Schlumberger

Engineering Center Optimizes Drilling to Save USD 18 Million in Deepwater GOM Well for Shell

Cohesive drilling solution delivers 26,678-ft well in 18 days less than AFE

CHALLENGE

Drill each hole section shoe to shoe in one run, including a uniquely sized 10¼-in section, in the challenging HPHT environment of Desoto Canyon while optimizing ROP and ensuring a high-quality, clean wellbore.

SOLUTION

Use the fully integrated, multidiscipline petrotechnical engineering center for prejob planning, BHA design, and job execution, assembling PowerDrive X6* RSS, MLWD services, Rhino* integrated borehole enlargement systems, PDC drill bit, and drilling fluids with prejob simulation and analysis of the entire drilling system.

RESULTS

- Delivered well 18 days ahead of plan, saving approximately USD 18 million off AFE.
- Optimized drilling with an integrated team specialized in drilling, MLWD, bits, reamers, and fluids.
- Drilled each section of the 26,678-ft well to TD in one run with zero NPT, avoiding midsection BOP trips.

Plan HPHT exploration well in deepwater Gulf of Mexico

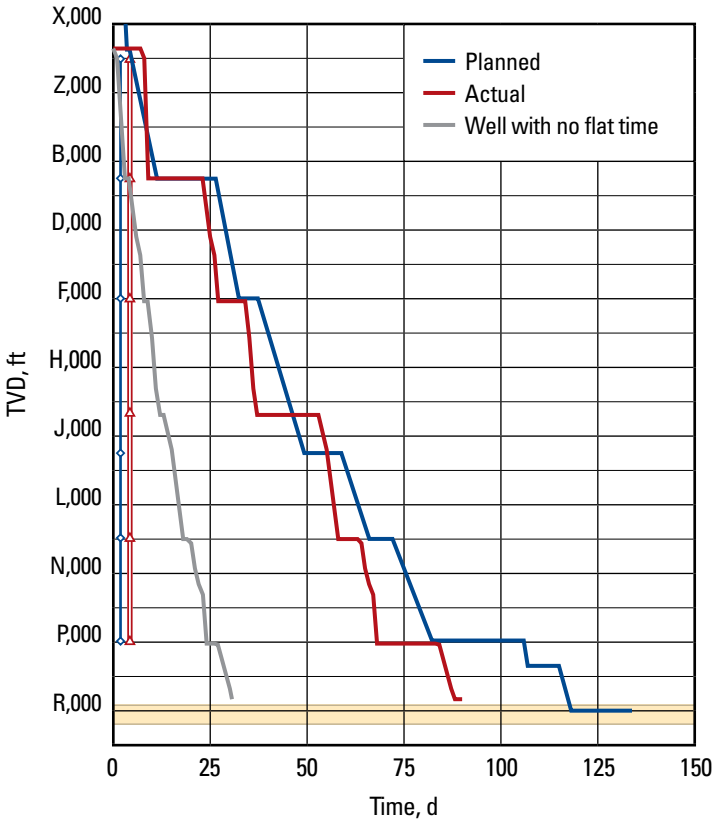
Shell planned to optimize drilling performance in the deepwater well, located in the Eastern Gulf of Mexico. With scarce offset data, Schlumberger coordinated a cohesive multidiscipline team for planning and execution of the high-risk project that faced an HPHT environment up to 340 degF, salt avoidance, and TVD greater than 25,000 ft.

Analyze BHA components and fluid systems for optimal performance

For BHA optimization, i-DRILL* engineered drilling system design was used for predictive modeling to simulate BHA tendencies and stability for each of the BHAs. The team analyzed potential for stick/slip and shock and vibration (S&V) and BHA behavior in multiple scenarios given the unknown environment. VIRTUAL HYDRAULICS† software—a proprietary integrated suite of programs from M-I SWACO, a Schlumberger company—predicted the swab and surge pressures in the wellbore as well as ECD and provided a hole cleaning overview.

Saved USD 18 million and 18 days off AFE

The six hole sections were each finished in a single run without tripping up for regulatory BOP tests, tool failure, or hole conditioning, resulting in zero NPT. The 26,678-ft vertical well was drilled with minimal stick/slip and S&V and in great condition for logging evaluation and casing runs. Schlumberger drilled the well in 18 days less than AFE, saving Shell approximately USD 18 million.



The well was drilled 18 days ahead of AFE, saving Shell approximately USD 18 million.

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Drilling

*Mark of Schlumberger
†Mark of M-I, L.L.C.
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