

# RCX Sentinel service successfully provided clean samples in two critical wells

A major operator in Southeast Asia deployed the **RCX Sentinel™ focused sampling service** with the objective to collect clean samples in two deviated wells while logging on pipe. The pressure testing and sampling operation in the clastic environment was subjected to a high overbalance of up to 2,248 psi (15,500 kPa).

Baker Hughes, a GE company (BHGE), performed extensive pre-job modeling and planning prior to the two jobs using an in-house 3D near-wellbore simulator. This provided an estimate of the cleanup time and pumped volume with respect to contamination. A matrix of different scenarios based on the simulation studies was available during pressure testing and sampling to aid the decision-making process. Rigorous deployment risk management scenarios were run to optimize the logging services.

During pressure testing, from top to bottom, variable mobility values were encountered in the highly laminated sand/shale sequence that ranged from less than 5 to much greater than 1,000 mD/cP. This information helped

with the selection of sampling targets in the high-mobility zones. The operation included optimizing the perimeter to sample line flow rate ratio and commingled to split flow durations. Cleanup time before the first and last tank filling at the sampling station ranged from 46 minutes to three hours, while the cleanup volume concurrently ranged from 16 to 120 liters. During the focused flow, the sample line flow rate was as low as 1.5 cc/s, when required.

In a very limited time frame, the RCX Sentinel service acquired clean fluid samples with low levels of oil-based mud (OBM) —under 2% for gas samples and under 4% for oil samples. A total of 22 fluid samples of oil/gas/water were collected from seven depths in the two wells. The operator was able to use the representative fluid samples for pressure/volume/temperature (PVT), flow assurance, and geochemistry analyses. The high-quality pressure data reduced pore pressure uncertainties and the operator was able to successfully appraise the target sands for further development.

## Challenges

- Sticky hole with pipe-conveyed logging and high-overbalance environment
- Limited stationary time to confirm formation fluid type and collect fluid samples with low mud-filtrate contamination
- Highly-laminated sand/shale sequence with relatively low gross thickness

## Results

- Collected 22 total samples from seven depths in two wells
- Acquired clean samples in a very limited time frame
- Provided representative fluid samples for PVT, flow assurance, and geochemistry analyses
- Delivered quality pressure data to reduce pore pressure uncertainties
- Successfully appraised target sands to further the development plan

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