

SACK BLACK enhances high performance WBM, eliminates casing (Alaska)

“The performance of SACK BLACK* was a major contributor to the success we had with KLA-SHIELD* in these wells”

Jim Cucullu, Project Engineer – M-I SWACO

Well Information

LocationAlaska

Spud..... May 21 – June 20, 2008

Intervals drilled..... 12 ¼ in from 70 ft to 3,041 ft (21 – 927 m)
 8 ¾ in. from 3,041 ft to 7,005 ft (927 – 2,135 m) S-shaped well

Total well depth 7,005/6,780 ft TVD (2,135/2,067 m)

Disposal method Injection

Bottom hole temperature..... 110° F (43° C) Mud type/Density
water-based 9.8 lb/gal (1.1 s.g.)

Completion type..... Gravel pack

Casing size..... 12 ¼ in. 9 5/8 in. csg; 8 ¾ in. Long string casing 7 in

The Situation

The operator wanted to drill the wells and run 7 in. long string casing, which would eliminate an intermediate interval and, thus significantly reduce time and cost. The objective was to drill and run the long string through depleted production sands to the normally pressured target zone. The job posed inherent risks of stuck pipe, losses, as well as wellbore stability and well control Adding to the challenge were highly reactive clay/shale, coal beds and clay rich sands in the producing zones. Owing to environmental concerns and logistical challenges, mineral oil-based and synthetic-based drilling fluids were not an option.

The Solution

The M-I SWACO Houston lab performed characterization and analysis of formation samples with Mineralogy, CEC, Thin Section Analysis and Fracture Development tests. The test results lead M-I SWACO to recommend the operator use the KLA-SHIELD water base mud designed to provide wellbore stabilization by sealing microfractures in shale/coal formations and inhibiting the swelling and dispersion of sensitive shale and drill cutting exposed to water-based drilling fluids. Further, the results test data analysis indicated a 50/50 blend (6 lb/bbl each) of SACK BLACK and sulfonated asphalt should be incorporated for HTHP filtrate control and shale/coal stabilization. Continuous maintenance of 6 lb/bbl of SACK BLACK and proper particle size distribution of bridging material were recommended to prevent differential sticking threats in the depleted zones.

Key products used in the final KLA-SHIELD System comprised KLA-STOP*, SACK BLACK, SAFE-CARB* bridging agent (Using OPTI-BRIDGE* for PSD), Pac and sulfonated asphalt. LO-TORQUE and LUBE 776 were used as needed to reduce torque and drag.

The Results

- The well was drilled with no losses, stuck pipe or wellbore stability problems. Total time from spud to landing the 7 in. long string casing, including four days of open hole logging, was 18 days with no lost time due to mud problems
- The KLA-SHIELD system provided excellent inhibition of reactive shale and clay, producing crisp angular cuttings
- The mechanically sensitive shale remained stable
- Drilled thru depleted zones with formation pressures of 3.5 ppg EMW to TD with pressures of ~9.8 ppg EMW and ECD's of ~10 ppg EMW with no losses



Inhibited shale cuttings taken from the shaker.

The Details

This S shaped well was drilled in two intervals, 12 ¼ in. surface and 8 ¾ in. production. Of particular concern was drilling the production interval and running 7 in. long string casing through the unconsolidated, depleted formation just below the casing shoe, to the normally pressured target formation.

A three-to-four day open hole logging run only magnified the concern of maintaining adequate wellbore integrity to allow the 7 in. long string to be landed. Other concerns that were successfully avoided included lost circulation, stuck pipe and well control problems.

Questions? We'll be glad to answer them.

If you'd like to know more about SACK BLACK and how it's performing for our other customers, please call the ALPINE SPECIALTY CHEMICALS or M-I SWACO office nearest you.



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