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CARRIAGE OF CARGOES AND CONTAINERS

Proposal to correct structural errors in the draft amendments to paragraphs 4.20.1.1 and 4.20.1.2 of the IGC Code

Submitted by China, Panama, Republic of Korea and IACS

SUMMARY

Executive summary: This document proposes to correct structural errors identified in the draft amendments to paragraphs 4.20.1.1 and 4.20.1.2 of the IGC Code to ensure the appropriate implementation.

Strategic direction, if applicable: Not applicable

Output: Not applicable

Action to be taken: Paragraph 10

Related documents: MSC 110/WP.7; CCC 11/WP.8 and CCC 11/16

Introduction

1 Following a comprehensive review of the IGC Code, the Sub-Committee on Carriage of Cargoes and Containers (CCC Sub-Committee) developed a wide-ranging package of draft amendments, which were initially approved by MSC 109. However, during MSC 110, a significant number of comments and concerns were raised by Member States, and the Committee decided to defer adoption. The draft amendments were therefore referred back to CCC 11 for further consideration, taking into account the issues and texts set out in annexes 14 and 15 to document MSC 110/WP.7.

2 In this context, the Sub-Committee finalized the draft amendments, as contained in annex 9 to document CCC 11/16, for submission to MSC 111. It is accordingly expected that the updated draft amendments will be considered for approval at MSC 111, with a view to adoption at MSC 112.

Background

3 During CCC 11, concerns were raised on the structure of paragraph 4.20.1.1.2 and the deletion of requirements applicable to existing gas carriers constructed before 1 July 2028. These concerns are reflected in paragraphs 6 and 9 of document CCC 11/WP.8, as excerpted below:

"6 In the discussion of paragraph 4.20.1.1.2 of the Code, the Group noted a view expressed that the structure of this paragraph might not be correct. However, the Group agreed that this went beyond the task given by the Sub-Committee".

"9 During consideration of the proposals in relation to the application scope of the specific requirements, concerns were raised that the requirements for existing ships might be lost if they were deleted, either owing to the introduction of new provisions for new ships, or by being overwritten to apply only to new ships. ... *omitted* ..."

4 The finalized draft amendments of paragraphs 4.20.1.1 and 4.20.1.2, which will be approved by MSC 111, are contained in annex 9 to document CCC 11/16 and annex 15 to document MSC 110/WP.7. The draft amendments are as rephrased below for ease of reference:

"4.20.1.1 For ships constructed on or after [1 July 2028], aAll welded joints of the shells of type A independent tanks and type B independent tanks, primarily constructed of plane surfaces, shall be of the in-plane butt weld full penetration type. This includes the tank corners which are constructed using bent plating which is aligned with the tank surfaces and connected with in-plane welds. For dome-to-shell connections only, tee welds of the full penetration type may be used depending on the results of the tests carried out at the approval of the welding procedure and in accordance with the following:

- .1 Except for small penetrations on domes, nozzle welds shall also be designed with full penetration;
- .2 welded corners (i.e. corners made of weld metal) shall not be used in the main tank shell construction, i.e. corners between shell side (sloped plane surfaces parallel to hopper or top side inclusive if any) and bottom or top of the tank, and between tank end transverse bulkheads and bottom, top or shell sides (sloped plane surfaces inclusive if any) of the tank. Instead, tank corners which are constructed using bent plating aligned with the tank surfaces and connected with in-plane welds shall be used; and
- .3 tee welds can be accepted for other localized constructions of the shell, such as suction well, sump, dome, etc., where tee welds of full penetration type shall also be used".

"4.20.1.2 For ships constructed on or after [1 July 2028], wWelding joint details for type C independent tanks, including bi-lobe tanks, primarily constructed of curved surfaces fitted with a centreline bulkhead, and for the liquid-tight primary barriers of type B independent tanks primarily constructed of curved surfaces, shall be as follows:

- .1 all longitudinal and circumferential joints shall be of butt welded, full penetration, double vee or single vee type. Full penetration butt welds shall be obtained by double welding or by the use of backing rings. If used, backing rings shall be removed except from very small process pressure vessels. Cruciform full penetration welded joints in a bi-lobe tank with centreline bulkhead may be accepted for the tank structure construction at tank centreline welds with bevel preparation subject to the approval of the Administration or

recognized organization acting on its behalf, depending on the results of the tests carried out at the approval of the welding procedure (see figure 4.1). Other edge preparations may be permitted, depending on the results of the tests carried out at the approval of the welding procedure; and

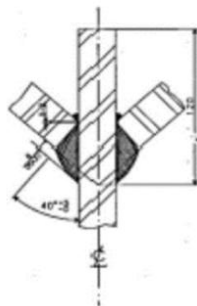


Figure 4.1

.2 ... omitted ... "

Structure of paragraph 4.20.1.1

5 The draft amendments to paragraph 4.20.1.1 and its sub-paragraphs comprise three components regarding the welding of independent type A and type B tanks, namely:

- .1 tank shell construction requiring full penetration butt welding and tank shell corners using bent plating (chapeau and sub-paragraph .2 as highlighted in green);
- .2 tee welds of full penetration type for localized constructions, such as suction well, sump, dome and their connections to shell (chapeau and sub-paragraph .3 as highlighted in red); and
- .3 nozzle welding of full penetration, except for small penetration (sub-paragraph .1 as highlighted in blue).

