Bureau of Safety and Environmental Enforcement

SAFETY ALERT

Safety Alert No. 514

Date: Feb. 6, 2026

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Verify Megger Testing and Termination Prep to Prevent Seawater Pump Motor Fires

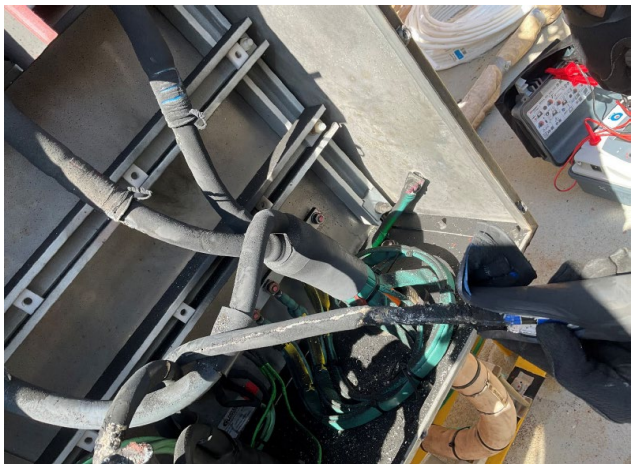

Figure 1: Evidence of arcing and burned wiring inside the motor termination box.

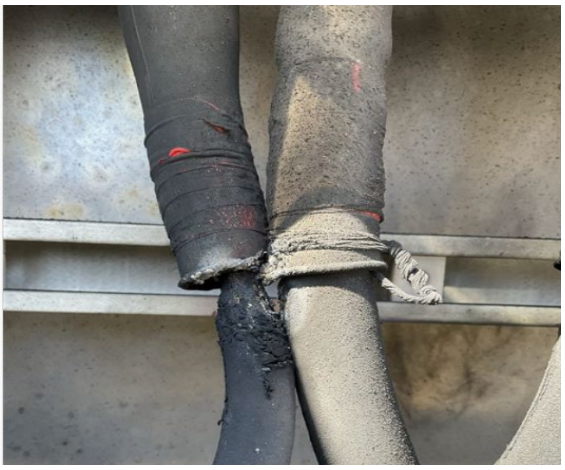

Figure 2: Burned wiring located below the stress cones between the line and load conductors.

Incident

The Bureau of Safety and Environmental Enforcement (BSEE) received a report of a fire involving a seawater source pump motor that was under maintenance.

After electricians replaced stress cones and crimped lugs during a motor termination repair, the motor was placed back in service to test the work. The motor tripped offline, and multiple overload alarms were recorded. While troubleshooting, electricians found burned wiring and signs of arcing inside the motor termination box (see Figure 1). The damaged wiring was found below the stress cones, between the line and load conductors (see Figure 2).

Findings

The terminations were megger-tested[1] with a 1,000-volt tester, but the work pack required a 5,000-volt tester.

- The recorded insulation resistance to ground was **200,000 ohms**, which did not meet the work pack requirement of **100,000,000 ohms (100 megaohms)**.
- The semiconductor layer was not prepared as specified in the maintenance work pack.

Corrective Action

The operator's corrective action was to create slack in the load cables, cut out damaged phase conductors, and reterminate the conductors in accordance with engineering guidance.

The semiconductor layer was not prepared like prescribed in the maintenance work pack. The operator's corrective action was to find slack on load cables and cut damaged phase conductors/re-terminate per engineering guidance.

To help prevent similar incidents in the future, the Bureau of Safety and Environmental Enforcement recommends that operator and contractor supervisors, where appropriate, consider the following:

- Follow the manufacturer's instructions and the approved work pack for repairs.
- Verify test setup and results before restoring equipment to service.
- Use test equipment with the correct voltage rating for the job.
- Ensure workers understand unit prefixes (ohms, kilo-ohms, megaohms) and the magnitude differences.

– BSEE –

[1] "*meggered" refers to testing electrical insulation resistance using a megohmmeter (commonly called a "Megger," after the Megger Group brand name). This test applies a high DC voltage to measure the resistance between conductors and ground, helping identify insulation breakdown or moisture ingress that could lead to electrical faults. For example, a reading of 100 MΩ indicates good insulation, while lower readings, such as 200 kΩ, may indicate a problem.*

A **Safety Alert** is a tool used by the Bureau of Safety and Environmental Enforcement 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: Electrical Safety; Maintenance/Testing