

MEMS Gyro-While-Drilling Sensor Reduces Rig Time and Improves Collision Risk Management in Dense Onshore Well Cluster, Ecuador

Operator replaces drop gyro surveying with GyroSphere service that delivers real-time data for kickoff and steering

CHALLENGE

Overcome magnetic interference while drilling top-hole sections in congested well clusters.

SOLUTION

Deploy GyroSphere* MEMS gyro-while-drilling service.

RESULTS

- Decreased gyro-surveying time, which reduced rig time by up to 12 hours per well.
- Delivered real-time-while-drilling gyro survey data to improve anticollision management confidence.



Minimize drilling time in dense field, averting collision with offset wells

An onshore field in Ecuador is typically drilled among congested clusters of 26-in and 16-in top-hole sections. MWD surveys and magnetic toolface measurements are compromised by dense offset well proximities, that cause external magnetic interference and resulting in the need to use drop gyros. This adds approximately 9–12 hours of rig time per well.

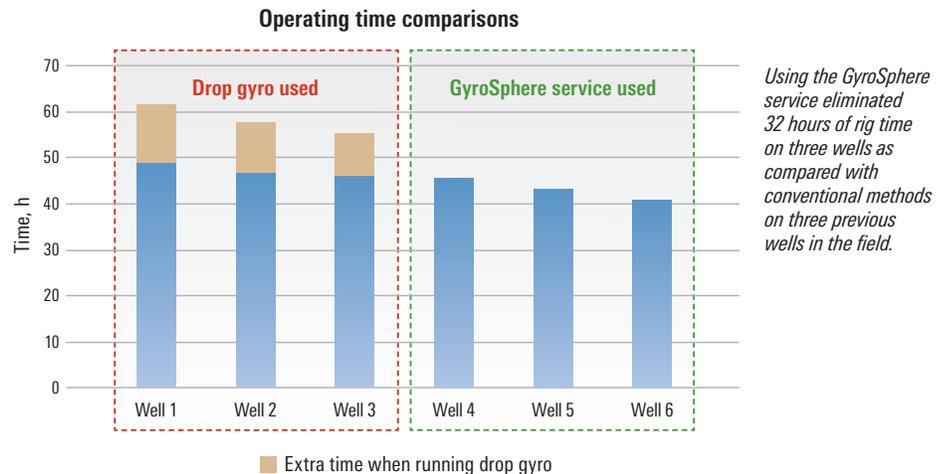
Many wells begin with the 26-in hole section using a conventional BHA to drill the vertical through boulder formations until 400-ft MD. Drop gyros are run in-hole prior to drilling 16-in sections. The number of drop gyro runs depends on lateral kickoff points, nudges, and external magnetic interference, but drilling programs generally require 6 to 10 gyro surveys per well.

Use MEMS gyro-while-drilling service to reduce rig time and deliver gyro survey data during drilling operation

Schlumberger recommended replacing drop gyros by incorporating the GyroSphere MEMS gyro-while-drilling service into the BHA. The BHA would be run in-hole through the top-hole sections to the 16-in section at 400-ft MD to commence gyro surveying. The MEMS technology of the GyroSphere service enables taking surveys while drilling during connections. This is especially critical for making proactive steering decisions when drilling in a field where nearby wells create magnetic interference.

Pioneered use of GyroSphere service to improve drilling efficiency while mitigating collision risks

This was the first oilfield use of inertial toolface with microelectromechanical gyroscopic surveying in the western hemisphere. Using GyroSphere service eliminated flat time associated with slickline or drop gyro operations, saving 32 hours of rig time on three wells. Additionally, the customer effectively and proactively managed collision risk with confidence. Consequently, the operator replaced conventional gyro surveying with the GyroSphere service for the remaining drilling operations.



*Mark of Schlumberger. Other company, product, and service names are the properties of their respective owners. Copyright © 2019 Schlumberger. All rights reserved. 18-DR-505094