

SAFETY ALERT



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Broken Compressor Heat Exchanger Causes Fire



Broken heat exchanger pipe



Ruptured heat exchanger pipe



Compressor engine exhaust

In November 2019, a fire occurred on an offshore production platform in the Gulf of Mexico when tubing in a third stage compressor heat exchanger broke away from its manifold block, releasing gas that ignited at the compressor's engine exhaust. The compressor engine exhaust was located above the heat exchanger where gas could rise toward the exhaust pipe. Personnel successfully extinguished the fire within minutes.

BSEE's investigation team concluded the operator's inspection and maintenance of the heat exchanger was inadequate to prevent loss of integrity thereby allowing a gas leak to occur. Additionally, the compressor engine exhaust was located above the heat exchanger creating an ignition source. Although the muffler was wrapped with an insulation blanket, the final exhaust pipe was exposed and within the classified area created by the gas tubes within the heat exchangers.

A similar incident occurred in October 2017 when a tube in a third stage compressor heat exchanger ruptured, also causing a fire. Locating and fixing small leaks can reduce the possibility of heat exchanger tubes experiencing full disconnects or ruptures.

Therefore, BSEE recommends that operators and contractors consider the following:

- Establish increased oversight practices for rolled joints on tubing at heat exchanger manifold blocks due to the higher probability of leakage;

- Consider using an ultrasonic leak detector or infrared camera, or conducting hydrotesting to inspect the condition of heat exchanger pipes rather than by visual inspection alone; and,
- Ensure engine exhaust is routed to an unclassified area, as recommended by API Recommended Practice 14F, to prevent a possible ignition source for the heat exchanger.

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A Safety Alert is a tool used by BSEE to inform the offshore oil and gas industry of the circumstances surrounding a potential safety issue. It also contains recommendations that could assist avoiding potential incidents on the Outer Continental Shelf.