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NOTE

From:	General Secretariat of the Council
To:	Delegations
No. Cion doc.:	12009/19 MAR 138 OMI 54
Subject:	IMO - Union submission to be submitted to the 7th of the Sub-Committee on Ship Systems and Equipment (SSE 7) of the IMO in London from 2 – 6 March 2020 concerning proposed amendments to the LSA Code and Resolution MSC.81(70) to address the in-water performance of SOLAS lifejackets

As a follow-up to the Shipping Working Party meeting on 11 October 2019, delegations will find attached a revised version of the draft EU submission.

It should be noted that the deadline for introducing the submission to the IMO secretariat is **29 November 2019**.

Compared to the previous document, changes are indicated in **bold underline** (new text) and ~~strikethrough~~ (deleted text).

Scrutiny reservation: all delegations.

INTERNATIONAL MARITIME ORGANIZATION

SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT
7th session
Agenda item 18

SSE 7/18/X
29 November 2019
ENGLISH
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BIENNIAL STATUS REPORT AND PROVISIONAL AGENDA FOR SSE 8

Proposal for amendments to the LSA Code and Resolution MSC.81(70) to address the in-water performance of SOLAS lifejackets

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[1]

SUMMARY

Executive summary:	This paper contains proposals to review the in-water performance of SOLAS lifejackets in accordance with the instruction of MSC 101.
Strategic direction, if applicable:	Other Work
Output:	MSC 101/24 paragraph 21.6
Action to be taken:	Paragraph ~~22 to 25~~ **26**
Related documents:	MSC 101/21/6, MSC 101/INF.3, MSC 101/24, MSC 101/24/Add.1

Background

1 The co-sponsors have obtained evidence indicating that the IMO requirements for the design and testing of lifejackets may not provide sufficient assurance of the in-water performance of SOLAS lifejackets in real-life situations. To address this issue the co-sponsors submitted documents MSC 101/21/6 and MSC 101/INF.3 to MSC 101 requesting the opening of a new output under the agenda of SSE.

[1] Reservation: the Commission.

2 The 101st session of the Committee considered documents MSC 101/21/6 and MSC 101/INF.3 (Austria et al.), proposing to review the LSA Code and resolution MSC.81(70) in respect of the in-water performance of SOLAS lifejackets; and agreed to include in the post-biennial agenda of the Committee an output on "Development of amendments to the LSA Code and resolution MSC.81(70) to address the in-water performance of SOLAS lifejackets", with two sessions needed to complete the item, assigning the SSE Sub-Committee as the coordinating organ.

3 Notwithstanding the above decision, the Committee instructed the SSE Sub-Committee to take into account the following issues:

.1 annex 4 of the proposal should not be used as the basic document for the discussion since further detailed consideration was needed; and

.2 the approval of the output should not be interpreted to mean that the use of existing lifejackets is not safe and the retroactive application of any requirements for new equipment to existing ships should be carefully considered.

4 The Committee further agreed, in accordance with MSC.1/Circ.1481 and MSC.1/Circ.1500/Rev.1, that:

.1 the amendments to be developed should apply to lifejackets manufactured to the new standard and would apply to all new ships. Careful consideration should be made on the potential application to existing ships;

.2 the instruments to be amended are the LSA Code and resolution MSC.81(70); and

.3 the amendments to be developed should enter into force on 1 January 2024, provided that they are adopted before 1 July 2022.

Introduction

5 In July 2017 the United Kingdom's Marine Accident Investigation Branch reported on the deaths of three seafarers who had drowned whilst wearing SOLAS lifejackets. The sea and environmental conditions were calm; however, these seafarers were found by the rescue services in a face down position.

6 A detailed review confirmed that these lifejackets held valid approval documentation and approval tests were conducted in accordance with the relevant instruments and were otherwise compliant, and therefore an investigatory group was assembled to identify the root causes affecting the in-water performance of these lifejackets. The investigatory group was chaired by the United Kingdom's Maritime & Coastguard Agency and consisted of members from the Maritime Accident Investigation Branch, the Royal National Lifeboat Institution, the International Life-saving Appliance Manufacturers' Association (ILAMA) and technical experts on human physiology and sea survival.

7 The investigatory group was primarily tasked with reviewing the capability of a SOLAS lifejacket to retain a person's airways clear of the water and the level of safety offered by existing SOLAS lifejackets. In total, the investigatory group conducted three ordered sets of in-water lifejacket tests against the requirements within the LSA Code and Resolution MSC.81(70), which included 2856 righting tests and 1060 freeboard measurements.

8 During these investigations, the investigatory group recognised that there is a strong correlation between the clothing worn by a person and the in-water performance provided by a lifejacket, and that the current IMO requirements do not consider the effects of clothing. The final set of in-water testing was performed using eight SOLAS lifejackets and 14 test subjects wearing standardised clothing. 10 out of the 14 test subjects recorded one or more test results where they would not turn to clear their airways of the water surface. Another portion of test subjects would turn in a time which exceeded the 5 second original requirement from Resolution MSC.81(70) (before adoption of the amendments to the revised recommendation on testing of life-saving appliances contained within MSC200(80)).

