Precision DRILLING

AlphaApps™

Montney (NE B.C)
CANADA - ONSHORE
CASE STUDY

CHALLENGES

To improve directional control and consistency.

SOLUTIONS

AlphaApps™ Pason Toolface Control reduces toolface error and slide drilling required, while increasing motor yield.

RESULTS

46.3% reduction in toolface error

9.8% increase in motor yield

8.4% reduction in slide drilling

Fully Automated Slide Drilling: AlphaApps™ Pason Toolface Control Reduces Toolface Error and Increases Motor Yield in Montney

OVERVIEW OF CASE STUDY

Directional drilling with conventional bent motor assemblies presents many challenges in achieving consistent directional control. The increasing complexity of well trajectories amplifies these challenges, especially since slide drilling is primarily a human-managed process that can vary significantly based on the experience and discretion of the Directional Driller.

AlphaApps™ Pason Toolface Control (TFC) fully automates the slide drilling process and delivers consistent directional control and improved performance. The TFC app controls the rig draw works and top drive and utilizes Machine Learning (ML) to continuously adjust to changes in reactive torque, differential pressure, and toolface orientation to consistently achieve a target toolface.

PERFORMANCE HIGHLIGHTS

Through the course of drilling a 6-well pad, 2576m of high-resolution slide drilling data was collected to evaluate tool face control when the TFC app was On (automated slide drilling) versus when the TFC app was Off (manual slide drilling). Data was aggregated across the vertical, tangent, build, and lateral directional intervals to ensure a broad range of wellbore inclinations and drilling scenarios were explored. Toolface error, desired toolface versus actual toolface, was compared by grouping the data into 20-degree windows of inclination to evaluate performance as wellbore inclination changed.

Over the 6 well program, the TFC app reduced toolface error by 46.3% when compared to manual slide drilling (Figure 1) with some intervals showing an improvement of more than 50% (Figure 2). Improved toolface control led to a 9.8% increase in motor yield (Figure 3) and resulted in an 8.5% reduction in the amount of slide drilling required (Figure 4).

CONCLUSION

Automated slide drilling with Precision's AlphaApps™ Pason Toolface Control app delivers significant value by reducing toolface error, increasing motor yield, and reducing the amount of slide drilling required. With applications from conventional manned to 100% remote directional drilling operations, TFC reduces risk and uncertainty in drilling programs.

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REDUCTION
46.3%
in toolface error

INCREASE
9.8%
in motor yield

REDUCTION
8.4%
in slide drilling required

FIGURE 1

Toolface error comparison with TFC App On vs TFC Off.

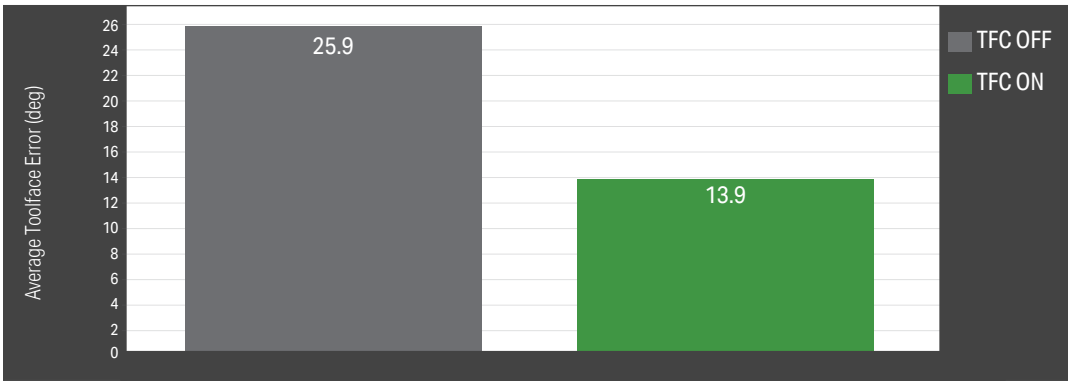


FIGURE 2

Toolface error comparison with TFC App On vs TFC Off. Wellbore inclination grouped by 20-degree windows.

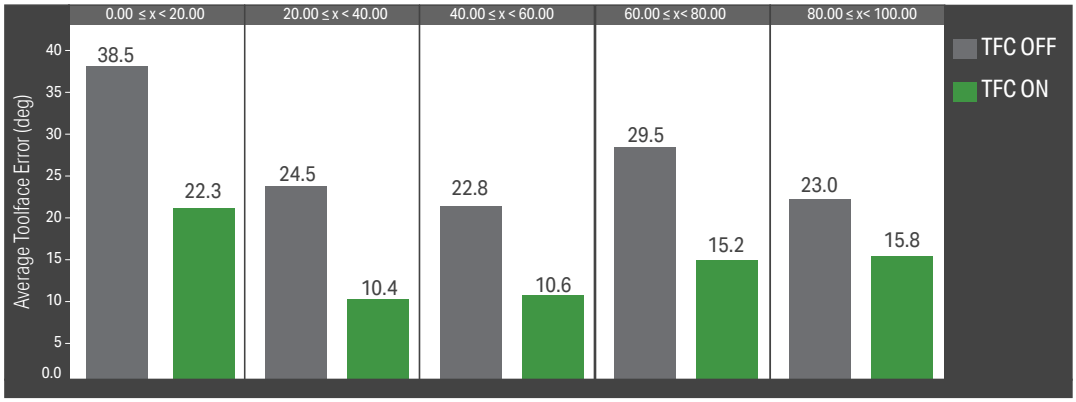
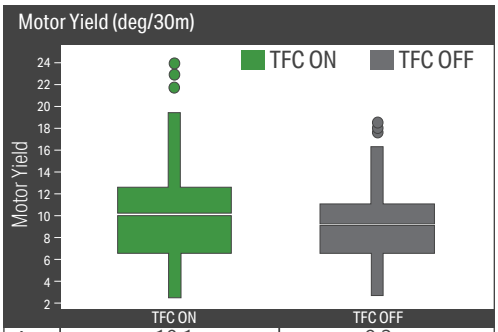


FIGURE 3

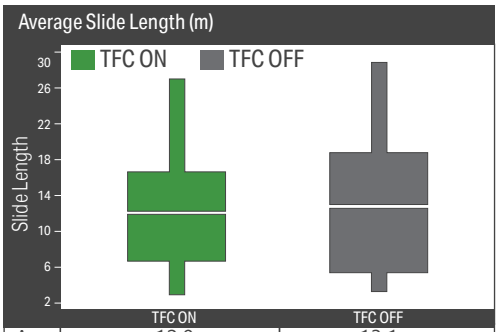
Motor yield comparison with TFC App On vs TFC Off.



	TFC ON	TFC OFF
Avg	10.1	9.2
Count	127	130

FIGURE 4

Average slide length comparison with TFC App On vs TFC Off.



	TFC ON	TFC OFF
Avg	12.0	13.1
Count	127	130

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