

Trinidad: MUDSOLV NG successfully used as an open hole gravel pack carrier fluid in a gas producer

“The drawdown was less than what was predicted from the modeling and considerably less than what historically has been recorded in the field. Also, the well cleaned up comparatively easier compared to past offloads.”

Completion Engineer

Well Information

Location	Trinidad Offshore
Well Type	OHGP Gas Producer
Date.....	Dec. 2011 – Mar. 2012
Maximum Deviation	70°
BHST	170°F (77°C)
Well Depth.....	12,629 ft (3,849 m) MD / 8,502 ft (2,591 m) TVD
Well Geometry.....	7 in. 13 Cr / 5 ½ in screens to TD

The Situation

In an offshore Trinidad gas field, the project area has a pore pressure that requires a density between 10.4 and 10.8 lb/gal (1.24 and 1.3 SG) to maintain the required overbalance and sand control. The operator chose to complete the well as an open hole gravel pack (OHGP) utilizing the Schlumberger Sand Management Services calcium chloride (CaCl₂), as completion brine. The campaign was to drill and complete four wells.

The reservoir drill-in fluid and gravel pack carrier fluid needed to be compatible with the divalent calcium brine. The OHGP called for the use of a breaker integral to the carrier fluid. The breaker was required to ‘delay’ the break in order to remove the drilling fluid filtercake uniformly from the very high permeability formation face.

A competitor had the fluids contract, but was unable to provide an appropriate breaker for the gravel pack fluid. Most of the commercial chelants are compatible only with monovalent brines. Additionally, the competitor could not guarantee the corrosion requirements or the rheology stability of the HEC viscosifier in the gravel pack fluid.

The Solution

The BREAKDOWN¹ HD system, the primary chemical component of the MUDSOLV NG¹ system, contains a novel chelant (D-SOLVER¹ HD) compatible with divalent brines. After screening breakers using the competitor’s field mud BREAKDOWN HD additive was chosen as a solution for the project. Further testing of the breaker in the Schlumberger stimulation lab and the client’s fluids lab confirmed the selection.

The Results

The usage of the novel breaker system allowed the customer to achieve higher production rates than expected. The drawdown was 200 psi, which was one-half of that predicted from the modelling, and less than the historically seen in the field (up to 1,000 psi). The well cleaned up was also easier compared to past offloads.

Two more wells were completed using the same procedure and chemicals. Each well showed similar success. The production update in January 2012 shows both wells reached the flow line capacity, producing as high as 200 mmscfd, and requiring the wells to be choked back to 43%.



Figure 1- Competitor's Initial 4 hour filtercake (left) and residual filtercake (right) after 72 hr soak

The Details

At the wellsite, 320 bbls of BREAKDOWN HD chelant were mixed and viscosified with 21.73 gpt of J512 (HEC), 3.0 gpt of D047 (antifoam) and 2.0 gpt of A272 (corrosion inhibitor), 10% of D SOLVER HD chelant and 5% of D-STRUCTOR* additive to provide the properties of an OHGP carrier fluid. No losses were encountered during the placement or while pulling the pipe before closing the FIV.

Questions? We'll be glad to answer them.

If you'd like to know more about the BREAKDOWN HD breaker and how it's performing for our other customers, please call the M-I SWACO office nearest you.

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