fwd Stb mooring winch motor n.1	xxx	yyy	90	150	0.92	97.8	0.8	1	0*	0*	0	*not in use at **NMSL** see para 2.5.6 of Circ.681
6	A	WTDs system main control panel	xxx	yyy	n.a.	n.a.	n.a.	0.5	1	1	1*	1	0.5	*in use 24hours/day
7	A	WTD 1, deck D frame 150	xxx	yyy	1.2	3	0.91	1.3	0.7	1	0.104*	0.0728	0.096	*180 secs to open/close x 100 opening a day
8	A	WTD 5, deck D frame 210	xxx	yyy	1.2	3	0.91	1.3	0.7	1	0.156*	0.1092	0.14	*180 secs to open/close x 150 opening a day
9	A	Stabilisers control unit	xxx	yyy	n.a.	n.a.	n.a.	0.7	1	1	1*	1	0.7	*in use 24hours/day
10	A	Stabilisers Hydraulic pack power pump 1	xxx	yyy	80	90	0.9	88.9	0.9	1	0*	0	0	*NMSL=> calm sea,=> stabiliser not in use
11	A	S-band Radar 1 controller	xxx	yyy	n.a.	n.a.	n.a.	0.4	1	1	1*	1	0.4	*in use 24hours/day
12	A	S-band Radar 1 motor	xxx	yyy	0.8	1	0.92	0.9	1	1	1*	1	0.9	*in use 24hours/day
13	A	Fire detection system bridge main unit	xxx	yyy	n.a.	n.a.	n.a.	1.5	1	1	1*	1	1.5	*in use 24hours/day
14	A	Fire detection system ECR unit	xxx	yyy	n.a.	n.a.	n.a.	0.9	1	1	1*	1	0.9	*in use 24hours/day
15	A	High pressure water fog contol unit	xxx	yyy	n.a.	n.a.	n.a.	1.2	1	1	1*	1	1.2	*in use 24hours/day
16	A	High pressure water fog engines rooms pump 1a	xxx	yyy	25	30	0.93	26.9	0.9	0.5	0*	0	0	*NMSL=> not emergency =>Load not in use
17	A	High pressure water fog engines rooms pump 1b	xxx	yyy	25	30	0.93	26.9	0.9	0.5	0*	0	0	* not emergency situations
18	B	PTi port fresh water pump 1	xxx	yyy	30	36	0.92	32.6	0.9	0.5*	1	0.45	14.7	* pump1,2 one is duty and one is stand-by
19	B	PTi port fresh water pump 2	xxx	yyy	30	36	0.92	32.6	0.9	0.5*	1	0.45	14.7	* pump1,2 one is duty and one is stand-by
20	B	Thrusters control system	xxx	yyy	n.a.	n.a.	n.a.	0.5	1	1	1*	1	0.5	in use 24hours/day (even if thruster motor isn't)
21	B	Bow thruster 1	xxx	yyy	3000	3000	0.96	3125.0	1	1	0*	0	0	*NMSL=>thrusters motor are not in use
22	B	PEM port cooling fan 1	xxx	yyy	20	25	0.93	21.5	0.9	1	n.a.	n.a	n.a.*	*this load is included in the propulsion chain data
23	C	HT circulation pump 1 DG 3	xxx	yyy	8	10	0.92	8.7	0.9	0.5*	1	0.45	3.9	* pump1,2 one is duty and one is stand-by
24	C	HT circulation pump 2 DG 3	xxx	yyy	8	10	0.92	8.7	0.9	0.5*	1	0.45	3.9	* pump1,2 one is duty and one is stand-by
25	C	DG3 combustion air fan	xxx	yyy	28	35	0.92	30.4	0.9	1	1*	0.9	27.4	*in use 24hours/day
26	C	DG3 exhaust gas boiler circulationg pump	xxx	yyy	6	8	0.93	6.5	0.8	1	1*	0.8	5.2	*in use 24hours/day
27	C	Alternator 3 external cooling fan	xxx	yyy	3	5	0.93	3.2	0.8	1	1*	0.8	2.75	*in use 24hours/day
28	C	fuel feed fwd booster pump a	xxx	yyy	7	9	0.92	7.6	0.9	0.5*	1	0.45	3.4	* pump1,2 one is duty and one is stand-by
29	C	fuel feed fwd booster pump b	xxx	yyy	7	9	0.92	7.6	0.9	0.5*	1	0.45	3.4	* pump1,2 one is duty and one is stand-by
30	D	Fwd main LT cooling pump 1	xxx	yyy	120	150	0.95	126.3	0.9	0.5*	1	0.45	56.8	* pump1,2 one is duty and one is stand-by
31	D	Fwd main LT cooling pump 2	xxx	yyy	120	150	0.95	126.3	0.9	0.5*	1	0.45	56.8	* pump1,2 one is duty and one is stand-by
32	E	FWD engine room supply fan 1	xxx	yyy	87.8	110	0.93	94.4	0.95	1	1*	0.95	89.7	*in use 24hours/day
33	E	FWD engine room exhaust fan 1	xxx	yyy	75	86	0.93	80.6	0.96	1	1*	0.96	77.4	*in use 24hours/day
34	E	purifier room supply fan 1	xxx	yyy	60	70	0.93	64.5	0.96	0.5	1*	0.48	31.0	*in use 24hours/day
35	E	purifier room supply fan 2	xxx	yyy	60	70	0.93	64.5	0.96	0.5	1*	0.48	31.0	*in use 24hours/day
36	F	HVAC chiller a	xxx	yyy	1450	1600	0.95	1526.3	1	2/3*	1	0.66	1007.4	*1 Chiller is spare; see heat load dissipation doc.
37	F	HVAC chiller b	xxx	yyy	1450	1600	0.95	1526.3	1	2/3*	1	0.66	1007.4	*1 Chiller is spare; see heat load dissipation doc.
38	F	HVAC chiller C	xxx	yyy	1450	1600	0.95	1526.3	1	2/3*	1	0.66	1007.4	*1 Chiller is spare; see heat load dissipation doc.
39	F	A.H.U. Ac station 5.4 supply fan	xxx	yyy	50	60	0.93	53.8	0.9	1	1*	0.9	48.4	*in use 24hours/day
40	F	A.H.U. Ac station 5.4 exhaust fan	xxx	yyy	45	55	0.93	48.4	0.9	1	1*	0.9	43.5	*in use 24hours/day
41	F	Chilled water pump a	xxx	yyy	80	90	0.93	86.0	0.88	0.5*	1	0.44	37.8	* pump1,2 one is duty and one is stand-by
42	F	Chilled water pump b	xxx	yyy	80	90	0.93	86.0	0.88	0.5*	1	0.44	37.8	* pump1,2 one is duty and one is stand-by
43	G	Italian's espresso coffee machine	xxx	yyy	n.a.	n.a.	n.a.	7.0	0.9	1	0.2*	0.18	1.3	*in use 4.8hours/day
44	G	deep freezer machine	xxx	yyy	n.a.	n.a.	n.a.	20.0	0.8	1	0.16*	0.128	3.2	*in use 4hours/day
45	G	washing machine 1	xxx	yyy	n.a.	n.a.	n.a.	8.0	0.8	1	0.33*	0.264	3.2	*in use 8hours/day
46	H	lift pax mid 4	xxx	yyy	30	40	0.93	32.3	0.5	1	0.175*	0.0875	0.9	*in use 4hours/day
47	H	vaccum collecting system 4 pump a	xxx	yyy	10	13	0.92	10.9	0.9	1	1*	0.9	8.7	*in use 24hours/day
48	H	sewage treatmet system 1 pump 1	xxx	yyy	15	17	0.93	16.1	0.9	1	1*	0.9	8.7	*in use 24hours/day
49	H	Gym running machine	xxx	yyy	n.a.	n.a.	n.a.	2.5	1	1	0.3*	0.3	0.8	*in use 7.2hours/day
50	I	Cabin's lighting MVZ3	n.a.	n.a.	n.a.	n.a.	n.a.	80*	1	1	1	1	80.0	* see explainatory note
51	I	corridors ligthing MVZ3	n.a.	n.a.	n.a.	n.a.	n.a.	10*	1	1	1	1	10.0	* see explainatory note
52	I	Cabin's sockets MVZ3	n.a.	n.a.	n.a.	n.a.	n.a.	5*	1	1	1	1	5.0	* see explainatory note
53	L	Main Theatre audio booster amplifier	xxx	yyy	n.a.	n.a.	n.a.	15.0	1	1	0.3*	0.3	4.5	*in use 7.2hours/day
54	L	Video wall atrium	xxx	yyy	n.a.	n.a.	n.a.	2.0	1	1	0.3*	0.3	0.6	*in use 7.2hours/day
55	M	Car Garage supply fan1	xxx	yyy	28	35	0.92	30.4	0.9	1	1*	0*	0	*not in use at **NMSL** see para 2.5.6 of Circ.681
56	M	Fish transportation refeer hold n.2	xxx	yyy	25	30	0.93	26.9	0.9	0.5	0*	0*	0	*not in use at **NMSL** see para 2.5.6 of Circ.681
57	N	Sliding glass roof	xxx	yyy	30	40	0.93	32.3	0.9	1	0.3*	0.27	0.2	*in use 7.2hours/day
											ΣPload(i)=		**3764**	

***PAE* =3764/(weighted average efficiency of generator(s)) [kW]** Group's necessary power (group A=22.9kW, B=29.8kW,C=49.9kW, D=113.7kW, E=229kW , F=3189kW, G=7.6kW, H=19kW, I=95kW, L=5.1kW, M=0kW, N=0.22kW)

APPENDIX 3

A GENERIC AND SIMPLIFIED MARINE POWER PLANT FOR A CRUISE PASSENGER SHIPS HAVING NON-CONVENTIONAL PROPULSION

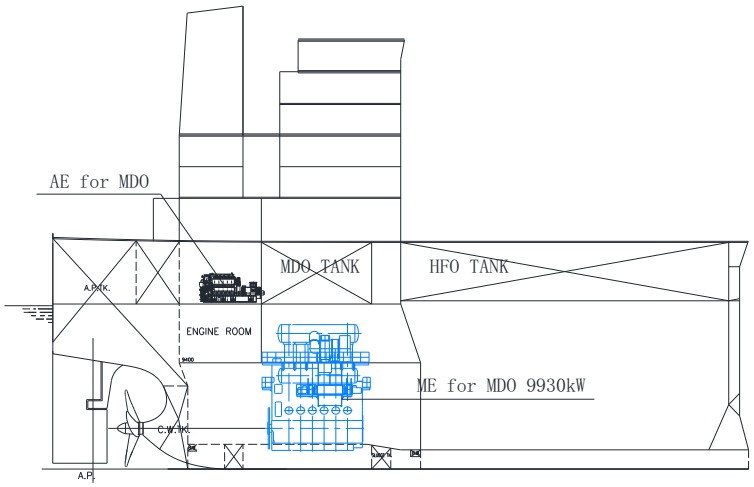


Note: Symbols for plus (+) and minus (−) indicate CO_2 contribution to EEDI formula.

APPENDIX 4

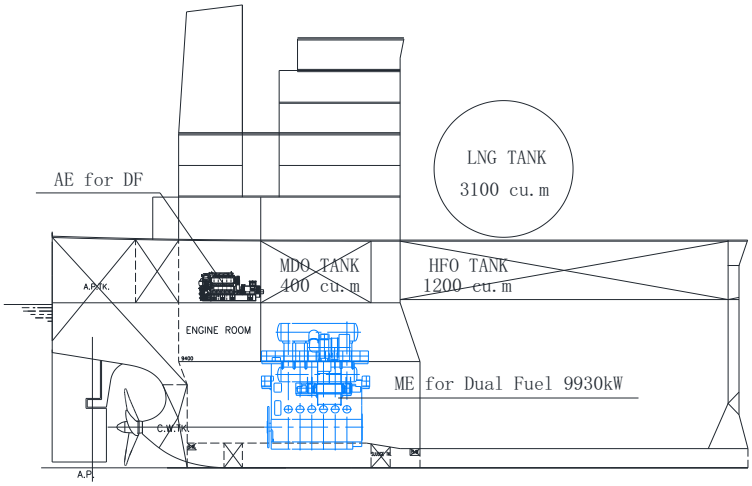
EEDI CALCULATION EXAMPLES FOR USE OF DUAL-FUEL ENGINES

Case 1: Standard Kamsarmax ship, one main engine (MDO), standard auxiliary engines (MDO), no shaft generator:



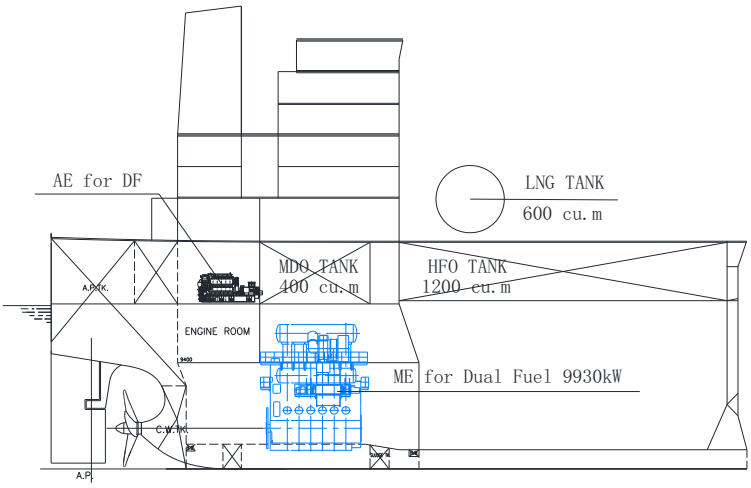
S/N	Parameter	Formula or Source	Unit	Value
1	MCR_{ME}	MCR rating of main engine	kW	9,930
2	Capacity	Deadweight of the ship at summer load draft	DWT	81,200
3	V_{ref}	Ships speed as defined in EEDI regulation	kn	14
4	P_{ME}	0.75 x MCR_{ME}	kW	7,447.5
5	P_{AE}	0.05 x MCR_{ME}	kW	496.5
6	C_{FME}	C_F factor of Main engine using MDO	-	3.206
7	C_{FAE}	C_F factor of Auxiliary engine using MDO	-	3.206
8	SFC_{ME}	Specific fuel consumption of at P_{ME}	g/kWh	165
9	SFC_{AE}	Specific fuel consumption of at P_{AE}	g/kWh	210
10	EEDI	$((P_{ME} \times C_{F\,ME} \times SFC_{ME})+(P_{AE} \times C_{FAE} \times SFC_{AE})) / (V_{ref} \times Capacity)$	gCO_2/tnm	3.76

Case 2: LNG is regarded as the "primary fuel" if dual-fuel main engine and dual-fuel auxiliary engine (LNG, pilot fuel MDO; no shaft generator) are equipped with bigger LNG tanks:



S/N	Parameter	Formula or Source	Unit	Value
1	MCR_{ME}	MCR rating of main engine	kW	9,930
2	Capacity	Deadweight of the ship at summer load draft	DWT	81,200
3	V_{ref}	Ships speed as defined in EEDI regulation	kn	14
4	P_{ME}	0.75 x MCR_{ME}	kW	7,447.5
5	P_{AE}	0.05 x MCR_{ME}	kW	496.5
6	$CF_{Pilotfuel}$	C_F factor of pilot fuel for dual-fuel ME using MDO	-	3.206
7	$CF_{AE\ Plilotfuel}$	C_F factor of pilot fuel for Auxiliary engine using MDO	-	3.206
8	CF_{LNG}	C_F factor of dual-fuel engine using LNG	-	2.75
9	$SFC_{MEPilotfuel}$	Specific fuel consumption of pilot fuel for dual-fuel ME at P_{ME}	g/kWh	6
10	$SFC_{AE\ Pilotfuel}$	Specific fuel consumption of pilot fuel for dual-fuel AE at P_{AE}	g/kWh	7
11	$SFC_{ME\ LNG}$	Specific fuel consumption of ME using LNG at P_{ME}	g/kWh	136
12	$SFC_{AE\ LNG}$	Specific fuel consumption of AE using LNG at P_{AE}	g/kWh	160
13	V_{LNG}	LNG tank capacity on board	m^3	3,100
14	V_{HFO}	Heavy fuel oil tank capacity on board	m^3	1,200
15	V_{MDO}	Marine diesel oil tank capacity on board	m^3	400
16	ρ_{LNG}	Density of LNG	kg/m^3	450
17	ρ_{HFO}	Density of heavy fuel oil	kg/m^3	991
18	ρ_{MDO}	Density of marine diesel oil	kg/m^3	900
19	LCV_{LNG}	Low calorific value of LNG	kJ/kg	48,000
20	LCV_{HFO}	Low calorific value of heavy fuel oil	kJ/kg	40,200
21	LCV_{MDO}	Low calorific value of marine diesel oil	kJ/kg	42,700
22	K_{LNG}	Filling rate of LNG tank	-	0.95
23	K_{HFO}	Filling rate of heavy fuel tank	-	0.98
24	K_{MDO}	Filling rate of marine diesel tank	-	0.98
25	f_{DFgas}	$\frac{P_{ME}+P_{AE}}{P_{ME}+P_{AE}} \times \frac{V_{LNG} \times \rho_{LNG} \times LCV_{LNG} \times K_{LNG}}{V_{HFO} \times \rho_{HFO} \times LCV_{HFO} \times K_{HFO} + V_{MDO} \times \rho_{MDO} \times LCV_{MDO} \times K_{MDO} + V_{LNG} \times \rho_{LNG} \times LCV_{LNG} \times K_{LNG}}$	-	0.5068
26	EEDI	(P_{ME} x ($C_{F\ Pilotfuel}$ x $SFC_{ME\ Pilotfuel}$ + $C_{F\ LNG}$ x $SFC_{ME\ LNG}$) + P_{AE} x ($C_{F\ Pilotfuel}$ x $SFC_{AE\ Pilotfuel}$ + $C_{F\ LNG}$ x $SFC_{AE\ LNG}$)) / (V_{ref} x *Capacity*)	gCO_2/tnm	2.78

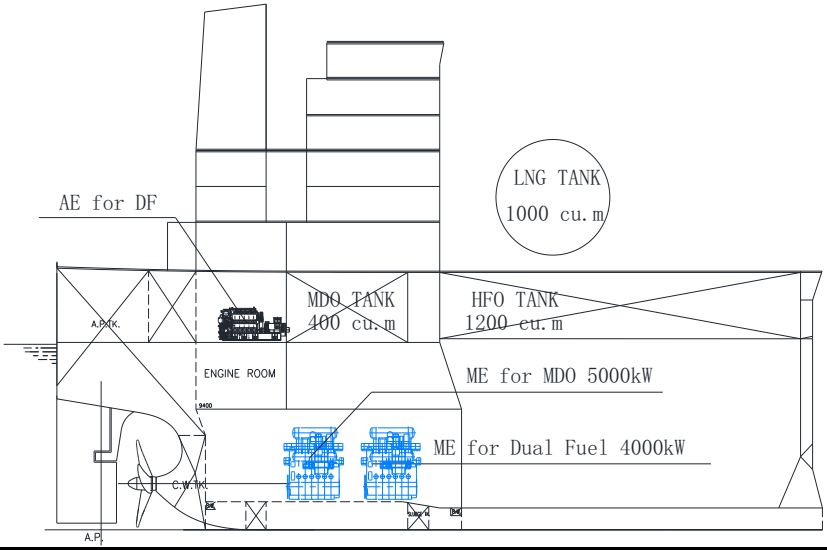
Case 3: LNG is not regarded as the "primary fuel" if dual-fuel main engine and dual-fuel auxiliary engine (LNG, pilot fuel MDO; no shaft generator) are equipped with smaller LNG tanks:



S/N	Parameter	Formula or Source	Unit	Value
1	MCR_{ME}	MCR rating of main engine	kW	9,930
2	Capacity	Deadweight of the ship at summer load draft	DWT	81,200
3	V_{ref}	Ships speed as defined in EEDI regulation	kn	14
4	P_{ME}	0.75 x MCR_{ME}	kW	7,447.5
5	P_{AE}	0.05 x MCR_{ME}	kW	496.5
6	$C_{FPilotfuel}$	C_F factor of pilot fuel for dual-fuel ME using MDO	-	3.206
7	$C_{FAE\ Plilotfuel}$	C_F factor of pilot fuel for Auxiliary engine using MDO	-	3.206
8	C_{FLNG}	C_F factor of dual-fuel engine using LNG	-	2.75
9	C_{FMDO}	C_F factor of dual-fuel ME/AE engine using MDO	-	3.206
10	$SFC_{MEPilotfuel}$	Specific fuel consumption of pilot fuel for dual-fuel ME at P_{ME}	g/kWh	6
11	$SFC_{AE\ Pilotfuel}$	Specific fuel consumption of pilot fuel for dual-fuel AE at P_{AE}	g/kWh	7
12	$SFC_{ME\ LNG}$	Specific fuel consumption of ME using LNG at P_{ME}	g/kWh	136
13	$SFC_{AE\ LNG}$	Specific fuel consumption of AE using LNG at P_{AE}	g/kWh	160
14	$SFC_{ME\ MDO}$	Specific fuel consumption of dual-fuel ME using MDO at P_{ME}	g/kWh	165
15	$SFC_{AE\ MDO}$	Specific fuel consumption of dual-fuel AE using MDO at P_{AE}	g/kWh	187
16	V_{LNG}	LNG tank capacity on board	m^3	600
17	V_{HFO}	Heavy fuel oil tank capacity on board	m^3	1,800
18	V_{MDO}	Marine diesel oil tank capacity on board	m^3	400
19	ρ_{LNG}	Density of LNG	kg/m^3	450
20	ρ_{HFO}	Density of heavy fuel oil	kg/m^3	991
21	ρ_{MDO}	Density of marine diesel oil	kg/m^3	900
22	LCV_{LNG}	Low calorific value of LNG	kJ/kg	48,000
24	LCV_{HFO}	Low calorific value of heavy fuel oil	kJ/kg	40,200
25	LCV_{MDO}	Low calorific value of marine diesel oil	kJ/kg	42,700
26	K_{LNG}	Filling rate of LNG tank	-	0.95
27	K_{HFO}	Filling rate of heavy fuel tank	-	0.98
28	K_{MDO}	Filling rate of marine diesel tank	-	0.98

S/N	Parameter	Formula or Source	Unit	Value
29	f_{DFgas}	$\frac{P_{ME}+P_{AE}}{P_{ME}+P_{AE}} \times \frac{V_{LNG} \times \rho_{LNG} \times LCV_{LNG} \times K_{LNG}}{V_{HFO} \times \rho_{HFO} \times LCV_{HFO} \times K_{HFO} + V_{MDO} \times \rho_{MDO} \times LCV_{MDO} \times K_{MDO} + V_{LNG} \times \rho_{LNG} \times LCV_{LNG} \times K_{LNG}}$	-	0.1261
30	$f_{DFliquid}$	1- f_{DFgas}	-	0.8739
31	EEDI	(P_{ME} x (f_{DFgas} x ($C_{F\ Pilotfuel}$ x $SFC_{ME\ Pilotfuel}$ + $C_{F\ LNG}$ x $SFC_{ME\ LNG}$) + $f_{DFliquid}$ x C_{FMDO} x $SFC_{ME\ MDO}$) + P_{AE} x (f_{DFgas} x ($C_{FAE\ Pilotfuel}$ x $SFC_{AE\ Pilotfuel}$ + $C_{F\ LNG}$ x $SFC_{AE\ LNG}$)+ $f_{DFliquid}$ x C_{FMDO} x $SFC_{AE\ MDO}$)) / (V_{ref} x *Capacity*)	gCO_2/tnm	3.61

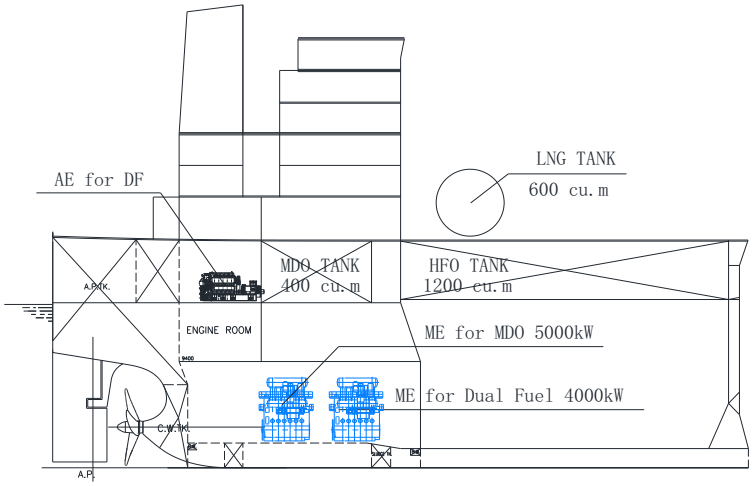
Case 4: One dual-fuel main engine (LNG, pilot fuel MDO) and one main engine (MDO) and dual-fuel auxiliary engine (LNG, pilot fuel MDO, no shaft generator) which LNG could be regarded as "primary fuel" only for the dual-fuel main engine:



S/N	Parameter	Formula or Source	Unit	Value
1	MCR_{MEMDO}	MCR rating of main engine using only MDO	kW	5,000
2	MCR_{MELNG}	MCR rating of main engine using dual-fuel	kW	4,000
3	Capacity	Deadweight of the ship at summer load draft	DWT	81,200
4	V_{ref}	Ships speed	kn	14
5	P_{MEMDO}	0.75 x MCR_{MEMDO}	kW	3,750
6	P_{MELNG}	0.75 x MCR_{MELNG}	kW	3,000
7	P_{AE}	0.05 x (MCR_{MEMDO} + MCR_{MELNG})	kW	450
8	$C_{FPilotfuel}$	C_F factor of pilot fuel for dual-fuel ME using MDO	-	3.206
9	$C_{FAE\ Plilotfuel}$	C_F factor of pilot fuel for auxiliary engine using MDO	-	3.206
10	C_{FLNG}	C_F factor of dual-fuel engine using LNG	-	2.75
11	C_{FMDO}	C_F factor of dual-fuel ME/AE engine using MDO	-	3.206
12	$SFC_{MEPilotfuel}$	Specific fuel consumption of pilot fuel for dual-fuel ME at P_{ME}	g/kWh	6
13	$SFC_{AE\ Pilotfuel}$	Specific fuel consumption of pilot fuel for dual-fuel AE at P_{AE}	g/kWh	7
14	$SFC_{DF\ LNG}$	Specific fuel consumption of dual-fuel ME using LNG at P_{ME}	g/kWh	158
15	$SFC_{AE\ LNG}$	Specific fuel consumption of AE using LNG at P_{AE}	g/kWh	160
16	$SFC_{ME\ MDO}$	Specific fuel consumption of single fuel ME at P_{ME}	g/kWh	180
17	V_{LNG}	LNG tank capacity on board	m^3	1,000
18	V_{HFO}	Heavy fuel oil tank capacity on board	m^3	1,200
19	V_{MDO}	Marine diesel oil tank capacity on board	m^3	400
20	ρ_{LNG}	Density of LNG	kg/m^3	450

S/N	Parameter	Formula or Source	Unit	Value
21	ρ_{HFO}	Density of heavy fuel oil	kg/m^3	991
22	ρ_{MDO}	Density of marine diesel oil	kg/m^3	900
23	LCV_{LNG}	Low calorific value of LNG	kJ/kg	48,000
24	LCV_{HFO}	Low calorific value of heavy fuel oil	kJ/kg	40,200
25	LCV_{MDO}	Low calorific value of marine diesel oil	kJ/kg	42,700
26	K_{LNG}	Filling rate of LNG tank	-	0.95
27	K_{HFO}	Filling rate of heavy fuel tank	-	0.98
28	K_{MDO}	Filling rate of marine diesel tank	-	0.98
29	f_{DFgas}	$\frac{P_{MEMDO} + P_{MELNG} + P_{AE}}{P_{MELNG} + P_{AE}} \times \frac{V_{LNG} \times \rho_{LNG} \times LCV_{LNG} \times K_{LNG}}{V_{HFO} \times \rho_{HFO} \times LCV_{HFO} \times K_{HFO} + V_{MDO} \times \rho_{MDO} \times LCV_{MDO} \times K_{MDO} + V_{LNG} \times \rho_{LNG} \times LCV_{LNG} \times K_{LNG}}$	-	0.5195
30	EEDI	(P_{MELNG} x ($C_{F\ Pilotfuel}$ x $SFC_{ME\ Pilotfuel}$ + $C_{F\ LNG}$ x $SFC_{DF\ LNG}$) + P_{MEMDO} x $C_{F\ MDO}$ x $SFC_{ME\ MDO}$ + P_{AE} x ($C_{FAE\ Pilotfuel}$ x $SFC_{AE\ Pilotfuel}$ + $C_{F\ LNG}$ x $SFC_{AE\ LNG}$)) / (V_{ref} x *Capacity*)	gCO_2/tnm	3.28

