Council of the European Union

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'I' ITEM NOTE

From:	General Secretariat of the Council
To:	Permanent Representatives Committee
No. Cion doc.:	6239/17 MAR 37 OMI 3 ENV 132 CLIMA 36
No. prev. doc.:	6480/17 MAR 42 OMI 4 ENV 152 CLIMA 44
Subject:	IMO – Draft Union submission to be submitted to the 71st session of the Marine Environment Protection Committee (MEPC 71) of the IMO in London from 3 - 7 July 2017 concerning a new work programme item in relation to a proposal to amend Annex 1 of the International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001 – Endorsement

INTRODUCTION

1. On 10 February 2017, the Commission transmitted to the Council a Commission Staff Working Document containing a draft submission to the 71st session of the Marine Environment Protection Committee ('MEPC 71') of the International Maritime Organization ('IMO') containing a proposal for a new work programme item in relation to a proposal to amend Annex 1 to the International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001 ("the AFS Convention"). The deadline for transmitting the draft submission to the IMO Secretariat is 31 March 2016.

2. The ultimate purpose of the submission is to ban the use of the active substance cybutryne from being used in anti-fouling paints. Cybutryne has been found by several scientific studies to be toxic and persistent and harmful for the marine environment. To that end, however, it is necessary that a new work programme item be included on the agenda of the IMO Sub-Committee on Pollution Prevention and Response so as to permit the preparation of amendments to Annex 1 to the AFS Convention.

WORK WITHIN THE COUNCIL

3. The draft submission was examined by the Shipping Working Party at its meetings on 20 February and 6 March 2017. Based on the comments by delegations at the last meeting, some minor modifications were made to the draft submission with the purpose of reaching consensus. Those changes are marked in **bold underline**/~~strikethrough~~ in the Annex.

4. However, there is no agreement on who should submit the draft submission. The Commission maintains the view that the draft submission should be made by "the European Commission on behalf of the European Union", while the Member States consider that it should be made by the Member States and the European Commission.

5. Given the urgency and importance of the matter, it was agreed at working party level to propose to transmit the submission in the name of the Member States and the European Commission, while taking good note of the position of the Commission.

CONCLUSION

6. In the light of the above, the Permanent Representatives Committee is invited to

   – endorse the text of the draft submission in the annex, with a view to its transmission by the Presidency to the International Maritime Organization on 31 March 2017 at the latest.

MARINE ENVIRONMENT PROTECTION COMMITTEE

71st session

Agenda item 19

MEPC 71/19/xx

X xx 2017

Original: ENGLISH

WORK PROGRAM OF THE COMMITTEE AND SUBSIDIARY BODIES

Proposal for Amendment to Annex 1 to the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001

Submitted by Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom and the European Commission

SUMMARY

Executive summary: This document proposes a new substance to be controlled by the Anti-Fouling Systems (AFS) Convention: cybutryne (CAS No 28159-98-0), also known as Irgarol. Following the effective ban and phase-out of Tributyltin (TBT) in anti-fouling paints, more than fifteen years after the adoption of the AFS Convention, a new range of biocidal products have been developed and used as anti-fouling agents, particularly known as "booster biocides". Cybutryne, being one of these active substances, has been found by several scientific studies to be toxic and persistent, with a significant half-life in the marine/aquatic environment and potential to impact unacceptably non-target organisms and the base of food chains leading to seafood production and other ecosystem services.

Even though some parties have undertaken consequential legislation to ban cybutryne, there are today no international measures that can ensure an effective ban and phase out of this harmful substance. Given the international reach and nature of the problem, the transboundary pathways of marine transportation mechanisms and the need for a harmonized approach, the co-sponsors present this proposal for a new output to address this situation.

Strategic direction: 7.1

High-level action: 7.1.2

Output: No related provisions

Action to be taken: Paragraph 28

Related documents:	International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001; A.900(21), A.1097(29)

Introduction and background

1 This document is submitted in accordance with paragraph 4.6 and annex 1 of MSC-MEPC.1/Circ.5 *Organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies*, on the submission of proposals for new outputs.

