



Technical Circular

No.: 015/2023

Date: 30th June 2023

Subject: Immersion Suit Defects.

1. The Maritime Administration of Republic of Marshall Islands (RMI) vide Marine Safety Advisory No. 08-23 has informed that significant number of deficiencies (both during Flag and Port State Inspections) have been observed relating to the condition of immersion suits.
2. Further, the Administration has informed that since 1 January 2023, immersion suit defects account for nearly one-third of all lifesaving related deficiencies identified during flag State inspections of RMI flagged ships. Commonly observed defects include:
 - a. Defective or inoperable zippers;
 - b. Failed seams;
 - c. Holes or other defects in immersion suit material;
 - d. Inoperative or missing light and/or whistle; and
 - e. Overdue air pressure testing.

Note: Of the above, deteriorated or inoperable zippers account for the largest percentage of observed defects. Defects or failures of seams of immersion suits are the next most commonly observed defects.

3. In view of above, it is recommended that all owners, operators and Masters take the following actions to raise awareness of the importance of properly inspecting and maintaining immersion suits:
 - a. Review the requirements prescribed by the Company's Safety Management System (SMS) relating to the periodic (monthly) inspection of all immersion suits to ensure they adequately address the requirements contained in IMO Circular – MSC/Circ. 1047;
 - b. Ensure zippers are fully closed and opened during monthly check to ensure smooth operation throughout the zipper's length;
 - c. Ensure crewmembers responsible for conducting periodic inspections of immersion suits are properly trained and knowledgeable in the inspection procedure;
 - d. Review the requirements prescribed by the Company's SMS relating to air pressure testing of all immersion suits to ensure they adequately address the requirements contained in IMO Circular – MSC/Circ. 1114;



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- e. Confirm that the number of immersion suits on board are in accordance with the Safety Equipment Certificate, Form E, in serviceable condition, and immediately available at the prescribed location;
- f. Ensure that all crewmembers are familiar with the location on board where immersion suits are stored; and
- g. Immediately notify the Flag Administration if defective immersion suits are identified and the number of immersion suits in satisfactory condition does not meet that required by Form E.

Encl.:

1. RMI Marine Advisory No. 08-23
2. MSC/Circ. 1047
3. MSC/Circ. 1114

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MARINE SAFETY ADVISORY No. 08-23

To: Owners/Operators, Masters, Nautical Inspectors, Recognized Organizations

Subject: IMMERSION SUIT DEFECTS

Date: 23 June 2023

This Marine Safety Advisory (MSA) reaffirms the importance of proper inspections and maintenance of immersion suits on board Republic of the Marshall Islands (RMI)-flagged vessels. It supersedes MSA No. 09-21.

1.0 BACKGROUND

1.1 The RMI Maritime Administrator (the “Administrator”) previously promulgated MSA No. 18-19 (2019) and MSA No. 09-21 (2021) which both addressed inspection and maintenance of immersion suits. Since issuing these MSAs, the Administrator continues to observe a significant number of deficiencies (both during flag and port State inspections) relating to the condition of immersion suits.

2.0 IMMERSION SUIT DEFICIENCIES

2.1 Since 1 January 2023, immersion suit defects account for nearly one-third of all lifesaving related deficiencies issued during flag State inspections of RMI-flagged ships. Commonly observed defects include:

- .1 defective or inoperable zippers;
- .2 failed seams;
- .3 holes or other defects in immersion suit material;
- .4 inoperative or missing light and/or whistle; and
- .5 overdue air pressure testing.

2.2 Deteriorated or inoperable zippers account for the largest percentage of observed defects. Defects of the zipper rarely affect only one immersion suit on board. Many times, numerous suits are found with the same defect when closely examined following the identification of one unacceptable immersion suit.

2.3 Defects or failures of seams of immersion suits are the next most commonly observed defect. Deficiencies issued following flag State inspections indicate that the seams at the hands, feet, and zipper are most susceptible to failure. Similar to defective zippers, the

This MSA is evaluated annually by the Administrator and expires one year after its issuance or renewal unless otherwise noted, superseded, or revoked.

Administrator's records indicate that seam failure rarely is found isolated to only one immersion suit, often with many found on board in the same condition.

