

# SAFETY BULLETIN



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## Electrostatic Heater Treater Explosion with Resulting Fatality

An explosion occurred offshore in the U.S. Gulf of Mexico while a contracted cleaning crew was cleaning an electrostatic heater treater. The explosion resulted in the death of the supervisor of the cleaning crew and injured three others in the vicinity of the vessel.



A BSEE investigation found that the partially drained heater treater had not been effectively ventilated to remove flammable vapors. When the manway hatch was opened, introducing outside air, the mixture of flammable vapors and oxygen created an environment inside the vessel where an ignition source could trigger an explosion.

BSEE determined that a potential ignition source was not mitigated during the preparation for cleaning of the heater treater. During the initial onsite investigation, BSEE investigators observed that the circuit breaker in the Motor Control Center that regulated the electrical energy to the heater treater transformer and coalescing section of the vessel had been clasped with a lock and tagged for energy isolation, but it was in the “On” position and was not de-energized or isolated.

A BSEE Panel investigation identified other factors that may have caused or contributed to the incident. These included the following: inadequate verification of isolation, lack of effective ventilation, and the absence of an automatic function to remove energy from the electrical components when the fluid level in the coalescing section of the vessel dropped below and exposed those components.

### Therefore, BSEE recommends that operators:

- Ensure that pre-job isolations and verification of isolations are completed for all available isolation locations and by at least one authorized and qualified electrician or technician with knowledge of how to perform isolation on the equipment, using group lockout/tagout when appropriate. Ensure and document that employees working with this equipment, i.e., “affected employees”, also verify that the isolations are completed.
- After product removal (without opening manways or hatches), use approved and appropriate ventilation methods to safely displace or dilute potentially hazardous

residual liquids, gas and vapors in the tank or vessel. Have a qualified person test and document the applicable atmospheric conditions and ensure levels are safe prior to permitting work inside or around the outside of the tank or vessel (API Standard 2015 7<sup>th</sup> edition, Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks).

- Use procedures or safety devices to ensure protection against electrostatic grids as a source of ignition, through de-energization when liquid levels drop and expose the grid components.
- Ensure that authorized personnel confirm that job safety analyses align with approved procedures, address hazards specific to the job and represent an orderly completion of job steps.
- Ensure contractors are aware of the functions and all potential hazards of the equipment on which they are working.

A **Safety Bulletin** is a tool used by BSEE to share the lessons learned from an incident or a near miss. It also contains recommendations that should help prevent the recurrence of such an incident on the Outer Continental Shelf.