



**Society of Naval Architects and Marine Engineers  
2009 Annual Meeting and Expo**

**Title:** Analysis of USS Frank Cable (AS-40) Boiler Casualty

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**Abstract:** The USS Frank Cable (AS-40) was conducting steam testing of boiler safety valves in December 2006. While conducting this test, two generating tubes failed above the water drum causing rapid expansion of the boiler water. Subsequently, the boiler casing failure above the economizer resulted in three deaths and two critical injuries. This failure was directly caused by poor fabrication of a reinforcing plate to the corner seam weld of the exhaust stack transition piece above the economizer of No. 1A Boiler. Structural analysis showed that if the boiler had been constructed per design, the loss of boiler water flashing to steam, and subsequent pressure increase in the boiler casing, would have contained the rapidly expanding steam and would not resulted in a failure of the boiler casing. The analysis of the as-built structure was unable to resist the pressure increase from the tube failure.

**Keywords:**