9 Based on this technical evidence, the investigatory group concluded that the international requirements for the design and testing of lifejackets within the LSA Code and Resolution MSC.81(70) did not provide consistent assurance of the in-water performance of SOLAS lifejackets. The investigatory group developed proposals which would alleviate the issues which had been identified, including a proposal to incorporate a new in-water test with a form of standardised clothing to be worn by the test subjects. The investigatory group made formal assessments of the repeatability of the in-water tests by repeating many of the tests on two occasions and by comparing results which were obtained from previous in-water tests using the reference test device (RTD). This work concluded with verification testing of these proposals against eight SOLAS lifejackets, which showed that an acceptable performance may already be achieved by some existing SOLAS lifejackets.

Analysis of the issue

10 All SOLAS vessels are required to provide a lifejacket for every person on board which complies with the requirements of the LSA Code. Lifejackets are associated mainly with abandonment; however they are also utilised as a safety measure in many scenarios on board of SOLAS vessels, including survival craft drills, operations on a weather deck, tendering operations and crew transfer operations or any other activity where there is a greater risk of a person entering the water. If a person enters the water, there is general expectation that a SOLAS lifejacket can maintain a person's airways clear of the water surface.

11 MSC 101/INF.3 contains a timeline of events which were conducted to assess the in-water performance of SOLAS lifejackets. This evidence supports that achieving a baseline performance equivalent to that provided by the reference test device will not guarantee an acceptable level of in-water performance for a lifejacket when used in an emergency situation.

12 During the gathering of evidence and from consultations with stakeholders, the investigatory group became aware that some stakeholders believed that a lifejacket would maintain the airways clear of the water and right a person regardless of the subject's physical attributes, or anything that might be worn on their body. The IMO does not currently issue guidance with respect to the in-water performance of lifejackets, however the development of such an MSC Circular could help stakeholders to make more informed decisions regarding the safety of persons who might be expected to be immersed in water. Similar information is already presented in another international lifejacket standard.

13 The current in-water performance of SOLAS lifejackets has been the subject of detailed deliberations by the co-sponsors of this document. During these deliberations many options were considered for how to rectify the perceived issues with in-water performance of a lifejacket. The investigatory group deemed it impossible to improve the in-water performance by simply applying a single “safety factor” to the existing requirements within the LSA Code and Resolution MSC.81(70) and hence the group concluded that a number of amendments must be established jointly. The proposal measures detailed below have been carefully considered so that collectively they achieve the necessary enhancements to lifejacket performance and to the safety of persons immersed in water.

1. To provide lifejacket end users with an enhanced understanding of the capabilities of a lifejacket, the co-sponsors believe it is necessary to introduce a new requirement for SOLAS lifejackets to be marked with important safety information and manufacturer’s details. Such information may include simple donning instructions or the proven compatibility of the lifejacket with other safety equipment. This requirement already exists within ISO 12402: Personal Flotation Devices, and such markings are common on other safety equipment.

2. The existing in-water testing requirements for turning time allow a “no-turn” result to be recorded by a lifejacket if the same test subject also recorded a “no-turn” whilst wearing the RTD (reference test device). The co-sponsors propose that this provision should no longer be permitted, and in the event that a test subject records a “no turn” in a lifejacket, a two-test subject substitution method should be employed. If either of these two test subjects also records a “no-turn” then the lifejacket will have failed.

3. The co-sponsors have identified instances when a lifejacket has turned a test subject to a position where the mouth is clear of the water, however the test subject has not concluded the test in a face-up position. The co-sponsors believe that the righting test should only be deemed successful if the test subject subsequently attains the safe static balance, face-up position.

4. The in-water testing conducted by the investigatory group was conducted against the RTD and eight samples of existing SOLAS lifejackets. The RTD is used within all SOLAS in-water performance tests as a comparative testing tool for righting performance as well as freeboard and static balance measurements. The RTD has an inherent buoyancy of approximately 148 Newton; however, with test subjects wearing standardised clothing the RTD has shown a questionable in-water performance.

5. The eight existing SOLAS lifejackets had buoyancy values of 137, 147, 156, 173, 179, 180, 187, 191 Newton. The investigatory group concluded that there is a correlation between the buoyancy of a lifejacket and its in-water performance, and that this correlation is already the fundamental basis for performance levels within ISO 12402. Two of the tested lifejackets presented an in-water performance in clothing which achieved both the righting and static balance assessment criteria without recording no-turns. These lifejackets provided 173 Newton and 191 Newton of inherent buoyancy. After reviewing the results from the other lifejackets, the co-sponsors believe that to attain an acceptable in-water performance level for SOLAS lifejackets, it would certainly not be possible to achieve this with a buoyancy value of less than 150 Newton. In order to align with other industry standards such as ISO 12402 and to ensure that lifejacket designs are not unduly restricted, this minimum buoyancy value should be introduced.

