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BIENNIAL STATUS REPORT AND PROVISIONAL AGENDA FOR SSE 12

Proposal to include the output on "Revision of the *Guidelines for the application of plastic pipes on ships* (resolution A.753(18))" in the provisional agenda for SSE 12

Submitted by China and IACS

SUMMARY

Executive summary: This document proposes placing the post-biennial output on "Revision of the *Guidelines for the application of plastic pipes on ships* (resolution A.753(18))", on the provisional agenda for SSE 12 and offers the scope of its revision in several aspects in order to reduce potential ambiguities and deviation from the current state of the art.

Strategic direction, if applicable: 7

Output: Not applicable

Action to be taken: Paragraph 6

Related documents: MSC 104/15/18 and MSC 105/20

Background

1 MSC 105 considered document MSC 104/15/18 (China), proposing to revise the *Guidelines for the application of plastic pipes on ships* (resolution A.753(18)) and agreed to include an output on "Revision of the *Guidelines for the application of plastic pipes on ships* (resolution A.753(18))" in its post-biennial agenda with one session needed to complete the item, assigning the SSE Sub-Committee as the associated organ (MSC 105/20, paragraph 18.40).

2 Document MSC 104/15/18 highlighted some shortcomings and ambiguities with respect to the L3 fire endurance test of plastic piping, which should be clarified by the proposed revision, in particular:

- .1 the lack of specifying the diameter group to be used for determining necessary rows of burners, i.e. inner, nominal or outer diameter;

- .2 the possibility of having test specimens so designed that the fittings are not exposed to the flame; and
- .3 the possibility of specimen designs including several typical joints and fittings that are not exposed to the flame during the test.

Discussion

3 The co-sponsors are of the view that in order to address further existing ambiguities, the review of resolution A.753(18) should consider the Guidelines as a whole.

4 A comparison between the current resolution A.753(18), the current relevant industry standards and industry practices was performed, which identified the following areas to be addressed in the review under this output:

- .1 Paragraph 1.4.3 of the Guidelines reads:

"Joint – the term joint refers to the permanent method of joining pipes by adhesive bonding, laminating, welding etc."

Today, other types of joints are commonly in use, e.g. flanges and mechanical joints; and it is recommended to enhance this list by all relevant types.
- .2 Paragraph 2.1.3 "External pressure": The external pressure test does not include provisions of SOLAS as amended by resolution MSC.436(99), i.e. for passenger ships, an essential system which shall remain operational in case of flooding (safe return to port). These requirements may be considered by inclusion of a new subsection for external pressure test under section 2.2 (Requirements applicable to piping systems depending on service and/or locations). See also paragraph 4.7.1 below, regarding the corresponding need for highlighting safe return to port requirements in the fire endurance requirements matrix.
- .3 Paragraph 4.5.1 of the Guidelines reads:

"Piping systems for essential services should be subjected to a test pressure not less than 1.5 times the design pressure of the system."

For short-term test, paragraph 2.1.2.2 of resolution A.753(18) requires to divide the hydrostatic test failure pressure by a factor of four. The co-sponsors are of the view that the minimum design pressure for essential service pipes should be not lower than 1 bar. Thus, it is suggested to amend resolution A.753(18) by a minimum required test pressure of 4 bar for essential services not to be undercut.
- .4 Paragraph 2 of appendix 1 on the Test method for fire endurance testing of plastic piping in the dry conditions: The test specimen should be prepared with the joints and fittings.

Comparing wall thicknesses of joints and fittings joints can be regarded as the weakest link and hence fire testing of joints is regarded to be sufficient. Hence, it is suggested to amend resolution A.753(18) accordingly.

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- .5 Notes under paragraph 2 of appendix 1 on the Test method for fire endurance testing of plastic piping in the dry conditions, specify:

"The number and size of test specimens required for the approval test should be specified by the Administration. At least largest and smallest diameter or wall thickness should be tested for approval."

According to the co-sponsors, for a given wall thickness, the most demanding test conditions are achieved for minimal outer diameter (minimal volume), meaning that testing of only a minimum diameter is regarded sufficient for pipes up to 200 mm nominal diameter. For pipes with a diameter larger than 200 mm it is suggested to select a specimen for each t/D category (D = outer diameter, t = structural wall thickness).

- .6 Appendix 2 on the Test method for fire endurance testing of water-filled plastic piping:

- .1 The first sentence of the third paragraph of Section 1 "Test method" states:

"The burners should be type 'Sievert No. 2942' or equivalent which produces an air mixed flame."

Due to technical development, this type of the burner is no longer available. It is suggested to use the available burner "Sievert 29402" instead.

- .2 The second sentence of the first paragraph of section 2 "Test specimen" states:

"The test specimen should be prepared with the joints and fittings intended to be used."

As explained above, fire endurance tests should focus on most demanding conditions which are achieved for minimal outer diameter and minimal wall thickness (see paragraph 4.5 above). Accordingly, most demanding conditions are achieved for joints and fittings need not be tested. It is suggested to use consistent specifications for specimen selection for appendices 1 and 2.

- .3 The third sentence of the first paragraph of Section 2 states:

"Only valves and straight joints versus elbows and bends should be tested as the adhesive in the joint is the primary point of failure. The number of pipe specimens should be sufficient to test all typical joints and fittings."

According to the co-sponsors, for a given wall thickness, test conditions are most demanding for minimal outer diameter (minimal volume), meaning that testing only a minimum diameter is regarded as sufficient.

.4 The second sentence of the second paragraph of Section 3 states:

"The water inside the sample should be stagnant and the pressure maintained at 3 +/-0.5 bar during the test."

It is suggested to amend resolution A.753(18) by a reference to an established standard, e.g. ISO 14692, for ensuring constant media pressure.

.7 Appendix 4 on the Fire endurance requirements matrix:

.1 The co-sponsors are of the view that this matrix is not adequately highlighting the differences between passenger ships which are subject to the safe return to port requirements (SOLAS regulation II-2/21.4), and all other ships, and related requirements with respect to systems to be considered essential services.

.2 Further, in recent years new systems found their way on board ships and, therefore, this matrix should be amended accordingly. The co-sponsors, as a minimum, suggest adding the following systems:

.1 exhaust gas cleaning system effluent line; and

.2 urea transfer/supply system (Selective Catalytic Reduction (SCR) installation).

Further explanations by footnotes may be provided, if deemed appropriate.

.8 Appendix 4: location definitions states for "D":

D	Ro-ro cargo holds	Ro-ro cargo holds are ro-ro cargo spaces and special category spaces as defined in SOLAS II-2/3.14 and 3.18
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References to SOLAS should be updated with respect to recent SOLAS amendments. For example, the definition of "Ro-ro cargo holds" should now refer to SOLAS regulations II-2/3.41 and II-2/3.46.

Proposal

5 Considering the availability of the scope of work and specific proposals, the co-sponsors propose to place the output on "Revision of the *Guidelines for the application of plastic pipes on ships* (resolution A.753(18))" on the provisional agenda for SSE 12.

Action requested of the Sub-Committee

6 The Sub-Committee is invited to consider the proposal in paragraph 5 and to take action, as appropriate.