



Briefings of IMO Meeting

MEPC 77 (22 – 26 November 2021)

BRIEFING STATUS

- Flash*
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Ref.: IMO-0001-2022

Subject: News Final of MEPC 77/Rev.1

The Marine Environment Protection Committee, its 77th session was held from 22 to 26 November 2021 via remote session. With respect to the decisions made by MEPC 77, we already published the MEPC 77 – News Flash containing information of the main and summarized outcomes from the Committee. Please be informed that News Final of MEPC 77 as 2nd step contains overall outcomes of the session and the recommended measures on those results.

1. Ballast Water Management Convention

- 1.1 1 Basic Approval was granted
 - RADClean[®] BWMS (Islamic Republic of Iran)
- 1.2 2 Final Approvals were granted
 - JFE BallastAce[®] that makes use of NEO-CHLOR MARINE[®] (Japan)
 - HiBallast NF[™] BWMS (Republic of Korea)
- 1.3 1 Final Approval was not granted
 - FlowSafe BWMS (Cyprus)
- 1.4 Type approved BWMSs reported to MEPC 77 (total 8 units)
 - SeaCURE[®] BWMS (Liberia), MICROFADE II BWMS (Netherlands), CompactClean BWMS (Denmark), Purestream[™] BWMS (Norway), Electro-Cleen[™] System BWMS (Republic of Korea), Purimar[™] BWMS (Republic of Korea), EcoGuardian[™] BWMS (Republic of Korea), NiBallast[™] BWMS (China), they were type approved in accordance with BWMS Code adopted by resolution MEPC.300(72).
- 1.5 Guidance for the application of the BWM Convention to ships operating at ports with challenging water quality
 - MEPC 71 considered a proposal on the guidance on ballast water exchange (BWE) plus ballast water treatment (BWT) by the ship's BWMS as a shipboard contingency measure in a port area where normal operation of BWMS for ballasting is not possible (e.g. turbidity, total suspended solid(TSS) and/or salinity exceed the operating limitation of



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BWMS). But, the Committee referred this proposal to PPR 5 for further consideration.

- During the discussion of PPR 5, some concerns were raised with respect to the aspects such as whether the proposed measures would fall under the definition and scope of contingency measures or would create disproportionate administrative and financial burden such as identification of areas where ballast water should not be loaded due to the water quality, mutual agreement among the Parties to the Convention for identifying port areas with challenging water quality and/or alternative source of less challenging water if provided by the port, etc.

- MEPC 77 further considered various proposals and comments on a guidance on the application of the BWM Convention to ships operating at ports with challenging water quality with following key elements:

.1 In the case of entry into a port area with high level of turbidity, high level of total suspended solids or low salinity that exceed the operational limitation of a ship's BWMS, the ship may intake ballast water bypassing the BWMS and then move to an area where the BWMS can be operated to exchange ballast water using water treated by BWMS, with appropriate records on the uptake of ballast water and its exchange plus treatment operations in the ballast water record book;

.2 Ballast water exchange area may be the high seas at least 200 nautical miles from the nearest land and in water at least 200 meters in depth. If this option is not possible, the area would be designated areas for ballast water exchange, if established by the port State or at least 50 nautical miles from the nearest land and in water at least 200 meter in depth.

- MEPC 77 could not reach a consensus on the proposed guidance due to the divergent views raised in terms of regulatory, technical and safety implication of conducting BWE plus BWT, while the Committee agreed upon the elements to be further considered at MEPC 78 with a view to finalizing the guidance, which include the focus as to identifying situations where water quality inoperable due to TSS and turbidity, the approach similar to the contingency measures in the context of BWM.2/Circ.62 and the consultation with the Administration and/or port Authorities in case of BWE plus BWT, etc.

1.6 Unified Interpretation of regulations E-1.1.1 and 1.1.5 of BWM Convention

- MEPC 75 adopted Res.MEPC.325(75) on draft amendments to regulation E-1 of the BWM Convention concerning a mandatory requirement on commissioning testing of BWMS and approved BWM.2/Circ.70/Rev.1 on *2020 Guidance for the commissioning*



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testing of ballast water management systems, as amended. In light of this, the amendments do not explicitly provide an exact timing for the mandatory implementation of the commissioning testing of individual BWMS, whereas those amendments will enter into force on 1 June 2022.

- Given the various questions raised by industries as to whether mandatory testing should be undertaken based on the "actual completion date", "construction (the keel is laid) date", "date of reception for a survey application" or "date of commencement of the commissioning testing", MEPC 77 approved BWM.2/Circ.76 on the unified interpretation stipulating that the commissioning testing with a biological test in accordance with BWM.2/Circ.70/Rev.1 should be conducted if the initial or additional survey is completed on or after 1 June 2022.

1.7 Experience Building Phase

- In accordance with the basic principle that ship owner who have already installed BWMS type approved in accordance with old G8 guidelines onboard should not be required to replace BWMS fitted onboard, for the life of the ship or the system, whichever comes first, due to occasional lack of efficacy for reasons that beyond the control of the ship owner and ship's crew, MEPC 71 adopted Res.MEPC.291(71) which provides the basic structure of the Experience Building Phase (EBP). In addition, MEPC 72 approved BWM.2/Circ.67 and MEPC 74 further approved revised BWM.2/Circ.67/Rev.1 on data gathering and analysis plan for implementing Experience Building Phase.

