Engineered LCM Prevents Losses, Eliminates Second Stage, Saving $25,000

CHALLENGES

History of substantial losses to the formation

Losses complicate cementing operations, requiring a two-stage cement job, increasing cost and complexity

SOLUTION

Treatment while drilling with a blend of engineered lost circulation materials to target loss zones

Applied as viscosified sweeps consisting of 4 lb/bbl ENERLOC, 3 lb/bbl ECM 1, and 3 lb/bbl CAL CARB MIX at recommended intervals

RESULTS

- Zero losses to formation while drilling intermediate section
- Eliminated the second cement stage
- Savings of more than $25,000 from reduced rig time and eliminated cement stage

ENERLOC† (left), CAL CARB MIX† (middle), and ECM 1† (right)

OVERVIEW

The intermediate sections of wells drilled in this area are well known to be troublesome due to frequently encountering lost circulation and washout. Historically, these losses require the cement job to be performed in two stages to ensure proper cementing of casing. AES Drilling Fluids recommended a viscosified LCM sweep regimen consisting of ENERLOC, ECM 1, and CAL CARB MIX while drilling the intermediate section to combat expected losses.

ENERLOC and ECM 1 are proprietary blends of lost circulation material designed to provide an optimized particle size distribution for treatment of lost circulation. ENERLOC is designed for porous formations and fractures greater than 1,000 microns. ECM 1 is designed with fine to medium sized particles to address seepage/partial losses. These products, combined with CAL CARB MIX, provided a broad range to seal the formation and prevent losses throughout drilling operations.

The treatment included pumping the viscosified sweeps in accordance with drilling depths and ROP. The sweeps consisted of 4 lb/bbl of ENERLOC, 3 lb/bbl of ECM 1, and 3 lb/bbl of CAL CARB MIX. No losses occured while drilling the section, running casing, or while cementing intermediate casing, resulting in the cancellation of the second cement stage. This reduced rig time, saving the operator approximately $25,000.

DETAILS

In preparation for intermediate drill out, a detailed sweep schedule was formulated to address the potential for washout and losses in the Delaware and Brushy Canyon formations. Upon drilling out the surface casing shoe, 15 bbl sweeps were pumped every other connection.

The frequency of the 15 bbl LCM sweeps was reduced to every third connection at approximately 6,000 feet measured depth. At the kick-off-point of approximately 9,600 feet MD, it was recommended to add the LCM at the same concentrations to the entire active system. The LCM performed as background material until section TD. No losses to formation were encountered while drilling, running casing, or cementing intermediate casing.

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