BaraFLC®-903 Shale Stabilizer Helps JVGAS Eliminate NPT and Save 23 Percent on Interval Costs

**OVERVIEW**

The In Amenas/Tiguentourine field is part of the fourth-largest ongoing gas development in Algeria. It is operated by JVGAS, a joint venture comprising Sonatrach, BP, and Equinor (formerly Statoil). The wells are drilled with high-performance, inhibitive water-based muds (WBMs). These systems provide an environmentally friendly alternative to oil-based muds. This helps protect the aquifer layers that are penetrated during the intermediate intervals. Recently, the JVGAS drilling team focused on reducing the concentration of sulfonated asphaltic material needed for filtration control.

**CHALLENGE**

Both the 17.5-inch and 12.25-inch intervals – 2,182 feet (665 meters) and 6,411 feet (1954 meters), respectively – contain long sections of highly reactive clays. Significant non-productive time (NPT) on past wells was caused by shale destabilization and lost circulation. A highly inhibitive HYDRO-GUARD® WBM was used successfully to minimize wellbore instability, and the operator requested a fluid loss control additive that would deliver the desired results at a much lower concentration. Baroid technical personnel evaluated alternative fluid loss control additives that would meet this objective without impairing the HYDRO-GUARD system’s performance.

**SOLUTION**

The Baroid team determined that its BaraFLC®-903 shale stabilizer would be the optimal choice, and Baroid tested a HYDRO-GUARD® WBM formulation that incorporated the new product. BaraFLC-903 shale stabilizer helps to form a thin and tough filter cake, where the small hydrophobic particles can effectively bridge microfractures. This action prevents shale hydration and sloughing, and also decreases cuttings erosion. Testing confirmed that the high-pressure/high-temperature (HP/HT) fluid loss results were within the specified range, and the new formulation also remained stable at temperatures up to 350°F (176°C).

**RESULTS**

- Improved 17.5-inch and 12.25-inch intervals with powerful clay inhibition
- Reduced drilling time
- Decreased overall drilling costs by 23 percent
- Saved USD 10,000 per well on drilling fluid costs

**CHALLENGE**

Provide a shale stabilizer and fluid loss control additive that provides equal or better performance than conventional sulfonated asphaltic materials – at a lower concentration.

**SOLUTION**

BaraFLC®-903 shale stabilizer, which forms thin, tough filter cake to block shale hydration, and is:

- Effective at a 50 percent lower concentration than conventional sulfonated asphaltic additives
- Stable in temperatures up to 350°F (176°C)

**RESULTS**

- Improved 17.5-inch and 12.25-inch intervals with powerful clay inhibition
- Reduced drilling time
- Decreased overall drilling costs by 23 percent
- Saved USD 10,000 per well on drilling fluid costs
The effective concentration of BaraFLC-903 shale stabilizer was 2 lb/bbl, as compared to the 3–4 lb/bbl required when using a conventional sulfonated asphaltic additive.

RESULTS

Combining the BaraFLC-903 additive with the HYDRO-GUARD fluid inhibition package allowed the operator to drill the two problematic sections in less time than was allocated in the well plan, and also decreased total well costs for these intervals by 23 percent. These cost savings were derived from eliminating excessive circulating time to clean the wellbore, avoiding extra trips to manage wellbore instability, and decreasing the need for additional cement volumes to account for hole erosion and washouts. Further, drilling fluid costs were decreased by approximately USD 10,000 per well.

With these positive results, JVGAS has now approved the continued use of BaraFLC-903 shale stabilizer and fluid loss control additive in similar sections for its In Amenas/Tiguentourine wells.

API and HP/HT filtrate results show improved performance with BaraFLC®-903 shale stabilizer.

BaraFLC®-903 shale stabilizer proves effective at lower concentrations compared to conventional additives.

BaraFLC®-903 shale stabilizer enables significant reductions in NPT, thus decreasing overall well costs.