CASE STUDY

HALLIBURTON

Norway

Collaborative solution helps operator improve operational efficiency, and reduce time and costs

EV0-Trieve™ retrievable bridge plugs with real-time monitoring technology enable barrier verification in a single run with ZERO NPT

CHALLENGES

- Secure well for Christmas tree maintenance
- Barrier verification of shallow-set plugs

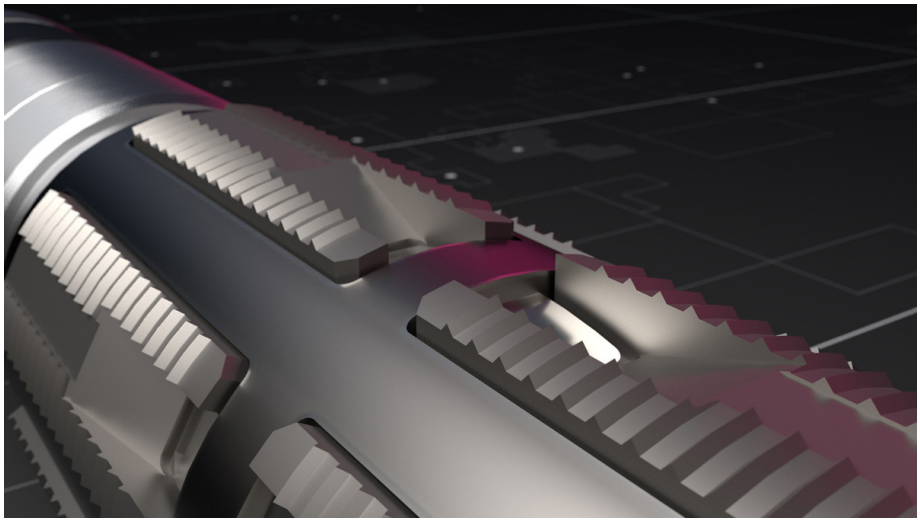
SOLUTION

- EV0-Trieve™ retrievable bridge plugs with real-time monitoring technology

RESULTS

- Plug deployment, and setting and verification performed in a single run, to reduce time, costs, and operational risk
- Leak testing completed with zero non-productive time
- Halliburton integrated operations reduced the need for onsite dedicated intervention personnel
- Slickline operations saved time during rig up, testing and deployment

Performance accuracy during barrier testing



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EV0-Trieve™ retrievable bridge plug

Overview

A major operator needed to secure an offshore well and perform a valve changeout on the Christmas tree. To establish the required barriers and help ensure safe and effective operations, Halliburton collaborated with a local service company to provide a combined technology solution.

Challenges

The operator planned to install two shallow-set barrier plugs above the downhole safety valve (DHSV) using slickline and conventional timer-based setting tools. However, because the plugs would be set close together, conventional volume control could not accurately deliver a good barrier leak test. The optimum method to ensure a proven barrier required monitoring of the small volume between the installed bridge plugs during leak tests.

Solution

Halliburton recognized an opportunity for collaboration with a local service company to deliver a reliable solution that combined field-proven EV0-Trieve™ retrievable bridge plugs with real-time barrier integrity monitoring. During this first-time collaboration, the companies developed a concise up-front system integration test (SIT) program to operator- specific requirements, which ultimately led to successful downhole operations.

CASE STUDY

A real-time monitoring device mounted on the shallow EV0-Trieve™ retrievable bridge plug enabled wireless live monitoring from the surface through the Christmas tree. In addition, a slickline wireline adapter with memory module was included in the bottomhole assembly to provide secondary data collection and storage.

The first EV0-Trieve retrievable bridge plug was set using the DPU® downhole electrical power generator at 649 ft (198 m) measured depth (MD) inflow tested from below and leak tested from above at 290 and 3,916 psi (20 and 270 bar). The shallow EV0-Trieve retrievable bridge plug was set at 183 ft (55.7 m) MD and leak tested from above at 290 and 3,916 psi (20 and 270 bar).

During leak testing of the shallow barrier, the real-time monitoring device continuously transmitted pressure and temperature (P/T) data from above and below the barrier to the surface, and the signals picked up by the surface logging system. Additionally, the device allowed the operator to send commands directly to the real-time monitoring device and "prompt" for additional P/T data throughout the pre-programmed transmission sets.

Results

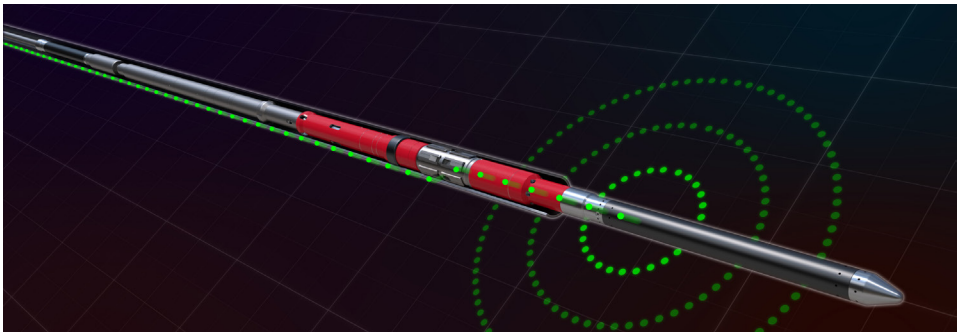
The EV0-Trieve retrievable bridge plug with real-time monitoring device performed at a high level of accuracy and provided proven barriers for the subsequent maintenance operations. The collaborative approach maximized the operator's asset value, and delivered reliable, efficient, cost-effective and safer operations.

Using Halliburton integrated operations reduced the need for onsite dedicated intervention personnel, and the entire system was deployed in a single trip. Additionally, slickline operations provided additional time savings during rig up, testing and deployment compared to typical electric line operations.

P/T data transmitted in real time enabled quick decision-making and allowed the operator to act according to the test results. Data from the memory module was downloaded and included in the final report to the operator.

Barrier testing and verification with

ZERO NPT



EV0-Trieve™ retrievable bridge plugs with real-time monitoring technology

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

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