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Aker BP Restores Production to Chalk-Plugged Well and Saves >3 Days by Combining Cleanout and Logging on CT

ACTive Power system transmits power and real-time data for combined operation on a space-limited North Sea platform

After two chalk influx incidents hindered oil production from a well in the Valhall Field, Aker BP used electro-optical coiled tubing (CT) technology to guide the well cleanout and power the logging technology used to identify the chalk influx zones for future remediation.

Chalk influx slows or stops production in the North Sea

Chalk production is an ongoing challenge in the North Sea Valhall Field, where an estimated 2,000 bbl/d of oil production is deferred because of well shut-in or suspension related to chalk influx. One oil producer well experienced two major chalk influx events within 8 months. The first event temporarily killed the well; the second dropped its oil production by 50% and induced slugging behavior because of increased water cut.

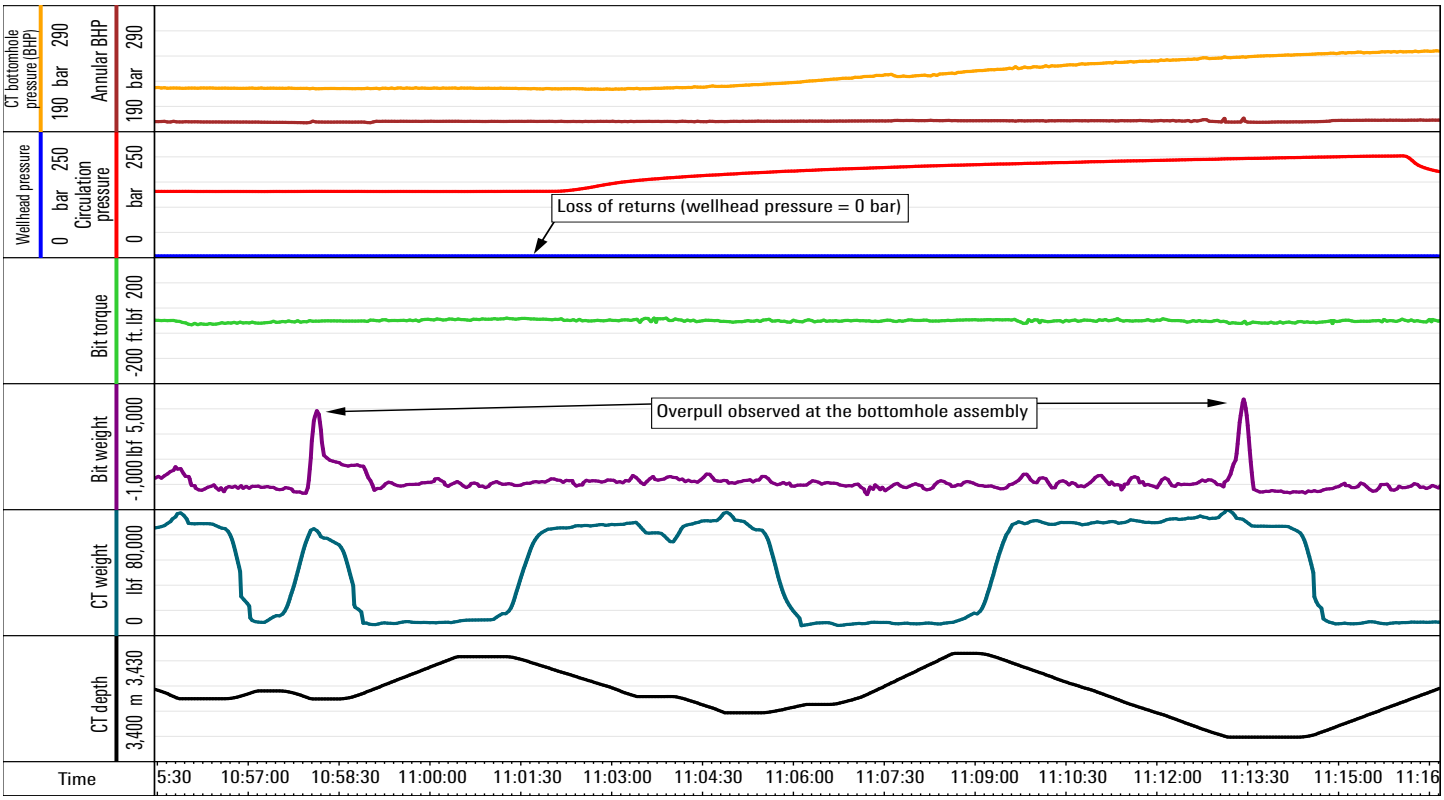
Aker BP wanted to clean out the chalk to restore production and log the well with the Pulsar* multifunction spectroscopy service to find the source of the chalk.

