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Agenda item 5

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AIR POLLUTION AND ENERGY EFFICIENCY

EEDI review beyond phase 2 – considerations for Large Tankers

Submitted by INTERTANKO

SUMMARY

Executive summary: This document provides comments on the report of the Correspondence Group on EEDI review beyond Phase 2 together with information on initial data on the reasons for which VLCCs will encounter significant difficulties to meet EEDI Phase 3 required values by use of traditional design techniques. The document provides information on a study INTERTANKO commissioned which is aimed at finding practical and safe solutions to this particular challenge. The study will be submitted at MEPC 75.

Strategic direction, if applicable: 3

Output: 3.6

Action to be taken: Paragraph 15

Related documents: MEPC 74/5/2; MEPC 73/5/10; MEPC 74/5/6; MEPC 60/4/33 and MEPC 60/4/34

Introduction

1 This document is submitted in accordance with the provisions of paragraph 6.12.5 of the document on *Organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.5/Rev.1) and comments on document MEPC 74/5/2.

2 The Committee is reviewing the EEDI regulations, specifically the matter of EEDI beyond Phase 2. It was addressed at MEPC 73, with a Correspondence Group, and will be further considered at MEPC 74. Related documents include documents MEPC 73/5/10 and MEPC 74/5/6 which provide a good summary of the relevant background and overview of critical technical issues.

3 The goal of the review is to determine if there are any amendments required to the regulation. These could include amendments to the time periods, the EEDI reference line parameters for relevant ship types and/or reduction rates as set out in this regulation.

4 In previous submissions, including document MEPC 60/4/34 on the "Influence of design parameters on EEDI for tankers, containerships, and LNG carriers" and document MEPC 60/4/33 on "EEDI baseline evaluation for tankers, containerships, and LNG carriers", among others, it was shown that large tankers faced a more difficult challenge to comply with EEDI than smaller tankers and most other ships types. Large bulk carriers share the same burden. This is largely because the reference line regression passed well below most of the baseline data instead of through the mean. It was determined that the then state-of-the-art VLCC designs within the top 25% in terms of energy efficiency were only 1.8% below the required baseline, Phase 0, EEDI.

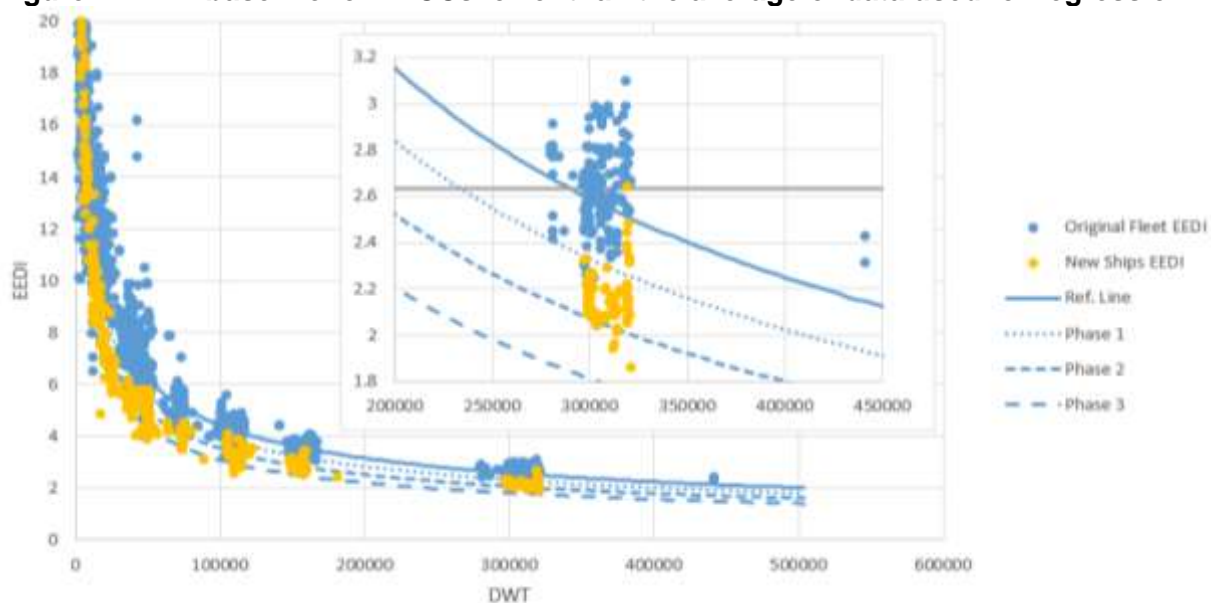
5 Another issue pointed out in document MEPC 60/4/34 was that the focus on DWT instead of capacity in the EEDI formulation does not accurately reflect the benefit of economy of scale in ship design and cargo movement. Large tankers are clearly more efficient in $\text{gCO}_2/\text{mt-nm}$ than smaller tankers. As indicated in the document, a VLCC emits $6.8 \text{ gCO}_2/\text{MT-nm}$ vs. Suezmax at 8.7, Aframax at 10.7 and Panamax at $18.4 \text{ gCO}_2/\text{MT-nm}$, respectively. If VLCCs are not able to meet the goals of the EEDI because they were so severely challenged at the outset, then VLCCs may fall out of use in favour of smaller tankers that more easily meet the Phase 2 and Phase 3 EEDI. Just to have an equivalent emission footprint as the VLCC, the Suezmax must improve by 20%. This is just an illustrative difference between two large categories of tankers. It should not be seen that VLCCs should not improve their footprint or that Suezmaxes should achieve a footprint equal to the footprint of VLCCs despite the economy of scale effect.

