

Iraq

# Total losses cured in vuggy, karstified dolomite formation

BridgeBlend™ lost circulation material cures losses and reduces rig time

## CHALLENGE

- Severe to total lost circulation
- Pervasive voids in karstified dolomite

## SOLUTION

- Deploy BridgeBlend™ LCM

## RESULT

- Cured total losses on first placement
- Reduced rig time compared to conventional approach
- BridgeBlend™ LCM is now the operator's preferred solution in the region

## Overview

Characterized by the karstified dolomite of the Dammam formation, an oil field in southern Iraq presents a unique set of lost-circulation challenges. Operators and service companies have exhausted options for more than a decade to address losses in this region.

## Challenge

Drilling through karst facies at depths of 450 to 650 m poses a formidable challenge. Up to 90% of wells experience severe to total lost circulation attributed to geological characteristics, such as caverns, vugs, and large fractures. The Dammam formation consists of interbedded limestone and dolomite with karst that ranges up to large-scale cave/void systems. These large voids lead to lost circulation and complicate operations, which increases rig time and costs. Operators have historically used conventional lost circulation materials (LCMs), thixotropic cement systems, and multiple cement plugs, but with limited success.

## Solution

Halliburton worked with the operator to develop a solution to address losses using BridgeBlend™ lost circulation material (LCM), which is comprised of a blend of fibers, resilient angular particles, and coarse materials. Rigorous engineering, which included computer-aided simulation and laboratory testing, helped determine the optimal concentration of BridgeBlend LCM to effectively pump through the drillpipe. Before field deployment, thorough tests and verification helped ensure ease of mixability at the surface.

An optimal concentration of 29 lb/bbl of BridgeBlend LCM was used to address and block voids in the Dammam and reinforce the formation. The solution was batch mixed into the cement slurry and pumped through open-ended drillpipe.



## Result

BridgeBlend™ LCM enabled drilling and primary cementing operations to proceed without losses. This tailored lost-circulation solution cured losses with a single lost circulation plug, a result that outperformed the usual four to six conventional cement plugs required per well. The operator saved significant rig time and costs per well compared to the conventional approach. BridgeBlend LCM is now the operator's preferred solution to cure losses in the area.

BridgeBlend™ LCM cured losses with a single lost-circulation plug compared to the common use of four to six conventional cement plugs per well.

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