KLA-STOP Organic Inhibitor Passes Field Tests in West Siberia, Russia

“The new polyamine-based inhibitor provides better inhibition as compared to common inhibitors. The application of KLA-STOP* inhibitor enables sufficient reduction of dilution volumes and higher-quality reservoir drilling-in without significant increase in well cost.”

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Well Information
Location .................................................................................................................................................. West Siberia, Russia
Number of wells ........................................................................................................................................ 2 sidetracks
Interval drilled ........................................................................................................................................... Solkinskoye field, formation BS-1 (1897 – 2613 m)
................................................................................................................................................................. Vachimovskoye field, formation AS-9 (1853 – 2480 m)
Bit size ......................................................................................................................................................... 124 mm
Completion type ....................................................................................................................................... Perforated liner 102 mm

The Situation
A leading Russian operator’s sidetracking operations include about 60 wells a month on average. For the last few years the operator has applied classical biopolymer systems, including M-I SWACO FloPro* NT reservoir drill-in fluid (RDF) using potassium chloride and the glycol-base inhibitor IKGLIK-S^ for stabilizing shales in the formation cap.

Sidetrack drilling to the formation cap is often performed in highly-reactive shales. Well drilling is marked by a significant mud contamination, which is marked by the increase in active solids content and mud density, and the degradation of rheology and filtration properties. In most cases, from the moment the productive formation is reached, the drilling mud falls short of the RDF requirements, so the customer has to completely change drilling mud, which results in increase in rig days, non-productive maintenance and disposal costs, and the mud volume required to drill the well.

The operator needed a more effective inhibitor for the purpose of sidetracking process optimization and the RDF quality improvement. M-I SWACO suggested field-testing the new KLA-STOP organic polyamine-based inhibitor.

The Solution
The customer, together with M-I SWACO specialists, carried out a number of laboratory tests to compare inhibiting properties of different inhibitors, where KLA-STOP fluid showed the best results. The tested zone included four wells. The mixing and additional treatment of drilling fluid was performed in accordance with the process procedures and mud program using the KLA-STOP organic inhibitor.
The Results
The tests showed that the use of KLA-Stop fluid helps achieve better results during sidetrack drilling:

- Higher degree of inhibition of the polyamine-based KLA-Stop chemical as compared to the glycol-based IKGLIK-S.
- Considerable reduction in dilution volumes.
- Higher general quality of the formation drilling-in
- Absence of problems related to wellbore stability
- Higher well flow rates and easier transition to stable production
- Reduction of costs and non-production time related to mud transportations

The test results are shown in Pictures 1 and 2.

![Picture 1 – Drilling to formation BS-1](image1)

![Picture 2 – Drilling to formation AS-9](image2)

The Details
The tests were carried out at wells of similar casing design and interval length. The recommended concentration of KLA-Stop fluid by the end of drilling to AS-9 and BS-1 formations was 22-25 kg/m³.

The resulting cost of 1 m³ prepared mud containing KLA-Stop was higher than common drilling fluids, but due to the reduced volumes of mud mixing and transportation and the reduced volumes of drill wastes, the total cost of the mixed mud was practically comparable to the cost of common technologies, and the total cost of sidetrack drilling was reduced as compared to that of commonly used drilling fluids.

The test results show that KLA-Stop fluid can be recommended for use:

- on lengthy sections extending from drilling a window to drilling-in the formation and going through active or unstable shales
- in fields where there is a significant mud contamination
- when drilling in group AS formations.

Questions? We’ll be glad to answer them.
If you’d like to know more about the KLA-Stop product and how it’s performing for our other customers, please call the M-I SWACO office nearest you.