RCX Sentinel Service Captured High Purity Samples in Deepwater GoM
Captured oil samples within 90 minutes and with less than 2% contamination

Benefits
- Collected samples quickly, saving significant rig time
- Obtained fluid samples of high purity with less than 2% contamination
- Significantly reduced stationary time, mitigating operational risk

Background and challenges
- Highly deviated borehole in the GoM
- Operator required clean samples but wanted to minimize sampling time
- Multiple sampling targets were required
- Optimal deployment technology needed to overcome challenging well design

Baker Hughes solution and results
- Used RCX Sentinel service at three sampling stations to collect multiple samples
- Kept cleanup times below 90 minutes with under 2% mud filtrate contaminants
- Used fine pump rate control to stay above bubble point
- Deployed using pipe-conveyed logging to meet operator objectives

An operator in the Gulf of Mexico (GoM) had a challenging deepwater well for the appraisal and development of several oil-bearing reservoirs, including a critical heavy oil zone. A key concern for the reservoir appraisal was the recovery of reservoir fluid samples with a very low level of oil-based filtrate contamination that were maintained in a single-phase condition from the reservoir to the analysis facility. Additionally, the operator had a strict requirement to minimize the stationary time during sampling and pumping the hydrocarbon volumes to the wellbore.

To meet these conflicting requirements, the operator chose the RCX™ Sentinel focused sampling service from Baker Hughes wireline services. Extensive prejob modeling projected significant benefits by using the Baker Hughes RCX Sentinel service in reservoirs that had permeabilities ranging from 30 to 700 md, while at the same time staying above the reservoir fluid bubble point.
The RCX Sentinel service is the latest offering in the Baker Hughes formation sampling and testing portfolio. Built upon the reliable RCX platform, the service enables faster, cleaner, and ultimately safer sampling while maintaining the ability to operate in hostile environments.

The RCX Sentinel service simultaneously collects reservoir fluids into a formation testing probe that has two concentrically arranged fluid inlets. Independent control of separate fluid pumps optimizes the rate of fluid intake of reservoir fluids into each inlet to establish a precise fluid focusing effect. Data from two fluid analyzer modules, operating simultaneously, are used to understand the sample cleanup and drive real-time decision making.

The operational challenges of this project were modeled in advance using the Baker Hughes deployment risk management process, which matches specific wellbores with our advanced suite of technologies. In this instance, our prejob planning indicated that pipe-conveyed logging would be the best technology for deployment.

The RCX Sentinel service was used at three discrete sampling stations with varying fluid and formation properties. The RCX Sentinel service string was deployed for 52 hours, taking high quality multiple pressure tests and samples with 100% reliability. Ultimately, eight single-phase samples were collected with filtrate contamination levels of less than 2%.

According to the operator, “RCX Sentinel hit a home run by obtaining 1% contamination samples in the critical 16 API heavy oil zone. On a previous well in this same zone, single-probe sampling yielded 25% contamination.”