

In Less Circulating Time, BaraKlean®-648 Wellbore Cleanout Spacers Deliver Brine With Less Than 2% Solids

GULF OF MEXICO

CHALLENGE

Displacement issues on offset wells serviced by a competitor led to a wellbore cleanout and displacement job for the Baroid Gulf of Mexico completion fluids team.

SOLUTION

Testing showed that optimizing BaraKlean®-648 casing cleaners would quickly and effectively remove 12.6-ppg synthetic-based mud and mud residue.

RESULTS

The cleanout process reduced the time needed to obtain the target completion brine specifications of less than 2% solids. The team achieved 0.3% solids, and no contingency spacers were required.

OVERVIEW

After a competitor had issues with prior displacements, a major deepwater operator asked Baroid to design and execute the largest displacement ever performed for that customer in the Gulf of Mexico. The well's total depth was 26,268 feet (8,006 meters). A 5,077-bbl volume of 12.6-ppg ACCOLADE® synthetic-based fluid would be displaced and cleaned out with 10.5-ppg CaCl₂ completion fluid (brine) prior to running a tieback. After the tieback was in place, the well would be temporarily suspended and completed at a later date. The displacement endpoint for the brine was set at less than 2 percent solids content as per the drilling program.

SOLUTION

The Baroid completion fluids team tested wellbore cleanout formulations to determine the optimum cleaners and concentrations for these challenging conditions. To achieve the target clarity values at relatively low concentrations, the team selected its BaraKlean®-648 surfactant-based casing cleaner due to its strong solvent action and high cleaning capacity.

BaraKlean-648 cleaner proved to be more powerful than available alternatives and was ideally suited to the technical constraints presented by this application. It is also a product that is approved by the U.K.'s Centre for Environment, Fisheries and Aquaculture Science (Cefas), and is on the Offshore Chemical Notification Scheme (OCNS) list without a substitution warning.

Modeling and simulation with Baroid's Completion Fluids Graphics (CFG™) cleanup displacement modeling software optimized the displacement design. CFG software can be used to optimize critical parameters such as pump rates, circulating pressures, and annular velocities.



This magnet scraper is water-wet and residue-free after application of BaraKlean®-648 casing cleaner.

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The BaraKlean-648 cleaner was used in the transition and as cleaning spacers for the displacement of the 12.6-ppg SBM. The scraper photo verifies the thoroughness of the cleaning process. Baroid cleaner was also used for pit cleaning and line flushing at 12 percent volume/volume (V/V).

ECONOMIC VALUE CREATED

The displacement was successful in obtaining the desired nephelometric turbidity units (NTU) and solids specifications without incurring additional circulating time or requiring the use of contingency spacers. Baroid's recommended cleanout process effectively reduced the time needed to obtain the target completion brine specifications of less than 2 percent solids, with the team achieving 0.3 percent solids. Additionally, no environmental incidents or discharges occurred during or after the displacement.

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