- 2.4 Issues related to the overall condition of immersion suits on board RMI-flagged vessels are often identified during inspections. This includes deterioration or defects in the suit's material, overdue air pressure testing, and missing or inoperable light and/or whistle (for suits designed to be worn without a lifejacket).
- 2.5 In several instances, immersion suits manufactured in China by "Dongtai City Jianghai Lifesaving & Firefighting Equipment Limited Company" and "DongTai City Dong Fang Marine Fitting Co., Ltd.," were found to be significantly deteriorated despite being only about five years old.

3.0 RECOMMENDED ACTIONS

- 3.1 The Administrator recommends that all owners, operators, Masters, and crewmembers of RMI-flagged vessels take the following actions to raise awareness of the importance of properly inspecting and maintaining immersion suits:
 - 3.1.1 Review the requirements on immersion suits and thermal protective aids contained in RMI Marine Notice [2-011-37](#), *Life Saving Appliances and Systems*;
 - 3.1.2 Review the requirements prescribed by the Company's safety management system (SMS) relating to the periodic (monthly) inspection of all immersion suits to ensure they adequately address the requirements contained in IMO Circular [MSC/Circ.1047](#);
 - 3.1.3 Ensure zippers are fully closed and opened during monthly check to ensure smooth operation throughout the zipper's length;
 - 3.1.4 Ensure crewmembers responsible for conducting periodic inspections of immersion suits are properly trained and knowledgeable in the inspection procedure;
 - 3.1.5 Review the requirements prescribed by the Company's SMS relating to air pressure testing of all immersion suits to ensure they adequately address the requirements contained in IMO Circular [MSC/Circ.1114](#);
 - 3.1.6 Confirm that the number of immersion suits required on the Safety Equipment Certificate Form E are on board, in serviceable condition, and immediately available at the locations prescribed in RMI Marine Notice 2-011-37;
 - 3.1.7 Ensure that all crewmembers are familiar with the location on board where immersion suits are stored; and
 - 3.1.8 Immediately notify the Administrator if defective immersion suits are identified and the number of immersion suits in satisfactory condition does not meet that required by Form E.

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MSC/Circ.1047
28 May 2002

**GUIDELINES FOR MONTHLY SHIPBOARD INSPECTION OF IMMERSION SUITS
AND ANTI-EXPOSURE SUITS BY SHIPS' CREWS**

1 The Maritime Safety Committee, at its seventy-fifth session (15 to 24 May 2002), recognizing that SOLAS regulation III/20.7 requires monthly inspection of life-saving appliances to be carried out by using the checklist required by SOLAS regulation III/36.1 to ensure that their operational readiness is maintained in service, approved Guidelines for monthly shipboard inspection of immersion suits and anti-exposure suits by ships' crews, as set out in the annex.

2 Member Governments are invited to bring the annexed Guidelines to the attention of all parties concerned, in conjunction with the relevant requirements of SOLAS regulations III/20.7 and 36.1.

ANNEX**GUIDELINES FOR MONTHLY SHIPBOARD INSPECTION OF IMMERSION SUITS
AND ANTI-EXPOSURE SUITS BY SHIPS' CREWS**

When carrying out the inspection of immersion suits and anti-exposure suits required by SOLAS regulation III/20.7, the following procedure is recommended.

- 1 Check closures on storage bag as well as general condition of bag for ease of removal of suit. Ensure donning instructions are legible. Confirm that suit is the type and size identified on the bag.
- 2 Lay the suit on a clean, flat surface. Make sure the suit is dry inside and out. Visually check for damage. Rips, tears or punctures should be repaired in accordance with manufacturer's instructions by a suitable repair station*.
- 3 Check the zipper by sliding it up and down to check for ease of operation. Using lubricant recommended by the manufacturer, lubricate the front and back of the zipper and the slide fastener. If the zipper is not functional, the suit should be removed from service and discarded or returned to the manufacturer or a suitable repair station.
- 4 If fitted, check inflatable head support and/or buoyancy ring for damage and ensure that it is properly attached. Check inflation hose(s) for deterioration. At least quarterly, the head support/buoyancy ring should be inflated and tested for leaks (this test does not apply to integral inflatable lifejackets). Leaks should be repaired in accordance with manufacturers' instructions by a suitable repair station.
- 5 Check retro reflective tape for condition and adhesion. Replace if necessary.
- 6 If fitted, check whistle and expiration date of light and battery.
- 7 Replace suits in the bag with zippers fully opened.
- 8 The opportunity should be taken at such monthly inspections for the crew to practise donning the immersion suits or anti-exposure suits.