6 This document provides additional technical information regarding VLCCs to help support the sound analysis and consideration of amendments to the EEDI regulation. The goal is to identify what EEDI VLCCs can achieve given a forecast of best design practices for energy efficiency and application of reasonable and applicable technologies.

EEDI Baseline Data Review

7 The data shown in the plot below was that used for the original determination of the current EEDI baseline for tankers. Additional data from the IMO EEDI database of newer ships (and not those considered in drafting the current baseline) are also shown.

Figure 1: EEDI baseline for VLCCs lower than the average of data used for regression

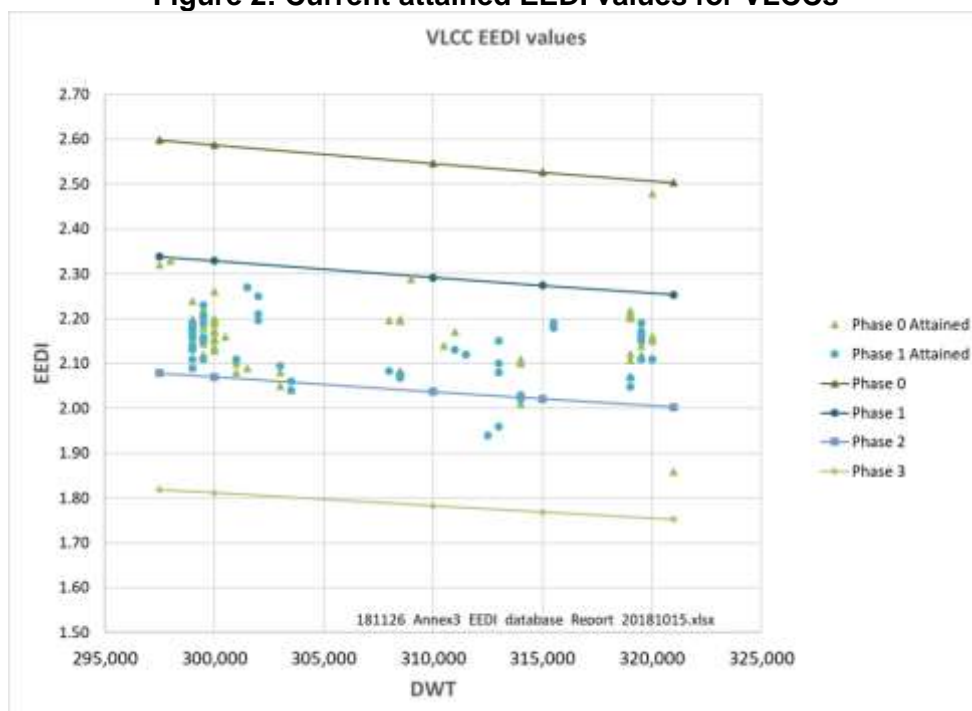


8 The inset is a close up of the data in the VLCC range. The solid blue line is the current baseline. The grey line is simply an average of the VLCCs and ULCCs originally considered. From the above, we would make the following observations/conclusions:

- .1 the baseline was originally drawn below the average of the existing ships in the VLCC size range. This is as indicated in document MEPC 60/4/33 showing that the large tankers started out with a more difficult challenge than small tankers and other ships types where the baseline was at or above the mean line;
- .2 the new ships are clearly better than the baseline ships but not yet to Phase 2 levels. On average the new ships (yellow dots) are about 18% lower than the original fleet (blue dots) and represent a good estimate of the EEDI improvements that are actually possible with hull optimization, speed reductions and some application of "advanced technologies"; and
- .3 if the simple average grey solid line is used as the baseline (at EEDI = 2.631), the required EEDI for Phase 2 would = 2.105. Consequently, about 15 of the "new" ships comply with this new Phase 2.

9 As indicated at MEPC 73, INTERTANKO has commissioned a study. The intent was to submit it to MEPC 74, including suggestion(s) on possible solutions on how VLCCs may be able to meet the current EEDI Phase 3 requirement. The study has been initiated but it was not finalized in due time to be submitted to this session. The search to find a quick fix in a short time proves to be quite difficult.

