



BaraXcel™ HP NAF System Eliminates Two Intervals and Cuts Rig Time in Half

HIGH-PERFORMANCE FLUID SAVES MORE THAN 70 DAYS ON DEEPWATER OPERATION

OFFSHORE CAMPECHE, MEXICO

CHALLENGE

Enable an operator to reach TD in five intervals, instead of in the planned seven, by overcoming significant lost circulation issues and high deepwater operating costs

SOLUTION

The Baroid solution coupled a high-performance fluid with a highly accurate drilling simulation capability:

- » Organophilic clay-free BaraXcel™ HP NAF, with superior suspension and ECD control
- » DFG™ hydraulics modeling software for on-the-fly optimization of drilling parameters and mud properties

RESULTS

- » Eliminated two of the planned seven intervals
- » Reduced drilling time from the planned 149.4 days to 76.7 days
- » Saved approximately USD 36.6 million

OPERATOR PLANS TO REDUCE NUMBER OF INTERVALS FROM SEVEN TO FIVE

In 2016, an operator in the Gulf of Mexico planned to deepen some intervals in order to reduce the total number of sections required to reach total depth (TD). This would save time and eliminate some casing strings. However, costly lost circulation events occurred on offset wells while using conventional fluid systems to drill deeper intervals.

BAROID FLUID SYSTEM OPTIMIZES RHEOLOGY AND ECD CONTROL

The Baroid team recommended the organophilic clay-free BaraXcel™ high-performance (HP) non-aqueous fluid (NAF) system because of its unique rheological properties. The BaraXcel HP NAF system contains no organophilic clay or lignite additives. Instead, the formulation relies on high-performance emulsifiers and additives to provide superior suspension properties while minimizing equivalent circulating density (ECD). The BaraXcel system exhibits a rapid gel-to-flow transition when circulation is resumed after a trip or other static period. The robust gel strengths provide reliable suspension, and then break easily when the fluid begins moving. This response provides several performance benefits:

- » Minimal pressure spikes associated with turning on the mud pumps
- » Improved ECD control while drilling and circulating
- » Significant reduction in downhole losses while running casing and cementing

The performance of the BaraXcel HP NAF system was further enhanced by the application of proprietary Baroid Drilling Fluids Graphics (DFG™) hydraulics modeling software. DFG modeling shows the impact of mud density, pump rate, and rate of penetration (ROP) on cuttings loading and ECD. The operator can adjust to these parameters in real time to help ensure that ECD stays within the optimal range. DFG software can also be used to establish optimal tripping and casing running speeds that help prevent excessive pressures in the wellbore.

**REDUCED
DRILLING DAYS
SAVED OVER
\$36 MILLION**

SYSTEM REDUCES DRILLING DAYS BY HALF, SAVING OPERATOR OVER USD 36 MILLION

The combined performance of the BaraXcel HP NAF system and DFG modeling allowed the operator to safely reduce the total number of wellbore sections from seven (as stated in the well plan) to five. There were no significant lost circulation incidents.

The original well program called for 149.4 days to reach TD. The actual number of days was 76.7, saving 72.7 days – nearly half the original estimate. The value of this time reduction was estimated at USD 36,618,100.

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