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PREVENTION OF AIR POLLUTION FROM SHIPS

Comments on the proposed attained new ship design CO_2 index

Submitted by China

SUMMARY

Executive summary:	This document comments on the proposed attained new ship design CO_2 index contained in annex 5 to document MEPC 58/4
Strategic direction:	7.3
High-level action:	7.3.1
Planned output:	7.3.1.1 and 7.3.1.3
Action to be taken:	Paragraph 6
Related documents:	MEPC58/4, GHG-WG 1/2/1, GHG-WG 1/2/2 and GHG-WG 1/WP.1

Background

1 This document is submitted in accordance with the provisions of paragraph 4.10.5 of the Guidelines on the organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies (MSC-MEPC.1/Circ.2) and comments on the proposed attained new ship design CO_2 index contained in annex 5 to the report on the outcome of the first Intersessional Meeting of the Working Group on Greenhouse Gas Emissions from Ships (GHG-WG 1) (MEPC 58/4).

2 The first Intersessional Meeting of the Working Group on Greenhouse Gas Emissions from Ships held in Oslo, Norway from 23 to 27 June 2008 discussed and developed the Draft Guidelines on the Method of calculation of the new ship design CO_2 index as contained in annex 5 to document MEPC 58/4. This new ship design CO_2 index formula was produced on the basis of the proposals submitted by Denmark and Japan (documents GHG-WG 1/2/1 and GHG-WG 1/2/2), which needs further verification.

3 China conducted a thorough analysis on this new ship design CO_2 index formula in a scientific and prudent manner, to verify the feasibility of applying this formula at the contract design stage, including the attainability of all parameters at the design stage and how to determine the parameter values consistent with the design practice, for example, the ship design speed defined in the formula is not consistent with the ship speed in the building contract which refers to the ship's service speed.

Comments

4 In light of the results of the analysis, China would like to make the following comments:

4.1 Power of main engine and auxiliary engine

.1 In the formula contained in the draft guidelines, MCR is used for the designed power of main engine, however, in a considerable number of design practices, the relevant value (75% MCR, 91% RPM) of test cycle type E3 for engine NOx emission in Annex VI of MARPOL, or the power (0.75 MCR-0.8 MCR) in correspondence to the service speed are normally used. Therefore, further studies should be made on this matter;

.2 as shipowners may have different requirements regarding the power redundancy for main and auxiliary engines (for example, the main engine power and the auxiliary engine power will be increased about 3% and 5% respectively under "the Gulf condition"), which will affect the actual power of the main and auxiliary engines installed on board, therefore, the required power redundancy should be corrected in the formula; and

.3 in addition to the ice strengthening, cargo gear or reefer containers, other specific design elements such as bow thrusters and ballast water treatment plant should also be considered when determining f_j and f_k in the formula.

4.2 Speed

.1 The speed defined in the formula is the design speed corresponding to power output at 100% MCR of the main engine, while the guarantee speed in building contract is the service speed corresponding to power output at 75%-80% MCR of the main engine. Therefore clarification is needed for the determination of the speed used in the formula.

4.3 Capacity

.1 As for container ships, the *number of TEUs* x *average weight* should be used as *Capacity*, so as to avoid the inclusion of the weight of the ballast water which is the un-payload of the ship.

4.4 *f*w coefficient

.1 There are many factors causing the decrease of ship's speed, such as sea conditions of wave height, wave frequency and wind speed, etc., meanwhile, different ship types (main dimension, block coefficient, etc.) and different loading conditions (full loading, half loading and ballast condition) may result in different

speed reduction under the same sea conditions. There are only very limited data available on the speed reduction of existing ships, and it is difficult to find sample material relating to f_w. For this reason, it is suggested that:

- f_w should not be included in the formula at this stage, that is, f_w should be assumed as 1; and

- further studies should be conducted on the factors which may cause the decrease of ship's speed, including the selection of different sea conditions (wave height, wave frequency and wave spectrum) and the loading conditions (full loading, half loading and ballast condition) as well as their contributions to the reduction of ship's speed, so as to provide a basis for future determination of the f_w value.

Conclusion

5 In light of the above comments, it is believed that the formula to determine the new ship design CO_2 index should be further clarified and verified before considering it for mandatory application. Therefore, it is proposed that this formula could be applied in trials on a voluntary basis so as to make the formula more reasonable and practicable and to ensure that it conforms to ship design practice.

Action requested of the Committee

6 The Committee is invited to consider the above comments and take action as appropriate.