



Significant Torque Reduction with NRPs installed Midspan Along the Pipe

Summary

An operator requested the use of WWT NRPs to reduce the torque while drilling the 8-1/2 in. section of a directional well. The section was drilled from 13,400 ft to 20,651 ft MD. 216 x SS3-550 NRPs were installed at two per joint on 5-1/2" DP to cover the areas of highest side forces in the build section. NRPs were installed midspan to accommodate pipe handling equipment, demonstrating flexibility of WWT NRP installation. A preliminary stiff string analysis showed very similar torque reduction benefit compared to installing NRPs near the tool joint.

NRP Performance

WWT NRPs were installed midspan at 17 ft and 19 ft above the tool joint to accommodate the pipe racking system. The actual torque with NRPs installed midspan yielded 13% torque reduction which is in line with the simulated results with WWT NRPs. Although installation near the tool joint is preferred for torque reduction, results confirm that torque reduction was not compromised by installing NRPs midspan while allowing for easier pipe handling.

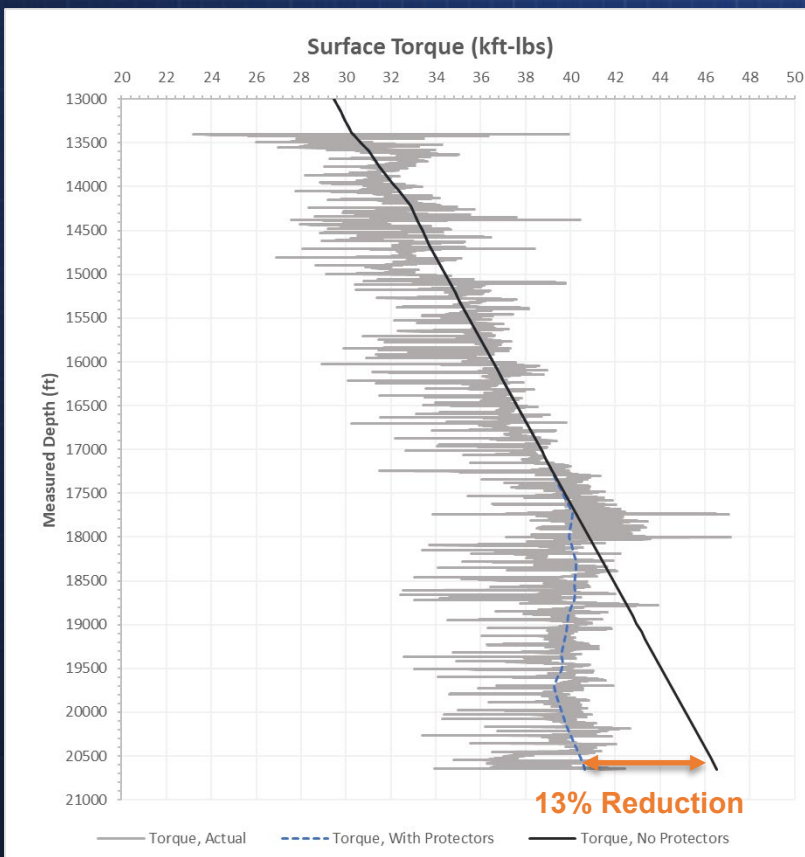


Figure 1. Comparison between actual average torque and simulated, with and without NRPs.

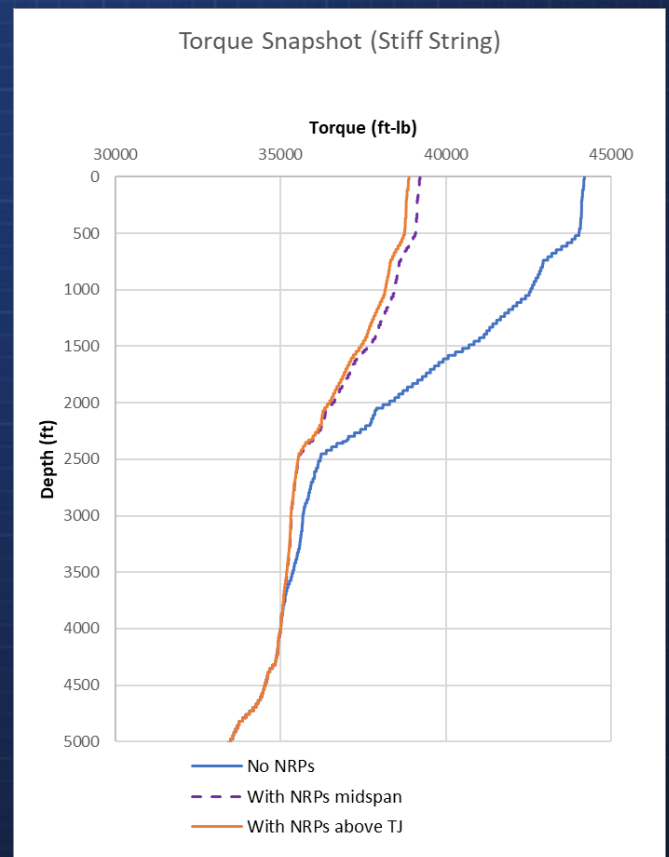


Figure 2. Preliminary stiff string analysis comparing torque with NRP placed midspan or near the tool joint.