

17000

## **WWT Non-Rotating Protectors**

WWT Non-Rotating Protector Provides
Greater Than 25% Torque Reduction

## NRPS REDUCE TORQUE AND DRAG IN LATERAL WELL **Executive Summary** Operator experienced torque and On Bottom Torque (ft-lb) drag issues in a lateral well in 2000 4000 6000 8000 10000 12000 14000 16000 18000 20000 22000 24000 Oklahoma. WWT installed 237 13000 NRPs to significantly reduce drill No NRPs string friction. NRPs were re-13500 With NRPs 1 positioned after their first run to With NRPs 2 14000 remain in the high side force areas Modeled - No NRPs of the well. The bit run prior to NRPs 14500 was also evaluated to compare benefits as shown in the on bottom 15000 torque and POOH hookload plots. **€** 15500 Projected Vertical Section (kft) MD 16000 16500 3000 129 553-500 4000 17000 5000 108 SS3-400 17500 700 18000 8000 25% reduction 9000 18500 POOH Hookload (klb) excluding rotation 180 100 140 460 7000 With NRPs 2 9000 With NRPs 1 No NRPs Modeled - No NRPs 2 11000 25% torque reduction 13000 ~30 klb tension added when RIH ~100 klb of tension reduced when POOH 15000

-100k tension