* A "suitable repair station" is one authorized by the suit manufacturer and/or acceptable to the Administration.



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MSC/Circ.1114
25 May 2004

**GUIDELINES FOR PERIODIC TESTING OF IMMERSION SUIT AND
ANTI-EXPOSURE SUIT SEAMS AND CLOSURES**

1 The Maritime Safety Committee, at its seventy-eighth session (12 to 21 May 2004), recognizing that shipboard inspections of immersion suits and anti-exposure suits carried out in accordance with SOLAS regulation III/20.7 and MSC/Circ.1047 may not be adequate to detect deterioration of seams and closures of the suits due to adhesive ageing, and having considered the recommendation made by the Sub-Committee on Ship Design and Equipment at its forty-sixth session, approved the Guidelines for periodic testing of immersion suit and anti-exposure suit seams and closures, as set out in the annex.

2 Member Governments are invited to bring the annexed Guidelines to the attention of all parties concerned.

ANNEX**GUIDELINES FOR PERIODIC TESTING OF IMMERSION SUIT AND ANTI-EXPOSURE SUIT SEAMS AND CLOSURES**

- 1 Research performed by several Member Governments has demonstrated that the seams and closures of immersion suits and anti-exposure suits experience deterioration over time. The rate and severity of deterioration may vary widely, depending upon the specific components and procedures employed in the manufacture of the suit and the conditions under which the suit is stored. However, even under ideal conditions, the materials and adhesives used have a finite service life and will inevitably experience a reduction in strength and/or loss of watertightness with age.
- 2 The Guidelines for monthly shipboard inspection of immersion suits and anti-exposure suits (MSC/Circ.1047) are very helpful in identifying obvious problems with a suit, but do not adequately address deterioration of seams and closures (zippers, etc.) which may not be readily apparent by visual inspection. Such deterioration can be detected by pressurization of the suit with air, and testing of the seams and closures for leaks with a soapy water solution.
- 3 To ensure the maintenance of adequate strength and watertightness of seams and closures of immersion suits and anti-exposure suits with age, it is recommended that each suit be subjected to an air pressure test such as the following, at intervals not exceeding three years, or more frequently for suits over ten years of age:
 - .1 A suitable head piece, fitted with a means to inject air into the suit, should be inserted into the face orifice of the suit and secured so as to minimize leakage around the face seal. A low-pressure monitoring device, either integral to the fitting for air injection or as a separate device, should also be inserted. If the suit is fitted with detachable gloves and/or boots, the wrists and/or cuffs should be sealed by inserting a short length of suitable diameter plastic pipe and securing the gloves and/or boots with suitable wire ties or hose clamps. The zipper should be fully zipped, and any face flap closed. The suit should then be inflated to a pressure of 0.7 to 1.4 kPa (0.1 to 0.2 psi). If an auxiliary inflatable means of buoyancy is provided, it should be inflated through the oral valve to a pressure of 0.7 kPa (0.1 psi) or until firm to the touch.
 - .2 Each seam and closure of the suit - and each seam, oral tube and attachment points and joint or valve of any auxiliary inflatable means of buoyancy - should then be covered with a soapy water solution containing enough soap to produce bubbles (if leakage is noted at a foot valve to the extent that air pressure cannot be maintained, the valves should be sealed for the test).
 - .3 If leaks are revealed by the propagation of bubbles at seams or closures, the leaking areas should be marked and, after cleaning the suit thoroughly with fresh water and drying it, repaired in accordance with the suit manufacturer's recommendations.

4 It is recommended that the air pressure test be performed at a suitable shore-based facility equipped to make any necessary repairs in accordance with the manufacturer's recommendations. In view of the wide variety of materials and adhesives used in immersion suits and anti-exposure suits, it is strongly recommended that any repairs to a suit be carried out by a facility which has access to the original manufacturer's recommended servicing instructions, parts and adhesives, and suitably trained personnel. The air pressure test may be carried out on board ship if suitable equipment is available.
