Torque Reduction Tools in Long ERD Wells

Author Block: A. Al Nasrullah, N. Rahmani, Schlumberger; M. Carr, J. Atwood, K&M Technology Group (SLB)

Abstract

Objectives/Scope: Drilling extended reach wells is challenging in many aspects. One of which, is maintaining the Top Drive System (TDS) torque within the limits. This paper aims to shed light on a solution that reduces the surface and downhole torques, which would be an advantage not only while drilling, but also during the well construction process.

Methods, Procedures, Process: A full engineered solution based on offset wells lessons learned, as well as collaboration with various parties involved on the project both internally and externally from client and other service providers to continuously improve performance and establish best practices, adding torque reducers to ERD drillstring were implemented.

Torque reducer tool is an integral drillstring component as it is being rotated during drilling operation. It works by incorporating various design features that helps minimize the contact area between the drillstring and the wellbore, thereby reducing the frictional forces that can cause excessive torque, drag and wear on the tools and casing. The tools are placed throughout the drill pipes in problematic places where torque limitation or build-up is a concern. The tool is designed to allow for high side loads to occur across the tool without compromising the supporting bearings between the rotating parts. The typical spacing for these tools will ensure complete standoff of the drill pipe tool joints away from the casing and provide protection to the critical zone all time during operation.

Results, Observations, Conclusions: Continuous performance improvement along the project were demonstrated through the implementation of below drilling techniques and technologies: Broomstick analysis to monitor hole condition. Along with torque reducers to reduce surface torque in small size sections, and reduce casing wear.

It is an effective option for reducing torque and improving drilling speeds. Overall, the use of torque reduction tools in ERD wells has been shown to enhance wellbore stability, reduce drilling costs, and improve operational safety, provide protection to the critical zone all time during operation.

It helped the client to reach a new milestone drilling deeper TD with ERD ratio of 4.6 and planned for ERD ratio of 5.8, this will help to ensure reach of longer depth.

Novel/Additive Information: Multiple clients records achieved. All are proof of the outstanding service delivered and the strong technical expertise provided to them improving drilling performance specifically in ERD wells

The use of torque reduction tools in ERD wells while drilling helps improving the well construction drilling in a efficiency, hole cleaning, well design, casing deployment, execution, monitoring and drilling optimization, improving Drilling efficiency, reducing torque and friction factor, and enhancing wellbore stability.