2 The International Convention on the Control of Harmful Anti-fouling Systems on Ships ('the Convention') prohibits the use of harmful Anti-fouling agents, establishing controls as part of its provisions leading Parties to the Convention to prohibit and/or restrict use of harmful anti-fouling systems on 1) ships flying their flag, 2) ships not entitled to fly their flag but which operate under their authority and 3) ships that enter a port, shipyard or offshore terminal of a Party. Anti-fouling systems to be prohibited or controlled are listed in Annex 1 to the Convention, which is open to future possible updates and revisions, subject to the provisions of Article 6.

3 The Convention prohibits today the use of harmful organotin compounds acting as biocides in anti-fouling systems and establishes a mechanism to prevent the potential future use of other substances in anti-fouling systems, as supported by scientific evidence of their harmful nature to the aquatic/marine environment. Since the adoption of the Convention in 2001, and its entry into force in 2008, no amendments to the Convention have been made.

4 Despite the ban, and close to effective phase-out, of harmful organotin compounds acting as anti-fouling systems, there is today a variety of different products, known as “booster biocides” that are used in the composition of different self-polishing anti-fouling paints. Their impact on the marine/aquatic environment and ecological systems has been extensively studied with substantial collected evidence and derived conclusions on their effects on non-target organisms. One of these active substances is cybutryne.

5 As an increasing number of studies became available on the environmental and ecological impacts of cybutryne, together with an equally increasing number of environmental risk assessment evaluations, the toxicity and persistence of this substance has been determined. When used as an anti-fouling agent, cybutryne leaches following the physical mechanism well known to self-polishing anti-fouling paints and becomes then available in the environment, together with other degradation products of its original formulation which can also be characterized as toxic and persistent.

6 In certain countries, such as Bermuda[1], New Zealand[2], the UK[3], Denmark[4] and Sweden, the use of cybutryne in anti-fouling products has already been restricted or phased out. More recently, following an in-depth assessment[5] by a rapporteur Member State and an opinion[6] of the European Chemicals Agency's Biocidal Products Committee (BPC) within the context of the implementation of the Biocidal Product Regulation (EU) N°528/2012[7], the European Commission adopted a decision that effectively prohibits the marketing and use of anti-fouling paints containing cybutryne in all EU Member States[8]. It was indeed identified that using cybutryne in anti-fouling paints applied on commercial coastal and ocean-going vessels causes unacceptable risks to marine water and sediment organisms in the environment.

7 With the foregoing in mind, from a procedural perspective, this submission precedes the submission of an Initial Proposal, following the provisions of Article 6 of the AFS Convention. As far as it is possible and relevant, all the elements required to consider an Initial Proposal are already included in a summarized table in the appendix to this submission.

IMO's objectives and the scope of the proposal

8 By way of background, following the adoption of the Convention on 18 October 2001, Parties to the Convention have agreed with the importance of protecting the marine environment and human health from the adverse effects of anti-fouling systems. This recognition, in 2001, was the result of substantial material evidence of the harmful effects of organotin compounds as anti-fouling agents on the environment and ecosystems. At the adoption of the Convention, Parties also recognized the fundamental relevance of a global legally binding instrument to facilitate the effective ban of organotin compounds.

9 Having today a substantial amount of references and evidence to the toxicity, persistence and risks to the environment of cybutryne, fifteen years after the adoption of the Convention, the Committee is requested to give good consideration to the need to amend the existing control measures currently in force in the Convention, extending the application of the provisions of Article 4 also to cybutryne as an anti-fouling agent for ships and thereby amending Annex 1 to the Convention. The proposal is within the scope of the IMO's objectives, aiming at addressing safety and environmental protection issues and effective uniform implementation of existing IMO standards and regulations relating to maritime safety and environmental protection.

