

First Use of Inertial Toolface Mitigates Collision Risks in Dense Well Cluster, Reduces Rig Time

GyroSphere service quickly completes more gyro surveys and provides operator with better anticollision data, offshore Angola

CHALLENGE

- Reduce gyro-surveying time.
- Mitigate collision risks while drilling in dense offshore well cluster.
- Acquire better ahead-of-the-bit data for anticollision calculations.

SOLUTION

Deploy the GyroSphere* MEMS gyro-while-drilling service.

RESULTS

- Reduced the gyro-survey time from 20 to 0 minutes.
- Eliminated need for drop gyros at section TD, reducing rig time by 2 hours.
- Delivered more gyro surveys, providing better anticollision data.



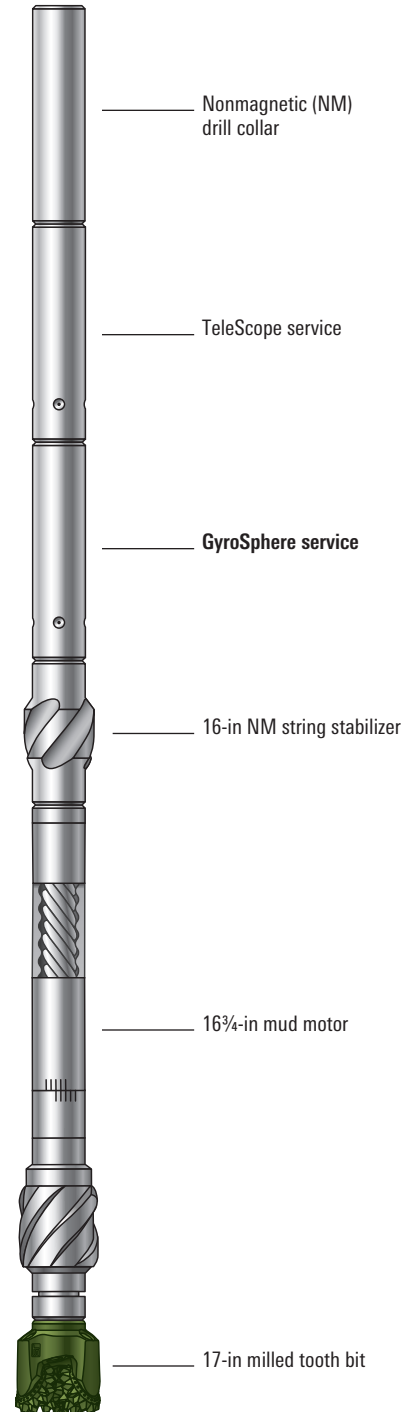
Complete gyro surveying quicker to reduce collision risks

A dense well cluster in a field offshore Angola posed a high collision risk for an operator drilling a 17-in tophole section and a 12¼-in section. Magnetic toolface systems would be compromised by complex offset well proximities, and the operator needed an alternative surveying system. The drawback for conventional mechanical gyro-while-drilling systems previously deployed was that survey time in the tophole section was 20 minutes, slowing the ability to survey and make anticollision calculations. Further data inadequacies were encountered while using drop gyros at the 12¼-in section TD, which were intended to fill in the data gaps from the tophole survey. A faster, more efficient alternative was sought that would also deliver better survey data.

Use MEMS gyro while drilling to improve drilling efficiency and deliver more gyro-survey data

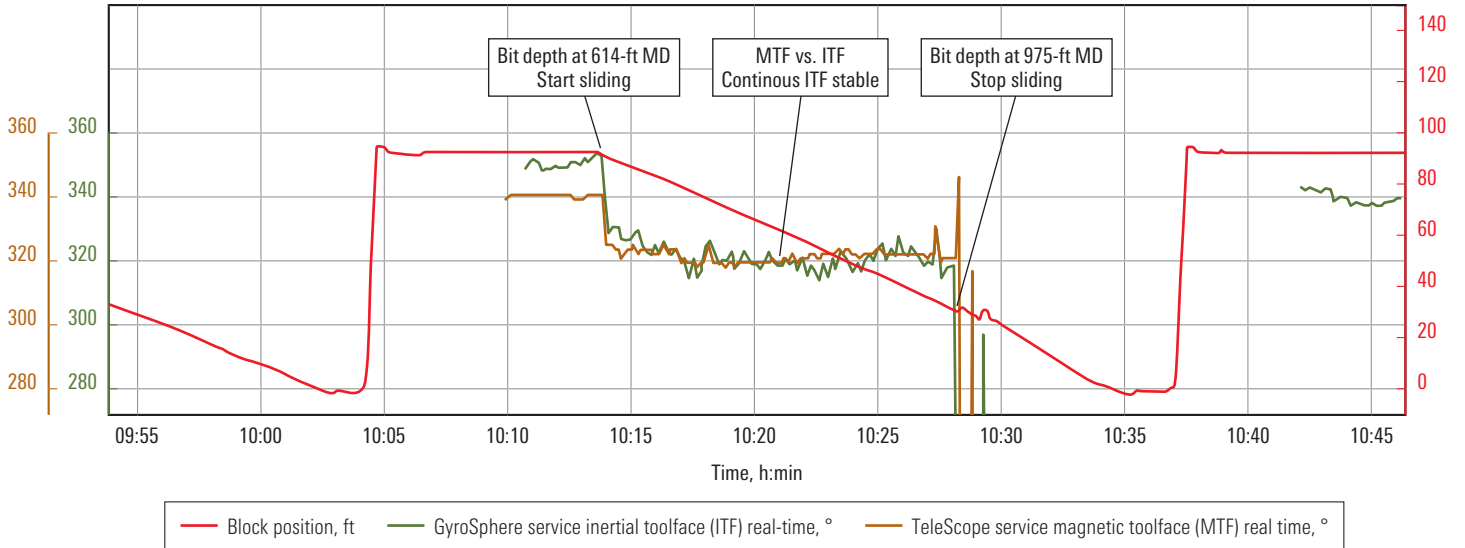
Schlumberger recommended the GyroSphere MEMS gyro-while-drilling service, the first adaptation of microelectromechanical systems technology for gyro surveying in the oil field. The service increases drilling efficiency and enables transparent gyro-surveying operations.

Within the service’s single sensor is solid-state technology able to withstand the rigors of drilling, including shock and vibration. It is incorporated into the drillstring and completes gyro surveys during connections and for the whole duration of the section. These capabilities provide more surveys and more reliable survey data, which is especially critical when drilling a complex field profile.



The GyroSphere service is based on the TeleScope high-speed telemetry-while-drilling service.*

CASE STUDY: GyroSphere service deployment mitigates collision risk and reduces rig time, offshore Angola



Inertial toolface from GyroSphere service showed good agreement with the TeleScope magnetic toolface during the sliding intervals.

Performed MEMS gyro-while-drilling surveys while reducing survey time and acquiring better anticollision data

This instance is the first industry use of an inertial toolface incorporating a solid-state MEMS gyro. Using the GyroSphere service eliminated the need for drop gyros, saving at least 2 hours of rig time at section TD. Additionally, more gyro surveys were performed due to the ability of the GyroSphere service to function during connections, unlike conventional mechanical gyro survey systems that can wait for up to 30 minutes to initiate surveys. In fact, the GyroSphere service reduced survey time from 20 to 0 minutes and provided the operator with the data to make better anticollision calculations. Consequently, the operator has replaced conventional gyro surveying with the GyroSphere service for the remainder of the drilling operations.

slb.com/gyrosphere