HYDRO-GUARD® water-based drilling fluid system replaced competitor silicate mud, delivering stable wellbore through troublesome shale

Location: Egypt, Eastern Desert

OPERATOR’S CHALLENGE – Drilling through Rudies shale is a well known challenge in Eastern Desert / Red Sea concession, where this operator was looking for an engineered mud system that would enable the well to be successfully drilled to target depth, logged and cased, after successive failures by a competitor to produce a usable hole with a silicate mud system.

HALLIBURTON’S SOLUTION – Upon reviewing the fluid properties used previously, Halliburton’s Baroid team determined dispersion of clays in competitor’s mud system produced an under gauged hole in the unstable shale, while severe losses in the pay zone resulted in damage to the reservoir section, leaving the operator unable to produce the well, which had to be abandoned.

Based on extensive experience in the area, the Baroid team optimized a drilling fluid solution to provide maximum shale stability, customizing the use of shale inhibitors according to formation drilled and shale composition based on previous shale tests made in same field.

The team recommended HYDRO-GUARD water-based drilling fluid system along with the addition of BARO-TROL PLUS additive to provide optimum inhibition in the troublesome shale. The full package of inhibitors included CLAYSEAL® shale stabilizer, which was primarily added before drilling the Kareem shale, followed by CLAY SYNC™ II shale stabilizer and CLAY GRABBER®

Shale cuttings were observed on the shale shakers well inhibited and encapsulated, optimized HYDRO-GUARD® mud system provided excellent shale stability as per customer.

Additive to help ensure maximum inhibition along with extended exposure time. BARO-TROL PLUS additive was added before drilling the Rudeis shale to plug the micro-fractures and minimize pressure transmission in the highly stressed fractured formation.

Using this system, the hole was drilled successfully to TD, after which four open hole wire line logs and 7-inch production casing were successfully run with no hole related problems. BARO-TROL PLUS additive provided extra shale stability in the Rudeis shale and acted as a lubricant along with the thin firm filter cake, enabling the operator to run the wire line logs and take pressure points successfully.

ECONOMIC VALUE CREATED – This engineered HYDRO-GUARD mud system from Baroid helped the operator to drill, log and complete the well safely and economically, dropping cost per foot by 40 percent, to $14.92/ft, compared to the competitor cost of $63.16/ft. In addition to these estimated savings of $200,000, the operator estimates the production based on pay zone pressure of 1250 psi, to be four times the expected rates.