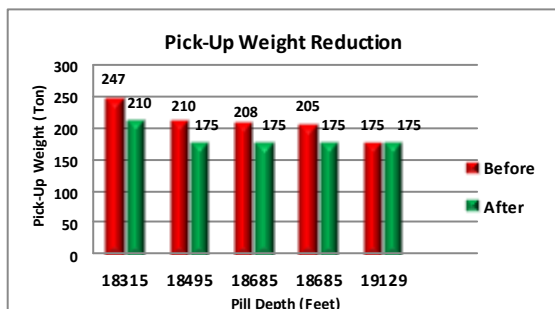
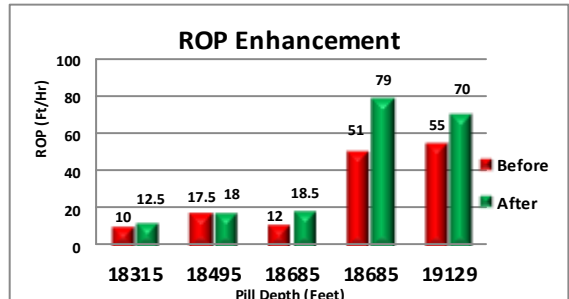


## SUNBURST DP®

### Performance in Oil Mud – Permian Basin – West Texas – USA

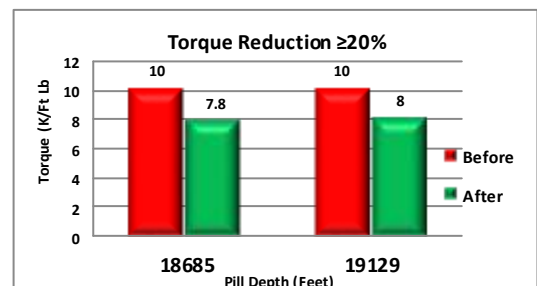
**SUNBURST DP®** is a functionalized co-polymer bead containing micro-channels impregnated with an environmentally friendly liquid lubricant. The beads are coated with graphite to contain the lubricant and provide additional downhole benefits. This dual phase means that the beads will also function as a typical copolymer bead in providing standoff and mechanical lubrication for casing runs or drilling operations in directional wellbores. However, the infused liquid lubricant is intended to be released when subjected to the higher pressures gained through impact around the drill bit and drill string. As the beads exit the bit a fraction of them “burst” thereby releasing the lubricant which will immediately impact the points of friction. Additionally, as the beads travel, more of them will “burst” at points of impact around the drill string and BHA releasing additional amounts of the impregnated lubricant and reducing friction farther up the hole. Extensive use in the field has shown positive effects in both WBM and OBM reducing torque and drag when added into the drilling fluid at a low rate and concentration.



Dynamic Drilling Fluids tested **SUNBURST DP®** in an XTO Energy well, on Nabors 893 rig. This was XTO's longest lateral to date in the Permian Basin, West Texas, USA. Five separate test pills/sweeps were run. The 50 bbl pills had a concentration of 10/ppb **SUNBURST DP®** and the drilling fluid was oil based mud (OBM). All parameters showed positive results.

Key numbers were as follows:

Mud Weight	11.5 ppg (1.38 SG, 86.0 pcf)
Funnel Viscosity	62 - 64 sec
Surface 13.375"	2,137ft (651m)
Intermediate 9.625"	4,750ft (1448m)
7 inch casing set	11,005ft (3354m)
KOP	9,898ft (3017m) MD/TVD
Landing Point	11,167ft (3404m) MD
	10,671ft (3253m) TVD
Estimated Depth	20,700ft (6309m) MD
	10,545ft (3214m) TVD



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