S4 NRP Reduces Torque of High-Temperature ERD Well

Challenging ERD Well Profile

An operator was expecting high torque while drilling the 8-1/2" and the 6-1/8" sections in an extended-reach well. WWT performed torque and drag analysis to identify the major side force areas and decide the optimum placement for WWT Non-Rotating Protectors (NRPs).

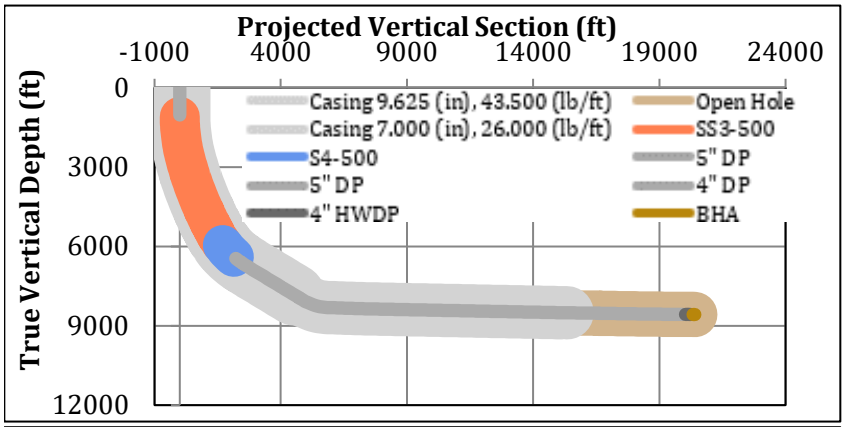
NRP Recommendation

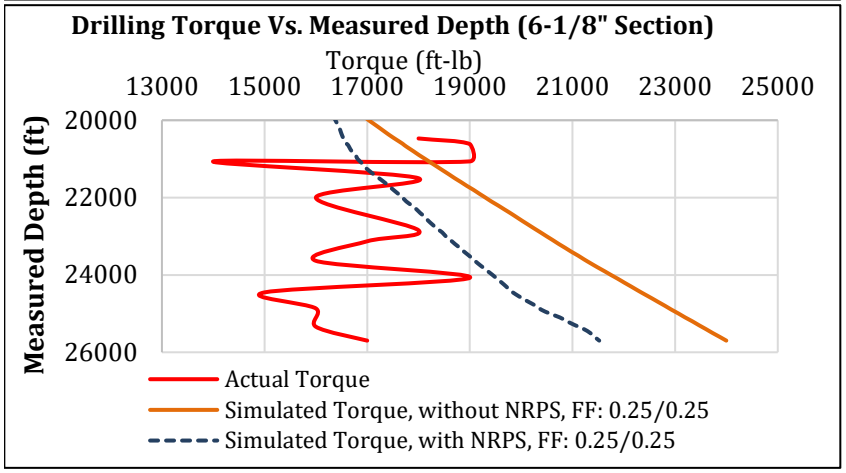
SS3 and S4 NRPs were installed as per WWT Engineering's recommendation to reduce the torque by covering the high side force areas. The S4 model was newly-developed for service up to 275°F. The adjacent projected vertical section plot represents the SS3 and S4 NRPs placement at the well TD.

S4 NRP Durability & Performance

15 x S4 NRPs and 174 x SS3 were used and performed as intended without any sign of significant wear. The S4s had a total of 373 rotating hours downhole with the maximum temperature estimated to be 215°F. The NRPs were used in OBM and WBM without having any compatibility issue. S4s came out in good condition after being used to drill the cement and the shoe track. The torque without NRPs was expected to reach 24 kft-lb whereas actual torque at TD averaged around 17 kft-lb. This indicates a 29% torque reduction compared to the simulated torque without NRPs.

Location: Middle East
Well Type: Horizontal ERD
Objective: Torque Reduction
Solution: S4-500 & SS3-500 NRPs
Results: 29% Torque Reduction





WWT Non-Rotating Protectors
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