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1 Bermuda Fisheries (Anti-Fouling Paints Prohibition) Regulations 1989, BR 20 / 1989

2 http://www.epa.govt.nz/hazardous-substances/at-home/Pages/Boating.aspx
http://www.epa.govt.nz/search-databases/HSNO%20Application%20Register%20Documents/APP201051_APP201051_Decision_Final.pdf

3 http://webarchive.nationalarchives.gov.uk/20060715180244/http:/www.hse.gov.uk/pesticides/news/pest49.htm

4 https://www.retsinformation.dk/Forms/R0710.aspx?id=165488; http://eng.mst.dk/topics/biocides/application-in-accordance-with-the-bpr/products-involved-and-responsibility/legislation-according-to-product-type/anti-fouling-paint---danish-national-legislation/).

5 http://dissemination.echa.europa.eu/Biocides/ActiveSubstances/1281-21/1281-21_Assessment_Report.pdf

6 https://echa.europa.eu/documents/10162/03a3085a-044e-41d8-8f18-248987e6f756

7 Information on this legislation is available on the EU Commission and the ECHA websites: http://ec.europa.eu/health/biocides/policy/index_en.htm; https://echa.europa.eu/regulations/biocidal-products-regulation
The Biocidal Products Committee (BPC), through its work to the European Chemicals Agency (ECHA) assists the European Commission on all subjects related to the Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products (BPR) - https://echa.europa.eu/about-us/who-we-are/biocidal-products-committee

8 Commission Implementing Decision (EU) 2016/107 of 27 January 2016 not approving cybutryne as an existing active substance for use in biocidal products for product-type 21, (OJ L 21, 28.1.2016, p.81).

10 In practice, should the Committee give good consideration to the present proposal for a new output, the procedure set out in Article 6 of the Convention will be followed and an initial/comprehensive proposal submitted with all the available elements listed in Annexes 2 and 3 to the Convention.

11 The intention of the co-sponsors of this proposed revision of the Convention is not only to follow the good precedent of the ban on organotin compounds in anti-fouling systems but, in particular, to highlight the need for a harmonized approach, allowing possible restrictions to be discussed and better decided at global level.

Need

12 Following the ban of harmful organotin compounds acting as biocides in anti-fouling systems, resulting from the adoption of the Convention in 2001, and its subsequent entry into force in 2008, a variety of different biocidal agents have been developed and used as additives in anti-fouling systems for ships. Recent scientific studies have highlighted similar concerns to those raised by the use of organotin compounds, also for other biocidal additives, with cybutryne deserving a substantial attention.

13 The co-sponsors ~~higlight~~ **highlight** to the Committee that restrictions on the use of cybutryne have been imposed by some countries around the world and in the EU. For instance, the use of cybutryne in anti-fouling products has been restricted or phased out in several countries such as the UK, Denmark and Sweden, in the past[9]. Even though these restrictions are fundamentally for pleasure craft and small commercial vessels, the risks of the application of cybutryne based anti-fouling paints have shown to be also unacceptable for the use on other types of vessels. Furthermore, at European level, following a recent evaluation where different studies and publicly available information have been considered, a decision has been made to ban the marketing and use of cybutryne as an active substance in anti-fouling paints. In the framework of worldwide shipping, any restriction of such kind, however, should be better considered at the international level with a possible consideration for global legally binding measures that, just like with organotin compounds, can be of better assistance to harmonization. Therefore, it is suggested that the need for restrictions to the use of cybutryne as anti-fouling should be addressed in an amendment to Annex I to the Convention.

14 For the above reasons, it is proposed to add this issue to the agenda of PPR with a view to, ultimately, amending Annex I to the Convention, extending the existing provisions of Article 4 also to cybutryne as an anti-fouling agent for ships.