- The EBP is structured as three stages: a data gathering stage, a data analysis stage, and a Convention review stage. The EBP begun with the entry into force of the Convention and will end with the entry into force of the package of priority amendments. As per the initial timeline for the EBP as described in BWM.2/Circ.67/Rev.1, three years of data should have been gathered and a draft analysis report of the gathered data should have been completed. It was noted that information gathered during the EBP was provided by some delegations and only four Member States in total had submitted data to the IMO so far, representing a very limited number of ships.

- Having noted that the substantial data corresponding to approximately 15,000 ships has been collected so far and being analyzed with a view to submission of the full data analysis report to MEPC 78, MEPC 77 deferred its consideration of the proposals submitted as well as the final report to be submitted by the Secretariat to MEPC 78.



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- 1.8 Application of the BWM Convention to specific ship types
- MEPC 74 considered proposals seeking possible amendments to the BWM Convention extending regulation A-5 (equivalent compliance) to multipurpose salvage ships and possible exemptions of the Convention to rescue tug boat, due to the ambiguity as to whether salvage ships more than 50 meters in length fall under regulation A-5, the lack of space for retrofitting a BWMS onboard and no ballasting and cargo handling during normal operation. After consideration, it was decided that existing guidance such as BWM.2/Circ.44 (options for ballast water management for Offshore Support Vessels in accordance with the BWM Convention) could be amended to address this matter, and proposals to this effect were invited to future session for further consideration.
 - A proposed guidance on options for compliance with the BWM Convention for all ships to address above issue was submitted to MEPC 75, but its consideration was deferred to future session.
 - Having noted that there had been deliberations among some key delegations, MEPC 77 deferred its discussion to the next session and invited interested parties to cooperate for developing updated proposals to be submitted to next session.
- 1.9 Unified Interpretation to regulation B-3.10 of BWM Convention
- MEPC 77 considered a unified interpretation to regulation B-3.10 of BWM Convention proposed for clarifying determination of the implementation date of the D-2 biological standard for ballast water management based on the IOPP renewal survey. It was identified that next IOPP renewal survey for the ships which are constructed before 8 September 2017 and which completes the initial survey after 8 September 2019 may be designated after 8 September 2024, and therefore the deadline for D-2 compliance may be after 8 September 2024.
 - Bearing in mind that the fundamental purpose of regulation B-3, as amended by Res.MEPC.297(72), was to ensure that all ships as well as existing ships to which this Convention applies comply with D-2 performance standard by 8 September 2024, a clarification is needed as to whether the deadline for D-2 compliance for those ships referred above may be after 8 September 2024 or not. In this regard, the Committee referred this proposal to 9th session of PPR Sub-Committee for further consideration.
- 1.10 Considerations for ship owners, builders and related stakeholders**
- Regarding the guidance for the application of the BWM Convention to ships operating



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at ports with challenging water quality referred in paragraph 1.5 above, given that there may be some countries or port authorities accepting BWE + BWT as their national legislation and/or port regulations despite no decisions taken from MEPC yet, interested parties are invited to consult with the port authorities to ensure the smooth implementation of the Convention in case of the event. For more detailed instruction, please refer to previous Technical Information (2019-IMO-06, para.6).

- Regarding the unified Interpretation of regulations E-1.1.1 and 1.1.5 of BWM Convention referred in paragraph 1.6 above, please be informed that, irrespective of the actual completion date of commissioning testing following the installation of BWMS onboard, the commissioning testing with biological test will be mandatory where the initial survey for new ships under construction and additional survey for existing ships subject to the installation of BWMS are scheduled to be completed as of 1 June 2022. Moreover, bearing in mind that the delivery date of new ships mostly coincides with the completion date of the initial survey of IMO Convention, it is required to identify the ships delivery schedules for ensuring the compliance with the relevant requirements.

2. Air Pollution and Energy Efficiency Regulation

2.1 2021 Guidelines for Exhaust Gas Cleaning System (2021 EGCS Guidelines)

- MEPC 77 considered draft 2021 Guidelines for Exhaust Gas Cleaning System (EGCS) developed by PPR 7, with following outstanding issues and proposals for further refinement of the Guidelines:

.1 Proposed revision to definition of "Phenanthrene equivalent" for clarifying the ranges of wavelengths used to measure 16 PAHs in PAH mixture, including phenanthrene;

.2 Proposed revision to the requirements of turbidity monitoring equipment to align with ISO 7027;

.3 Proposed 12-month grace period after adoption of new Guidelines. 6-month grace period referred to in the current draft Guidelines would not be sufficient due to a number of instances where EGCSs were contracted to be delivered on or after the application date and the possibility that EGCS design based on 2015 Guidelines may already be in the approval process;

.4 Proposed revision to paragraph 10.1.6.1 to align with Res.MEPC.307(73) on *2018 Guidelines for the discharge of exhaust gas recirculation (EGR) bleed-off water*. This is to exclude additional assessment of discharge water where additives such as neutralization



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agents, such as sodium hydroxide (NaOH); and flocculants used for approved oily-water separating equipment are used, provided that the discharge water pH does not exceed 8.0; and

.5 Results of the study for EGCS discharge water that the concentration of PAHs measured onboard using Phenanthrene equivalent was quite different from that analyzed in the laboratory using EPA16 PAHs.

