

SAFETY ALERT



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Contact: Jason Mathews
Phone: (504) 731-1496

Fired Vessel Hazards Identified by BSEE in Risk-Based Inspections

The Bureau of Safety and Environmental Enforcement (BSEE) recently conducted a review of recent compliance and incident data to identify safety trends throughout the Gulf of Mexico. The analysis pointed to a potential risk associated with fired vessels. From January 2016 to May 2018, 17 fired vessel incidents were reported to BSEE by 12 unique operators. Further, BSEE issued 76 fired vessel-related incidents of non-compliance (INCs) during the 29-month period. To reduce the likelihood of future incidents and compliance issues, BSEE developed a Performance Based Risk Inspection (PBRI) protocol and conducted targeted inspections of fired vessels on 27 production platforms in the Gulf of Mexico Region over a two-day period in July 2018.



Sight Glass Gauge Cock found partially open during a Performance Based Risk Inspection

Overall, the integrity of the majority of fired vessels inspected during the PBRI was commendable; however, there were noticeable gaps on a few platforms that warrant attention to prevent or mitigate uncontrolled releases of hydrocarbons, toxic substances, or other materials that may cause environmental or safety consequences. After completing the inspections, BSEE reviewed the results and conducted additional reviews of Safety and Environmental Management System (SEMS) specific items (e.g., fired vessel inspection records, operating procedures, competency of production operators, JSAs). The findings were as follows:

- BSEE found that fired vessel operating procedures were not available to all personnel involved in the equipment operations examined during the PBRI. Additionally, essential instructions for conducting safe and environmentally sound activities failed to include some normal and emergency operations of fired vessels.

- BSEE determined that operators are not consistently inspecting gauge cock valves to make sure they are functioning properly and remaining in the correct status/position. (See [BSEE Safety Bulletin No. 007](#))
- BSEE concluded that a majority of the inspected operators do not perform documented inspections/reviews beyond regulatory safety device testing of the vessel – specifically, monitoring glycol sample analysis.
- BSEE found the majority of the inspected facilities had no method to address, or failed to specify in their maintenance plans, when the fuel gas filters are changed on fired vessels.
- The inspections suggest multiple operators are not in compliance with 30 CFR 250.876, which requires operators to have a qualified third-party remove and inspect, and repair or replace, as needed, the fire tube for tube-type heaters that are equipped with either automatically controlled natural or forced draft burners installed in either atmospheric or pressure vessels that heat hydrocarbons and/or glycol. BSEE began enforcing this regulation on September 7, 2018.
- BSEE identified multiple facilities where the integrity of the flame arrestor and spark arrestor could not be easily inspected, the frequency of inspections was not understood by facility personnel, or there was no documentation of inspections.
- Operators' inspections and maintenance of fire suppression/fighting systems were overwhelmingly in compliance with applicable regulations; however, consideration should be given to the location of deluge systems and fire suppression equipment.
- The facilities associated with the PBRI had minimal issues with excessive temperatures. In fact, most observations made by inspectors indicated high temperature areas were well insulated.
- BSEE determined temperature safety element (TSE) coverage on offshore facilities associated with the PBRI were appropriate and in good condition.

Therefore, BSEE recommends that operators consider the following:

- Review fired vessel operating procedures and verify they are accessible to all employees involved in the operations; review operating procedures at the conclusion of specified periods and as often as necessary to ensure they reflect current and actual practices, including any changes made to the operation; and ensure changes to the procedures are documented and communicated to responsible personnel.
- Review gauge cock valves to ensure they are equipped with an automatic ball check shutoff, in accordance with API RP 14J 3.3.2, to help prevent/mitigate rapid loss of fluid due to accidental glass breakage. Also, operators should ensure that personnel are familiar with, and trained on, the status/position of gauge cock valve assemblies.
- Develop and implement written operating procedures that define the process for sampling pH and include the frequency of that sampling and the documentation of each inspection/sampling. Additionally, operators should periodically sample glycol and replace or filter it, as appropriate, especially when glycol is used as a heat transfer media without circulation or filtering. Recommendations from the equipment and glycol vendors/manufacturers should be incorporated into maintenance and testing procedures.

- Review fired vessel quality assurance/mechanical integrity procedures along with the vessel manufacturer's recommendations for fuel gas filter maintenance. If gaps are identified during the operator's review, the operator should ensure that inspections and tests meet the manufacturers' recommendations.
- Verify compliance with 30 CFR 250.876.
- Inspect the integrity of fired vessels and correct any deficiencies associated with equipment and systems prior to further use.
- Review the difficulty of flame arrestor and spark arrestor inspections, and develop facility-specific protocols to ensure the integrity of the arrestors, create protocols to document all inspections, and ensure that facility personnel are knowledgeable of the inspection frequencies.
- Review the layout of the facility and fired vessels and determine if the required number and type of portable and semi-portable fire extinguishers and/or deluge systems are available and in compliance with 33 CFR 145, 30 CFR 250.859(a) and/or 30 CFR 250.860.
- Review the location and condition of temperature hazards signs and ensure paints on high temperature vessels are appropriate.
- Even when TSEs are properly installed and in compliance, operators should further evaluate the appropriateness of TSE installations below vessels or skids.

A **Safety Alert** is a tool used by BSEE to inform the offshore oil and gas industry of the circumstances surrounding an accident or near miss. It also contains recommendations that should help prevent the recurrence of such an incident on the Outer Continental Shelf.