# Operator Improves Drilling, Casing, and Completion Performance with Freshwater "Diesel-Based" Fluid

## BARASHALE® LITE FLUID SYSTEM HELPS SAVE TWO WELLS BY REACHING TOTAL DEPTH OF 9,765 FEET AND SETTING 7-5/8" CASING INCIDENT-FREE

NEW MEXICO

### CHALLENGE

- Mitigate lost returns issue
- Avoid stuck pipe, lost BHAs, and non-productive time (NPT)
- Reduce ECD impact
- Find a more cost-effective fluid system

### SOLUTION

- BaraShale® Lite fluid system — customized to meet job requirements

### RESULTS

- Successfully completed interval to TD with no logistical incidents
- Reduced fluid density to 8.0 ppg
- Lowered fluid cost by 50% by replacing invert emulsion fluid
- Eliminated disposal costs by reusing fluid

### OVERVIEW

Two previous rigs in the fleet had successfully drilled with freshwater, swapping over to produced water when returns were lost. Another operator moved into the same field and drilled the interval using the same procedure; but this time, numerous downhole issues were encountered and the operator looked to Halliburton Baroid experts to provide a more reliable solution.

### CHALLENGE

In the Intermediate II interval, the operator had lost full returns with freshwater, choosing to resume drilling with no returns to interval total depth (TD) using produced water. This resulted in stuck pipe twice with both bottomhole assemblies (BHAs) left downhole and requiring two sidetracks. The operator suspected that with no returns to suspend cuttings out of the wellbore, the cuttings were packing off the BHA. This prompted them to reconsider the fluid attributes needed for the hole section, including:

- Fluid density lower than freshwater to prevent lost returns
- Thin rheology to reduce the circulating pressure (ECD) impact of drilling fluid
- A lower-cost solution than invert emulsion fluid to mitigate the remaining large risk of losing returns

### SOLUTION

The Baroid Permian Team proposed a customized freshwater, diesel-based BaraShale Lite fluid system to reduce the density below that of freshwater in the liquid phase. Since a salt zone was previously cased off in the Intermediate I interval, the risk of washing out the formation was removed. This solution would cost the Operator approximately 50% less than invert emulsion fluid options. It also allowed the reuse of the fluid for other applications, thus, alleviating any disposal costs.

### PROJECT DETAILS

Vacuum trucks were used in order to haul freshwater to the rig sites, and diesel was trucked in daily to keep operations running smoothly. The BaraShale Lite emulsion was applied directly in both wells, as needed:

*FIRST WELL*

The Operator used freshwater, diesel-based BaraShale Lite fluid on a second sidetrack until losses were observed. At that point, pump rates were reduced, and full returns were established. The fluid was then swapped back to produced water, and the section was drilled to TD, cased, and cemented as planned.

*SECOND WELL*

The Operator used freshwater, diesel-based BaraShale Lite fluid until losses occurred near the same depth as during the first well. They again swapped back to produced water, drilling with no returns. The hole then packed off and stuck the drilling BHA. They were able to recover this BHA after fishing attempts. They then swapped back over to freshwater, diesel-based BaraShale Lite, reducing the density to 8.0 ppg and maintaining full returns to TD.

## RESULTS

The customized BaraShale Lite fluid system allowed for successful tripping out of hole, running casing, and cementing (with no issues or tight spots) to complete the interval and reach TD of 9,765 ft. Overall, the project demonstrated effective collaboration between Baroid and the customer, while also showcasing the efficacy of a fluid solution formulated expressly for this application that outperformed previous operations.





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