

Better Caliper Logs with BLACK FURY in Ecuador

“With the BLACK FURY* product, the caliper was improved, reducing problems associated with hole cleaning and creating a better scenario for good removal of mud and filter cake during cementing jobs.”

Julian Bautista, Senior Drilling Engineer

Well Information

Location Block 16, Ecuador
 Spud September 2005
 Interval drilled 8½-in hole for a total of 2,930 ft (894 m) – from 6,712 to 9,642 ft (2,047 to 2,941 m)
 Inclination 26.8°

The Situation

An operator in South America using a polymer-base drilling fluid was experiencing significant washouts in front of shale sections and under-gauge hole in front of sandstone sections. Consequent issues included liner and logging tools not reaching bottom and poor cement bonds. M-I SWACO was asked to assist with the fluid design to improve the hole caliper.

The Solution

The drilling team proposed using the BLACK FURY product to improve wellbore conditions along the section with the aim of creating a thinner and better cake quality in the sand formations. The drilling plan required additions of the BLACK FURY product from 7,700 ft (2,349 m) in the middle of the Tena formation in order to drill the more sensitive and sloughing shale encountered in the 8½-in. section.

The Results

BLACK FURY product was added to the active system, reaching a concentration of 2% volume at 7,700 ft (2,349 m). No negative property variations were observed.

The logs ran to bottom trouble-free, and the condition of the hole while tripping was stable, with no cavings or high amount of materials on shakers. The caliper log showed improvements compared to the previous well. Also, there was a reduction on filter-cake thickness in front of the sand formations, which helped improve cement bond quality.

The Details

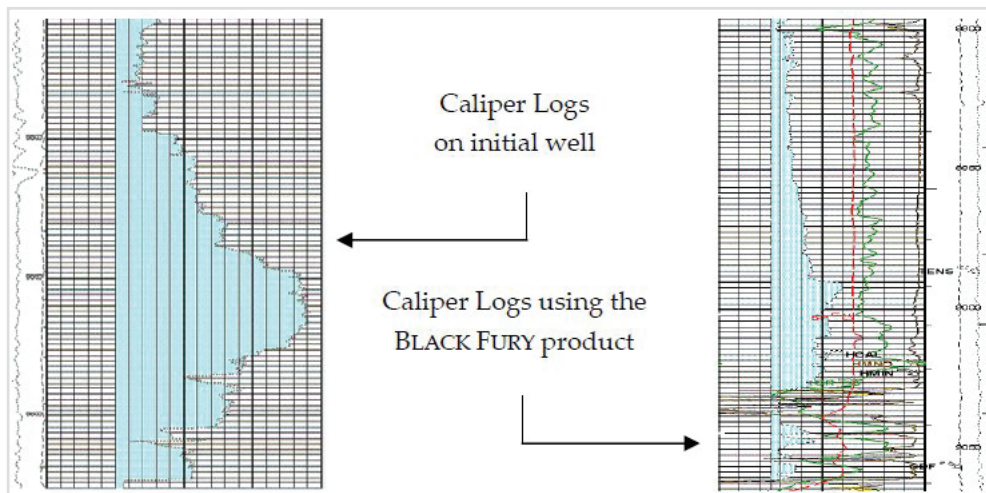
The polymer-base fluid used on this well was similar to the one used to drill the 8½-in. section in the previous well. The change in composition was made at 7,700 ft (2,349 m) MD with a treatment of 2% of BLACK FURY (~7.0 lb/bbl) product to drill the Lower Tena and Napo shales. The product was added to the active system with no adverse effects to the mud properties.

BLACK FURY additive was used in conjunction with calcium carbonate resulting in notable reduction on spurt losses and total fluid losses measured with the PPT (permeability plugging tester) at 190°F, 800 psi and 35 micron disc as porous media.

The cleaning of the hole was ensured and monitored with M-I SWACO VIRTUAL HYDRAULICS* software. There were no problems tripping in or out of hole. Circulation prior to cementing showed steady pressures.

The caliper log showed considerable improvement from a previous well where the BLACK FURY product was not used. The peak diameter reduced from 16 in. to 12 in. The average enlarged hole went from 11.06 in. to 10.08 in. In the sand section, the average cake thickness was estimated as 0.35 in. in the first well, while in the well with the BLACK FURY product, it was only 0.22 in. With a reduction of 10% in hole diameter, the cementing volume was reduced by 36%.

The operator is now implementing the use of BLACK FURY product on the upcoming wells for four other fields as a cost-effective solution to enlarged hole issues.



Questions? We'll be glad to answer them.

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



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