

SAFETY ALERT

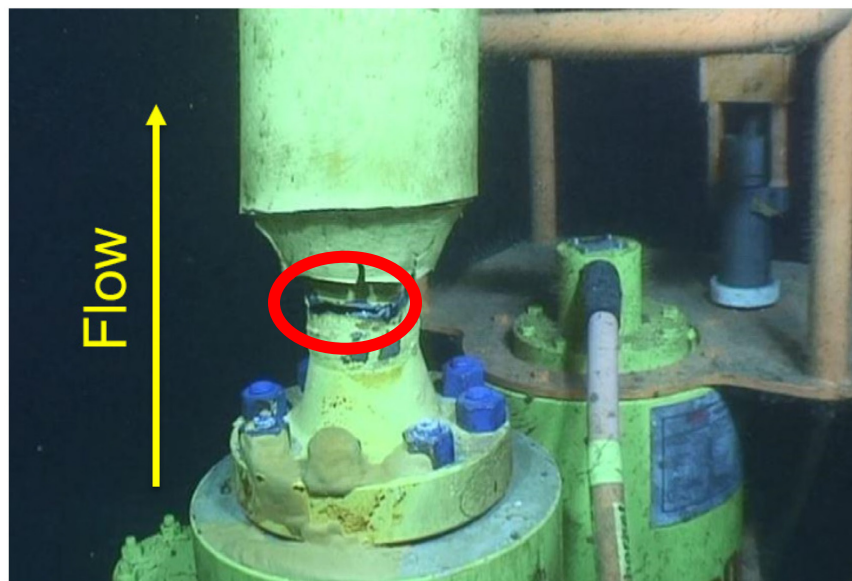


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Subsea Jumper Failure Leads to Leak

In October 2017, a subsea leak that went undetected for over 24 hours resulted in an estimated 16,000 barrels of oil released into the Gulf of Mexico. BSEE investigated the incident to determine the causes and prevent future occurrences.



Crack downstream of a multi-phase flow meter flange

A BSEE investigation panel recently concluded that the leak resulted from a failed jumper that connected the wellhead to the Pipeline End Termination (PLET). This failure resulted from internal corrosion within the jumper and movement of the PLET and pipeline, which added mechanical stress to the jumper.

The panel also found that while a Pressure Safety Low was installed, it was set below hydrostatic pressure for the flowline operated in this range; therefore, the operator did not have any sensors that would trigger an alarm due to a suspected leak. Lack of training was also cited because the operator relied on the Control Room Operators' experience and they were not trained to shut in wells for unexplained pressure fluctuations or metering discrepancies.

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

- Review [BSEE Panel Report 2019-002](#);
- Incorporate subsea leak detection into the Safety and Environmental Management System (SEMS) with increased focus on training, mechanical integrity, operating procedures, and pre-startup review;
- Provide training to Control Room Operators to increase awareness of the possibility of flowline integrity loss to a higher consideration when undergoing startup operations;
- Consider improving subsea leak detection methods by employing conditional rate of change, mass in mass out, or other advanced monitoring technologies;
- Evaluate and enhance pressure trend analysis for leak detection where possible;
- Assess designs of applicable components for their tolerance under increased loads due to thermal expansion or other movement;
- Review the use and placement of sleepers or other components that mitigate pipeline buckling;
- Evaluate the construction of flowline components to ensure that materials have adequate corrosion mitigation properties;
- Consider the use of different surveying methods such as Light Detection and Ranging (LIDAR) to confirm that pipeline systems remain within their design tolerances throughout their service life; and,
- As an industry, consider revising [API Recommended Practice 17V](#) to include subsea leak detection.

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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.