Operator Saves Significant Rig Time by Gathering Complete Formation Evaluation Data in Real Time

SPERRY DRILLING PENTA-COMBO LWD REPLACED WIRELINE SERVICES TO SAVE COSTLY RIG TIME IN A LONG CHALK FORMATION SECTION

OFFSHORE U.K.

OVERVIEW
In an offshore U.K. well, an operator needed to obtain a complete formation evaluation (FE) data set to measure reservoir and overburden characteristics in a deviated well. One of the challenges of the field development plan was to drill long and deviated tangent sections through massive and hard chalk formations. The rate of penetration (ROP) through these sections is typically low and is normally budgeted for multiple runs in the well scope. Sperry Drilling addressed the twin challenges of low ROP and tight time constraints by delivering a penta-combo LWD assembly combined with a rotary steerable system (RSS) drilling tool. This approach saved the operator days of rig time by drilling the section in a single run and avoiding the need for wireline services and potential extra costly rig time for wireline conveyance issues.

WHILE REDUCING COSTS, THE OPERATOR NEEDED TO DRILL AND LOG WITH A PENTA-COMBO BOTTOMHOLE ASSEMBLY (BHA) IN A DEVIATED WELL
The operator needed a full suite of formation evaluation data to determine the value of its reservoir, but also had a limited amount of rig time available. Wireline services were not an optimal solution, given the time constraint. Moreover, with a highly deviated wellbore, tubing-conveyed wireline options meant that tools were more susceptible to stuck-pipe incidents, thus potentially adding more nonproductive time (NPT) to resolve conveyance issues. With these difficulties, the operator challenged Sperry Drilling to drill and log the entire 12-1/4-inch hole section in one run to reduce the cost and avoid the need for using openhole wireline services.

SPERRY DRILLING OFFERED AN OPTIMAL SOLUTION OF DIRECTIONAL DRILLING WITH A FULL SUITE OF MEASUREMENT-WHILE-DRILLING (MWD) AND LOGGING-WHILE-DRILLING (LWD) SENSORS
In collaboration with the operator, the U.K. technical advisors recommended the use of a penta-combo LWD BHA with a Geo-Pilot® RSS. For a full suite of LWD formation evaluation measurements, the operator ran the DGR™ sensor for gamma ray, the EWR®-PHASE 4™ sensor for resistivity, the ALD™ sensor for density, the CTN™ sensor for porosity, the QBAT™ sensor for sonic data, and the GeoTap® sensor for formation pressure. The penta-combo BHA was also optimized with MaxBHA™ software to assist with stabilization placement to reduce vibration, ensuring the best BHA configuration to efficiently reach the final total depth (TD).
OPERATOR SAVES DAYS OF RIG TIME BY GATHERING FE DATA WHILE DRILLING

The Sperry Drilling team used the penta-combo LWD string with the Geo-Pilot RSS to complete the objective of drilling and logging the entire 9,535-foot (2,906-meter) section in just one run of 333 drilling hours, averaging an ROP just over 28 feet/hour (8 meters/hour). The operator saved a bit and tool-string replacement trip that would have cost 24–48 hours of rig time. The penta-combo LWD solution provided all of the required formation evaluation data needed for petrophysical evaluation, and avoided the requirement for additional openhole wireline services, thus saving considerable time and cost.

The recommended LWD penta-combo solution reached final total depth (TD) in just one run, ultimately saving the operator up to 48 hours in rig tripping time and avoiding the need for additional openhole wireline logging.