



WWT NRPs reduce riser flexjoint wear enabling successful completion of “undrillable” well in the North Sea.

Severely misaligned wellheads induce excessive side loads and flexjoint angles, accelerating wear and keyseating, ultimately rendering the well undrillable.

Client challenge

This re-entry well had a 2.5° inclination at the wellhead and had been deemed “undrillable”, yet the customer decided to take on the challenge using all available measures to mitigate keyseating at the flexjoint.

Our solution

WWT Non-Rotating Protectors (NRPs) were used to prevent wear induced by rotating drillpipe tool joints. SS3 model NRPs were placed such that the wellhead was protected from start to end of each drilling section.

Results

By maintaining standoff between the tool joint and the wellhead, NRPs reduced wear while drilling 3 sections for a combined footage of 3,400m. NRPs successfully went over 900m into open hole through both a milled window and a casing shoe.

Final field inspection showed some wear to the lower flexjoint. However, the keyseat curvature radius is smaller than the tool joint which implies that pipe tube contact was the likely cause.

- **Unprotected tool joints showed wear and polishing compared to protected pipe. This demonstrates how the NRP eliminated tool joint contact.**
- **The flexjoint was still in good enough condition to be reused on the subsequent well without needing refurbishment. This shows that NRPs successfully protected the flexjoint.**