Case 5: One dual-fuel main engine (LNG, pilot fuel MDO) and one main engine (MDO) and dual-fuel auxiliary engine (LNG, pilot fuel MDO, no shaft generator) which LNG could not be regarded as "primary fuel" for the dual-fuel main engine:



S/N	Parameter	Formula or Source	Unit	Value
1	MCR_{MEMDO}	MCR rating of main engine using only MDO	kW	5,000
2	MCR_{MELNG}	MCR rating of main engine using dual-fuel	kW	4,000
3	Capacity	Deadweight of the ship at summer load draft	DWT	81,200
4	V_{ref}	Ships speed	kn	14
5	P_{MEMDO}	0.75 x MCR_{MEMDO}	kW	3,750
6	P_{MELNG}	0.75 x MCR_{MELNG}	kW	3,000
7	P_{AE}	0.05 x (MCR_{MEMDO} + MCR_{MELNG})	kW	450
8	$C_{FPilotfuel}$	C_F factor of pilot fuel for dual-fuel ME using MDO	-	3.206
9	$C_{FAE\ Plilotfuel}$	C_F factor of pilot fuel for auxiliary engine using MDO	-	3.206
10	C_{FLNG}	C_F factor of dual-fuel engine using LNG	-	2.75
11	C_{FMDO}	C_F factor of dual-fuel ME/AE engine using MDO	-	3.206
12	$SFC_{MEPilotfuel}$	Specific fuel consumption of pilot fuel for dual-fuel ME at P_{ME}	g/kWh	6
13	$SFC_{AE\ Pilotfuel}$	Specific fuel consumption of pilot fuel for dual-fuel AE at P_{AE}	g/kWh	7
14	$SFC_{DF\ LNG}$	Specific fuel consumption of dual-fuel ME using LNG at P_{ME}	g/kWh	158

S/N	Parameter	Formula or Source	Unit	Value
15	$SFC_{AE\ LNG}$	Specific fuel consumption of AE using LNG at P_{AE}	g/kWh	160
16	$SFC_{DF\ MDO}$	Specific fuel consumption of dual-fuel ME using MDO at P_{ME}	g/kWh	185
17	$SFC_{ME\ MDO}$	Specific fuel consumption of single fuel ME at P_{ME}	g/kWh	180
18	$SFC_{AE\ MDO}$	Specific fuel consumption of AE using MDO at P_{AE}	g/kWh	187
19	V_{LNG}	LNG tank capacity on board	m^3	600
20	V_{HFO}	Heavy fuel oil tank capacity on board	m^3	1,200
21	V_{MDO}	Marine diesel oil tank capacity on board	m^3	400
22	ρ_{LNG}	Density of LNG	kg/m^3	450
23	ρ_{HFO}	Density of heavy fuel oil	kg/m^3	991
24	ρ_{MDO}	Density of marine diesel oil	kg/m^3	900
25	LCV_{LNG}	Low calorific value of LNG	kJ/kg	48,000
26	LCV_{HFO}	Low calorific value of heavy fuel oil	kJ/kg	40,200
27	LCV_{MDO}	Low calorific value of marine diesel oil	kJ/kg	42,700
28	K_{LNG}	Filling rate of LNG tank	-	0.95
29	K_{HFO}	Filling rate of heavy fuel tank	-	0.98
30	K_{MDO}	Filling rate of marine diesel tank	-	0.98
31	f_{DFgas}	$\frac{P_{MEMDO} + P_{MELNG} + P_{AE}}{P_{MELNG} + P_{AE}} \times \frac{V_{LNG} \times \rho_{LNG} \times LCV_{LNG} \times K_{LNG}}{V_{HFO} \times \rho_{HFO} \times LCV_{HFO} \times K_{HFO} + V_{MDO} \times \rho_{MDO} \times LCV_{MDO} \times K_{MDO} + V_{LNG} \times \rho_{LNG} \times LCV_{LNG} \times K_{LNG}}$	-	0.3462
32	$f_{DFliquid}$	$1 - f_{DFgas}$	-	0.6538
33	EEDI	$(P_{MELNG} \times (f_{DFgas} \times (C_{F\ Pilotfuel} \times SFC_{ME\ Pilotfuel} + C_{F\ LNG} \times SFC_{DF\ LNG}) + f_{DFliquid} \times C_{FMDO} \times SFC_{DF\ MDO})) + P_{MEMDO} \times C_{F\ MDO} \times SFC_{ME\ MDO} + P_{AE} \times (f_{DFgas} \times (C_{FAE\ Pilotfuel} \times SFC_{AE\ Pilotfuel} + C_{F\ LNG} \times SFC_{AE\ LNG}) + f_{DFliquid} \times C_{FMDO} \times SFC_{AE\ MDO})) / (V_{ref} \times Capacity)$	gCO_2/tnm	3.54

APPENDIX 5

STANDARD FORMAT TO SUBMIT EEDI INFORMATION TO BE INCLUDED IN THE EEDI DATABASE

IMO number (1)	Type of ship (2)	Common commercial size (3)	Capacity (4)		Dimensional parameters			Year of delivery	Applicable phase	Required EEDI	Attained EEDI	Vref (knot) (9)	P_{ME} (kW) (10)	Type of fuel (11)	f_{DF} gas (12)	Ice class (13)	EEDI 4th term (Installation of innovative electrical technology)		EEDI 5th term (Installation of innovative mechanical technology)		Short statement as appropriate describing the principal design elements or changes employed to achieve the attained EEDI (15)
			DWT	GT (5)	Lpp (m) (6)	Bs (m) (7)	Draught (m) (8)										Yes/ No	Name, outline and means/ ways of performance of technology (14)	Yes/ No	Name, outline and means/ ways of performance of technology (14)	

Note:

(1) IMO number to be submitted for Secretariat use only.
(2) As defined in regulation 2 of MARPOL Annex VI.
(3) Common commercial size reference (TEU for containership, CEU (RT43) for ro-ro cargo ship (vehicle carrier), cubic metre for gas carrier and LNG carrier), if available, should be provided.
(4) The exact DWT or GT, as appropriate, should be provided. The Secretariat should round the DWT or GT data up to the nearest 500 when these data are subsequently provided to MEPC. (For containerships, 100% DWT should be provided while 70% of DWT should be used when calculating the EEDI value).
(5) GT should be provided for a cruise passenger ship having non-conventional propulsion as defined in regulations 2.2.11 and 2.2.19, respectively, of MARPOL Annex VI. Both DWT and GT should be provided for a ro-ro cargo ship (vehicle carrier) as defined in regulation 2.2.27 of MARPOL Annex VI.
(6) As defined in paragraph 2.2.13 of these Guidelines. The exact Lpp should be provided. The Secretariat will round the Lpp data up to the nearest 10 when these data are subsequently provided to MEPC.
(7) As defined in paragraph 2.2.16 of these Guidelines. The exact Bs should be provided. The Secretariat will round the Bs data up to the nearest 1 when these data are subsequently provided to MEPC.
(8) As defined in paragraph 2.2.15 of these Guidelines. The exact draught should be provided. The Secretariat will round the draught data up to the nearest 1 when these data are subsequently provided to MEPC.
(9) As defined in paragraph 2.2.2 of these Guidelines. The exact V_{ref} should be provided. The Secretariat will round the V_{ref} data up to the nearest 0.5 when these data are subsequently provided to MEPC.
(10) As defined in paragraph 2.2.5.1 of these Guidelines. The exact P_{ME} should be provided. The Secretariat will round the P_{ME} data up to the nearest 100 when these data are subsequently provided to MEPC.
(11) As defined in paragraph 2.2.1 of these Guidelines or other (to be stated). In the case of a ship equipped with a dual-fuel engine, type of "primary fuel" should be provided.
(12) As defined in paragraph 2.2.1 of these Guidelines, if applicable.
(13) Ice class, which was used to calculate correction factors for ice-classed ships as defined in paragraphs 2.2.8.1 and 2.2.11.1 of these Guidelines, if applicable, should be provided.
(14) In the case that the innovative energy efficiency technologies are already included in the *2021 Guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI and EEXI* (MEPC.1/Circ.896), the name of technology should be identified. Otherwise, name, outline and means/ways of performance of the technology should be identified.
(15) To assist IMO in assessing relevant design trends, provide a short statement as appropriate, describing the principal design elements or changes employed to achieve the attained EEDI.

***

ANNEX 10

RESOLUTION MEPC.365(79)

2022 GUIDELINES ON SURVEY AND CERTIFICATION OF 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 conferred upon it by international conventions for the prevention and control of marine pollution from ships,

NOTING 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 ALSO that the Committee adopted, at its sixty-seventh session, the *2014 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)* (resolution MEPC.254(67)),

NOTING FURTHER that, at its sixty-eighth and seventy-third sessions, it adopted, by resolutions MEPC.261(68) and MEPC.309(73), respectively, amendments to the *2014 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)*,

HAVING NOTED, at its seventy-ninth session, the need to further amend the *2014 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)* (resolution MEPC.254(67), as amended),

1 ADOPTS the *2022 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 implement the 2022 EEDI Survey and Certification Guidelines 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 amendments to the attention of shipowners, ship operators, shipbuilders, ship designers and any other interested groups;

4 AGREES to keep these Guidelines, as amended, under review, in light of the experience gained with their application;

5 AGREES that these Guidelines supersede the *2014 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)* (resolution MEPC.254(67), as amended by resolutions MEPC.261(68) and MEPC.309(73)).

ANNEX

2022 GUIDELINES ON SURVEY AND CERTIFICATION OF THE ENERGY EFFICIENCY DESIGN INDEX (EEDI)

Table of contents

1 GENERAL

The purpose of these guidelines is to assist verifiers of the Energy Efficiency Design Index (EEDI) of ships in conducting the survey and certification of the EEDI, in accordance with regulations 5, 6, 7, 8 and 9 of MARPOL Annex VI, and assist shipowners, shipbuilders, manufacturers and other interested parties in understanding the procedures for the survey and certification of the EEDI.

2 DEFINITIONS[1]

2.1 *Verifier* means an Administration or organization duly authorized by it which conducts the survey and certification of the EEDI in accordance with regulations 5, 6, 7, 8 and 9 of MARPOL Annex VI and these guidelines.

2.2 *Ship of the same type* means a ship the hull form (expressed in the lines such as sheer plan and body plan), excluding additional hull features such as fins, and principal particulars of which are identical to that of the base ship.

2.3 *Tank test* means model towing tests, model self-propulsion tests and model propeller open water tests. Numerical calculations may be accepted as equivalent to model propeller open water tests or used to complement the tank tests conducted (e.g. to evaluate the effect of additional hull features such as fins, etc. on ship's performance), with the approval of the verifier.

3 APPLICATION

These guidelines should be applied to new ships for which an application for an initial survey or an additional survey specified in regulation 5 of MARPOL Annex VI has been submitted to a verifier.

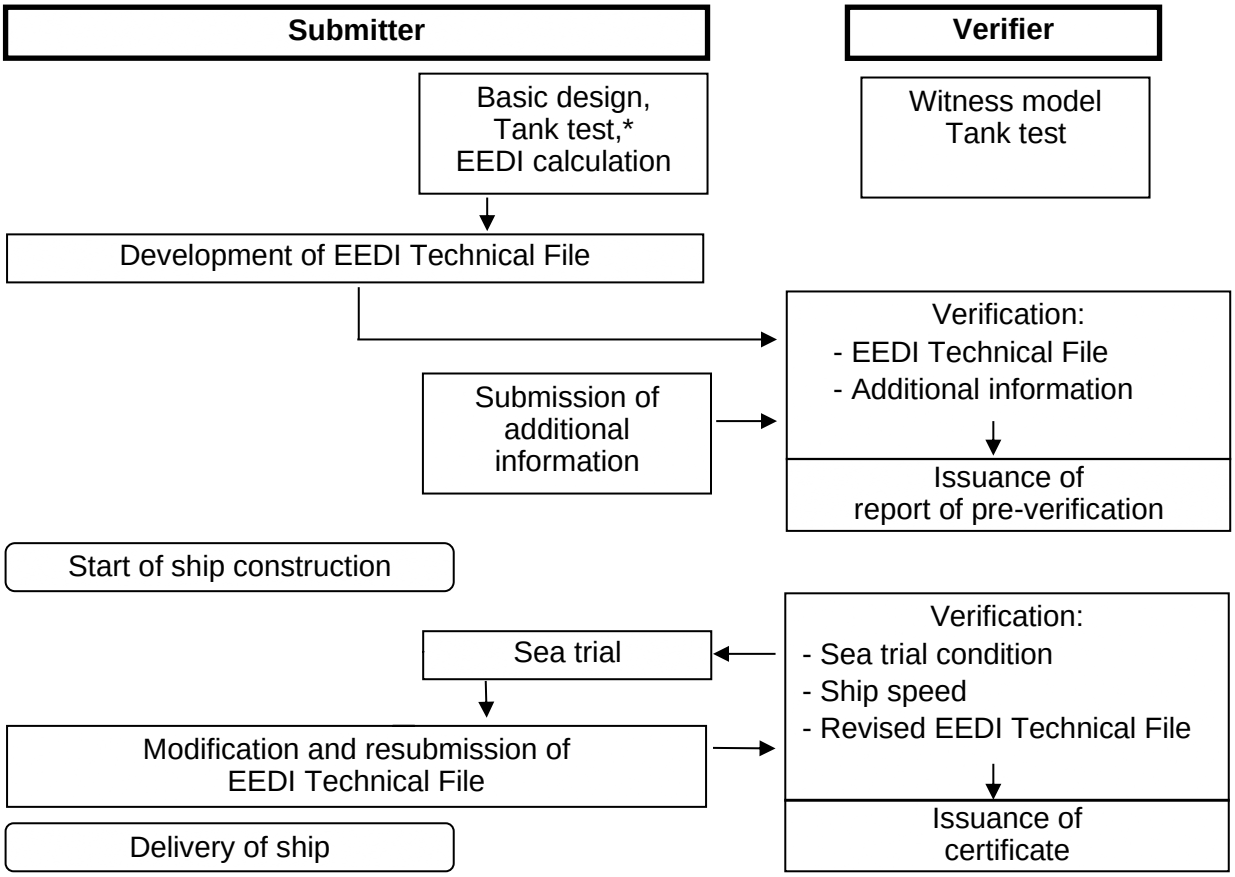
4 PROCEDURES FOR SURVEY AND CERTIFICATION

4.1 General

4.1.1 The attained EEDI should be calculated in accordance with regulation 22 of MARPOL Annex VI and the *2022 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships* (resolution MEPC.364(79)) (EEDI Calculation Guidelines). Survey and certification of the EEDI should be conducted in two stages: preliminary verification at the design stage and final verification at the sea trial. The basic flow of the survey and certification process is presented in figure 1.

4.1.2 The information used in the verification process may contain confidential information of submitters which requires Intellectual Property Rights (IPR) protection. In the case where the submitter wants a non-disclosure agreement with the verifier, the additional information should be provided to the verifier upon mutually agreed terms and conditions.

[1] Other terms used in these guidelines have the same meaning as those defined in the *2022 Guidelines on the method of calculation of the attained EEDI for new ships* (resolution MEPC.364(79)).



* To be conducted by a test organization or a submitter.

Figure 1: Basic flow of survey and certification process

4.2 Preliminary verification of the attained EEDI at the design stage

4.2.1 For the preliminary verification at the design stage, an application for an initial survey and an EEDI Technical File containing the necessary information for the verification and other relevant background documents should be submitted to a verifier.

4.2.2 The EEDI Technical File should be written at least in English. The EEDI Technical File should include as a minimum, but not be limited to:

.1 deadweight (DWT) or gross tonnage (GT) for passenger and ro-ro passenger ships, the maximum continuous rating (MCR) of the main and auxiliary engines, the ship speed (V_{ref}), as specified in paragraph 2.2.2 of the EEDI Calculation Guidelines, type of fuel, the specific fuel consumption (*SFC*) of the main engine at 75% of MCR power, the *SFC* of the auxiliary engines at 50% MCR power, and the electric power table[2] for certain ship types, as necessary, as defined in the EEDI Calculation Guidelines;

[2] Electric power table should be validated separately, taking into account guidelines set out in appendix 2 to these Guidelines.

.2 power curve(s) (kW – knot) estimated at design stage under the condition as specified in paragraph 2.2.2 of the EEDI Calculation Guidelines, and, in the event that the sea trial is carried out in a condition other than the above condition, also a power curve estimated under the sea trial condition;

.3 principal particulars, ship type and the relevant information to classify the ship as such a ship type, classification notations and an overview of the propulsion system and electricity supply system on board;

.4 estimation process and methodology of the power curves at design stage;

.5 description of energy-saving equipment;

.6 calculated value of the attained EEDI, including the calculation summary, which should contain, at a minimum, each value of the calculation parameters and the calculation process used to determine the attained EEDI;

.7 calculated values of the attained $EEDI_{weather}$ and f_w value (not equal to 1.0), if those values are calculated, based on the EEDI Calculation Guidelines; and

.8 for LNG carriers:

.1 type and outline of propulsion systems (such as direct drive diesel, diesel electric, steam turbine);

.2 LNG cargo tank capacity in m^3 and BOR as defined in paragraph 2.2.5.6.3 of the EEDI Calculation Guidelines;

.3 shaft power of the propeller shaft after transmission gear at 100% of the rated output of motor (MPP_{Motor}) and $\eta_{(i)}$ for diesel electric;

.4 maximum continuous rated power ($MCR_{SteamTurbine}$) for steam turbine; and

.5 $SFC_{SteamTurbine}$ for steam turbine, as specified in paragraph 2.2.7 of the EEDI Calculation Guidelines.

A sample of an EEDI Technical File is provided in appendix 1 to these guidelines.

4.2.3 For ships equipped with dual-fuel engine(s) using LNG and fuel oil, the C_F factor for gas (LNG) and the specific fuel consumption (SFC) of gas fuel should be used by applying the following criteria as a basis for the guidance of the Administration:

.1 final decision on the primary fuel rests with the Administration;

.2 the ratio of calorific value of gas fuel (LNG) to total marine fuels (HFO/MGO), including gas fuel (LNG) at design conditions should be equal or larger than 50% in accordance with the formula below. However, the Administration can accept a lower value of the percentage taking into account the intended voyages:

$$\frac{V_{gas} \times \rho_{gas} \times LCV_{gas} \times K_{gas}}{\left(\sum_{i=1}^{nLiquid} V_{liquid(i)} \times \rho_{liquid(i)} \times LCV_{liquid(i)} \times K_{liquid(i)} \right) + V_{gas} \times \rho_{gas} \times LCV_{gas} \times K_{gas}} \geq 50\%$$

Whereby,

V_{gas} is the total net tank volume of gas fuel on board in m^3;

V_{liquid} is the total net tank volume of every liquid fuel on board in m^3;

ρ_{gas} is the density of gas fuel in kg/m^3;

ρ_{liquid} is the density of every liquid fuel in kg/m^3;

LCV_{gas} is the low calorific value of gas fuel in kJ/kg;

LCV_{liquid} is the low calorific value of liquid fuel in kJ/kg;

K_{gas} is the filling rate for gas fuel tanks;

K_{liquid} is the filling rate for liquid fuel tanks.

Normal density, Low Calorific Value and filling rate for tanks of different kinds of fuel are listed below.

Type of fuel	Density (kg/m^3)	Low Calorific Value (kJ/kg)	Filling rate for tanks
Diesel/Gas Oil	900	42700	0.98
Heavy Fuel Oil	991	40200	0.98
Liquefied Natural Gas (LNG)	450	48000	0.95*

* subject to verification of tank filling limit

.3 in case the ship is not fully equipped with dual-fuel engines, the C_F factor for gas (LNG) should apply only for those installed engines that are of dual-fuel type and sufficient gas fuel supply should be available for such engines; and

.4 LNG fuelling solutions with exchangeable (specialized) LNG tank-containers should also fall under the terms of LNG as primary fuel.

4.2.4 The *SFC* of the main and auxiliary engines should be quoted from the approved NO_x Technical File and should be corrected to the value corresponding to the ISO standard reference conditions using the standard lower calorific value of the fuel oil (42,700 kJ/kg), referring to ISO 15550:2002 and ISO 3046-1:2002. For the confirmation of the *SFC*, a copy of the approved NO_x Technical File and documented summary of the correction calculations should be submitted to the verifier. In cases where the NO_x Technical File has not been approved at the time of the application for initial survey, the test reports provided by manufacturers should be used. In this case, at the time of the sea trial verification, a copy of

the approved NO_x Technical File and documented summary of the correction calculations should be submitted to the verifier. In the case that gas fuel is determined as primary fuel in accordance with paragraph 4.2.3 and that installed engine(s) have no approved NO_x Technical File tested in gas mode, the *SFC* of gas mode should be submitted by the manufacturer and confirmed by the verifier.

> **Note:** *SFC* in the NO_x Technical File are the values of a parent engine, and the use of such value of *SFC* for the EEDI calculation for member engines may have the following technical issues for further consideration:
>
> .1 the definition of "member engines" given in the NO_x Technical File is broad and specification of engines belonging to the same group/family may vary; and
>
> .2 the rate of NO_x emission of the parent engine is the highest in the group/family – i.e. CO_2 emission, which is in the trade-off relationship with NO_x emission, can be lower than the other engines in the group/family.

4.2.5 For ships to which regulation 24 of MARPOL Annex VI applies, the power curves used for the preliminary verification at the design stage should be based on reliable results of tank tests. A tank test for an individual ship may be omitted based on technical justifications such as availability of the results of tank tests for ships of the same type. In addition, the omission of tank tests is acceptable for a ship for which sea trials will be carried out under the condition as specified in paragraph 2.2.2 of the EEDI Calculation Guidelines, upon agreement of the shipowner and shipbuilder and with the approval of the verifier. To ensure the quality of tank tests, the ITTC quality system should be taken into account. Model tank tests should be witnessed by the verifier.

> **Note:** It would be desirable in the future that an organization conducting a tank test be authorized.

4.2.6 The verifier may request further information from the submitter, in addition to that contained in the EEDI Technical File, as necessary, to examine the calculation process of the attained EEDI. For the estimation of the ship speed at the design stage much depends on each shipbuilder's experience, and it may not be practicable for any person/organization other than the shipbuilder to fully examine the technical aspects of experience-based parameters, such as the roughness coefficient and wake scaling coefficient. Therefore, the preliminary verification should focus on the calculation process of the attained EEDI to ensure that it is technically sound and reasonable and follows regulation 22 of MARPOL Annex VI and the EEDI Calculation Guidelines.

> **Note 1:** A possible way forward for more robust verification is to establish a standard methodology of deriving the ship speed from the outcome of tank tests, by setting standard values for experience-based correction factors such as roughness coefficient and wake scaling coefficient. In this way, ship-by-ship performance comparisons could be made more objectively by excluding the possibility of arbitrary setting of experience-based parameters. If such standardization is sought, this would have an implication on how the ship speed adjustment based on sea trial results should be conducted, in accordance with paragraph 4.3.8 of these guidelines.
>
> **Note 2:** A joint industry standard to support the method and role of the verifier is expected to be developed.

4.2.7 Additional information that the verifier may request the submitter to provide includes, but is not limited to:

.1 descriptions of a tank test facility; this should include the name of the facility, the particulars of tanks and towing equipment, and the records of calibration of each monitoring equipment;

.2 lines of a model ship and an actual ship for the verification of the appropriateness of the tank test; the lines (sheer plan, body plan and half-breadth plan) should be detailed enough to demonstrate the similarity between the model ship and the actual ship;

.3 lightweight of the ship and displacement table for the verification of the deadweight;

.4 detailed report on the method and results of the tank test; this should include at least the tank test results at sea trial condition and under the condition as specified in paragraph 2.2.2 of the EEDI Calculation Guidelines;

.5 detailed calculation process of the ship speed, which should include the basis for the estimation of experience-based parameters such as roughness coefficient, and wake scaling coefficient;

.6 reasons for exempting a tank test, if applicable; this should include lines and tank test results of ships of the same type, and the comparison of the principal particulars of such ships and the ship in question. Appropriate technical justification should be provided, explaining why the tank test is unnecessary; and

.7 for LNG carriers, detailed calculation process of P_{AE} and $SFC_{SteamTurbine}$.

4.2.8 The verifier should issue the report on the Preliminary Verification of the EEDI after it has verified the attained EEDI at the design stage, in accordance with paragraphs 4.1 and 4.2 of these guidelines.

4.3 Final verification of the attained EEDI at sea trial

4.3.1 Sea trial conditions should be set as the conditions specified in paragraph 2.2.2 of the EEDI Calculation Guidelines, if possible.

4.3.2 Prior to the sea trial, the following documents should be submitted to the verifier: a description of the test procedure to be used for the speed trial, the final displacement table and the measured lightweight, or a copy of the survey report of deadweight, as well as a copy of the NO_x Technical File, as necessary. The test procedure should include, as a minimum, descriptions of all necessary items to be measured and corresponding measurement methods to be used for developing power curves under the sea trial condition.

4.3.3 The verifier should attend the sea trial and confirm:

.1 propulsion and power supply system, particulars of the engines or steam turbines, and other relevant items described in the EEDI Technical File;

.2 draught and trim;

.3 sea conditions;

.4 ship speed; and

.5 shaft power and RPM.

4.3.4 Draught and trim should be confirmed by the draught measurements taken prior to the sea trial. The draught and trim should be as close as practical to those at the assumed conditions used for estimating the power curves.

4.3.5 Sea conditions should be measured in accordance with ITTC Recommended Procedure 7.5-04-01-01.1 *Preparation, Conduct and Analysis of Speed/Power Trials* (2017, 2021 or 2022 version, as may be applicable at the time of sea trials) or ISO 15016:2015.

4.3.6 Ship speed should be measured in accordance with ITTC Recommended Procedure 7.5-04-01-01.1 *Preparation, Conduct and Analysis of Speed/Power Trials* (2017, 2021 or 2022 version, as may be applicable at the time of sea trials) or ISO 15016:2015, and at more than two points of which range includes the power of the main engine as specified in paragraph 2.2.5 of the EEDI Calculation Guidelines.

4.3.7 The main engine output, shaft power of propeller shaft (for LNG carriers having diesel electric propulsion system) or steam turbine output (for LNG carriers having steam turbine propulsion system) should be measured by shaft power meter or a method which the engine manufacturer recommends and the verifier approves. Other methods may be acceptable upon agreement of the shipowner and shipbuilder and with the approval of the verifier.

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, current, waves, shallow water, displacement, water temperature and water density in accordance with ITTC Recommended Procedure 7.5-04-01-01.1 *Preparation, Conduct and Analysis of Speed/Power Trials* (2017, 2021 or 2022 version, as may be applicable at the time of sea trials) or ISO 15016:2015. 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.

4.3.9 The submitter should compare the power curves obtained as a result of the sea trial and the estimated power curves at the design stage. In case differences are observed, the attained EEDI should be recalculated, as necessary, in accordance with the following:

.1 for ships for which sea trial is conducted under the condition as specified in paragraph 2.2.2 of the EEDI Calculation Guidelines: the attained EEDI should be recalculated using the measured ship speed at sea trial at the power of the main engine as specified in paragraph 2.2.5 of the EEDI Calculation Guidelines; and

.2 for ships for which sea trial cannot be conducted under the condition as specified in paragraph 2.2.2 of the EEDI Calculation Guidelines: if the measured ship speed at the power of the main engine as specified in paragraph 2.2.5 of the EEDI Calculation Guidelines at the sea trial conditions is different from the expected ship speed on the power curve at the corresponding condition, the shipbuilder should recalculate the attained EEDI by adjusting ship speed under the condition as specified in paragraph 2.2.2 of the EEDI Calculation Guidelines by an appropriate correction method that is agreed by the verifier.