Integrated service manages risks and accommodates platform limitations

Usually, the Pulsar service's pulsed neutron logging tool is run using wireline, and well cleanouts are done with CT. With the high potential of additional solid influx and underbalanced well conditions promoting proppant pack instability, the wireline operation was considered risky. The ACTive Power* CT real-time powered downhole measurements system was key to mitigate that risk: It enabled Pulsar service logging—a first with CT conveyance—while maintaining CT circulation to stabilize the well. The single conveyance system also eliminated the need for multiple rig-ups in the constricted space, thereby reducing HSE risks and operating time.

Powered CT enables logging and data-informed cleanout

Schlumberger recommended ACTive* real-time downhole coiled tubing services with the ACTive Power system to perform a well cleanout by monitoring downhole parameters. That operation was to be followed by the Pulsar service's logging tool, using the same CT equipment.



Real-time downhole weight measurements provided early warning signs of debris settling around the BHA during a period of no returns to surface.

The ACTive Power system's electro-optical technology enables virtually unlimited downhole intervention operation time for powered tools—including logging tools with high power consumption—and real-time downhole data transmitted through fiber optics.

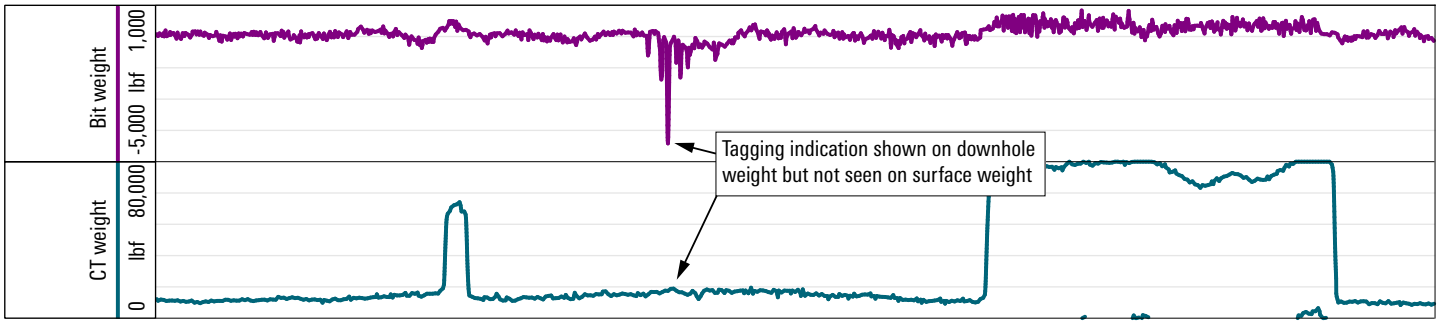
Real-time data and power delivery mitigate risks and save >3 days

The cleanout was initially planned for overbalance conditions to avoid chalk or proppant influx. However, heavy losses precluded steady returns, so the operation was changed to underbalanced conditions.

The ACTive Power system transmitted live annular bottomhole pressure data, and Vx* multiphase well testing technology verified surface flow rates to ensure the operation was performed underbalanced with a small drawdown margin, thus avoiding more chalk or proppant influx. Nitrified fluid rates were adjusted based on the real-time data. The system also transmitted real-time downhole weight measurements to warn of early signs of debris settling around the BHA during a period of no returns to surface. Access to that data accelerated decision making and mitigated the risks of becoming stuck.

The use of the ACTive Power system saved Aker BP 3 days by eliminating the need to swap between CT and wireline on the space-constrained platform. The Pulsar service tool also saved an estimated 41 hours because of its faster logging speed (200 ft/h) as compared with conventional reservoir saturation tools that are limited to 100 ft/h.

Aker BP will process the logging results to plan future remediation work.



Real-time downhole weight measurements identified chalk and debris bridges that were not evident from surface weight data. The real-time data enabled efficient milling to speed up the cleanout.

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