

BERMUDA SAFETY BULLETIN

EUSABI WATER MIST HEADS FAILING TO ACTIVATE AT SYSTEM PRESSURE

Application

Notice to all Ship Owners, Ship Operators and Managers, Masters and Officers of Bermuda registered ships incorporating automatic fire fighting systems manufactured by Eusabi Impianti, a Valvitalia subsidiary, which include type 3IXX574.0 mist heads.

Summary

This Bermuda Safety Bulletin is issued to raise awareness of a manufacture defect with batch number (0451/18) of type 3IXX574.0 water mist heads which may result in failure of the heads to operate as designed in the event of a fire.

Subsequent investigation indicates the fault to be a result of insufficient lubrication to a batch of water mist heads during the manufacture process.

This Safety Bulletin was issued on 20 February 2023.

1. Introduction

- (1) The BSMA has become aware of a production issue with a batch of the Eusabi Impianti water mist heads of type 3IXX574.0 produced in 2017/2018 and supplied for hulls being constructed in the Monfalcone shipyard of Fincantieri Italy.



- (2) The total batch consisted of 3,000 pieces, of which approximately 1,400 have been identified on a Bermuda registered ship. It is believed that the remainder were supplied to other hulls in build at this time.
- (3) The issue was identified during normal system testing in accordance with the MSC Circular 1516. The system, being less than 5 years old, was eligible for a functional test of 2 heads of each type. During this test, one of the heads of type 3IXX574.0 failed to activate when the glass vial was broken.
- (4) This expanded the scope of the testing and in accordance with circular 1516, 20 total heads in 10 sections were subsequently tested which lead to extended testing Case 2, as detailed by Circular 1516.
- (5) Normal standby pressure of the system is approximately 30 Bar which increases to approximately 110 bar upon activation of the system. In cases where heads failed to activate at the standby pressure it was further observed that some also did not activate at the full system pressure.
- (6) Of particular interest was that there was no apparent connection between failures, in some branches 0% of the heads would fail, in other branches failure rates of over 80% were observed. This suggested that water quality and corrosion due to conductivity or chemical processes was not a factor.
- (7) The vessel engaged in refurbishment of the heads onboard, with the participation of the OEM. Heads were fully disassembled, cleaned, lubricated and re-assembled according to procedures agreed by the OEM. Subsequent bench tests of the refurbished heads show a 100% success rate for activation at normal standby pressure.

2.Failure Modes

- (1) On disassembly of the heads, no corrosion, significant mineral deposits or other issues were identified as causal factors. However, it was noted that the activating piston which slides out of the body when the head is activated, to allow water to flow, was very stiff. This piston is retained by 2 rubber O-Rings.



- (2) Comparison between the watermist heads that activated and those heads that failed to activate at the system standby pressure showed signs of insufficient lubricant on the heads that failed.
- (3) A selection of both failed heads and those that functioned correctly were sent to the OEM for a detailed failure analysis.

- (4) Chemical analysis of the O-Rings did not indicate any issues with the rubber chemistry or degradation of their physical properties.
- (5) On review of manufacturing records for the period when the failed heads were produced, it was noted that they were all of the same batch and showed signs of insufficient lubrication. The OEM has reported that this is the likely root cause of the failures experienced.
- (6) Water samples were taken from the ship's watermist system and chemically tested. These showed no issues with water quality in the system.

3. Further Comments

- (1) It should be noted that when a head is produced or refurbished by the OEM, they conduct vacuum test of the fully assembled head to ensure that there has not been any damage to the glass vial which could lead to loss of the alcohol over time. This was the only step that could not be completed onboard, so the vessel managers made the decision to cycle all the heads of the defective type back to the OEM facility for a second refurbishment.
- (2) Other interested parties should note that had this been known at the time and a vacuum chamber been available onboard, the testing could have been completed to the full factory standard by the ship staff to the satisfaction of this Administration.
- (3) For more information please contact: survey@bermudashipping.bm