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[9] The restrictions imposed in the past by the UK, Denmark and Sweden on the application of cybutryne have been focused on small pleasure boats and small commercial craft. These restrictive measures have followed the increasing availability of data on the eco-toxicological effects of cybutryne and the determination of higher concentrations in sediments, in areas with a higher presence of ships using this substance as anti-fouling:

- The UK Health and Safety Executive (HSE) imposed a ban on the application of Irgarol 1051 as an antifouling for boats under 25m in length since November 2002 (Advisory Committee on Pesticides, 2000; http://webarchive.nationalarchives.gov.uk/20060715180244/http:/www.hse.gov.uk/pesticides/news/pest49.htm).
- Denmark prohibited the import, sale and use of hull paints containing cybutryne/Irgarol on pleasure boats and small commercial vessels since 1 January 2000. (https://www.retsinformation.dk/Forms/R0710.aspx?id=165488; http://eng.mst.dk/topics/biocides/application-in-accordance-with-the-bpr/products-involved-and-responsibility/legislation-according-to-product-type/anti-fouling-paint---danish-national-legislation/)
- In Sweden antifouling products containing cybutryne have not been found acceptable for product authorisation since 2007.

Analysis of the issue

15 Cybutryne is the common name for N'-tert-butyl-N-cyclopropyl-6-(methylthio)-1, 3, 5-triazine2, 4-diamine (CAS number 28159-98-0). Usually in the form of a white powder, cybutryne is one of the herbicides within the triazine family which act to reduce plant photosynthetic ability. Its mode of action consists of inhibiting the photosystem-II (PSII) by interfering with the photosynthetic electron capture transport in chloroplasts. Cybutryne is available under the commercial names Irgarol 1051, Irgarol 1071 and Irgaguard D1071. Cybutryne has been used since the mid-1980s (Hall et al., 1999). It is applied at marine as well as at inland freshwater sites and is more effective against freshwater and seawater algae than aquatic animal organisms (Yebra, 2004). It is often combined with copper or copper compounds in anti-fouling paints.

16 From the assessment performed within the context of the EU Biocides Regulation No 528/2012[10], it was concluded that cybutryne is not readily biodegradable, and also the abiotic degradation of cybutryne in seawater is very slow. In evaluated studies, no significant mineralization was observed. The dissipation from seawater to sediment in a microcosm study however was found to be fast (DT50: 23 days). The half-life in the water column of the main degradation product of cybutryne in marine waters, 2-methylthio-4-tert-butylamino-6-amino-s-triazine (metabolite known as M1 or GS26575), is comparable to the parent compound (DT50: 23 days). Nevertheless, cybutryne and its main metabolite GS 26575 showed to be recalcitrant to biodegradation. No reliable degradation rates are available for the sediment compartment or the whole system, and therefore it is assumed that the substance and its major metabolite does not degrade once it enters the sediment. Based on the average KOC-value of 895 L/kg for adsorption, cybutryne is classified as having a low mobility potential in soil. Cybutryne's sorption characteristics in combination with its recalcitrance towards biodegradation pose a risk for accumulation to be assumed in plants and sediment.

17 Cybutryne affects the photosynthesis in primary producers by blocking electron transport. This inhibition ultimately leads to reduced carbon dioxide uptake, decreased carbohydrate production and the eventual starvation of the plant. The major degradation product of cybutryne, 2-methylthio-4-tert-butylamino-6-amino-s-triazine (metabolite known as M1 or GS26575), has also been found to be toxic to aquatic plants and algae, although less toxic than cybutryne itself. A number of acute and chronic toxicity studies on algae and aquatic plants as well as invertebrates and fish have been evaluated in the context of the EU Biocides Regulation No 528/2012. Cybutryne has been found to have a moderate potential to accumulate in fish (BCF 250 L/kg), but is eliminated fast (t1/2 < 3 days). Although the accumulative potential in macro algae was relatively high (BCF 5200 L/kg), the elimination of cybutryne was also fast for this species (t1/2 9.2 days). The bioconcentration in a microcosm test demonstrated that cybutryne does not bioconcentrate in periphyton, rooted plants and macro invertebrates, and that biomagnification does not play a significant role. The highest BCFSS values for invertebrates were 110 L/kg ww for oyster (*Crassostrea virginica*; suspension feeder) and 307 L/kg ww for amphipods (*Leptocheirus plumulosus*; surface deposit feeder). The latter value can be taken as an indication that food-chain transfer resulting in biomagnification is not an apparent concern, since the BCFs in algae and plants were below the 2000 L/kg ww trigger (max. 1397 L/kg) and higher than the BCFs in the herbivorous organisms.

