

Combo LCM Pill Stems Losses in Deeply Fractured Carbonate Formation

LCM TREATMENT SAVES OPERATOR APPROXIMATELY USD 600,000

OFFSHORE BRAZIL

CHALLENGES

- » Eliminate severe lost circulation incidents in highly fractured carbonate formation, where operator was losing 650 bbl/hr
- » Avoid need for costly cement plug

SOLUTION

Engineered BaraBlend®-657 and BaraLock®-666 LCM pill, which:

- » Provides an effective seal
- » Maintains pressure containment in the loss zone
- » Prevents further loss of synthetic-based drilling fluid

RESULTS

- » Stopped downhole losses while also significantly reducing NPT
- » Avoided cement plug, saving 12 hours of rig time
- » Saved operator approximately USD 600,000

OPERATOR LOSES 650 BBL/HR IN SEVERELY FRACTURED CARBONATE FORMATION

While drilling at 5,641 meters (18,507 feet) in the 12-1/4-inch section of an ultra-deepwater well in Brazil, an operator began losing 650 bbl/hr. The mud weight was 9.88 ppg. The highly fractured carbonate formation had caused similar severe lost circulation incidents on other wells in the field. Core samples taken from the formation confirmed the characteristics of the large fractures present in this hole section.

BAROID RECOMMENDS LCM BLEND AS OPTIMAL TREATMENT IN LOSS ZONE

The Baroid technical team recommended spotting a pill containing BaraBlend®-657 and BaraLock®-666 lost circulation material (LCM) across the loss zone. BaraBlend-657 LCM is an acid-soluble, composite solution capable of sealing fractures up to 3,000 microns in width. It works in all types of drilling fluid and is suitable for use in the reservoir. BaraLock-666 LCM is a sized reticulated foam supplement that enhances the effectiveness of particulate LCM pills in large induced and/or natural fractures.

Prior to the field application, the customer validated the proposed LCM formulation at its internal laboratory, confirming it would provide both sealing and pressure containment capabilities in the highly fractured and cavernous carbonate section. Based on the positive results, the operator determined that the BaraBlend-657 and BaraLock-666 combination treatment was the best response for the anticipated losses in this zone.

When the high-rate losses were encountered, BaraBlend-657 LCM was blended with a combination of fine and medium BaraLock-666 supplemental LCM and pumped through a PBL bypass valve, per the standard field application procedure. The pill was spotted across the loss zone. It sealed the carbonate formation, enabling the operator to resume drilling.



This highly fractured carbonate formation is prone to severe lost circulation.

Overall, the operator saved 12 hours of rig time by avoiding a cement plug operation and stopping the loss of expensive synthetic-based drilling fluid.

PILL SEALS FORMATION, ELIMINATES CEMENT PLUG AND SAVES RIG TIME

The engineered LCM pill helped stop downhole losses while also significantly reducing nonproductive time (NPT). This application helped the operator reach its planned depth without the need for setting a cement plug.

Overall, the operator saved 12 hours of rig time by avoiding a cement plug operation and stopping the loss of expensive synthetic-based drilling fluid. The savings in rig time and fluid were estimated at USD 600,000. This effective LCM treatment also helped eliminate well control risks associated with high-rate losses.

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