

FLC 2000[®] Used to Stabilize Sudair and Khuff Formations in Qatar

Middle East

CHALLENGE:

- ▶ Design a fluid that would protect the Khuff formation and prevent differential sticking and limit mud losses

SOLUTION:

- ▶ FLC 2000 was introduced in the active sodium chloride polymer WBM at 6 lb/bbl

RESULT:

- ▶ No mud losses or differential sticking in the Khuff formation
- ▶ No wellbore instability issues through both formations
- ▶ 7-in. liner was successfully ran

OVERVIEW

In the North Field in Qatar, operators typically drill through the Sudair and Khuff Formations. The Sudair Formation is frequently isolated in a casing run while the Khuff Formation is drilled as a separate interval. The operator wanted to drill through both formations in one interval using a new well design. The novel well path was designed to manage the high differential pressures associated when drilling the Sudair and Khuff reservoir in the same interval. The new well design isolated the Sudair formation, which required a higher mud density for controlling salt-water inflow and maintain wellbore stability. However, the required mud density in the Sudair could cause mud losses in the Khuff formation. Excessive overbalance could lead to stuck pipe issues through differential sticking. The challenge was to design a fluid that would protect the Khuff formation and prevent differential sticking and limit mud losses

SOLUTION

All varieties of drilling fluids have been used in this field. In this case, the operator selected a sodium chloride polymer water-based mud (WBM), with mud weights ranging from 12.4-12.5 lb/gal. The drilling fluid was designed to give a low-end rheological profile to maintain a steady equivalent circulating density (ECD). Laboratory tests demonstrated FLC 2000 ultra-low fluid invasion properties would provide the wellbore stability needed for the operator. FLC was added to the drilling fluids system at 6 lb/bbl.

RESULT

The operator successfully drilled the 8 ½-in. section without mud losses or differential sticking in the Khuff formation. The addition of FLC 2000 into sodium chloride polymer WBM prevented wellbore instability issues through the both Sudair and the Khuff formations. The 7-in. liner was successfully ran after a clean-up trip and cemented in place. The 6-in. hole was also drilled on this well using FLC 2000 in the formulation to maintain wellbore stability and prevent mud losses.