18 It has been established that cybutryne occurs in areas where there are boats coated with paint that contains the substance. Cybutryne has low water solubility and a mid-range partition coefficient (log kow of 3.2 and koc of 895 L/kg) which means that it will predominantly exist adsorbed to the particulate phase. Given this, there is potential for significant environmental occurrence.

[10] http://dissemination.echa.europa.eu/Biocides/ActiveSubstances/1281-21/1281-21_Assessment_Report.pdf

Analysis of implications

19 Cybutryne, as a booster biocide anti-fouling agent, threatens a variety of habitats — from coral reefs and seagrass beds to open moorings. Its primarily herbicidal properties mean that coral zooxanthellae, phytoplankton and periphyton are particularly vulnerable. Compared to TBT, an anti-fouling agent with a specific action, cybutryne and other "booster biocides" have more broad-spectrum impacts. Even though the detailed wider ecological effect of shifting to such biocides remains to be understood, the evidence already available today is considered to be sufficient to raise considerable concern because they may affect the base of marine food chains.

20 Detailed toxicity tests have not been undertaken for all booster biocides. There is evidence, however, namely for those anti-fouling paints containing cybutryne, that non-target organisms are exposed and potentially vulnerable. Concern arises because, as noted above, photosynthesis can be affected by booster biocides at extraordinarily low concentrations, i.e. in the 'parts per trillion' (ng/L) range. Effects may be reversible over short exposures, but higher concentrations and long-term exposure can lead to reduced photochemical efficiency of algae (Jones, 2005). In corals this may lead to breakdown of the coral-zooxanthellae symbiosis (bleaching), demanding lengthy recovery times. Hence, "booster biocides" can impact the base of food chains, which are linked to seafood production and many other ecosystem services.

A particularly significant aspect of cybutryne is that it acts herbicidally. Cybutryne affects the primary photochemical reactions of photosynthesis targeting. This is a remarkably conserved area (the amino acid sequence of D1 has a 98 % homology between different higher plants and 85–90 % between PSII containing species). This conservation, and the fact that it is the base of the food chain, means that, like TBT, "booster biocides" can potentially have far-reaching consequences. Whereas TBT acted quite specifically in causing *imposex*[11] and shell abnormalities, through endocrine disruption, the booster biocides that replaced TBT have more broad-spectrum impacts.

21 Cybutryne as a biocidal active substance in anti-fouling paints has been evaluated and has been determined to be harmful even in very low concentrations, with unacceptable eco-toxicological risks identified. It has been shown that restrictions on use have been successful in various IMO Member States at reducing concentrations in the environment. For instance, in the UK (Cresswell et al, 2006; Gatidou et al, 2007) tested water samples from locations where previous biocide levels were well documented with results demonstrating a clear reduction in water concentrations of cybutryne, indicating that restrictions appear to have been effective. Continued use of anti-fouling paints containing cybutryne has shown to pose unacceptable risks to the environment. These unacceptable risks have led to its ban at European level.

Benefits which would accrue from the proposal

22 Extension of the controls outlined in the provisions of Article 4 of the Convention to also cover the use of cybutryne would allow the restrictions on the use of this biocidal substance as an anti-fouling agent for ships to be globally and legally binding, serving the IMO Strategic Direction 7.1 which aims to focus on reducing and eliminating adverse impacts from shipping on the environment by identifying and addressing possible adverse impacts.

[11] Imposex is a disorder in sea snails caused by the toxic effects of certain marine pollutants. These pollutants cause female sea snails (marine gastropod molluscs) to develop male sex organs.

23 In the light of the unacceptable risks identified to the environment related to the use of anti-fouling paints containing cybutryne, banning the marketing and the use of cybutryne as anti-fouling biocidal agent is concluded to be the most effective measure in reducing concentrations of cybutryne in currently contaminated areas and preventing contamination of other areas. Common understanding and uniform application of environmental regulations should additionally have a positive effect on the protection of marine environment at global level.