An example of scheme of conversion from trial condition to EEDI condition at EEDI power is given as follows:

V_{ref} is obtained from the results of the sea trials at trial condition using the speed-power curves predicted by the tank tests. The tank tests shall be carried out at both draughts: trial condition corresponding to that of the S/P trials and EEDI condition. For trial conditions the power ratio α_P between model test prediction and sea trial result is calculated for constant ship speed. Ship speed from model test prediction for EEDI condition at EEDI power multiplied with α_P is V_{ref}.

$$\alpha_P = \frac{P_{Trial,P}}{P_{Trial,S}}$$

where:

$P_{Trial,P}$: power at trial condition predicted by the tank tests

$P_{Trial,S}$: power at trial condition obtained by the S/P trials

α_P: power ratio

Figure 2 shows an example of scheme of the conversion to derive the resulting ship speed at EEDI condition (V_{ref}) at EEDI power.

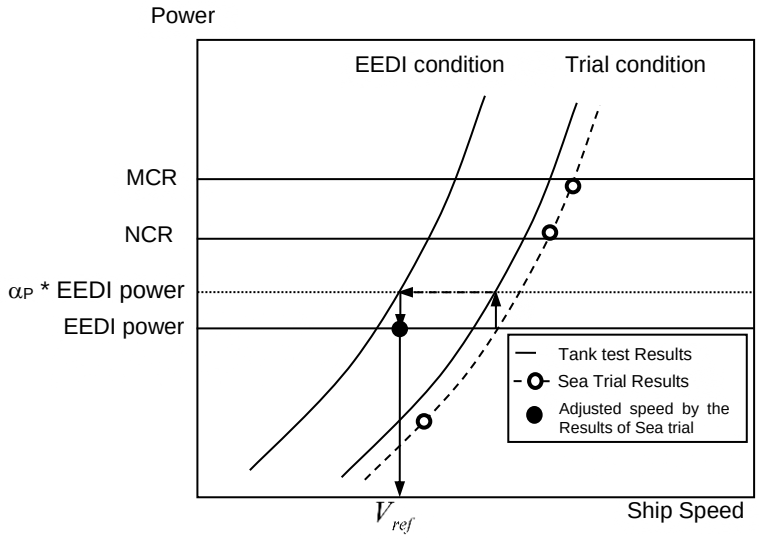


Figure 2: An example of scheme of conversion from trial condition to EEDI condition at EEDI power

Note: Further consideration would be necessary for speed adjustment methodology in paragraph 4.3.9.2 of these guidelines. One of the concerns relates to a possible situation where the power curve for sea trial condition is estimated in an excessively conservative manner (i.e. power curve is shifted in a leftward direction) with the intention to get an upward adjustment of the ship speed by making the measured ship speed at sea trial easily exceed the lower-estimated speed for sea trial condition at design stage.

4.3.10 In cases where the finally determined deadweight/gross tonnage differs from the designed deadweight/gross tonnage used in the EEDI calculation during the preliminary verification, the submitter should recalculate the attained EEDI using the finally determined deadweight/gross tonnage. The finally determined gross tonnage should be confirmed in the Tonnage Certificate of the ship.

4.3.11 The electrical efficiency $\eta_{(i)}$ should be taken as 91.3% for the purpose of calculating the attained EEDI. Alternatively, if a value of more than 91.3% is to be applied, $\eta_{(i)}$ should be obtained by measurement and verified by a method approved by the verifier.

4.3.12 In cases where the attained EEDI is calculated at the preliminary verification by using *SFC* based on the manufacturer's test report, owing to the non-availability at that time of the approved NO_x Technical File, the EEDI should be recalculated by using *SFC* in the approved NO_x Technical File. Also, for steam turbines, the EEDI should be recalculated by using *SFC* confirmed by the Administration or an organization recognized by the Administration at the sea trial.

4.3.13 The EEDI Technical File should be revised, as necessary, by taking into account the results of sea trials. Such revision should include, as applicable, the adjusted power curve based on the results of sea trials (namely, modified ship speed under the condition as specified in paragraph 2.2.2 of the EEDI Calculation Guidelines), the finally determined deadweight/gross tonnage, η for LNG carriers having diesel electric propulsion system and *SFC* described in the approved NO_x Technical File, and the recalculated attained EEDI based on these modifications.

4.3.14 The EEDI Technical File, if revised, should be submitted to the verifier for confirmation that the (revised) attained EEDI is calculated in accordance with regulation 22 of MARPOL Annex VI and the EEDI Calculation Guidelines.

4.4 Verification of the attained EEDI in case of major conversion

4.4.1 In cases of a major conversion of a ship, the shipowner should submit to a verifier an application for an Additional Survey with the EEDI Technical File duly revised, based on the conversion made and other relevant background documents.

4.4.2 The background documents should include as a minimum, but are not limited to:

.1 details of the conversion;

.2 EEDI parameters changed after the conversion and the technical justifications for each respective parameter;

.3 reasons for other changes made in the EEDI Technical File, if any; and

.4 calculated value of the attained EEDI with the calculation summary, which should contain, as a minimum, each value of the calculation parameters and the calculation process used to determine the attained EEDI after the conversion.

4.4.3 The verifier should review the revised EEDI Technical File and other documents submitted and verify the calculation process of the attained EEDI to ensure that it is technically sound and reasonable and follows regulation 22 of MARPOL Annex VI and the EEDI Calculation Guidelines.

4.4.4 For verification of the attained EEDI after a conversion, speed trials of the ship are required, as necessary.

APPENDIX 1

SAMPLE OF EEDI TECHNICAL FILE

1 Data

1.1 General information

Shipbuilder	JAPAN Shipbuilding Company
Hull no.	12345
IMO no.	94111XX
Ship type	Bulk carrier

1.2 Principal particulars

Length overall	250.0 m
Length between perpendiculars	240.0 m
Breadth, moulded	40.0 m
Depth, moulded	20.0 m
Summer load line draught, moulded	14.0 m
Deadweight at summer load line draught	150,000 tons

1.3 Main engine

Manufacturer	JAPAN Heavy Industries Ltd.
Type	6J70A
Maximum continuous rating (MCR)	15,000 kW x 80 rpm
SFC at 75% MCR	165.0 g/kWh
Number of set	1
Fuel type	Diesel Oil

1.4 Auxiliary engine

Manufacturer	JAPAN Diesel Ltd.
Type	5J-200
Maximum continuous rating (MCR)	600 kW x 900 rpm
SFC at 50% MCR	220.0 g/kWh
Number of set	3
Fuel type	Diesel Oil

1.5 Ship speed

Ship speed in deep water at summer load line draught at 75% of MCR	14.25 knots

2 Power curves

The power curves estimated at the design stage and modified after the speed trials are shown in figure 2.1.

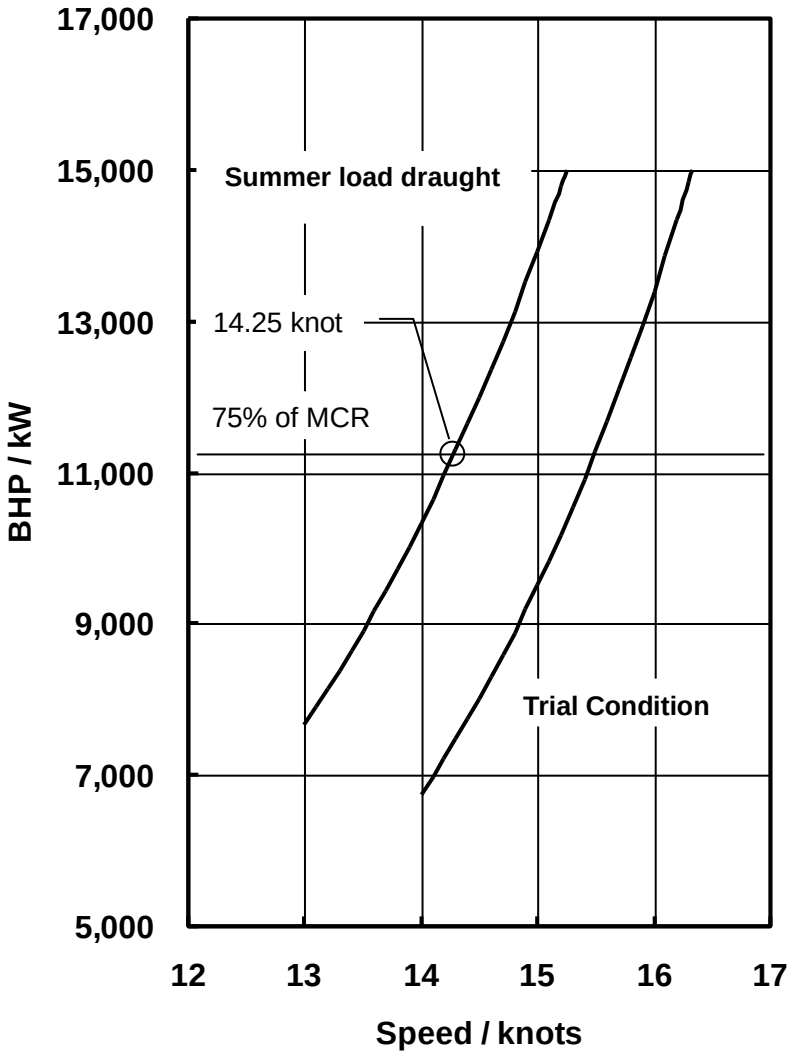


Figure 2.1: Power curves

3 Overview of propulsion system and electric power supply system

3.1 Propulsion system

3.1.1 Main engine

Refer to paragraph 1.3 of this appendix.

3.1.2 Propeller

Type	Fixed pitch propeller
Diameter	7.0 m
Number of blades	4
Number of set	1

3.2 Electric power supply system

3.2.1 Auxiliary engines

Refer to paragraph 1.4 of this appendix.

3.2.2 Main generators

Manufacturer	JAPAN Electric
Rated output	560 kW (700 kVA) x 900 rpm
Voltage	AC 450 V
Number of set	3

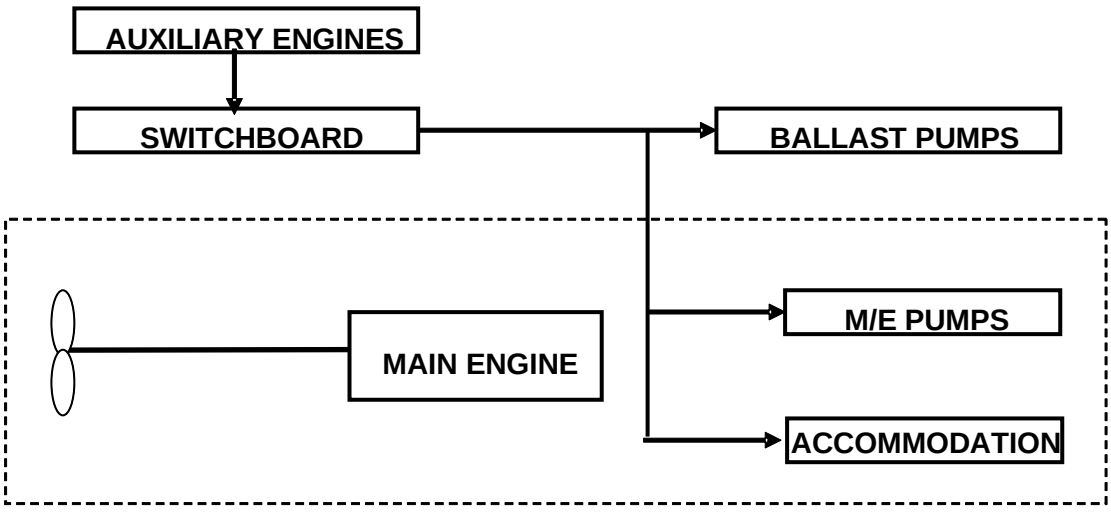


Figure 3.1: Schematic figure of propulsion and electric power supply system

4 Estimation process of power curves at design stage

Power curves are estimated based on model test results. The flow of the estimation process is shown below.

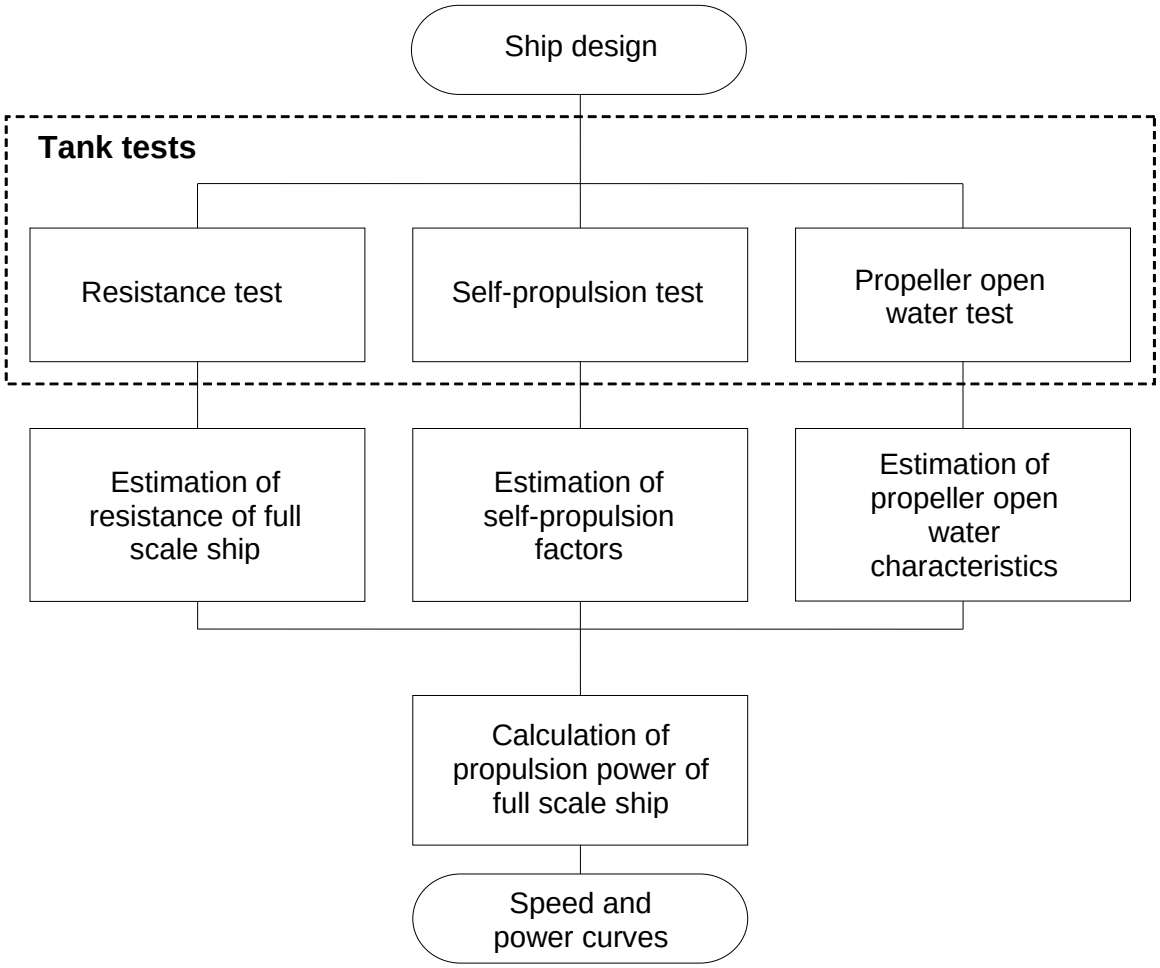


Figure 4.1: Flow chart of process for estimating power curves

5 Description of energy-saving equipment

5.1 Energy-saving equipment the effects of which are expressed as $P_{AEeff(i)}$ and/or $P_{eff(i)}$ in the EEDI calculation formula

N/A

5.2 Other energy-saving equipment

(Example)

5.2.1 Rudder fins

5.2.2 Propeller boss cap fins

……
(Specifications, schematic figures and/or photos, etc., for each piece of equipment or device should be indicated. Alternatively, attachment of a commercial catalogue may be acceptable.)

6 Calculated value of attained EEDI

6.1 Basic data

Type of ship	Capacity DWT	Speed V_{ref} (knots)
Bulk Carrier	150,000	14.25

6.2 Main engine

MCR_{ME} (kW)	Shaft gen.	P_{ME} (kW)	Type of fuel	C_{FME}	SFC_{ME} (g/kWh)
15,000	N/A	11,250	Diesel Oil	3.206	165.0

6.3 Auxiliary engines

P_{AE} (kW)	Type of fuel	C_{FAE}	SFC_{AE} (g/kWh)
625	Diesel Oil	3.206	220.0

6.4 Ice class

N/A

6.5 Innovative electrical energy-efficient technology

N/A

6.6 Innovative mechanical energy-efficient technology

N/A

6.7 Cubic capacity correction factor

N/A

6.8 Calculated value of attained EEDI

$$EEDI = \frac{\left(\prod_{j=1}^{M} f_j\right)\left(\sum_{i=1}^{nME} P_{ME(i)} \cdot C_{FME(i)} \cdot SFC_{ME(i)}\right) + \left(P_{AE} \cdot C_{FAE} \cdot SFC_{AE}\right)}{f_i \cdot f_c \cdot Capacity \cdot f_w \cdot V_{ref}}$$

$$+ \frac{\left\{\left(\prod_{j=1}^{M} f_j \cdot \sum_{i=1}^{nPTI} P_{PTI(i)} - \sum_{i=1}^{neff} f_{eff(i)} \cdot P_{AEeff(i)}\right) C_{FAE} \cdot SFC_{AE}\right\} - \left(\sum_{i=1}^{neff} f_{eff(i)} \cdot P_{eff(i)} \cdot C_{FME} \cdot SFC_{ME}\right)}{f_i \cdot f_c \cdot Capacity \cdot f_w \cdot V_{ref}}$$

$$= \frac{1 \times (11250 \times 3.206 \times 165.0) + (625 \times 3.206 \times 220.0) + 0 - 0}{1 \cdot 1 \cdot 150000 \cdot 1 \cdot 14.25}$$

$$= 2.99 \quad (\mathrm{g - CO_2/ton \cdot mile})$$

attained EEDI: 2.99 g-CO_2/ton mile

7 Calculated value of attained $EEDI_{weather}$

7.1 Representative sea conditions

	Mean wind speed	Mean wind direction	Significant wave height	Mean wave period	Mean wave direction
BF6	12.6 (m/s)	0 (deg.)*	3.0 (m)	6.7 (s)	0 (deg.)*

* Heading direction of wind/wave in relation to the ship's heading, i.e. 0 (deg.) means the ship is heading directly into the wind.

7.2 Calculated weather factor, f_w

f_w	0.900

7.3 Calculated value of attained $EEDI_{weather}$

attained $EEDI_{weather}$: 3.32 g-CO_2/ton mile

APPENDIX 2

GUIDELINES FOR VALIDATION OF ELECTRIC POWER TABLES FOR EEDI (EPT-EEDI)

1 INTRODUCTION

The purpose of these guidelines is to assist recognized organizations in the validation of electric power tables (EPT) for the calculation of the Energy Efficiency Design Index (EEDI) for ships. As such, these guidelines support the implementation of the EEDI Calculation Guidelines and the *Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)*. These guidelines will also assist shipowners, shipbuilders, ship designers and manufacturers in relation to aspects of the development of more energy-efficient ships and also in understanding the procedures for the EPT-EEDI validation.

2 OBJECTIVES

These guidelines provide a framework for the uniform application of the EPT-EEDI validation process for ships for which required auxiliary engine power is calculated under paragraph 2.2.5.7 of the EEDI Calculation Guidelines.

3 DEFINITIONS

3.1 *Applicant* means an organization, primarily a shipbuilder or a ship designer, which requests the EPT-EEDI validation in accordance with these guidelines.

3.2 *Validator* means a recognized organization which conducts the EPT-EEDI validation in accordance with these guidelines.

3.3 *Validation* for the purpose of these guidelines means review of submitted documents and survey during construction and sea trials.

3.4 *Standard EPT-EEDI-Form* refers to the layout given in appendix 3, containing the EPT-EEDI results that will be the subject of validation. Other supporting documents submitted for this purpose will be used as reference only and will not be subject to validation.

3.5 P_{AE} herein is defined as per the definition in paragraph 2.2.5.6 of the EEDI Calculation Guidelines.

3.6 *Ship service and engine-room loads* refer to all the load groups which are needed for the hull, deck, navigation and safety services, propulsion and auxiliary engine services, engine-room ventilation and auxiliaries and ship's general services.

3.7 *Diversity factor* is the ratio of the "total installed load power" and the "actual load power" for continuous loads and intermittent loads. This factor is equivalent to the product of service factors for load, duty and time.

4 APPLICATION

4.1 These guidelines are applicable to ships as stipulated in paragraph 2.2.5.7 of the EEDI Calculation Guidelines.

4.2 These guidelines should be applied for new ships for which an application for an EPT-EEDI validation has been submitted to a validator.

4.3 The steps of the validation process include:

.1 review of documents during the design stage

.1 check if all relevant loads are listed in the EPT;

.2 check if reasonable service factors are used; and

.3 check the correctness of the P_{AE} calculation based on the data given in the EPT.

.2 survey of installed systems and components during construction stage

.1 check if a randomly selected set of installed systems and components are correctly listed with their characteristics in the EPT.

.3 survey of sea trials

.1 check if selected units/loads specified in EPT are observed.

5 SUPPORTING DOCUMENTS

5.1 The applicant should provide as a minimum the ship electric balance load analysis.

5.2 Such information may contain shipbuilders' confidential information. Therefore, after the validation, the validator should return all or part of such information to the applicant at the applicant's request.

5.3 A special EEDI condition during sea trials may be needed and defined for each ship and included in the sea trial schedule. For this condition, a special column should be inserted into the EPT.

6 PROCEDURES FOR VALIDATION

6.1 General

P_{AE} should be calculated in accordance with the EPT-EEDI Calculation Guidelines. EPT-EEDI validation should be conducted in two stages: preliminary validation at the design stage and final validation during sea trials. The validation process is presented in figure 1.

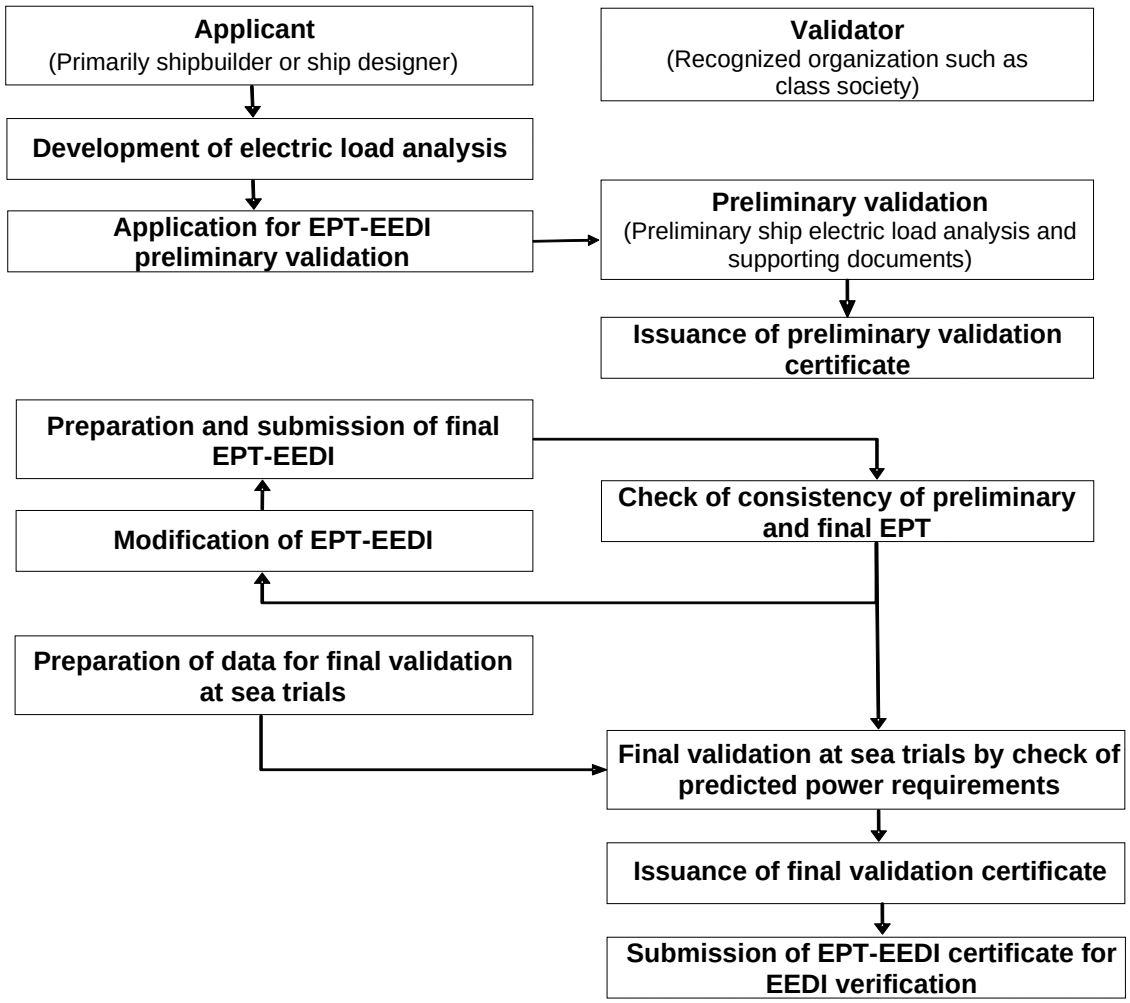


Figure 1: Basic flow of EPT-EEDI validation process

6.2 Preliminary validation at the design stage

6.2.1 For the preliminary validation at the design stage, the applicant should submit to a validator an application for the validation of EPT-EEDI, inclusive of the EPT-EEDI Form, and all the relevant and necessary information for the validation as supporting documents.

6.2.2 The applicant should supply as a minimum the supporting data and information, as specified in appendix A (to be developed).

6.2.3 The validator may request from the applicant additional information to that contained in these guidelines, as necessary, to enable the validator to examine the calculation process of the EPT-EEDI. The estimation of the ship EPT-EEDI at the design stage depends on each applicant's experience, and it may not be practicable to fully examine the technical aspects and details of each machinery component. Therefore, the preliminary validation should focus on the calculation process of the EPT-EEDI that should follow best marine practices.

> **Note:** A possible way forward for more robust validation is to establish a standard methodology of deriving the ship EPT by setting standard formats as agreed and used by industry.

6.3 Final validation

6.3.1 The final validation process should as a minimum include a check of the ship electric load analysis to ensure that all electric consumers are listed, and that their specific data and the calculations in the power table itself are correct and are supported by sea trial results. If necessary, additional information has to be requested.

6.3.2 For the final validation, the applicant should revise the EPT-EEDI Form and supporting documents as necessary, by taking into account the characteristics of the machinery and other electrical loads actually installed on board the ship. The EEDI condition at sea trials should be defined and the expected power requirements in these conditions documented in the EPT. Any changes within the EPT from design stage to construction stage should be highlighted by the shipyard.

6.3.3 The preparation for the final validation includes a desktop check comprising:

.1 consistency of preliminary and final EPT;

.2 changes of service factors (compared to the preliminary validation);

.3 all electric consumers are listed;

.4 their specific data and the calculations in the power table itself are correct; and

.5 in case of doubt, component specification data is checked in addition.

6.3.4 A survey prior to sea trials is performed to ensure that machinery characteristics and data as well as other electric loads comply with those recorded in the supporting documents. This survey does not cover the complete installation but selects randomly a number of samples.

6.3.5 For the purpose of sea trial validation, the surveyor will check the data of selected systems and/or components given in the special column added to the EPT for this purpose or the predicted overall value of electric load by means of practicable measurements with the installed measurement devices.

7 ISSUANCE OF THE EPT-EEDI STATEMENT OF VALIDATION

7.1 The validator should stamp the EPT-EEDI Form as "Noted" having validated the EPT-EEDI in the preliminary validation stage, in accordance with these guidelines.

7.2 The validator should stamp the EPT-EEDI Form as "Endorsed" having validated the final EPT-EEDI in the final validation stage in accordance with these guidelines.

