INTERNATIONAL MARITIME ORGANIZATION

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REVIEW OF MARPOL ANNEX VI AND THE NOx TECHNICAL CODE

Global use of low sulphur marine distillates – Consequence assessments

Submitted by INTERTANKO

SUMMARY

Executive summary:	This document responds to the questions raised with regard to possible problems on the availability of sufficient amounts of marine distillate fuels, cost implications and the CO_2 emissions from refineries related to production of this additional amount of distillate fuels in case of a mandatory use of such fuels on global basis
Action to be taken:	Paragraph 18
Related documents:	BLG-WGAP 1/2/5; BLG 11/5; BLG-WGAP 1/2/13; BLG 11/5/8, BLG 11/5/9, BLG 11/5/14 and MEPC 56/4/14

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-MEPC/Circ.405) and comments on BLG 12/6/2 (BIMCO). In the main, the issues raised referred to: availability of sufficient marine ditillates, cost implications and the CO_2 emissions from refineries related to production of this additional amount of marine distillate fuels. INTERTANKO has considered these issues and assessed various impacts and scenarios of such valid points. The result of the assessment is provided below.

Availability of marine distillates fuels and of abatement technology

2 The demand and thus the availability of marine distillates will be dictated by the extent to which IMO will decide to reduce the SOx and the PM emissions from ships. The SOx emission reduction due to the two exiting SECAs is around 5% of the total. Additional SECAs may add to this reduction but, a significant SOx emission reduction will be achieved only with a large number of SECAs which collectively would cover a large sea area.

3 It was proposed to lower the sulphur cap in SECAs to1.0% or to 0.5%. The fuel solution for such low levels would mean use of marine distillates. A significant SOx emissions reduction would demand larger supply of low sulphur marine distillate fuels. Therefore, the demand for low sulphur marine distillate fuels would be higher than the amount supplied today.

4 The alternative to achieve a significant reduction of SOx emissions from ships would be to use abatement technologies, namely scrubbers. Scrubbers would also have to be available, installed onboard ships within the same period of time that low sulphur marine distillate fuels would be expected to become available. There is insufficient information to fully assess the feasibility of such a solution for all ship types and all ship sizes.

5 Information received from a ship operator who considered scrubber installation can be summarized as follows:

.1 scrubbers to be installed only on 50% of the engines onboard (one main engine and 2 auxiliaries);

.2 even so, there was insufficient space in the ship's funnel and a new funnel needs to be constructed;

.3 the total energy to be used to run the scrubbers is 260 kW which adds to fuel consumption and to the CO_2 emissions;

.4 since the ship has room to scrub only 50% of the exhaust gas, she can run in SECAs with only 50% of its installed power or some of the other engines as a function of sulphur content in the residual fuel used;

.5 in this particular case, the ship can run in SECAs with all engines only if the sulphur content in the residual fuel is less than 2 times the sulphur cap in SECAs (e.g., for a SECA sulphur cap of 1.0%, the residual fuel used should have a sulphur content of less than 2.0%); for a SECA sulphur cap of 0.5%, the ship cannot run all engines in SECAs;

.6 the amount of scrubbing water needed to remove 1% sulphur is calculated as 16 tonnes of seawater per hour and per MW of engine brake power; and

.7 the condition for compliance with a SECA sulphur cap of 1.0% for this ship is the use of a residual fuel with a sulphur content less than 2% and the scrubbers would need to run some 14,000 tonnes a day of seawater plus at least a third of that amount for dilution to restore the pH of the water effluent.

6 Based on the above considerations, INTERTANKO concludes that availability is an issue for either alternative solution, low sulphur fuels and scrubbers. However, marine distillate fuel is a product already available. All that is required is to augment its production over a certain period of time. Scrubbers are new installations, still under testing and their dimensions create a lot of challenges to be retrofitted in tens of thousands of existing ships. Retrofitting scrubbers in existing ships would mean different solutions for almost each ship, a time consuming element with a high demand for skilled people. Ship yard capacity would also be a problem. INTERTANKO concludes that, time wise and feasibility wise, supply of sufficient marine distillate fuels can be obtained in a shorter period of time.

7 INTERTANKO recognizes that the supply of an increased amount of marine distillate fuels will be a challenge for refineries but it is manageable and feasible. For ships, the use of marine distillate fuels is the most rapid, most efficient and best means for a significant and immediate reduction of SOx and PM emissions. From a holistic marine environmental point of

view, scrubbers would still generate solid and liquid waste and would discharge millions of tonnes of sulphur into the sea instead of into the air.

8 Therefore, in view of the above, INTERTANKO suggests that low sulphur marine distillate fuels are used on global basis. A global reduction from 2.7% to 0.5% of sulphur content in fuels used by ships would reduce the amount of sulphur discharges into the sea by at least 8 million tons per annum.

