



CASE STUDY



FlexDrill



Improving Efficiencies and Preserving Bit Life by Automating eDriller Set Point Optimization

OBJECTIVE

In the Permian Basin, one H&P operator has seen significant performance improvements when utilizing H&P's FlexApps in an ongoing well program.

The operator had been drilling similar well types since October 2016 experiencing minimal cycle time improvements. Needing to gain optimal efficiencies, the operator reached out to H&P—specifically interested in increasing their rate of penetration (ROP), achieving consistent bit engagement after tagging bottom, and decreasing overall on-bottom time.

The operator had been involved with testing new automation technologies, and they were interested in what H&P had to offer.

FlexDrill™ was recommended to maximize efficiency while minimizing the need for driller intervention. FlexDrill was installed on the rig, where they quickly saw significant performance improvements.

WELL PROGRAM STATS

- 22 Wells Compared (11 Wells with FlexDrill)
- Glasscock & Martin Counties, Texas
- Spraberry, Wolfcamp A and Wolfcamp B formations
- Three Casing String Well Profile
- Spud to Total Depth: Average of 18.5 Days at 17,500 feet

RESULTS

Increased ROP

- The automated eDriller set point optimization created a 15% higher average ROP in all sections where FlexDrill was utilized

Time Savings

- The rig's average back to drilling time was reduced by an average of 17 seconds, which translated to an improvement of more than 21%

Lower Average Bottom-hole Assembly (BHA) Totals

- The proper bit engagement and automated drilling dysfunction mitigation contributed to a reduction in total number of BHAs by 0.45 per well

Lower Cycle Time

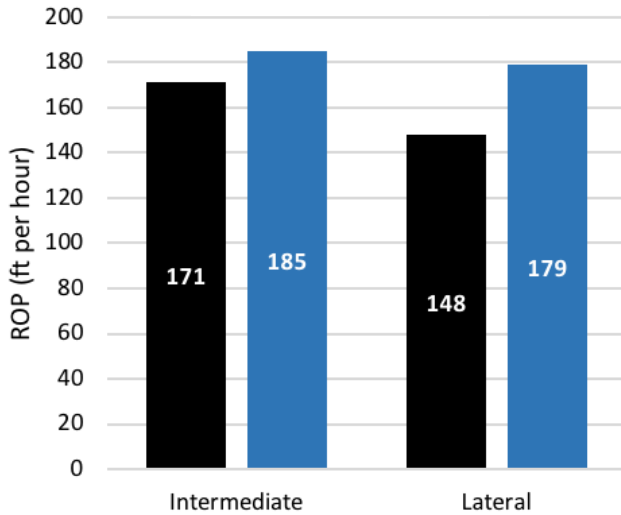
- The rig's average Spud to Total Depth time was reduced to 15.8 days, with an average total depth of 17,500 feet

Cost Savings

- With a \$70,000 spread rate, the average savings utilizing FlexDrill was \$3,400 per day

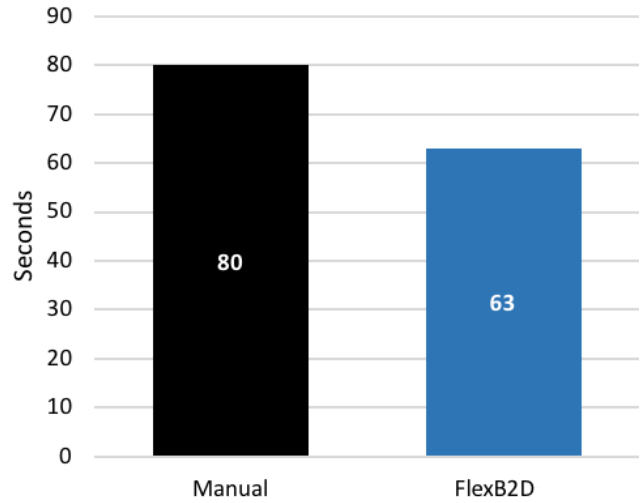


Average ROP



FlexDrill increased the average ROP in both the intermediate section by 8%, and the lateral section by 21%.

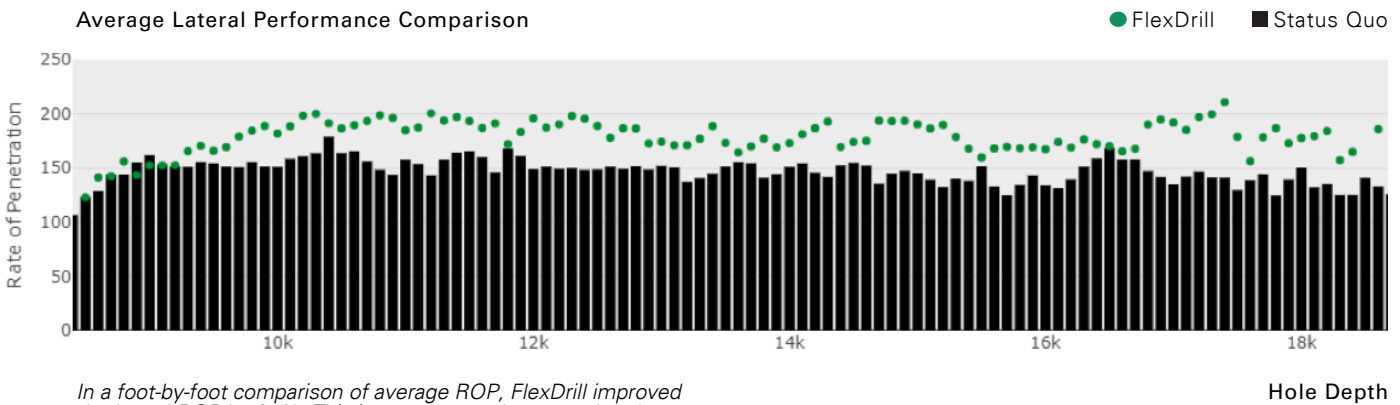
Average Back to Drilling Time



Automating the back to drilling process reduced the overall average when compared to completing the multi-step task manually.

■ FlexDrill ■ Status Quo

Average Lateral Performance Comparison



In a foot-by-foot comparison of average ROP, FlexDrill improved the lateral ROP by 21%. This improvement alone translated to a time savings of 8.4 hours.



ABOUT US

We're rated 1st by our customers 11 years in a row because no one designs, fabricates, and operates automated drilling performance packages as well as we do. H&P reduces risk, lowers total cost of operations and accelerates well programs better than anyone. Our long-standing commitment to safety reinforces the importance we place on people and our ability to recruit and retain top talent to serve our customers.

* PAST PERFORMANCE IS NOT A GUARANTEE OF FUTURE RESULTS. ANY STATEMENTS REGARDING PAST PERFORMANCE ARE NOT GUARANTEES OF FUTURE PERFORMANCE AND ACTUAL RESULTS MAY DIFFER MATERIALLY.