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PREVENTION OF AIR POLLUTION FROM SHIPS

MARPOL Annex VI – related matters

Submitted by the International Association of Independent Tanker Owners (INTERTANKO)

SUMMARY

Executive summary:	This document comments on the annex to the report on the outcome of the Informal Cross Government/Industry Scientific Group of Experts. It presents a number of identified inconsistencies in the data presented in different paragraphs of the report. INTERTANKO believes it would be beneficial to bring these to the attention of the Committee for further review
Strategic direction:	7.3
High-level action:	7.3.1
Planned output:	7.3.1.1
Action to be taken:	Paragraph 18
Related documents:	MEPC 57/4 and MEPC 57/INF.7

1 This document is submitted in accordance with paragraph 4.10.5 of the Guidelines on the organization and method of work (MSC/Circ.1099 and MEPC/Circ.405) and provides comment on documents MEPC 57/4 and MEPC 57/INF.7.

2 INTERTANKO fully supports the revision process for MARPOL Annex VI and has contributed to the Informal Cross Government/Industry Scientific Group of Experts. However, INTERTANKO has identified a number of inconsistencies in the data presented in different paragraphs of the report and believes it would be beneficial to bring these to the attention of the Committee. The inconsistencies addressed in this document refer to data presented in the Informal Cross Government/Industry Scientific Group of Experts Report specific reference being made to the relevant paragraphs in the annex to document MEPC 57/4.

3 The issues where INTERTANKO has identified inconsistencies relate to the following:

.1 control of the diverse types of exhaust gas emissions from ships;

.2 the CO_2 emissions balance in case of a global use of distillates; and

.3 costs associated with the global distillate solution versus other solutions.

Control of the diverse types of exhaust gas emissions from ships

4 Option C proposes to mandate the global use of a specified grade of heavy distillate marine fuel oil as an efficient means to tackle the problems to be confronted when considering the control of the diverse types of exhaust gas emissions from ships. Whilst not considered within MARPOL Annex VI, Option C also includes ways to reduce the CO_2 emissions from ships.

5 The Informal Cross Government/Industry Scientific Group of Experts' report contains an extensive amount of data. Therefore cross correlation of all the data would assist in achieving a clear view of the specific impediments to the diverse proposals being considered, amongst which is Option C. The majority of the types of emissions considered are fuel quality related and therefore the choice of actions to be taken to reduce a specific type of emission depend upon either the installation of an abatement system for that specific emission type or a change in fuel type. A simplified presentation is given in the following tabular format:

Emission Parameter	Use of Heavy Residual Marine Fuel Oil (HFO)	Use of Heavy Distillate Marine Diesel Oil (MDO)
Sulphur Dioxide Emissions (SOx)	Achievable down to a maximum sulphur content of 1% in the fuel (paragraph 57). Therefore, for low SOx emissions, an abatement system is required.	Achievable for all levels of sulphur content in the fuel
Nitrogen Oxide Emissions (NOx)	For low emission standards for all ships an abatement system will have to be installed NOx reduction with SCRs is efficient only if ships use clean, low sulphur fuels	For low emission standards for all ships an abatement system will have to be installed notwithstanding that "in engine" modifications may become available. However, there is an immediate reduction of 10% -15% for all ships using this fuel type. (NOx Technical Code – 6.3.11)
Particulate Matter (PM)	For an emission standard for all ships an abatement and storage system will have to be installed	For an emission standard for all ships it is possible that this fuel quality will meet a required standard (paragraph 16)
Carbon Dioxide (CO2)	The NOx dilemma – NOx reduction systems cause an increase in fuel consumption and CO_2	Fuel consumption using this fuel type is reduced thereby reducing CO_2 emissions (paragraph 16)

The CO_2 emissions balance in case of a global use of distillates

6 It has been suggested that since Option C would result in increased refinery production of Heavy Distillate Marine Diesel Oil (MDO), it will cause increase in CO_2 emissions from refineries. There has been less emphasis on the potential to reducing CO_2 emissions from ships operating with MDO only. The report (paragraph 16) records a CO_2 reduction potential from ships using MDO in 2020 in the amount of 59 million tonnes whereas refineries will emit some 93 million tonnes (paragraph 106) as a result of the extra "refining activities" notwithstanding the limitations of the model (paragraph 90).

7 INTERTANKO wishes to correct the impression given with respect to this apparent imbalance of CO_2 emissions by reference and cross correlation to facts stated in the report. Note is made to the use of energy by refineries for producing products.

