GEOLOG SURFACE LOGGING

Avoiding NPT with the help of BitLife prediction Service

BitLife

Client

Kuwait Oil Company
Onshore Development, Kuwait
WBM with diesel added & OBM

Challenge

Kuwait Oil Company required an accurate system to detect the bit condition and optimize drilling parameters for more efficient drilling. Their aim was to reduce the NPT resulting from unnecessary bit trips.

Solution

GEOLOG's BitLife service was deployed to identify when the Drill Bit efficiency deteriorates due to bit wear. Drilling parameters were optimized to ensure drilling efficiently and trips performed at the correct time.

Results

The service was deployed with both WBM (with diesel added) and OBM drilling fluids. Drilling parameters were optimized to get maximum footage and to effectively detect the condition of the drilling bit to determine the optimal time to perform bit trips.

This data was utilized to study the efficiency of various bits with different drilling parameters.

Value

The BitLife service was utilized to optimize drilling efficiency and detect the most efficient time to perform bit trips to avoid bit wear related NPT.

By utilizing BitLife the client improved bit utilization, reduced valuable rig time by avoiding unnecessary bit trips, reduced the risk of bit related junk in hole thus avoiding associated costs of NPT.

Services used

BitLife

BitLife service was implemented to effectively monitor bit wear and avoid NPT.

When drilling deep HPHT wells, bit efficiency is a concern for the drilling team. An onshore exploratory deep HPHT well in Kuwait required a technique to detect the condition of the bit in real-time to avoid losing the bit or parts of bit in hole and avoid drilling under-gauge hole due to excessive bit wear.

BitLife measures the presence of artificially generated gases in the well. While drilling, "Drill-Bit metamorphism" generates alkene gases through the cracking of hydrocarbon components of the drilling fluid system at high temperatures. These high temperatures are generated when drill bits lose their cutting action and friction becomes the more dominant effect.

The BitLife service was deployed in the 22" hole section and bit wear was detected with the presence of Alkenes, which was confirmed in this first run by a drop in ROP and an increase in Torque (Figure 1), which is easily seen in the bit condition once removed from the hole (Figure 2). In the 16" hole section, once the Alkenes were detected, indicative of a wearing bit, the bit was pulled out of hole, showing some chipped teeth, but still in gauge.
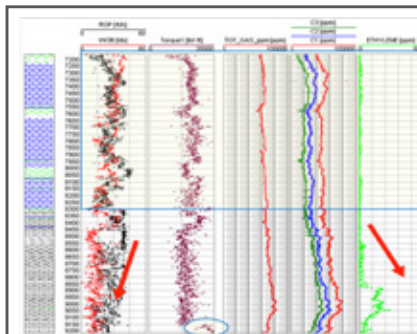

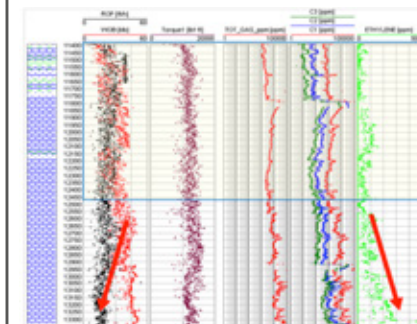Fig 1. Alkene detected in 22" hole with WBM (Diesel add)

Fig 3. Alkene detected in 16" hole with OBM

Under gauge bit with chipped teeth
Fig 2. The picture of the Bit after POOH

Fig 4. The picture of Bit after POOH