Case History

Navigate™ Direct Emulsion Fluid Cuts Cost on Drilling Through Highly Unconsolidated Formations

Woodford Shale, Oklahoma

Challenge
Drill through the challenging Woodford Shale

Solution
Customized, highly stable, Navigate direct emulsion drilling fluid system

Results
Completed project 33% under budget and 28% faster

An operator drilling in the Woodford Shale play in Oklahoma was dealing with issues of high costs associated with oil-based mud losses. The operator desperately needed new technology that could compete with the performance of a traditional oil-based drilling fluid (OBM), but also lower the fluid-related costs.
The operator sought an inhibitive fluid system to efficiently drill the vertical, curve, and lateral wellbore sections. Performance attributes crucial for a Woodford shale well included a highly inhibitive system to control the shale reactivity of the upper formations from about 300 to 4,200 ft (90 to 1280 m) in depth.

Newpark's Navigate direct emulsion fluid system is a brine & diesel direct emulsion (oil-in-water) fluid system that allows operators to drill in zones where formation reactivity as well as fractured & unconsolidated formations are of concern. Besides shale inhibitive properties, the fluid uses a polymeric viscosifier that aids in shear thinning rheological characteristics as well as a clean break from cuttings at the shakers. As a result, a lower retention on cuttings is inherent with the direct emulsion fluid. The fluid contains inhibitive characteristics approaching those of a traditional OBM, however, at a fraction of the cost. The system is clay-free, low-solids, and non-dispersed.

The Navigate direct emulsion fluid system drilled the vertical, curve, and lateral sections of the well 6 full days ahead of schedule. Cuttings remained well inhibited and no hole instability issues were reported. Mud losses occurred in the unconsolidated lateral section as expected, however, due to the lower cost of the direct emulsion fluid, the final fluid cost was 33% lower than with a traditional OBM. This application proved the Navigate system's capability to successfully replace the oil-based fluid used previously in this field.

NEWPARK DRILLING FLUIDS