



## CASE STUDY

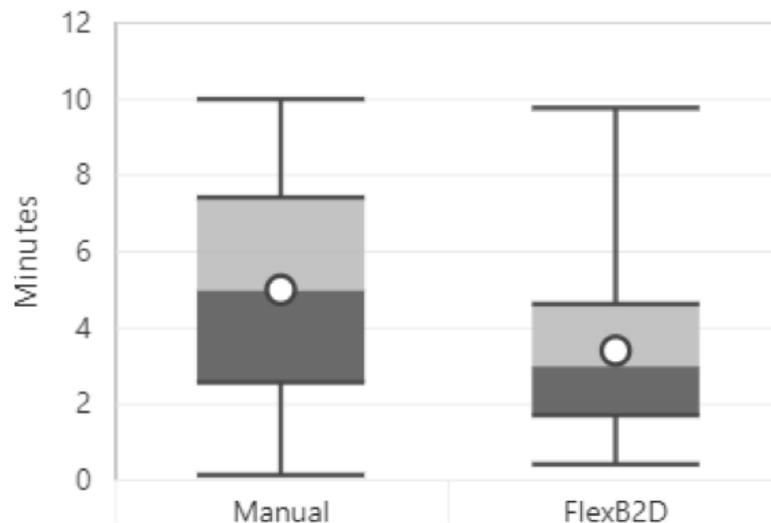


## Achieving Configurable and Consistent Bit Engagement

### OVERVIEW

The process of staging drilling set points after tagging bottom is performed throughout the entire well and can be inconsistent and cause drilling dysfunction. H&P has transformed this common multi-step task into an automated and configurable process with FlexB2D™.

FlexB2D performs automated zeroing of Weight on Bit and Delta-P set points, as well as ensuring proper contact with the formation. This allows for configurable and consistent bit engagement, reducing bit and BHA torsional and lateral vibrations.



Compare the difference between Manual and FlexB2D in both average back to drilling time (rotation to on-bottom drilling) and standard deviation. Automating the multi-step task not only shortens the amount of time it takes, it also reduces variation among all occurrences.

### RESULTS

#### Reduces Risk

- Lowers risk of damaging downhole tools by reengaging the bit in a controlled and repeatable manner

#### Lowers Total Cost of Operations

- Less costly bit and BHA issues
- Improved consistency drives lower cost per foot

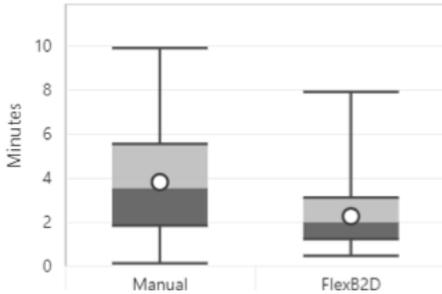
#### Accelerates Well Programs

- Lower rotary to on-bottom time averages contribute to time savings in overall cycle time
- Extended bit and BHA life reduces unplanned trips

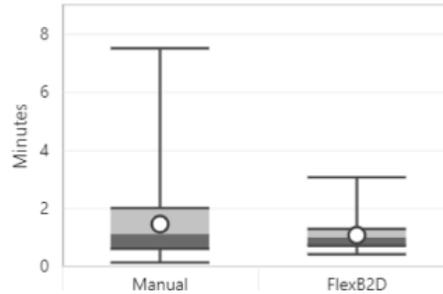


### FlexB2D Performance Improvements Across All Districts

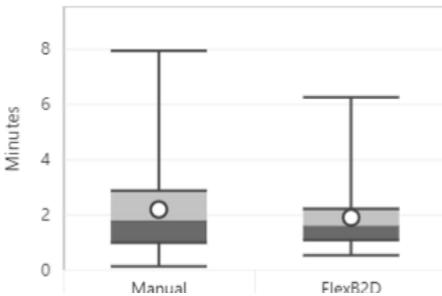
West Texas—Delaware Basin



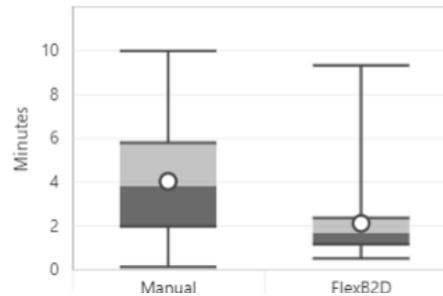
North Dakota—Bakken Shale



South Texas—Eagle Ford Shale



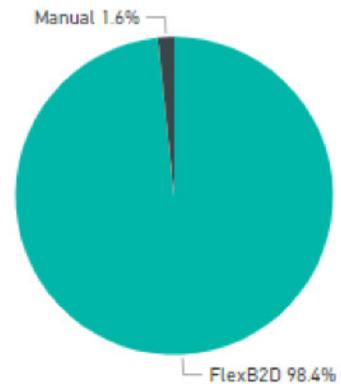
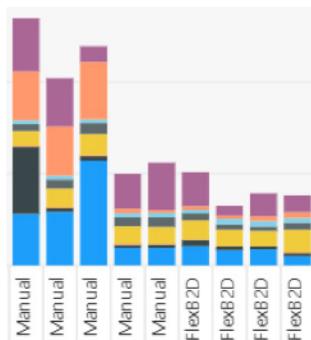
Midcontinent—Meramec Shale



### Analyzing and Measuring Performance Efficiencies with FlexB2D

Track continuous improvement, look for trends, set goals and capture best practices.

- EndofStand to PumpsOff (min)
- PumpsOff to In Slips (min)
- InSlips to BreakOut (min)
- BreakOut to MakeUp (min)
- MakeUp to PumpsOn (min)
- PumpsOn to OutofSlips (min)
- OutofSlips to TDS Rotation (min)
- TDS Rotation to OnBtm Drilling



Compare the difference with past individual top drive rotation to on bottom drilling times.

Monitor FlexB2D usage over the entire well.



### 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.