



Shallow and deep set Inter Remote Bypass Valve (IRBV) successfully operated in a single well

Date: November 2021
Region: Norwegian Continental Shelf



Key Capabilities

- Efficient removal
- Remotely Activated
- Full bore ID after removal
- Bi-directional barrier qualified to ISO 14310 V0

Challenge

A major operator in NCS have an upcoming subsea field development with an improvement program focused on increased standardization and efficiency. We were challenged to come up with a solution for a temporary barrier and packer setting device with no need for intervention. Fluid communication through the plugs during installation was required for auto filling and pressure testing of tubing hanger and production packer from below prior to closing the shallow set barrier and removal of the BOP.

Solution

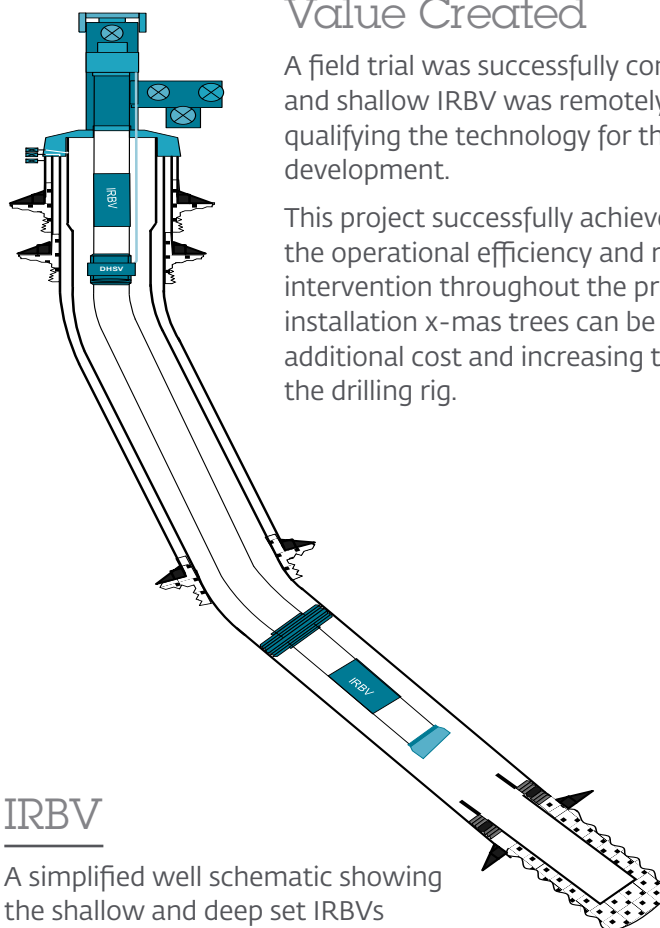
We proposed the installation of our IRBV both shallow and deep as part of the upper completion. By implementing the IRBV deep below the production packer, fluid bypass was achieved during installation and testing of the tubing hanger and production packer from below was possible. After successfully testing, the bypass ports in the IRBV were closed and the IRBV was used as a packer setting device to set the hydraulically activated production packer. Once the packer was set, the deep IRBV was remotely shattered open making it possible to perform a pressure test of the production packer from below.

The shallow set IRBV was then closed and successfully tested as a barrier for removal of the BOP and installing the x-mas tree.

Value Created

A field trial was successfully conducted and both the deep and shallow IRBV was remotely operated as intended, qualifying the technology for the upcoming subsea field development.

This project successfully achieved the goal of increasing the operational efficiency and removing the need for intervention throughout the pre-production phase. Subsea installation x-mas trees can be installed with an IMR saving additional cost and increasing the operational efficiency for the drilling rig.



IRBV

A simplified well schematic showing the shallow and deep set IRBVs