Technique Enables Optimized Remedial Water Shutoff Operations in Saudi Arabia

ACTive PS integrated service allows production logging and intervention with the same coiled tubing unit

CHALLENGE
Improve efficiency and effectiveness of remedial water shutoff operations.

SOLUTION
Run ACTive PS* integrated production logging service with FloScan Imager* horizontal and deviated well production logging system.

RESULTS
Allowed coiled tubing (CT) remedial work and production logging to be scheduled with the same unit, maximizing productivity and saving cost for future operations.

Improve water shutoff strategy
In a Middle Eastern field, the operator worked over and completed a well as a horizontal openhole producer. After initial production, the well started producing with water cut, which increased gradually to 24.1% of 2,400 bbl/d. For wells with this problem, the operator traditionally performed wireline logging cable-equipped CT jobs to understand the well production profile. The logistics for this type of intervention often took several months or even years, making remedial work difficult in the face of changing well conditions. Because logging results were not current, CT interventions needed to be optimized.

Combine production logging and intervention
To improve the effectiveness of its remedial work, the operator sought a Schlumberger solution because of the company's expertise with fiber optics. ACTive PS integrated production logging service was chosen as a trial for the well. This service enables wireline production logging tools, such as FloScan Imager horizontal and deviated well production logging system, to be run by the optical telemetry of ACTive* in-well live performance. With the ACTive PS system, CT intervention and real-time production logging can be performed with the same CT unit.

The operator ran the ACTive PS service with the FloScan Imager system for logging. The toolstring comprised several sensors, such as gamma ray, casing collar locator (CCL), pressure, and temperature. It reached a maximum depth of 9,848 ft, with cross sections captured at 6,820 and 9,140 ft. No crossflow was detected during shut-in, and passes were repeated to ensure data quality.

Optimize remedial operations
Using the ACTive PS system allowed the operator to gather high-quality FloScan Imager data, making it possible to schedule and perform production logging and CT remedial jobs together. The acquired data showed clear points of water entry and a multiprimerflow profile, proving critical for remedial water shutoff jobs to maximize productivity and save the cost of water production.

Prejob planning, flowing survey, and shut-in survey logs for Saudi Arabian well.

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