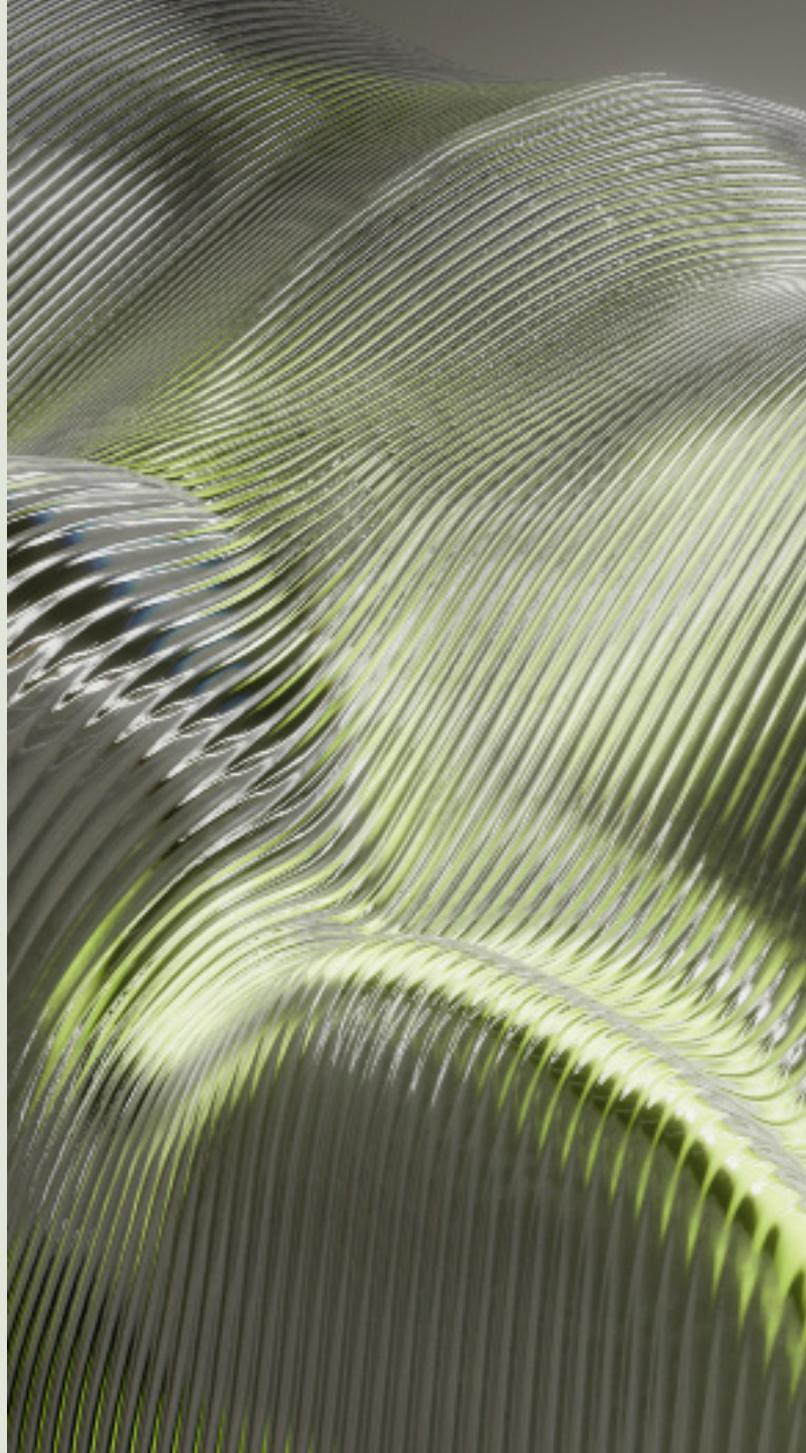


Providing Reliable,
Robust and
Verified Barriers
for Tricky Subsea
Xmas Tree Repairs
from a Light Well
Intervention Vessel
(LWIV)



Region
North Sea, UK

Year
Jul 2024

Case study

Challenge

A major North Sea operator required a robust barrier solution to carry out repairs on the Methanol Injection Valve (MIV) block and production choke on their subsea Xmas Tree (XMT) using divers from a Light Well Intervention Vessel (LWIV). The initial plan was to perform an inflow test on the Sub Surface Safety Valve (SSSV) and use it as one of the two dual barriers required to safely execute the workscope. However, if the operator was unable to achieve a satisfactory barrier test on the SSSV, a contingency option would be required to install two barriers above the SSSV.

Solution

Interwell proposed their 435-550 Medium Expansion (ME) Retrievable Bridge Plug (RBP) (4.35" OD for 5.5" tubing) to be used as a single or dual barrier above the SSSV, depending on whether a satisfactory barrier test could be achieved on the SSSV. The 435-550 ME RBP is ISO 14310 validation grade V0 qualified to withstand 5,000 psi differential pressure in a temperature range of 150-4°C in 5.5" tubing.

Given the close proximity of the barriers above the SSSV, it would be challenging to accurately determine which barrier was being tested during pressure tests. To address this, Interwell proposed using the Iconic Digital Transponder (iDT), which employs wireless acoustic communication to transmit data through the tubulars. This allows for real-time monitoring of pressure and temperature, ensuring reliable verification of the dual-barrier system.

Key Capabilities

- ISO 14310 validation grade V0 qualified bridge plug products
- Real-time pressure and temperature monitoring with the Iconic Digital Transponder (iDT)
- Ability to set and verify dual barriers in close proximity
- Wireless acoustic data transmission through tubulars



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During operations, the operator was unable to achieve a satisfactory barrier test on the SSSV. As a contingency, a 435-550 ME RBP with the iDT was Run In Hole (RIH) on Electric Line (E-Line) and set at 1,250ft as the lower barrier, with another set at 540ft as the upper barrier. Both barriers were successfully inflow tested due to a leaking XT coupler, with real-time monitoring of pressure and temperature above and below the barriers conducted at surface, providing a reliable and robust barrier solution to safely carry out the subsea XMT repairs.

Value Created

Interwell delivered a reliable and robust dual-barrier solution that ensured the safe execution of repairs on the MIV block and production choke on the subsea XMT. By utilizing the 435-550 ME RBP with the iDT, the operator was able to overcome the challenge of an unsatisfactory barrier test on the Sub Surface Safety Valve (SSSV). Real-time monitoring of pressure and temperature during inflow testing confirmed the integrity of both barriers, reducing operational risks and eliminating downtime. This innovative approach minimised the need for additional interventions, ensured well integrity, and allowed the operator to safely complete the repair workscope without delay.