6 Currently, paragraphs 4.20.1.1.1 to 4.20.1.1.3 are presented under the requirement relating to dome-to-shell connections. However, paragraphs 4.20.1.1.1 and 4.20.1.1.2 are not directly related to dome-to-shell connections. Paragraph 4.20.1.1.1 refers to spray nozzles on tank domes, while paragraph 4.20.1.1.2 concerns cargo tank corners excluding dome-to-shell connections.

7 Accordingly, it is suggested that paragraph 4.20.1.1 and its sub-paragraphs should be restructured, as shown below:

"For ships constructed on or after [1 July 2028], aAll welded joints of the shells of type A independent tanks and type B independent tanks, primarily constructed of plane surfaces, shall be of the in-plane butt weld full penetration type. Welded corners (i.e. corners made of weld metal) shall not be used in the main tank shell construction, i.e. corners between shell side (sloped plane surfaces parallel to hopper or top side inclusive if any) and bottom or top of the tank, and between tank end transverse bulkheads and bottom, top or shell sides (sloped plane surfaces inclusive if any) of the tank. Instead, tank corners which are constructed using bent plating aligned with the tank surfaces and connected with in-plane welds shall be used. For localized constructions of the shell, such as suction well, sump, dome, and their connections to

shell, however, tee welds of the full penetration type may be used depending on the results of the tests carried out at the approval of the welding procedure. Except for small penetrations on domes, nozzle welds shall also be designed with full penetration".

Deletion of requirements applicable to existing gas carriers constructed before 1 July 2028

8 Due to the draft amendments to paragraphs 4.20.1.1 and 4.20.1.2, requirements applicable to ships constructed on or after 1 July 2016 but before 1 July 2028 will be lost. The Experts Group established at CCC 11 noted similar concerns in its discussion on proposals submitted to MSC 110. The Experts Group succeeded in retaining existing requirements for ships with keel laid on or after 1 July 2016, while accepting the proposal to change the application to new ships. However, the same issue in paragraphs 4.20.1.1 and 4.20.1.2 was not addressed as they were not included in annex 14 to document MSC 110/WP.7.

9 In light of the aforementioned situation, it is proposed that the current requirements of paragraphs 4.20.1.1 and 4.20.1.2 should be retained as they are, and that the draft amendments to paragraphs 4.20.1.1 and 4.20.1.2 should be established as additional provisions to accommodate MSC.1/Circ.1625, as follows and as set out in the annex to this document:

- .1 the amendment proposal in paragraph 7 above should be added as paragraph 4.20.1.1.1 under the existing paragraph 4.20.1.1; and
- .2 the draft amendments to paragraph 4.20.1.2 may need to be restructured.

Action requested of the Committee

10 The Committee is invited to consider the discussion in paragraphs 3 to 6 and 8 above and the proposals in paragraphs 7 and 9 and take action as appropriate.

ANNEX

PROPOSAL TO CHANGE THE STRUCTURE OF THE DRAFT AMENDMENTS TO
PARAGRAPHS 4.20.1.1 AND 4.20.1.2 OF THE IGC Code

1 The draft amendments to paragraph 4.20.1.1 are proposed to be changed as follows:

"4.20.1.1 All welded joints of the shells of independent tanks shall be of the in-plane butt weld full penetration type. For dome-to-shell connection only, tee welds of the full penetration type may be used depending on the results of the tests carried out at the approval of the welding procedure. Except for small penetrations on domes, nozzle welds shall also be designed with full penetration.

4.20.1.1.1 For ships constructed on or after [1 July 2028], all welded joints of the shells of type A independent tanks and type B independent tanks, primarily constructed of plane surfaces, shall be of the in-plane butt weld full penetration type. Welded corners (i.e. corners made of weld metal) shall not be used in the main tank shell construction, i.e. corners between shell side (sloped plane surfaces parallel to hopper or top side inclusive if any) and bottom or top of the tank, and between tank end transverse bulkheads and bottom, top or shell sides (sloped plane surfaces inclusive if any) of the tank. Instead, tank corners which are constructed using bent plating aligned with the tank surfaces and connected with in-plane welds shall be used. For localized constructions of the shell, such as suction well, sump, dome, and their connections to shell, however, tee welds of the full penetration type may be used depending on the results of the tests carried out at the approval of the welding procedure. Except for small penetrations on domes, nozzle welds shall also be designed with full penetration".

2 The draft amendments to paragraph 4.20.1.2 are proposed to be changed as follows:

"4.20.1.2 Welding joint details for type C independent tanks and for the liquid-tight primary barriers of type B independent tanks primarily constructed of curved surfaces, shall be as follows:

- .1 all longitudinal and circumferential joints shall be of butt welded, full penetration, double vee or single vee type. Full penetration butt welds shall be obtained by double welding or by the use of backing rings. If used, backing rings shall be removed except from very small process pressure vessels. Other edge preparations may be permitted, depending on the results of the tests carried out at the approval of the welding procedure; ~~and~~
- .2 ... *omitted* ... ~~;~~ and
- .3 for welding joint details of type C independent tanks installed for ships constructed on or after 1 July 2028, cruciform full penetration welded joints in a bi-lobe tank with centreline bulkhead may be

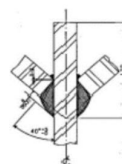


Figure 4.1

accepted for the tank structure construction at tank centreline welds with bevel preparation subject to the approval of the Administration or recognized organization acting on its behalf, depending on the results of the tests carried out at the approval of the welding procedure (see figure 4.1)."
