

Colombia

Operator improves reservoir evaluation in Colombian deepwater

Real-time acoustic telemetry with the RezConnect® well testing system helps operator reduce uncertainty and support a major gas discovery

CHALLENGE

- Evaluate reservoir in complex deepwater geology
- Interpret seismic data affected by thick salt sections
- Execute reliable well tests in high-pressure environments
- Characterize pressure and fluid behavior in heterogeneous formations
- Adapt test program to reservoir condition changes

SOLUTION

- Deploy RezConnect® well testing system
- Facilitate real-time downhole communication and control
- Integrate surface, downhole, and subsea data acquisition systems
- Monitor pressure response throughout the well test
- Capture representative fluid samples under dynamic conditions

RESULT

- Reduced uncertainty in reservoir characterization
- Improved understanding of reservoir pressure and fluids
- Facilitated real-time reservoir evaluation
- Supported confident exploration decisions
- Established digital benchmark for deepwater well testing in Colombia



Overview

An operator pursued a high-impact exploration campaign in the deepwater Colombian Caribbean, where complex subsurface conditions created significant uncertainty around reservoir quality, pressure behavior, and fluid distribution. Thick salt sections, fractured carbonates, and turbidite reservoirs limited seismic resolution and increased exploration risk. The operator required accurate reservoir data to evaluate a gas-bearing interval and make confident development decisions.

To support these objectives, Halliburton deployed the RezConnect® well testing system in a deepwater exploration well. The deployment marked the first use of the technology in Colombian deepwater operations. The system provided wireless downhole communication and control throughout the well test and allowed the operator to monitor reservoir behavior in real time without mechanical or hydraulic intervention.

Halliburton integrated the RezConnect well testing system with surface, downhole, and subsea acquisition technologies to deliver continuous reservoir data throughout the test program. The solution provided the operator with immediate access to critical pressure and fluid information, which supported faster decisions and reduced reservoir uncertainty.

Challenge

The operator faced several challenges amid exploration activities in the Colombian Caribbean. Large salt bodies reduced seismic accuracy and complicated reservoir mapping. Fractured carbonate intervals and layered turbidite reservoirs introduced significant heterogeneity, which increased uncertainty around reservoir continuity, compartmentalization, and hydrocarbon distribution.

The operator also encountered high-pressure conditions that challenged conventional well testing methods. In addition, the remote deepwater environment required precise planning and execution to minimize operational risk and maximize data quality.

Because exploration success depended on accurate reservoir information, the operator required a testing solution that could adapt to unexpected pressure responses, fluid composition changes, and reservoir conditions that continually shifted, and at the same time, maintain operational efficiency.

Solution

Halliburton deployed the RezConnect® well testing system as part of an integrated deepwater well testing solution. The system facilitated real-time wireless communication between downhole tools and surface personnel, which allowed the operator to monitor reservoir conditions and control downhole equipment throughout the test.

The integrated solution combined the Surface Data Acquisition System (SDAS), Downhole Data Acquisition System (DAS), bottomhole sampling technology, and subsea monitoring capabilities. Together, these technologies provided continuous access to reservoir data and supported rapid operational decisions.

The RezConnect well testing system provided remote downhole valve actuation and pressure surveillance without mechanical intervention. Real-time communication allowed the test team to respond quickly to well conditions as they changed and optimize fluid sampling and pressure acquisition activities. This approach improved operational flexibility and strengthened data quality throughout the testing program.

Result

RezConnect® well testing system deployment provided the operator with real-time insight into reservoir performance and delivered critical information for exploration evaluation. Continuous access to downhole data improved reservoir understanding and reduced uncertainty about pressure behavior and fluid characterization.

The operator used high-quality reservoir data to evaluate a high-potential gas reservoir and support exploration decision-making with greater confidence. Real-time monitoring and remote tool control also improved operational flexibility throughout the well test and allowed the team to adapt quickly to reservoir conditions as they shifted.

As a result, the operator achieved a more efficient reservoir evaluation process and established a new standard for digital well testing in Colombian deepwater operations. The project demonstrated the value of real-time acoustic telemetry for complex deepwater exploration programs and highlighted the role of integrated digital solutions in the reduction of exploration risk.

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