- After consideration, MEPC 77 adopted Res.MEPC.340(77) on the “2021 Guidelines for the Exhaust Gas Cleaning Systems” with the following agreements:

1. Clarification on the application dates (the dates the keels of which are laid on or after the application date, or a contractual delivery date of EGCS on or after the application date where the date the keels of which are laid was before the application date);

.2 The originally proposed 6 months grace period after the adoption of the Guidelines was agreed instead of newly proposed 12 months grace period;

.3 Clarification on a definition of “Phenanthrene equivalent” so as to reflect that any wavelength that falls within in the range is acceptable (244-264 nm excitation and 310-410 nm detection);

.4 Clarification on the requirements for turbidity monitoring equipment to align with ISO 7027 (Turbidimeter should identify when the turbidity is unable to be reliably quantified);

.5 2021 Guidelines also apply to existing EGCSs to which amendments to ETM-A(EGCS Technical Manual Scheme A) and ETM-B as specified in 4.2.2.4 and 5.6.3 of the guidelines were undertaken on or after the application date; and

.6 Clarifications to paragraph 10.1.6.1 of the guidelines to exclude additional assessment of discharge water where additives such as neutralization agents such as sodium hydroxide; and flocculants which are used for approved oily-water separating equipment are used, provided that the discharge water pH does not exceed 8.0.

2.2 Evaluation and harmonization of rules and guidance on the discharge of discharge water from EGCS into the aquatic environment, including conditions and areas

- EGCS discharge water contains various contaminants such as Sulphur oxides, Nitrogen oxides and other mixtures originated from the engine’s exhaust gas. It is noted that the mixtures of compounds when discharged overboard were identified to have negative impacts on the marine environment. Accordingly, many countries have been regulating the discharge of wash water from open-loop scrubber in their territorial water and port limits via their national legislation. Moreover, there have been many proposals and views



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that the measures such as prohibition of EGCS discharge water in Particularly Sensitive Sea Areas (PSSAs) and special areas, more strict limits for contaminants and further development of standards and protocols for measuring, monitoring and reporting on EGCS discharge water parameters should be considered and explored, with a view to minimizing or removing unintended risks to the marine environment.

- In this context, recognizing the need for uniform and clear regulatory measures to manage the environmental and economic impacts both for the industry and countries, PPR 7 agreed with the general structure of the scope consisting of 4 parts, i.e. Risk and Impact assessment, Delivery of EGCS residues, Regulatory matters and Database of substances, and further agreed to change to title of the output to "Evaluation and harmonization of rules and guidance on the discharge of discharge water from EGCS into the aquatic environment, including conditions and areas".

- Some studies in terms of EGCS discharge water were provided as follows:

.1 A study of an actual sample suggests that the discharge from open-loop scrubber potentially will be more risky to the marine environment than the discharge water generated from a closed-loop scrubber;

.2 A study concludes that the environment effect of discharge water is dependent on the location, with risks due to short-term exposure to marine organisms in the open sea being minimal. But, in the case of high traffic areas the allowable concentration level could be potentially exceeded; and

.3 A study suggests that risks of such discharge water to marine organisms were within the acceptable range.

- After extensive debates, particularly taking into account that re-establishment of GESAMP to further consider the proposals would not be feasible due to time constraints and urgency of this work, MEPC 77 approved the draft revised title and scope of work on "*Evaluation and harmonization of rules and guidance on the discharge of discharge water from EGCS into the aquatic environment, including conditions and areas*", with a target completion year of 2022. Moreover, the Committee further agreed to request GESAMP to review the proposals and provide their recommendation or advice to PPR Sub-Committee.

2.3 Guidance on indication of ongoing compliance in the case of the failure of a single monitoring instrument, and recommended actions to take if the exhaust gas cleaning system fails to meet the provisions of the EGCS Guidelines.

- MEPC 74 approved MEPC.1/Circ.883 providing a *Guidance on indication of ongoing*



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compliance in the case of the failure of a single monitoring instrument, and recommended actions to take if the Exhaust Gas Cleaning System (EGCS) fails to meet the provisions of the 2015 EGCS Guidelines (Res.MEPC.259(68)).

- PPR 7 developed revised MEPC.1/Circ.883 for extending the applicability of the guidance to future versions of EGCS guidelines, and reported to the Committee for its approval.

- MEPC 77 considered various proposals for amending the guidance as follows:

.1 In case of an EGCS malfunction that lasting more than one hour, tentative use of non-compliant fuel oil in a certain circumstance (out of contact with the Administration due to time difference or any other technical reasons for not using compliant fuel oil, etc) needs to be allowed;

.2 Use of non-compliant fuel oil should not be allowed in any cases, and immediate change to compliant fuel oil should be conducted in case of an EGCS malfunction that lasting more than one hour if approved under Scheme B certification; and

.3 The consultation with relevant Authority or Administration in case of the malfunction and its determination on any actions should be agreed upon as soon as possible to avoid sailing being delayed.

- After consideration, MEPC 77 approved MEPC.1/Circ.883/Rev.1 with some modifications to the Guidance as well as a further clarification on the communication with the relevant port States in the case where the ship should exceptionally need to continue on its intended voyage in a non-compliant condition following the EGCS malfunctions.

2.4 2013 Guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI (MEPC.1/Circ.815)

- MEPC 65 approved the *2013 Guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI (MEPC.1/Circ.815)* to incorporate the effect of innovative technologies, such as Wind Assisted Propulsion System (WAPS), into the EEDI framework. The Guidance covers the wind assisted propulsion system, while the global wind probability matrix and technical guidance for performance tests to gain the wind assisted propulsion system force matrix have not been completed yet.

