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REDUCTION OF GHG EMISSIONS FROM SHIPS

Comments on document MEPC 78/7/11

Submitted by Panama, CESA and CLIA

SUMMARY

Executive summary:	This document comments on document MEPC 78/7/11 and proposes that the Committee retain the text pertaining to the port time correction factor within the 2022 interim guidelines on correction factors and voyage adjustments for CII calculations (G5)
Strategic direction, if applicable:	3
Output:	3.2
Action to be taken:	Paragraph 20
Related documents:	MEPC 78/7/11; MEPC 76/7/23 and MEPC 76/7/34

Background

1 This document is submitted in accordance with paragraph 6.12.5 of the document on the *Organization and working methods of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.5/Rev.2) and provides comments on document MEPC 78/7/11 (Japan, China and European Commission).

2 MEPC 75 approved draft amendments to MARPOL Annex VI concerning mandatory goal-based technical and operational measures to reduce the carbon intensity of international shipping. The Committee established a Correspondence Group on the Development of Technical Guidelines on Carbon Intensity Reduction to produce guidelines in support of the short-term measures to reduce carbon intensity, including EEXI and CII.

3 MEPC 76 established a Correspondence Group on Carbon Intensity Reduction to consider various proposals for correction factors and voyage exclusions to be included in separate guidelines (G5) using the assessment criteria provided in document MEPC 76/7/23 (France) as guidance. The list of correction factors for consideration by the Correspondence Group included proposals set out in document MEPC 76/7/34 (CLIA) for cruise passenger ships to address the perverse incentives associated with the existing CII calculation method.

4 The Correspondence Group has submitted its report to MEPC 78 (MEPC 78/7/11, China et al.) to be considered first by ISWG-GHG 12. The Working Group may review and make recommendations on any issues remaining before the draft guidelines are considered for approval by the Committee. The report of the Correspondence Group invites the Committee to further consider and decide on the inclusion of the port time correction factor for cruise passenger ships within the 2022 interim guidelines on correction factors and voyage adjustments for CII calculations (G5). This document provides background on the development of the port time correction factor and the reasoning for why the port time correction factor should remain within the guidelines (G5).

Perverse Incentives

5 Document MEPC 76/7/34 identified potential perverse incentives associated with the existing CII calculation method. These issues relate to how transport work is calculated for cruise passenger ships. Transport work is a difficult value to measure for some ship types, such as cruise ships, since their operational profile is based on set itineraries which require more time in each port than other ship types. Calculating transport work for cruise ships as the product of gross tonnage and distance travelled does not, by itself, take into account this unique operating profile. Cruise ships also utilize a smaller portion of installed power for propulsion as compared to other ship types. Cruise ships typically dedicate 50% or more of their annual energy consumption to hotel loads comprised of air conditioning, accommodation, lighting and other sources. These power demands are present both at sea and in port.

6 The unique energy profile of cruise ships is important, especially when calculating CII, because inclusion of distance travelled in the denominator of the CII equation has unintended consequences. The distance variable normalizes emissions at sea but does not normalize emissions in port. As a result, in-port emissions have a disproportionate impact on a ship's attained CII value. This is exacerbated by the fact that cruise ships consume a higher portion of their total energy demand in port compared to other ship types. Since port emissions are not normalized in the existing CII equation, ships which spend greater amounts of time in port receive higher attained CII values despite emitting fewer absolute emissions than ships which spend a greater amount of time at sea. This trend creates a perverse incentive for ship operators to spend less time in port in pursuit of lower attained CII values. Since ships emit more emissions while at sea, this would lead ships to emit more absolute emissions. It is this perverse incentive that the co-sponsors seek to address with a correction factor.

Port time correction factor development

7 Following the Committee's inclusion of MEPC 76/7/34 within the terms of reference for the Correspondence Group, the cruise industry conducted additional work and data analysis to develop an appropriate correction factor. This analysis was performed within the Cruise Ship Safety Forum (CSSF), a consortium of cruise ship operators, shipyards and classification societies. The CSSF convened a sub-group of technical experts to develop a correction factor using the criteria set out within document MEPC 76/7/23 as a basis.

8 The CSSF sub-group developed a database of over 30 itineraries of ships in the CLIA fleet in 2019. The itineraries represented a range of ship size and port time percentage in order to accurately capture the impact of the existing CII calculation method and potential correction factors on the fleet. CSSF analysis of the data using the existing CII calculation method confirmed the industry's concerns regarding perverse incentives expressed by CLIA in document MEPC 76/7/34. Ships which spent a greater portion of their itinerary in port on average received higher attained CII values, despite emitting less absolute GHG emissions, than ships which spent a greater portion of their itinerary at sea. This may lead ships to spend more time at sea to lower their attained CII, which would increase the absolute emissions produced by the ship.

9 The CSSF sub-group developed a set of guiding principles to follow when assessing potential correction factors, including alignment with document MEPC 76/7/23 (France), inclusion of all emissions in port and at sea, incentivizing meaningful investment in further carbon intensity reduction and supporting the goal of mitigating the perverse incentive.