10 The graph below illustrates the current data of VLCCs delivered since 2013, being compliant with Phase 0 and Phase 1. Except a few outliers, most of these tankers have attained EEDI values between Phase 1 and Phase 2. There is little "reserve" on how much more one can improve the EEDI values for new VLCCs using traditional design techniques, without including further speed reductions or alternative low carbon fuels.

Figure 2: Current attained EEDI values for VLCCs

11 Our study will attempt to further assess how much one can improve EEDI levels with aggressive uptake of possible technologies. We are compiling and evaluating claims of benefits of available technologies in order to incorporate them into a VLCC design and identify what is the best that can be expected with known technologies. Part of this approach will be to carry out interviews with tanker owners who have recently taken delivery of VLCCs and assess what technologies and innovations were presented to them by the ship yards, what technologies were used and what improvement was achieved.

12 The study will filter the claims with practical design and operational constraints. It is also intended to look at the impact of further speed reductions and switching to LNG fuel to see where that will take EEDI for VLCCs.

13 Preliminary findings of the study indicate that based on the feasible and practical uptake of technologies it may not be reasonable to expect VLCCs to achieve Phase 3 with a safe level of minimum power, prior to the switch to alternative fuels. Some adjustment in the EEDI requirements or allowance of suitable reserve power will likely need consideration to ensure VLCCs can continue to operate and provide the economies of scale that result in the best overall tanker fleet emission performance.

14 INTERTANKO will be able to submit such a study way ahead of MEPC 75 with the intent to address practical and safe measures through which VLCCs can meet the required EEDI Phase 3 and associated consequences. INTERTANKO recognizes that the Committee will be considering the amended table of regulation 21 for approval, for circulation and adoption at MEPC 75. If the Committee approves these amendments at this session, INTERTANKO will submit the study and any proposed amendments to the table for tankers to MEPC 75 when the results of the study would be available and can be taken into account when making a final decision on the EEDI Phase 3 for tankers.

Action requested of the Committee

15 The Committee is invited to consider the information provided in this submission and take action as appropriate.