- MEPC 77 considered various proposals for updating this guidance as follows:

.1 Extending the applicability of this guidance to EEXI framework as well;

.2 Updates to the calculation procedure accounting for wind conditions in different global regions, operational variations of ships to account for wind and route optimization, and



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options to correctly display real fuel savings in the EEDI result for ships equipped with WAPS technology;

.3 Guidance for the performance of model tests to determine the relevant system force matrix as well as numerical calculations for the determination of the force matrix as an alternative method;

.4 Another option for the model tests which do not investigate the whole superstructure with WAPS of a ship but just a single wind propulsion unit, which is required for some systems (especially rotating sails) to perform the tests with relevant Reynolds numbers; and

.5 The need to check that the applied cases are technically reasonable, i.e. that only realistic cases are included and cases where, for example, the heel force exceeds acceptable limits are ignored.

- After consideration, MEPC 77 approved MEPC.1/Circ.896 on the *"2021 Guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI and EEXI"*, having the option for using the upper half of the wind matrix where 1/2 is related to the probability that was considered the "more realistic option" in terms of real fuel savings gained.

- This updated guidance revokes MEPC.1/Circ.815, and it was agreed to keep the guidance under review in the light of experience gained in its application.

2.5 Data collection and analysis under regulation 18 of MARPOL Annex VI and the inclusion of flashpoint as mandatory information in the bunker delivery note (BDN)

- MEPC 77 endorsed the recommended improvements to the user interface to the MARPOL Annex VI module on GISIS to allow a more seamless reporting of data on fuel oil availability and non-availability.

- Having noted that MSC was developing a number of draft guidelines related to flashpoint and that a correspondence group was established by MSC 103 to deal with this matter, MEPC 77 agreed to defer the consideration of the inclusion of flashpoint in BDN to future session of MEPC until MSC had completed its work.

2.6 Considerations for ship owners, builders and related stakeholders

- Regarding the 2021 EGCS Guidelines referred in paragraph 2.1 above, please be informed that change of contract for the series ships which have been contracted to be installed with EGCS approved in accordance with 2015 EGCS Guidelines on or after 1 June



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2022¹ would be inevitable as 6-month grace period was adopted notwithstanding a proposed 12-month grace period after adoption of new Guidelines. Ship owners, builders and EGCS manufacturers are invited to make best efforts to ensure that EGCS approved in accordance with new Guidelines should be installed onboard in due course.

- Regarding the guidance on discharge of discharge water from EGCS referred in paragraph 2.2 above, the guidance provides IMO member States and industries with the criteria to evaluate its harmfulness in a scientific and objective manner, while it is closely relating to whether discharge water from EGCS is allowed or not, readers are invited to particularly note the future discussion progress and its outcomes from PPR 9 (April 2022) and MEPC 78 (June 2022), or MEPC 79 (December 2022).

- Regarding the guidance on the malfunctions of EGCS referred in paragraph 2.3 above, while the ships fitted with EGCS are voluntarily preparing compliant fuel oils onboard due to the national or port regulations to prohibit discharge of wash water from open-loop EGCS, it is required to communicate with the relevant authorities including the ship's Administration and relevant port State to decide on appropriate action in accordance with the Convention in the case where the ship should exceptionally need to continue on its intended voyage in a non-compliant condition following the EGCS malfunction that lasts more than 1 hour.

- Regarding updated 2013 guidance on the innovative energy efficiency technologies, it should be noted that its applicability was extended to the technologies for complying with EEXI requirements, while the guidance was originally developed for certifying the technologies to comply with EEDI requirements for new ships. In particular, it is noted that these updates do not contain certification requirements by sea trial while wind assisted propulsion system among the technologies corresponding to Category B (engine power reduction) should have been certified at sea trial, and the guidance for the performance of model tests to determine the relevant system force matrix as well as numerical calculations for the determination of the force matrix as an alternative method were also included.

3. Reduction of GHG emission from ships

¹ 2021 EGCS Guidelines apply to EGCS installed on ships the keels of which are laid or which are at a similar stage of construction on or after 1 June 2022; or EGCS installed on ships the keels of which are laid or which are at a similar stage of construction before 1 June 2022, which have a contractual delivery date of EGCS to the ship on or after 1 June 2022 or, in the absence of a contractual delivery date, the actual delivery of the EGCS to the ship on or after 1 June 2022.



