

BAPETCO Improves Operational Efficiency Saving 15 Hours of Rig Time and USD 30-40K

BARASURE™ W-674 SHALE STABILIZER MINIMIZES SWELLING AND DISPERSION ACROSS HIGHLY REACTIVE MOGHRA FORMATION

EGYPT

CHALLENGE

- » Eliminate non-productive time (NPT) and increase ROP while drilling Moghra clay formation
- » Prevent flow line and conductor plugging, and shaker overflow
- » Avoid hard back-reaming while pulling out of hole (POOH)
- » Optimize costs, with fluid treatment and rig time improvements

SOLUTION

- » Conducted laboratory shale studies on offset cuttings samples
- » Customized drilling fluid system, including a combination of:
 - » BaraSure W-674 shale stabilizer — to prevent clay swelling caused by hydration, and minimize cuttings accretion and bit balling potential on the BHA
 - » KCl-Polymer mud — for drilling through reactive formation
- » Documented engineering recommendations to ensure successful deployment of drilling fluid

RESULTS

- » Maintained high ROP while drilling the 17½-in. section
- » Experienced no incidents of bit balling or plugged flow lines
- » Improved overall drilling and tripping performance, saving 15 hrs of rig time
- » Reduced total cost of ownership by USD 30-40K



OVERVIEW

The BADR Petroleum Co. (BAPETCO) was planning to drill a well in Egypt's Western Desert through the reactive Moghra Formation, with an interval that exhibits high clay swelling and dispersive characteristics. The operator wanted to drill the 17½-in. hole with optimal rate of penetration (ROP) and perform trouble-free trips with the drilling bottomhole assembly (BHA) and 13¾-in. casing.

CHALLENGE

BAPETCO was concerned that intersecting the highly reactive clays would likely impact drilling performance, i.e. reduced ROP due to bit balling tendencies, plugged flow lines, and high dilution of drilling fluids required to mitigate clay dispersion. Tight hole conditions had been experienced across this formation, resulting in high overpull and back reaming, and difficult casing operations.

SOLUTION

The Halliburton Baroid Technical Team performed extensive shale studies on offset cutting samples to determine the most appropriate inhibitive fluid for the job. Laboratory studies showed that mixing KCl-Polymer mud with BaraSure™ W-674 shale stabilizer would provide the necessary inhibition, cuttings integrity, and high-performance drilling and tripping. The Baroid team presented the test results and recommended a customized fluid formulation to BAPETCO. Approval was granted to develop deployment plans utilizing this engineered drilling solution, and a detailed Design of Service (DOS) was drawn up by Baroid.

RESULTS

Drilling performance was significantly improved, with no incidents of bit balling, no plugged flow lines, and high ROP. The trip out of hole with the BHA was performed on elevators, and a stable wellbore was maintained while running the 13 ¾-in. casing. The upgraded fluid system reduced drilling and tripping times by 15 hours in the section, equivalent to a cost savings of two to nearly three thousand USD per hour. Baroid subsequently secured ongoing work with BAPETCO to deploy the KCl-Polymer BaraSure W-674 formulation as the fluid of choice when drilling similar intervals in the region.

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