

## CASE STUDY

# QUEST GWD PROVIDES HIGH-ACCURACY WELLBORE SURVEYING IN HIGH-INCLINATION APPLICATION IN ONE TRIP, SAVING OPERATOR \$337,500

### ► TECHNOLOGY

- Quest™ gyro-while-drilling (GWD) system
- SPEAR™ solid-state sensors
- GyroGuide™ vertical continuous wireline tool

### ► APPLICATION

- High-accuracy wellbore surveying
- Wellbore placement
- Extended-reach drilling

### ► LOCATION

- UK North Sea

### INDUSTRY CHALLENGE + OBJECTIVE

An operator in the North Sea was drilling a well where wellbore collision risk mitigation and accurate placement of the reservoir section were essential to the success of the project. As such, required a number of gyro and magnetic surveys through multiple well sections that would allow the greatest accuracy and confidence in wellbore placement. We recommended running our solid-state Quest GWD system, along with a vertical continuous wireline tool, to address the operator's challenges.

## TECHNOLOGY + SERVICE SOLUTION

- We suggested implementing our Quest GWD system, powered by SPEAR solid-state sensors, in the 36-in. x 26-in. 16-in., and 12¼-in. sections.
- The solid-state SPEAR sensors measure the earth's rotational rate precisely and accurately.
- The sensors are able to handle harsher downhole environments when compared to conventional GWD systems.
- The reduced power consumption allows the tool to drill long sections without the need for a tool change trip.
- The vertical continuous survey was run in the 26-in. x 20-in. casing to allow for additional data collection and ellipse of uncertainty (EOU) reduction.
- Our service partner used a novel survey combination algorithm to allow a bespoke "most accurate" survey station to be created, the first time this has been used in a real-time drilling application. This utilized both magnetic and gyroscopic surveys. It would not have been possible to drill the well without this combined data.

## RESULTS + VALUE DELIVERED

- The Quest GWD system was successfully implemented with the third-party service company's MWD system (required for both motor and RSS assemblies).
- The Quest GWD system's extended battery life allowed for 18 days of surveying in hole with no battery trip required, saving approximately 48 hours (estimated point-to-point trip time given backreaming requirements) or \$300,000 based on rig time. This would not have been possible with legacy GWD systems.
- A total of 18,400 ft were drilled with the tool, a record for a 12¼-in. section on GWD.
- The system presented 152 surveys, with 99% of them passing survey acceptance the first time.
- The Quest GWD tool allowed faster survey collection, saving an estimated 2 minutes per connection. This equates to approximately 6 hours saving for all sections.
- The combined time savings on the Quest GWD system equated to 54 hours, or \$337,500 based on the rig day rate over the entire well.

