

Case History

SENTIO SMART Intervention Increased Milling Efficiency

Problem

A deepwater operator, working to complete an extremely complex well profile, was concerned about the possibility of twisting off and over-torquing the bottomhole assembly (BHA) while performing a casing clean-out run. The run dictated using 7-in. and 7-5/8-in. casing scrapers to clean out two separate ID liners simultaneously. Therefore, the casing scraper BHA configuration included one 7-in. and five 7-5/8-in. scrapers spaced out over 3,465 ft and was conveyed on 4-1/2-in. XTM 40 drillpipe.

As the operation progressed, it became necessary to mill additional cement at 26,000 ft; 14,000 ft of this run consisted of an 84° horizontal section. It was determined the milling assembly for this run should include a tapered section composed of 3-1/2-in. IF and 3-1/2-in. X-hole connections. This BHA design and the size of the workstring created a large degree of uncertainty regarding the transfer of torque to weaker connections of the milling BHA.

Solution

To mitigate risk of a downhole string failure, the operator chose to employ Baker Oil Tools SMART InterventionSM services. The 4-3/4-in. SENTIOTM tool was placed in the BHA to record and send up real-time torque and weight on bit values. The ability to view actual downhole torque values, in real time, enabled the operator to maximize weight on bit and avoid over-torquing the BHA while milling the cement.

Results

Beyond reducing the risk of a workstring failure, SENTIO enabled the operator to increase cement milling efficiency and save rig time. The SENTIO tool measured less torque downhole than predicted by computer modeling. This allowed the operator to adjust surface high torque limits in real time. Additionally, SENTIO made it possible to quantify, in real time, downhole vibration measurements that enabled optimization of milling parameters.

Project Details

Location: Offshore Gulf of Mexico

Water Depth: 2,945 ft (897 m)

Setting Depth: 26,615 ft (8112 m) at 64°

Vertical Section: 18,262 ft (5566 m)

Mud Weight: 13.4 ppg

Completion Fluid: Calcium Bromide

Work String: 4-1/2 XTM 40 drillpipe

Casing String: 7-in. 38-lb CYP110 H523 and 7-5/8-in. 39-lb Q125 H523



BCPM - Bidirectional
Communications
Power Module



SENTIOTM