



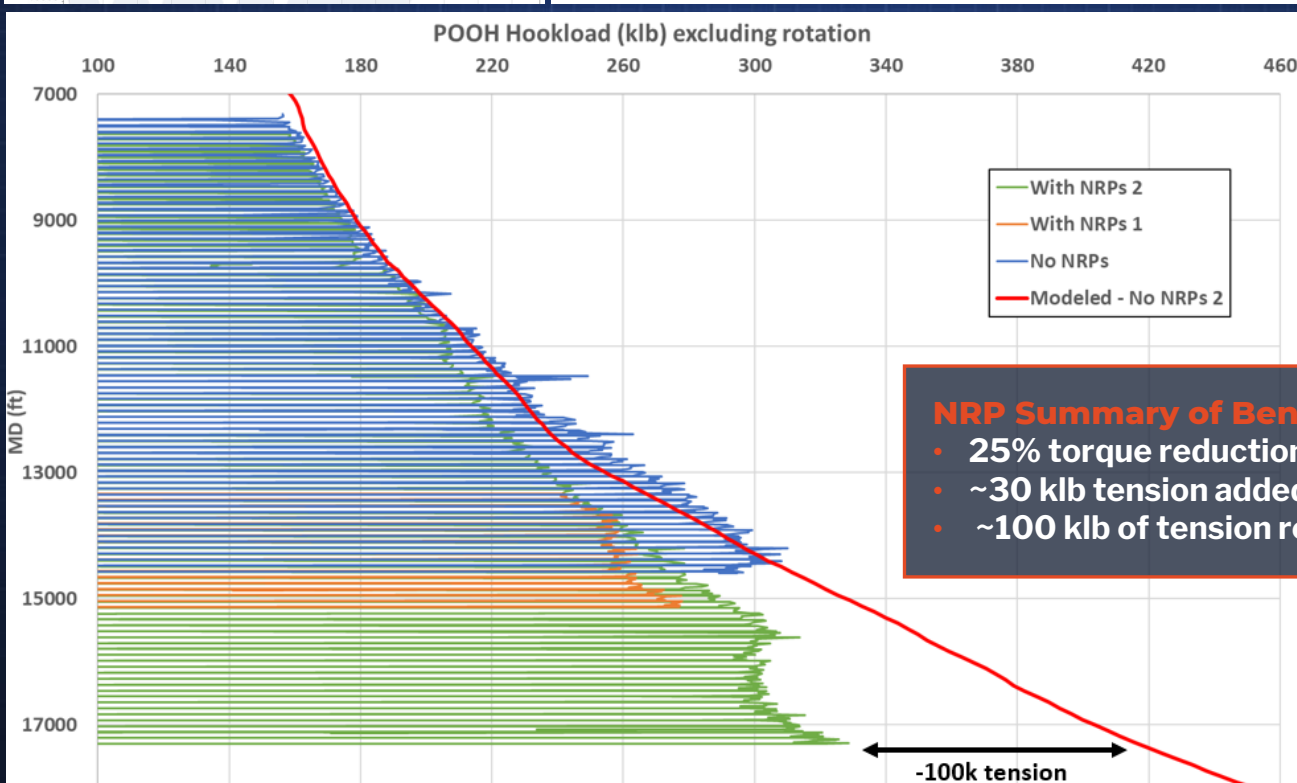
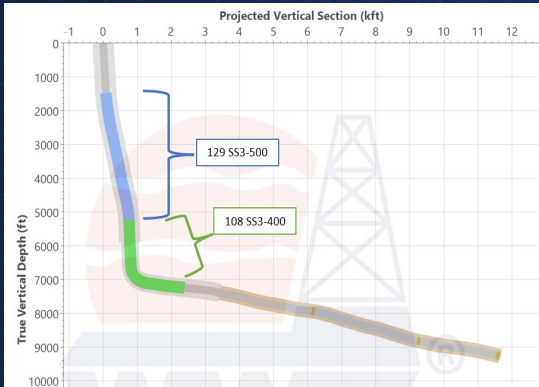
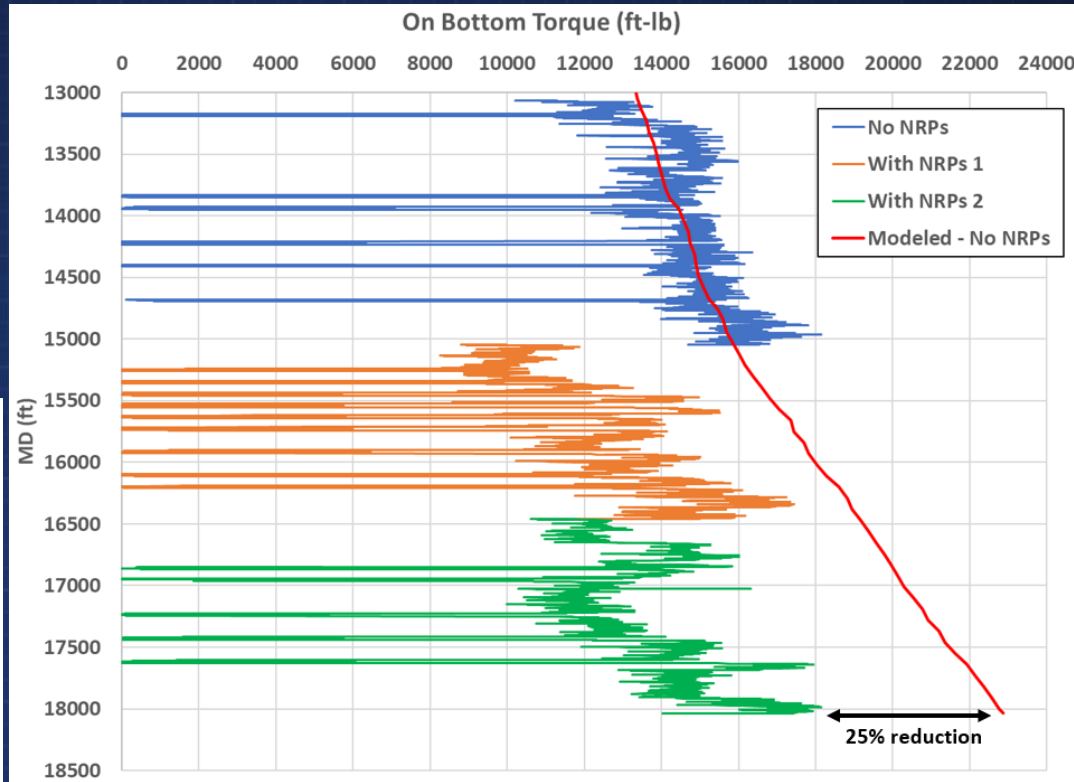
WWT Non-Rotating Protectors

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

NRPS REDUCE TORQUE AND DRAG IN LATERAL WELL

Executive Summary

Operator experienced torque and drag issues in a lateral well in Oklahoma. WWT installed 237 NRPs to significantly reduce drill string friction. NRPs were re-positioned after their first run to remain in the high side force areas of the well. The bit run prior to NRPs was also evaluated to compare benefits as shown in the on bottom torque and POOH hookload plots.



NRP Summary of Benefits:

- 25% torque reduction
- ~30 klb tension added when RIH
- ~100 klb of tension reduced when POOH