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First Successful deployment of Rotary Steerable Technology For North East Region - India

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Summary

RSS was introduced in NE region for the first time to drill a S-type well. It enabled client to nullify various problems encountered while drilling same type of offset wells

Keywords: RSS : Rotary Steerable System
TD : Target depth
BHA : Bottom Hole Assembly
ROP : Rate of Penetration
PDM : Positive displacement Motor

Introduction

This paper will illustrate the problems solved for the client through deployment of RSS in a S-type well. Expectation was to have continuous hole cleaning (removing sliding & thus reducing stuck pipe probability), achieve the TD in minimum trips.

Theory and/or Method

Deployment of RSS was driven with a lot of challenges associated with drilling the S- type well in a NE field. In the past there has been lot of wells drilled with motor, but not to the desired results as expected from the client. Following were the main problems encountered in the past wells with motor BHAs:

- 7-8 trips to complete the 12.25in Section.
- Stuck scenario increases due to various wellbore issues.
- Difficulty in sliding incurs lot of deviation from the actual plan.

The main purpose to deploy RSS was to minimize the rig time to complete the 12.25in section by minimizing trips, reducing drilling time, reducing wellbore issues. Reducing drilling time also meant increasing ROP with proper hole cleaning.

The result was a noticeable improvement in well delivery time, reduced drilling cost, and improved hole quality, also number of trips was reduced from **8 runs to a single run**, field specific bit design and optimization was done and the section was completed in one run as compared to the offset wells where 4-5 bit was used to drill these sections, The drilling time was reduced by **158 hrs** and ROP increased by **300 %** compared to the offset wells.

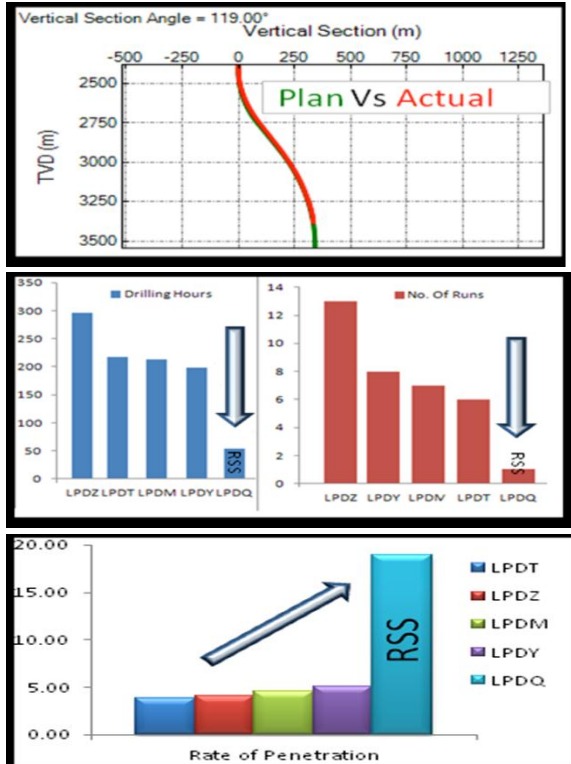
This paper compares the drilling performances with PDM vs RSS in the same field and presents the lessons learnt. RSS delivered less tortuous hole which result in a problem- free casing run. Hole cleaning was improved which allowed to drill at faster ROP without taking risk of well complication. Time versus Depth analysis clearly indicated that RSS was both technically and economically, It will also discuss the pre-job planning in detail, selection of rig to deploy RSS & the optimization of the drilling parameters, It will also discuss the complete drilling phase with the challenges associated with it & the results of this first successful deployment.



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Charts:



Conclusions

- Drilled 1022 m in 54.1 hours with Avg ROP of 18.9 m (300 % increase with offset well)
- Reduced Trips from seven to a single run
- Saved Rig time by 158.5 drilling hrs
- Good hole cleaning, minimizing tight spots due to continuous rotation

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