

Case History

Water-Based Fluids

Engineered PERFORMADRIL® Fluid System with BARACARB® Bridging Agents Helped Save 3 Days of Rig Time and \$4M

Customer: Qatar Shell Services Company

Location: Qatar

OPERATOR'S CHALLENGE – Qatar Shell Services Company (QSSC) was planning to drill and core an 8½” reservoir section in an exploration well in the Pre-Khuff formation. The primary target was the Jauf Reservoir, and the Unayzah Reservoir was the secondary target. QSSC was seeking an environmentally-friendly fluid system that could help minimize formation damage and provide optimum shale inhibition for increased wellbore stability over an extended period of time during well logging. As an added challenge, the expected temperature in the reservoir section was expected to be 300°F.

HALLIBURTON'S SOLUTION –Halliburton Baroid engineers recommended a 11.3 ppg PERFORMADRIL® water-based drilling fluid system. The unique chemistry of PERFORMADRIL high-performance fluid system provides a high degree of clay control, wellbore stability, and rheological control over a wide range of temperatures, and is non-damaging to the reservoir.

Baroid engineers formulated the fluid system so that it would minimize the invasion of solids, polymers and filtrate into the reservoir. This was achieved by the creation of a bridging package that was customized according to expected pore throat size to form a filter cake on the surface of the borehole wall. The reservoir was considered a tight sandstone with streaks of shale and had a mean porosity of 12% and a permeability of 7 mD.

The customized bridging package included a combination of BARACARB® 5 bridging agent and BARACARB® 25 bridging agent in the ratio 75:25 to maintain a D_{50} within the proposed range of 7 – 10µm. The BARACARB 25 bridging agent was pumped at 25 lb/bbl to help minimize fluid loss to the formation, and the BARACARB 5 bridging agent was applied as a weighting agent at a rate of 85 lb/bbl.

ECONOMIC VALUE CREATED – After the customized PERFORMADRIL system was applied, the entire reservoir section was drilled and logged with no issue, achieving a perfectly gauged hole with stable fluid properties. The PERFORMADRIL system helped minimize formation damage and provided the ability to run logs on wireline instead of using a Tough Logging Condition (TLC) system.

Overall, this solution helped save the customer 13 days of rig time, leading to a cost savings of around \$4MM USD.