

AES DRILLING FLUIDS

CHALLENGES

- Historical approach utilized conventional LCM blends at 30 lb/bbl as a generic approach to losses
- Heavy losses required additional volume deliveries while circulating at lower pump rates, compromising hole cleaning efficiency
- Unable to maintain full returns at standard circulating rates

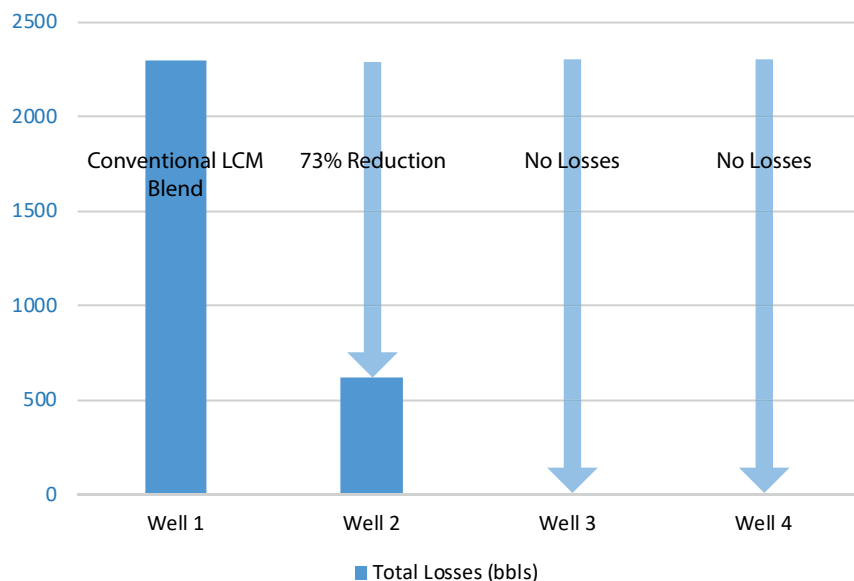
SOLUTION

- 35 lb/bbl sweeps consisting of 15 lb/bbl ECM 1, 15 lb/bbl ECM 2, and 5 lb/bbl ENERLOC[†] slowed then eliminated losses
- Regain full circulation and return to drilling and circulating at desired rates

RESULTS

- Return to optimal circulation rates to maximize rate of penetration
- Reduced drilling days by 2.5 (compared to first well)
- Eliminated losses for drilling, casing running, and cementing final two wells

ECM 1[†] and ECM 2[†]: Engineered LCM Package Stops Losses and Reduces Drilling Days in the Midland Basin



Reduction in losses with ECM 1, ECM 2, and ENERLOC blend

Overview

An operator drilling in the Midland Basin was facing significant losses at the start of a 4 well pad, requiring a reduction in circulation rates to limit equivalent circulating density (ECD). The lower pump rates minimized losses, but required lower drilling rates to account for reduced hole cleaning efficiency. Conventional treatments failed to provide a solution, so AES Drilling Fluids recommended utilizing a blend of ECM 1, ECM 2, and ENERLOC to cure the losses and return to normal drilling operations.

ECM 1 and ECM 2 are a complementary blend of loss prevention material designed to provide an optimized particle size distribution for treatment of lost circulation. For larger fractures, ECM 1 and ECM 2 work together with ENERLOC to cover an even larger particle size distribution.

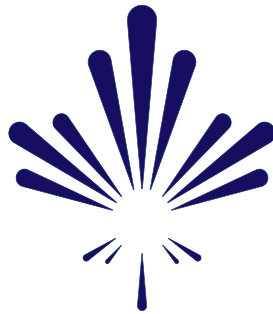
The treatment consisted of 35 lb/bbl sweeps of 15 lb/bbl ECM 1, 15 lb/bbl ECM 2, and 5 lb/bbl ENERLOC each stand to mitigate losses. The losses were reduced and ultimately cured through the four well program. This enabled increased pump rates which saved a total of 2.5 days of drilling when compared to the initial well.

Details

When losses began, conventional LCM sweeps were applied with no success. Pump rates were reduced from 690 gal/min to 550 gal/min. The interval was drilled to total depth with intermediate casing cemented in 5 days after sustaining 2,300 bbbls lost to formation.

AES Drilling Fluids recommended a sweep blend of 15 lb/bbl ECM 1, 15 lb/bbl ECM 2, and 5 lb/bbl ENERLOC for the subsequent wells on the pad based upon experience and the optimized blend of products for the thief zone. The second well was drilled to total depth operating at circulating rates of 690 gal/min without any losses, although partial losses were seen while circulating and cementing once on bottom with casing.

The third and fourth wells were drilled to total depth and casing cemented in 3.5 and 4 days, respectively. Zero losses were encountered on either well allowing for further increased circulating rates of 800 gal/min.



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www.aesfluids.com

info@aesfluids.com

888-556-4533

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