8 In paragraph 50 of the report it is stated that oil refineries emitted 798 million tonnes of CO_2 in 2002. By use of the Carbon to CO_2 conversion factor, the amount of equivalent fuel used as a result of these CO_2 emissions was approximately 254 million tonnes.

9 With reference to the graph in paragraph 44 of the report and making the relevant calculations, refineries produced in 2002 some 3.8 billion tonnes of products. According to all this data, refineries use a fuel equivalent energy consumption of 6.7 tonnes for each 100 tonnes of products produced. In other words, the equivalent energy that induces CO_2 emissions is some 6.7% of the amount of the product produced by refineries.

10 One can assess the fuel consumption to produce the MDO amount which would replace the amount of HFO used by ships. But first what is the amount of MDO needed? Although the primary component of HFO is refinery residue, this does not meet the ISO 8217 specification limits unless blended with distillate component like light cycle oil. In practice, the residue component of the HFO which needs to be replaced by MDO is between 65% and 80% of the total HFO used by ships with a mean value of residue of 72.5%. Making reference to the extent of HFO demand by shipping in 2020 (see paragraph 28 of the report) of 382 million tonnes, then the Residue component of the HFO which has to be replaced by MDO is some 277 million tonnes for the year 2020.

11 In order to adopt Option C to transfer to a global heavy distillate scenario for marine bunker fuel (MDO) refineries have to supplement 277 million tonnes of MDO which would mean some 58 million tonnes of CO_2.

12 The saving of CO_2 emission from shipping by the sole use of MDO is stated in the report (paragraph 16) as 59 million tonnes for 2020. This saving, however, is not the sole saving available as further emissions of CO_2 occur as a result of the SOx emissions from ships. There is CO_2 saving from no fuel treatment onboard ships and the CO_2 emissions saving from less incineration, including incineration of additional sludge from scrubbers.

13 Thus, for shipping moving to the sole use of MDO would create a saving of CO_2 emission or at least a CO_2 neutral effect (see paragraph 148).

Installation and costs for abatement systems

14 Of the registered 2,400 ship repair yards globally about 250 yards would be capable of undertaking the full scope of work required and associated with the retrofitting of abatement systems to ocean going vessels. Paragraph 86 of the report states that approximately "10% of ships" would fit abatement equipment which, given the number of ships over 400 GT stated in paragraph 14 as being 59,612 ships, would approximate the number of ships installing abatement systems as 6,000 ships. The question would then be what options would the rest of 53,000 ships have to comply with low limits on a multi SECA world or in case of a low global sulphur cap. For this comparative exercise, one should consider that all options apply to all ships under consideration.

15 Although paragraph 81 states that a feasible retrofitting time for an abatement system would be 3 to 7 days, enquiries of ship operators suggests that due to the complex modifications required of a ship to incorporate three individual abatement units as a minimum into the restricted machinery space available then such work would take roughly one month as a minimum, due to the required modifications to the existing structures of the ship. Taking the foregoing into consideration together with the lead time required for the repair yards and assuming efficient logistics for ship availability for continuous retrofit, then the time requirement would be of many, many years at a possible "theoretical rate" of 3,000/year. But there is no guarantee that there would be shipyard availability for this enormous retrofit challenge or all components for these installations will be available in time.

16 The cost for the installation of abatement systems is recorded in paragraph 85 as being between US$ 4.0 to 7.0 million per ship. Enquiries of a tanker operator suggests that the cost including delivery of the system would be approximately US$ 6 million and therefore confirms this scale of cost as being reliable. Notwithstanding these costs and the limitations of the refining model (paragraph 90) to the "real world", the report also records a variety of costs for the approximate 700 global refineries' investment over and above the base investment costs for the 2020 base line scenario. The reported "worse case" cost for refineries would be for the requirements for Option C – Global Marine heavy distillate fuel – of US$ 126 billion (paragraph 103). Considering these respective costs, it would seem that the total global refineries' cost would only cover the costs of installation of abatement systems on approximately 40% of the total fleet in 2007. This provides an insight into the benefits of "the economies of scale" available in this issue.

Other comments

17 INTERTANKO also is concerned with regard to the limitations on the assumptions used in the EnSys/WORLD software which assessed the impact on the refining industry (reference to paragraph 90 of the report). INTERTANKO noted that the majority of these assumptions result in minimization of costs and CO_2 emissions for the base Case (i.e., no changes to MARPOL Annex VI regulations) thereby maximizing the costs and the CO_2 related emissions for all options including Option C, or the Global Distillate Case.

Action requested of the Committee

18 The Committee is invited to consider the observations and information provided in this document when considering the draft amendments to MARPOL Annex VI and take action as appropriate.