

Paradigm Driver® Tools Reduce Stick / Slip

Overview

This case study has been done in order to measure and evaluate the vibration and stick / slip before and after installing the Paradigm Driver®, delivering prove of efficiency.

Challenge


Measure, evaluate and document results of installing Driver®, proving that the Paradigm Driver® reduces stick / slip.

Solution

Two 7" Driver® tools were run in a Rotary Steerable Assembly as a trial to improve weight transfer to the bit, and also to reduce vibration and stick / slip within the BHA. The 8½" section goal was to drill from the 9 5/8" casing shoe at 9,820', building from 78° to horizontal, before initiating an 87° left turn, whilst holding horizontal to section TD at 16,569'. A new M222 PDC bit was utilised, consistent with the offset wells.

Result

- The 6,740' section was successfully drilled in 96.7 hours, with a drilling ROP of 69.6ft/hr. Offset ROP's varied between 57ft/hr to 78ft/hr.
- A significant reduction in stick / slip was measured at the LWD tool, with severe stick / slip held below 2% for the entire section.
- The best offset run had measured severe stick / slip, with intervals in excess of 30 minutes, for 20% of the 8½" section.
- Post run drill bit dull grading revealed word cutters as the primary dull. In all offset wells chipped and broken cutters were the primary dull. This confirms the vibration reduction and consistent WOB generated by the Driver®.

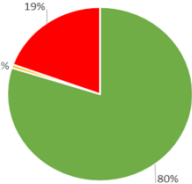


The Driver™ is designed as a short collar system, converting 40 - 50% of localised BHA side force into axial traction thrust. In rotation, the speed of this traction is designed to exceed the maximum expected drilling rate, allowing the traction rollers to generate additional, consistent, controlled weight on bit.

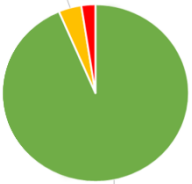
Main Features / Benefits

- Provides Constant Axial Thrust at the top of the BHA
- Reduces Compressive Buckling in Lower Drill String
- Improves weight transfer for Extended Reach
- Reduces BHA Vibration and stick / slip
- Provides consistent Weight on Bit
- Minimum Pressure Drop
- No specialist handling
- Minimal ECD Impact

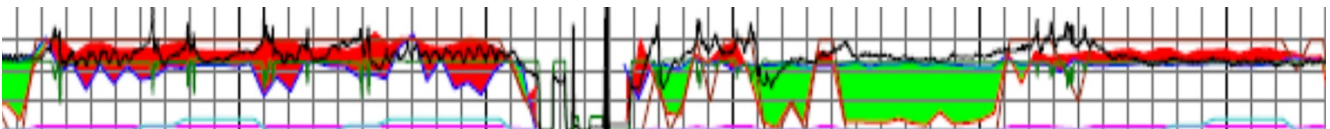
Stick Slip While Drilling Offset Well



Stick Slip While Drilling with Driver®



Offset Log at Same TVD & MD Showing Long Intervals of Severe Stick / Slip



Log of Driver® Enhanced Rotary Steerable Assembly Showing Significant Reduction in Stick / Slip