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- 3.1 Outcome of 9th meeting of the Intersessional Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG 9)
- ISWG-GHG 9 was held via a virtual meeting from 15~17 September 2021 to initiate the development of life cycle GHG/Carbon intensity guidelines for all relevant types of fuels and incentive schemes, and the measures to reduce methane slip and emissions of volatile organic compounds.
 - The group could not fully consider all proposals and comments raised during the meeting owing to the time constraints and initial stages of the discussion, while following principles for the development of LCA guidelines and measures for methane slip and VOC were agreed:
 - .1 The scope of the guidelines is **Well-to-Tank(WtT)**² and **Tank-to-Propeller(TtP)**³ GHG emissions related to all fuels used for combustion for propulsion and operation onboard a ship. Other short-lived climate pollutants such as NMVOC, NO_x, SO_x, CO, PM and black carbon are not included in the scope. But, if appropriate at a later stage, the addition of black carbon and other short-lived climate pollutants may be considered;
 - .2 The GHGs included are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). For, tank-to-propeller emissions, CO₂ emissions are determined by the fuel type, while CH₄ and N₂O emissions are dependent on the engine generation and type and fuel used;
 - .3 The GHG emissions are calculated as CO₂-equivalents (CO_{2eq}) using the Global Warming Potential over a 100-year horizon (GWP₁₀₀) as a basis and GWP₂₀ as comparison purposes;
 - .4 The main "fuel labels" were identified as Fossil, Biomass, Captured Carbon, Zero-carbon and Electricity, which are based on carbon source and other sustainability aspects, and each of which contains sub-categories for the different energy carriers;
 - .5 Incorporation of default upstream emission values in the IMO lifecycle GHG/carbon intensity assessment of fuels, and its value and assessment needs to be done by experts using a scientific approach;
 - .6 Methane slip should be addressed in the context of LCA guidelines, taking into account the views that methane emissions constitute a worrying factor as their climate impact would accelerate climate change and should be kept into account when considering the

² **Well-To-Tank** emissions factor, also known as upstream or indirect emissions, is an average of all the GHG emissions released into the atmosphere from the production, processing and delivery of a fuel or energy vector.

³ **Tank-To-Wake(Propeller)** emissions factor, also known as downstream or direct emissions, is an average of all the GHG emission released into the atmosphere from a fuel consumption to operate a ship.



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future development of "Phase 4" of the EEDI; and

.7 Further investigation on how the reduction of VOC emissions could contribute to the implementation of the *Initial IMO Strategy on reduction of GHG emissions from ships*. There was also a need to further examine the potential of the existing regulatory framework (MARPOL Annex VI, regulation 15) and consider if there was a way to improve it, taking into account the cost-effectiveness of control measures such as increasing settings of pressure/vacuum (P/V) valves from current standard at 0.14 bar to 0.2 bar.

- Given the principles and views above, the group developed draft LCA guidelines for further consideration and discussion at ISWG-GHG 11 which is scheduled to be held in March 2022 and the group invited the Committee to consider whether PPR Sub-Committee might be tasked to investigate how VOC measures could be further addressed.

3.2 Outcome of 10th meeting of the Intersessional Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG 10)

- ISWG-GHG 10 was held via a virtual meeting from 18~22 October 2021 to consider the interim report of the Correspondence Group in Carbon Intensity Reduction (correction factors and voyage adjustment in relation to the calculation of attained CII values), the mid- and long-term GHG reduction measures, and how to keep the impacts of the short-term measure under review and how to undertake a lesson-learned exercise of the comprehensive impact assessment of the short-term measures.

- In considering the interim report of the Correspondence Group in Carbon Intensity Reduction (correction factors and voyage adjustment in relation to the calculation of attained CII values), the group agreed, in principle, that:

.1 The voluntary collected data as referred to in section 5 of G1 (Res.MEPC.336(76)) to calculate trial CIIs should also be verified with the same procedure for the mandatory data;

.2 The attained annual operational CIIs, the parameters to calculate the correction factors, voyage adjustments, and other trial CIIs should be reported to the IMO DCS Database, while MARPOL Annex VI does not require to report these data relating to the CIIs to the IMO DCS Database;

.3 Correction factors for certain ship types, operational profiles and/or voyage for the CII calculations should be addressed in a set of new guidelines (CII guidelines, G5), and CII value corrected according to G5 should be used for calculation of the attained operational CII and for CII rating of the ship as defined in the G4 guidelines. But, uncorrected values of the attained CII should also be reported to the Administration;



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.4 Correction factors and voyage adjustments which may be specified in G5 should be used to calculate the attained CII as defined in G1 guidelines, but should not be applied to the reference CII values as defined in G2 guidelines; and

.5 New guidelines accompanying the short-term measures as well as updated draft SEEMP guidelines for including CII related should be completed by MEPC 78 ahead of entry into force of the revised MARPOL Annex VI on 1 November 2022.

- The group considered the following mid-term GHG reduction measures proposed, and agreed to continue its consideration at ISWG-GHG 12 which is scheduled to be held in May 2022:

.1 Proposed three possible concepts for a regulatory mechanism: a fuel CO₂/GHG limit; an emission cap and trading; and carbon intensity indicators and credit trading/fleet averaging, so as to achieve the overall ambitions of the Initial IMO GHG strategy;

.2 Future working arrangements to support the follow-up actions of the Initial Strategy (Establishment of a Standing Technical Group on reduction of GHG (ST-GHG));

.3 Proposed universal levy of 100 USD per CO₂equivalent tonne to incentivize a rapid shift away from fossil fuel use by international shipping with upward ratchets in a five-yearly review cycle;

.4 Proposed measures to incentivize the use of low-carbon and zero-carbon fuels (GHG tax or levy of 250 to 400 USD per CO₂equivalent tonne to become competitive with fossil fuels; cap-and-trade scheme for maritime GHG emissions; and low-GHG fuel standard);

.6 A regulatory package suggesting to demonstrate how a levy-based MBM, based on mandatory IMO climate contributions by ships, per tonne of CO₂ emitted, to an IMO Climate Fund, could be brought into effect quickly via adoption of a new chapter to Annex VI of MARPOL Convention;

.7 A low GHG fuel standard; and

.8 Combination of fuel GHG intensity limit and cap and trade system.

