

WPX Energy Saves 9 Days While Drilling a Nearly 3-Mile Lateral in North Dakota

PowerDrive Orbit vorteX RSS sets a lateral footage record for Mountrail County

CHALLENGE

Increase ROP while drilling a low-tortuosity borehole for a nearly 3-mile lateral targeting an abrasive formation.

SOLUTION

- Improve drilling performance with a PowerDrive Orbit vorteX* motorized RSS and a customized directional PDC bit from Smith Bits, a Schlumberger company.
- Optimize borehole drilling dynamics with measurements from SlimPulse* retrievable MWD service.

RESULTS

- Saved 9 days as compared to the average achieved in five lateral sections in the same field drilled with conventional motor BHAs.
- Set lateral footage record of 14,717 ft [4,485 m] for Mountrail County, North Dakota.
- Eliminated a reaming run by drilling a smooth wellbore, allowing the operator to run casing to bottom without contingencies.
- Optimized well placement and eliminated sliding, which increased overall ROP and improved hole cleaning.



Drill smooth ERD wells faster

WPX Energy was drilling extended reach wells in the Williston Basin to target the Bakken and Three Forks formations. Using conventional motor BHAs, WPX experienced premature tool wear and extreme borehole tortuosity in these abrasive environments. Dissatisfied with the results from conventional motor BHAs, WPX sought to find a system capable of high ROP while maintaining a high-quality borehole.

Maximize ROP and minimize tortuosity with motorized RSS

Schlumberger recommended the PowerDrive Orbit vorteX motorized RSS, which can perform at speeds up to 350 rpm while maintaining directional control and consistent steerability. Equipped with hold inclination and azimuth mode, this motorized RSS automatically maintains the trajectory specified to minimize tortuosity and achieve target TD. The PowerDrive Orbit vorteX RSS also features an advanced actuation pad designed with metal-to-metal seals to tolerate corrosive drilling fluids and challenging hydraulic designs.

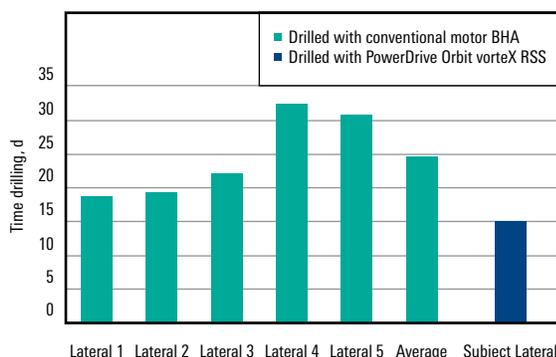
Using the IDEAS integrated drillbit design platform, Schlumberger modeled downhole conditions and operator requirements, such as a handling speed of 0.29 rev/galUS to select the exact configuration of directional PDC bit that would optimize drilling. SlimPulse retrievable MWD service was also recommended to mitigate vibration and stick/slip by providing formation evaluation and BHA drilling mechanics data.

Reached TD 9 days faster than average achieved by conventional motor RSSs

Using the recommended BHA configuration, WPX reached the target TD of its nearly 3-mile lateral 9 days faster than the average achieved in five nearby lateral sections drilled using conventional motor BHAs. As compared to the best of those five lateral sections, the PowerDrive vorteX RSS saved 3.5 days.

As per WPX's objective, the PowerDrive Orbit vorteX RSS achieved an ROP of 76 ft/h [23 m/h], a 20% increase over the average ROP for other wells in this field. In part, this was accomplished by eliminating the need to slide. The wellbore was drilled so smoothly that no reaming was required, and WPX was able to set casing to bottom in one run.

Additionally, gamma ray measurements from the SlimPulse service helped WPX confirm downhole steering commands, enabling WPX to optimize well placement. This 14,717-ft section set a lateral footage record for Montrail County.



The PowerDrive Orbit vorteX RSS saved WPX 3.5 days as compared to the best of five nearby motor BHA runs and reached TD 10 days faster than the average of those five wells.