

## Torque Reduced By 20% after Installing WWT NRPs in Open Hole

### Active Torque Monitoring

Drilling parameters on a horizontal well were recorded regularly with and without WWT's Non-Rotating Protectors (NRPs) to gather comparable data. NRPs were placed on the drill string for three bit runs while drilling the lateral. An initial run with only three NRPs was performed to ensure the wellbore was clear of any major obstructions or damaging conditions in addition to providing baseline data for comparison. The subsequent bit runs were to evaluate the performance of the NRPs utilizing approximately 2,000ft of coverage and experiment with placement locations along the wellbore. Data was collected on a total of five bit runs, including the runs before installation and after removal of protectors.

### Immediate 20% Torque Reduction

SS3-500 model NRPs reduced torque by approximately 20% for bit runs #3-4. The NRPs proved to be effective in the deviated build section and the lateral where buckling likely causes increased torque. The NRPs reduce drag to mitigate the effects of buckling, deliver weight to bit and reduce drill string torque. This results in higher ROP near the end of laterals where it would ordinarily diminish.

### Visible Proof of Tool Joint Stand Off

As shown in Figure 2, the tool joints with NRPs had visibly less wear. This indicates stand off was maintained and the NRPs operated as intended in open hole. This can be challenge in horizontal wells with varying wellbore size and cuttings beds. However, the SS3 model was designed to be robust and low friction, even in open hole.



**Location:** North America  
**Well Type:** Horizontal  
**Objective:** Torque Reduction  
**Solution:** WWT SS3-500 NRPs  
**Results:** 20% Torque Reduction

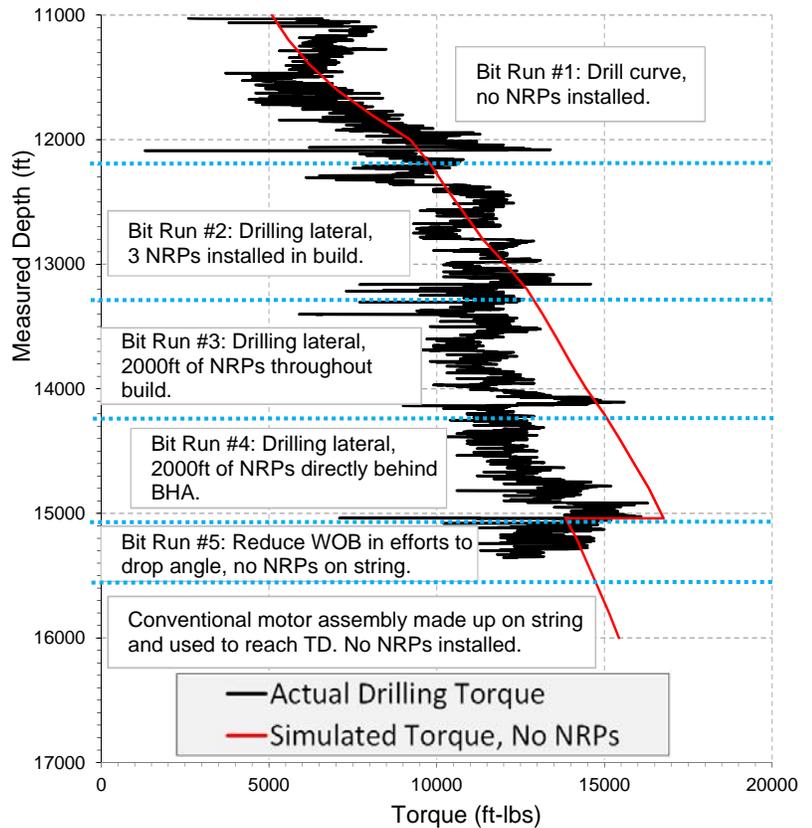


Figure 1: Surface Torque While Drilling.



Figure 2: Tool joints with NRPs had visibly less wear, indicating stand-off was properly maintained.



Figure 3: Unprotected tool joints were polished, indicating wear.