- The group considered how to keep the impacts of the short-term measure under review and how to undertake a lesson-learned exercise of the comprehensive impact assessment of the short-term measures, and reached agreements as follows:

.1 Holding one or more ad-hoc Expert Workshop with a view to improving the impact assessment procedure (MEPC.1/Circ.885) as well as review the assumptions and methodologies for both assessing impacts on ships and on States was agreed;

.2 Conducting the lessons learned exercise in parallel with Phase I of the consideration of further GHG reduction measures relating to the mid- and long-term measures was agreed,



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and the procedure contained in MEPC.1/Circ.885 regarding initial impact assessments would apply to Phase I of the work plan for development of mid- and long-term measure; and

.3 The possible areas for improvement of process include the role and function of Steering Committee as well as other relevant organizations such as World Bank for impact assessment and the involvement of UNCTAD for the comprehensive impact assessment. The methodologies to be used to conduct the assessment for “positive impact” as well as “disproportionately negative impact” are required.

3.3 Revision of the Initial IMO GHG Strategy and 2050 level of ambition

- MEPC 77 considered several proposals and information to revise the Initial IMO GHG Strategy and 2050 level of ambition as follows:

.1 Given that the current regulations in MARPOL Annex VI concerning reduction of GHG emissions from ships alone are insufficient to reduce GHG emissions to achieve the Paris Agreement temperature goals, a draft resolution stipulating that all GHG emissions from shipping industry should reach zero by no later than 2050 was proposed;

.2 Recalling the Committee previously agreed that the revision of the Initial IMO GHG Strategy at MEPC 77 and to adopt a revised strategy at MEPC 80 as well as the need to strengthen the levels of ambition for 2030 and 2050, a new introduction of level of ambition for 2040 on a trajectory to achieve zero emissions was proposed;

.3 In supporting the reinforcement of Initial IMO GHG Strategy, it must also take into account the constraints of developing countries, as appropriate, especially small island developing countries (SIDS) and least developed countries (LDCs), ensuring the needed technological cooperation and financial support;

.4 To achieve total annual CO₂ emissions of net zero by 2050, IMRB/F proposals should be approved for fund raising purposes to accelerate R&D of zero-carbon technologies; and

.5 Information of the work of IPCC and recent announcements by certain industry coalitions as well as evidence for investment and action already happening in zero-emission fuel/shipping was provided.

- During discussion, MEPC 77 particularly considered a proposed resolution to update the ambition of the IMO’s Initial GHG Strategy to zero GHG emissions by 2050 instead of the current 50% reduction of GHG levels from 2008 in 2050, which would have aligned with



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the Paris Agreement and the **Glasgow Climate Pact**⁴ reached at COP 26. The Committee could not reach a consensus on the proposed resolution although there was broad support, while agreed with the need to review and update the IMO Initial Strategy including its target, impact assessment and a review of fuel availabilities.

- In light of this, MEPC 77 agreed to initiate the revision of the Initial IMO Strategy on Reduction of GHG Emissions from ships in accordance with the timeline described in the Programme of follow-up actions of the Initial IMO Strategy on Reduction of GHG Emissions from Ships and further agreed that a final draft of the Revised Strategy must be considered for adoption by MEPC 80 during Spring 2023.

3.4 International Maritime Research and Development Board (IMRB)

- Recalling that MEPC 75 considered a proposed development of a research and development (R&D) program to accelerate the introduction of low-carbon and zero-carbon technologies and fuels, which includes the establishment of a non-governmental International Maritime Research and Development Board in charge of funding, overseeing and coordinating specific R&D projects, and an International Maritime Research Fund (IMRF) expected to raise approximately 5 billion USD over the 10 to 15 years life of the program via a mandatory R&D contribution of 2 USD per tonnes of fuel oil purchased for consumption, MEPC 76 further considered an updated proposal for the IMRB and its Fund suggesting draft amendments to MAPROL Annex VI and changes to address specific concerns and suggestions raised by some member States at MEPC 75, as well as a comprehensive impact assessment for the proposal.

- But, MEPC 76 noted the concerns over a universal levy per tonne of CO₂ emitted per tonne of carbon-based fuel purchased that it did not adequately reflect the principle of Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC) and proposed IMRB/F were designed to only support R&D but not the deployment or uptake of alternative fuels, fuel production and bunkering infrastructures.

- MEPC 77 continued the discussion on IMRB/F, with following updated proposals:

.1 Information on development of a prototype for an automated IMRF R&D contribution system which is intended to demonstrate that the proposed establishment of the IMRF

⁴ The **Glasgow Climate Pact** which is an agreement reached at the 2021 United Nations Climate Change Conference (COP 26) is the first climate agreement explicitly planning to reduce unabated coal usage as well as a commitment to climate finance for developing countries. During COP 26, some declarations and pledges that would lead the shipping industry towards net zero emissions in 2050 such as Clydebank declaration, Declaration on zero emission shipping by 2050, CVF (Climate Vulnerable Forum) Dhaka-Glasgow declaration, etc. were presented.



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would involve minimal administrative burdens;

.2 An urgent need to accelerate R&D of zero-carbon technologies through the proposed establishment of an IMRB and the type of project IMRB might commission and coordinate, as well as a better understanding of the magnitude and complexity of the R&D projects needed to increase Technology Readiness Levels (TRLs) to the maturity required to achieve the current IMO level of ambition for 2050; and

.3 Intellectual property issues generated from IMBR projects in relation to ensuring equitable and fair access for the mutual benefit of all project partners and stakeholders, including member States, the shipping industry and other stakeholders.

