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AMENDMENTS TO MARPOL ANNEX II IN ORDER TO IMPROVE THE EFFECTIVENESS OF CARGO TANK STRIPPING, TANK WASHING OPERATIONS AND PREWASH PROCEDURES FOR PRODUCTS WITH A HIGH MELTING POINT AND/OR HIGH VISCOSITY

Proposed amendments to MARPOL Annex II in relation to persistent floaters

Submitted by Denmark and CESA

SUMMARY

Executive summary:	Proposal to define "all surfaces" in relation to prewash procedures in MARPOL Annex II and its associated appendix VI for new ships, and a proposal on how to incorporate the proposal set out in the annex of document PPR 11/INF.21 for existing ships, and finally a proposal on having a structured discussion on whether stripping procedures need to be reconsidered.
Strategic direction, if applicable:	7
Output:	7.3
Action to be taken:	Paragraph 18
Related documents:	MEPC 79/12; PPR 11/4 and PPR 11/INF.21

Background

1 MEPC 79, following consideration of document MEPC 79/12 (Austria et al.), agreed to include in the Committee's post-biennial agenda an output on "Amendments to MARPOL Annex II in order to improve the effectiveness of cargo tank stripping, tank washing operations and prewash procedures for products with a high melting point and/or high viscosity", assigning the PPR Sub-Committee as the associated organ.

2 PPR 11 had for its consideration two documents, document PPR 11/4 (Secretariat), reproducing the comments listed in paragraph 12.2 of the report of MEPC 79 (MEPC 79/15) in relation to the output, and document PPR 11/INF.21 (Kingdom of the Netherlands and Spain), providing further information concerning ways to improve the effectiveness of cargo tank stripping, tank washing operations and prewash procedures for products with a high melting point and/or high viscosity, supplementing the information in document MEPC 79/12.

3 Following consideration, the Sub-Committee agreed to refer the matter to ESPH 30, including it as an additional item in its provisional agenda, with the view to have the Technical Group advise PPR 12 on how to proceed.

Discussion

4 The experiences gained during Dutch inspections of ships in Rotterdam and Moerdijk suggest that there may be a need to look at the stripping procedures and appendix V of MARPOL Annex II; however, documents MEPC 79/12 and PPR 11/INF.21 do not contain any such concrete proposals on text changes or information on how to progress this work.

5 The Dutch authorities implemented additional national prewash criteria of ships carrying paraffin-like substances prior to entry into force of resolution MEPC.315(74) and based on the experiences concluded that the prewash procedures provided in appendix VI of MARPOL Annex II needed to be changed and/or updated. The authors set forward a procedure in the annex to document PPR 11/INF.21; however, they did not address how to add it to or how to amend appendix VI of MARPOL Annex II accordingly.

6 The co-sponsors of this document acknowledge the experience gained and acknowledge the merits of the proposed way forward with regard to prewashing procedure; however, the co-sponsors suspect that the underlying problem is separate to what has been identified in documents MEPC 79/12 and PPR 11/INF.12.

7 MARPOL Annex II does not require ships carrying solidifying substances and/or high-viscosity substances and/or persistent floaters to have fixed cleaning machinery installed; however, for prewash it requires that "all tank surfaces shall be washed." In practice, and in the experience of the co-sponsors, most chemical tankers and product carriers are installed with fixed cleaning machinery, and this is often in accordance with resolution A.446(XI) on *Revised specifications for the design, operation and control of crude oil washing systems* under MARPOL Annex I for lack of a better regulatory direction or with the misconception that the resolution includes the definition of "all surfaces."

8 The purpose of resolution A.446(XI) is, amongst others, to control sediments during discharge of a crude oil cargo, a situation not comparable with products carried under MARPOL Annex II.

9 Resolution A.446(XI) allows the fixed cleaning machinery under MARPOL Annex I to have a shadow area (the total area shielded from direct impingement etc.) with respect to the horizontal and the vertical surfaces of respectively 10% and 15%. In addition, appendix III of the resolution provides directions on which structures should be considered and which should be disregarded in relation to a shadow diagram assessment. Amongst these structures, corrugations on corrugated bulkheads should be disregarded. So, these disregarded areas might add an additional 10% to the shadow area. The resolution was adopted before corrugated tank surfaces was a common practice, a later introduction due to requirements of double hull tankers.

