

Diagnostic Approach to Control & Minimize Wireline Formation Tester (Wft) Sticking Problem

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Abstract

Wireline Formation Testers (WFT) sticking in the wellbore leads to increased rig-time, operational complexity and may require sidetracking. Therefore understanding the controlling parameters of sticking is crucial to minimize risks.

The objective of this study is to investigate several field examples to identify correlation of sticking probability with mud properties, wellbore parameters and WFT operational variables. The scope of this work includes comparative evaluation of different controlling parameters, their relative sensitivity to sticking probability and their influence on that specific case. Data used for this comparative analysis included; well depth, deviation, overbalance; formation type, temperature, pressure; mud weight, funnel viscosity, Fann viscometer readings, gel content etc. Graphical analysis was performed for 26 jobs by plotting all these parameters and common trends were identified. Results demonstrated that sticking is not characteristic to one specific parameter, instead it follows a complex behavior. However detailed analysis revealed that critical mud properties, such as solid loading and subsequently increased over balance, have a larger control over operational success of WFT jobs.

This study proposes that proper monitoring of mud parameters, especially solid content in mud is of vital importance for success of WFT jobs. The methodology undertaken can be extended to other areas to develop specific cut off limits and flag an increased potential of sticking. This technique can be used as a proactive approach towards identifying and mitigating risks before deploying WFT in the well.