



WWT NRPs Enable Record Breaking Lateral Drilling in Continental USA

Executive Summary

WWT Non-Rotating Protectors (NRPs) provide TQ reduction assisting an operator achieve 8 out of the 10-record breaking laterals on challenging extended reach wells in the Lower 48. The 8-1/2" lateral section of these wells were drilled using an average of 217 x SS3-550 NRPs on 5-1/2" drill pipe to cover areas of highest side forces in the vertical and open hole curve.

NRP Performance

A significant torque reduction of 12-16% at TD was analyzed by WWT. Using a motorized rotary steerable, ROP held around 200 ft/hr while torque remained below the top drive limit of 40 kft-lb at 150 RPM, usually in a single bit trip during the lateral. This not only made it possible to reach desired total depths, but also to get out of the hole smoothly and efficiently rather than backreaming the entire length of the lateral.

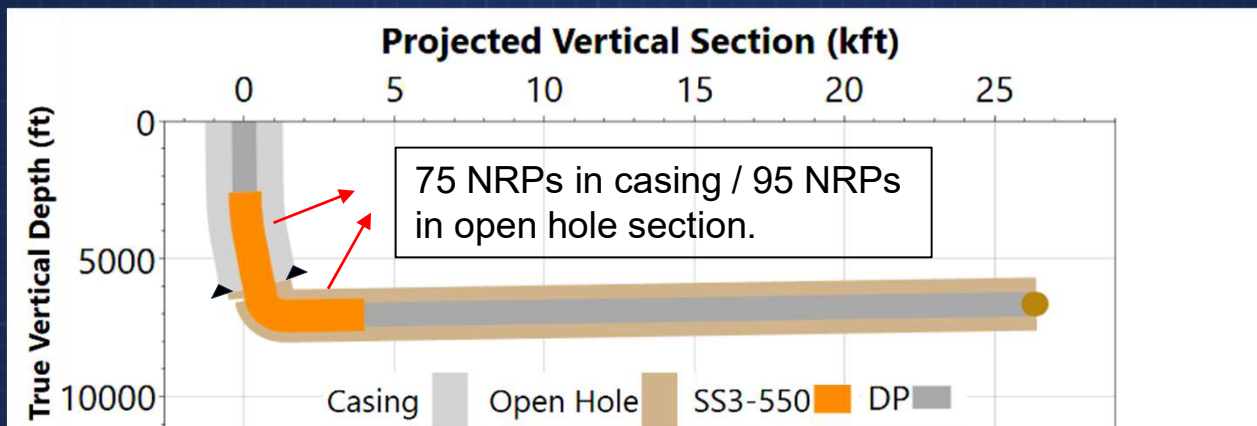


Figure 1: Projected Vertical Section Plot for Longest Lateral Length Well.

Table 1: 8 out of 10 Longest Laterals Drilled in Continental USA.

Lateral Drilling Length (ft)	Hole Depth (ft)	QTY NRPs	Torque Reduction (%)
25,366	32,782	170	12
25,055	32,582	243	13
24,995	32,663	176	16
24,979	32,693	243	12
24,400	32,598	170	16
24,166	31,987	267	14
24,102	32,138	243	13
24,039	31,472	225	12



Figure 2: NRPs Clamp Onto the Drill Pipe Body to Mitigate Friction and Buckling to Decrease Torque and Drag.