APPENDIX 3

ELECTRIC POWER TABLE FORM FOR ENERGY EFFICIENCY DESIGN INDEX (EPT-EEDI FORM) AND STATEMENT OF VALIDATION

Ship ID:
IMO no.: _____
Ship's name: _____
Shipyard: _____
Hull no.: _____

Applicant:

Name: _____
Address: _____
_____

Validation stage:

☐ Preliminary validation

☐ Final validation

Summary results of EPT-EEDI

Load group	**Seagoing condition EEDI Calculation Guidelines**		**Remarks**
	Continuous load (kW)	**Intermittent load (kW)**	
Ship service and engine-room loads			
Accommodation and cargo loads			
Total installed load			
Diversity factor			
Normal seagoing load			
Weighted average efficiency of generators			
P_{AE}			

Supporting documents

Title	**ID or remarks**

Validator details:
Organization: _____
Address: _____
_____

This is to certify that the above-mentioned electrical loads and supporting documents have been reviewed in accordance with EPT-EEDI Validation guidelines and the review shows a reasonable confidence for use of the above P_{AE} in EEDI calculations.

Date of review: _____ Statement of validation no. _____

This statement is valid on condition that the electric power characteristics of the ship do not change.

Signature of Validator

_____
Printed name:

***

ANNEX 11

MEPC RESOLUTION.366(79)
(adopted on 16 December 2022)

INVITATION TO MEMBER STATES TO ENCOURAGE VOLUNTARY COOPERATION BETWEEN THE PORT AND SHIPPING SECTORS TO CONTRIBUTE TO REDUCING GHG EMISSIONS FROM SHIPS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

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

RECALLING ALSO that Regulation 28.10 of MARPOL ANNEX VI encourages Administrations, port authorities and other stakeholders as appropriate to provide incentives to ships rated A or B,

HAVING ADOPTED resolution MEPC.304(72) on the *Initial IMO Strategy on reduction of GHG emissions from ships* (hereinafter the Initial Strategy),

NOTING that the Initial Strategy calls for the encouragement of port developments and activities globally to facilitate reduction of GHG emissions from shipping, including provision of ship and shoreside/onshore power supply from renewable sources, infrastructure to support supply of alternative low-carbon and zero-carbon fuels, and to further optimize the logistic chain and its planning, including ports,

RECALLING that, at its seventy-fourth session, the Committee adopted resolution MEPC.323(74) on the *Invitation to Member States to encourage voluntary cooperation between the port and shipping sectors to contribute to reducing GHG emissions from ships,*

RECALLING ALSO that, at its seventy-ninth session, the Committee agreed to revise resolution MEPC.323(74),

RECOGNIZING that many ports are already taking action to facilitate the reduction of GHG emissions from ships,

RECOGNIZING ALSO present-day initiatives for increasing cooperation between ports and other actors in the maritime industry in developing actions that aid the reduction of GHG emissions of the maritime transport system,

RECOGNIZING FURTHER that these actions and initiatives could be part of voluntary National Action Plans which are encouraged in resolution MEPC.XX(79),

RECOGNIZING the value of capacity-building, knowledge sharing and cooperation for all States, including developing countries, particularly least developed countries (LDCs) and small island developing States (SIDS),

HAVING AGREED the need to encourage further cooperation between ports and shipping to facilitate the reduction of GHG emissions from ships and the value of collaboration,

1 INVITES Member States to promote the consideration and adoption by ports within their jurisdiction, of regulatory, technical, operational and economic actions to facilitate the reduction of GHG emissions from ships. Those could include but are not limited to the provision of: (a) onshore power supply* (preferably from renewable sources); (b) safe and efficient bunkering of alternative low-carbon and zero-carbon fuels; (c) incentives promoting sustainable low-carbon and zero-carbon shipping; (d) support for the optimization of port calls; and (e) facilitating voluntary cooperation through the whole value chain, including ports, to create favourable conditions to reduce GHG emissions from ships through shipping routes and maritime hubs consistent with international law, including the multilateral trade regime;

2 ALSO INVITES Member States to facilitate the uptake of actions such as those identified in paragraph 1 through appropriate actions, which may include:

.1 supporting the viability of business cases for ship and in-port renewable power-to-ship solutions and the use of these solutions;

.2 encouraging cooperation between ports, bunker suppliers, shipping companies and all relevant levels of authority in addressing the supply and availability of alternative low-carbon and zero-carbon fuels, including the legal, regulatory and infrastructural barriers to the efficient and safe handling and bunkering of alternative low-carbon and zero-carbon fuels;

.3 promoting incentive schemes that address GHG emissions and sustainability of international shipping and encouraging more incentive providers and shipping companies to join these; and

.4 supporting the industry's collective efforts to improve quality and availability of data and develop necessary global digital data standards that would allow reliable and efficient data exchange between ship and shore as well as enhanced slot allocation policies thereby optimizing voyages and port calls and facilitating just-in-time arrival of ships;

3 INVITES Member States and international organizations to support collaboration, capacity-building and sharing of best practices through initiatives that bring together relevant stakeholders, such as IMO capacity-building projects (e.g. GMN, NextGEN Connect and GreenVoyage2050 projects) and the IMO Global Industry Alliance to Support Low Carbon Shipping;

4 ALSO INVITES Member States and international organizations to bring to the attention of the Committee successful examples, including results, of initiatives taken in relation to port developments and activities to facilitate the reduction of GHG emissions from ships;

5 REQUESTS Member States and international organizations to bring this resolution to the attention of port authorities, port and terminal operators, shipowners, ship operators, cargo handling and maritime service providers and other interested groups; and

6 REVOKES resolution MEPC.323(74).

***

* Refer to MEPC.1/Circ.794 and further guidelines concerning the safe operation of onshore power supply under development by the Maritime Safety Committee.

ANNEX 12

MEPC RESOLUTION 367(79)
(adopted on 16 December 2022)

ENCOURAGEMENT OF MEMBER STATES TO DEVELOP AND SUBMIT VOLUNTARY NATIONAL ACTION PLANS TO ADDRESS GHG EMISSIONS FROM 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 resolution MEPC.304(72) on *Initial IMO Strategy on reduction of GHG emissions from ships* (the Initial Strategy),

NOTING that the Initial Strategy includes a candidate short-term measure to encourage the development and update of National Action Plans to develop policies and strategies to address GHG emissions from international shipping in accordance with guidelines to be developed by the Organization, taking into account the need to avoid regional or unilateral measures,

NOTING ALSO the role of Member States in extending the emission reduction efforts to all shipping-related sectors which are not necessarily covered by the Organization's conventions,

NOTING FURTHER resolution MEPC.366(79) *on Invitation to Member States to encourage voluntary cooperation between the port and shipping sectors to contribute to reducing GHG emissions from ships*,

RECALLING that, at its seventy-fifth session, the Committee adopted resolution MEPC.327(75) on *Encouragement of Member States to develop and submit voluntary national action plans to address GHG emissions from ships,*

RECALLING ALSO that, at its seventy-ninth session, the Committee agreed to revise resolution MEPC.327(75),

RECOGNIZING that many Member States are already taking actions at national level to facilitate the reduction of GHG emissions from ships,

RECOGNIZING ALSO that many Member States, industry, ports and other relevant stakeholders are voluntarily working together to strengthen cooperation through the whole value chain to create favourable conditions along specific shipping routes to reduce GHG emissions from ships,

COMMENDING those Member States that have already prepared National Actions Plans and encourages them to share their experiences with the Organization,

RECOGNIZING that since 2015 IMO has, through its various capacity-building initiatives and by offering several generic guide documents, assisted countries to develop national strategies to address emissions from ships,

RECOGNIZING ALSO the value of mobilizing national resources, promoting experience and information-sharing and cooperation for all national stakeholders,

1 INVITES Member States to voluntarily submit their National Action Plans to the Organization, outlining respective policies and actions, as soon as possible, and provide updates, as relevant, thereafter;

2 SUGGESTS the National Action Plans could include but are not limited to: (a) improving domestic institutional and legislative arrangements for the effective implementation of existing IMO instruments; (b) developing activities to further enhance the energy efficiency of ships; (c) initiating research and advancing the uptake of alternative low-carbon and zero-carbon fuels; (d) encouraging the production and distribution of such fuels for shipping; (e) accelerating port emission reduction activities, consistent with resolution MEPC.366(79); (f) fostering capacity-building, awareness-raising and regional cooperation; (g) facilitating the development of infrastructure for green shipping; and (h) facilitating voluntary cooperation through the whole value chain, including ports, to create favourable conditions to reduce GHG emissions from ships through shipping routes and maritime hubs consistent with international law, including the multilateral trade regime;

3 INVITES Member States to elaborate on those arrangements (legal, policy, institutional, etc.) that they put in place or plan to do so to support emission reduction from ships, in accordance with their national conditions, circumstances and priorities;

4 ALSO INVITES those Member States to take into account the guide on *National Action Plans to address GHG emissions from ships, from decision to implementation* as developed by the GreenVoyage2050 project;[1]

5 ENCOURAGES those Member States to initiate early actions to facilitate the reduction of GHG emissions from ships without awaiting the entry into force of measures in the IMO context;

6 REQUESTS the Secretariat to continue to provide guidance and any further action which may be taken (e.g. through the GMN, NextGEN Connect and GreenVoyage2050 projects or the IMO GHG-TC Trust Fund) to assist Member States including developing countries, in particular SIDS and LDCs, in developing National Action Plans;

7 ALSO REQUESTS the Secretariat to facilitate the sharing of relevant information provided in the submitted National Action Plans, including by means of the dedicated website;[2]

8 REQUESTS the Member States to bring this resolution to the attention of all stakeholders on a national scale, including Administrations, ports, ship designers, engine manufacturers, fuel suppliers, seafarers and other interested groups;

9 REVOKES resolution MEPC.327(75).

***

[1] See: https://www.imo.org/en/ourwork/environment/pages/relevant-national-action-plans-and-strategies.aspx

[2] See: https://greenvoyage2050.imo.org/national-action-plan/

ANNEX 13

RESOLUTION MEPC.368(79)

AMENDMENTS TO THE 2014 STANDARD SPECIFICATION FOR SHIPBOARD INCINERATORS (RESOLUTION MEPC.244(66))

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

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

RECALLING ALSO that, at its fortieth session, the Committee adopted, by resolution MEPC.76(40), the *Standard specification for shipboard incinerators*, in respect of regulation 16.6.1 and appendix IV to MARPOL Annex VI,

NOTING that, at its forty-fifth session, the Committee adopted, by resolution MEPC.93(45), *Amendments to the standard specification for shipboard incinerators*,

NOTING ALSO that, at its sixty-fourth session, the Committee decided that incinerators with a capacity greater than 1,500 kW and up to 4,000 kW could be type-approved under the existing standard specification for shipboard incinerators,

NOTING FURTHER that, at its sixty-sixth session, the Committee adopted, by resolution MEPC.244(66), the *2014 Standard specification for shipboard incinerators*, which superseded the *Standard specification for shipboard incinerators* adopted by resolution MEPC.76(40), as amended by resolution MEPC.93(45),

RECOGNIZING the need to remove the discrepancies between resolution MEPC.244(66) and SOLAS chapter II-2 on fire protection requirements for incinerators and waste stowage spaces,

1. ADOPTS the *Amendments to the 2014 Standard specification for shipboard incinerators (resolution MEPC.244(66))*, as set out in the annex to the present resolution;

2. INVITES the Parties to MARPOL Annex VI and other Member Governments to bring the above amendments to the attention of all Parties concerned.

ANNEX

AMENDMENTS TO THE 2014 STANDARD SPECIFICATION FOR SHIPBOARD INCINERATORS (RESOLUTION MEPC.244(66))

1 In the table of contents, the entry for annex 2 is deleted and the entries for annex 3, annex 4 and annex 5 are renumbered as annex 2, annex 3 and annex 4, respectively.

2 Paragraph 1.5 is replaced by the following:

"1.5 This Specification provides emission requirements in annex 1. Provisions for incinerators integrated with heat recovery units and provisions for flue gas temperature are given in annex 2 and annex 3, respectively."

3 Annex 2 is deleted in its entirety and annexes 3, 4 and 5 are renumbered as annexes 2, 3 and 4, respectively.

***

ANNEX 14

STATUS REPORT OF THE OUTPUTS OF MEPC FOR THE 2022-2023 BIENNIUM

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.2	Input on identifying emerging needs of developing countries, in particular SIDS and LDCs to be included in the ITCP	Continuous	TCC	MSC / MEPC / FAL / LEG		Ongoing		MEPC 78/17, section 12; MEPC 79/16, section 7
1. Improve implementation	1.4	Analysis of consolidated audit summary reports	Annual	Assembly	MSC / MEPC / LEG / TCC / III	Council	Completed		MEPC 78/17, paragraphs 10.7 to 10.11; MEPC 79/16, paragraph 9.3
1. Improve implementation	1.5	Non-exhaustive list of obligations under instruments relevant to the IMO Instruments Implementation Code (III Code)	Annual	MSC / MEPC	III		Completed		MEPC 77/16, paragraphs 10.8 and 10.9; MEPC 79/16, paragraph 9.13
1. Improve implementation	1.7	Identify thematic priorities within the area of maritime safety and security, marine environmental protection, facilitation of maritime traffic and maritime legislation	Annual	TCC	MSC / MEPC / FAL / LEG		Completed		MEPC 78/17, section 12
1. Improve implementation	1.9	Report on activities within the ITCP related to the OPRC Convention and the OPRC-HNS Protocol	Annual	TCC	MEPC		Completed		MEPC 78/17, section 12

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.11	Measures to harmonize port State control (PSC) activities and procedures worldwide	Continuous	MSC / MEPC	HTW / PPR / NCSR	III	Ongoing		MEPC 78/17, paragraphs 7.73 and 9.8; MEPC 79/16, paragraphs 9.5 and 9.6
1. Improve implementation	1.13	Review of mandatory requirements in the SOLAS, MARPOL and Load Line Conventions and the IBC and IGC Codes regarding watertight doors on cargo ships	2022	MSC / MEPC	CCC	SDC	Completed		MSC 104/18, paragraphs 3.19 to 3.21; MEPC 78/17, section 3
1. Improve implementation	1.14	Development of guidance in relation to Mandatory IMO Member State Audit Scheme (IMSAS) to assist in the implementation of the III Code by Member States	2023	MSC / MEPC	III		In progress		MEPC 76/15, paragraphs 10.2 and 12.5; MEPC 79/16, paragraph 9.3
1. Improve implementation	1.15	Revised guidance on methodologies that may be used for enumerating viable organisms	2022	MEPC	PPR		Completed		MEPC 78/17 paragraph 4.8

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.16	Review of the 2014 Guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life (MEPC.1/Circ.833) (2014 Guidelines) and identification of next steps	2023	MEPC	SDC		In progress		MEPC 78/17 paragraph 10.3
1. Improve implementation	1.18	Development of guidance on assessments and applications of remote surveys, ISM Code audits and ISPS Code verifications	2024	MSC/ MEPC	III		In progress		MSC 105/20, paragraph 18.52; MEPC 79/16, paragraph 9.13
1. Improve implementation	1.21	Review of the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (resolution MEPC.207(62))	2023	MEPC	PPR		In progress		PPR 9/21, section 7; MEPC 78/17, paragraph 9.1

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.23	Evaluation and harmonization of rules and guidance on the discharge of discharge water from EGCS into the aquatic environment, including conditions and areas	2025	MEPC	PPR		Extended		PPR 9/21, section 10; MEPC 78/17, paragraphs 5.9 to 5.18 and 14.14; MEPC 79/16, paragraphs 5.3 to 5.15
Note: MEPC 78 agreed to: extend the target completion year to 2025; not to include the output in the provisional agenda for PPR 10; and consider reinstating the output in the provisional agenda of a future session of the Sub-Committee (after PPR 10) subject to further proposals to the Committee on part 3 (regulatory matters) and part 4 (database of substances) of the scope of work of the output by interested Member States and international organizations.									
1. Improve implementation	1.24	Review of the BWM Convention based on data gathered in the experience-building phase	2023	MEPC			In progress		MEPC 78/17, section 4; MEPC 79/16, section 4
1. Improve implementation	1.25	Urgent measures emanating from issues identified during the experience-building phase of the BWM Convention	2023	MEPC			In progress		MEPC 78/17, section 4; MEPC 79/16, section 4
1. Improve implementation	1.26	Revision of MARPOL Annex IV and associated guidelines	2023	MEPC	III / HTW	PPR	In progress		PPR 9/21, section 14; MEPC 78/17, paragraphs 14.7 to 14.11
Note: MEPC 78 agreed to amend the title of the existing output 1.26 to "Revision of MARPOL Annex IV and associated guidelines", and that specific work to be carried out be captured in the scope of work, i.e. (1) introduce provisions for record-keeping and measures to confirm the lifetime performance of sewage treatment plants; (2) consider amending the definition of "person" as provided in regulation 1 of MARPOL Annex IV, taking into account persons other than crew and passengers; and (3) prohibit fitting comminuting and disinfecting systems (CDS) on new ships.									

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.30	Review of the 2014 Standard specification for shipboard incinerators (resolution MEPC.244(66)) regarding fire protection requirements for incinerators and waste stowage spaces	2022	MEPC	SSE		Completed		SSE 8/22, section 19; MEPC 79/16, paragraph 9.2
Note: SSE agreed to a draft MEPC resolution on amendments to the 2014 Standard specification for shipboard incinerators (resolution MEPC.244(66)), as set out in annex 17, which was adopted by MEPC 79.									
2. Integrate new and advancing technologies in the regulatory framework	2.2	Approved ballast water management systems which make use of Active Substances, taking into account recommendations of the GESAMP-BWWG	Annual	MEPC			Completed		MEPC 78/17, paragraph 4.7; MEPC 79/16, paragraphs 4.9 to 4.14
2. Integrate new and advancing technologies in the regulatory framework	2.13	Review of the IBTS Guidelines and amendments to the IOPP Certificate and Oil Record Book	2023	MEPC	PPR		In progress		MEPC 78/17, paragraphs 9.11 to 9.19
2. Integrate new and advancing technologies in the regulatory framework	2.15	Development of amendments to MARPOL Annex VI and the NOx Technical Code on the use of multiple engine operational profiles for a marine diesel engine	2023	MEPC	PPR		In progress		PPR 9/21, section 11; MEPC 78/17, paragraphs 5.5 to 5.8

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
2. Integrate new and advancing technologies in the regulatory framework	2.17	Consideration of development of goal-based ship construction standards for all ship types	2023	MSC / MEPC			No work requested by MSC		
2. Integrate new and advancing technologies in the regulatory framework	2.18	Standards for shipboard gasification of waste systems and associated amendments to regulation 16 of MARPOL Annex VI	2023	MEPC	PPR		In progress		PPR 9/21, section 9
2. Integrate new and advancing technologies in the regulatory framework	2.19	Revision of guidelines associated with the AFS Convention as a consequence of the introduction of controls on cybutryne	2022	MEPC	PPR		Completed		PPR 9/21, section 6; MEPC 78/17, paragraphs 9.7 and 9.8
3. Respond to climate change	3.1	Treatment of ozone-depleting substances used by ships	Annual	MEPC			Completed		MEPC 74/18, paragraphs 5.75 and 5.76
3. Respond to climate change	3.2	Further development of mechanisms needed to achieve the reduction of GHG emissions from international shipping	Annual	MEPC			Completed		MEPC 78/17, sections 6 and 7; MEPC 79/16, sections 6 and 7

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
3. Respond to climate change	3.3	Reduction of the impact on the Arctic of emissions of Black Carbon from international shipping	2023	MEPC	PPR		In progress		PPR 9/21, section 8; MEPC 79/16, paragraphs 5.16 to 5.22
3. Respond to climate change	3.4	Promotion of technical cooperation and transfer of technology relating to the reduction of GHG emissions from ships	2023	MEPC			In progress		MEPC 78/17, sections 7 and 12; MEPC 79/16, section 7
3. Respond to climate change	3.5	Revision of guidelines concerning chapter 4 of MARPOL Annex VI	2023	MEPC			In progress		MEPC 78/17, section 6; MEPC 79/16, section 6
3. Respond to climate change	3.6	EEDI reviews required under regulation 21.6 of MARPOL Annex VI	2023	MEPC			In progress		MEPC 78/17, section 6; MEPC 79/16, section 6
3. Respond to climate change	3.7	Further technical and operational measures for enhancing the energy efficiency of international shipping	2023	MEPC			In progress		MEPC 78/17, section 6; MEPC 79/16, section 6
4. Engage in ocean governance	4.1	Identification and protection of Special Areas, ECAs and PSSAs and associated protective measures	Continuous	MEPC	NCSR		Ongoing		MEPC 78/17, section 11; MEPC 79/16, section 10

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
4. Engage in ocean governance	4.2	Input to the ITCP on emerging issues relating to sustainable development and achievement of the SDGs	Continuous	TCC	MSC / MEPC /FAL / LEG		Ongoing		MEPC 78/17, section 12
4. Engage in ocean governance	4.3	Follow-up work emanating from the Action Plan to Address Marine Plastic Litter from Ships	2023	MEPC	PPR / III / HTW		In progress		MEPC 78/17, section 8; MEPC 79/16, section 8
6. Address the human element	6.1	Role of the human element	Continuous	MSC / MEPC	III / PPR / CCC / SDC / SSE / NCSR	HTW	Ongoing		MEPC 78/17, paragraphs 10.4 and 13.1
6. Address the human element	6.2	Validated model training courses	Continuous	MSC / MEPC	III / PPR / CCC / SDC / SSE / NCSR	HTW	Ongoing		PPR 9/21, section 12; MEPC 79/16, paragraphs 9.1, 9.14 to 9.15
Note: MSC 105 approved the holding of virtual meetings of three drafting groups, to take place during 2022, to consider draft model courses for validation at HTW 9, which was endorsed by the Council (MSC 105/20, paragraph 18.56.2) (C127/D, paragraph 10.3.4).									
6. Address the human element	6.10	Development of an entrant training manual for PSC personnel	2023	MSC / MEPC	III		In progress		MEPC 76/15, paragraphs 10.1, 10.2 and 12.5
6. Address the human element	6.11	Development of training provisions for seafarers related to the BWM Convention	2023	MEPC	HTW		Extended		MSC 105/20, paragraph 18.51; MEPC 78/17, paragraph10.6
Note: Target completion year extended to 2023.									

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
6. Address the human element	6.16	Development of an operational guide on the response to spills of Hazardous and Noxious Substances (HNS)	2023	MEPC	PPR		Extended		PPR 9/21, section 4; MEPC 78/17, paragraph 14.13
Note: MEPC 78 agreed to extend the target completion year to 2023.									
7. Ensure regulatory effectiveness	7.1	Unified interpretation of provisions of IMO safety, security, environment, facilitation, liability and compensation-related conventions	Continuous	MSC / MEPC / FAL / LEG	III / PPR / CCC / SDC / SSE / NCSR		Ongoing		MEPC 78/17, section 4, and paragraphs 5.6 and 5.7; MEPC 79/16, paragraphs 4.8, 4.26, 4.27, 6.26 to 6.29
7. Ensure regulatory effectiveness	7.3	Safety and pollution hazards of chemicals and preparation of consequential amendments to the IBC Code	Continuous	MEPC	PPR		Ongoing		PPR 9/21, section 3; MEPC 78/17, paragraph 9.3
7. Ensure regulatory effectiveness	7.4	Lessons learned and safety issues identified from the analysis of marine safety investigation reports	Annual	MSC / MEPC	III		Completed		III 7/17, section 4; III 8/19, section 4; MEPC 79/16, paragraph 9.3
7. Ensure regulatory effectiveness	7.5	Identified issues relating to the implementation of IMO instruments from the analysis of PSC data	Annual	MSC / MEPC	III		Completed		III 7/17, section 6; MEPC 79/16, paragraphs 12.13 and 12.14
Note: MEPC 79 agreed, subject to the endorsement by the Council, to rename output 7.5 as "Identified issues relating to the implementation of IMO instruments from the analysis of data", extending the scope of the output.									

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
7. Ensure regulatory effectiveness	7.7	Consideration and analysis of reports on alleged inadequacy of port reception facilities	Annual	MEPC	III		Completed		III 7/17, section 3; MEPC 79/16, paragraphs 9.3 and 9.4
7. Ensure regulatory effectiveness	7.8	Monitoring the worldwide average sulphur content of fuel oils supplied for use on board ships	Annual	MEPC			Completed		MEPC 78/17, paragraphs 5.3 and 5.4
7. Ensure regulatory effectiveness	7.11	Development of measures to reduce risks of use and carriage of heavy fuel oil as fuel by ships in Arctic waters	2023	MEPC	PPR		Extended		PPR 9/21, section 12; MEPC 78/17, paragraphs 14.3 to 14.6
Note: MEPC 78 agreed to extend the target completion year to 2023.									
7. Ensure regulatory effectiveness	7.16	Development of necessary amendments to MARPOL Annexes I, II, IV, V and VI to allow States with ports in the Arctic region to enter into regional arrangements for port reception facilities (PRFs)	2023	MEPC	PPR		Completed		PPR 9/21, section 13; MEPC 78/17, paragraphs9.9 and 9.10; MEPC 79/16, section 3
7. Ensure regulatory effectiveness	7.27	Updated Survey Guidelines under the Harmonized System of Survey and Certification (HSSC)	Annual	MSC / MEPC	III		Completed		III 7/17, section 8; MEPC 77/16, paragraph10.7; MEPC 79/16, paragraphs 9.7 to 9.9

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
7. Ensure regulatory effectiveness	7.28	Consideration of reports of incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas	Annual	MSC / MEPC	III	CCC	No work requested		CCC 7/15, section 9
7. Ensure regulatory effectiveness	7.43	Revision of regulation 13.2.2 of MARPOL Annex VI to clarify that a marine diesel engine replacing a boiler shall be considered a replacement engine.	2023	MEPC		PPR	No work requested		MEPC 78/17, paragraph 14.13
Note: The output was approved by MEPC 77 and included in the Committee's post-biennial agenda (1 session required for its completion). MEPC 78 approved the provisional agenda for PPR 10, which includes this output. Therefore, the target completion year is set to 2023.									
8. Ensure organizational effectiveness	8.1	Endorsed proposals for the development, maintenance and enhancement of information systems and related guidance (GISIS, websites, etc.)	Continuous	Council	MSC / MEPC / FAL / LEG / TCC		Ongoing		MEPC 78/17, paragraph 4.45; MEPC 79/16, paragraphs 6.1 to 6.5 and 9.4
8. Ensure organizational effectiveness	8.3	Analysis and consideration of reports on partnership arrangements for, and implementation of, environmental programmes	Annual	TCC	MEPC		Completed		MEPC 78/17, section 12
8. Ensure organizational effectiveness	8.9	Revised documents on organization and method of work, as appropriate	2023	Council	MSC / FAL / LEG / TCC / MEPC		In progress		MEPC 78/17, section 13; MEPC 79/16, section 11

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
OW. Other work	OW.3	Endorsed proposals for new outputs for the 2022-2023 biennium as accepted by the Committees	Annual	Council	MSC / MEPC / FAL / LEG / TCC		Completed		MEPC 78/17, section 14; MEPC 79/16, section 12
OW. Other work	OW.8	Cooperate with the United Nations on matters of mutual interest, as well as provide relevant input/guidance	2023	Assembly	MSC / MEPC / FAL / LEG / TCC	Council	In progress		MEPC 78/17, paragraph 7.6 and section 8; MEPC 79/16, paragraphs 7.3 to 7.5
OW. Other work	OW.9	Cooperate with other international bodies on matters of mutual interest, as well as provide relevant input/guidance	2023	Assembly	MSC / MEPC / FAL / LEG / TCC	Council	In progress		MEPC 78/17, sections 7 and 8; MEPC 79/16, sections 7 and 8

POST-BIENNIAL AGENDA OF THE MARINE ENVIRONMENT PROTECTION COMMITTEE

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)								
ACCEPTED POST-BIENNIAL OUTPUTS				Parent organ(s)	Associated organ(s)	Coordinating organ	Timescale	Reference
No.	Biennium*	Reference to strategic direction, if applicable	Description					
1	2022-2023	7. Ensure regulatory effectiveness	Development of a guide compiling best practices to develop local-level marine spill contingency plans to aid States, particularly local governments and key institutions, in implementing the OPRC Convention and OPRC-HNS Protocol	MEPC	PPR		2 sessions	MEPC 78/17, paragraph14.2
2	2016-2017	7. Ensure regulatory effectiveness	Development of amendments to regulation 19 of MARPOL Annex VI and development of an associated Exemption Certificate for the exemption of ships not normally engaged on international voyages	MEPC	III		2 sessions	MEPC 71/17, paragraph 14.15
3	2022-2023 (New)	7. Ensure regulatory effectiveness	Amendments to MARPOL Annex II in order to improve the effectiveness of cargo tank stripping, tank washing operations and prewash procedures for products with a high melting point and/or high viscosity	MEPC	PPR		2 sessions	MEPC 79/16, paragraph12.4
4	2022-2023 (New)	7. Ensure regulatory effectiveness	Revision of the *Revised guidelines and specifications for pollution prevention equipment for machinery space bilges of ships* (resolution MEPC.107(49))	MEPC	PPR		2 sessions	MEPC 79/16, paragraph12.8

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* Biennium when the output was placed on the post-biennial agenda.

