

CASE STUDY

QUEST GWD MITIGATES COLLISION RISK AT RECORD LATITUDE AND SAVES OPERATOR \$156,000 VERSUS OTHER OPTIONS

▶ TECHNOLOGY

- Quest™ gyro-while-drilling (GWD) system
- SPEAR™ solid-state sensors

▶ APPLICATION

- Wellbore placement
- Collision risk mitigation
- High-latitude drilling
- Remote operations

▶ LOCATION

- Barents Sea

INDUSTRY CHALLENGE + OBJECTIVE

An operator in the Norwegian North Sea was drilling producing and injector wells from various templates as part of an extensive project. Due to the project's location at a high latitude, there was increased uncertainty with surveying tool performance, leading the operator to request multiple solutions for redundancy purposes. Drilling outside of magnetic interference zones with only MWD tools active was not ideal, as the increased impact of solar activity in the arctic region, which can cause errors in MWD data, will sometimes result in drilling coming to a complete halt. Tophole drilling on a subsea template also resulted in the operator needing to choose a surveying solution to help them avoid adjacent wells as each slot on the template was drilled.

The operator requested we provide a GWD solution in the BHA as a contingency in the event that MWD encountered magnetic interference, as well as a real-time gross error check should the MWD tool not be affected by magnetic interference. The operator also asked that an outrun memory mode (OMM) survey be collected when pulling out of hole, allowing the most accurate error model to be applied to the downhole surveys, increasing confidence in wellbore position and well separation.

TECHNOLOGY + SERVICE SOLUTION

- We suggested implementing our Quest GWD system, powered by SPEAR solid-state sensors.
- The shorter SPEAR sensor package, loaded into a compact collar, allows greater steerability and sensor placement closer to the bit without the need for non-mag.
- The Quest GWD system is compatible with wired drillpipe for real-time survey transmission to surface.

RESULTS + VALUE DELIVERED

- The wells were drilled at a latitude of +72°, which is the farthest north the Quest GWD system has been run to date.
- The Quest GWD system was incorporated into the third-party service company's directional BHA, which was successfully run with wired drillpipe for real-time data transmission to surface. With the use of wired drillpipe, survey quality control (QC) was rapidly interpreted by survey specialists in the remote operating center, allowing drilling to proceed more quickly. The Quest GWD system saved approximately 60 minutes of rig time during tophole drilling versus legacy GWD systems.
- We covered the job entirely remotely, with one Gyrodata engineer on the rig as a contingency in case of any loss of communications and to better use assets for multiple sections.
- The improved surveying speed and smart processing of the Quest GWD system, combined with increased downlink functionality, delivered time savings versus all other options, while outrun memory multishot surveys allowed better uncertainty models to be applied, optimizing well spacing.
- Based on the rig spread rate, we saved the operator \$32,000 per tophole section on each well. In addition, the OMM functionality saved more than \$92,000 versus a drop gyro.

