Case Study: Development

DrillVibe Service Saves Operator $138,000 USD through Drilling Optimization

Client

Major E&P Company

Onshore, North Africa

Challenge

Reducing drill-string vibration and stick slip events to improve drilling efficiency

Solution

Monitor drilling parameters in real-time using surface logging measurements; Torque, ROP, WOB and RPM. Data was used to monitor Mechanical Specific Energy (MSE) and drill-string vibration in real-time and alert the drilling crew when results indicated that drilling parameters required changing.

Results

GEOLOG specialists were able to identify the severity of stick slip events and provide feedback to drillers so drilling parameters could be changed in real time. A detailed analysis identified that adjusting drilling parameters alone would not solve the stick slip events. A change in bit and stabilizer placement were implemented to improve drilling efficiency.

Value

Analysis of the various drilling parameters along with a review of the BHA supported a change in BHA design and as a consequence the third well using the revised BHA was drilled with 19 hours fewer on bottom, saving $138,000 USD in rig costs. Additionally the bit was found to be less worn than the previous two wells, further reducing operating costs per well.

Services used

Identifying cause of vibrations and stick slip events

While drilling through a formation mixed with dolomite and claystone, the presence of increased stick slip vibrations was identified, causing premature bit wear and increasing the chance of damage to the BHA.

Continuous Real-Time Surface Data Monitors Vibration Data for Drilling Optimization

The DrillVibe specialist observed and communicated abnormal events and alerts when stick slip events occurred. Collaboration with drilling personnel and Operator concluded that the physical properties of the formation, coupled with the BHA design was not optimally designed to mitigate these vibrations. A new BHA was used on the third well in the campaign with a reduction in vibration recorded and a dramatic improvement in drilling efficiency as evidenced by the improved MSE. DrillVibe service was able to save 19 hours drilling the difficult 12 ¼" hole section; ROP improved by 47%.

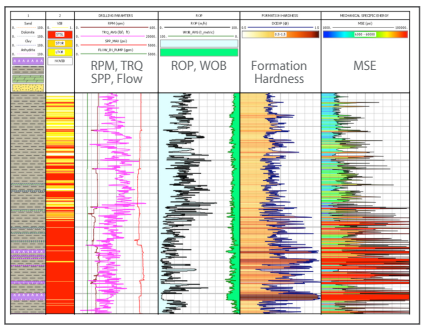

Figure 1. First well in drilling campaign.

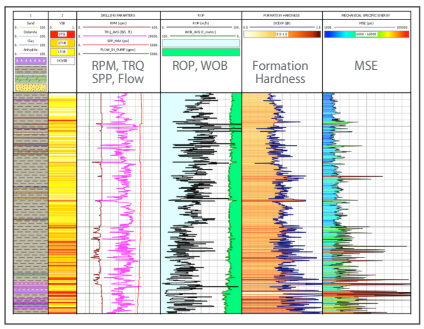

Figure 2. Third well in drilling campaign showing improved MSE.

Well	12 ¼" Section Length (m)	12 ¼" Section On Bottom Hours	Average ROP m/hr
1	2107	61	34.5
3	2136	42	50.8

Figure 3. 19 hours of rig time saved as a result of DrillVibe analysis

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