ANNEX 15

ITEMS TO BE INCLUDED IN THE AGENDA OF MEPC 80

No.	Item
1	Adoption of the agenda
2	Decisions of other bodies
3	Consideration and adoption of amendments to mandatory instruments
4	Harmful aquatic organisms in ballast water
5	Air pollution prevention
6	Energy efficiency of ships
7	Reduction of GHG emissions from ships
8	Follow-up work emanating from the Action Plan to Address Marine Plastic Litter from Ships
9	Pollution prevention and response
10	Reports of other sub-committees
11	Identification and protection of Special Areas, ECAs and PSSAs
12	Technical cooperation activities for the protection of the marine environment
13	Application of the Committees' method of work
14	Work programme of the Committee and subsidiary bodies
15	Election of the Chair and Vice-Chair
16	Any other business
17	Consideration of the report of the Committee

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ANNEX 16

STATEMENTS BY DELEGATIONS AND OBSERVERS*

ITEM 2

Statement by the delegation of Australia

"Thank you Chair

Australia joins others in condemning the Russian Federation's unilateral, illegal, and immoral aggression against the people of Ukraine. The invasion is a gross violation of international law.

The Russian Federation's actions present an immediate and ongoing threat to the safety of shipping and the marine environment in the Black Sea and the Sea of Azov.

In this regard, Australia condemns practices which are not in the spirit of safety convention requirements and increase the risk of oil pollution. Member States should ensure that tankers flying their flag are practicing safe shipping standards, and for Flag States to be notified when a vessel flying their flag is engaged in a mid-ocean operation.

Australia remains a steadfast supporter of Ukraine's sovereignty and territorial integrity. The Russian Federation's invasion and ongoing occupation of parts of Ukraine are a flagrant violation of international law.

Despite continued requests from Member States for the Russian Federation to cease its aggressive actions against Ukraine, the invasion continues to put the lives of seafarers at risk.

Australia calls on Russia to immediately withdraw its forces from Ukrainian territory. We demand the Russian Federation ensure the welfare of seafarers and the safety of ships impacted by its actions; respect the territorial integrity and political independence of Ukraine; and meet its obligations under relevant IMO instruments by ensuring their implementation to the fullest extent.

Australia will continue to work with the IMO and member States to support Ukraine's rights as a port, flag and coastal state and to protect seafarers and others impacted by the Russian Federation's ongoing aggression against Ukraine.

Australia requests that this statement be attached to the report of the Committee."

Statement by the delegation of Canada

"Thank you Chair.

Canada condemns in the strongest possible terms Russia's unprovoked, unjustifiable, and egregious attack on Ukraine. This invasion is an attack on international law, democracy, freedom, and human rights. We stand in solidarity with Ukraine and call on Russia to immediately cease its aggression and withdraw from Ukraine's sovereign territory.

* Statements have been included in this annex as provided by delegations/observers, in the order in which they were given, sorted by agenda item, and in the language of submission (including translation into any other language if such translation was provided). Statements are accessible in all official languages on audio file at: http://docs.imo.org/Meetings/Media.aspx

The invasion severely threatens the safety of and security of merchant shipping, the protection of the marine environment, the lives of seafarers and the integrity of global supply lines.

At this Committee Canada is particularly concerned about the potential environmental impacts of Russia's actions as noted by the distinguished delegate from Ukraine.

Canada aligns itself with the statement by France, the US, the UK others and requests that this Committee continue to monitor the situation in the Black Sea and the Sea of Azov. We stress the critical importance of protecting the environment in times of war, in compliance with the relevant international obligations under international humanitarian law and that the committee continue to monitor that situation."

Statement by the delegation of Croatia

"Thank you Mr. Chair.

Good day to you, and to all distinguished delegates.

We fully align ourselves with the statement made by the delegation of France on behalf of the Member States of the European Union.

Croatia stands in full solidarity with Ukraine and the Ukrainian people and we condemn in the strongest possible terms Russia's war of aggression against Ukraine.

We would also like to stress the importance of environmental protection during wartime in accordance with the relevant international obligations.

We would like our intervention to be reflected in the report of the Committee.

Thank you Chair."

Statement by the delegation of Estonia

"Thank you, Chair.

Estonia aligns ourselves with the statement made by France.

Thank you."

Statement by the delegation of Finland

"Thank you, Chair. Greetings to everyone!

Finland condemns in the strongest possible terms Russia's military aggression against Ukraine, which grossly violates international law and the UN Charter, and undermines international security and stability.

Finland wants to express its full solidarity with Ukraine and the Ukrainian people.

Finland, as one of the EU Member States, wants to associate with the intervention made by France and would like to have this statement to be reflected in the report of the Committee.

Thank you, Chair."

Statement by the delegation of France

"M. le Président,

D'emblée, au nom des États membres de l'Union européenne qui sont tous membres de l'OMI, la France souhaite exprimer sa pleine solidarité avec l'Ukraine et le peuple ukrainien, dont la vie a été affectée par la guerre d'agression de la Russie contre l'Ukraine, que nous condamnons avec la plus grande fermeté possible. L'Union européenne est aux côtés de l'Ukraine et de son peuple. La guerre d'agression injustifiable, non provoquée et illégale de la Russie contre l'Ukraine constitue une violation flagrante du droit international et de la Charte des Nations unies. Elle porte atteinte à la sécurité et à la stabilité européenne et mondiale et cause des pertes massives en vies humaines.

Nous exigeons de la Fédération de Russie qu'elle cesse immédiatement ses actions militaires, qu'elle retire sans condition toutes ses forces et équipements militaires de l'ensemble du territoire ukrainien, et qu'elle respecte pleinement l'intégrité territoriale, la souveraineté et l'indépendance de l'Ukraine à l'intérieur de ses frontières internationalement reconnues.

M. le Président,

Lors de sa 78ème session en juin notre comité s'était déjà montré préoccupé par les conséquences des attaques perpétrées par la Fédération de Russie à l'encontre des navires de commerce qui avaient entraîné des déversements de substances nuisibles pour le milieu marin. Nous avions souligné l'importance cruciale de la protection de l'environnement en temps de guerre, en conformité avec les obligations internationales pertinentes en vertu du droit international humanitaire et prié instamment cet Etat « de s'abstenir d'attaquer des navires de commerce et des infrastructures portuaires essentielles, qui pourraient entraîner des événements de pollution de zones maritimes par les hydrocarbures, produits chimiques et autres substance nuisibles".

C'est pourquoi la France apporte son entier soutien à la déclaration du délégué de l'Ukraine. Nous souhaitons en particulier que ses demandes concernant un suivi attentif par les Etats côtiers et les Etats du pavillon des conséquences sur l'environnement marin des actions militaires conduites par la Fédération de Russie dans la mer Noire et la mer d'Azov soient bien prises en compte. Nous sommes également très préoccupés des conséquences des transbordement illégaux de pétrole brut qui interviennent pour échapper aux sanctions, et créent des risques majeurs pour l'environnement dans d'autres régions.

Je souhaite que cette déclaration figure au rapport de notre comité.

Merci M. le Président.

Chair,

On the outset, on behalf of the Member States of the European Union, which are all members of the IMO, France wishes to express its full solidarity with Ukraine and the Ukrainian people, whose lives have been affected by Russia's war of aggression against Ukraine, which we condemn in the strongest possible terms. The European Union stands by Ukraine and its people. Russia's unjustifiable, unprovoked and illegal aggression war against Ukraine is a flagrant violation of international law and the UN Charter. It undermines European and global security and stability and causes massive loss of life.

We demand that the Russian Federation immediately cease its military actions, unconditionally withdraw all its military forces and equipment from the entire territory of Ukraine, and fully respect the territorial integrity, sovereignty and independence of Ukraine within its internationally recognised borders.

Chair,

At its 78th session in June, our Committee had already expressed concern about the consequences of the Russian Federation's attacks on merchant vessels, which had resulted in the discharge of substances harmful to the marine environment. We stressed the crucial importance of environmental protection in wartime, in accordance with relevant international obligations under international humanitarian law, and urged the Russian Federation "to refrain from attacks on merchant vessels and essential port infrastructure, which could lead to pollution of maritime areas by oil, chemicals and other harmful substances".

In particular, we hope that its demands for careful monitoring by coastal and flag states of the consequences for the marine environment of the Russian Federation's military actions in the Black Sea and the Sea of Azov are taken into account. We are also very concerned about the consequences of illegal transhipments of crude oil that take place to evade sanctions and create major environmental risks in other regions.

I would like this statement to be included in our committee's report.

Thank you, Chair."

Statement by the delegation of Georgia

"Thank you Chair and good morning to all.

Georgia joins others in condemning Russian aggression against Ukraine and aligns itself with France, Germany, US, UK and others. Georgia implores Russian Federation to seize illegal war, respect territorial integrity and political independence of Ukraine.

We demand that the Russian Federation ceases its unlawful activities, as well as respects its obligations under relevant international treaties and conventions. Georgia as a Black Sea littoral State urges the Russian Federation to avoid any action that may hinder the marine environment protection standards on the Black Sea.

We call upon flag States to maintain due checks in order to avoid possible violations of international sanctions regime, for such illicit practices primarily endanger marine environment.

Georgia once again reiterates its unwavering support for the independence, sovereignty and territorial integrity of Ukraine within its internationally recognized borders.

I kindly request this statement to be added to the final report of this Committee.

Thank you Chair"

Statement by the delegation of Germany

"Thank you, Chair.

Good morning to all!

Germany fully supports the statement given by France on behalf of the Member States of the European Union.

Germany condemns Russia's war of aggression against Ukraine in the strongest possible terms – and we express our full solidarity with Ukraine and its people and remain committed to Ukraine's territorial integrity and sovereignty.

We would like to echo what France, Ukraine, USA and others, said: we share the concern about the consequences of the war for the marine environment and we request this committee to continue to monitor the consequences.

Chair, we would like to ask our support to be mentioned in our committee's report.

Thank you, Chair."

Statement by the delegation of Greece

"Thank you Mr. Chair

Firstly we wish to associate ourselves with the statement made by the distinguished delegation of France.

Secondly with regard to the reference made by the Ukrainian delegate we wish to state that Greece has been standing by Ukraine from the very beginning of this conflict and condemns any action against this country. It is a fact that more than 50% of the Ukrainian grains have been transported by Greek owned ships.

Until today there has not been communicated to the Greek Administration any formal information or official complaint or even a documented breach of sanctions regime by Greek registered or Greek operated vessels. We wish also to highlight that we fully abide by the sanctions imposed to Russia."

Statement by the delegation of Iceland

"Thank you Chair and good morning to all.

We condemn the unprovoked and unjustified aggression of Russia against Ukraine in the strongest possible terms, and we express our full solidarity with Ukraine and its people.

We would like to align ourselves with the statements made by France, the US and others, and we would kindly ask that our intervention be noted in the report of the committee."

Statement by the delegation of Ireland

"Thank you Chair.

Ireland wishes to align our-selves with the statement made by France, expressed on behalf of the European Union, and to also commend the IMO Secretary General and the Secretariat for their work in supporting the safety of shipping, seafarers welfare, and the maritime environment in the Black Sea and Sea of Azov.

Ireland wishes to offer our sincere condolences to the people of Ukraine for the losses they have suffered and continue to suffer.

Every Nation relies on international shipping and on those working in the Maritime Industry, in order to provide essential supplies and goods to and from their Ports. Now, more than ever in these winter months, it is absolutely critical that supplies of vital food, fuel and medicines are allowed to flow safely and unimpeded in-to Ukraine.

The continuing Russian military action against Ukraine is illegal and immoral, involving the utterly unacceptable targeting of civilians and civilian infrastructure, with brutal and indiscriminate attacks continuing through-out the Country. In addition, the damage caused to Ports, the surrounding infrastructure and the maritime environment is massive in scale and will have long reaching consequence for the region.

A full and comprehensive cessation of hostilities and the withdrawal of the Russian military from Ukrainian territory including its territorial waters, is immediately required to ensure the safety and welfare of its civilians, and the protection of the Marine environment. Ireland is unwavering in our solidarity with the people of Ukraine and in our support for Ukraine's sovereignty and territorial integrity.

We would request that Irelands statement is included in the report of this Committee.

Thank you"

Statement by the delegation of Italy

"The Italian delegation once again condemns the invasion of Ukraine, a sovereign state of Europe, whose people are unjustly paying for the atrocities of a deliberate and unjustified military attack.

Italy has always been and will always be on the side of the Ukrainian people and Ukraine.
Italy, as well, demand that the Russian Federation immediately cease its military actions and fully respect the territorial integrity, sovereignty and independence of Ukraine within its internationally recognised borders.

Regarding environmental aspects, Italy is particularly concerned about the consequences of illegal transhipments of crude oil that are taking place to evade sanctions and create greater environmental risks.

The attack by Russian forces on merchant vessels poses a serious concern not only for the lives of the crews, but also for the consequent environmental damage such attacks cause to the marine environment in the areas affected by the conflict.

As already stated by the French delegation speaking on behalf of the European member states of the IMO, we share the crucial importance of environmental protection in wartime, in accordance with relevant international obligations under international humanitarian law, and urged the Russian Federation "to refrain from attacks on merchant vessels and essential port infrastructure, which could lead to pollution of maritime areas by oil, chemicals and other harmful substances"."

Statement by the delegation of Lithuania

"Thank you, Chair.

The Lithuanian delegation would like to express the full support to the statement made by France and Chair, we would like to ask to include this statement to the report.

Thank you, Chair."

Statement by the delegation of Luxembourg

"Merci Monsieur le Président et bonjour à tous,

Pour être bref, Monsieur le Président, la délégation du Luxembourg affirme toute sa solidarité vers le peuple de l'Ukraine et voudrait bien s'associer à la déclaration de la France, suivi par le Canada, les Etats-Unis, le Royaume Uni, l'Italie, l'Espagne et autres délégations de l'Union Européenne.

Nous vous saurions gré de bien mentionner notre intervention dans le rapport final de la présente session de notre comité et nous ne manquerons pas de l'envoyer au Secrétariat.

Je vous remercie Monsieur le Président."

Statement by the delegation of Monaco

"La Principauté de Monaco se tient aux côtés du peuple ukrainien depuis le début de ce conflit. C'est pourquoi, une fois encore dans ce comité, nous soutenons la déclaration faite par la France au nom des Etats de l'Union Européenne."

Statement by the delegation of the Netherlands

"Thank you Chair.

This delegation would like to align ourselves with the intervention by the delegation of France on behalf of the EU, and echoed by many other delegations. We condemn Russia's aggression against Ukraine in the strongest possible terms. This unprovoked act of aggression is a serious violation of international law and the UN Charter.

We have seen the impact of this on the people of the Ukraine and the consequences on the safety of shipping, welfare of seafarers, the marine environment and global supply chains.

This delegation would like to thank the Secretary-General for taking actions and initiatives in providing support to the Black Sea Grain Initiative, making an important contribution to the critical problem of the alleviation of global food supply shortages.

We share the concerns, expressed by many delegations, about the environmental impact of the ongoing conflict, due to Russian's unjustified aggression, and we call upon the Russian Federation to refrain from any action that is a violation of international law, including international regulations with regard to marine environment. And as said by other delegations, we request the Secretariat to continue monitoring the effect of the conflict on the marine environment in the Black Sea.

We would like this statement to be noted in the report."

Statement by the delegation of Poland

"Thank you Chair, and good morning to all distinguished delegates.

Poland joins others in expressing solidarity with Ukraine and the Ukrainian people in the context of Russia's blatant violation of international law and its war of aggression against Ukraine, which we condemn in the strongest possible terms.
We fully support Ukraine's territorial integrity, sovereignty, and independence within its internationally recognized borders.

We are deeply concerned about the dangers to the marine environment resulting from Russia's actions against merchant vessels in the Black Sea and the Sea of Azov, which can lead to pollution of the marine environment by oil, chemicals or other harmful substances.

Moreover, we think that illegal transshipments of crude oil that take place to evade sanctions pose significant environmental risks as well.

Chair, we would like this statement to be reflected in the report.

Thank you."

Statement by the delegation of Portugal

"Thank you Chair and good morning to all,

Portugal fully aligns with the statement delivered by the delegation of France and other delegations in expressing its full solidarity with Ukraine and the Ukrainian people and in condemning in the strongest possible terms the Russian aggression against Ukraine.

This delegation shares the same concerns expressed by previous delegations about the consequences of Russia's attacks on merchant vessels and of illegal ship-to-ship transfers of crude oil for the marine environment.

We also concur that this Committee continues to monitor the situation in the region.

We kindly ask that this intervention is reflected in the Committee's report.

Thank you."

Statement by the delegation of Spain

"España apoya en su totalidad la intervención de la delegación de Francia en nombre de la Unión Europea en la que se condena la agresión militar no provocada e injustificada de la Federación de Rusia contra Ucrania.

Nos gustaría aprovechar esta oportunidad para volver a expresar nuestro compromiso y solidaridad con el pueblo ucraniano ante la agresión de la que está siendo objeto por parte de la Federación de Rusia.

España comparte las mismas preocupaciones manifestadas por la delegación de Ucrania en relación a las consecuencias que sobre el medio marino tiene las acciones militares llevadas a cabo por la Federación Rusa en el Mar Negro y el Mar de Azov, incluyendo el transbordo ilegal de crudo efectuado para evitar las sanciones, lo que supone un riesgo medioambiental en otras regiones, por lo que está delegación considera que el MEPC debe continuar realizando un seguimiento de estas cuestiones que afectan al medio ambiente marino.

Solicitamos por último que esta declaración sea incluida en el informe final del Comité."

Statement by the delegation of Türkiye

"The Russia-Ukraine war continues to pose a serious threat to maritime security and safety of navigation, as well as the marine environment in the Black Sea.

We thank the IMO Secretary General and Secretariat for their valuable efforts to address the impacts of the war on shipping and seafarers in the Black Sea.

Türkiye's position has been clear and consistent since the beginning of war. We remain committed to Ukraine's independence, sovereignty and territorial integrity.

We maintain our view that the diplomacy is the only logical way out. With this understanding, we continue our engagement with the relevant parties.

Türkiye also supports the international efforts to mitigate the negative effects of the war. Together with the UN, we brokered the Black Sea Grain Initiative.

İstanbul agreement proved the importance of dialogue.

We will continue to explore ways to find a diplomatic solution, which will ensure a just and lasting peace for Ukraine.

Thank you."

Statement by the delegation of Ukraine

"Mr. Chair,

International law has long become something that the Russian Federation ignores in its international cooperation, including in the field of environmental protection.

Since the attempted annexation of Ukraine's Crimea in 2014, Russia neglects MARPOL, OPRC, and Espoo and other conventions in its everyday illegal activities. This has been proved by the negative results of regular uncontrolled infrastructure projects, such as the construction of the bridge over the Kerch Strait, exploitation of captured gas fields, and offshore transhipments of oil and gas, accompanied by collisions and explosions occurring at relevant tankers.

After years of impasse, the full-scale Russian invasion of Ukraine has finally forced the IMO bodies to keep an eye on the situation.

PPR 9 and MEPC 78 conducted a thorough consideration of the effects of ongoing armed conflict between the Russian Federation and Ukraine on international shipping and the marine environment.

Following the MEPC's decision to keep this matter under review, Ukraine would like to provide an update on the situation to the Committee, which if left unattended may cause massive pollution of the marine areas in the Black Sea and the Sea of Azov.

Mr. Chair,

Russia's fossil fuels remain its main source of financing the war of aggression against Ukraine.

For a long time, Russia has been practicing illegal activities by exploiting waters adjacent to the temporarily occupied Crimea, in particular near the Kerch Strait, for the ship-to-ship transportation of fossil fuel (gas / oil) and other natural resources illegally imported / exported to / from Crimea, while turning AIS transponders on vessels engaged in these activities. The mentioned water areas were also used for bunkering at sea for tankers, which apparently receive diesel fuel from other vessels arriving from Russian ports and other Black Sea states.

Since the introduction of relevant sanctions by G7, EU and other states against Russia's sources of financing of its invasion of Ukraine, the Russian Federation is seeking ways to bypass by concealing the true origin of dubious goods, such as crude oil.

It has come to our attention that dangerous transhipment of Russia's oil supplies also occurs in other locations in the Black Sea, namely in the area about 18 nautical miles southeast of the port of Constanta (Romania).

Among the vessels actively involved in these activities during recent months is the Liberia-flagged tanker NEW LEGEND (IMO 9230505). The ship replenishes oil product reserves by systematically receiving supplies from tankers under the Russia's flag coming from the port of Temryuk (RU).

Moorings with a number of tankers under the flags of Panama, Malta, Greece and Liberia, which are suspected of loading Russian oil products for further delivery, were observed. The final destination of these vessels' movement are still to be identified, because of the practiced switch-off of AIS transponders once they reach certain points in the Mediterranean.

Several other tankers under the flags of Liberia and Panama were also spotted to be involved in relevant activities.

The common denominator for all the listed cases is the Greek nationality of shipowners/operators. Ukraine insists that these cases should be investigated by respective authorities, in particular given the recent adoption of the EU Council's decision to criminalize the breach of the sanctions regime.

Mr. Chair,

Since 2014 Russia's brutal violation of maritime law and IMO instruments like SOLAS, SAR, MARPOL in the areas of the Black Sea and the Sea of Azov has already led to violations by companies, whose ships are engaged in transportation to/from closed ports of Crimea, as well as of sanctioned goods from ports of the Russian Federation.

In addition, as repeatedly raised by Ukraine at MSC and NCSR sessions, Russia has been deliberately destructing the entire maritime safety system in the Black Sea and the Sea of Azov, at least the maritime communication system within the framework of the GMDSS, navigational and hydrographic support for navigation and the SAR system. This significantly increases the risks of marine accidents, in particular with tankers, and should be examined by the MEPC.

The introduction of new restrictions on the sea transportation of Russian oil will lead to additional risks associated with the demand to circumvent Russian sanctions with the help of companies and vessels that do not have the proper security management system required by the International Safety Management Code. This relates not only to the Black Sea – Sea of Azov basin, but also the entire world.

There are grounds to believe more maritime incidents can occur endangering the safety of navigation and the environmental situation in this area. Such inevitable increase in tanker accidents may be caused by the human factor and technical condition of the monitored vessels.

Mr. Chair,

In view of the above and given the critical importance of protecting the marine environment, the delegation of Ukraine suggests that this Committee continues to closely monitor the impact of the Russian armed aggression against Ukraine. This also has to involve relevant flag states and states of shipowners' origin.

Apart from that, we consider it necessary for Black Sea states to take decisive action by launching interstate projects aimed at conducting joint pollution inspections of marine areas in the region.

I thank you, Mr. Chair, and kindly request that this statement is appended to the Committee's report."

Statement by the delegation of the United Kingdom

"Thank you, Chair

The United Kingdom and our international partners stand united in condemning the Russian government's unprovoked, premeditated and barbaric attack against a sovereign democratic state. Russia's invasion of Ukraine is a violation of international law, including the UN Charter, and an assault on the international norms that protect us all.

As a Permanent Member of the UN Security Council, Russia has a particular responsibility to uphold international peace and security. But as it attempts to redraw the borders of Europe by force, causing widespread suffering in Ukraine and across the globe, it is clear the Russian government was never serious about acting responsibly, or engaging in diplomacy.

Russia's holding of so-called referendums on sovereign Ukrainian territory in September was a further violation of Ukraine's independence, sovereignty and territorial integrity, and of international law. These referendums were a blatant sham designed to illegally grab Ukraine's land, its resources, and its identity.

We will remain resolute in providing political and practical support to Ukraine as it continues to defend itself against Russia's aggression, because, as a free and democratic country, Ukraine has the right to determine its own future. And we will continue to work together with our international partners to make sure that Russia cannot further undermine European stability.

Russia must seize its aggression and with draw from Ukraine.

We would echo the request of Ukraine, France and others to continue to monitor the situation in the Black Sea and the Sea of Azov in respect of the protection of the marine environment.

Thank you, Chair"

Statement by the delegation of the United States

"Thank you Chair. From the outset, the United States aligns fully with the statement delivered by the distinguished delegation of France.

The United States condemns in the strongest possible terms the Russian Federation's unprovoked and illegal invasion of Ukraine. Russia's invasion of Ukraine is inconsistent with the principles of the United Nations Charter and the purposes of the IMO as set out in Article 1 of the IMO Convention which seek to provide for "co-operation among governments" in matters

related to shipping and in "adoption of the highest practicable standards" for, among other things, the prevention and control of marine pollution from ships. The United States deplores this war and Russian Federation's attacks that strike commercial vessels and ports that threaten the safety and welfare of seafarers and the marine environment.

The United States is extremely concerned over the risk to the marine environment resulting from practices by Russia aimed at evasion of sanctions, and aligns with requests from Ukraine and France that MEPC continue to monitor this situation.

We support all efforts to ensure the safety of seafarers, commercial vessels and the marine environment in the Black Sea and Sea of Azov. The swiftest and surest way to accomplish all of this is for the Russian Federation to immediately end its illegal invasion of Ukraine and withdraw all of its forces from Ukrainian territory, including its territorial waters.

Thank you, Chair."

Statement by the observer from the European Commission

"The European Commission wishes to be fully associated with the statement made by France and echoes the sentiments and comments made by the US, the UK, Canada and others, and we wish this to be noted in the Committee's report."

Statement by the delegation of the Russian Federation

"Наша делегация благодарит Генерального секретаря и Секретариат за вовлеченность в целом и представленную информацию о ходе реализации зерновой инициативы. Также хотели бы поблагодарить Правительство Турции и сотрудников ООН за содействие в реализации данной инициативы. Мы продолжаем работать в рамках этой инициативы со всеми заинтересованными странами, несмотря на ту подрывную акцию со стороны Украины в конце октября сего года, когда вооруженные силы Украины нанесли массированные авиационные и морские удары по кораблям и инфраструктуре Черноморского флота России.

В отношении озвученных сейчас обвинений в адрес Российской Федерации по невыполнению своих обязательств в рамках различных инструментов ИМО, наша делегация еще раз подчеркивает и заверяет, что Российская Федерация продолжает в полной мере выполнять все взятые на себя обязательства.

Что касается угрозы загрязнения окружающей среды в регионе, хотелось бы напомнить всем присутствующим, что в июне сего года украинские вооруженные силы атаковали гражданские объекты Российской Федерации, а именно буровые платформы. Эти атаки повлекли за собой жертвы среди гражданского населения, а также вызвали серьезные риски значительного загрязнения окружающей среды.

Касательно санкций, введенных в отношении нефтедобывающих стран и непосредственно Российской Федерации, хотелось бы отметить, что это именно санкции приводят к нарушениям цепочек поставок товаров, а также серьезным рискам для режима охраны окружающей среды в целом. Но, тем не менее, западные страны упорствуют в этом, поэтому надо с них спрашивать о возросших рисках для морской среды.

В этой связи информируем, что по инициативе западных стран было приостановлено сотрудничество с Российской Федерацией по вопросам охраны окружающей среды в Балтийском и Чёрном морях, в Арктическом Совете, а также многие двусторонние

соглашения по ликвидации разливов нефти. Это, в свою очередь, также повышает риски загрязнения окружающей среды, поэтому все соответствующие вопросы должны быть адресованы тем странам, по чьей инициативе упомянутое сотрудничество было приостановлено.

Наша делегация, будучи последовательной в своих заявлениях, остается приверженной скорейшему выходу всех гражданских судов, которые остаются заблокированными на данный момент в портах Украины и скорейшему возвращению домой всех членов экипажей. В подтверждение этого факта следует напомнить о том, что Российской Федерацией был установлен специальный гуманитарный безопасный морской коридор для этих целей. Надеемся на скорейшее разрешение данной ситуации.

