

Nabors' integrated Smart Suite significantly reduces days on well in the Bakken

Challenge

Reduce days to drill on a long-term drilling program, improve consistency of directional drilling performance and limit vibrations in the lateral that result in BHA failures

The non-automated offset wells averaged 1,515 feet per day, 30 slides across all sections of the well, an average ROP of 160 and 16 hours tripping resulting in an average of 15 days spud to TD.

Solution

- Implement the SmartNAV™ and SmartSLIDE™ systems to improve slide performance and standardize the approach on wellbore placement.
- Utilize SmartNAV™ directional automation to centralize directional drilling decision making in a remote operating center and incorporate standardized best practices to reduce slide count.
- Deploy SmartDRILL™ process automation to minimize damage to the BHA and increase one-run laterals to reduce trip time.

Results

- Reduced average Spud to TD to 11 days saving 4 days versus the average non-automated offset (Table 1)
- Increased footage per day by 28% to 1,935 ft. per day versus the average non-automated offset (Table 1).
- Achieved an average ROP of 197 versus 160 for the average non-automated offset (Table 1).
- Reduced slide count across all sections to an average of 25 versus the non-automated (Table 1).
- Reduced trip time 34% to 10.5 hrs. across all sections versus the non-automated offset (Table 1).
- Achieved 100% one-run laterals and reduced BHAs per hole section by 60% (Figure 1).

Case Study Facts

LOCATION:

McKenzie County, ND

TIMEFRAME:

3Q 2019– 4Q 2020*

CUSTOMER SUCCESS:

Time savings and performance improvement as a result of a fully integrated suite of advanced automation **saved the operator \$141,399 per well****.

FOOTNOTES:

*Adoption of technologies was scaled by operator. Time periods selected reflect no use of automation versus implementation of full automation suite.

**Assuming a spread rate of \$60,000 and an average depth of 20,000 ft. Savings realized have been adjusted to reflect the cost of automation on a per well basis. Not inclusive of savings resulting from reduced damage to downhole tools.

Automated Well Performance Summary

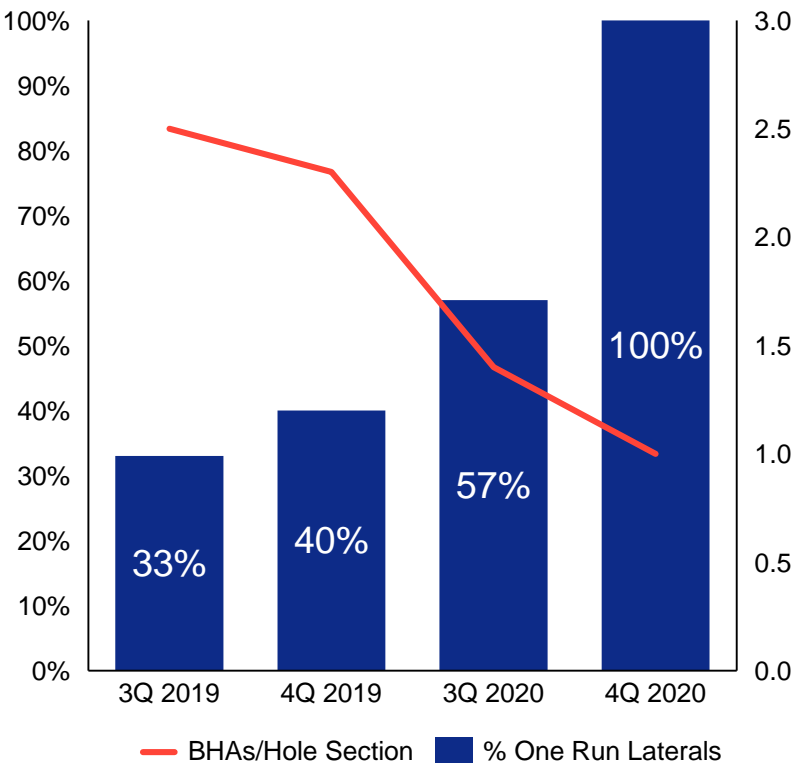
Table 1

Well Name	Avg. Spud to TD (days)	Avg. Footage per Day	Avg. ROP	Avg. Slide Count	Avg. Trip Time (hrs)	Avg. Lateral Cycle Time (hrs)
Smart Suite	11	1,935	197	25	10.5	57.5
Avg. Operator Offset	15	1,515	160	30	16	95

The implementation of our integrated technology portfolio enabled the operator to drill faster wells through improved slide performance and quality, standardization and execution of best practices for directional drilling operations, increased ROP throughout the well to reduce curve time and reduced hours spent tripping.

One-Run Lateral % and BHAs per Hole Section

Figure 1



Lateral Cycle Time Reduction (hours)

Figure 2

