

# BaraECD® System Enables Operator to Drill and Complete Difficult Well

## HIGH-PERFORMANCE NON-AQUEOUS SYSTEM

### ELIMINATES NEED FOR LINER TOP SQUEEZE

GULF OF MEXICO

#### CHALLENGE

An operator in the Gulf of Mexico needed to run and cement the production string without mud losses, as mud losses of over 50 percent would require the liner top to be squeezed.

- » Losses were observed during the drilling operations for the production interval due to low-pressure sand.
- » Previously, the operator had experienced total losses when cementing the liner, resulting in the need for a liner top squeeze job that would require an additional 24 hours of rig time.

#### SOLUTION

Halliburton recommended the BaraECD® high-performance non-aqueous fluid system, which was designed to address the narrowing margins between the pore pressure and fracture gradient.

- » A Baroid hydraulic shearing unit was used to precondition the fluid, so that the fluid could perform optimally from the start of the drilling operations.

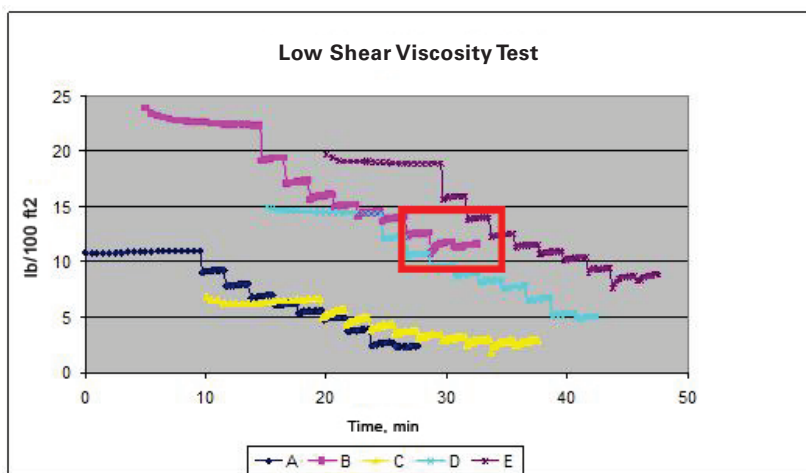
#### RESULTS

The BaraECD fluid system enabled the operator to drill and complete this difficult well successfully:

- » Production liner was run with a 100 percent return rate and the cement with a 90 percent return rate, eliminating the need for the liner top squeeze.
- » Avoiding the top liner squeeze, which would have required 24 hours of rig time, saved the operator more than USD 1 million.

#### CHALLENGE

After drilling a production interval, an operator in the Gulf of Mexico experienced losses due to low-pressure sand. To solve this issue, Baroid pumped lost circulation pills into the interval, sealing off the sand and halting these losses. The challenge was to run and cement the production string without mud losses, as mud losses of over 50 percent would require the liner top to be squeezed. With an 11.6 lb/gal equivalent sand pressure and surface mud density of 15.0 lb/gal, the differential pressure across the sand was 3,786 psi.



This test measures yield point and suspension at very low shear rates. BaraECD® high-performance fluid system (Fluid B) shows a high yield point and demonstrates formation of structure at low shear.

The operator's experience with similar situations led it to believe that total losses would occur when cementing the liner, resulting in a liner top squeeze job. Before trying the BaraECD system, the operator would have made plans to do this squeeze job, which would cost an additional 24 hours of rig time.

#### SOLUTION

In 2012, after achieving success using an engineered Halliburton BaraECD® high-performance non-aqueous fluid system in a previous deepwater sidetrack, the operator opted to use the same fluid technology again.

Using the BaraECD® system saved the operator the cost of a top liner squeeze and 24 hours of rig time, for an estimated economic savings of more than USD 1 million.

The BaraECD system was designed to address the increasingly common problem of narrowing margins between the pore pressure and fracture gradient due to difficult well conditions.

Its unique rheological profile allows it to maintain low viscosity while providing excellent suspension and hole cleaning, preventing barite sag in the high-angle and lateral sections of the wellbore. As a part of the fluid design, it is preconditioned using Baroid's hydraulic shearing unit. This allows the fluid to be stable before its first time through the bit, enabling optimal performance at the start.

### RESULTS

The use of the BaraECD fluid system allowed the customer to run the production liner with a 100 percent return rate and the cement with a 90 percent return rate, thus eliminating the need for the liner top squeeze. This saved the operator the cost of the top liner squeeze and 24 hours of rig time, for an estimated economic savings of more than USD 1 million. The Halliburton BaraECD high-performance **non-aqueous fluid** system enabled the operator to drill and complete this difficult well successfully, providing an economical alternative compared to other current industry solutions.

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