



AES DRILLING FLUIDS

CHALLENGES

- Eliminate casing string by combining two intermediate sections
- Upper salt section features washout risk and lower depleted section has high risk of losses
- Control density below fracture gradient for lower section while avoiding washout of the upper section

SOLUTION

- EnerLITE direct emulsion system to inhibit salt with a saturated brine phase
- Control density with additions of diesel

RESULTS

- \$820,000 savings from casing interval elimination, single stage cement job and reduced trucking of mix volumes and waste
- Reduced location size for fluid storage and no additional personnel to mix
- EnerLITE continues to deliver for key customers in the Permian Basin

\$820,000 in savings: EnerLITE[†] direct emulsion system eliminates casing string, simplifies logistics in Reeves County

Overview

In Reeves county the intermediate section is divided into two casing intervals. The first interval covers the salt layer while the second interval isolates depleted loss zones. Previous attempts to combine both intervals resulted in thousands of barrels in losses as the saturated brine density controlling salt washout induces loss of circulation below the salt. Waste volumes are compounded by efforts to dilute drilling brine below saturation to control the mud weight. Once below saturation, the drilling brine dissolves formation salt, washing out the hole and elevating the mud weight once more.

AES recommended the EnerLITE system to drill the intermediate section in a single drilling interval.

The EnerLITE system featured a saturated salt phase to control washout and a dispersed diesel phase to reduce the overall mud weight below the fracture gradient. The EnerLITE system provided flawless performance, avoiding losses while combining both intervals for a single casing run. The drilling team noted reduced shock and vibration while drilling and rates of penetration met expectations. Only a single stage cement job was required, saving time and equipment cost versus previous wells.

The simplicity of the system eliminated the need for extra personnel to mix volumes and reduced the location size requirements. Minimal dilution reduced trucking requirements for water and waste.



The EnerLITE system was re-used from a previous well and conditioned for the application (above).

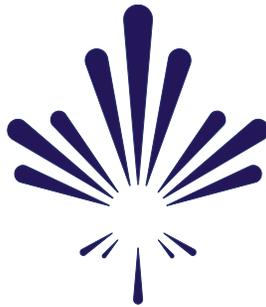


The EnerLITE system provided excellent hole cleaning and easy removal of cuttings (above).

Details

13 5/8" Surface casing was drilled and cemented at 1,629'. Cement and new formation was drilled out using brine and sweeps, displacing to 9.3 lbm/gal EnerLITE at 4,750'. Drilling continued using API 200 shaker screens and a centrifuge to control solids. Properties were maintained with additions of diesel and NORMUL[†] emulsifier for system stability.

Mud weight ranged from the initial 9.3 lbm/gal to 9.7 lbm/gal throughout the interval. Drilling continued trouble-free without losses until total depth at 10,290'. Casing was run and cemented. The remaining EnerLITE volume was transferred to the next well.



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