Case History

Fusion™ Clear Brine System Reduces Total Days on Well by 45%

An operator in east Texas deployed the Fusion Clear Brine Drilling Fluid System – including EvoLube XRD™ greasing lubricant, NewArmor D™ corrosion inhibitors, and flocculants – to execute a long-lateral well requiring high ROP, tight torque control, and minimized solids loading.

The system delivered markedly improved drilling efficiency, superior hole cleaning, lower corrosion rates, and significantly reduced days on well compared to conventional water-based mud (WBM) and offset wells.

CHALLENGE	SOLUTION	RESULT
• **Low ROP in abrasive intervals** • **High torque/drag** • **Corrosion risk in brines** • **Solids buildup** • **Difficulty achieving planned drilling days**	• **Fusion $CaCl_2$ brine** • **EvoLube XRD lubricant** • **NewArmor D & Reduction O_2 scavenger** • **Dual centrifuges, fine screens**	• **24 days drilling – 45% fewer days** • **72% increase in average ROP** • **Zero-rotation casing run** • **54% reduction on days in production interval**

OVERVIEW

The operator faced a technically demanding long-lateral well where conventional water-based mud (WBM) systems had historically yielded low ROP, high torque and drag, elevated corrosion exposure, and chronic solids buildup that impaired hydraulics and extended drilling time. Offset wells experienced frequent trips with high friction, torque and elevated bottom hole temperatures, compounding inefficiencies and increasing overall cost. To overcome these limitations, the team selected the Fusion clear-brine drilling fluid system, engineered to deliver solids-free hydraulics, improved lubricity, superior heat transfer, and advanced corrosion control, to create a cleaner, cooler, and more stable wellbore environment capable of sustaining higher ROP and reducing operational risk.

CHALLENGE

The long-lateral interval presented multiple performance challenges. As was seen with the offset wells, conventional WBM systems contain solids that result in higher PVs and reduced hydraulic efficiency that negatively impact penetration rates.

High-salinity brine approaches offered potential benefits but introduced risks such as accelerated corrosion, oxygen ingress, and foaming that reduced shaker efficiency. Offset wells also struggled to maintain low-gravity solids (LGS) below operational limits, resulting in higher PV, diminished hydraulic efficiency, and difficulty completing the lateral within planned days. These conditions required a fluid

system capable of providing significantly improved lubricity, more effective solids removal, stronger corrosion control, and stable rheological behavior across the entire lateral.

SOLUTION

- Engineering Basis of Performance

Fusion's solids-free brine system increases hydraulic efficiency by minimizing PV and maximizing annular velocity, allowing for improved hole cleaning throughout the lateral. Continuous centrifuging keeps LGS <1%, ensuring the brine maintains clarity and optimal flow properties. EvoLube XRD, injected directly downhole using Newpark's controlled dosing system, eliminates overtreatment while maximizing torque and friction reduction.

- Operational Sequence

1. **Corrosion Control**: Managed through pH stabilization (9.0 - 10.0), oxygen scavenger dosing (1 box/250 bbl plus daily additions), and NewArmor D inhibitor (~0.3 - 0.5% v/v). Corrosion rings in the drillstring and pits monitored real-time exposure.
2. **Lubrication Program**: EvoLube XRD injected at 0.2 - 0.4 GPF provided continuous coating of the open hole and drill pipe, reducing torque/drag and aiding ROP performance; a final lubricant sweep was applied prior to casing.
3. **Solids Management**: Flocculant polymers were mixed in dedicated polymer tanks and injected into centrifuge suction to maximize solids removal. Surface volumes (~500-600 bbl) were maintained to support effective fluid processing and circulation turnover.

RESULTS

- Total days on well reduced to **25 days**, compared to **45.6 days** on offsets – a **45% improvement**.
- ROP increased from **506 ft/day to 868 ft/da**y, with instantaneous peaks of **170-225 ft/hr**.
- Casing reached bottom **without rotation or circulation**, confirming strong hole cleaning and lubricity.
- Barite usage was not required in the production zone, demonstrating efficient density management and low dilution needs.
- Pipe pulled from TD to surface in **~10 hours**, indicating minimal drag and excellent wellbore condition.
- Production interval days reduced from **34.8 to 16**, a **54% improvement** over offsets.
- Corrosion exposure reduced through effective inhibitor and scavenger management, outperforming conventional brine systems.
- Hole stability and cleanliness enhanced by maintaining **LGS <1%** using dual centrifuges and fine API screens.