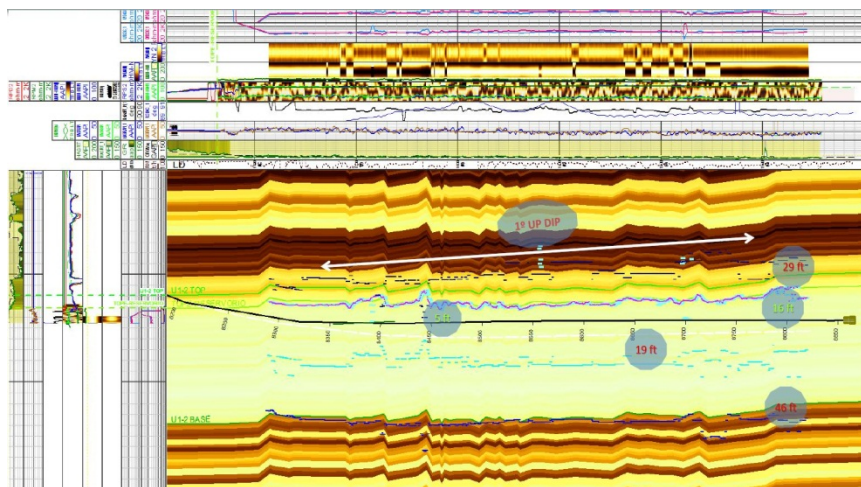


Logging-While-Drilling Technology Cuts Well-Placement Time by 50% in a Challenging Formation



The image shows the well curtain section along the horizontal trajectory through the reservoir. The GuideWave tool enabled calculating the distance to bed boundaries, positioning the well trajectory close to the roof according to client requirements, and placing the well in the zone with the best petrophysical properties.

Objectives

- Maximize exposure of a sandstone reservoir by drilling a deviated, 8 1/2-in. borehole through the top of the formation.
- Place the well in the challenging formation while using logging-while-drilling (LWD) technology to inform drilling plans.
- Minimize drilling obstacles such as low motor performance, hole tortuosity, stuck pipe, and sidetracking. In previous drilling attempts conducted by another service company, these obstacles required multiple runs to reach the drain section, which prolonged drilling operations and increased operational costs.

Our Approach

- To drill the well, Weatherford deployed the Revolution® Core rotary-steerable system (RSS) in conjunction with the GuideWave® azimuthal resistivity tool and QVGeo petrophysical and geosteering software.
- The QVGeo software—with its multiwell correlation, three-dimensional views, and simulation of LWD tool signals—constructed a geological model from well data. In real time, the software calculated the inversion and dip interpretation to identify the best petrophysical properties, which enabled the operator to optimize well trajectory and maximize reservoir exposure.

LOCATION

Venezuela

WELL TYPE

Onshore, deviated, oil

HOLE SIZE AND ANGLE

8-1/2 in., 90°

SECTION LENGTH

600 ft (183 m)

DEPTH IN

8,250 ft (2,515 m)

DEPTH OUT

8,866 ft (2,702 m)

RATE OF PENETRATION

100 ft/hr (30 m/hr)

NUMBER OF RUNS

1

PRODUCTS/SERVICES

- Revolution Core RSS
- GuideWave azimuthal resistivity tool
- QVGeo petrophysical and geosteering software



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Our Approach (continued)

- The 6 3/4-in. GuideWave tool obtained critical formation data throughout the operation. This data included high-resolution, multilayer bed boundary and formation resistivity mapping that calculated the distance to bed boundaries as between 2 and 40 ft (0.6 and 12 m). This information enabled more accurate and proactive geosteering of the RSS and resulted in better navigation of the borehole around the sweet spot.
- The Revolution Core RSS improved borehole quality, achieved a build rate of 3 to 4°, and increased rate of penetration up to 100 ft/hr (30 m/hr). This helped the operator reach the total depth of 8,866 ft (2,702 m) in just 4 days.

Value to Client

- The combination of Weatherford LWD and well-placement technologies enabled the operator to drill more than 600 ft (183 m) to reach the target zone in a single run and with zero nonproductive time.
- The well was drilled in half the time expected for an operation using a conventional motor. Completing the operation ahead of schedule saved the client rig time and operating costs.



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