GyroSphere Service Helps Improve Drilling Efficiency and Reduce Ellipse of Uncertainty, Far East Asia

MEMS technology establishes gyro-while-surveying record through hard formation and eliminates need for additional rig time

**CHALLENGE**
- Perform gyro survey while drilling without adding rig time.
- Reduce ellipse of uncertainty (EOU).

**SOLUTION**
Include the GyroSphere™ MEMS gyro-while-drilling service in the BHA to improve drilling efficiency.

**RESULTS**
- Performed gyro surveys while drilling and during connections, saving operator 28 hours of added rig time.
- Reduced the EOU by 40%.
- Set new record for longest gyro-while-drilling run.

**CASE STUDY**

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The GyroSphere service reduced the EOU and eliminated 28 hours of additional rig time.

**Perform gyro surveying without adding rig time while reducing stuck pipe risks**
An operator needed to perform a gyro survey program to TD in the 12¼-in section of a well to pinpoint and penetrate the target reservoir. This extended-reach section limited wireline gyro surveying because the downhole conditions presented risks for stuck tools while running in and out of hole, as well as an inability to run the tool far enough downhole to adequately reduce EOU. Wireline gyro surveying can be run after drilling operations are complete, because such tools need a stationary drillstring to hold orientation in the targeted survey direction. Consequently, this could add an estimated 28 hours of rig time to the operation.

**Use industry-first MEMS gyro while drilling to eliminate additional rig time**
Given operator requirements, Schlumberger recommended the GyroSphere MEMS gyro-while-drilling service. This is the first gyro surveying service to adapt a microelectromechanical system (MEMS), which increases drilling efficiency, enables transparent gyro-surveying operations, and provides a better reduction of EOU.

The 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. Being part of the drilling BHA also means that the GyroSphere service reduces the risks of stuck pipe in long laterals.

The GyroSphere service reduced the EOU and eliminated 28 hours of additional rig time.
Completed gyro surveying while drilling and set new record while saving operator rig time

The operator deployed the GyroSphere service while drilling the 12¼-in section of the well, helping to provide real-time positioning with the same level of accuracy as drop gyro measurements. Indeed, by combining the gyro surveys with the regular MWD surveys, the EOU was reduced by 40%.

No additional rig time was required to complete the gyro surveys, including a full set of pull-out-of-hole survey data for QC and data redundancy. In fact, the operator saved 28 hours of rig time. Additionally, the GyroSphere service established a record for the longest gyro survey-while-drilling run ever completed.