

PowerDrive vorteX Max System Reduces Average Total Drilling Cost by 30% per Lateral Foot, Permian Basin

Parsley Energy uses high-powered RSS to set lateral footage and drilling speed records while improving drilling efficiency in Wolfcamp Formation

CHALLENGE

- Extend footage and increase ROP in shale and interbedded abrasive formations while improving directional-drilling control in a multiwell-pad environment.

SOLUTION

- Deploy the PowerDrive vorteX Max* high-powered rotary steerable system (RSS) to mitigate trajectory deviation due to formation characteristics.

RESULTS

- Reduced average drilling cost per lateral foot by 30%.
- Drilled 7,128 lateral feet [2,172.61 m] in 1.7 days.
- Increased total production wells drilled by 89%.
- Extended total lateral footage drilled per well by an average of 9%.



Drill through challenging formation while extending lateral footage and improving speed

During 2016, Parsley Energy faced the challenge of improving drilling efficiency for multiwell pads in the Midland basin, focusing on extending production-hole lengths from 1-mi [1.609-km] laterals to 2 mi [3.218 km] or more. Well designs consisted of 12¼-in intermediate sections followed by 8¾-in curves and 8½-in laterals. Production-hole trajectories targeted the Wolfcamp Formation, an interbedded abrasive formation primarily of salts and limestone. There was severe shock and vibration in the offsets. Combined, all these factors caused an overall well delivery time that ranged between 20 and 35 days.

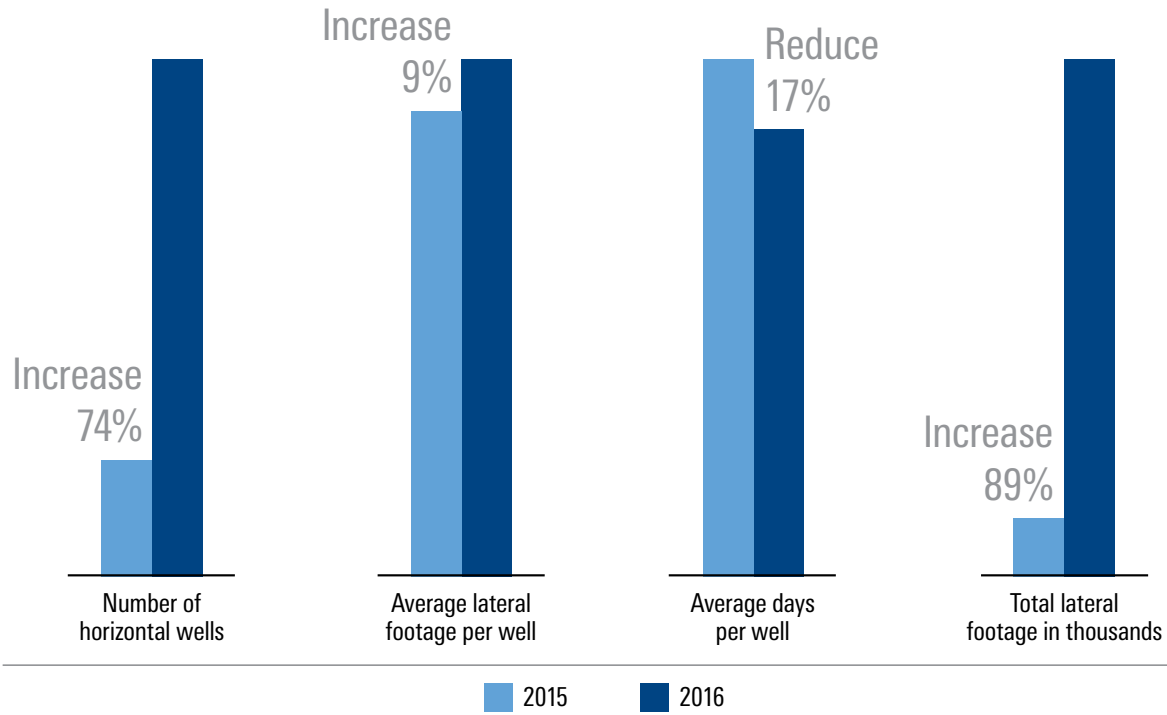
Additionally, the basin consisted of other multiwell-pad drilling activity, which increased the risk of wellbore collision. Offset wells using high dogleg severities (DLS) experienced BHA failures that resulted in multiple lateral runs.

Optimize the PowerDrive vorteX Max system to increase drill speed and trajectory control

Schlumberger recommended deploying the PowerDrive vorteX Max system to continue drilling the 8½-in lateral sections of Parsley Energy wells in that basin. The system is both rugged and customizable, enabling it to be optimized to endure drilling conditions through the Wolfcamp Formation, as well as to allow the BHA to pass through the high dogleg severities curve section. The power section can be adjusted to improve drill speed once the curve is built. Also, the self-steering mode for both inclination and azimuth provides better trajectory control in the dense, multiwell environment.

“Drilling days were initially reduced from 35–40 days to 25 days and are now into the teens for these 10,000-ft laterals—we are getting quite a resounding reputation in the industry as a premier, state-of-the-art drilling team.”

Jeffery Boggs
Senior Drilling Engineering Manager
Parsley Energy



The PowerDrive vortex Max system helped Parsley Energy drill farther, faster, and deeper in more wells than it achieved in the previous year.

Delivered improved drilling efficiency, record-setting drilling speed, and extended footage

The PowerDrive vortex Max system helped Parsley Energy drill 80 wells in Permian Basin in 2016, representing a year-over-year increase of 74%. The average lateral footage increased 9% per well. Rig days were reduced by 17% and drilling costs per lateral foot decreased 30%. The total lateral footage drilled increased by 89% year on year.

A record was set for one well in the Wolfcamp Formation by drilling a 7,128-ft [2,172.61-m] lateral section with one run in less than 3 days.

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