

MAIB SAFETY BULLETIN 2/2010

Failure of fixed high expansion foam system to
extinguish fire on board the passenger ferry *Oscar Wilde*

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The Merchant Shipping (Accident Reporting and Investigation) Regulations 2005 provide for the Chief Inspector of Marine Accidents to make recommendations at any time during the course of an investigation if, in his opinion, it is necessary or desirable to do so.



Stephen Meyer
Chief Inspector of Marine Accidents

NOTE

This bulletin is not written with litigation in mind and, pursuant to Regulation 13(9) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, shall not be admissible in any judicial proceedings whose purpose, or one of whose purposes, is to apportion liability or blame.

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BACKGROUND

At approximately 1912 (UTC) on 2 February 2010, a fire broke out in the auxiliary machinery space on board the roll-on roll-off cruise ferry *Oscar Wilde*. The ferry had just sailed from Falmouth, UK after completing her annual docking. The seat of the fire was in way of a diesel alternator fuel supply module (**Figure 1**) and quickly spread across the compartment.

Figure 1



As part of the fire-fighting effort, the fixed total flooding system (high expansion foam) was activated but did not extinguish the fire. Although all of the foam solution in the system was deployed into the auxiliary engine room, no foam was produced. The fire burned fiercely for over 1 hour before it was extinguished by the ship's crew.

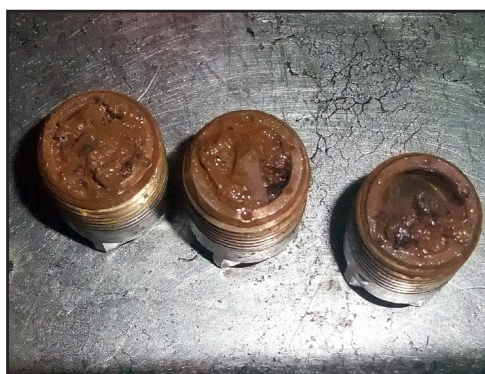
The fire is being investigated by the Marine Accident Investigation Branch and The Bahamas Maritime Authority.

ANALYSIS

The high expansion foam system was installed in 2002 and was designed to generate foam using the atmosphere from within the machinery compartment. The system was type-approved and had been maintained and tested in accordance with the manufacturer's instructions and current IMO guidance. It had been blown through with air in April 2009 and tested to the satisfaction of a Classification Society/Flag state surveyor during the dry docking. However, technical investigation has identified that:

- 80% of the foam generator nozzles within the auxiliary engine room were blocked by debris (**Figure 2**) and about 50% of the nozzles in the other protected spaces on board were also clogged.

Figure 2



- The distribution pipework for the foam solution contained debris and was corroded (**Figure 3**).

Figure 3



- There were several sections of the system's distribution pipes in which water and/or foam solution could have been trapped following the testing of the system (**Figure 4**).

Figure 4



The debris found in the nozzles and piping is most likely to have been rust and scale that had built up in sections of pipe in which water and/or foam solution had previously been trapped. This debris would then have been distributed along the pipes and into the nozzles during the annual blow through tests and when the system was operated. The resulting blockages were sufficient to prevent the aspiration of the foam solution.

ACTION TAKEN

Compliance with IMO guidance on the installation and testing of this system did not prevent its failure. Therefore, The Bahamas Maritime Authority (BMA) will bring to the attention of the International Maritime Organization (IMO) sub-committee on fire protection (FP) in April 2010, the need to urgently review current requirements for the installation and testing of the distribution piping of high expansion foam systems using inside air with regard to:

- The inspection of nozzles following blow through tests
- The elimination of potential liquid traps
- Consideration of the need to flush systems with fresh water periodically

The BMA aims to ensure that any resulting changes to the guidance are approved by the IMO's Maritime Safety Committee (MSC) in December 2010. The Maritime and Coastguard Agency (MCA) has agreed to support Bahamas in its actions at both FP and MSC.

RECOMMENDATION

S109/2010 Owners of ships fitted with high expansion foam systems utilising the atmosphere from within a protected space are recommended to urgently:

- Remove and inspect all foam generator nozzles to ensure they are free from debris.
- Inspect sections of distribution piping in which water or foam solution might collect and to fit drains where appropriate.

Owners, operators or manufacturers that find system nozzles to be blocked or identify corrosion within distribution pipes are requested to inform the MAIB by e-mail (maib@dfi.gsi.gov.uk) using the title 'Foam Systems' and include the names of the vessel and the system manufacturer, and the date and place of installation. This information is for internal use only and will be treated in the strictest confidence.

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