

# Operator Uses Single-Trip Solution for Reliable Water Conformance in Complex Reservoir

## DATA ACQUISITION PROGRAM HELPS IDENTIFY COMMUNICATION WITH HIGHER-PRESSURE, WATER-BEARING ZONE

EUROPE

### CHALLENGES

- » Identify unwanted water-entry points, in real time, from a complex and naturally fractured reservoir
- » Provide a reliable and cost-effective data acquisition program for water-flow mitigation

### SOLUTION

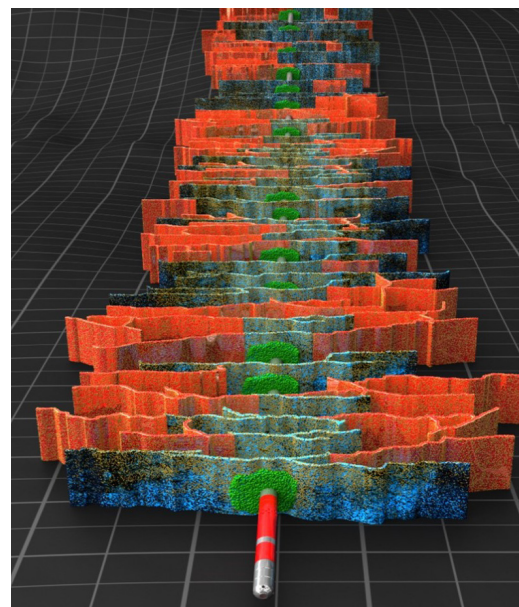
SPECTRUM® FUSION real-time hybrid CT service, along with the RMT-3D™ pulsed-neutron tool and a PLT, for effective water-flow logging and production logging

### RESULTS

- » Performed a single-trip deployment with a high telemetry rate in real time, using this innovative integrated-tool solution
- » Successfully executed a data acquisition program to confirm that communication still existed in a higher-pressure, water-bearing zone
- » Provided a reliable and cost-effective solution for achieving accurate water-flow logging data, thus saving the operator an entire day of rig time

### OVERVIEW

A major operator in Europe experienced a high production level of unwanted water after opening a new interval in one of its wells. The operator wanted a solution for this long horizontal well in order to identify, in real time, unwanted water entry points from a complex and naturally fractured reservoir, along with subsequent flow behind casing. The well would not flow naturally, and asphaltene buildup in the tubing also had to be addressed. To solve these issues, Halliburton put together an engineered solution that could be deployed in a single trip, comprising the SPECTRUM® FUSION real-time hybrid coiled tubing (CT) service, the Reservoir Monitor Tool 3-Detector™ (RMT-3D™) pulsed-neutron tool, and a production logging tool (PLT).



### CHALLENGE

This customer understood that further remediation was required to improve the water injection rate. Solving this water-entry issue would enable the operator to save significant time and money, thus positively impacting the operator's field injection strategy across the reservoir.

### SOLUTION

To achieve accurate water-flow logging, the Halliburton team proposed using its SPECTRUM FUSION real-time hybrid CT service, along with its RMT-3D pulsed-neutron tool and a PLT – the first-ever deployment of this combined solution in the industry. This engineered solution would enable a single-trip deployment with a high telemetry rate in real time.

To address the asphaltene buildup in the tubing, a special solvent blend was recommended for tubular cleaning via an initial CT run.

## CASE STUDY

*The SPECTRUM® FUSION real-time hybrid CT service, combined with an RMT-3D™ pulsed-neutron tool and a PLT, enabled a data acquisition program to be successfully executed, including for both the drift-run and water-flow logs.*

### **RESULTS**

The SPECTRUM FUSION service, combined with the RMT-3D pulsed-neutron tool and the PLT, enabled a logging data acquisition program to be successfully executed, with no restriction in the tubing, including for both the drift-run and water-flow logs.

Instead of initially offering a wireline solution, which would have required a separate rig-up, the Halliburton team put together this innovative CT integrated-tool solution. Integrating these tools saved the operator an entire day of rig time and also offered deployment flexibility. By using this CT-based solution, the operator was able to identify the root causes of the water-entry problem and to plan for remedial interventions in order to optimize well production, thus saving time and money.

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