

SUB-COMMITTEE ON CARRIAGE OF
CARGOES AND CONTAINERS
5th session
Agenda item 3

CCC 5/3/6
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**AMENDMENTS TO THE IGF CODE AND DEVELOPMENT OF GUIDELINES FOR
LOW-FLASHPOINT FUELS**

Comments on the report of the Correspondence Group

Submitted by Norway, IACS, IBIA and ITF

SUMMARY

Executive summary: This document provides comments on the report of the Correspondence Group on Development of Technical Provisions for the Safety of Ships using Low-flashpoint Fuels (CCC 5/3)

Strategic direction, if applicable: 2

Output: 2.3

Action to be taken: Paragraph 17

Related documents: BLG 15/WP.5; CCC 4/12, CCC 4/WP.3 and CCC 5/3

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.1) and provides comments on document CCC 5/3 (Germany), which contains the report of the Correspondence Group on Development of Technical Provisions for the Safety of Ships using Low-flashpoint Fuels.

Background

2 The International Code of Safety for Ships Using Gases or other Low-flashpoint Fuels (IGF Code), which was adopted by resolution MSC.391(95), provides an international standard for ships using low-flashpoint fuel, other than ships covered by the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code). Part A-1 of the IGF Code addresses specific requirements for ships using natural gas as fuel.

3 At its fourth session, the Sub-Committee on Carriage of Cargoes and Containers, having considered the report of the Working Group on Amendments to the IGF Code and Development of Guidelines for Low-flashpoint Fuels (CCC 4/WP.3), re-established the Correspondence Group (CG) to finalize the draft amendments to the IGF Code regarding fuel cells and finalize the draft technical provisions for the safety of ships using methyl/ethyl alcohol as fuel, under the coordination of Germany (CCC 4/12, paragraph 3.52).

4 The co-sponsors actively participated in the Correspondence Group; however, they observed that some of the comments raised in the early rounds of discussions were not included in the CG working documents or in the final report of the CG. As such, consideration of some comments submitted to the CG, many of which were on substantive safety principles in relation to the draft provisions under consideration by the CG, appeared to be lacking. Consequently, the co-sponsors found it difficult to review the conclusions presented in the report of the CG. This document discusses some of the key points for the Sub-Committee's attention, with a view to taking the issue forward to CCC 5.

Discussion

5 The co-sponsors note that the implications of the Sub-Committee's previous agreement to move the draft fuel cell requirements, which had previously been developed under part A-1 of the IGF Code for natural gas, to a stand-alone new Part E of the IGF Code containing the prescriptive requirements for fuel cells have not been fully addressed by the draft fuel cell requirements, as provided in annex 1 to document CCC 5/3.

6 In the context of the current IGF Code requirements and the proposed draft new part E for fuel cells, a ship considering the installation of a fuel cell would only need to consider the requirements under parts A, D and the new part E of the IGF Code. The IGF Code originally intended to provide a goal-based regulatory framework. However, the Code actually contains very detailed prescriptive requirements for natural gas only under part A-1, which would also be considered appropriate for application to other low-flashpoint fuels and technologies using such fuels. Without all of the applicable prescriptive requirements that may be determined to be applicable to fuel cells, being referenced by the new part E or modified as applicable to fuel cells and included within part E, the co-sponsors are concerned that many substantive and established safety principles may be lost.

7 The co-sponsors note that proposals for low flashpoint fuels other than natural gas, which, for example, may be applicable to LPG or methanol fueled fuel cells, would in any case require application of the "Alternative design" process, required by section 2.3 of Part A of the IGF Code, for review of novel concepts in accordance with SOLAS regulation II-1/55. With large commercial marine fuel cells still largely in the planning/design or experimental stage, the co-sponsors consider that there may be benefits to developing interim guidelines for fuel cells while the marine industry's experience in this technology grows. The co-sponsors request the Sub-Committee to reconsider whether the current plan to develop a new part E for fuel cells is the most appropriate way forward. The Sub-Committee is invited to note that if the new part E is adopted, any amendment to that part can be adopted only after the entry into force of the new part E, which may be subject to the four-year amendment cycle, as per the *Guidance on entry into force of amendments to the 1974 SOLAS Convention and related mandatory instruments* (MSC.1/Circ.1481).

8 The co-sponsors are also concerned that the draft fuel cell requirements have copied the ESD machinery space concept requirements from part A-1 of the IGF Code. The co-sponsors consider that this is not appropriate and that the requirements for fuel cells should be specifically developed. Fuel cell spaces cannot be considered non-hazardous under normal operation because of the inherent challenges in dealing with the normal leakage rates of

hydrogen and hydrogen rich gases from fuel cells to the surrounding space during operation. As such, spaces containing fuel cells need to be classified as zone 1 according to IEC standards. However, it is not possible to produce certified safe type fuel cells suitable for hazardous area zone 1. Consequently, all fuel cell safety requirements need to be developed to mitigate the risks associated with these systems and their unique features, and should not merely copy/paste the ESD machinery space concept. The co-sponsors propose that the Sub-Committee should endorse this understanding and instruct that further development of the draft fuel cell requirements is undertaken in accordance with these principles.

9 The co-sponsors note that the draft fuel cell fire protection requirements appear to be some way from being finalized. In part, this is due to the lack of agreed definitions and agreement on machinery space principles applicable to fuel cells, together with a lack of clarity on the acceptability of combustible materials and application of IEC principles for area classification. As discussed in paragraph 8 of this document, the co-sponsors consider that fuel cell spaces shall be considered as zone 1 areas in accordance with IEC principles. Furthermore, it is considered that fuel cell spaces are to have A-60 insulation to all surrounding spaces and be classified as machinery spaces of category A according to SOLAS chapter II-2, for the purposes of fire protection. The co-sponsors also consider that a clear agreement on the definition of "fuel space" is imperative before any further discussion on the technical details takes place. The Sub-Committee is invited to endorse these proposals.

