

## S4 NRP Provides Casing Protection in High-Temperature Well

### Casing Wear Concern

Due to the combination of hard formation, high RPM, and high side forces, the operator wore a hole in their casing causing a blow-out while drilling. WWT's Non-Rotating Protectors (NRPs) were deployed for the subsequent similar wells as a solution to prevent further incidences by protecting the casing throughout the bit run on multiple hole sections.

### Well Analysis and NRP Proposal

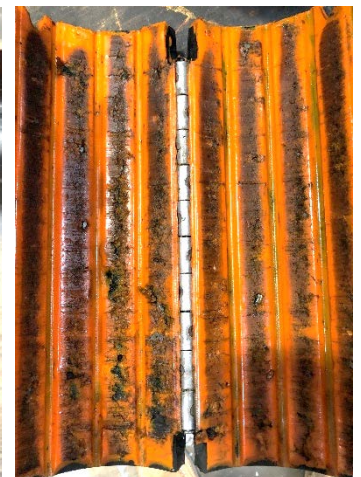
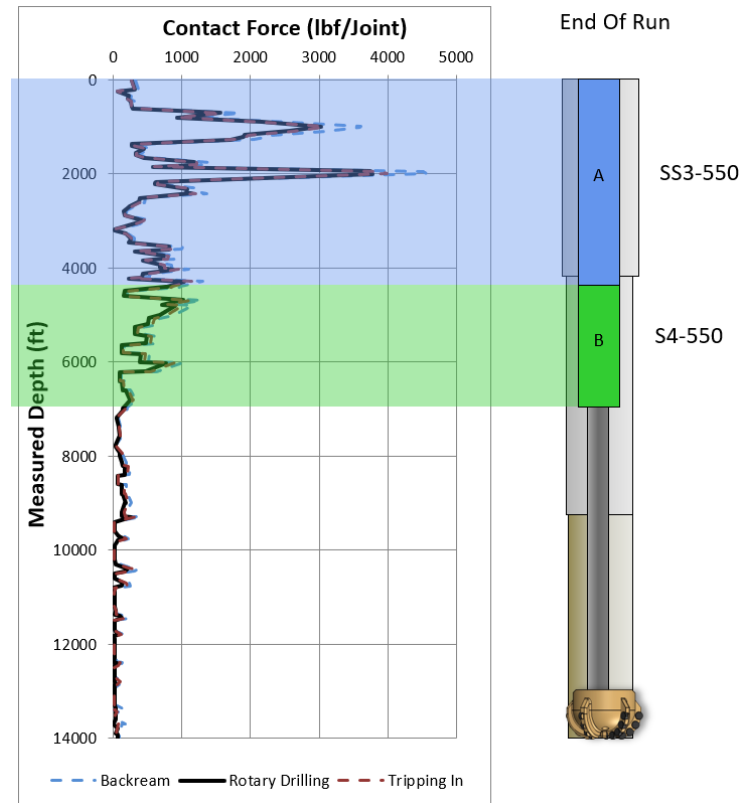
WWT analyzed the well and presented a technical recommendation of 1 NRP on every-other joint to protect the 13-3/8" surface casing throughout the entire bit run for both the 12-1/4" x 13-1/2" and 10-5/8" hole sections. The well had a bottom hole temperature of 352°F with no mud coolers. As a result, 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 248°F in this well. A total of 42 S4 NRPs were installed on the string.

### S4 NRP Performance

Metal recovered from the ditch magnets were extremely low. NRPs were installed on the first pad well for 24 days; during this period, the average metal returns were 0.8lbs per day. The S4s had a total of 305 rotating hours while installed. The same NRPs were then used on the second well for 29 days and had a total of 302 rotating hours. The average metal returns were 1.5lbs per day. The S4 NRPs protected the casing of the wells with elevated temperatures and had a total of 607 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:** Casing Protection  
**Solution:** S4 NRPs  
**Benefit Seen:** Reduced metal returns



WWT Non-Rotating Protectors  
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