



EAST TEXAS SUCCESS IN SENSITIVE MIDWAY SHALE WITH THE M2-PLUS*/ POLYMER INHIBITED DRILLING FLUID SYSTEM

- » An East Texas HTHP, 12,768' TVD with an 8,000' lateral project was problematic because it required drilling through several sensitive shale zones, including the Midway formation.
- » Previous projects in the area had experienced formation breakdown, and huge fluid losses using oil based systems.
- » The *M2-PLUS/Polymer* fluid system was selected to chemically inhibit problem shales from becoming water wet and swelling in the well annulus, minimize torque, and maximize ROP while drilling.
- » The *M2-PLUS/Polymer* system was able to drill the historically troublesome Wilcox Sand, Taylor Shale and Midway Shale formations without any issues.

SITUATION

A Universal Fluids Services customer in Tyler County, East Texas was preparing to drill a high-temperature, high-pressure (HTHP) Austin Chalk well to a total vertical depth of 12,768' MD with an 8,000' lateral section. The well required drilling through a highly reactive shale zone, the Midway Shale. Therefore, an inhibited system was needed to provide formation permeability protection by means of pH stability while drilling through swelling and migrating shales. In similar wells, oil based fluids had been tried and achieved some degree of success. However, the Operator was concerned about possible fluid losses due to potential breakdown of the Wilcox Sand and Taylor Shale zones in addition to the Midway Shale. Oil based drilling fluid was quickly ruled impractical given the tremendous cost associated with potential formation breakdowns and the resulting high-volume oil based fluid losses. This combined with the cost of trucking the oil-based fluid to location, the price of diesel fuel, diesel waste disposal costs, potential environmental issues and other ancillary costs made the decision to use a water-based drilling fluid fairly easy.

SOLUTION

The Drilling Specialist, in consultation with the Universal Fluids Services Operations Team, proposed the implementation of our environmentally friendly *M2-PLUS*/Polymer* fully inhibited water based drilling fluid system. The *M2-PLUS/Polymer* fluid system was selected because of its ability to chemically inhibit problem shales from becoming water wet and swelling in the well annulus, thereby significantly reducing permeability. The system also minimizes torque and maximizes ROP while drilling. The components of the system included water as the base fluid, minimal gel additions, proprietary polymers, 2% by volume *M2-SS** shale stabilizer, and 3% diesel. The drilling fluid weight at the casing point depth was 10.0 ppg.

ENVIRONMENTALLY MINDED OPERATOR SEEKS ALTERNATIVE TO OIL-BASED DRILLING FLUIDS

NOTES:

RESULTS

By utilizing the *M2-PLUS/Polymer* system, the Operator was able to drill the historically troublesome Wilcox Sand, Taylor Shale and Midway Shale formations without any notable issues. The utilization of costly oil based drilling fluids and resulting fear of excessive fluid losses, as well as the costs of cuttings haul offs, and fluid trucking were all eliminated. This delivered peace of mind as well as considerable cost savings. As expected, the *M2-PLUS/Polymer* system also provided notable torque reduction while drilling the top of the curve section.

CONCLUSIONS

The customer stated that this job proved that by using the *M2-PLUS/Polymer* system, drilling the intermediate section in these difficult zones is achievable without oil based drilling fluid. Saving time (pit cleaning, etc.) as well as negating the costly issues that go with oil based drilling fluid usage can now be accomplished by using the *M2-PLUS/Polymer* system.

To enjoy the benefits of *Application Excellence*^{*} let Universal Fluid Services (UFS) provide the fluid management services on your next well.