Matched Drilling System Delivers Record Run and Helps North Sea Operator Save over Twenty Days on Reservoir Section

Location: North Sea, Norway

OPERATOR’S CHALLENGE – An operator wanted to drill the entire 8 ½-inch x 9 ½-inch reservoir section of a North Sea well in one trip, using one bottom-hole-assembly (BHA) from just below the 10 ¾-inch shoe at 3,638 meters (11,936 feet) to the target depth of 7,065 meters (23,179 feet).

HALLIBURTON’S SOLUTION – Halliburton deployed the Geo-Pilot® rotary steerable system matched to an FMFX651Z 6-bladed bit with 16mm cutters and XR™ Reamer borehole enlargement tool. Considering the different formations expected and the rate of penetration (ROP) the team wanted to achieve, the matched drilling solution was selected to optimize ROP and at the same time keep vibrations to a minimum.

Halliburton designed the BHA to avoid vibrations using MaxBHA™ modeling software, which also assisted in identifying the optimized position and size of stabilizers required. The result was a BHA that produced very little vibration and had a good dynamic picture while drilling. The StrataSteer® 3D geosteering service helped steer the well, keeping the inclination between 88 and 92 degrees and staying in the upper part of the top formation.

ECONOMIC VALUE CREATED – The reservoir section was drilled in one run to total depth of 6,739 meters (22,110 feet). A total of 3,101 meters (10,174 feet) were delivered in 167 hours with an average ROP of 18.5 meters per hour (61 feet/hr).

This section alone saved the operator 20.8 days and is the longest 8 ½-inch x 9 ½-inch run on the field. The well was delivered 30 days ahead of budget.

HALLIBURTON MATCHED SYSTEM – As drilling applications become more complex, so have the challenges. Halliburton provides an integrated and perfectly “matched” solution to help address these challenges, improving the drilling program and minimizing issues downhole, such as borehole stability issues, downhole tool failures, high vibration, low rates of penetration and difficulty achieving planned well trajectories. By measuring, modeling and optimizing the range in which critical BHA components should operate, systems including the rotary steerable system, drill bit and hole enlargement tool can work in unison to improve performance. The result is improved steerability, increased efficiency and wellbore stability.