- During discussion, MEPC 77 particularly noted the remaining concerns related to the funding and information sharing, such as technology transfer, redistribution of funds, governance mechanism and equal access to R&D results.

- In light of this, given the increased support for the proposal to establish an IMRB and associated fund, MEPC 77 agreed to instruct ISWG-GHG 12 to further consider this issue as part of its consideration of proposals for mid-term measures under Phase I of the work plan for development of mid- and long-term GHG reduction measures.

3.5 Revision of Data Collection System

- With respect to the information to be submitted to the IMO ship fuel oil consumption database, taking also into account that revised MARPOL Annex VI adopted by Res.MEPC.328(76) does not provide any provisions requiring to report the data related with the operational attained CII and its associated values to the IMO DCS Database, MEPC 77 considered proposals for improving current data reporting system as follows:

.1 Inclusion of information on the ship's required and attained Energy Efficiency Existing Ship Index (EEXI), Carbon Intensity Indicator (CII) values and rating in the IMO Data Collection System, as well as its corresponding amendments to Appendix IX of MARPOL Annex VI; and

.2 Public accessibility for a ship's attained CII and its associated rating.

- After consideration, due to time constraints, MEPC 77 instructed ISWG-GHG 11 to further consider the proposals with a view to advising MEPC 78 on a way forward.

3.6 Considerations for ship owners, builders and related stakeholders

Taking into account that the discussions on development of the guidelines for voyage adjustment and correction factors in relation to the calculation and rating of attained CII,



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life cycle GHG for maritime fuels, and mid- and long-term measures for reduction of GHG from international shipping will be continued by future ISWG-GHG and MEPC meeting, readers are invited to note future discussion progress with following terms of references and agendas of ISWG-GHG:

- ISWG-GHG 11 (scheduled from 14 to 18 March 2022)

- .1 Development of draft lifecycle GHG and carbon intensity guidelines for maritime fuels (draft LCA guidelines);
- .2 Further consideration of concrete proposals on how to keep the impacts of the short-term measure under review;
- .3 Lesson-learned exercise of the comprehensive impact assessment of the short-term measure; and
- .4 Consideration of proposals for the revision of the ship fuel oil consumption Data Collection System (DCS)

- ISWG-GHG 12 (scheduled from 16 to 20 May 2022)

- .1 Consideration of the final report of the Correspondence Group on Carbon Intensity Reduction;
- .2 Consideration of concrete proposals for mid- and long-term measures, as well as the proposal to establish an International Maritime Research Board (IMRB); and
- .3 Consideration of the matter on how to address the increasing workload on reduction of GHG emissions from ships and proposals for possible alternative working arrangements.

4. Marine Plastic Litter from ships

- MEPC 73 adopted Res.MEPC.310(73) containing an action plan for preventing marine plastic litter entering the oceans through ship-based activities, and the action plan includes various aspects such as reduction of marine plastic litter generated from fishing vessels, reduction of shipping's contribution to marine plastic litter and improvement of the effectiveness of port reception facilities and treatment in reducing marine plastic litter, etc.

- Under this plan, IMO will undertake a review of the Action Plan to assess the need for updating actions and/or incorporating new actions to the plan annually and a comprehensive review to assess the effectiveness of the actions after five years.

- For the purpose of continuing the discussion, MEPC 77 considered several proposals for reinforcement of the measures to prevent and minimize marine plastic litter as follow:



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- .1 Report of Correspondence Group on development of a Strategy to Address Marine Plastic Litter from Ships;
- .2 Proposed amendments to regulations 10.3 and 10.3.6 of MARPOL Annex V to expand the obligation to carry a Garbage Record Book to all ships of 100 GT and above;
- .3 The need for further investigation into the prevalence and impact of microplastics from paints and anti-fouling coatings used on ships;
- .4 Introduction of a new mandatory requirement on the marking of fishing gear with IMO Ship Identification Number to prevent abandoned, lost or otherwise discarded fishing gear (ALDFG), and the concerns over its legal and implementation aspects; and
- .5 The need to establish international guidelines and requirements for loading, unloading and clear labelling of containers carrying plastic pellets, given the recent case of MV X-Press Pearl.
 - After consideration above progress and proposals, MEPC 77 agreed:
 - .1 The adoption of Res.MEPC.341(77) on the Strategy to address marine plastic litter from ships with following key elements:
 - Reduction of marine plastic litter generated from, and retrieved by, fishing vessels;
 - Reduction of shipping's contribution to marine plastic litter; and
 - Improvement of the effectiveness of port reception facilities and treatment in reducing marine plastic litter.
 - .2 Regarding a proposal for making Garbage Record Book mandatory for ships of 100 GT and above, given the widespread support, to instruct PPR Sub-Committee to prepare draft amendments to MARPOL Annex V.
 - .3 Regarding impact of microplastics from paints and anti-fouling coatings used on ships, MEPC 77 noted the information provided.
 - .4 Regarding marking of fishing gear, given the concerns relating to the technical difficulties and legalities of doing so since fishing gear in use was not classed to garbage under current MARPOL Annex V, to instruct PPR Sub-Committee to further consider the potential regulatory (mandatory or recommendatory) options for promoting marking of fishing gears.
 - .5 Regarding the issues on the plastic pellets, MEPC 77 instructed to PPR and CCC Sub-Committee to further consider this matter with a view to advising the Committee on how best to proceed.