Our delegation thanks the Secretary-General and the Secretariat for their overall engagement and for providing information on the progress of the grain initiative. We would also like to thank the Government of Türkiye and the UN staff for their assistance in the implementation of this initiative. We continue to work within the framework of this initiative with all interested countries, despite the subversive action by Ukraine at the end of October this year, when the Ukrainian armed forces launched massive air and sea strikes against the ships and infrastructure of the Russian Black Sea Fleet.

With regard to the accusations now voiced against the Russian Federation of non-fulfilment of its obligations under various IMO instruments, our delegation once again emphasizes and reassures that the Russian Federation continues to fully comply with all its relevant obligations.

As for the threat of environmental pollution in the region, we would like to remind everyone present that in June of this year, the Ukrainian armed forces attacked civilian objects of the Russian Federation, namely drilling platforms. These attacks have resulted in civilian casualties as well as serious risks of significant environmental pollution.

Regarding the sanctions imposed on oil-producing countries and namely on the Russian Federation, we would like to note that it is precisely the sanctions that lead to disruptions of the supply chains of goods, as well as serious risks for the environmental protection regime as a whole. But, nevertheless, Western countries persist in this, so they need to be asked about the increased risks to the marine environment.

In this connection, it should be noted that, at the initiative of Western countries, cooperation with the Russian Federation on environmental issues in the Baltic and Black Seas, in the Arctic Council, as well as many bilateral agreements on oil spill response, has been suspended. This, in turn, also increases the risks of environmental pollution, so all relevant questions should be addressed to those countries on whose initiative the said cooperation was suspended.

Our delegation, being consistent in its statements, remains committed to the speedy departure of all civilian ships that currently remain blocked in the ports of Ukraine and return of all crew members to their homes. In support of this fact, it should be recalled that the Russian Federation established a special humanitarian safe maritime corridor for these purposes. We hope that this situation will be resolved as soon as possible"

ITEM 3

Statement by the observer from UNEP (UNEP/MAP Coordinator)

"Thank you, Mr. Chair, for allowing me to take the floor.

It is with great satisfaction that I note the adoption of the amendments to MARPOL Annex VI establishing the Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter.

The adoption of these amendments by IMO represents the culmination of an ambitious multilateral exercise catalysed by the Mediterranean Action Plan-Barcelona Convention System (UNEP/MAP), in line with Appendix III to MARPOL Annex VI that stresses that, where two or more Parties have a common interest in a particular area, they should formulate a coordinated proposal.

The designation the Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter is further empowering the Contracting Parties to the Barcelona Convention and other actors to fulfil the vision of a healthy Mediterranean Sea and Coast that underpin sustainable development. This will enable to take important measures to reduce air pollution from ships in the Mediterranean leading to environmental, health and socio-economic benefits at both regional and global levels.

Mr. Chair, I would like to kindly ask the Secretariat to include this statement in the report of the meeting. Thank you!"

ITEM 5

Statement by the observer from WWF

First statement (concerning EGCS discharge water)

"Mr. Chair,

The discharge of scrubber waste into the sea substitutes air pollution for marine pollution, and therefore directly conflicts with the requirement of Article 195 of UNCLOS not to transform one type of pollution into another, as well as Article 194's requirement to minimize the release of toxic substances to the fullest extent possible.

In this regard, WWF highlights research previously presented to this Committee addressing environmental impacts of scrubber discharges, in particular documents MEPC 76/9/1 and MEPC 76/INF.5 (ICES) and further suggests that the Committee request an opinion from the Legal Division on this matter by MEPC 80.

Thank you."

Second statement (concerning Black Carbon emissions)

"Thank you, Chair. I will be brief. Black carbon is well established as a potent short-lived climate forcer that dramatically accelerates snow and ice loss.

Sea ice is a fundamental component of life for Arctic species. Polar bears rely on sea ice to hunt, rest, breed, and store energy for the summer and autumn, when food can be scarce. Walrus migrate with moving ice floes and use sea ice as a place to rest between dives for food.

The entire lifecycle of the ringed seal depends on ice – and rapid ice loss in the Arctic causes seal pups to be prematurely separated from their mothers during the nursing period. Caribou migrate across sea ice to move from their calving grounds to their wintering grounds. The list goes on.

Chair, in the past five decades, relative wildlife populations globally have decreased by 69 per cent. We are in the midst of a global biodiversity crisis, one which is inextricably linked to climate change. We urge the Committee to take meaningful and swift regulatory action to address black carbon emissions from ships in and near the Arctic. We believe mandating the use of distillate or cleaner fuels in the Arctic is an essential part of the solution.

To this end, we support the intervention by Friends of the Earth and recommend this work be forwarded to PPR as a matter of urgency."

ITEM 7

Statement by the delegation of Argentina

"Argentina is committed to reducing greenhouse gases. My country has also been and is hit by the climate crisis. On the work of ISWG-GHG, we thank the Chair, Mr. Sveinung Oftedal and the Secretariat.

Regarding measures, we are committed to continue working for progress in accordance with the Work plan approved by MEPC for mid- and long-term measures, based on a basket of measures that includes a technical and an economic element. We will make further interventions on specific measures, for now we would like to say that we have serious concerns with the proposals to adopt a mandatory universal tax with a notable emphasis on its revenue potential. A tax is not an "equitable" measure, because it carries a high potential for the cost to be transferred to the freight price, and thus to the primary producer -many of them small and medium-sized producers- or to the consumer, negatively impacting exporting or importing developing countries distant from their markets, and making them actually bear the cost of the measure. There, the polluter does not pay, it is developing countries distant from their markets, who would pay. South Africa has been clear on this, and we agree with their comments.

We also believe that the "green corridors" initiative should not be considered in the basket of measures. This is a unilateral measure taken by some countries and we do not believe that it should be blessed by IMO, since it should be dedicated to multilateral measures, which will give legitimacy to collective action.

Aligning with the expressions of Ghana, Brazil and India regarding the necessary solidarity, we highlight the revision of circular MEPC.1/Circ. 885 by the Working Group, which was a cooperative effort of all Members. The agreed procedure is essential to assess the negative impacts on States with a double objective: firstly so that when shaping measures in a basket of measures, negative impact developing countries, especially LDCs and SIDS, is avoided or minimized. Secondly, to address negative impacts once a measure enters into force, to review it and, if necessary, adjust it, or provide compensation to negatively impacted States.

Regarding the review of the Initial Strategy, we believe that all aspects should be addressed, as stressed in document ISWG-GHG 13/4/4. We are ready to discuss the levels of ambition, with the other components of the Initial Strategy. This includes important aspects such as how the just transition and the CBDR-RC principle will be implemented in IMO. An essential part of the considerations is the need for financing for developing countries to transform port and bunkering infrastructure, and that financing for research and development duly includes them. We cannot support document MEPC 79/7/11 to adopt a separate resolution, and we believe that its proposals should be addressed in the framework of the review of the EI.

We adhere to the expressions of Brazil regarding the role of biofuels in our efforts.

Regarding just transition, there seems to be some vagueness in our language; and as regards CBDR-RC there is even reluctance in some countries to consider it. This is so because there seems not to be a common understanding of their meaning and how they would be translated in IMO. We believe that it is necessary to understand what they mean, how they are implemented in other *fora*, and then consider how to implement them at IMO, in the Revised Strategy. Paragraph 86 of document MEPC 79/WP.5 contains the suggestion to organize a working group to learn about these concepts, and we hope MEPC can request the Secretariat to organize it."

Statement by the delegation of Belgium

"With regard to the outcome and report of ISWG-GHG 13, as others we would like to thank the chair, all participants and the Secretariat for the constructive discussions and all efforts made to make progress on these important issues. Belgium is committed to continue to work together in this positive setting.

As France, Belgium believes that IMO is the right place to take decisions to decarbonize shipping. Industry is ready and willing to invest, this became clear in the numerous maritime events at the recent COP 27 in Egypt. It is for us now at the IMO to give the industry regulatory certainty by taking urgent and ambitious policy decisions. When doing so, we need to ensure that no one is left behind, that the level playing field is being maintained, and that the Paris agreement 1,5 degrees temperature goal will be achieved.

During last week's discussions, some interventions referred to a possible legal issue when it comes to the introduction of an economic measure at the IMO and that MARPOL might not be the right instrument to do this. This is reflected in paragraph 135 of the report in document MEPC 79/WP.5.

Allow me to recall our submission document MEPC 76/7/11 on the conclusions of a legal study, contained in document MEPC 76/7/40. The legal study clearly demonstrated that there is no legal obstacle in the IMO Convention preventing Member States from adopting an economic measure through an amendment to MARPOL Annex VI. So it seems the MARPOL Convention and its Annex VI is the proper place to adopt an economic measure that can generate revenues.

En ce qui concerne la révision de la stratégie, les mesures et les impacts sur les états, la Belgique s'aligne avec l'/les intervention de la France, la Suède et autres.

Monsieur le président, je ne suis pas certaine que nous discutions déjà à ce stade du document MEPC 79/7/11 ou si cela sera réalisé ultérieurement. En considérant que nous pouvons aborder ce point dès maintenant, voici quelques commentaires :

Au sujet de la résolution proposée dans le document MEPC 79/7/11, la Belgique soutient l'intention développée dans la résolution visant à réduire à zéro les émissions d'ici à 2050 au plus tard. En effet, l'orientation développée dans cette soumission rejoint notre position d'éliminer progressivement les émissions de GES provenant des transports maritimes d'ici à 2050, en tenant compte des émissions tout au long du cycle de vie. Cependant, nous sommes encore en pleine discussion sur les niveaux d'ambition et donc le contenu de la résolution pourrait être intégré dans les discussions actuelles liées à la révision de la Stratégie.

En ce qui concerne les mesures, nous sommes convaincus que la combinaison du GFS avec une mesure économique, tel qu'un GHG levy, permet d'une part, d'introduire progressivement des carburants à émissions faibles ou nulles et, d'autre part, de prévoir des recettes pour soutenir la transition de manière juste et équitable. "

Statement by the delegation of Canada

"We thank the Chair of Working Group 2, as well as the Secretariat, for their steadfast work on this paper, and we look forward to engaging on the "Chair's reflections text" during ISWG-GHG 14.

In terms of action item 60 subparagraph 2, we can agree that the text in Annex 1 is what will go forward for further consideration, but we did just want to take the floor to make two comments.

First, we are somewhat concerned that the current milestones set out in Section 6 are missing some important markers for actual adoption of measures. We look forward to working with all delegates at ISWG-GHG 14 to put us on a path of developing mid-term measures with a clear date of adoption, as per the workplan we agreed at MEPC 76.

Second, as we look forward to ISWG-GHG 14, we sincerely hope that all members come to the next ISWG-GHG meeting in the spirit of wanting to move forward in the direction that this Committee has set out, specifically that the development of a revised strategy be done with a view to increasing levels of ambition. That we continue to spend time contemplating language that keeps us at the same level of ambition of the Initial strategy is, to be honest, somewhat disheartening. As we have heard many times over the last two weeks, the time to act is now and this Organization has an opportunity to show the leadership role it can play in reducing GHG emissions. We remain optimistic that we can all come together to meet that challenge."

Statement by the delegation of China

"This delegation believes that, responding to climate change is a challenge we all face. Shipping is a special and hard-to-abatement sector, and it is vital to the world economy and the livelihood of developing countries. Any update to the vision and the levels of ambition of international shipping should provide specific feasibility analysis and impact assessment rather than based on merely "willingness".

The review of the Strategy should be aligned with the Paris Agreement, which reiterated the principle of Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC). The revision of the Strategy, as well as the development of mid- and long-term measure should fully embody the principle of CBDR-RC principle.

With regard to emission reduction measures, we appreciate the constructiveness and inclusiveness shown by the delegations last week. We are ready to work with all parties to continue the assessment and selection of various technical and economic elements, paying particular attention to the synergy of different elements, so as to develop effective, rational and feasible emission reduction pathway, while at the same time ensuring a level playing field and a fair transition.

We would like to emphasize again that impact assessment of measures is not just a procedure, but to ensure that measures do not have negative impacts on developing countries. We have agreed that the impact assessment will be carried out in parallel with the development of the measures, and it is important to note that if the impact assessment shows that the mid-term measures may have negative impacts on the shipping industry and developing countries, then

the design and setting of the measures will need to be adjusted, in order to avoid and reduce negative effects. For the inevitable negative impacts, it is necessary to minimize and compensate such impacts. This is an important embodiment of the CBDR-RC principle in the development of measures. Moreover, we would like to emphasize that IMO has to address the impacts from reduction measures, not the general impacts of climate change, so the funds generated by the mid-term measures must be for in-sector use and cannot be counted as general climate obligations."

Statement by the delegation of the Cook Islands

"The Cook Islands country is nearly 2 million km^2 in area, but it is 99.99% ocean. That is why the small islands that provide people a place to stand on are so very important.

The Glasgow Climate Pact committed to keeping the 1.5-degree goal alive, and to thrive and agreed a course of action to do so. In Glasgow, the Cook Islands and other regional SIDs emphasized that we needed to urgently raise ambition, and that without concerted and rapid mitigation efforts, this goal would slip further and further from our reach. Yet at COP 27 we had to fight to keep 1.5C alive

We therefore share the grave concerns voiced by other small island states at the findings in the recent NDC Synthesis report, which indicates that our current NDCs have put us on a 2.7-degree pathway by 2100. This is based on the pledges that a limited group of countries have made this is the extent of our current global climate ambition. It is clearly not enough.

Even more concerning is the recent IPCC report, with the science telling us that if our current 2.7 degree NDC pledges are not implemented, and that if we stay the course of the current emissions trajectory, we will face a world with a median global warming of 3.2 degrees by 2100. The change is happening already, it is incremental, it is insidious, and it is now becoming inevitable.

Chair, for small island states such as the Cook Islands, a small country made up of 15 islands in the South Pacific Ocean, we cannot underscore how grave the threat we are currently facing is.

At the national level, we are walking the talk:

We have converted 13 of our islands to solar energy and have set a target of 2025 for the remaining two.

We have committed to net zero emissions by 2040.

We have over a number of years-built climate resilient infrastructure as a matter of survival, despite high construction costs and poor delivery by climate finance mechanisms. We have for years implored for enhanced direct financing to communities for adaptation. The release of adaptation funding for our countries needs to be accelerated. The Pacific has proposed a simple model for the *disbursements* of adaptation funds through the Pacific Resilience Fund. This is a financing facility that has been designed by the Pacific and tailored for the Pacific. If there is to be a financial element to our revised strategy by way of an MBM, monies raised must not come at the cost of SIDS like ours that are wholly dependent on shipping for all essential goods and services. With the cost of such levies inevitably being passed down the supply chain to island people who are already struggling, we need to see an irrevocable commitment from those intent on using shipping as a source of revenue to establish a compensatory mechanism and to allocate significant money into the Pacific Resilience Fund for it to be used in the regions maritime related sector whilst helping alleviate the effects and burden of the climate crisis caused by the actions of the developed world.

As a collective, the Pacific region contributes less than 0.03 percent to global emissions. As a country ours are .00014% of which 7% are transport related. Our emissions are the equivalent of a burning a matchstick in a forest fire. While we are doing our bit on mitigation efforts and reducing our emissions, there is only so much impact our national and regional actions can have. It is to the G20 countries, and others in the developed world, present in this room and responsible for 80% of global emissions that we are beholden to for our survival.

Chair, SG, fellow delegates, our way of life and culture has thus far been held to ransom by an unwillingness to act, this despite the ability to do so. Act we must, but do not now impose measures on us that would disproportionally impact on the structure, fabric and sustainability of our remote Island society that is so dependent on shipping.

Let no one be left behind."

Statement by the delegation of Ecuador

"Concordamos que es necesario tomar acciones sobre el cambio climático y aunque la emisión de gases de efecto invernadero del sector del transporte marítimo representa menos del 3%, consideramos que el adoptar una estrategia inicial y ahora en prospectiva a una estrategia revisada, las medidas que se han adoptado y la discusión de nuevos elementos técnicos y económicos que contribuyan a reducir la emisión de gases de efecto invernadero, es necesario para alcanzar nuevas metas en el mediano y largo plazo.

El Ecuador apoya firmemente cualquier iniciativa que se tome para la reducción de gases de efecto invernadero del sector del transporte marítimo; sin embargo, la Organización Marítima Internacional al ser un organismo técnico deseamos resaltar que las decisiones que se adopten deben asentarse sobre una base técnica y científica, con datos que permitan visualizar metas claras al mediano y largo plazo; para que la estrategia revisada no sea un instrumento que este escrito en papel, sino sea un instrumento factible y que realmente articule hacia cambios profundos en la reducción de gases de efecto invernadero.

Concordamos con puntos claros en este proceso, como el establecer elementos técnicos y económicos que permitan la implementación de la medidas al mediano y largo plazo, debe trabajarse en un proceso de transición justa, considerando el desarrollo de capacidades, la transferencia de tecnología, derechos de propiedad intelectual y el respeto al principio de CBDR; para todos avanzar hacia las metas que se desean alcanzar en la estrategia revisada; siendo importante para implementar este proceso en una transición justa una adecuada evaluación de los impactos que se pueden generar en los diferentes países; y por otra parte, se debe tener como principio que esta reducción de emisión de gases de efecto invernadero los procesos de producción de combustibles alternativos no cause mayores problemas en el marco del Acuerdo de Paris, generando una mayor contaminación en otro sector, y al mismo tiempo transparentar la real capacidad de oferta que se puede proyectar para abastecer la demanda de combustibles renovables en el transporte marítimo.

Consideramos que es necesario tomar acciones concretas y centrarnos a trabajar en medidas al corto y mediano plazo, en una canasta de medidas que sean factibles y viables, y continuar avanzando sobre estrategias que permitan tomar estrategias al largo plazo, pero con una base sólida con información técnica y datos que permitan adoptar las medidas más adecuadas.

Finalmente, como parte del proceso de transición justa, participación equitativa, inclusión y en el marco del multilingüismo es necesario que se analice en este Comité, conforme el informe del grupo intersesional de GHG en el documento MEPC 79/WP5 en el numeral 88, la necesidad de que los temas que se tratan en este grupo debería adoptar los idiomas oficiales de la OMI, ya que esto permitirá una mayor participación de los Estados Miembros y considerando la importancia de los temas tratados en este grupo."

Statement by the delegation of Fiji

"The Fijian delegation aligns to the proposed resolution with the co-sponsors, Marshall Islands, New Zealand, Solomon Islands, and Vanuatu.

Sir, I wish to reiterate the words of my colleagues from Tuvalu at the ISWG-GHG when he said, 'at every session of IMO we hear that the particular need of SIDS and LDCs are priority.

For our island states, our greatest priority is to set the highest possible ambition limits on GHG. Fiji supports the call for urgency and for setting hard targets for 2040 and 2050 now. Mr. Chairman, in relation to the progress made at ISWG-GHG in regard the revision of the initial strategy, as noted by many others, Fiji applauds the progress and looks forward to greater inroads over the course of this week.

Mr. Chairman, however, the discussions so far have focused on the measures and impacts, we also need to ensure we have a common vision agreed and greater clarity as to the levels of ambition we will adopt, including 2030, 2040 and 2050 targets.

We reiterate the calls made by the Pacific, that we acknowledge and address the urgency and scale of the emergency we collectively face and by passing the resolution offered by my Pacific colleagues and setting us irrevocably on the path of highest possible ambition now, not next year or some vague future date.

Mr. Chairman, as suggested by member from Tuvalu, it is essential we select the correct basket of measures and that these are derived in turn from the dual levels of ambition needed – temperature limits and equitable transition goals. It is essential that the basket of measures are grounded on the correct `bedrock of the basket of principles we collectively commit to govern our delivery of this strategy. Perhaps this is a section we did not spend sufficient time on in designing the initial strategy

Mr. Chairman, we have all committed to an evidence-based approach, one based on the science. We should also commit to an approach based on the law. Fiji supports the suggestion from Tuvalu that the Secretariat be tasked ahead of MEPC 80 with convening a workshop of respected legal expertise to debate what the correct basket of legal principles in the revised strategy should be. Comprehensive and excellent work has already been done for us in this regard, possibly buried and forgotten in information papers from previous years.

We also acknowledge the timely intervention by our colleagues from Belgium yesterday, reminding us of the existing analysis presented to this committee on the legality of using MARPOL in the context of revenue collection.

Mr. Chairman we also note and support the excellent document MEPC 76/INF.22 prepared by the Columbia Law school speaking to the principles at law that govern our choice of a Market Based Measure.

Mr. Chairman, Fiji looks forward to further discussing these matters in detail at the Working Group."

Statement by the delegation of Ghana

"The Republic of Ghana takes this opportunity to commend the Secretary-General and the entire Secretariat for the immense work undertaken towards our industry's contribution to the global fight against climate change, in support of the UN Sustainable Development goal 13.

As you are well aware, Ghana as a proud member of the United Nations (UN) and subscriber to the UN Sustainable Development Goals has been at the forefront of the Climate Change Agenda. Indeed, this Session is taking place at the back of the just ended Climate Change Conference (COP 27) with key global resolves on Climate Change towards achieving carbon neutrality and during which H.E the President of Ghana led the Call for immediate climate action. The global shift towards a greener economy continues to be of utmost importance to mitigate the risks of climate change and other environmentally threatening conditions.

However, developing countries remain challenged with the lack of green transportation infrastructure, which would have ensured a sustainable future for all.

At the national level, the Government of Ghana recognizes that the energy and transportation sectors are key areas in reducing emissions. The Government is therefore deploying strategies to transition these sectors towards a net-zero emissions future. To lay the foundation for decarbonization, a National Energy Transition Framework (2022-2070) has been developed. This framework will ensure that Ghana's transition will be achieved in a just and equitable manner.

Ghana as a proud member of the International Maritime Organization (IMO) is equally committed to reducing greenhouse gas emissions from international shipping. We note however that the finances, technological innovation, research and logistical requirements needed to implement measures and to be ready for the global introduction and commercial use of alternative fuels is immense. The green energy sources required for the industry to meet its climate goals will be a challenge for developing countries. The implementation of measures are also likely to have a huge impact on our economies.

It has long been recognized that technical and operational measures alone would not be sufficient to satisfactorily reduce greenhouse gas (GHG) emissions from international shipping in view of the growth projections of world trade.

Noting the ongoing discussions some form of market-based measure appears to be inevitable as part of a comprehensive package of measures for the effective regulation of GHG emissions from international shipping.

We have the desire to move forward and to support the measures necessary to ensure shipping's contribution to the fight against climate change is positive.

As we indicate our support for further consideration of market-based measures and affirm our confidence in the IMO to administer the funds to be generated, I must emphasise that due consideration needs to be given to the use of the funds to mitigate the impacts of measures on developing countries and to support the decarbonisation transition and to address the related challenges of developing countries particularly Least Developed Countries (LDCs) and Small Island Developed Countries (SIDS).

We look forward to continued engagement in this regard."

Statement by the delegation of India

"General Comments on the outcome of ISWG-GHG 13:

Taking cognizant of the discussion at the ISWG-GHG 13, India would like to express its appreciation for the various views expressed during the session and acknowledge the convergence on many of the issues. India is supportive and agrees on the need for the revision of the Initial Strategy, particularly to demonstrate to the world that the Organization is committed to reducing GHG emissions from international maritime transport.

.1 Mr. Chair, this delegation comes from a country falling in the "extreme risk" category of Climate Change Vulnerability Index and is fully aware of the climate change emergencies of this decade and hence whole heartedly support any initiative from this organization for the control of emissions from the maritime sector.

.2 However, Mr. Chair, we also need to acknowledge the fact that whole world community, not only shipping, is in a confused state on a sustainable pathway to address this global challenge. No one, whether the best of our scientists or the best of our engineers is sure what kind of technology or energy would be propelling our ships ten years down the date. Even the most profound economist or the most adventurous ship owner could confidently advise appropriate investment on the kind of a 'future ready' ship.

.3 When the industry is going through such a disruptive state, it is the responsibility of this Organization, particularly this Committee, to provide them with regulations that could stand tests of the time and develop policy frame works that could facilitate a stable predictable and competitive business environment, and thereby encourage and build confidence in the prospective investors in this high risk, cyclical industry. Distinguished delegates, if the industry does not sustain, there is no relevance for this forum or for the regulations that we develop; no matter how noble our intentions could be.

.4 Hence, India would urge this forum to engage in extensive deliberations and exchange of views, taking its own reasonable time to develop regulations or policies that could have longstanding impact, not only on this industry, but on the global society as a whole. Hence our decisions must be based on scientific facts, and engineering logics and shall be compatible with sustainable business practices. In short, we should not get carried away by mere global calls without any scientific evidence to back it or achievable solutions to achieve the same.

.5 It is against this background that India had submitted the document MEPC 79/7/8, proposing a way forward for the reduction Strategy to be phased-in progressively, while ensuring that the transition is smooth, achievable, and inclusive without leaving anyone behind. The Committee should take into account the achievements and impacts of the short-term measure implemented till date and going into 2026 and focus on targets to ensure that net zero carbon fuels occupy 5% of the fuel mix by energy content by 2030.

CBDR-RC as Guiding Principle:

.1 While we discuss on the midterm measures, we thank some of the delegates of the ISWG-GHG 13 for highlighting the need regarding clarity on the use of very heavy and far-reaching terms, such as CBDR-RC, Just and equitable transition, no favourable treatment, etc.

.2 This delegation is of the opinion that the no-favourable treatment and the CBDR-RC are the two sides of the same coin, which can harmoniously co-exist in the guiding principles of the strategy, complementing to each other.

.3 When we refer to no more favourable treatment in the context of a Committee like this, largely dealing with technical matters, so far, must imply that no ship, irrespective of the flag it flies, shall be discriminated against its safety or environment protection requirements.

.4 On the other hand, the CBDR-RC, a principal integral to any international climate change negotiations establishes the need for a common responsibility of states for the protection of the global environment, while acknowledging the different capabilities and differing responsibilities of individual countries in addressing climate change. This is specifically relevant for this Committee, when we talk of technical cooperation and capacity building across the industry, taking on board the needs of the developing countries specifically the SIDS and LDCs.

Economic Elements:

.1 Finally, coming to the economic elements discussed in ISWG-GHG 13, specifically revenue generating mechanisms, it is very important to distinguish whether these measures are to be used to incentivise the industry or to penalise the industry, which is completely dependent on a supply chain that is beyond its the control.

.2 Energy and technology have repeatedly been identified to require 87% of investment outside the sector for developing shore-based infrastructure over which this Organization has no control or mandate and hence it is very important that we focus our efforts more towards technical and efficiency measures applicable to ships rather than on revenue generation measures.

.3 Having said so, India also recognizes the need to explore options to generate appropriate fund proposals to meet not only R&D in maritime sector, but also for production of alternative fuels and development of infrastructure as well. But feels that such fund proposals must have (i) transparent administrative mechanism with adequate representation for developing countries (ii) equitable distribution of the fund respecting principles of CBDR-RC (iii) special focus to encourage R&D in developing countries (iv) appropriate mechanisms that technology is equitably facilitated to all member states."

Statement by the delegation of Indonesia

"On the Revised Strategy on Reduction of GHG Emissions from Ships:

Indonesia is of the view that this Organization's 2050 GHG reduction level of ambition is already challenging for developing countries to achieve without any support of technical and financial assistances.

The current short-term targets have its merits that could be considered further. However, we would like to point out that each country will conduct their own adaptation and technology transformation in the shipping sector within their own capacity. Thus, we support the proposal to allow a course correction for the next revision of the Strategy in 2028, only to consider the evolving fuels and technology.

We welcome the proposal for this Committee to consider the findings of the IPCC to review the Initial IMO Strategy and would like to highlight that the Paris Agreement goals is not achievable only through the shipping industry, but also other industries and sectors as well.

When reviewing the Strategy, Indonesia suggests that States should focus on achieving the existing target, optimizing existing mechanisms and evaluating our progress so far, rather than reinventing the wheel.

On the candidate mid-term measures:

We support the principles regarding the importance of an equitable transition towards the GHG reduction from ships, funding mechanism to support investment on the low-, near-, zero-, and zero-GHG fuels, as well as the attention to areas that are difficult to access that leads to higher transportation costs.

Indonesia is of the view that the measurement of the GHG emission reduction from the shipping industry should be viewed in the wider perspective of the entire transportation sector and suggest that IMO could harmonize this effort with other initiatives of other transportation bodies, especially on the methodology to measure the GHG reduction.

Lastly, Indonesia believes that a thorough and detailed impact assessment is required, especially for developing States regarding the four mid-term proposals that are being discussed."

