CASE STUDY

HALLIBURTON

Middle East

Enhance well operations with the Fuzion®-H connector

Robust design and patented soft-release system allow seamless deployment of reliable hydraulic downhole wet-mate connector to facilitate SmartWell® technology ESP completion solutions

CHALLENGES

- Enable cost-effective ESP replacement and preserve functionality of SmartWell® technology

SOLUTIONS

- Include Fuzion®-H hydraulic downhole wet-mate connector in SmartWell® equipment design to enable ESP retrieval and replacement
- Enable multizone production management in wells with ESP
- Fuzion®-H patented soft-release mechanism to minimze risk associated with sudden tubing movement during disconnect operations

RESULTS

- Robust design helped ensure success and deliver flawless ICV functionality during 50 deployments
- Streamlined operational efficiency
- Reduced deployment time and costs
- Effective and successful Integration of ESP and SmartWell® equipment

50th

successful Fuzion-H connector deployment in Middle East

Overview

In April 2024, Halliburton successfully deployed the 50th Fuzion®-H hydraulic downhole wet-mate connector. This technology is foundational to facilitate completions using a combination of SmartWell® equipment technology and electric submersible pump (ESP) systems. The Fuzion-H connector offers a dependable solution to enable retrieval of the upper completion and ESP without having to remove the lower completion. This approach significantly reduces the time and costs associated with ESP replacement and maintains full SmartWell equipment capabilities for production optimization. Re-establishing connectivity to the lower completion is achieved through the deployment of a new upper completion and ESP equipped with a Fuzion-H stinger.

Challenges

In multizonal wells equipped with ESPs, conventional completion systems commonly deliver commingled flow. This assigns equal production priority to all connected reservoir sections without the capability to control the amount each zone contributes or isolate watered- out zones. This conventional approach often leads to underperformance in wells, particularly when a high water cut in one zone diminishes the production potential of other zones in the well.

SmartWell technology enables the operator to monitor and control various zones in real time to improve reservoir management, enhance productivity, and maximize hydrocarbon recovery.

The challenge lies in the integration of ESP systems with SmartWell technology while enabling economical ESP replacement. Establishment of a reliable and active connection between the upper and lower completions in a well with SmartWell® technology can be complex, particularly during ESP workover operations. This integration must address mechanical and operational intricacies to ensure effective and efficient management throughout the life of the well.

Fuzion®-H Wet-Mate Connector

Solutions

The Fuzion®-H hydraulic downhole wet-mate connector integrates the following unique features to greatly enhance deployment flexibility and reliability.

- Patented Soft-Release Mechanism: This feature supports high string weight below the device and facilitates low-force, reliable separation of the upper and lower completions when activated. It also provides adaptability with multiple activation methods to fulfill various completion design requirements.
- Robust Seal Design: This seal design is precisely engineered to ensure the success and full functionality of interval control valves (ICVs) during deployment and after ESP replacement. Placing the ICVs in the closed position during ESP replacement eliminates fluid loss and provides the operator with critically needed reservoir isolation during workover operations.
- Efficient Installation Methods: The Fuzion-H connector incorporates six hydraulic feedthroughs; thus, when coupled with Halliburton control-line set feed-through packers, it can facilitate installation of up to four ICVs in a single-trip completion. This capability significantly reduces completion deployment time and operational costs.
- Broad Casing Compatibility: Engineered to accommodate both 9 5/8-in. and 7-in. casing, the slimline construction and optional scoop-head feature enable compatibility with a wide variety of well architectures. This helps ensure optimal ESP placement and secure connections, particularly in wells with significant deviations.

Operational goals were met during every installation of the Fuzion®-H wet-mate connector to date.

Results

All installations to date were successfully deployed, met operational objectives, and ensured uninterrupted functionality. The Fuzion-H hydraulic downhole wet-mate connector can provide the following notable enhancements to well operations:

- The flexibility of both single and dual-trip SmartWell technology with ESP completion installations can streamline operations and reduce time and costs associated with completion deployment.
- Compatibility with various casing sizes coupled with the use of optional scoop-head and centralization accessories enhances ESP installation and helps ensure optimal well placement.
- The capability to place ICVs in the closed position during ESP replacement helps eliminate fluid loss and provides critical reservoir isolation throughout workover periods.

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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