5. Reports of Sub-Committees



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5.1 Black Carbon emissions

- MEPC 77 considered proposals on the reduction of the impact on the Arctic of black carbon emissions from international shipping as follows:

.1 Updated proposed terms of reference for further work on the black carbon emission which include the development of non-mandatory guidelines on goal-based control measures to reduce black carbon emission, how to regulate or directly control of black carbon emission with the identified candidate control measures and a standardized sampling and measurement protocol to make accurate and comparable measurement;

.2 A proposal to prohibit the use of low sulphur HFO and any aromatic marine fuels, and a switchover to distillate fuels for ships operating in Arctic. This proposal was evidenced that blended low Sulphur residual fuels with a large proportion of aromatic compounds, which was designed to meet the IMO 2020 global 0.5% Sulphur limit, contribute to the production of black carbon emission; and

.3 As the contrary views, ban on low Sulphur HFO should not be supported as formation of black carbon is influenced by a number of factors which include engine design and load; average very low Sulphur fuel oils were more paraffinic in nature than the high Sulphur HFO they have replaced; and switching to marine diesel oil would increase global refinery CO₂ emissions by 17 million tonnes per year.

- During discussion, MEPC 77 particularly noted that PPR Sub-Committee invited to submit the outcomes of additional Black Carbon measurement trials using different type of VLSFOs to identify the possible impact of fuel parameters such as aromatic content, and further invited ISO to provide the Sub-Committee or MEPC with updates to the review of ISO 8217 with a view to providing an approximate indication as to whether a fuel oil was more aromatic or more paraffinic.

- After consideration, MEPC 77 approved draft terms of reference for continuing the work for remaining items referred to in paragraph 5.1.1 above and agreed to extend the target completion year to 2023.

- After extensive political and technical debates, as a voluntary nature, MEPC 77 adopted Res.MEPC.342(77) containing a resolution consisting of following outstanding elements:

.1 Recognizing that Black Carbon is a potent short-lived contributor to climate warming, and as considered under Fourth IMO GHG Study's that a switch to distillate reduces Black Carbon emissions; and

.2 Encouraging member States and ship operators to voluntary use distillate or other



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cleaner alternative fuels or methods of propulsion that are safe for ships and could contribute to the reduction of Black Carbon emissions from ships when operating in or near the Arctic.

- 5.2 Proposed amendments to MARPOL Annex II – GESAMP hazard evaluation procedure
- MEPC 77 approved, with a view to adoption at MEPC 78, draft amendments to the Guidelines for the categorization of noxious liquid substances in Appendix I of MARPOL Annex II. This was to reflect two changes in the GESAMP Hazard Profile, namely sub-categorization of column C3 and the reassignment column E1, in accordance with the finalized GESAMP Reports and Studies No.102.
- 5.3 Draft amendments to Chapter 2 of the IBC Code and regulation 28 of MARPOL Annex I
- MEPC 77 approved, with a view to adoption at MEPC 78, draft amendments to Chapter 2 of the IBC Code and regulation 28 of MARPOL Annex I in relation to the unified requirements on watertight doors for cargo ships. It has been revised to align the SOLAS and MSC.1/Circ.1572/Rev.1, taking into account the types of watertight doors (Remotely operated sliding door, Sliding door, Hinged door) fitted on watertight bulkhead for cargo ships depend on the frequency of use while at sea (Used, Normally closed, Permanently closed), but regulation 28.3.1 of MARPOL Annex I for oil tankers and regulation 2.9.2 of IBC Code for chemical tankers only stated as to remotely operated sliding door as used while at sea. In addition, it was decided to apply it to all ships (new and existing ship) taking into account the amendments will have no impact on existing ships.
- 5.4 Considerations for ship owners, builders and related stakeholders**
- Regarding the resolution urging the use of distillate fuel oil when operating in or near the Arctic referred in paragraph 5.1 above, it should be noted that countries of Arctic community may require their flagged ships or ships calling at their port areas to use distillate fuel oil mandatorily as per their national legislation, while the resolution is in the form of voluntary nature from a legal perspective of IMO Convention. Thus, relevant parties for the ships operating in or near the Arctic are invited to closely follow up the national requirements or port regulations from the countries of Arctic community, if any.

6. New work programme



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- 6.1 MEPC 77 approved a new output to develop amendments to the 2014 Standard specification for shipboard incinerators (Res.MEPC.244(66)) by reviewing the provisions of its annex 2 on fire protection requirements for incinerators and waste stowage spaces, to remove perceived discrepancies between Res.MEPC.244(66) and SOLAS chapter II-2. It was evidenced that SOLAS regulations require one of the fixed fire-extinguishing systems whereas Res.MEPC.244(66) specifies the fitting of an automatic sprinkler system.
- 6.2 MEPC 77 approved a new output to revise regulation 13.2.2 of MARPOL Annex VI to clarify whether a marine diesel engine replacing a boiler is considered a replacement engine and consequential amendments to *2013 Guidelines as required by 13.2.2 of MARPOL Annex VI in respect of non-identical replacement engines not required to meet the Tier III limit (Res.MEPC.230(65))*. - The end -

**General Manager of
Convention & Legislation Service Team**

P.I.C:

Kim Hoi-Jun / Principal surveyor
Convention & Legislation Service Team
Tel: +82 70 8799 8330
Fax: +82 70 8799 8319
E-mail: convention@krs.co.kr

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