

SUB-COMMITTEE ON CARRIAGE OF
CARGOES AND CONTAINERS
10th session
Agenda item 4

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REVIEW OF THE IGC CODE

Comments on document CCC 10/4/1 pertaining to the use of anhydrous ammonia cargo as fuel

Submitted by IACS

SUMMARY

<i>Executive summary:</i>	This document provides comments on document CCC 10/4/1 proposing to develop interim guidelines for the use of anhydrous ammonia cargo as fuel.
<i>Strategic direction, if applicable:</i>	1
<i>Output:</i>	1.17
<i>Action to be taken:</i>	Paragraph 18
<i>Related documents:</i>	CCC 10/3 and CCC 10/4/1

Introduction

1 This document is submitted in accordance with the provisions of paragraph 6.12.5 of the *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.5) and provides comments on document CCC 10/4/1 (Australia et al.).

Discussion

2 IACS appreciates the work performed by the co-sponsors to develop the draft interim guidelines for the use of anhydrous ammonia cargo as fuel. As a matter of urgency, IACS agrees to the proposal to finalize these guidelines as soon as possible or at the latest at CCC 11.

3 Having carefully reviewed the proposals, IACS supports them in general, subject to the following comments on and modifications to the draft interim guidelines contained in the annex to document CCC 10/4/1.

Comments on the draft interim guidelines

4 Paragraph 2.3.1: IACS considers that, due to the risk of toxicity and the expected permanent presence of ammonia in fuel distribution systems, the ammonia fuel system should be designed so that a single failure should not cause leakage of fuel into any space, even those in the cargo area.

5 Paragraph 2.4.3: the text is understood to be from the interim guidelines for LPG whose main components consist of a mixture of butane and propane. However, since anhydrous ammonia has a single main ingredient, ammonia, the requirements concerning composition are not needed for ammonia as fuel.

6 Paragraph 2.4.5: the text is unclear as to whether it requires dual fuel consumers to have separate exhaust systems and to use them when ammonia is used as fuel or otherwise. IACS understands that the intention is to have a separate exhaust system for each consumer capable of using ammonia as fuel, i.e. consumers should not share the same exhaust system. To reflect this understanding, it is proposed to change the wording to read as follows:*

"2.4.5 ~~Each a~~Ammonia fuel consumers~~s~~ should have a separate exhaust system and exhibit no external visible flame."

7 Paragraph 2.4.6, first sentence: "a safe location" is to be defined with respect to the toxicity of ammonia.

8 Paragraphs 2.4.6 and 2.4.7: the last sentence of paragraph 2.4.6 specifies the prevention of the release of liquid to the atmosphere. While this provision would be applicable to ammonia fuel considering that it can be supplied in liquid phase, it should also be considered that ammonia should not be directly released to atmosphere even in gas state, as specified in the second sentence of paragraph 2.4.7. Since the ammonia releases addressed in paragraphs 2.4.6 and 2.4.7 are assumed to be the same release, IACS suggests combining the content of paragraphs 2.4.6 and 2.4.7 and also considering "abnormal conditions" besides "normal" and "emergency" conditions, i.e. conditions that are off-design and do not originate in or from an emergency. Also, IACS considers that definitions of "normal condition" and "abnormal conditions" should be given; IACS suggests the following definitions:

Normal condition: A condition under which all systems and equipment operate as intended.

Abnormal condition: A condition under which one or more systems or equipment are operating outside of the intended conditions but do not present a threat to human and/or aquatic life.

9 Paragraph 2.4.8: the scope of this provision is unclear. IACS believes that it is better to specify that ammonia should be admitted to the combustion chamber only after a stabilized fuel oil flame is established.

10 Paragraph 2.5.1.2: the risk assessment should also define the proposed actions in case of ammonia being detected, depending on the level of exceedance of defined thresholds. The location for leak detection in the ammonia fuel system should be assessed by means of a gas dispersion analysis, irrespective of whether ammonia is expected to be present in or outside of the cargo area, because leakage in cargo areas may also lead to ammonia entering accommodation.

* Tracked changes here and in the annex are indicated using "strikeout" for deleted text and "grey shading" to highlight all modifications and new insertions, including deleted text.

11 Paragraph 2.5.3.1: in the context of these guidelines, the provisions should not refer to a fuel tank, but only cargo tanks. Therefore, it is suggested to change the reference from "fuel tank" to "dedicated tanks".

12 Paragraph 2.5.3.4: IACS does not support having an inert gas purging interface and a means for preventing condensation of vapour in the system, for the vent mast.

13 Paragraph 2.5.4.1: IACS cannot see any reason why an ammonia fuel system from cargo should be installed in a space separate from cargo machinery space. A combination of an ammonia fuel preparation room and cargo machinery space should be allowed.

14 Paragraph 2.5.4.6: IACS understands that in the case of leakage in the fuel preparation room (FPR), the "gas evacuation system" will transfer a larger quantity of ammonia vapours to the atmosphere by increased fan capacity. Other arrangements where vapours are transferred to the ammonia vapour treatment system should preferably be considered to limit the amount of ammonia released to the atmosphere. Also, in order to limit the ammonia vapour concentration in the space and at the point of release through the ventilation system, it would be advisable to lower the 300 ppm threshold.

15 Paragraph 2.5.4.8: IACS considers that a treatment may be considered before releasing to the atmosphere. Also, the source and justification for the selected distance of 15 m should be considered.

16 Paragraph 2.5.4.9: IACS proposes that also the annular space of the double-walled piping should be fitted with gas detection heads.

17 Paragraph 2.5.4.11: IACS suggests adding the provision to arrange a dedicated ammonia drain tank, distinct from the ammonia bilge collecting tank, to collect ammonia liquid spills from drip trays in case of leakage.

Action requested of the Sub-Committee

18 The Sub-Committee is invited to consider the foregoing and take action, as appropriate.