Industry standards

24 No identified Industry Standards on the use of cybutryne as biocidal additive in anti-fouling paints.

Output

25 The intended output, an amendment to Annex I to the Convention, is considered to be achievable and realistic.

Priority and target completion date

26 The proposal should be given high priority and the new item be added to the agenda and work programme of the PPR for the biennium 2018-20**19**.

27 The proposed output will respond to IMO's Strategic Directions to develop and facilitate the implementation of effective measures for mitigating and responding to the impact on the environment caused by shipping incidents and operational pollution from ships, to contribute to international efforts to reduce atmospheric and aquatic pollution and address climate change and to ensure that measures to promote safe, secure and environmentally sound shipping do not unduly affect the efficiency of shipping. The proposed output will respond to IMO's High-level Actions to keep under review the adequacy of the legal framework and IMO measures to reduce atmospheric pollution.

Action requested of the Committee

28 On the basis of the information above, the Committee is invited to consider the proposal to add a new output "Amendments to Annex 1 (Controls) in the AFS Convention" to the work programme of the Sub-Committee on Pollution Prevention and Response (PPR), to ensure discussion of the extension of the Convention's control provisions to cybutryne can effectively take place, and to take action as appropriate. The Committee is also invited to formulate the scope of the new output sufficiently wide to allow for other substances to be looked at as well, if and when appropriate scientific evidence on their risks becomes available.

29 The Committee is further requested to take into consideration the information set out in the attached Appendix in advance of the submission of an initial proposal, in accordance with Article 6 of the Convention.

Appendix

Information set out in advance of the submission of an initial proposal, in accordance with Article 6 of the AFS Convention

(a) identification of the anti-fouling system addressed in the proposal	Cybutryne (CAS No 28159-98-0), also known as Irgarol. IUPAC name : N'-tert-butyl-N-cyclopropyl-6-(methylthio)-1, 3, 5-triazine2, 4-diamine.
(b) characterization of the information which suggests that the anti-fouling system or its transformation products may pose a risk to human health or may cause adverse effects in non-target organisms at concentrations likely to be found in the environment	Toxicity studies available and bioaccumulation data to be referred
(c) material supporting the potential of the toxic components in the anti-fouling system, or its transformation products, to occur in the environment at concentrations which could result in adverse effects to non-target organisms, human health, or water quality	Data on persistence in sediments and known action mechanism affecting photosynthesis and, therefore, affecting non-target **organisms.**
(d) an analysis of the association between the anti-fouling system, the related adverse effects and the environmental concentrations observed or anticipated;	Reference to be made in the initial proposal to studies that have determined higher concentrations of cybutryne in areas where boats with this additive as anti-fouling can be found.
(e) a preliminary recommendation on the type of restrictions that could be effective in reducing the risks associated with the anti-fouling system.	Extension of Article 4 provisions to cybutryne as an anti-fouling agent for ships.

ANNEX 1

CONSIDERATION OF HUMAN ELEMENT ISSUES

Instructions: If the answer to any of the questions below is: (A) **YES**, the preparing body should provide supporting details and/or recommendation for further work. (B) **NO**, the preparing body should make proper justification as to why human element issues were not considered. (C) **NA** (Not Applicable) the preparing body should make proper justification as to why human element issues were not considered applicable.	
Subject Being Assessed: (e.g. Resolution, Instrument, Circular being considered) Amendments to Controls in the AFS Convention	
Responsible Body: (e.g. Committee, Sub-committee, Working Group, Correspondence Group, Member State) The Sub-Committee on Pollution Prevention and Response (PPR)	
1. Was the human element considered during development or amendment process related to this subject?	☐Yes ☐No ☒NA
2. Has input from seafarers or their proxies been solicited?	☐Yes ☐No ☒NA
3. Are the solutions proposed for the subject in agreement with existing instruments? (Identify instruments considered in comments section)	☒Yes ☐No ☐NA
4. Have human element solutions been made as an alternative and/or in conjunction with technical solutions?	☐Yes ☐No ☒NA
5. Has human element guidance on the application and/or implementation of the proposed solution been provided for the following:	
• Administrations?	☐Yes ☐No ☒NA
• Ship owners/managers?	☐Yes ☐No ☒NA
• Seafarers?	☐Yes ☐No ☒NA
• Surveyors?	☐Yes ☐No ☒NA
6. At some point, before final adoption, has the solution been reviewed or considered by a relevant IMO body with relevant human element expertise?	☐Yes ☐No ☒NA

