



Bureau of Safety and Environmental Enforcement

SAFETY ALERT

Safety Alert No. 507

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Improper Use of Equipment and Tools Increases Risk of Fires and Explosions Offshore

The Bureau of Safety and Environmental Enforcement (BSEE) has identified a recurring trend of equipment misuse contributing to fire and explosion hazards during offshore oil and gas operations in the Gulf of America Region (GOAR). These incidents often result from workers using non-rated tools in hazardous areas, deviating from Job Safety Analyses (JSAs), failing to identify unsafe equipment during inspections, and improperly using tools and equipment.

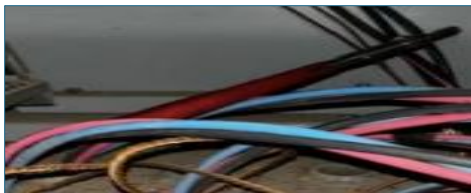


Figure 1: Channel locks used for pulling wire leading to an arc event.



Figure 2: Under-rated valves used with high-pressure gas cylinders.



Figure 3: Non-intrinsically safe tools used in explosive atmosphere.



Figure 4: Plumber's Plug not rated for high-temperature use.

INCIDENT ANALYSIS

BSEE investigations revealed multiple safety deficiencies involving proper tool and equipment usage offshore:

- Workers have used tools not rated for electrical work on live circuits (Figure 1) and mismatched hydraulic or pneumatic tools for high-pressure systems (Figure 2). In several cases, non-intrinsically safe hand tools were used in explosive atmospheres, including mudrooms and drilling floors.
- Although JSAs and Hot Work Permits (HWP) were completed, operator inspections failed to detect these unsafe conditions (Figure 3).
- During welding on a blowdown scrubber, personnel used a plumber's plug not rated for high-temperature service. The crew lacked awareness of proper isolation procedures for high-pressure and high-temperature systems (Figure 4). These unsafe practices are often observed during emergency or turnaround maintenance activities.

BSEE recommends that operators and their contractors implement the following actions to reduce offshore risk:

- Conduct formal evaluations to ensure all personnel understand tool limitations and offshore-specific hazards.
- Assign qualified technical personnel to review training programs and identify compliance gaps.
- Enhance maintenance programs for all tools, including those brought on board by contractors.
- Use durable labels to mark all tools with pressure, temperature, and electrical ratings suitable for the offshore environment.
- Implement accountability systems to track both facility and personal tools brought offshore.
- Confirm that proper design principles and engineering controls are in place before tool use.
- Where feasible, complete hazardous tasks in controlled onshore environments or designated safe zones offshore.
- Implement a mandatory tool and equipment audit checklist that must be completed and attached to every JSA and HWP. The checklist should be reviewed and signed by both a supervisor and a qualified person prior to the start of any work to ensure all tools and equipment meet safety requirements.
- Empower all personnel to report equipment concerns or halt work without fear of retaliation or schedule pressure.

- Require qualified personnel to inspect tools before use in hazardous areas.
- Require briefings that specifically address tool selection and hazard zone requirements for each work location.
- Per API RP 14F, ensure that any portable electrical tools kept offshore that do not have labels certifying their use in Class I, Group D locations should be distinctly identified and permanently labeled “WARNING—SOURCE OF IGNITION WHEN IN USE.”

ADDITIONAL RESOURCES

Personnel are encouraged to review the following:

- [BSEE Safety Alert 449 - Temporary Equipment as a Potential Source of Ignition on Offshore Facilities | Bureau of Safety and Environmental Enforcement](#)
- [BSEE Safety Alert 437 - Improper Fan and Other Equipment Used in Hazardous \(Classified\) Locations During Coiled Tubing Operations | Bureau of Safety and Environmental Enforcement](#)
- [BSEE Safety Alert 395 - Electrical Equipment in Hazardous Locations Increase Risk of Fire](#)
- API RP 14F - Design and Installation of Electrical Systems for Offshore Production Platforms
- API RP 500 - Classification of Locations for Electrical Installations at Petroleum Facilities

– BSEE –

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.

CATEGORY: Explosion, Fire, Personnel Safety