

Case study: Song Hong basin, Vietnam

FASTrak eliminates operational risk in challenging field

An operator deployed the **FASTrak™ fluid analysis, sampling, and testing service** on two complex J-profile wells in the Thai Binh marginal field in the Song Hong basin, Vietnam. This maiden run of the new technology proved highly successful by efficiently acquiring reservoir gas samples in a challenging environment.

The FASTrak service combines three distinct functions while drilling—accurate real-time formation pressure, real-time in-situ measurements of reservoir fluid properties, and downhole capture and retrieval of representative formation fluid samples.

The Middle and Lower Miocene sands of the Song Hong basin reservoirs have a history of stuck tools, along with high overbalance that meant deeper invasion, therefore longer clean-up time required for sampling. To add to the complexity, the wells were drilled with conventional mud motors, hence the borehole quality was impacted.

Despite these challenges and constraints, it was important to operator that the fluid sampling

objective be accomplished with minimal risk to the wellbore and without significant delays to well completion, in the event the primary sampling strategy did not deliver the objective.

Baker Hughes offered both wireline and logging-while-drilling (LWD) sampling solutions in order to achieve these objectives. LWD sampling contingency replaced a pipe-conveyed option due to the ability to circulate while sampling and to eliminate well control risk.

On the first well, wireline was stuck, confirming the risk associated with wireline-conveyed sampling in this environment. Highly friable clastic formations with alternating sand, clay, and coal layers were encountered with variable mobility ranging from 0.3 to 206 mD/cP.

The FASTrak service was subsequently deployed to complete the sampling operation on the first well, and was deployed as the primary solution to acquire samples in the second producer well. The FASTrak operation

Challenges

- Obtain pressure tests in 8½-in. section that presented high chance for stuck tools
- High over-balance conditions
- Mixed mobility targets for pressure testing and sampling
- Reservoir fluid identification and representative sampling to finalize completion intervals and deliver the wells timely

Results

- Performed 49 depth-station pressure tests
- Identified reservoir fluid type and acquired six representative samples
- Experienced no tool sticking events on the second well and no NPT
- Saved operator rig time



on both wells was performed during the wiper trip, after an elapsed time after drilling nine and two days, respectively.

Some of the pressure testing results out of a total of 49 depth stations confirmed supercharging effects, arising from a high API fluid loss of >2.8 cc/30 minutes. Six gas samples were collected in single phase tanks from depths with mobility as low as 13 mD/cP to as high as 123 mD/cP. The clean-up volume and time ranged from 19 to 36 litres and 1.0 to 3.5 hours respectively, under a maximum overbalance of 1,478 psia (10,191 kPa).

Fast laboratory PVT analysis provided the required confirmation of the reservoir fluid and its properties.

The application of the fluid sampling-while-drilling technology provided results in difficult borehole conditions where no other fluid sampling would have been possible without significant nonproductive time risk.

The continuous circulation prevented tool sticking and eliminated several days of potential NPT. The holistic approach to fluid sampling and deployment risk management was the result of lessons learned from various past deployments in Vietnam.