SAFETY ALERT



Safety Alert No. 348 25 April 2019 Contact: Nicholas Fraiche Phone: (504) 736-7631

Chemical Leak in Flying Lead Discovered by ROV



With the outer jacket wire braiding removed, the HFL hose inner sheath was revealed to be in a collapsed condition.

On April 30, 2018, BSEE received a report of a subsea umbilical leak coming from a Hydraulic Flying Lead (HFL) used for chemical injection. An ROV operator performing a survey for a future PLET installation discovered paraffin inhibitor (Nalco EC 6004A, which contains the chemical naphthalene) leaking into the Gulf of Mexico. It was later discovered that the chemical injection lines had sustained either breaches or breaks in two locations. The estimated maximum total volume of the discharge was 900 barrels.

The investigation revealed that the hose assembly was rated for the appropriate collapse pressure. The system had been installed in 2015 and tested to demonstrate full pressure integrity. At an unknown time after May 1, 2017 (the date of the most recent prior ROV inspection), the outer jacket of the chemical injection line sustained damage. Once the outer jacket was damaged, the line's collapse resistance was compromised. Positive pressure was not maintained in the chemical injection line, which resulted in a collapsed and torn line. The leaks were undetectable from the water's surface, either visibly or by detection instruments, due to the water depth in which the facility is located.

Therefore, BSEE recommends that operators consider the following:

- Update operating procedures to ensure that umbilical lines are positively pressured.
- Provide operator training to ensure that lines are not bled to a zero pressure during maintenance tasks.
- Install a check valve to the system topsides to ensure a positive pressure is maintained on the system.
- Install a low-pressure alarm on the chemical pump skid for any injection lines that are connected subsea with a hose.
- Monitor fluid inventories of fluids that are pumped subsea.
- Consider subsea hose assembly movement (such as chafing, rubbing, friction, etc.) during design.
- Inspect subsea equipment on a regular basis utilizing ROV visual video recordings. The visual subsea equipment inspections include inspections of umbilical lines, subsea wellheads, subsea manifolds, etc. The regular visual inspections should identify initial issues with the subsea installation, as well as later life issues which occur during production operations.

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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.