

Middle East

Fuzion[®]-H hydraulic downhole wet-mate connector optimizes workover operations for operator

Flexible and robust through the life of well, Fuzion[®]-H technology enables safe and cost-effective ESP replacement

CHALLENGE

- Replace ESP located in upper completion 2.5 years after installation, without removing the zonal isolation packers and ICVs

SOLUTION

- Fuzion[®]-H hydraulic downhole wet-mate connector included in the initial SmartWell[®] design to enable ESP retrieval and replacement

RESULTS

- Two successful workovers to retrieve and replace failed ESPs
- ZERO NPT
- Reduced costs associated with ESP replacement
- Soft-release technology eliminated risks associated with abrupt tubing movement disconnect and reconnect operations
- ICVs placed in the closed position provided reservoir isolation to help eliminate fluid loss during upper completion workover

Overview

In September 2023, Halliburton successfully completed workover operations to replace underperforming electric submersible pumps (ESPs) on two operator wells in the Middle East. Both onshore wells included intelligent completions with Fuzion[®]-H hydraulic downhole wet-mate connectors, which provide a reliable method to disconnect and reconnect the upper and lower completions. The team retrieved the upper completion by disconnecting the male and receptacle subs in the 3 1/2-in. Fuzion-H connector, without removing the three-zone SmartWell[®] lower completions. Connectivity to the lower completion was re-established during run in hole with the new upper completion and ESP.

Challenge

The operator required an economical solution to replace the ESPs in each well and maintain the production optimization benefits of the SmartWell completion. Without Fuzion-H technology, ESP replacement introduces additional risks, which the operator wanted to avoid. Removal of the entire completion necessitates costly intervention operations and a means to combat fluid loss in each zone, along with the challenges typically associated with workover.



Place ESPs deeper in the well: Fuzion[®]-H hydraulic downhole wet-mate connectors can run in both 9 5/8 and 7-in. casing sizes.

Solution

Understanding the likelihood and challenges of ESP replacement, Halliburton designed the intelligent completions with Fuzion-H hydraulic downhole wet-mate connectors run in 9 5/8-in. casing. The hydraulic connectors enable replacement of any part of the upper completion, such as a non-functioning ESP, safety valve, or other component, without recovering the entire lower intelligent completion. Fuzion-H technology facilitates reliable disconnection and reconnection to ensure SmartWell hydraulic system functionality pre and post-workover.



Fuzion®-H Wet-Mate Connector

Results

The Halliburton team successfully performed workover operations and replaced the ESPs in both wells with ZERO NPT. Post-workover, the SmartWell® system retained full functionality. Because the existing lower completion components remained in place and available for use, the already-installed interval control valves (ICVs) could provide full reservoir isolation during workover, which helped reduce health, safety and environment (HSE) exposure, save time, and optimize operational costs.



Two upper completion ESP replacement operations completed successfully with ZERO NPT and full operation of SmartWell® system ICVs

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