

RCX Reduced Risks While Obtaining Fluid Samples in the North Sea

A super major in the North Sea needed to obtain pressure data and samples from their high-pressure/high-temperature (HP/HT) well. The initial projection for well temperature was above the standard rating of 350°F. This would be the client's first attempt at taking a single phase sample at this temperature.

The **Reservoir Characterization eXplorer™ (RCX™) system** from Baker Hughes, a GE company (BHGE), had not been used at such high temperatures before. It was tested at the Houston Technology Center and was approved for handling 395°F for six hours. This is a significant upgrade from the initial testing of 375°F for 20 hours. The BHGE RCX service was selected for the sampling, a critical component of the wireline operation. The RCX tool recorded hydrostatic pressures well above 17,000 psi and temperatures in excess of 388°F.

BHGE used sample tanks with nitrogen charge pressure compensation to

maintain single phase integrity and conducted three successful sampling stations collecting pressure and formation fluid samples. However, due to the extreme temperature, optical density/spectrometer data was unavailable. Since the operation had a restricted volume allowable in the wellbore, tracking hydrocarbons entering the wellbore was necessary. A near wellbore simulator model helped determine the amount of volume needed for real-time cleanup forecasting.

BHGE utilized the **Deployment Risk Management (DRM™) service** to develop a strategy for accessing the wellbore. The DRM service contributed to the client's confidence to perform the job on wireline and they agreed to use real time visualization from their onshore office. This created a collaborative environment that ensured the operation ran efficiently and smoothly. BHGE obtained the samples without any issues. In addition, this approach protected the equipment from the harsh environment by limiting exposure.

Challenges

- Limited operational time for obtaining samples
- HP/HT environment
 - 17,200 psi hydrostatic
 - 388°F borehole temperature

Results

- Received reliable HP/HT formation testing in harsh environment
- Data obtained within required timeline
- Successful single phase samples taken at 388°F without any issues

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