Costs to refineries and to shipowners

9 Each of the alternative solutions to reduce air pollution from ships comes with a substantial cost to ship owners. Although refineries have indicated large investments needed to increase the supply of low sulphur marine distillate fuels, they will get this back through product sales. INTERTANKO has assessed that the additional marginal cost of marine distillate fuels, based on a 10-year return for capital costs, together with operation and distribution costs, would be significantly less than the premium paid today for marine distillate fuels. As far as the time needed to ensure supply is concerned, INTERTANKO has noted the large number of upgrades already planned and under construction in the refining industry over the next 5 years. According to information released by the oil industry, many of these upgrades will enable refineries to further process the bottom of the barrel residuals. The refining industry is therefore more efficient and increases the amount of finite products it obtains from the same amount of crude oil processed. It is also noted that recent statements from the oil industry may indicate a possible overcapacity created by these new units.

10 As an alternative solution, ships could retrofit scrubbers. To maintain their commercial flexibility, ships would need scrubbers no matter whether MARPOL Annex VI would still keep the SECA concept but would lower the sulphur cap. Based on various information received from ship operators and from people that have considered retrofitting or even installed scrubbers on existing ships, the price would be between $2 million and $10 million per ship, depending on the size and the type of the ship. Therefore, the aggregate capital cost for ship owners to install scrubbers in all existing ships would be somewhere between $200 billion and $250 billion.

11 INTERTANKO concludes that, if use of low sulphur marine distillate is mandated by IMO, it would generate a safe and stable demand with refineries able to get a safe return on their investment. INTERTANKO does not believe that shipowners could recover their significant investments for retrofitting scrubbers.

CO_2 emissions

12 From the outset, INTERTANKO does not agree with the allegations that additional supply of marine distillate fuels would increase the CO_2 emissions. INTERTANKO has however addressed this issue in conjunction with the CO_2 emissions from use of scrubbers and from the "do nothing" approach when transiting outside SECAs.

13 Scientific evidence shows that sulphur reacts with sea water and, as a result of chemical reactions there is a significant release of CO_2. Use of scrubbers (thus use of residual fuels) means the following energy-consuming operations (CO_2 emissions) onboard ships:

.1 heating residual fuel at 80°C while the fuel is in the settling tank;

.2 heating residual fuel at 95°C before entry into the purifier/clarifier;

.3 further heating residual fuel at 130°C in the service tank to reduce the viscosity to 12 - 15 cSt for efficient combustion;

.4 fuel consumption to run scrubbers pumps;

.5 fuel consumption for running seawater to restore the pH scrubbing water effluent; and

.6 air emissions from incinerating even a larger amount of sludge.

14 The aggregate amount of CO_2 emissions from all existing ships that use residual fuels is significant and would be significantly reduced if all ships were to burn low sulphur marine distillate fuels.

15 The savings of CO_2 emissions from eliminating most of the operations above, together with the savings of CO_2 emissions from a significantly reduced sulphur discharge into the marine environment and the CO_2 savings from use of marine distillates only in all engines, would at least balance the CO_2 emissions from refineries from extra marine distillate fuel production.

16 INTERTANKO concludes that, either at the refinery or onboard ships, residual fuels need to be stripped of the sulphur and heavy metals they contain. The question is actually where to deposit these unwanted elements - either on shore after being treated in some 670 refineries – installations built to do exactly that processing; or at sea, onboard 60,000 ships processing the residual fuels through installations that do not yet exist. Even if the whole amount of sulphur and heavy metals were collected and stored onboard ships to be returned back to shore, the question remains - why deliver all this sulphur and heavy metals to ships in the first place? Long time experience indicates low expectations that shore facilities will accept large amounts of residues and waste. As long as IMO remains unable to impose regulations on shore facilities, the realistic consequence would ultimately be that all sulphur, heavy metals and other associated waste would have to be disposed at sea in a way to be regulated by the IMO. Some hold the idea that the marine environment can tolerate large amounts of sulphur and of CO_2. Scientists relate that all this would, in the long term, change the marine aquatic eco-system with consequences yet to be predicted.

17 INTERTANKO agrees it is not easy to assess or predict the future and to have a concrete answer to all these questions. Therefore, INTERTANKO concludes it is safer and it is better to follow a policy where each industry should be required to do what it is designed and expected to do: the refining industry to provide efficient and clean low-sulphur marine fuels; and ships to concentrate on safe and efficient operations instead of purifying fuels to make them fit for use. Engine manufacturers should then develop efficient technologies to improve the ships' energy efficiency. Using ships as waste management plants is an obstacle to innovation that will achieve further reductions of air emissions from ships and further increases in ships' energy efficiency, including reduction of CO_2 emissions. And it will definitely increase the amount of waste which may need to be discharged into the sea.

Action requested to the Sub-Committee

18 INTERTANKO strongly recommends that the Sub-Committee takes into account the assessments presented in this document which clearly indicates that a global mandate of a specifically defined low sulphur marine distillate fuel would provide significant environmental and operational benefits with no subsequent disadvantages greater that any other alternative solution.

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