6. As highlighted by the initial discussions of the investigatory group, the existing SOLAS in-water performance tests for lifejackets are conducted with test subjects wearing swimwear, and that this condition is not representative of a real emergency scenario. The subsequent testing by the group has repeatedly shown that the wearing of clothing has a substantial effect on the in-water righting performance of a lifejacket, and therefore the co-sponsors propose that an extra requirement is introduced for SOLAS lifejackets to turn an unconscious, face-down persons in the water to a position where the mouth is clear of the water in an average time not exceeding 5 seconds, whilst wearing standardised clothing. This test will be conducted as a new test, in addition to the current righting tests conducted against the RTD. To support this proposal, a new definition ~~is~~ **should be** introduced for the standardized clothing within ~~a draft new Annex 4 to~~ Resolution MSC.81(70).

14 The proposals detailed above, and the performance increases that they provide can be implemented using simple amendments to the existing provisions within SOLAS as shown in the Annexes to this paper. Further, these amendments were verified by the testing of eight existing SOLAS lifejackets which showed that there are lifejackets currently available on the market and currently carried on SOLAS vessels which already achieve this improved performance. It should be noted that the investigatory group considers that the proposed actions achieve the necessary improvements for in-water performance when they are applied collectively.

15 During the work of the investigatory group, attention was drawn to the general requirements for life-saving appliances within chapter 1.2 of the LSA Code which requires all life-saving appliances, “if they are to be used in a seaway, be capable of satisfactory operation in that environment.” On this basis, the investigatory group highlighted two additional misalignments between the LSA Code and industry standards, one related to the fitting of spray hoods and the other fitting of retention devices. The investigatory group gathered evidence which strongly supported the introduction of these components to improve the safety level offered by SOLAS lifejackets and hence these are proposed as follows:

1. A retention device is intended to provide additional support to prevent the lifejacket riding upwards over the wearers head in a seaway and thereby promote the correct static balance position and freeboard measurement for the airways. The existing in-water tests are conducted in calm fresh water and hence the only method of currently assessing the lifejacket securing mechanism(s) is via the 1 metre jump test. A new requirement should be introduced for SOLAS lifejackets to be fitted with a retention device.

2. In the event that a person enters the water in a seaway and that the person successfully rights into a face-up position with adequate freeboard, the next hierarchal survival needs are for the person to be able to breathe comfortably without water ingress into their airways and for them to be able to observe their surroundings to seek rescue. Spray hoods can be a simple addition to a lifejacket and can be paramount to a person’s survival when they tire and cannot prevent the natural orientation of their body to the direction of the waves. The co-sponsors propose that a new requirement is introduced for SOLAS lifejackets to be fitted with a spray hood with reference to existing industry standards.

Industry standards

16 The International Organization for Standardization produced guidance on the design and application of personal flotation devices for persons engaged in activities, whether in relation to their work or their leisure, in or near water. ISO 12402: Personal Floatation Devices provides guidance on personal flotation devices and the LSA Code already utilises a reference to Part 7 of the ISO 12402 series with regards to tests of components other than buoyancy materials and tensile strength tests.

17 The ISO 12402 series of documents openly states that personal floatation devices "manufactured, selected, and maintained to this standard should give a reasonable assurance of safety from drowning to a person who is immersed in water." ISO 12402 also defines lifejackets as those personal flotation devices "which provide face up in-water support to the user regardless of physical conditions."

18 When reviewing the expectation of maritime stakeholders with respect to the in-water performance of SOLAS lifejackets, the co-sponsors acknowledged that the ISO 12402 series explicitly states several of the issues, such as the wearing of heavy weather clothing, which may impact the performance of lifejackets.

19 It should also be recognised that for an adult of mass above 70 kg, ISO 12402 considers 150 Newton buoyancy as being the smallest size for a lifejacket to "turn an unconscious person into a safe position and requires no subsequent action by the user to maintain this position."

20 The proposed outputs within this paper have been considered with respect to the requirements within ISO 12402 and have been aligned to these international standards wherever possible.

21 The co-sponsors are aware that ISO 12402 includes a standard for a 275 Newton lifejacket which has a much improved in-water performance compared to the existing SOLAS lifejacket standard. Lifejackets with this volume of buoyancy are invariably of the gas inflation type. The co-sponsors acknowledge that although gas inflation lifejackets provide several benefits, including those related to in-water performance, there are some compromises such as the requirement for annual servicing and the increased complexity when compared with inherent buoyant foam lifejackets.

Proposals

22 The co-sponsors propose that submissions MSC 101/21/6 and MSC 101/INF.3 could be considered as base documents for detailed consideration by a working group.

23 The co-sponsors propose that the Sub-Committee consider to schedule the discussion for this output at SSE 8.

24 The Sub-Committee may also wish to consider the possibility of establishing ~~a correspondence~~ **an informal expert** group and its terms of reference at this session to **report its findings to SSE 8** ~~work intersessionally between SSE7 and SSE8 to advance with the work~~. **If this proposal is accepted, a focal point will be provided.**

25 Consideration of the application to "existing ships" should be addressed by the Sub-Committee only once the performance and technical requirements have been agreed.

Action requested of the Sub-Committee

26 The Sub-Committee is invited to note the proposals contained in this submission and take action as appropriate.