10 The co-sponsors of this document do not regard resolution A.446(XI) as fit for purpose in relation to defining "all surfaces" in MARPOL Annex II and further regard it to be out of date considering the design of modern tankers. Using the resolution to identify the number of washing machines to be installed and using no other additional means for cleaning, is in the co-sponsors' view a breach of the MARPOL Annex II requirement that "all tank surfaces shall be washed."

11 The co-sponsors are of the view that, if indeed all surfaces were washed during a prewash procedure followed by a proper stripping procedure, the issue with persistent floaters would be eliminated. The co-sponsors do not consider it to be necessary to require additional cleaning cycles (time factor) besides what already is provided for in appendix VI of MARPOL Annex II, as this would lead to unnecessary additional energy consumption.

Proposal

12 In order to accommodate the concerns raised in documents MEPC 79/12 and PPR 11/INF.12 and the additional views shared, several proposals have been set out in paragraphs 13 to 17.

Definition of "all tank surfaces"

13 MARPOL Annex II does not define "all tank surfaces" which when required need to be prewashed. The lack of definition leads to underestimated washing capability. It can be argued that a definition does not belong in MARPOL Annex II itself, as "all tank surfaces" is a concept introduced in appendix VI; however, as the co-sponsors propose to introduce a new requirement for new ships, it is found that regulation 1 of the annex would be the appropriate placeholder.

14 It is proposed to add the following definition under regulation 1 of MARPOL Annex II:

> "24 *All tank surfaces* in relation to prewash requirements as set out in appendix VI for ships built after [2025] is defined to be a washing coverage area of no less than [96%] of the total tank surface area and as further specified in part D of appendix VI of this Annex."

The 96% is suggested with inspiration from DNV’s Class Notation, ETC (effective tank cleaning).

15 "Coverage area" is the main parameter for a definition of "all surface areas"; however, the tank construction also needs to be considered, which is why it has been identified that there is a need for a new part D in appendix VI to elaborate on such matters. The new part D can be found in the draft amendments to appendix VI set out in the annex of this document.

Incorporation of the annex set out in document PPR 11/INF.21 into MARPOL Annex II

16 As the co-sponsors of this document see merits in the proposal in document PPR 11/INF.21 for existing ships, it is proposed to incorporate the text in the annex to document PPR 11/INF.21 into part C of appendix VI of MARPOL Annex II. The proposed text is set out in the annex to this document.

Consideration of stripping procedures and amendments of MARPOL Annex II

17 The co-sponsors propose that ESPH 30 discuss and consider how to address the findings of the Dutch inspectors regarding the lack of proper stripping procedures with the view to identify whether an amendment to appendix V of MARPOL Annex II would be needed, or whether the issue is sufficiently covered by appendix VI of MARPOL Annex II.

Action requested of the Technical Group

18 The Technical Group is invited to consider the proposals provided in paragraphs 13 to 17 and the annex to this document.

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ANNEX

DRAFT AMENDMENTS TO APPENDIX VI OF MARPOL ANNEX II (NEW PART D)

This annex contains appendix VI of MARPOL Annex II; however, only the headings of part A and B are provided. Additional text has been underlined and deleted text is shown in ~~strikethrough~~.

APPENDIX VI - PREWASH PROCEDURES

A For ships built before 1 July 1994
Prewash procedures for non-Solidifying Substances
Prewash procedures for Solidifying Substances

B For ships built on or after 1 July 1994 and recommendatory for ships built before 1 July 1994
Prewash procedures for non-Solidifying Substances without recycling
Prewash procedures for Solidifying Substances without recycling
Prewash procedures with recycling of washing medium
Minimum quantity of water to be used in a prewash

C For all ships built prior to [2025]

Prewash procedures for persistent floaters to which regulation 13.7.1.4 of Annex II of MARPOL applies

1 Cargos having ~~P~~persistent floaters characteristics; ~~with a~~ viscosity equal to or greater than 50 mPa×s at 20ºC and/or a melting point equal to or greater than 0ºC;~~,~~ shall be treated as solidifying or high-viscosity substances for the purposes of the prewash and in addition follow below procedure up to and during prewash:~~.~~