10 After careful analysis of multiple potential correction factors, the CSSF sub-group identified the port time correction factor (AF_{PT}) as the best choice to mitigate the perverse incentive. Equations describing how the port time correction factor is calculated and how it is implemented into the CII calculation method are provided below. This correction factor would only apply to ships which spend 20% or more of their total time in port so that only ships which require implementation of a correction factor would receive one.

$$AF_{PT} = (1.8 - \%_{Time\ at\ sea}) \quad CII_{Cruise} = \frac{Mass_{CO_2}}{GT \times (D_t - D_x) \times AF_{PT}}$$

11 Automatic identification system (AIS) data from 2019, considering over 300 cruise ships, was used to assess average port time with exclusion of anomalies (such as ships with extended dry docks) in order to not skew the dataset or overestimate port time. From this analysis a *mean* port time of 25% was estimated for the fleet.

12 Detailed analyses indicated the *mean* port time should not be used as the basis for the port time threshold in the AF_{PT}. The CSSF analysis identified a 20% threshold as the most appropriate value. Shifting the port time threshold up to 30%, or higher, would significantly under correct for time spent in port. Moreover, it would not significantly reduce the perverse incentive for ships to spend more time at sea in pursuit of lower attained CII values, but thereby produce more absolute emissions. By contrast, shifting the port time threshold to 10% overcorrects for the impact of port time. While a 15% port time threshold represents the most accurate correction, an AF_{PT} which does not apply to ships spending less than 20% of time in port was proposed by the industry as a conservative value to prevent any possible overcorrection while avoiding unintended consequences.

13 The sub-group found that implementation of AF_{PT} mitigated, but did not eliminate, the trend between increasing time in port and increasing attained CII values. Additionally, it was found that the correction factor provided the most benefit to ships emitting the least GHG emissions, while hardly providing any benefit to ships emitting the most GHG emissions. Two charts demonstrating these trends based on the itinerary database follow.

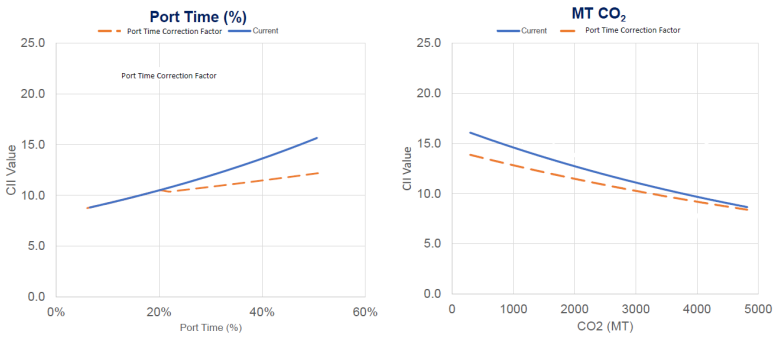

Figure 1: trends of the effects of the proposed port time correction factor

Port time correction factor advantages

14 The port time correction factor has multiple advantages which support its inclusion in the guidelines. First, as demonstrated by the charts above in figure 1, implementation of the port time correction factor mitigates the perverse incentive to sail further to reduce attained

CII values. This would reduce the impact this measure would have on cruise ships with high port time itineraries which produce fewer absolute emissions. This is accomplished without excluding any emissions for consideration by the CII calculation method.

15 The port time correction factor also incentivizes efficient underway operations, energy efficiency technologies and shore power utilization. The existing CII calculation method was unable to fully capture the impact of energy efficiency technologies since the percentage of time in port had a disproportionate impact on the resulting attained CII value. CLIA has identified several instances of newbuild ships with the latest technologies installed on board that would receive D or E ratings because of how much time they spent in port. Reducing the impact of the time in port allows the impact of energy efficiency technologies to be reflected in a ship's attained CII. These incentives extend to shore power since the port time correction factor does not exclude emissions at port. Shore power remains an option to reduce port emissions, and thus the attained CII value, in ports where it is available. It should be noted that while 35% of global cruise capacity is fitted to operate on shore-side electricity (SSE), and a significant number of new systems are planned for retrofits and newbuilds, SSE is only currently available in 14 cruise ports worldwide.

16 Importantly, the port time correction factor also does not require modification to the IMO DCS to implement. Since the calculation of the correction factor only requires the new variable of time at sea, which is already captured within the IMO DCS, there is no need to amend the IMO DCS to require additional data.

Conclusion

17 The port time correction factor presents a reasonable solution to address the identified perverse incentive for cruise passenger ships while maintaining the intent of the existing CII measure. The port time correction factor mitigates the identified issues while incentivizing efficient operations both underway and in port.

18 The CII operational efficiency measure is an important short-term measure in support of the IMO GHG Strategy. With this correction factor, the co-sponsors seek to ensure that the most energy efficient ships are not unduly penalised due to their specific profile of operation which includes shorter voyages and greater time spent in port. Without the adoption of the port time correction factor, there is a risk that ships will spend more time at sea in the pursuit of lower attained CII values but at the expense of the Organization's efforts to reduce actual carbon dioxide emissions.

19 The co-sponsors recommend that the Working Group favourably consider retention of the text for the port time correction factor within the 2022 interim guidelines on correction factors and voyage adjustments for CII calculations (G5).

Action requested of the Committee

20 The Committee is invited to consider the proposals provided in paragraph 19 and take action, as appropriate.