

RheGuard System with MicroBar Additive Exceeds KPIs, Enables Drilling to TD Through Narrow Hydraulic Window

Micronized weighting additive helps maintain low rheology while drilling tough section in North Sea sidetrack

CHALLENGE

Enhance sag stability and reduce equivalent circulating density (ECD) while drilling a sidetrack in a mature offshore field.

SOLUTION

Deploy RheGuard* flat rheology drilling fluid system formulated with MicroBar* micronized weighting additive.

RESULTS

Exceeded KPIs by drilling to TD and successfully running and cementing liner without losses.



Maintain stable rheologies in low-ECD conditions

An operator in the Norwegian sector of the North Sea planned a 2,383-ft [726-m] sidetrack through a narrow hydraulic window in an overburdened section of a mature field. Successfully drilling to the 7¾-in shoe required a cost-effective drilling fluid with enhanced sag stability and a sufficiently low rheological profile that would reduce the ECD in the tight operating conditions.

Deliver excellent hole cleaning and overall drillability

M-I SWACO, a Schlumberger company, suggested using the RheGuard system with MicroBar additive to drill the sidetrack and run the 7¾-in liner. The RheGuard system maintains low rheology and reduces the risk of barite sag for extended static periods during casing or liner runs, emergency disconnects, and planned long-term logging programs. Compared with conventional API barite, the uniquely engineered and cost-effective MicroBar additive optimizes rheologies and overall drilling performance.

Exceeded all KPIs in successful field trial

The RheGuard system with MicroBar additive was used while drilling the 8½-in × 9½-in sidetrack to TD at 12,636-ft [3,851-m] MD and 10,061-ft [3,067-m] TVD. The 7¾-in liner was run and cemented without issues or losses. A programmed increase in the oil/water ratio (OWR) steadily decreased the rheological profile and ECD during drilling, and the RheGuard system maintained excellent hole cleaning. The system also generated sufficient viscosity to eliminate a sweep during the milling operation.

Field Trial Results for RheGuard System with MicroBar Additive	
ECD, lbm/galUS	0.54
Sag, lbm/galUS	0.25
Plastic viscosity, cP	37
100 rpm, lbm/100 ft ²	26
10-s gels, Pa	1
Nonprogressive gels, Pa	1

The system remained within the narrow hydraulic window throughout drilling and easily maintained optimized rheology while drilling the section to TD.

The fluid system field trial exceeded all KPIs, even when some contamination was discovered immediately after displacement.

The third-party MWD and directional services provider lauded the hole-cleaning performance and

adaptability of the MicroBar additive. After completing the operation, the cementing engineer said the gels were easily broken, which made displacement optimal when performing the foam cement job.