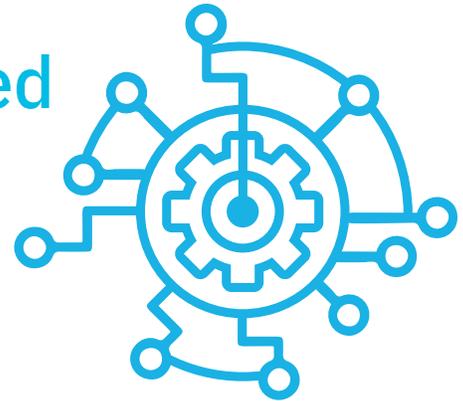




Fleetwide Automation Yields 17% ROP Increase & Extended Tool Life in Delaware Basin



Region: Delaware Basin, US Land
Scope: 10-Rig Fleet | 21,000+ Connections

Overview

On a 10-rig program in the Delaware Basin, a major operator faced a critical barrier to performance: inconsistency. As lateral lengths increased, inconsistency in torque behavior, connection execution, and drilling parameters drove unplanned trips, BHA damage, and constrained drilling speeds.

By deploying the **FlexFusion® Technology Package** fleetwide, the operator established a standardized, automation-driven drilling environment that reduced downhole dysfunction and enabled faster, more predictable well delivery. The result was a **17% increase in lateral on-bottom ROP**, a **46-87% reduction in torque variance**, and a significant extension in tool life due to reduced trips.

The Challenge: Unplanned Trips and ROP Improvement

As lateral sections extended, the operator’s 10-rig fleet began experiencing performance divergence. While some rigs performed well, others suffered from:

- ▶ High Torque Variability: Leading to stick-slip and inefficient weight transfer
- ▶ Shock Events: Occurring primarily during connections and transitions, damaging motors and BHAs
- ▶ Unplanned Trips: A direct result of downhole fatigue, driving up NPT (Non-Productive Time)

The operator needed a solution that addressed dysfunction at the root, not just to drill faster, but to drill consistently across the entire program.

The Solution: A Unified Automation Ecosystem

FlexFusion integrates multiple automation technologies into a single, unified drilling ecosystem. Rather than addressing isolated symptoms, the system targets the root causes of drilling dysfunction by reducing variability in torque, weight transfer, and connection execution. This stability translated directly into improved drilling speed across both vertical and lateral sections.

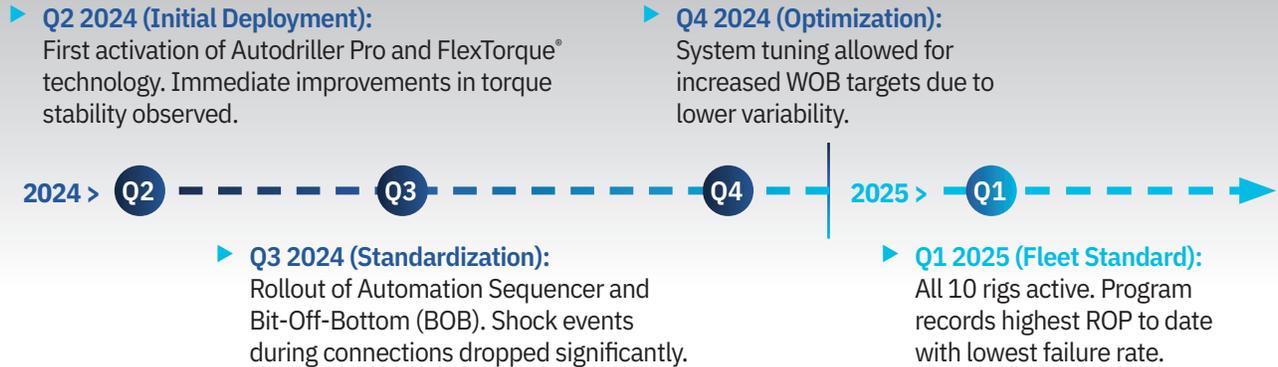
Key Features

Technology	Function	Primary Benefit
Autodriller Pro	Drill-off control	Smoothed WOB application & reduced block velocity swings
FlexTorque® Technology	Stick-slip mitigation	Lowered torque variance, enabling higher differential pressure
FlexB2D® 2.0 Technology	Connection automation	Standardized transitions, reducing shock during rotate-to-bottom
StallAssist® Technology	Stall recovery	Automated detection and recovery to prevent tool damage
Automation Sequencer	Workflow standard	Standardized drill-off and hoist-off-bottom procedures

CASE STUDY

Beginning in Q2 2024, H&P partnered with the operator to roll out a staged deployment of the **FlexFusion® Technology Package** supported 24/7 by the Drilling Performance Group.

Operational Timeline



The Outcome: Stability Driving Efficiency

The data, validated over **21,000+ automated connections**, showed that stability was the precursor to faster, more predictable well delivery.

Performance comparisons consistently showed higher rotating ROP when FlexTorque technology was enabled, with gains observed across multiple counties and well designs. These results reinforced that FlexFusion technology does not simply improve performance in one section of the wellbore, but delivers end-to-end speed enabled by reduced torsional dysfunction and improved parameter control.

Fleetwide data further confirmed this trend, with lateral on-bottom ROP increasing from 104 ft/hr to 122 ft/hr following full deployment. These gains were achieved alongside substantial reductions in torque variance — up to 87% in lateral sections — underscoring that improved speed was enabled by greater consistency, not increased risk.