Statement by the delegation of Ireland

Firstly, I wish to join other delegations in expressing our sincere condolences to the Australian delegation and to the family of Mr. Nelson.

Ireland also wishes to express our thanks to the Chair of the Intersessional Working Group and to the Secretariat for their hard work last week as well as all delegations for the constructive nature of our discussions.

In relation to the revised procedure for assessing impacts on States. This vital procedure is essential for insuring impacts are assessed as accurately as possible. Ireland supports the revised circular MEPC.1/Circ.885.

During the Intersessional Working Group we had constructive discussions on a basket of measures and there was notable convergence on some areas, but we have much more work to do. We must now work hard to select those measures that we want to take forward. In our view combining the GHG fuel standard with an economic measure such as a levy is the simplest and most effective way to move forward while ensuring an equitable transition, which is of course essential to all of the work that we do.

Ireland welcomes the progress made last week in the development of a draft Revised Strategy and we fully support taking our discussions forward based on the document set out in Annex 2 of the Intersessional Working Group's report and I wish to thank the Secretariat for their work on this document.

Chair, in our view the phasing out of shipping GHG emissions by 2050 is essential and we welcome the proposals that put forward such a target at ISWG-GHG last week. Ambitious intermediate checkpoints are also essential to keeping us on the right path to meeting our climate goals.

We wish to highlight the importance of the latest IPCC report, which identifies international shipping as a sector where more action is needed to comply with the goals of the Paris Agreement.

Ambition, Urgency and Certainty were three words mentioned by the distinguished delegate of the Marshall Islands in their intervention yesterday and I fully agree with them that these words are absolutely key to our work on the revised strategy.

We must be ambitious, we must act now and we must provide the regulatory certainty that industry requires, in order for them to make the necessary investments to reach the reduction in GHG emissions that we all require.

Statement by the delegation of Italy

"Italy would like to take this occasion to thank the Chair of the Intersessional Working Group on GHG Mr. Oftedal of Norway for the very complete and accurate presentation of the results achieved during the last GHG Intersessional Working Group. We welcome the progress made in the development of the revised draft strategy and fully support future discussions on the basis of the report. Italy is fully committed to the decarbonization process and, as a co-sponsor of the main documents about the revision of strategy as well as the revision of DCS mid-term measures to ensure an equitable transition.

Our aim is to create a system based on these 3 main pillars:

1. To phase out GHG emissions by no later than 2050. with intermediate checkpoint to keep the Paris agreement temperature within reach.

2. The involvement of all stakeholders in the process

3. An equitable transition: ensured on the principle that no one must be left behind, and, in this regard, considering the development of infrastructure to ensure the availability of new fuels in all the parts of the word and, on the other side, keeping into account the impact of any measure, especially on SIDs and LDCs.

Finally, this delegation wishes to emphasize once again the relevance of "time" as a determining factor in achieving concrete, effective results for the benefit of all. The time factor is a priority. Our action must therefore certainly be accelerated and transformed into concrete commitments. We need to design a low-carbon future, implementing solutions and initiatives to make the economy and society more resilient, sustainable, inclusive, and equitable. This is our responsibility towards the global community."

Statement by the delegation of Kenya

"This delegation is of the view that while Route-based Actions (RAs) can be explored as an option for facilitating and incentivizing the reduction of GHG emissions from ships, however, we need to ensure comprehensive impact assessment is undertaken to ensure that we consider and address any attendant concerns, among them the unilateral or regional nature of such measures.

Deliberate, intentional efforts geared towards increasing the capability and capacity for developing countries, SIDS and LDCs must be generated aimed at facilitating deliberate cooperation between the developed and the developing countries, LDCs and the SIDS so that they can access and have at their disposal, the appropriate infrastructure, technologies as well

as the alternative green fuels. It is observed that the current Technology Readiness Level (TRL) of many developing countries, LDCs and the SIDS is still at infancy phase as is the uptake and production of alternative fuels.

In these circumstances therefore, fostering capacity-building, awareness-raising and cooperation are key, while further facilitating the development of infrastructure for green shipping, and cooperation through the whole value chain, including ports to create favourable conditions through which route-based actions can be realised.

As discussions intensify on Route-based Actions, we see opportunities for some of the IMO technical cooperation projects such as MTCCs, Green Voyage to enable the piloting such measures by promoting technology transfer, gap finding, technology incubation and demonstration, among others. Based on experiences gained from such pilots, IMO would then be better placed to make informed policy decisions on the potential as a tool to achieve the ambitions of decarbonisation.

Chair, Distinguished Delegates, Climate change is a common enemy, to address and overcome it, we require a common and unified strategy. In the end, we would like these measures not to widen the already existing imbalances, but rather to ensure that the transition is smooth, achievable and inclusive without leaving anyone behind."

Statement by the delegation of the Marshall Islands

"Our positions, Chair, are, we hope, by now well known. For many years, the Marshall Islands and its Pacific partners have been calling for a price on GHG emissions from international shipping. With a range of different emission pricing proposals now on the table, we have no doubt that the IMO WILL price GHG emissions from shipping by 2024. A universal levy of $100 per tone of CO2 equivalent, combined with an appropriately sequenced clean fuel standard, remains the simplest, most equitable and effective way to put the necessary price on emissions, and ensure an equitable transition. We look forward to further Working Group discussions of these midterm measures in order to ensure we are in position to specify this basket of necessary measures at MEPC 80.

Today, however, we wish to focus our comments on our request, along with New Zealand, the Solomon Islands and Vanuatu, to this Committee to pass a very simple resolution this week confirming that IMO is committed to delivering new levels of ambition for 2040 and 2050.

Sir, distinguished colleagues, we think this should be an easy item to address and agree. We are only requesting what the science is clearly telling us are the minimum upper limits on shipping's fair share of emissions reduction necessary for us not breach 1.5 degrees. Sir, as has been underscored by Pacific high ambition delegations repeatedly since 2015, again in 2018 and 2020, we are in a climate emergency. We must act accordingly, and we must act now.

This resolution Sir, as with the previous requests, speaks to three words: ambition, urgency and certainty.

In regard to the need for ambition and urgency, I echo the comments from my colleague from Tuvalu at last week's Intersessional – Chair, we are the world's climate most vulnerable states, and we are calling for 1.5-aligned policy. We are the first that will be sacrificed as collateral damage in this emergency we have neither asked for nor caused. It is indeed unfortunate we did not have the benefit of the IPCC 1.5 and later reports in 2018, for we would have argued harder for the limits in the resolution to be adopted then. But today there is no ambiguity. All science says we must act hard and act now. Not in 2023 or 2026 or 2030.

Anything more than 1.5 degree of temperature increase will deliver a global scenario where some countries and cultures perish. Anything less than the highest possible ambition – which all states signed up for at Paris – will see us pass 1.5 in this decade.

Following COP27, 32 member States have signed the *Declaration on Zero Emission Shipping by 2050* and "pledge to work at IMO to adopt such a goal, to adopt goals for 2030 and 2040 that place the sector on a pathway to full decarbonization by 2050, and to adopt the measures to help achieve these goals". This resolution is the first step to delivering on that pledge.

The emission levels recommended in the resolution for 2040 and 2050 are the limits science is telling us are the minimum needed to keep a 1.5ºC agenda on the table. Both best science and the progressive industry are telling us this is technically achievable and feasible.

Chair, there is now a large agenda before us in the lead up to MEPC 80 and the adoption of the revised Strategy. Setting these limits now, at MEPC 79, saves a lot of time in subsequent meetings and leaves us all with clarity on the levels of ambition the measures and related matters are required to achieve.

While ambitious, this resolution provides for certainty:

.1 to the industry, who must now undergo the transition, as to the trajectory and speed of change required

.2 to the market, which must now deliver the fuels and technologies required by the industry

.3 to the climate most vulnerable, who will pay an existential price if these LoA are not achieved

.4 to the global community, demonstrating that shipping is committed to sectoral emission reduction commensurate with a 1.5ºC agenda.

Whatever the cost of the transition, immediate action is the lowest cost option. Delaying the inevitable only adds to the eventual cost and reduces the time horizons to achieve the necessary action.

.1 Global warming will be increasingly detrimental to the effectiveness and efficiency of world shipping and will dramatically affect global trade. Every percentage point counts. Time is not our friend. There is no headroom for further can kicking. I am sure this is the least the distinguished delegates can agree on.

Statement by the delegation of Mexico

" Nuestra intervención será muy breve para dar espacio al Grupo de trabajo que corresponda.

Deseamos unirnos a las condolencias para la Delegación de Australia, por el deceso del Señor Paul Nelson.

Por otro lado, felicitamos a la Delegación de Kenia porque ayer celebró su Dia Nacional.

La Delegación de México agradece al Grupo de trabajo Inter periodo sobre la reducción de las Emisiones de los Gases de Efecto Invernadero procedentes de los buques, al Señor Oftedal por su paciencia y extraordinaria guía, así como al Secretariado por el arduo trabajo de la semana pasada, en el que estuvimos presentes y valoramos todo lo vertido en el documento MEPC 79/WP.5

México, ha renovado su compromiso con el "Acuerdo de Paris" a través del registro de una nueva Contribución Nacionalmente Determinada (NDC) en el marco de la COP 27 en Egipto.

El nuevo compromiso "no-condicionado de México" es lograr la reducción de "Emisiones de Gases de Efecto Invernadero" al 35% para 2030, con respecto a su línea base para lograr "Cero Emisiones" en 2050.

Hemos incluido a muchos sectores industriales y el "Transporte Marítimo, no es la excepción".

Consideramos importante lograr la "Estrategia Revisada", así como la adopción de una "Canasta de Medidas" que coadyuve a obtener una "Transición Justa y Equitativa" misma que debe estar incluida en la vision para encontrar un "Terreno Común para Todos".

Por último, solicitamos se tome en consideración la cooperación continuada que apoye y garantice la igualdad de condiciones a los países en desarrollo y con especial énfasis a los pequeños estados insulares y los países menos desarrollados."

Statement by the delegation of the Netherlands

"The Netherlands believes that document MEPC 79/WP.5 provides a good compilation of all the work done last week. We thank the chair of the GHG group for his outstanding work on guiding the group through this difficult task while maintaining a spirit of productive cooperation and addressing issues that are of high concern for delegations, be it to the issue of "leaving nobody behind and equal transition", or the concern that climate objectives will not be met and that the consequences will be devastating for the planet and its people.

Our delegation was one of the co-sponsors for proposals on the revision of the Strategy and on the development of mid-term measures. It is important that the Strategy and the mid-term measures are developed in an aligned process. The Strategy, to set the right level of ambition, and the measures to achieve those ambitions.

We recall that at the last MEPC it was concluded that we should revise the Strategy with an aim to strengthen the ambition. The levels of ambition should provide a clear and reliable pathway for the sector to stay in line with the Paris Agreement temperature goals. A pathway that should therefore also include clear intermediate checkpoints, that help us to keep on track. This means that GHG emissions should start declining in absolute terms as soon as possible. We are convinced that we can develop measures that meet our climate objectives, minimize potential disproportionate negative impacts on States, and offer economic opportunities to developing States, particularly SIDS and LDCs.

We support the approval of the revised Circular 885, which for us seems a balanced approach.

Regulation and setting standards, as well as MBM's raising revenues, are both needed in order to provide the reduction of GHG and raise revenues such as for R&D and assisting developing states, in particular LDC's and SIDS.

Chair, we look forward to work further on the basis of document MEPC 79/WP.5 and deliver at the important task ahead of us."

Statement by the delegation of Saudi Arabia

"We as an industry are facing multiple challenges ranging from air pollution, the depletion of the marine ecosystems, maritime safety, security, diversity, representation and gender equality, and finally tackling climate change caused by greenhouse gas emissions. The world's

major challenges necessitate unprecedented levels of open, inclusive and coherent cooperation in order to ensure sustainable economic growth while addressing environmental concerns. Of these challenges, maritime environmental protection and climate change are potentially some of the biggest challenges facing our world.

Saudi Arabia is taking action on a national, regional and international level to protect the environment, reduce carbon emissions in the region and address climate change. This includes making significant investments in hydrogen and renewable energy sources, and developing cutting-edge carbon capture technology to address climate change. Saudi Arabia plans to rely on renewables for 50% of its electricity generation by 2030 and aspires to reach net-zero by 2060. At present 13 new renewable energy projects with a total capacity of 11.4GW, at an estimated investment value of US$ 9 billion (SAR 34 billion), are under development with one of the world's largest Carbon Capture and storage hubs (CCS) in Jubail will become operational in 2027. By 2030, Saudi Arabia will have fulfilled three key targets. Reducing carbon emissions by 278 mtpa (Metric Tonne per annum) by 2030, planting 10 billion trees across Saudi Arabia, and placing 30% of the Kingdom's land and sea under protection.

Saudi Arabia highly values the work of the IMO and the importance of our discussions in this hall to tackle issues, regulate standards and establish an ambitious vision for the future of the maritime world, especially with regards to the Maritime environment. The IMO Initial Strategy has outlined a 'Level of Ambition' to limit GHG by at least 50% by 2050 compared to 2008. As a council member, Saudi Arabia strongly believes that the IMO has the capacity, will and ability to work with stakeholders to turn our hopes of a more sustainable shipping sector into a reality. As such we divide our position with respect to the revision of the IMO Initial Strategy into four distinct tenets:

Firstly, there is a necessity to ensure a pragmatic approach. In reviewing the IMO's objectives of 2050, we must appreciate the importance of not just the objective but the challenges in our voyage to get there. As a result, Saudi Arabia supports technologies which mitigate shipping emissions as soon as possible in the immediate term such as wind assistance, improved operational and energy efficiency measures, whilst also developing mid- and long-term measures. We also acknowledge ongoing work at IMO aiming for a net-zero emission target, highlighting the importance of different approaches and technologies. Such a goal will require significant development, changes to the way we work and think, however we feel it is achievable. We also welcome suggestions of finding the best way to include a 5% target for low and zero carbon fuels by 2030 and acknowledge current recommendations as a starting point for further discussions. While we appreciate calls for the inclusion of well-to-wake emissions assessments as outlined in document ISWG-GHG 13/4/5 submitted by Japan and others and understand that accounting for these emissions will be necessary in the future, a focus on operational emissions must be the key first step.

Secondly, as a global community, we have to work comprehensively and take multiple actions in parallel". In achieving a GHG reduction in shipping, multiple options will need to be considered and a balance established between the first movers and the developing world. We believe that a complex approach combining a market-based measure with a fuel standard would be the optimal way forward in the long run and can help shipping close the price gap between conventional and low and zero carbon fuels while ensuring measures adopted take into account unique national circumstances implemented through an impact assessment on states.

Thirdly, it is important to note that the mechanisms used "must" ensure that nobody is left behind in this transition and that developing countries, LDCs and SIDs are provided with the means to limit negative impacts and create a sustainable shipping industry. Knowledge sharing will be paramount and we look to the IMO and initiatives such as the IMO CARES to facilitate

this in the future. We also ask for continued cooperation, and that "should" a decision be reached to establish a fund to utilise MBM revenue, this should be undertaken strictly within the maritime sector focused on supporting research, innovation, and global capacity building.

There is no doubt that a more sustainable shipping industry will be built on many pillars, guided by our ability to adapt. That said, we must recognize the diversity of climate solutions and options available, without creating additional societal challenges. Saudi Arabia firmly believes this is not just a daunting challenge but an opportunity. If I may quote HRH the Crown Prince "We reject the choice between preserving the economy and protecting the environment. Climate action will enhance competitiveness, spark innovation, and create millions of high-quality jobs." A key component will be the use of blue and green ammonia, methanol or hydrogen for the transition. Encouraging the use of these alternative fuels will lead to the widespread ship uptake and the expansion of bunkering infrastructure. To support this, Saudi Arabia is building the world's largest hydrogen plant expected to start production of up to 600 tonnes of hydrogen per day in 2026 while Saudi companies such as Aramco, SABIC and Ma'aden have received the world's first independent certifications recognizing blue hydrogen and ammonia production, further enabling Saudi Arabia's export infrastructure for clean fuels. As a result, we welcome green corridor initiatives however we feel discussions around integrating these into the IMO framework are premature and at present might be viewed as exclusionary without technology transfer between the global north and global south.

Starting the transition early on has several economic advantages making the transition more gradual and less abrupt. As part of this journey, we are all invited to make history, by outlining the shape of shipping for the next 50 years and turning our ambition into action."

Statement by the delegation of Sierra Leone

"Sierra Leone, it is reported, is among the 10% of nations in the world that are most vulnerable to the adverse results of Climate change and, currently one of the least to cope with the consequences.

Climate change is affecting every facet of the country's economy and society. The unforeseeable weather patterns, mudslides, severe flooding, and associated crop failures are becoming more regular.

However, the government of Sierra Leone has begun to integrate climate change adaptation measures into national development processes, strategies, climate-smart policies, programmes, and budgeting.

We have been cautioned by Climate Scientists that if actions are not taken to sharply drop global warming within the next 8 years, the natural disasters seen around the world in recent times would be a child's play as compared to what is to come.

Developing countries, SIDs, LDCs which are the least contributors to the ongoing climate crisis, have experienced some of the worst losses and destructions ascribed to human induced climate change.

Therefore, fulfilling climate finance commitments/obligations, among others, to these countries should be seen only as a matter of climate justice

To be brief, this delegation aligns itself with the statements made yesterday by the distinguished delegates of Ghana, Nigeria, France et al. in the spirit of leaving no one behind and No Plan B in this global crusade."

Statement by the delegation of South Africa

"Chair, please allow me to express our sincere appreciation for being honoured to host the 2022 World Maritime Day Parallel Event in South Africa, in the City of Durban, from 12 to 14 October 2022 under the Theme "New Technologies for Greener Shipping". The Event was celebrated in the month of October which is declared as a Transport Month in the Republic of South Africa.

We take this opportunity to thank the Secretary-General and the IMO staff their kind assistance and contribution in ensuring that the event becomes a success. We also extend our gratitude to delegates for taking their valuable time to attend and participate in the event with us.

On the matter at hand, South Africa participated in the Working Group last week and we applaud Mr. Oftedal for his remarkable leadership.

Chair, we support the ongoing work of the Working Group, aiming to develop concrete proposals for mid-to-long terms measures, as we acknowledge that shipping plays an important role in contributing to the reduction of green-house gas emission – to reach the goals, set out in the Paris Agreement. We are committed to support the pathway of decarbonising the shipping industry – being mindful that there are many challenges ahead of us in reaching the climate mitigation goals.

Therefore, we also support the revision of the Initial GHG Strategy which will recognise lessons learned from short term measures, and to consider mid-and-long-term candidate measures.

On that note, we agree that the basket of candidate measures should be assessed before they are adopted, and any disproportionate impact on developing States be addressed in a fair, just and equitable manner that guarantees that no one is left behind in its true sense. Therefore, capacity building, funding and transfer of greener technologies including matters of intellectual property should be addressed, as they are critical to transit from fossil fuel to greener shipping.

It is also important to address issues of transportation costs, potential distortion of trade particularly for developing countries that are remote to the market and trading in low value cargo – as we are well aware that the costs of that transition will not be fully absorbed by ships, but will be passed down to the value chain, and the "end user" from developing countries will be mostly affected.

We fully understand that it will be difficult and hard to balance the socioeconomic interests while protecting our planet against climate change, but it is a path that needs our collective wisdom and coordinated effort which ensures that co-benefits and sustainable shipping is attained."

Statement by the delegation of Spain

With regard to the outcome of ISWG-GHG 13:

"España apuesta por la acción multilateral en materia de clima en el ámbito de la OMI como foro adecuado para alcanzar soluciones globales que desataquen los beneficios de la acción y del cambio de modelo al tiempo que permitan reducir las desigualdades.

El futuro del transporte marítimo internacional va a venir marcado por lo que decidamos en este foro en los próximos meses. Por ello es de vital importancia que avancemos juntos hacia el objetivo de la descarbonización del transporte marítimo internacional.

Por este motivo, España celebra el progreso alcanzado la semana pasada por el grupo de trabajo inter-periodo sobre GEI en relación con el proceso de revisión de la estrategia inicial de la OMI.

La urgencia para que todos los sectores aceleren los esfuerzos para reducir las emisiones de GEI sigue presente y debemos hacer de nuevo hincapié en la necesidad de reforzar la ambición de la Estrategia inicial. Por ello, España apoya plenamente el establecimiento de un nivel de ambición que fije una fecha específica, no más tarde de 2050, para eliminar las emisiones de GEI del transporte marítimo internacional. Con ello, el transporte marítimo ayudará a evitar que el calentamiento global supere los 1,5 °C por encima de los niveles preindustriales.

El Comité debe seguir trabajando conforme a la fase 2 del plan de trabajo, y por ello, apoyamos el debate constructivo en el seno del grupo inter-periodos en relación con la viabilidad y la eficacia de las medidas y sus repercusiones en los Estados de las medidas propuestas, si bien debemos seguir progresando en la selección de elementos técnicos y económicos dentro de la combinación de medidas para que el MEPC 80 pueda determinar qué medidas van a elaborarse con carácter prioritario.

No hay dudas de que el apoyo a una medida combinada de carácter técnico y económico es creciente y para esta delegación es la única manera de lograr una transición energética del transporte marítimo que proporcione a la flota mundial el incentivo necesario y que contribuya y garantice al mismo tiempo la igualdad de condiciones y una transición justa y equitativa.

En ese sentido, nos felicitamos de la finalización del ejercicio de lecciones aprendidas de la evaluación amplia de las repercusiones de la medida a corto plazo, y de disponer de una circular 885 revisada que va a permitir hacer frente una evaluación de las repercusiones de las futuras medidas con mayores garantías respecto de las repercusiones que las mismas puedan tener en los estados en vías de desarrollo, los pequeños estados insulares en desarrollo y los países menos adelantados.

Queda todavía mucho por decidir, pero estamos mejor posicionados que en ocasiones anteriores.

España percibe una firme voluntad de todos los que formamos parte de la OMI por lograr el objetivo de la transición energética del transporte marítimo.

España quiere ayudar a mantener ese clima de entendimiento en los próximos meses para alcanzar nuestro objetivo sin dejar a nadie atrás.

Por ultimo nos gustaría expresar nuestro reconocimiento a todas la delegaciones por el excelente trabajo realizado la semana pasada y en especial al presidente del grupo de trabajo inter periodos sobre GIE el Sr. Oftedal de Noruega por su excelente labor y conducción del grupo, así como a todo el personal de la Secretaría implicado en la labor del grupo y en particular a la división de conferencias por la rápida traducción del informe del grupo.

Solicitamos que esta declaración se incluya como anexo al informe final del Comité."

With regard to the implementation and review of the CII framework:

"España reconoce la necesidad de seguir considerando cuestiones específicas como las planteadas en el documento MEPC 79/7/12 por INTERTANKO sobre los buques metaneros propulsados por vapor, en el documento MEPC 79/7/13 (Bahamas y otros) sobre los viajes cortos y el tiempo de espera en puerto, en el documento MEPC 79/7/15 (Bahamas e ICS) sobre la carga refrigerada bajo cubierta y en el documento MEPC 79/7/27 (ICS e INTERCARGO) sobre los graneleros auto descargables.

Esta delegación comparte en particular las opiniones expresadas en el documento 79/7/27 de ICS e INTERCARGO y viene observando que conforme el indicador de intensidad de carbono entra en vigor y su clasificación se registra en el SEEMP, muchos buques tendrán dificultades para mejorar su clasificación desde la categoría E o D a pesar de los esfuerzos técnicos y operativos realizados para reducir sus emisiones.

Esto puede motivar que los factores de corrección proliferen contribuyendo a rebajar las ambiciones sobre la revisión de los factores de reducción que se acuerden para 2027 en adelante. La cuestión del indicador de intensidad de carbono también plantea otros interrogantes.

.1 Desde el punto de vista comercial, en el caso de los fletamentos por tiempo, un buque puede empezar con una clasificación A, pero podría terminar con una peor calificación al final del fletamento, con lo que la compañía podría tener dificultades para volver a fletar adecuadamente ese buque.

.2 Del lado del control por el estado rector del puerto pueda darse una aplicación estricta del plan de medidas correctoras reflejado en el SEEMP en esta fase de aplicación temprana por lo que se debería adoptar un enfoque flexible en ese sentido.

Existe por tanto una necesidad de abordar estas cuestiones específicas planteadas en los referidos documentos de forma holística y basada en datos para evitar no causen solapamientos con los requisitos actuales de las CII y la EEXI sin menoscabar los actuales niveles de ambición.

Por ello esta delegación considera apropiado solicitar a la Secretaría de la OMI que identifique un calendario detallado para la próxima revisión del marco reglamentario de las CII y EEXI que tenga en cuenta el tratamiento de las cuestiones planteadas como una cuestión prioritaria.

Además, esta delegación tiene previsto presentar en próximos periodos de sesiones del comité información sobre nuestra experiencia en la aplicación del marco de las CII y las medidas correctivas previstas, con el fin de seguir estudiando y evitar que se produzcan consecuencias negativas no deseadas."

Statement by the delegation of Tonga

"We would like to begin by thanking the distinguished delegates from Nigeria and Ghana for their wise and apt words. Chair, the Kingdom of Tonga would like to align itself with the statement made by our colleagues from the Republic of the Marshall Islands. We would also like to thank the Republic of Korea for their intervention. We are very encouraged by their remarks, particularly those about the need to regulate emissions on a well-to-wake basis, the value of the levy, and its importance to an equitable transition.

We would like to share a few specific observations on the following matters:

.1 On measures: we were pleased to hear the further strengthening of support for a levy, and the recognition by many states of the value of the levy both for incentivising the use of new fuels and for enabling an equitable transition.

.2 We are comfortable with the way forward that combines the levy with a fuel standard, and that refining this basket in coming meetings can secure an equitable 1.5-aligned transition.

.3 However, we remain concerned that the revision of the strategy must clarify not only a 1.5-aligned transition, but also an equitable one. We think the clearest way to do that is to have a set of levels of ambition explicitly related to equitable transition objectives. In such a way, all countries can see that all their needs and concerns will be at the forefront of our efforts to implement and operationalise the strategy. This is about the needs of all developing countries, not only the needs of SIDS and LDCs.

.4 And we remain concerned about the clarity of the governance of our work under the Strategy. Hence, our call for us to consider governance principles, not just guiding principles. Particularly the need for principles of highest possible ambition, and polluter pays principles to make sure that we design equitable transition both into how funds are levied, as well as how revenues are deployed.

Chair we must ensure that this committee holds true to its commitment in resolution MEPC 304(72) to take an evidenced-based approach. As stated by the Marshall Islands, the current ambitions in the Initial Strategy do not align with the best available climate science

This Committee must ensure that the Revised Strategy includes nothing less than a 100% reduction in total greenhouse gas emissions by no later than 2050. Moreover, an intermediate target of 80% must be established for 2040, to ensure consistency, and an effective and efficient transition. Most fundamentally, this will align with a reality where our existence is ensured.

Finally, Chair, it is vital that these GHG emissions are accounted for on a Well-to-Wake basis, or else any emissions we reduce at sea, will be counteracted by the emissions in the production, transportation, and bunkering of the low-zero emission fuels.

For these reasons, we highly recommend the adoption of the proposed resolution in document MEPC 79/7/11, and we thank the submitters for the thought and consideration which they have put into this submission."

Statement by the delegation of Tuvalu

"Tuvalu would like to align itself with the statements of the Marshall Islands and Tonga. We agree with the need for high ambition justified by science as argued by many delegations such as Ghana and France amongst others.

The 1.5 degrees pathway is already a compromise for low lying atoll states such as Tuvalu, and this target is likely to have grim consequences for us. In relation to ambition therefore we also want to draw the audience's attention to the ICJ initiative from Vanuatu as we all can refer to the flyer left on our table this morning.

In the context of a science-based approach, there is little doubt that we need to adopt a Well-to-Wake basis to avoid the displacement of emissions to land. As such, Tuvalu supports the proposed resolution in document MEPC 79/7/11 as we think that the adoption of this resolution would crystallise the strong signal to eliminate emissions as soon as possible that we heard yesterday in deliberations on the revised strategy.

Turning to your invitation to comment more broadly on the work of ISWG-GHG. Whilst supporting the general progress being made, we do urge that sufficient time be allocated to allow detailed consideration of the vision and principles sections for the revised strategy. These are challenging discussions and require time to resolve, so the sooner we start, the better.

In respect to principles, it is clear for instance that this committee needs to translate the principle of differentiation from CBDRC-RC to an "IMO compatible" differentiation between states that addresses the need for an equitable transition leaving none behind.