.1 cargo shall be unloaded at a temperature of at least > 10°C above melting point;

.2 as soon as the tank is empty and stripped, hot water shall be entered in the tank until the heating coils are flooded or other measures shall be taken to avoid blockage of the cargo pump and line;

.3 the heating coils, or other means, shall be operated in order to heat up the tanks to melt any cargo residues attached to the tank walls;

.4 the tanks and tank walls shall be heated with steam long enough to sufficiently reduce the clingage on the bulkheads, taking into account the specific properties of the cargo;

.5 subsequently, the tanks and tank walls shall be washed with hot water (> 50°C for soft paraffin, > 70°C for hard paraffin and for microcrystalline wax more than 80°C) with the temperature of the washing water at least 10 degrees above melting point, taking into account specific properties of the cargo. (as normal prewash procedures do not inflict sufficient effect, hot water must be used);

.6 during washing the amount of liquid in the tank shall be minimized by pumping out slops continuously and promoting flow to the suction point. If

this condition cannot be met, the washing procedure shall be repeated three times with thorough stripping of the tank between washings;

.7 a time factor of at least 45 minutes for washing per tank shall be used instead of the regular ~~K~~k-factor;

.8 adjacent ballast water tanks should be kept empty (if possible);

.9 after prewashing the tanks and lines shall be thoroughly stripped;

.10 collecting tanks, if any, shall be heated and effluent shall be discharged to port reception facilities before departure and subsequently washed thoroughly as well, in accordance with the above-mentioned procedure, and the washing water discharged to a port reception facility; and

[.11 After unloading the washing water, the tanks should may be ventilated to allow for visual inspection from deck, taking into account safety considerations.]

D For ships built on or after [2025] and recommendatory for ships built before [2025]

Tank washing machines covering all tank surfaces

1 The tank washing machines for prewashing shall be permanently mounted and the washing be by means of rotary water jet(s), operated at sufficiently high water pressure, and shall be of a design acceptable to the Administration.

2 The performance characteristic of a tank washing machine is governed by nozzle diameter, working pressure and the movement pattern and timing. Each tank cleaning machine fitted shall have a characteristic such that the section of the cargo tank covered by that machine will be efficiently cleaned within the time specified in the Manual.

3 Portable washing equipment may be used in addition to permanently mounted washing machines, however additional access openings will be necessary. In case such arrangements are implemented, relevant information should be provided in the Manual to the satisfaction of the Administration. It shall be possible with such arrangements to carry out washing without entering the tank.

4 The number and location of the tank washing machines shall be to the satisfaction of the Administration.

5 The location of the machines is dependent upon the characteristics detailed in 2 and upon the configuration of the internal structure of the tank.

6 The number and location of the machines in each cargo tank shall be such that all horizontal and vertical area are washed by direct impingement covering all tank surfaces by no less than [96%].

7 Shadow diagrams drawings shall be to the scale appropriate for the size of the ship and shall consider a plan view, a profile view and an end elevation for each unidentical tank.

8 For calculation of coverage, following structures and areas shall be included in the shadow area calculation:

.1 areas where the angle between jet and tank surface is less than 10 degrees;

.2 shadow from cargo pump stacks;

.3 horizontal areas other than tank top, unless such are inclined or self-draining;

.4 horizontal or vertical corrugated bulkheads;

.5 web frames;

.6 girders;

.7 stringers;

.8 webs;

.9 brackets;

.10 transversers; and

.11 crossties, if more than two and if each is more than 1/15 of the total depths of the tank.

9 For the calculation of coverage, following structures and areas should be disregarded:

.1 longitudinals;

.2 stiffeners;

.3 ladders;

.4 platforms of grating type

.4 pipework; and

.5 face plates.

Prewash procedure

10 Prewashing shall be performed with hot water of minimum 85°C with a capacity sufficient for washing at least the largest cargo tank. The heater capacity shall be based on a seawater temperature of 0°C.

11 As otherwise provided for in this part D, the provision in part B is applicable.