



N-FLOW™ 325 Delayed-Reaction Breaker System Frees Differentially Stuck Pipe

SAUDI ARABIA

CHALLENGE

Failure to free differentially stuck pipe would result in the loss of expensive downhole tools and the need to sidetrack the well.

SOLUTION

A delayed-reaction filter cake breaker could potentially dissolve the formation around the trouble zone, helping to free the pipe and avoid the sidetrack.

RESULTS

The N-FLOW™ 325 breaker system freed the pipe in 30 minutes, saving the operator over US\$2 million.

OVERVIEW

While drilling in a carbonate reservoir, the operator reached an overbalance pressure of \pm 850 psi.

The drillstring, including a rotary steerable system (RSS) and measurement-while-drilling (MWD) tools, became differentially stuck. Failure to free the pipe would result in the loss of these expensive downhole

tools and would require a sidetrack for a new wellbore. The same issue had occurred on some offset wells, and the operator asked for a reliable solution to free the drillstring.

**OVER US\$2 MILLION
TOTAL SAVINGS**

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SAFE FILTER CAKE BREAKER WORKS IN STUCK PIPE APPLICATION

The Baroid team proposed using the N-FLOW™ 325 filter cake breaker system in this situation, which is an alternate application for the delayed-reaction acid, generator system. The N-FLOW 325 breaker system is well known for its filter cake removal capabilities. When spotted downhole, it reacts with water, generates acid, and subsequently dissolves calcium carbonate and other filter cake components, removing fluid damage. The breaker can be placed across the entire interval before acid is generated, so it delivers a uniform, targeted solvent in the trouble zone.

The N-FLOW 325 breaker system is neutral at the surface, eliminating safety concerns and the need for any special-handling equipment that would be required for hydrochloric acid. It can be spotted with the rig pump and is non-damaging to downhole tubulars and tools.

In preparation for this stuck pipe application, the operator pumped a dual low-viscosity/high-density sweep and circulated the hole clean. This was followed by a surfactant pill to cool the wellbore and ensure that it was water-wet. The next step was pumping viscosified water spacers before and immediately after the N-FLOW 325 breaker treatment, which was spotted at balance around the stuck area. The drillstring was freed 30 minutes after the N-FLOW 325 breaker was spotted.

SUCCESSFUL RECOVERY OF DRILLSTRING SAVES MILLIONS

The N-FLOW 325 system freed the pipe on the first try, after several unsuccessful attempts with other stuck pipe spotting agents. The savings totaled an estimated US\$2.1 million. The recovered RSS and MWD tools were valued at US\$1.0 million. Four days of rig time were saved, along with the cost of sidetracking for a new wellbore. This would have cost US\$1.1 million if the pipe had remained stuck. The N-FLOW 325 treatment was delivered safely with no risk to personnel, equipment, or downhole tools.

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