At Paris seven years ago, we all collectively agreed that the now antiquated concept of a bilateral world divided into "developed" and "developing" was too simplistic and inadequate for the task. And so we agreed to flank CBDR-RC which speaks to states, with the principle of Polluter Pays which speaks to the polluter, with the principle of Equity which speaks to the small and most vulnerable, and the principle of Highest Possible Ambition which speaks of course to the collective responsibility we all owe our children and grandchildren.

It is paramount that the Polluter Pays principle is adopted by this committee in relation to GHG as the IMO did in the past for other Conventions, and as the economics of pollution and transition so require. It might be true that some costs will be passed onto the final consumers, but these will be polluting consumers, unwillingly polluters perhaps, but polluters nevertheless. This is precisely why Polluter Pays is the most legitimate principle to articulate a decarbonisation strategy around, because it clearly identifies who is in the position the make the change.

Tuvalu would like to suggest that a webinar be hosted by the Secretariat on the legal principles, ahead of MEPC 80 to allow legal experts to set out the international principles relevant to the Revised Strategy.

Tuvalu agrees with the comments made by Tonga and our other Pacific colleagues that these principles need to be more than guidance, they need to govern our decision-making and implementation of the Strategy and all its parts, therefore we strongly support the relevant sub-heading be changed to Governing Principles."

Statement by the delegation of the United Arab Emirates

"On the outcomes of GHG-13 concerning the revision of the initial Strategy

.1 It should be acknowledged that the Revised Strategy is a continuation of the Initial Strategy to sustain the momentum of the work done by IMO as the appropriate international body to address greenhouse gas (GHG) emissions from international shipping.

.2 It should also be further acknowledged that any update to the vision and the levels of ambitions should provide specific feasibility analysis and impact assessment, including but not limited to the following contents:

.1 potential technology pathways to achieve the vision and levels of ambition;

.2 demand and availability of alternative fuels/new energy technologies regionally and globally;

.3 the cost of achieving specific levels of ambitions and the negative impacts on the shipping industry and the States, especially developing States including SIDS and LDCs; and

.4 addressing relevant issues to avoid and reduce negative impacts in setting levels of ambition.

.3 Several delegations made reference to ICAO's long-term aspirational net-zero goal for international aviation. Such aspirational goal was approved after the adoption of market-based measures and not before that. Therefore, IMO should consider, first, developing and finalizing its market-based measures or a combination of mid-term measures which could set the target towards an IMO's aspirational goal. As highlighted by the IPCC 6th Assessment Report Working Group III Report that international shipping would only reach zero emissions by 2080 based on the adopted short-term measures. This report is a clear indication that the Strategy with its short-term measures is going to progress towards the current vision and it will continue to further progress once mid- and long-term measures is developed and approved.

.4 Revising the strategy, in particular, the vision and the levels of ambition should be in accordance with the guiding principle of the strategy "evidence-based" which means that making decisions should be based on robust scientific evidence, rather than on good will uncertainty and willingness only. It is therefore, the Revised Strategy should maintain the current vision and the levels of ambition as they are in the Initial Strategy or alternatively aiming to phase out GHG preferably between 2050 and before the end of this century taking into account that future revisions of the strategy provide opportunity for further improvement which should be supported by experience gained, scientific data and three-step approach(i.e. data collection, data analysis and decision-making) without the need for an intermediate target as the Strategy reviewed every five years which monitors the progress towards achieving the vision and, if necessary, adjustments could be made accordingly.

.5 This delegation believes also that an additional Guiding Principles should also be included in the Revised Strategy on the need for a broad approach to regulating safety of ships with new technologies and alternative fuels to support the achievement of the IMO's decarbonization goals as well as to effectively and efficiently coordinate between the Committees to ensure harmonization and implementation of the Strategy.

.6 With regard to the initiative of green shipping corridors which is considered to be a unilateral approach. This delegation is of the view that such initiative would contribute in the reduction of GHG from maritime sector. However, it would have a significant impact on other States in their trade. In addition, such measure would require an extensive and thorough assessment. Furthermore, it would risk undermining shipping's international nature and would likely cause market distortion. It is therefore the Organization should always support a multilateral approach rather than unilateral ones.

On the development if a basket of candidate mid-term measures

.1 This delegation supports the development of a basket of candidate mid-term GHG reduction measures, integrating both various technical and economic elements which we believe that it would still requires further work in the context of Phase II of the Work plan.

.2 It should also be acknowledged that MARPOL Annex VI is a technical preventive instrument. It is therefore, not an appropriate instrument for any economic measure.

.3 In relation to Marine Fuel Life Cycle GHG, IMO has a mandate in regulating shipping sector and it should avoid going beyond its mandate. Therefore, this delegation supports the development of methodology and procedure for Tank-to-Wake GHG emissions with the exclusion of Black Carbon in the draft LCA guidelines.

On impact assessments including the revision of the procedure

.1 This delegation supports the approval of the *Revised Procedure for assessing impacts on States of candidate measures* as set out in annex 1 of document MEPC 79/WP.5. In addition, a reference to the revised circular should be included under the section of *Impact on States* of the Revised Strategy.

.2 As part of the lessons-learned exercise of the comprehensive impact assessment of the short-term measure, it should be stressed that the impacts on States of a measure should be assessed and taken into account as appropriate before adoption of the measure. Particular attention should be paid to the needs of developing countries, especially small island developing States (SIDS) and least developed countries (LDCs)."

Statement by the delegation of the United Kingdom

"The United Kingdom thanks the Working Group for its report and for continuing the discussion related to the Revision of our Strategy.

As we have heard from many of the delegations already, the UK also understands that strengthening the levels of ambition in the strategy in-line with the Paris Agreement temperature goals is not optional, and is the task the Committee has already agreed to embark upon.

As a proud signatory of the "Declaration on Zero Emission Shipping by 2050" signed at COP-26, the UK was a supporter of a proposal for a resolution recognising the importance of a target for emissions reduction in document MEPC 77/7/3, and we continue to seek a Paris temperature goals aligned level of ambition and believe calls for a complete reduction of GHG emissions by 2050 are merited.

In the course of initiating the revision of the strategy, we have listened carefully to all our distinguished colleagues in this room. Some have asked for further analysis on the feasibility of strengthening the levels of ambition in the Revised GHG Reduction Strategy in-line with Paris goals.

We do recognise that targets alone are insufficient. These must be accompanied by a straightforward and effective basket of measures, and a price on GHG emissions is needed as part of any combination of measures. We also recognise that these measures must, of course, assess and address disproportionately negative impacts on developing countries, as appropriate and we continue to assess measures based on their ability to balance an inclusive transition with the unique context of the regulatory remit of the Organization which does not support bifurcated implementation. We also recognise the need to understand which technologies provide a viable investment to meet the emissions reduction targets being discussed and thank those delegations contributed such information to the Working Group.

Indeed, the Group considered the UK's information documents MEPC 79/INF 29 and MEPC 79/INF 30 which contributed to the body of tangible evidence now available to the Organization on technology and fuel readiness as we embark on shipping's transition to an emission free future.

Considering the various analysis available, we understand that there are challenges ahead of us, particularly the importance of a feasible scale up of green energy production if solutions such as ammonia and hydrogen are to play a sustained role in shipping's GHG transition to a well-to-wake zero GHG emissions sector.

We also note the significant upscaling in renewable energy production that is required to ensure a well-to-wake basis is feasible. Whilst we accept the information provided to the Group, this narrative of the amount of energy required should not be misunderstood as a justification for not setting the most ambitious emission reduction targets possible.

Considering some of the shorter term views that have been discussed, we share commitments to achieve at least 5% of the global deep-sea fleet running on Well-to-Wake zero-emission fuels by 2030, and we support the Revised Strategy reflecting such a target.

However, we must not limit ourselves to short-term targets in the Strategy as this will deprive industry precisely of the pathway to zero emissions that planning and investment requires now.

In our view, it would be an error to delay further the strong signalling industry requires to allow for investment and decision making that is required now in order to deliver a fleet that meets the levels of ambition for the 2040s and beyond.

To reiterate, the UK believes the Committee has sufficient analysis available to align the GHG Reduction Strategy with a 1.5 degree target of zero emissions by 2050. We do not believe that further studies are needed as this would be inconsistent with the Committee's previous approach to setting the levels of ambition in the Initial Strategy and contribute little added value ahead of MEPC 80 while also risking delay and disruption to the sector's ongoing phase-out of fossil fuels.

Finally, the UK is heartened by the growing spirit of collaboration in this room, helped no doubt by so many of us being back together in-person again with the growing support to recognise international shipping's transition from GHG emissions must keep to the Paris Agreement goals and requires complete emissions reduction by 2050 at the latest."

Statement by the delegation of Vanuatu

"Vanuatu has taken part to the 13th session of the ISWG-GHG held last week and while it is obvious that there are 2 groups of countries sharing different level of ambitions for international shipping GHG emissions by 2050, it is also a fact that all share the same concerns over climate change and agree on the increasing urgency for direct action for emission reductions at all levels in all sectors.

However, our different level of economic development should not be used as an excuse to justify lower level of ambitions when – We – and I mean – Humankind – has been alerted of the devastating effect of climate change for decades and has yet remained mostly passive against the greatest challenge of our time despite so many natural warnings…

Yes, we all care about our own destiny and so our respective countries future sustainability, but should this be at the cost of the wellbeing of our future generation? Obviously, we all have the same answer – No - but then how couldn't we set ourselves a level of ambitions which

would lead us to a brighter future? An ambition that would guide our work to hopefully reach our target, an ambition which would remain an ambition i.e. non-binding but would cause in everyone's mind that little spark triggering investments which are so much required.

Chair, distinguished Delegates, Vanuatu could be considered as a non-contributor to anthropogenic GHG emissions noting our insignificant level of emissions and while shipping remains our lifeline for our survival - We are ambitious and certainly because our ambitions is not heard in every forum, a growing coalition of more than 80 nations led by Vanuatu is calling for a non-binding Advisory Opinion from the International Court of Justice (ICJ) to gain clarity how existing International Laws can be applied to strengthen action on climate change, protect people and the environment and save the Paris Agreement.

International Law already contains obligations to prevent harm to the environment and protect human rights and we are now asking the ICJ how these obligations can be applied to spur the transformative climate action by States that is so much required at every level and in every sector not just shipping of course. In this regard, the United Nations General Assembly will consider Vanuatu et al ICJ Advisory Opinion Resolution in the weeks to come.

Distinguished Delegates, many have acclaimed Vanuatu's ICJ initiative, but we wonder whether everyone has understood that this initiative is in fact a desperate call to Nations to understand how our country, our region, our ocean, our home is under threat.

Vanuatu is strongly advocating for an ambitious revised strategy aiming at decarbonizing shipping by 2050 as pointed out by the Marshall Islands with our joint submission calling for the adoption – this week - of a resolution calling for shipping decarbonization by 2050.

We are also strongly supporting a combination of a technical element and an economic element within a basket of measures to not only drive us towards decarbonization of shipping but also raise funds via a levy to assist among others those in need.

We are pleased that the revised procedure for assessing impacts on states of candidate measures does take into account the disproportionately negative impacts or DNI on developing countries and in particular SIDS and LDCs before the adoption of any measures though we stress that DNI remains to be defined.

Chair on a side note but yet related – we reiterate our call to institutionalise this ISWG-GHG into a dedicated GHG Sub-Committee which will be drastically required in the near future and for the next 20 years. there is simply no means to continue working in such environment with no translation of document, interpretation and limited resources."

Declaración de la República Bolivariana de Venezuela

"Mi delegación reitera su compromiso con la reducción de gases de efecto invernadero procedentes de los buques. Así, coincide en la importancia del documento finalizado en la decima tercera sesión del Grupo de Trabajo, y agradecemos a su Presidente, a las delegaciones de los países que lo integran y al apoyo, siempre eficiente, de la Secretaría.

En particular, coincidimos con la Argentina y otros Miembros respecto de la relevancia de la revisión de la Circular MEPC.1/Circ.885, porque es imprescindible la evaluación de los impactos negativos sobre los países en desarrollo, en particular los menos desarrollados y los pequeños Estados insulares en desarrollo. Creemos que debe servir para que, al considerar el formato de la canasta de medidas, se eviten impactos negativos sobre los países en desarrollo, y para "abordar" tales impactos luego de aplicada la medida.

Venezuela está dispuesta a trabajar una canasta de medidas y, en ese sentido, coincidimos con los documentos ISWG-GHG 13/3/5 y ISWG-GHG 12/3/9, porque se propone un sistema basado en recompensar a los buques cumplidores, de aquellos con menor eficiencia, utilizando el marco reglamentario existente del CII.

Igualmente creemos que hay que tener cautela con las propuestas de adoptar un impuesto universal obligatorio, por las razones expresadas por la Argentina, y que la revisión de la Estrategia Inicial no se puede limitar a los niveles de ambición, porque también hay que abordar efectivamente la transición justa y el principio CBDR, como indica el documento ISWG-GHG 13/4/4 presentado por Brasil, Argentina, China, Ecuador y Emiratos Árabes Unidos.

En cuanto a la transición justa y el principio CBDR, mi delegación apoya la realización de un taller para comprender mejor de qué manera han sido implementados en otros foros, y con ello nutrir nuestras discusiones, como propone el párrafo 86 del documento MEPC 79/WP002E5. "

Statement by the representative of the UNFCCC Secretariat

"On behalf of the UNFCCC secretariat, I would like to take this opportunity to inform the Committee of the key outcomes from COP27 in Sharm El Sheikh, last month, including those of the SBSTA57 and CMA4, and our expectations towards MEPC79.

I wish to start by reporting the progress in bunker fuel agenda item at SBSTA57. UNFCCC secretariat appreciates the submission from IMO secretariat to the SBSTA57 and its statement delivered at the opening plenary of the SBSTA57. They brought clarity on the recent progress and results of IMO's work in addressing GHG emissions from international shipping sector.

In response to the interest expressed by many Parties, the SBSTA initiated discussion on the substantive aspects of the submissions from ICAO and IMO secretariats including the progress in developing the revised IMO's initial strategy and how ICAO's net-zero 2050 goal will be achieved.

The SBSTA noted this dialogue between Parties and ICAO/IMO secretariats and agreed to continue consideration of emissions from fuels used for international transport at the next session. Given that emissions from international transport sector account for substantial share of global emissions and had rapidly increased over the last decade, it is possible that this agenda item will be increasingly more important at future sessions of the SBSTA.

Distinguished delegates, at CMA4, there were a range of other outcomes that can inform the work of the Committee at this session. Most significantly, the CMA adopted the "Sharm El Sheik Implementation Plan" that included the following key points:

.1 Firstly, as in the Glasgow Climate Pact at CMA3 last year, the Implementation Plan recognized the importance of the best available science for effective climate action and policymaking, and in this context,

.1 Welcomed the 6th assessment reports of IPCC; and

.2 Reiterated that the impacts of climate change will be much lower at the temperature increase of 1.5°C compared with 2°C and resolved to pursue further efforts to limit the temperature increase to 1.5°C;

.2 The Implementation Plan, however, noted with serious concern the findings in the UNFCCC's NDC synthesis report that the total GHG emissions level in 2030, taking into account mitigations targets of all latest submitted NDCs and IMO's initial strategy, is estimated to be 0.3% below the 2019 level, which is nowhere near from the GHG emission level in 2030 required for 1.5°C pathways in AR6, that is, "43% below the 2019 level".

.3 As a consequence, the Implementation Plan emphasized the urgent need for immediate, deep, rapid and sustained GHG reductions across all applicable sectors as well as accelerated mitigation actions in this critical decade of 2020's. For this purpose, the Implementation Plan:

.1 Requested Parties to revisit and strengthen 2030 targets in their NDCs by the end of 2023;

.2 Recognized that enhanced support for developing country Parties will allow for higher ambitions in their actions; and

.3 Resolved to implement ambitious, just, equitable and inclusive transitions to low-emission and climate resilient development.

This sense of urgency, in the face of ongoing climate crisis, has also led to the other key outcomes including:

.1 Adoption of the work programme for urgently scaling up mitigation ambition and implementation in this critical decade;

.2 A call for reforming multilateral development bank practices and priorities towards a new vision and operational model that are fit for the purpose of addressing global climate emergency; and

.3 Establishment of new funding arrangements for assisting developing countries that are particularly vulnerable to the adverse effects of climate change in responding to loss and damage.

Further, at COP27, a number of important shipping related events were organised in the margin of the negotiations of these matters. UNFCCC secretariat appreciates the contributions by the organizers and participants.

The next SBSTA session (SBSTA58) will be held on 5-15 June 2023 in Bonn and COP28 is scheduled for 30 November – 12 December 2023 in the United Arab Emirates.

Distinguished delegates, UNFCCC secretariat would like to encourage the Committee to achieve further tangible progress at this session, in particular, development of a revised initial strategy.

In line with COP27's resolution to pursue further efforts to limit the temperature increase to 1.5°C and emphasis on the urgent need for immediate, deep, rapid and sustained GHG reductions across all applicable sectors in this critical decade, the discussion on the development of the revised initial strategy is encouraged to consider the following:

.1 Seeking alignment of the levels of ambitions with 1.5°C pathways in both 2030 and 2050;

.2 Further strengthening short- and mid- term mitigation measures to contribute to keeping 1.5°C within reach, using all available feasible and cost-effective means; and

.3 Further enhancing support for developing countries to implement the revised initial strategy.

I look forward to working with you this week to jointly keep 1.5°C alive through ambitious, just, equitable and inclusive transitions."

Statement by the observer from ICS

"The Committee will recall that the report of the Carbon Intensity Correspondence Group rejected 13 of the 23 correction factors and voyage adjustments that had been proposed for the CII rating system. Through submissions to ISWG-GHG 12 and MEPC 78, industry raised concerns relating to these rejected elements of the CII system. Nevertheless, MEPC 78 accepted the recommendations of the Correspondence Group's report in full.

Document MEPC 79/7/13 highlights the unfair affect that the absence of just 2 of these rejected elements has on the CII rating of vessels. It's analysis is based upon an existing fleet of tankers, including nine exact sister ships, and five near sister ships. All the ships are operated by the same organisation, and all were built at the same Korean shipyard between 2007 and 2011. Hence, the principal difference between the ships is the routes they operate on. Nevertheless, on the basis of 2019 data, the CII ratings of the ships, vary significantly, i.e. from B to E. The reason for this is the different trading patterns, and in particular the amount of port waiting time incurred and the number of short voyages completed. Both these aspects are outside the control of the ship owner, and to enable fair treatment, such ships, should be afforded appropriate CII correction factors. In the longer term, the absence of such correction factors could lead to ship owners avoiding ports with a poor track record of port waiting time and to focus on longer routes. This would not be in the interests of society, and may lead to a modal shift to road, rail and air transportation. We should of course remember that shipping is by far the most energy efficient means of transporting cargo, and such outcomes would lead to increased CO2 emissions.

Our co-sponsored documents MEPC 79/7/15 and MEPC 79/7/27 also highlights unfairness in the way the CII system treats refrigerated cargo carriers and self-unloading bulk carriers. Accordingly we have proposed the adoption of the FCelectrical,j correction factor for refrigerated cargo carriers, and a dedicated reference line for self unloading bulk carriers. We recall that the dedicated reference line received near unanimous support during ISWG-GHG 12, and we are unsure why this was not adopted at MEPC 78.

Finally Chair, I would like to draw the committee's attention to paragraph 5 of the associated amendments to MARPOL Annex VI (MEPC.328(76)), which requires the review of the CII system to be initiated as soon as possible. Noting the complexities of the CII system, we would urge the committee to facilitate the definition of the terms of reference for the review within this meeting. Hence affording delegations the maximum possible time to support this complex process."

Statement made by the observer from INTERCARGO

"INTERCARGO reiterates that it is essential that appropriate policies are included in the Revision of the IMO GHG Strategy to ensure the availability and supply of green fuels in sufficient quantities, as well as the necessary infrastructure to ensure bunkering in ports around the world.

On this occasion, on top of the consideration of Green Shipping Corridors, we wish to invite initiatives promoting Green Ports and the concept of Green Hubs as fundamentally relevant for the tramp sector, which is characterized by ships sailing in irregular trade patterns, rather than along fixed routes, and calling various ports around the world supporting regions and countries with poor infrastructure."

Statement by the observer from ITF

"The International Transport Workers' Federation, ITF, welcomes the increased focus on just transition in discussions over the Revised GHG Strategy. In particular, the ITF welcomes the submission by the ILO, in document MEPC 79/7/25, 'Reflecting the principles of a just transition in the Revised IMO GHG strategy'.

In light of questions raised at the 13th Intersessional Meeting of the Working Group on Reduction of GHG Emissions from Ships, about how just transition should be defined, it is important to recognise the work that has already been done.

In the Paris Agreement just transition is explicitly defined in terms of workforce issues. The ITF agrees with the views expressed by several delegations at the 13th Intersessional that terminology in the Revised GHG Strategy should be aligned with the Paris Agreement – including a specific workforce focus in relation to just transition. Furthermore, the definition should build on the 2015 ILO Just Transition Guidelines, which were agreed on a tripartite basis, and emphasise social dialogue, skill development, and labour rights.

With respect to a just transition for maritime, we note this has been further defined in the Maritime Just Transition Task Force 10-point action plan, 'Mapping a Maritime Just Transition for Seafarers', which was launched at COP27 in November and will be presented at a side event "today ". The 10-point action, which the ITF co-authored along with the ICS and UN Global Compact, and which included contributions from both the ILO and IMO, has specific recommendations on how to develop seafarer skills and competence within a global labour standards framework.

We also note there are broader discussions over an equitable transition, including access to shipping services for all countries, access to technology, and the ability to develop port infrastructure, and affirm that these should be addressed alongside a just transition for the maritime workforce.

We believe the logical next step for implementing a just transition is to ensure that the necessary training for seafarers in relation to decarbonisation is financially and institutionally supported. Specifically, the ITF proposes that if agreed, Market-Based Measures should include dedicated funds and mechanisms for training and upskilling seafarers. In addition to ensuring that no seafarer is left behind, these funds should ensure that no country is left behind by ensuring that all countries have the capacity to develop seafaring workforces with the skills and competence for a zero-carbon shipping industry. Dedicated funding and support mechanisms for seafarers should be in conjunction with, and not instead of, adaptation funding for SIDS and LDCs.

We also support the proposal that training and education to ensure the safety of seafarers during the transition is considered by other IMO bodies.

In conclusion, the ITF supports the additional paragraph – 5.6 – proposed in Annex 2 of document MEPC 79/WP.5, and furthermore, suggests further consideration is given to including technical support and specific funding derived from Market-Based Measures."

ITEM 8

Statement by the delegation of Colombia

"Colombia en su primera intervención quiere dar el sentido pésame a la delegación de Australia por el fallecimiento del Señor Paul Nelson.

Nuestra delegación agradece a los Países que han financiado el estudio para abordar la problemática de la basura plástica marina, y a los autores de los documentos del punto 8 de la agenda.

Colombia está de acuerdo con lo expuesto con la delegación de Corea.

En ese sentido, es necesario que la posible hoja de ruta para la evaluación mundial de las fuentes marinas, expuestas en el numeral 22 del presente documento, evalué los tiempos extensos propuestos para obtener una evaluación.

Se requieren tomar acciones preventivas que empiecen a aportar a la reducción de la contaminación marina. El esfuerzo mundial requiere de resultados oportunos y rápidos para implementar estrategias que reduzcan estos impactos.

Se solicita al Comité reevaluar los resultados expuestos por la consultoría, y complementar la actividad de enfoque diagnóstico, con un enfoque preventivo de manera inmediata, para implementar a bordo de los buques. Esto contribuirá a los esfuerzos globales para la reducción de los plásticos en el mar, para aportar a las necesidades globales que se están trabajando en el marco de la UNEA en la posible adopción de un tratado global de plásticos.

Apoyar la definición de estándares globales que permitan a los países avanzar en la misma dirección en materia sustitución, investigación, acceso a la información, entre otros, así como la definición de metas globales con un cronograma definido por todos los países para combatir la contaminación plástica. Todo esto teniendo en cuenta las capacidades y circunstancias nacionales.

Definir mecanismos de cooperación para garantizar la asistencia técnica y financiera necesaria para que los países puedan asumir los estándares internacionales que se podrían fijar a futuro por la OMI para reducir los impactos de la basura plástica marina generada por los buques. Esto requiere que sea gradual y de acuerdo a las capacidades nacionales.

Finalmente, Colombia como país asociado al Proyecto Glolitter ha sumado esfuerzos nacionales que aporten al objetivo del proyecto. Por tal motivo, Colombia agradece la financiación del proyecto Glolitter que permitirá a los resultados preliminares para tomar acciones desde la OMI."

ITEM 14

Statement by the delegation of China

"本代表团感谢ICS为受困于洪都拉斯港口的中国香港籍船员和船舶积极奔走呼吁。中国政府将继续密切关注该事件的进展。我们敦促各方充分发挥本组织多边平台的作用，真诚合作，共同解决涉事船员和船舶面临的急迫问题。"

Statement by the delegation of Hong Kong, China

"Thank you Chair for giving me the floor.

Good day to all distinguished delegates.

This delegation raised the matter of concern of Capt. YU Yihai, the Captain of the vessel "**Mount Hikurangi"**, IMO No. 9580039, who is being held at Honduras, at MSC 106 last month.

On Wednesday last week, Captain Yu's application for bail was once again refused by the Sentencing Court. This decision has hit Captain Yu and his family very hard. We understand that the bail decision will be appealed but the timeline for that is unknown.

Chair, this delegation would again like to urge all concerned parties to exercise all effort in facilitating Captain Yu to be treated consistent with the Guidelines on Fair Treatment of Seafarers in the Event of a Maritime Accident as well as the relevant provisions in the ILO MLC 2006, and hopefully he could be released on bail soonest possible.

We would like to request to have this statement appended to the final report of this session.

Thank you Chair."

Statement by the observer from ICS

"Thank you Chair.

ICS would like to raise awareness of Captain Yu Yihai's imprisonment without trial in Honduras.

Captain Yu is the former Master of the Mount Hikurangi, a vessel owned and operated by Pacific Basin.

In August 2021 the Honduran port authorities in Puerto Cortes discovered bags of cocaine in the vent shaft of one of the Mount Hikurangi's cargo holds during discharge operations.

We understand that there is no evidence linking Captain Yu, or any of the crew, to this discovery and that Captain Yu is detained primarily because he was the Master in charge of the vessel at the relevant time.

Following the discovery, the drugs were removed and then destroyed by the authorities. The vessel was allowed to sail with its crew but Captain Yu was imprisoned in a local jail and has remained in jail in Honduras ever since.

This amounts to 16 months in prison without bail and without trial. That is 16 months of Captain Yu not seeing his wife and family and without any indication as to when his ordeal will be over.

He has only recently been formally indicted for a drug-smuggling offence.

Captain Yu's ordeal is contrary to the principles in the IMO / ILO guidelines on the Fair Treatment of Seafarers, the Maritime Labour Convention, and Human Rights law, for trials to be conducted as expeditiously as possible or for the detained person to be released, and for non-custodial alternatives to pre-trial detention to be considered.

Captain Yu's employer and ICS are engaged in seeking both a resolution to his case and, in the interim, that he be released from custody (on bail). We are increasingly concerned for his welfare as the days, weeks, months in prison go by.

Chair, we have been very disappointed to learn that Captain Yu's application for bail was refused last week by the Sentencing Court in the Honduras capital (Tegucigalpa). This has hit his loved ones and all concerned hard. We understand that this decision will be appealed but the timeline for that is unknown and may not be soon, if the length of time that it has taken for the bail application to be considered is anything to go by.

ICS fully understands the damage caused to countries by the trafficking of illegal narcotics and the need to suppress and deter this criminal activity, including through the prosecution of offenders using the full force of the criminal law.

However, the plight of seafarers who are detained on drug smuggling charges when it appears from an early stage of investigations that they are not complicit in the smuggling needs to be recognised and addressed in the context of their fair treatment. Hopefully this will be the case with the further work that is proposed on the Fair Treatment guidelines.

Whilst we recognise that this Committee and this body has no locus over the matter, ICS would again appeal to the Honduran administration for Captain Yu's release on bail and to return home to his family until such time as he may be needed to assist in any further investigation, or the judicial proceedings.

We would appreciate if this statement can be attached to the report of the meeting.

Thank you Chair."