BaraBlend®-657 Pill Cures Total Losses in Perforated Zone and Saves Qatar Operator USD 75,000

CUSTOMIZED ACID-SOLUBLE LCM SOLUTION HELPS SEAL PERFORATIONS PRIOR TO DRILLING SIDETRACK SECTION THROUGH LIMESTONE

QATAR

CHALLENGE

- Cure total losses from the 6-in. liner perforations prior to drilling a 5¾-in. sidetrack (perforations were estimated at 0.3" diameter and 25" in length)
- Mitigate effects of acid stimulation that had caused wormholes to develop within the perforations

SOLUTION

Baroid engineered solution, including:

- BaraBlend®-657 acid-soluble LCM pill to seal perforations in the liner
- BaraCarb® ground marble used as a bridging agent
- Laboratory qualification testing to ensure formation worked before using it in the field

RESULTS

- Initially spotted a BaraBlend-657 LCM pill over the perforated zone
- Observed returns at surface with static losses at the rate of 25 bbls/hr
- Lowered static losses to zero with the use of a second LCM pill containing BaraCarb

OVERVIEW

A major operator offshore Qatar needed to drill a 5¾-in. sidetrack hole through a limestone reservoir using water-based drilling fluids. They planned to set a whipstock in the 6 ⅝-in. liner below the perforated zone and then drill the sidetrack section. The primary purpose of the section was to cure the losses in the perforated zone with an acid-soluble LCM pill and drill the sidetrack section to target depth (TD).

CHALLENGE

The 6⅝-in. liner had perforations estimated at 0.3" diameter, with a nominal penetration of 25" in length. The perforations had been previously stimulated, which may have caused wormholes, further complicating the challenge to plug the perforations. The well was experiencing total losses, and the operator had to cure lost circulation with an acid-soluble pill before proceeding with the planned 5¾-in. sidetrack section.

SOLUTION

The Baroid Technical Team recommended using BaraBlend®-657 LCM, a multi-modal, engineered, composite solution comprised of all acid-soluble particulates, along with additional acid-soluble supplements required for this limestone well. This solution was specifically designed to help remediate partial to severe lost circulation in reservoir formations by quickly sealing fractures up to 3,000 microns in width.

The LCM pill was tested at the Halliburton Baroid Fluids Laboratory in Qatar, confirming that the formulation would be able to plug a 5-mm slotted disc. The operator approved the LCM pill for deployment. It was pre-mixed while running in hole with the 3½-in. open-ended drill pipe to the perforated depth. The well was on total losses and topped up with inhibited seawater through the emergency kill line at a rate of 132 bbls/hr. The pill was spotted across the 6⅝-in. liner perforations and displaced with seawater.

RESULTS

The acid-soluble BaraBlend-657 pill reduced the loss rate from total losses to 25 bbls/hr static losses. A second LCM pill formulated with the addition of 226-lbs/bbl BaraCarb® sized ground calcium carbonate was spotted across the perforations, which further brought the static losses down to zero.

ECONOMIC VALUE

The operator saved 24 hours of rig time through successful implementation of the specially engineered BaraBlend-657 LCM pills. Savings are estimated at USD 75,000, considering less rig time and less treatment by eliminating the need to pump a third pill. With the downhole losses cured, the operator was able to drill the planned sidetrack and complete the well.

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