

NOVOS reduces connection times for major operator on Alaska North Slope

Challenge

The operator was drilling a series of difficult two-section sidetrack wells on the Alaska North Slope that served as production replacement wells. Significant environmental and operational hurdles, including subzero temperatures, flora and fauna sensitivity, and fragile geologic conditions, made these some of the most technically challenging wells drilled in the region. The teams involved set the KPIs of balancing ROP so that it remained within pressure and wellbore stability boundaries while also achieving consistency and repeatability as greater degrees of drilling automation were implemented on the project.

Solution

The NOVOS reflexive drilling system, a platform for process automation, was chosen for this project. NOVOS sits on top of the rig's base-level control system and uses an imported well plan that describes desired drilling parameter ranges, performing planned operations until TD is reached. This level of control and consistency naturally leads to improved drilling performance throughout the drilling lifecycle, regardless of driller experience levels. NOVOS also structures data and defines activities, helping engineers to develop lessons learned and scale best practices across fleets and regions. On this project, NOVOS was intended to help both the operator and the drilling contractor achieve their objectives.

Results

The operator achieved valuable time reductions using the NOVOS system, saving approximately 4 min. per intermediate hole-section connection and 2 min. per production hole-section connection when compared with relevant offsets. Weight-to-slip sequences were comparable when examining the performance of the driller and NOVOS, but as much less interaction was necessary when using the system, the driller could focus on analytically supervising and managing the drilling operation versus performing each sequence. Slip-to-weight sequence performance showed that NOVOS was faster than the driller's manually controlled functions, leading to several hours of time saving. Furthermore, far greater consistency with managing pump start-ups helped prevent major NPT events in unstable openhole scenarios. Total drilling connection time (weight-to-weight) was reduced by an average of 30% versus non-automated connections on the project.

Case study facts

Location: Alaska North Slope

Rig or customer: Confidential

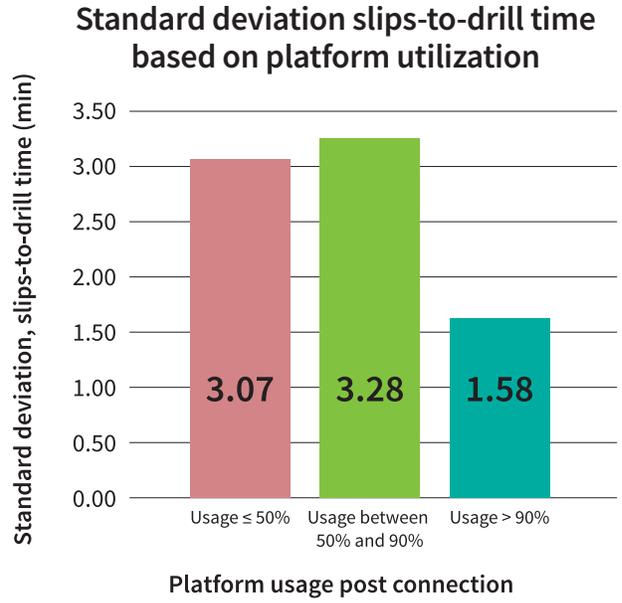
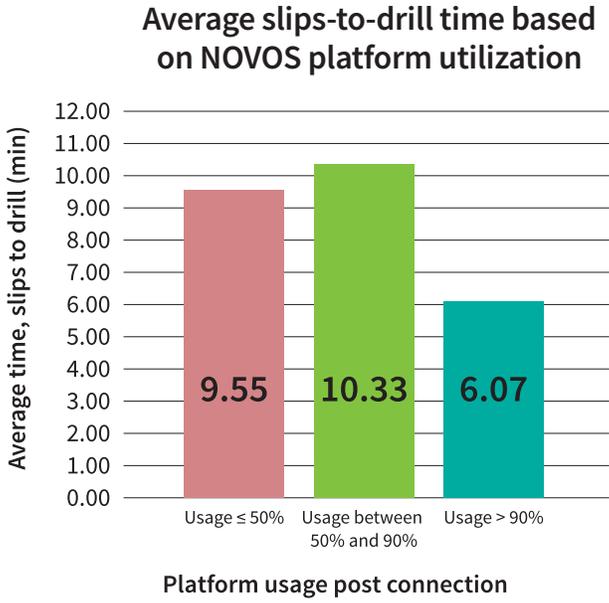
Time frame

- 2017 to 2018
 - Total of 11 wells drilled
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Value to the customers

- Successful implementation of NOVOS helps the driller to increase performance and consistency
 - Saves 4 minutes per intermediate hole-section connection and 2 minutes per production hole-section connection when compared with relevant offsets
 - Saves 30% on total weight-to-weight drilling connection times
- Drilling apps are integrated into NOVOS to tailor operation of the top drive and drawworks while on bottom
- NOVOS works in harmony with wired drill pipe, allowing instantaneous data transmission from downhole dynamics tools that enables parameter optimization

Case Study



Substantial time savings achieved when using the drilling process automation platform more than 90% of the time during drilling connections (based on one-second data). Total drilling connection time (weight-to-weight) was reduced by an average of 30% versus non-automated connections on the project.