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PowerDrive vorteX System Mitigates Shock and Vibration While Increasing ROP 67%

Operator uses powered RSS to significantly boost ROP in eastern Siberia, Russia

CHALLENGE

- Improve horizontal drilling efficiency by overcoming severe shock and vibration.

SOLUTION

- Use PowerDrive vorteX* powered rotary steerable system (RSS) to maximize energy at the bit, reduce vibration and drag, and increase ROP.

RESULTS

- Increased average horizontal ROP from 12 m/h [39 ft/h] to 20 m/h [65.6 ft/h], setting a new field record.
- Reduced total shock count from approximately 2 million to just 10,000.
- Eliminated stick/slip as well as shock and vibration issues.
- Saved 25 hours of rig time.

Increase ROP in high-shock-and-vibration environment

Pad 3 of a six multiwell pad operation in an eastern Russia field was close to the margin of the oil reservoir, and an area with 90% sandstone and mudstone in the formation. Consequently, the operator's main drilling challenge involved overcoming excessive shock and vibration while drilling the 6-in horizontal interval.

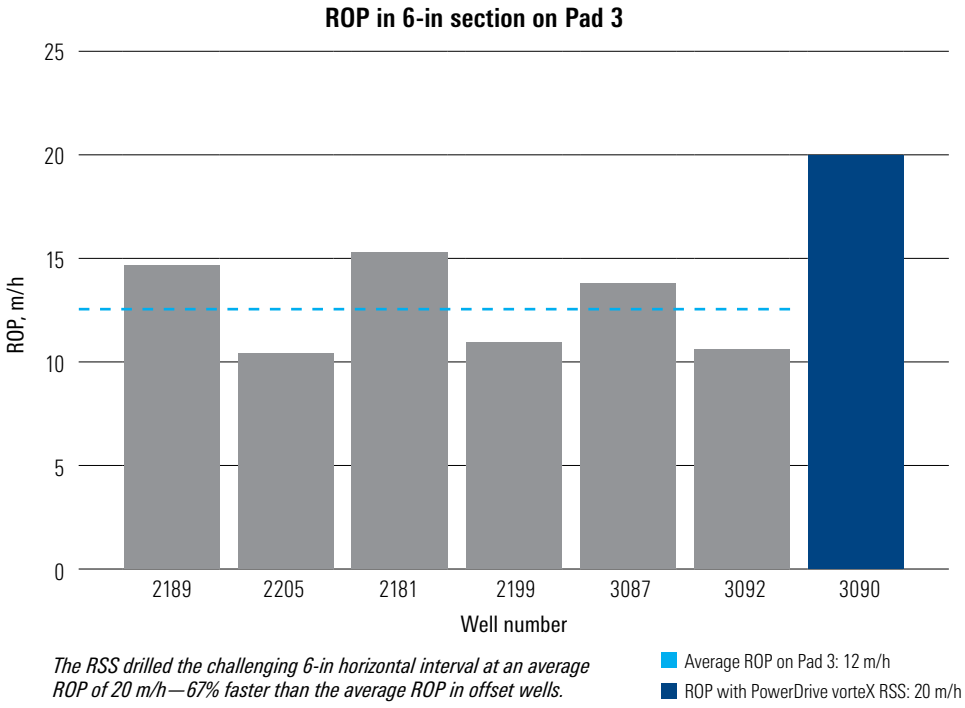
Historically, these harsh drilling conditions have led to slow ROP, increased tool failures, stick/slip issues, poor steerability, and lost rig time. In previous wells, the operator applied different BHA configurations, stabilizers, and bit designs with no significant improvements in drilling efficiency.

Use PowerDrive vorteX RSS to improve drilling performance

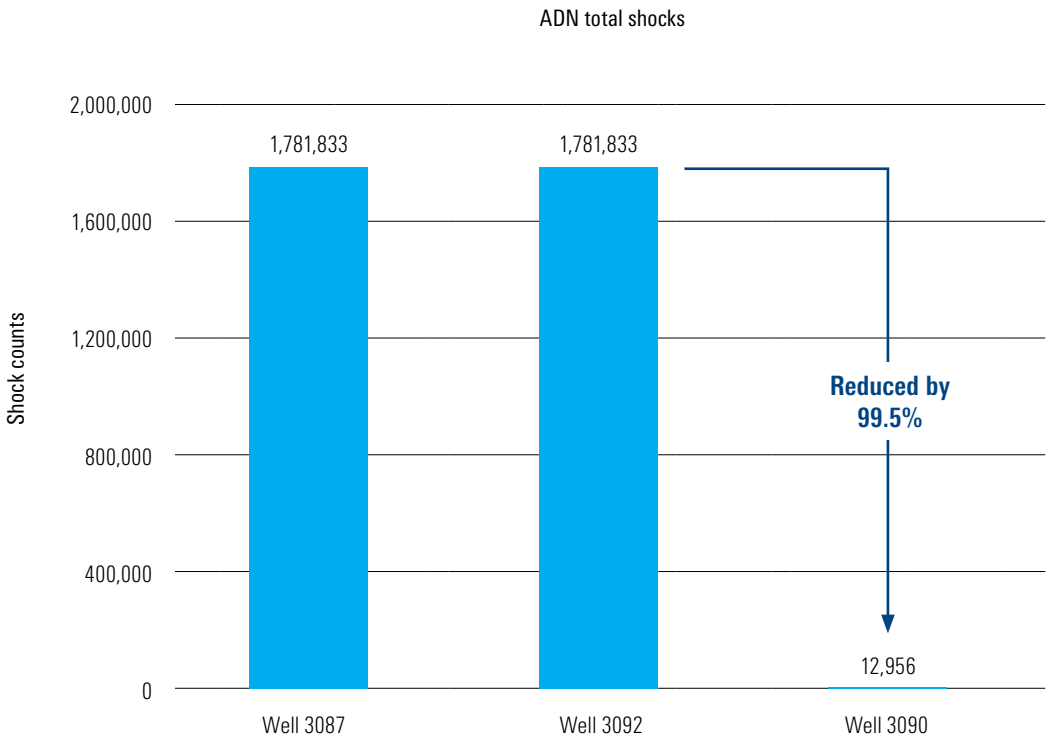
Schlumberger recommended deploying the fully rotating PowerDrive vorteX powered RSS to drill the horizontal section. The system's fully integrated power section converts mud hydraulic power to mechanical energy—mitigating drilling risks and increasing ROP in challenging drilling environments. The unique design of PowerDrive vorteX system maximizes power at the bit, delivering longer runs, faster penetration rates, and greater trajectory control than conventional motors.

Drilled challenging horizontal section 67% faster

Using the PowerDrive vorteX RSS, the operator drilled to TD at 3,478-m MD [11,410-ft MD] with no shock and vibration or stick/slip issues. The RSS reduced total shock count from approximately 2 million to just 10,000, enabling an increase in average ROP for the horizontal section from 12 m/h to a record 20 m/h. This saved the operator 25 hours of rig time.



The RSS drilled the challenging 6-in horizontal interval at an average ROP of 20 m/h—67% faster than the average ROP in offset wells.



The PowerDrive vorteX system reduced total shock count by approximately 99.5%.

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