FASTrak Prism sets global fluid sampling record

A customer working offshore Australia was developing a new field and needed to design its completion, surface facilities, and production pipeline.

Unsure of the chemical composition of the produced fluids, the operator was concerned that without collecting large volumes of high-quality fluid samples and performing a detailed geochemical analysis, the fluids could react with the metallurgy of downhole and surface equipment and degrade them, leading to significant costs and HSE risks.

Though downhole fluids characterization was useful, the operator knew that thorough, lab-quality analysis was needed to achieve the highest returns from its field and to prevent the catastrophic failure that could result if its completion, surface, and pipeline components were compromised by the non-hydrocarbon contaminant gases the field contained.

Wireline-conveyed sampling was not a solution because the well was highly deviated, with inclination of up to 80°, presenting a very real risk of differential sticking. And to conduct comprehensive chemical analysis, the operator knew they would need at least 20 liters (5.3 gallons) of representative fluid samples. No other commercially available fluid sampling while drilling services could reliably meet the client’s sampling and risk reduction objectives.

But the operator also knew that Baker Hughes, a GE company (BHGE), has a track record of gathering high volumes of high-quality samples with no history of differential sticking, and asked BHGE to propose a solution.

After discussing the specifics of the reservoir and understanding the operator’s goals and challenges, BHGE proposed the FASTrak™ Prism fluid analysis and sampling while drilling service.

The FASTrak Prism is built upon proven technology that has gathered thousands of liters of samples in hundreds of wells worldwide. With 33% more sample tanks and 400% more volume than competitive systems, the FASTrak Prism enables the capture of up to 13.4 liters of representative fluid per run and up to 16 separate single-phase samples.

Challenges
- 20 liters of representative fluid samples required
- Protect completion and surface equipment from corrosive downhole fluids
- Highly deviated well, with inclination of up to 80°

Results
- Captured 26 samples for a total volume of over 20 liters across two wells in two runs, setting a global fluid sampling record
- Acquired representative samples, enabling proper facilities design
- Prevented differential sticking

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The FASTrak Prism service includes proprietary technology to ensure representative samples are collected while redundant mechanisms mitigate against fluid contamination. The service also delivers comprehensive measurements of reservoir fluid properties, using multiple sensors which include VIS-NIR optical spectroscopy, for real-time contamination monitoring and in-situ reservoir fluid characterization.

The operator and BHGE experts agreed to capture the maximum amount of fluid possible for PVT and compositional analysis by collecting it from two dedicated drilling runs on two different wells due to the critical time frame for the analysis. They planned to spend a maximum of two hours on the wall at a time, after which the probe would be retracted and the bottomhole assembly (BHA) adjusted to mitigate sticking risks.

The reservoir characteristics consisted of a sandstone lithology with an average permeability of 200 md and an expected formation pressure of 4500 psi. The expected sampling fluid was gas and the mud type during drilling was OBM.

The FASTrak Prism service was able to capture a total of 26 samples—12 in the first well and 14 in the second—with total sample volume of over 20 liters during the two runs, a global record for fluid sampling while drilling. In comparison, leading competitive services would require at least 4 runs to accomplish this.

This enabled the operator to perform all the necessary testing and safeguard its completion equipment and surface facilities going forward. Even with extended on-the-wall times, there were no differential sticking issues despite the challenging hole inclination.