LWD Services Deliver Quality Data and TD in an HTHP Deepwater Well With 28,000 psi and 290°F Conditions

Objectives

- Design, build, test, and deploy a 4 3/4-in. logging-while-drilling (LWD) tool for the 6 1/2-in. production section of an HTHP deepwater well. A tool from another provider had failed four times due to pressure problems.
- Provide a formation evaluation and wellbore survey of a 2,907-ft (886-m) openhole section starting from 28,047 ft (8,549 m).
- Wipe and drill from 28,047 to 31,330 ft (8,549 to 9,549 m).

Our Approach

- Weatherford deployed an LWD team along with a newly designed, built, and tested LWD toolstring with the following configuration: 4 3/4-in. high-temperature azimuthal gamma ray (HAGR™) sensor, multifrequency resistivity (MFR™) sensor, azimuthal density (AZD™) sensor, thermal-neutron porosity (TNP™) sensor, ShockWave® sonic tool, and a hostile-environment-logging (HEL™) measurement-while-drilling system.
- The team first provided formation evaluation and wellbore surveys for the 2,907-ft (886-m) openhole section.
- The team began drilling at 28,074 ft (8,549 m). Despite low-flow conditions that ranged between 60 and 110 gal/min (227 and 416 L/min) throughout the operation, the HEL tool provided real-time formation evaluation data. The well exerted ultra-high pressures of 28,500 psi (1,965 bar) and temperatures up to 290°F (93.3°C). The team drilled to 31,330 ft (9,549 m) in only one run.

Value to Client

- The Weatherford team successfully wiped, drilled, and reached TD in one run in an ultrahigh-pressure and high-temperature environment. The operation put an end to the nonproductive time (NPT) that had sidelined client drilling for 10 days and is valued at approximately US $10 million.
- The operation provided comprehensive formation evaluation data in a complex and harsh environment.