



Multi Product application delivers reliabilities and efficiencies to Subsea P&A campaign

Date: June 2021

Region: Asia Pacific, Australia



Key Capabilities

- MSP Tool Pipe deployed CP recovery system to allow max pulling capability
- HPHT plug for long-term integrity and reliable retrieval
- THEX Vo Plugs for dual deep-set barrier
- BVS Live system to confirm installed barrier, its integrity and allow test in direction flow
- Surface powered EST for real-time setting log data for verification purposes

Challenge

A 2 x Well Subsea P&A campaign for an operator in the North West Shelf of Western Australia required dual Vo barriers whilst topside equipment was removed. To negate having to remove these barriers during the P&A stage they could set below the Production Packer which had relatively tight ID restrictions and high temperature. As per NORSOK guidelines, a barrier is required to be tested in direction of flow. Prior to installation the Crown Plug (CP) and current suspension barriers had to be removed after being installed for 9 years.

Solution

To counter any potential issues whilst retrieving the CPs Interwell's MSP was identified as it would allow up to 200,000lbs of force to be applied to the Plug. The system consists of 2 x Vo dual flapper valves for Well Control and has the means to reinstall the CP immediately after un-setting if required. This system has been run in the North Sea over 400 times.

The current suspension plugs (Interwell's HPHT), which had been installed for 9 years and evaluated on previous long term suspension operations was deemed to be suitable for standard retrieval on Slickline.

2 x 7" THEX Plugs qualified above and beyond the well envelope regarding pressure and temperature, as well as being qualified to ISO 14310 Vo were identified as required equipment for this suspension. As these would be set relatively close together, being set in the tailpipe below the Packer, an Interwell BVS wireless gauge system was used with an Interwell SP-EST. This supplied live surface readout on E-line to confirm the integrity of the upper barrier and to test the lower THEX in the direction of flow as per NORSOK D-10 guidelines. Fluid compatibility for the Well kill fluids was evaluated and deemed to be suitable for all equipment during the planning stage.



THEX

High Temperature High Expansion Bridge Plug



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Value Created

The use of the MSP system in both wells allowed the 2 x CP's to be retrieved safely on the first attempts, with the provision for heavy-duty pulling or circulation if required. This operation was simple, and consistent with other similar sequences relating to Pipe deployed/retrieved XT or Tubing Hanger assemblies utilising standard BOP control which operators are comfortable with.

Both 7" HPHT Plugs were un-set using standard retrieval/jarring procedures and retrieved to surface with no overpull or drag, despite being installed long term. The Plugs were equalised first to ensure pressure was balanced before un-setting the element and anchor slips, confirming their integrity over the installed period. On recovery, all mechanical sections of the Plugs had functioned as designed, some blisters bubbling within the Element was noted which indicated Gas cap present below.

The deep-set T-HEX Plugs permitted easy passing through the Well restrictions which allowed plugs to be set below the Production Packer, providing an ISO barrier tested to the required pressure at the relatively high temperature. The BVS not only allowed both Plugs to be set close together to verify integrity but by leaving a positive pressure above the lower Plug before setting the upper THEX, then bleeding off pressure above, allowed the lower barrier to be tested and monitored in the direction of flow on live E-Line readout at surface, giving the customer instantaneous verification. The customer was then able to confirm success and complete well objectives.



MSP

Multi-Setting Plug