

Real-Time Downhole CT Services Clean Out 250-m Sand Fill with 60% Time Savings, Gabon

Operation completed in a single run despite challenging downhole conditions, using foamed fluids and continuous monitoring of bottomhole pressure

CHALLENGE

- Clean out 250 m [820 ft] of sand and restore production from a deviated subhydrostatic openhole well with difficult downhole conditions.
- Prevent both fluid loss and hydrocarbon inflow during the cleanout operation.

SOLUTION

- Use ACTive Cleanout* CT real-time wellbore fill removal service to clean out the sand with foam.
- Continuously monitor downhole pressure with the ACTive PTC* CT real-time pressure, temperature, and casing collar locator tool.

RESULTS

- Successfully cleaned out the sand in one run, without any influx or excessive leakoff.
- Reduced total operating time by 60% compared with conventional sand cleanout methods.

“The crew was excellent and I am very impressed with the ACTive services. I can’t wait to use them for milling.”

—Operating Company Well Service Supervisor



Bottomhole conditions complicated sand cleanout

A deviated openhole well in Gabon producing 500 bbl/d of oil was shut in because of excessive sand production. Before performing a sand consolidation treatment and bringing the well back online, it was necessary to clean out 250 m of sand fill to gain access to the perforations. A number of key challenges had to be addressed:

- The subhydrostatic well was unable to support a column of conventional cleanout fluid (e.g., a water-based gel), necessitating use of a nitrified or foamed fluid.
- Nitrified fluids would create an underbalanced situation, causing hydrocarbons to flow into the wellbore and increase production of the poorly consolidated sand.
- High permeability increased the likelihood of lost circulation.
- Low annular velocities due to the large (7-in) wellbore further hindered sand removal.

ACTive services provided continuous downhole monitoring with foam pumping

Monitoring downhole pressure in real time throughout the cleanout operation was critical to maintaining it within the narrow window available for balanced downhole conditions. Schlumberger proposed using the fiber-optic-enabled ACTive PTC tool to provide the necessary bottomhole data.

ACTive Cleanout CT service pumped foam into the treatment area. Foam was selected because of its excellent sand-carrying capacity even at low annular velocities, low hydrostatic pressure, and minimal leakoff.

Operator addressed challenges and reduced cleanout time by 60%

Availability of annular bottomhole pressure in real time enabled precise control of well balance from the surface via pumps and chokes, preventing hydrocarbon and sand influx and minimizing leakoff into the formation. Monitoring downhole pressures also helped maintain foam stability by adjusting liquid and nitrogen pump rates at surface. These measures prevented contamination of the foam by formation hydrocarbons, preserving its sand-carrying capabilities.

The ACTive TC* CT real-time tension and compression tool run together with the ACTive PTC tool alerted the CT team when a sand bridge was tagged or an overpull occurred.

Continuous access to critical downhole data enabled the operator to make informed decisions—such as how much fluid to circulate or how much of the 250-m interval to treat at a time—and take corrective actions during the job that optimized the time and amount of product used to clean out the sand. As a result, the job was completed in one run with a time savings of 60% compared with conventional sand cleanout techniques used by the operator in Gabon.

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