CASE STUDY

PowerDrive Xcel Rotary Steerable System Helps Save 5 Days of Drilling Time in Statfjord Field, North Sea

Statoil ASA uses point-the-bit RSS’s inertial steering mode to drill four sections in high-magnetic-interference environment without shutting in offset wells.

CHALLENGE
Kick off while maintaining high directional and trajectory control in an environment with high magnetic interference without halting production.

SOLUTION
Use the PowerDrive Xcel® RSS's inertial steering mode to drill close to producing wells while keeping production from these wells online.

RESULTS
- Drilled and completed four wells while saving an estimated 5 days of rig time.
- Mitigated collision risks in high-magnetic-interference environment without shutting in the producing wells.

Kick off from cement plug, whipstock, and drilling sections
Statoil ASA planned to drill multiple reentry wells in one of the largest fields in the North Sea. The environment is known to have high magnetic interference, which makes accurate wellbore positioning a challenge. The operator needed to maintain high directional and trajectory control, as many of the reentry wells would be in close proximity to producing wells. Statoil also wanted to avoid shutting down these producers while the new wells were being drilled.

Increase operating envelope with inertial steering mode
An inertial steering mode was developed for the point-the-bit PowerDrive Xcel RSS to expand its operating envelope for precision well placement in the Statfjord field. After successful laboratory tests, the technology was deployed for four successful field runs. The tool performed as expected in all three sections (17½-in, 12¼-in, and 8½-in sections). In three out of the four runs, the inertial steering mode performed successful whipstock window exits with accurate toolface control despite the environment’s high magnetic interference.

Drilled four wells and saved 5 days drilling time
The new inertial steering mode of the PowerDrive Xcel RSS helped operators to save time and cost by keeping producers on production while kicking off and drilling close to these wells. Four wells were drilled and completed successfully with no collisions with producing wells, even in tight windows. In addition, an estimated 5 days of rig time was saved during drilling.

Based on these successful runs, it was proven that the new inertial steering mode has increased the operation envelope of the point-the-bit RSS.

In this reentry well, the whipstock window inside the 20-in casing posed collision risks with several producers at the shallow depth of approximately 1,969-ft (600-m) MD, with a potential collision point below the subsurface safety valves. The preferred option was to sidetrack from an openhole cement plug through a 121-ft (37-m) narrow window between the 20-in casing shoe (at 2,077-ft [633-m] MD) and the 13¾-in casing stump (at 2,198-ft [670-m] MD) and then drill the 17½-in section in one run for significant time savings and risk reduction. Collision risks were still the major concern because a sidetrack was planned close to known producers.

slb.com/powerdrive

Drilling