7. Does the solution address safeguards to avoid single person errors?	☐Yes ☐No ☒NA
8. Does the solution address safeguards to avoid organizational errors?	☐Yes ☐No ☒NA
9. If the proposal is to be directed at seafarers, is the information in a form that can be presented to and is easily understood by the seafarer?	☐Yes ☐No ☒NA
10. Have human element experts been consulted in development of the solution?	☐Yes ☐No ☒NA
11. **HUMAN ELEMENT**: **Has the proposal been assessed against each of the factors below?**	
☐ CREWING. The number of qualified personnel required and available to safely operate, maintain, support, and provide training for system.	☐Yes ☐No ☒NA
☐ PERSONNEL. The necessary knowledge, skills, abilities, and experience levels that are needed to properly perform job tasks.	☐Yes ☐No ☒NA
☐ TRAINING. The process and tools by which personnel acquire or improve the necessary knowledge, skills, and abilities to achieve desired job/task performance.	☐Yes ☐No ☒NA
☐ OCCUPATIONAL HEALTH AND SAFETY. The management systems, programmes, procedures, policies, training, documentation, equipment, etc. to properly manage risks.	☐Yes ☐No ☒NA
☐ WORKING ENVIRONMENT. Conditions that are necessary to sustain the safety, health, and comfort of those on working on board, such as noise, vibration, lighting, climate, and other factors that affect crew endurance, fatigue, alertness and morale.	☐Yes ☐No ☒NA
☐ HUMAN SURVIVABILITY. System features that reduce the risk of illness, injury, or death in a catastrophic event such as fire, explosion, spill, collision, flooding, or intentional attack. The assessment should consider desired human performance in emergency situations for detection, response, evacuation, survival and rescue and the interface with emergency procedures, systems, facilities and equipment.	☐Yes ☐No ☒NA
☐ HUMAN FACTORS ENGINEERING. Human-system interface to be consistent with the physical, cognitive, and sensory abilities of the user population.	☐Yes ☐No ☒NA
Comments: NA has been checked for a number of items because the proposal is to Amend the existing AFS Convention.	

ANNEX 2

CHECKLIST FOR IDENTIFYING ADMINISTRATIVE REQUIREMENTS

This checklist should be used when preparing the analysis of implications required in submissions of proposals for inclusion of outputs. For the purpose of this analysis, the term "administrative requirements" is defined in resolution A.1043(27), i.e. administrative requirements are an obligation arising from future IMO mandatory instruments to provide or retain information or data.

Instructions:

(A) If the answer to any of the questions below is YES, the Member State proposing an output should provide supporting details on whether the requirements are likely to involve start-up and/or ongoing costs. The Member State should also give a brief description of the requirement and, if possible, provide recommendations for further work (e.g. would it be possible to combine the activity with an existing requirement?).

(B) If the proposal for the output does not contain such an activity, answer NR (Not required).

(C) For any administrative requirement, full consideration should be given to electronic means of fulfilling the requirement in order to alleviate administrative burdens.

1. Notification and reporting? Reporting certain events before or after the event has taken place, e.g. notification of voyage, statistical reporting for IMO Members	NR ☑	Yes □ Start-up □ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)		
2. Record keeping? Keeping statutory documents up to date, e.g. records of accidents, records of cargo, records of inspections, records of education	NR ☑	Yes □ Start-up □ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)		
3. Publication and documentation? Producing documents for third parties, e.g. warning signs, registration displays, publication of results of testing	NR ☑	Yes □ Start-up □ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)		

4. Permits or applications? Applying for and maintaining permission to operate, e.g. certificates, classification society costs	NR ☑	Yes □ Start-up □ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)		
5. Other identified requirements?	NR ☑	Yes □ Start-up □ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)		