

# SAFETY ALERT



**Safety Alert No. 410**  
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## **Damaged Electric Cord Results in Arc Flash**

A worker observed an arc flash while performing construction activities that required additional lighting in the work area. Construction personnel ran an extension cord from a welding machine to portable lights that were needed in a different location, but when the machine was turned on, the electrical welding lead cable<sup>1</sup> arced and glowed. A nearby worker immediately pulled the lead cable away from a self-retracting lanyard (SRL) cable<sup>2</sup>, breaking the SRL cable. No fire occurred and no personnel were injured.

Upon immediate investigation, it was discovered that the rubber protective coating on the electrical welding lead cable was worn down by the continuous movement of steel SRL cable rubbing against it, which resulted in exposed welding lead cable wires. When the welding machine was turned on, the steel cable on the SRL made metal-to-metal contact with the welding lead cable wires and triggered the arc flash. This caused damage to both the welding lead cable and SRL cable.



*A frayed SRL cable that made contact with metal grating.*

The SRL cable rubbed and wore down the outer coating of the welding lead when the cable moved up and down through a deck penetration hole.

When the welding machine was turned on, the exposed lead arced on the SRL cable and broke the cable at the arc point.

<sup>1</sup> Electrical welding lead cable is a specially designed metal rod for use in electric arc-welding machines to power an electrode that conducts a charge. The charge carried by the electrode is needed to produce an electric arc—the heat source—between the electrode and the metals, or other materials, being welded.

<sup>2</sup> A self-retracting lanyard (SRL) is a vertical lifeline that is used as part of a complete fall arrest system. The lifeline, much like the seat and shoulder belt in a car, pulls out and retracts easily.

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

- Confirm proper separation of electrical energy sources, such as electrical cords and welding leads, from rigging, fall arrest equipment or any other identified equipment on a work site that could cause physical damage;
- Ensure that welding leads and SRL cables are separated during hot work activities and avoid putting them through the same deck penetration plate;
- Inspect welding leads and SRL cable before use to ensure they are in good working condition;
- Ensure safe routing of electrical equipment cords, cables, etc., to prevent abrasion and abnormal wear of their protective sheathes/coatings;
- Before work begins, check the final worksite to ensure all safety provisions/systems are in place and all hazards are controlled and risks are reduced to as low as reasonably possible; and,
- Ensure all Permit to Work and Job Safety Analysis documents and reviews include inspection and assessment of the electrical hazards prior to the start of a job.

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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.

Category: Arc Flash