

HYDRO-PLUG® LCM Pill Cures Losses in Perforated Zone, Eliminating Need for USD 50,000 Cement Squeeze

EAST KALIMANTAN, INDONESIA

CHALLENGES

The operator needed to plug a perforated zone, set a packer, and perforate above the old zone.

- » Losses of 1.5 bpm in the original perforated zone threatened the cement job quality
- » Curing losses with a cement squeeze would be costly and time consuming

SOLUTIONS

An engineered 80-bbl pill of HYDRO-PLUG® and BARACARB® LCMs was spotted across the perforated zone and squeezed for ~2.5 hours up to 350 psi.

RESULTS

Losses were stopped completely, allowing the operator to successfully set a cement plug and packer.

- » The estimated cement cost savings was USD 50,000.
- » The operator avoided delay in commencing packer and perforating operations above the old zone.

OVERVIEW

VICO Indonesia planned to plug a perforated zone during a rigless workover operation. Before the cement plug could be pumped, dynamic losses (1.5 bpm) in the perforated zone had to be stopped. This would help ensure the success and integrity of the plugging operation. A cement mixing unit would be used to place the lost circulation treatment.

HYDRO-PLUG® LCM BLEND PILL DESIGNED TO SEAL PERFORATIONS AND PORES

VICO Indonesia provided Baroid personnel with information concerning wellbore geometry, formation permeability, and perforation size and distribution. Based on this input, the Baroid team searched for the optimal lost circulation material (LCM) to plug both the formation pore throats (~12 microns) and the perforations (~0.21 inch). These values were used in WellSET® modeling to determine the best LCM options and particle size distribution (PSD).

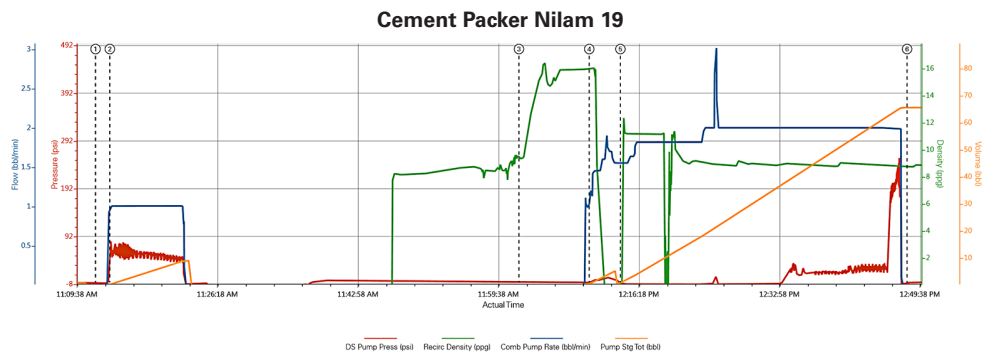
Prior experience with sealing perforations indicated that HYDRO-PLUG® composite hydratable LCM was an effective choice. The addition of sized BARACARB® ground marble, as determined by the WellSET modeling PSD solutions, would help seal the formation pore throats.

The formulation was tested and confirmed as suitable for use in this application. An 80-bbl HYDRO-PLUG/BARACARB LCM pill was pumped to the loss zone [8,298–8,658 feet (2,529–2,639 meters) of measured depth] in two parts.

Product	Concentration (ppb)
BARAZAN® D™	0.75
BARACARB® 5	20
BARACARB® 50	20
HYDRO-PLUG®	80

First, a 50-bbl volume was pumped and squeezed to 150 psi. The loss rate decreased to 0.8 bpm. The remaining 30-bbl volume was pumped and squeezed to a maximum pressure of 350 psi. After holding this pressure for 2.5 hours, the well was static. The red line on the graph shows that pump pressure held steady at -50 psi before the cementing job commenced, proving that the lost circulation was cured.

VICO Indonesia's main objective was to successfully plug the old zone and then perforate above the plugged zone. The 80-bbl LCM pill eliminated the need to pump cement to cure losses.



Effective HYDRO-PLUG® LCM squeeze: The red line shows pressure holding steady at -50 psi prior to pumping the cement plug, indicating that the well was static and the losses were cured.

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