

## S4 NRP Performance in High-Temperature Open Hole

### Casing Wear Concern

Due to the combination of hard formation, high RPM, and long duration drilling, WWT's Non-Rotating Protectors (NRPs) were deployed as a solution to prevent wear by protecting the casing throughout the bit run on multiple wells.

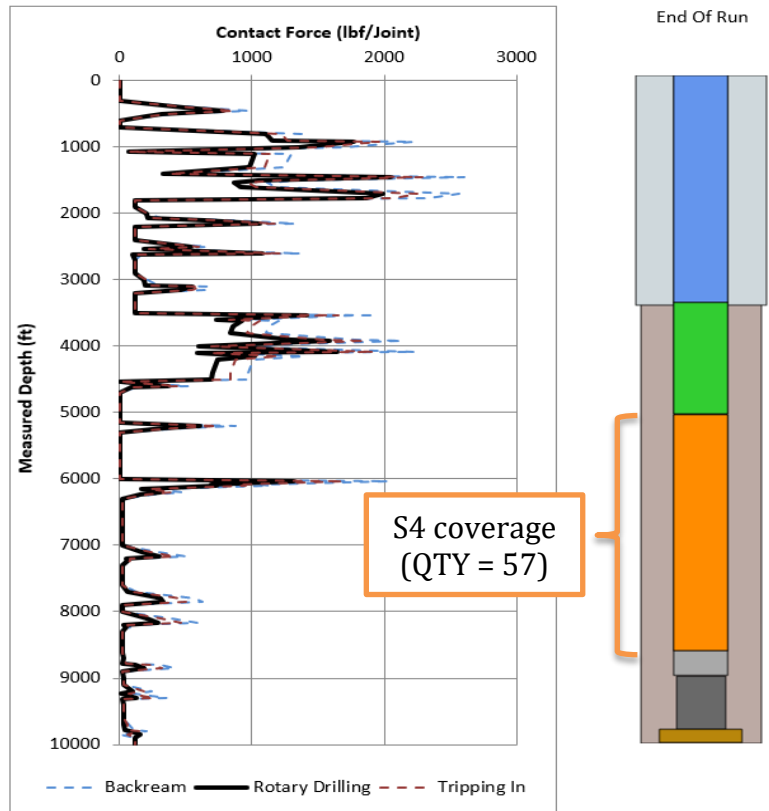
WWT analyzed two pad wells and provided coverage of 1 NRP on every-other joint to protect the 13-3/8" surface casing early throughout the bit run for the 12-1/4" sections. This required NRPs to run into open hole to accommodate for the 6,800ft hole section. The wells had a bottom hole temperature of 256°F. As a result, WWT recommended its newly-developed S4 model NRPs in areas where the temperature would have exceeded the temperature rating of the SS3 NRPs. The S4 is temperature rated to 275°F. The S4 NRP reached a maximum temperature estimated to be 220°F in these wells. A total of 57 S4 NRPs were installed on the string.

### S4 NRP Performance

NRPs were installed on the first pad well for 22 days, and NRPs were in open hole for 8 of those days. The S4 NRPs had a total of 239 rotating hours while installed. The same S4 NRPs were then used on the second pad well for 25 days, and had an additional 577 rotating hours. The NRPs were in open hole for the second pad well for another 8 days. The S4 NRPs protected the casing of the wells with elevated temperatures and had a total of 816 rotating hours, attesting the durability and effectiveness of the S4 NRPs. The operator has decided WWT NRPs are standard practice for future comparable wells in the area.



**Location:** East Texas  
**Well Type:** Vertical  
**Objective:** Long Duration Casing Protection  
**Solution:** S4 NRPs  
**Benefit Seen:** Reduced casing wear



WWT Non-Rotating Protectors  
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