

Subsea leak from well jumper

What happened?

A subsea system experienced a subsea equipment leak in May 2016. The location of the leak was at a rupture in a load limiting joint on a 410 stainless steel well jumper. The load limiting joint was a deliberate weak spot in the system, designed to protect the tree from damage in the event of an anchor drag of the pipeline.

What went wrong?

During drilling of the riserless section of a new well in the field, drilling mud, cuttings, and cement inadvertently were deposited on top of the surrounding subsea hardware (jumpers, sleds, manifold).

Why did it happen?

Over time the deposited well debris changed the loading conditions on the jumper & joint in ways that were unexpected & beyond the loads considered in design. These loads along with portions of the jumper remaining buried resulted in the load transferred to the jumper being greater than designed.

What areas were identified for improvement?

These load mechanisms were not recognized at the time when the impact of burial was evaluated. Therefore, the jumper was covered and eventually failed at the joint.

When actions (such as addition of a well or other subsea hardware) in a subsea environment/system are undertaken, an integrated risk identification and communication between disciplines, functions, organisations is needed:

- Identification of potential impact of subsea well cuttings/materials, bathymetry, and proximity to subsea system predrill.
- Identification of load limiting joint within jumper during burial assessment.
- Mitigation of residual bury risk to jumper (equipment outside design window).
- Inclusion of appropriate (technical) expertise in the risk identification.

What will WE do to prevent this from happening HERE?

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