

ECM 1† and ECM 2†: Engineered LCM Package Cures Total Losses in the Delaware Basin



CHALLENGES

Historical approach utilized third-party LCM blends at 50 lb/bbl with no success

Total losses required additional volume deliveries while circulating at lower pump rates, compromising hole cleaning efficiency

Large dilution volumes to maintain mud weight and ECD below fracture gradient



SOLUTION

60 lb/bbl pill consisting of 25 lb/bbl ECM 1, 25 lb/bbl ECM 2, and 10 lb/bbl ENERLOC† eliminated losses

Regain full circulation and return to drilling and circulating at desired rates



RESULTS

- Increased circulation rates, maximizing rate of penetration
- Reduced drilling days by 47% and diesel consumption by 55% (compared to previous well)
- Eliminated losses while drilling lateral interval



ECM 1 (left) and ECM 2 (right) provide an optimized particle size distribution for treatment of lost circulation

OVERVIEW

An operator in the Delaware Basin experienced total losses drilling into a cavernous void in the lateral interval. 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 lost circulation material formulated with an optimized particle size distribution for treatment of lost circulation. For larger fractures, ECM 1 and ECM 2 work together with ENERLOC to provide an even larger particle size distribution.

The treatment consisted of a 60 lb/bbl pill ECM 1, ECM 2, ENERLOC spotted in the loss zone. After allowing time for the formation to seal, full returns were regained, and normal drilling operations resumed. The well was drilled to total depth without any additional losses.

DETAILS

While drilling the lateral interval at 17,900' MD, a void was encountered, resulting in complete loss of returns. AES Drilling Fluids recommended a treatment of 25 lb/bbl ECM 1, 25 lb/bbl ECM 2, and 10 lb/bbl ENERLOC based upon experience and the optimized blend of products for the thief zone. The pill was spotted and given two hours to heal, after which full returns were established.

While drilling the remaining interval, losses were minimized to less than 250 barrels using the specially formulated LCM package.

Total losses occurring on previous wells utilized third party LCM with no success - resulting in reduced circulating rates and increased dilution amounts to maintain mud weight and ECD below the fracture gradient. Drilling days and diesel consumption were reduced by 47% and 55%, respectively, when utilizing ECM 1, ECM 2, and ENERLOC.





AES DRILLING FLUIDS

www.aesfluids.com

☎ Phone : 281 556 5628

✉ Email : info@aesfluids.com

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