Coring solution recovered record 216-m continuous sample in single trip

A customer in the Montney Basin, Canada, could not reach the intended core point because the bit played out in the Doig Phosphate, a notoriously abrasive formation. The operator requested a solution from Baker Hughes, a GE company (BHGE): would it be possible to account for the 30-m (98.4-ft) difference prior to the core point as well as core the intended 180-m (590-ft) interval in the Montney formation? If not, the operator would have to conduct an unplanned trip to replace the dull bit and lose valuable rig time in the drilling of the wellbore.

To minimize operational costs, the proposed plan was to conduct both operations in a single run using BHGE’s HT Series™ core barrel system combined with the JamBuster™ anti-jamming system. The HT Series addresses all formations, especially high-angle and extended-reach wells, and are built in 9-m (30-ft) lengths. The JamBuster technology protects against the potentials of jamming in the formation transitions.

To alleviate the risk of premature bit dulling in the Doig Phosphate and prior to coring 180 m (590 ft) of the remaining Montney interval, a TC407 corehead was selected employing BHGE’s StaySharp™ premium polished cutters to improve rates of penetration (ROP), drilling efficiency, and overall performance. The Talon™ Force high-velocity PDC drill bit blade was deployed with stay sharp cutters to allow for durability in the abrasive formation while enabling optimal ROP in the Montney interval.

BHGE mobilized additional equipment to the rig, and 24 core barrels were made up at the rig floor to capture the sample. Coring commenced and in just under 45 hours, the BHGE team cut through both formations and reached the core total depth in a single run. The tools achieved an average ROP of 4.8 m/hr (15.7 ft/hr) for the duration of the operation.

In the end, a single continuous 216-m (708-ft) core was captured, recovered, and sent to the analytical lab. The success of this run marked the longest single core cut to date, eclipsing previous world records.

The single-trip run was completed safely, with zero health, safety, and environmental (HSE) issues. By deploying BHGE’s technology and expertise, the customer saved the costs of two additional trips and three days rig time.

Challenges
- Core 30 m (98 ft) through Doig Phosphate formation cap rock
- Core 180 m (591 ft) of target Montney formation
- Overcome the jamming-prone transition from Doig to Montney formations
- Perform all operations in a single run

Results
- Recovered single, continuous 216-m (708-ft) core sample, a world record
- Entire continuous core cut in under 45 hours
- Eliminated additional trips to advance well to core point
- Saved costs of 2 additional bit trips and 3 days rig time