Performance Gains

- ▶ **+17% Lateral On-Bottom ROP:** Increased from **104 ft/hr to 122 ft/hr**
- ▶ **~10% Reduction in Well Cycle Time:** Faster overall well delivery
- ▶ **+7% Lateral ft/day:** Specific gains in the most demanding sections
- ▶ **0.38 days saved per well** from FlexTorque technology alone
- ▶ **~51% reduction in unplanned trips**

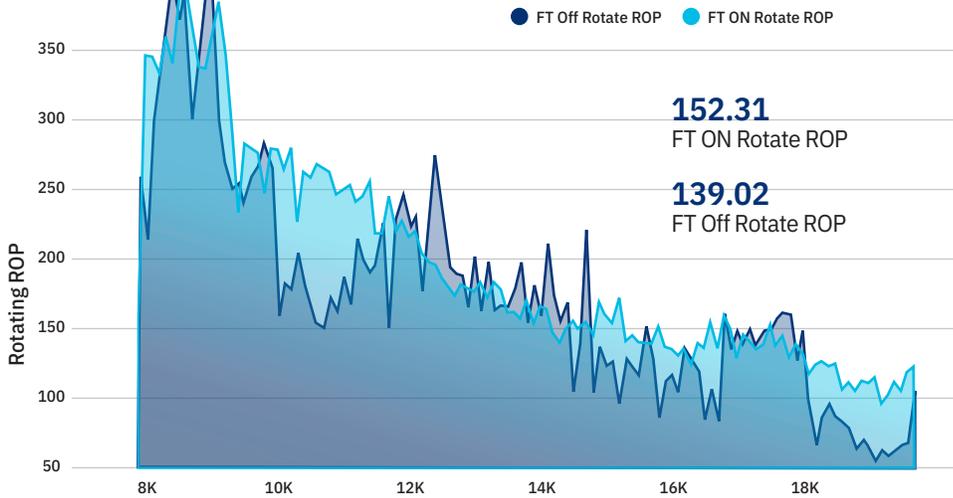
Reduction in Dysfunction

- ▶ **Torque Variance:** Reduced by **46% in vertical and 87% in lateral** sections
- ▶ **Block Velocity Variance:** Reduced by **13.4% in lateral** sections
- ▶ **Trips per 10,000 ft:** Dropped from **2.74 to 2.37**, indicating improved BHA survival rates

Connection Consistency

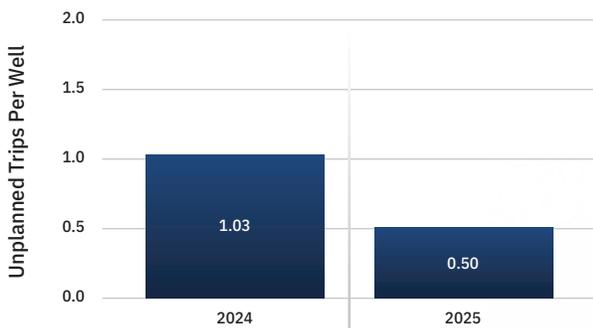
- ▶ **>92%** of connections performed without WOB overshoot
- ▶ **~1 Minute** average rotate-to-on-bottom time
- ▶ **Minimal Delta-P Overshoot:** Significantly reduced shock loading on the motor

Rotating ROP Lateral – FlexTorque® Technology On/Off



▶ FlexTorque® technology delivered measurable ROP improvements in both vertical and lateral sections

Unplanned Trips Offset Operator



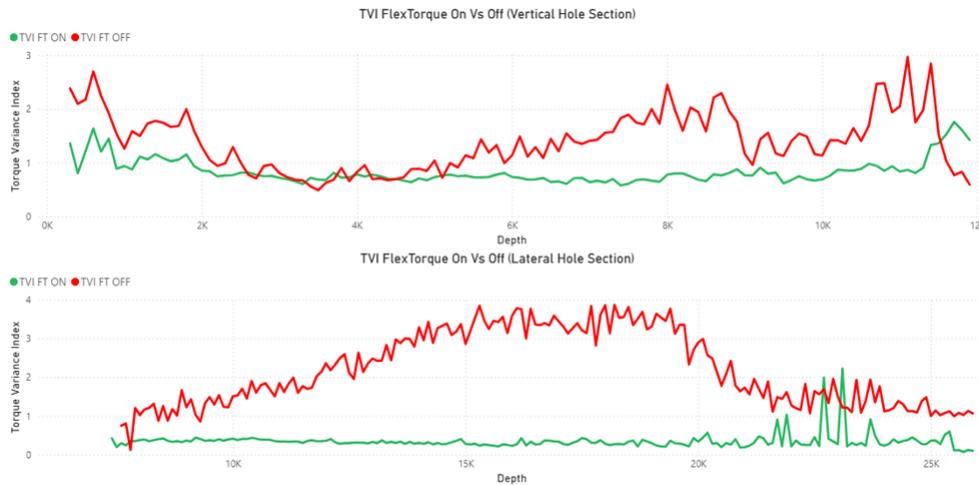
▶ ~51% decrease in unplanned trips.

**All rigs supported/
monitored 24/7
by our Drilling
Performance Group**



CASE STUDY

FlexTorque® Technology – Torque Variance Comparison



Goals

- ▶ 90% utilization of on-bottom drilling time in intermediate and lateral
- ▶ TVI reduction of 10%
- ▶ Intermediate – TVI reduction to reduce torsional vibrations
- ▶ Lateral – TVI reduction allows room to increase WOB and diff when limited by MUT

Torque Variance Stats

- ▶ Torque variance reduction in vertical: 46%
- ▶ Torque variance reduction in lateral : 87%

Conclusion

This program demonstrates that **automation is not just about speed – it's about reliability.** By removing variability the operator protected their downhole tools and experienced more predictable drilling, even when pushing parameters higher.

For more information on how H&P can help you achieve better drilling outcomes, contact an H&P sales representative today or contact us through our website at hpinc.com/contact.

It's time to follow through on your drilling performance potential.



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.

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