Electrical Straddle Packer Technology Applications in Diagnostics of Inflow Control Devices (ICD’s)

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Abstract

Objectives/Scope: Electrical Straddle Packer Technology Applications in Diagnostics of Inflow Control Devices (ICD’s)

Methods, Procedures, Process: Objectives/Scope: Through-tubing electrical straddle packers technology advancements allowed for new applications which significantly helped optimize well intervention and maintenance operations. This paper will address the application of straddle packers to diagnose completions with malfunctioning ICDs, each separately, in one single coiled tubing run. The paper will also quantitatively assess the performance optimizations emanating from this technology application.

Methods, Procedures, Processes: The application discusses completion with ICDs. The ICDs were suspected to be closed or plugged, and several attempts were made to unplug them, but it did not yield the desired results. Hence, the need to confirm each ICD status. By isolating each ICD and measuring the pressure/temperature in-between, above, & below the sealing elements along with utilizing CCL to accurately set the elements, the ICD status was confirmed. It was also possible to stimulate the targeted zone, all in one single run.

Results, Observations, Conclusions: Results, Observations, Conclusions: The electrical straddle packer managed to isolate each ICD successfully and apply pressure which confirmed the ICDs were in closed position. The usage of the electrical straddle packer is compared to the conventional methods used with or without zonal isolation, which lacks the understanding of how and which ICD would respond to the treatment. The comparison concluded that the electrical straddle packer would reduce the equipment footprint and fluid consumption necessary to perform this kind of intervention by a factor of 2 to 3. Additionally, deploying such technology decreases CO2 emissions and decreased well intervention time which resulted in increasing well intervention efficiency.

Novel/Additive Information: Novel/Additive Information: This paper will assess application for the deployment of electrical straddle packers in ICDs diagnostic application and capture the value added of this technology application. Furthermore, in addition to its electrical setting mechanism, the unique value of utilizing such straddle packer is the confirmation of the packer’s isolation integrity in real-time eliminating the risk of treatment leakage to other zones.