



Lost Circulation Materials

Plugging Perforations with Engineered DUO-SQUEEZE® R LCM Pills Saves Operator US\$200,000 on Sidetrack Operation

Location: Offshore Qatar

OPERATOR'S CHALLENGE

Due to an increase in water cut, the operator decided to temporary plug the open perforation using an acid soluble LCM then setting a whipstock above water bearing zone to drill a 5 3/4-in. lateral hole through the carbonate reservoir. After drilling a new open hole, a formic acid precursor would be used to stimulate the new section and the reopened perforations.

CHALLENGE	SOLUTION	RESULT
A perforated zone with a static loss rate of 15 m ³ /hr needed to be plugged so that a sidetrack could be drilled into a new pay zone above the perforations.	Two acid-soluble DUO-SQUEEZE® R pills were spotted and squeezed in sequence across the perforations, so that the perforations could be reopened later.	The loss rate fell to 0.25 m ³ /hr and then stopped completely, allowing the operator to drill the new pay zone successfully without a complicated cement plug job.

HALLIBURTON'S SOLUTION

The Baroid team spotted two acid-soluble DUO-SQUEEZE® R lost circulation material (LCM) pills to control the static losses. DUO-SQUEEZE R LCM, a Halliburton "Engineered, Composite Solution," contains optimized types and sizes of materials that are 100% acid-soluble, as well as an OSPAR-compliant swelling natural polymer that is acid-breakable.

Pill 1 was 15 m³ containing 395 kg/m³ (138 ppb) of the DUO-SQUEEZE R LCM. It was spotted against the 6 5/8-in. perforated liner between 1,982 m to 2,702 m and squeezed gently into the perforations. After Pill 1, the initial static loss rate of 15 m³/hr dropped to 2.5 m³/hr.

Pill 2 contained 495 kg/m³ (173 ppb) of the DUO-SQUEEZE R LCM. After spotting this pill, the drillstring was pulled above the pill and circulation commenced with no losses. Run in hole again to bottom with milling assembly. The final static loss rate was 0.25 m³/hr.

The operator displaced the hole to drilling fluid, set a whipstock, and opened a window for lateral hole drilling operations. The loss rate ultimately fell to zero.

Both pills were pumped through a milling bottomhole assembly (BHA) at 5 m³ per minute and circulated for three hours after the spotting of each pill. The bottomhole temperature of the loss zone was approximately 135°F.

ECONOMIC VALUE CREATED

Spotting the DUO-SQUEEZE R LCM pills helped the operator plug the perforations economically. No tripping or special equipment was required. An estimated two days of rig time were saved, valued at US\$200,000.