10 The co-sponsors note that due to time constraints and the focus on the development of the fuel cell requirements, the draft requirements for methyl/ethyl alcohol fuels have not been discussed at all by the Working Group in the two preceding sessions of the Sub-Committee. This is unfortunate, in particular, since there are large merchant ships already in service burning methanol as fuel and the draft methyl/ethyl alcohol provisions are at a more advanced stage of development than those for fuel cells. While there are still issues to resolve with the methyl/ethyl alcohol fuel requirements, the co-sponsors are of the opinion that, as a matter of urgency, the Sub-Committee's activities should focus on finalizing the draft technical provisions for the safety of ships using methyl/ethyl alcohol as fuel at this session. The Sub-Committee is invited to endorse the prioritization of the work related to methyl/ethyl alcohol fuels.

11 With reference to the risk assessment requirements under section 4.2 of Part A of the IGF Code and the detailed prescriptive requirements for natural gas as fuel detailed under part A-1 of the IGF Code, the Sub-Committee will recall that paragraph 4.2.2 of the IGF Code limits the extent of the required risk assessment for natural gas fuel only to those items specifically listed in this paragraph. The co-sponsors consider that this is not an appropriate approach for methyl/ethyl alcohol fuels and that the extent of the risk assessment should not be limited, i.e. it should require application of paragraphs 4.2.1 and 4.2.3 of the IGF Code. The Sub-Committee is invited to endorse this approach.

12 It is noted that the draft methyl/ethyl fuel requirements include requirements developed from the "ESD machinery space concept" requirements in part A-1 of the IGF Code, which are proposed as an alternative "protected machinery space" concept (paragraph 5.6.1.2 of Alternative 1 in annex 5 to document CCC 5/3). The co-sponsors recall the extensive debate on the suitability and application of the ESD machinery space concept during the development of the IGF Code in many sessions of the BLG Sub-Committee sessions, in particular, the agreement that the ESD machinery space concept should be limited to gases lighter than air only (BLG 15/WP.5, paragraph 11).

13 It is to be noted that the ESD machinery space concept is based on ventilation principles and that it is, therefore, not suitable for liquid fuels. The Sub-Committee will also recall that the ESD machinery space concept was not accepted for application to gas carriers and inclusion in the IGC Code. The Sub-Committee is invited to endorse the previous decisions that the ESD machinery space concept is limited to low-flashpoint gases lighter than air only and that the proposed "protected machinery space" concept, which is a renamed ESD concept, is not appropriate for methyl/ethyl alcohol fuels.

14 With regard to the acceptable purity of methyl/ethyl alcohol fuels, the co-sponsors note that the definitions of such fuels are still under discussion. However, it is also noted that there is a proposal to allow blends of 85-100% methyl/ethyl alcohol fuels. In the absence of a clear definition and international standard, this blend could contain up to 15% gasoline. The co-sponsors understand that the driver for the methyl/ethyl alcohol fuel requirements is for their application to "pure" methanol or ethanol fuels. Therefore, in the absence of a developed international fuel standard for the proposed fuel blends, it is unclear why the draft requirements have been amended to cover fuel "mixtures based on methyl/ethyl". The Sub-Committee is invited to clarify the scope of application of the draft technical provisions for methyl/ethyl alcohol fuels with respect to methyl/ethyl alcohol purity. The co-sponsors welcome the decision of MSC 99 to invite ISO to develop a standard for methyl/ethyl alcohol as a marine fuel and a standard for methyl/ethyl alcohol fuel couplings.

15 The co-sponsors note that, at this time, clarity on the fundamental safety principles of inerting methyl/ethyl alcohol fuel tanks and the restriction of access to surrounding cofferdams and hold spaces is not appropriately reflected in the draft technical provisions. Furthermore, agreement on the restriction that all methyl/ethyl fuel pumps shall be located in a dedicated "pump room" or "fuel preparation room", with appropriate safety provisions for those spaces, also seems to be unclear in the draft provisions. The Sub-Committee is invited to endorse the above safety principles, i.e. that methyl/ethyl alcohol fuel tanks are to be inerted; that access to the surrounding cofferdams and hold spaces is to be restricted by appropriate safety requirements; and that all methyl/ethyl fuel pumps are to be located in a dedicated "fuel preparation room".

16 The co-sponsors are of the opinion that some of the safety principles and prescribed arrangements developed for natural gas are not appropriate for methyl/ethyl alcohol fuels. For example, allowing a methyl/ethyl Pump and Valve Unit (FPU) to be located within a machinery space, is not considered equivalent to allowing the Gas Valve Unit (GVU), for natural gas of part A-1 of the IGF Code, to be located within a machinery space. The fuel properties are very different, together with the location of potential sources of release and sources of ignition within the same FPU unit. It is also noted that the draft technical provisions have introduced "units not normally accessed" terminology as a means to locate such units within machinery spaces. As per the comments in paragraph 15 above, the co-sponsors consider that methyl/ethyl fuel pumps, or FPUs, are not to be located in machinery spaces and that the concept of units, or spaces, "not normally accessed" is an unnecessary complication to established IMO space and segregation principles. The Sub-Committee is invited to endorse these proposals.

Action requested of the Sub-Committee

17 The Sub-Committee is invited to note the comments in general and, in particular, to consider the proposals and requests for Sub-Committee direction as discussed in paragraphs 7 to 11 and 13 to 16 above and take action, as appropriate.