SAFETY ALERT No. 17-13

Injury Sustained by 3rd Engineer During Routine Auxiliary Boiler Fuel Valve Replacement

1. Introduction

1.1 The Bahamas Maritime Authority wishes to bring the information referenced in paragraph 2 to the attention of interested parties[1].

2. Description of incident

2.1 During a voyage from Singapore to Suez the 3rd Engineer on board a general cargo vessel sustained burn injuries to the face when the vessel's auxiliary boiler furnace cover shattered by an internal explosion during initial start-up.

2.2 The auxiliary boiler fuel valve was dismantled for cleaning in preparation for the vessel's transit of the Suez Canal. During the overhaul, the fuel nozzle was replaced with another valve held in stock onboard. Prior to installation the replacement valve was not checked, subsequently once installed the valve leaked fuel into the furnace during the purging process prior to initial auxiliary start-up. Installation of the replacement valve was also determined not to have been conducted adequately, compounding the issue. This led to a build-up of fuel, combined with air resulting in a rich combustible atmosphere within the furnace. With the system not adequately purged after pre-set interval, the combustible mixture spontaneously ignited on start-up resulting in an explosion, rupturing the burner sight glass directly in front of the 3rd Engineer.

3. Causal Factors

[1] This Safety Alert is provided by the Bahamas Maritime Authority with the aim of highlighting incidents, lessons learnt and to increase awareness, which may help avoid similar incidents occurring elsewhere. Any queries on the content of the information provided should be referred to the party providing the information.

Contact: casualty@bahamasmaritime.com +44 20 7562 1300

SAFETY ALERT No. 17-13

3.1 Fuel valve not secured properly, in accordance with manufacturer or ship board procedures.

3.2 Failure to follow correct start-up procedure by purging the furnace prior to ignition.

3.3 Insufficient oversight to ensure the condition of the fuel nozzle prior to ignition.

3.4 Inadequate assessment of operational readiness by Engineers, before the boiler start-up.

4. Technical Investigation Conclusions

4.1 A condition of the replacement fuel nozzle was unknown.

4.2 A fuel nozzle leak test was not conducted after replacement.

4.3 The fuel nozzle leaked fuel during purging whilst the boiler was in manual mode.

4.4 Procedure for purging was not followed.

5. Preventative Actions and Recommendations

5.1 On replacement of the fuel valve, purge the system in accordance with the manufacturers maintenance manual.

5.2 Change the boiler control to manual, run the purge cycle for a sufficient period ensuring the blower damper is in the fully open position to ensure combustible gases are purged out of the furnace.

5.3 If a misfire occurs then the purging sequence should be repeated.

5.4 Operator should take all necessary steps to ensure no fuel leak is present on completion of any maintenance work. This may result in checking the

Contact: casualty@bahamasmaritime.com +44 20 7562 1300

SAFETY ALERT No. 17-13

system after purging for inspection, resulting in another purging sequence to be conducted.

5.5 Appropriate Personnel Protective Equipment (PPE) should be used when inspecting the ignition process through the furnace sight glass. The use of a facemask and maintaining a safe distance could be considered appropriate measures.

5.6 Warning signs should be displayed, visible to all, highlighting the safety procedures to be followed and protective equipment to be worn.

6. Validity

6.1 This alert is valid until further notice

7. Revision History

Rev.0 (19 May 2017) – First issue

Contact: casualty@bahamasmaritime.com +44 20 7562 1300