CASE STUDY

HALLIBURTON

Vaca Muerta Formation, Argentina

Fas Drill® Ultra frac plugs reduce millout time and save operator significant cost

Average millout time less than four minutes and small amount of debris allows plug millout in each well without short trips

CHALLENGE

Minimize risk during pump-down operations in extended lateral sections, and reduce millout time and cost

SOLUTION

Install Fas Drill® Ultra composite frac plugs in two wellbores

RESULT

- Achieved average millout time of less than four minutes per plug
- Performed the millouts without short trips because of the small amount of debris
- Achieved average milling time of less than 3% of the total time of coiled tubing operation
- Saved days of millout operations, which reduced significant time, risk, and operational costs

Overview

A major operator in Argentina's Vaca Muerta formation searched for a slim frac plug that could be pumped down in multiple wells with a horizontal section. The operator also wanted to reduce service intensity and time associated with plug removal and wellbore cleanup. Halliburton proposed the Fas Drill® Ultra frac plug, composed of easy-to-mill composite material. This new design is enhanced for millability without sacrifice to fluid efficiency.

After installation of 4.5-in. Fas Drill Ultra plugs, the operator safely removed more than 60 plugs from several wellbores, with an average millout time of less than four minutes per plug. This performance had never been achieved before in the country. The operation was performed without short trips, and returns observed at the surface were smaller than with other plugs. This saved the operator several hours of operation, along with tens of thousands USD toward the overall cost of the completion.

Fas Drill® Ultra composite frac plugs

Challenge

To improve efficiency and reduce costs, the operator sought to scale down the time and risk required to remove composite plugs from the wellbore using a 2-in. coiled-tubing unit. At the same time, the required plug had to maintain a reduced diameter to avoid sticking because of the high occurrence of casing deformation in the area.

Solution

Halliburton recommended 3.50-in. Fas Drill® Ultra frac plugs. The single-component designs for the slips and element package provide a robust tool that can be pumped in extended horizontal sections.

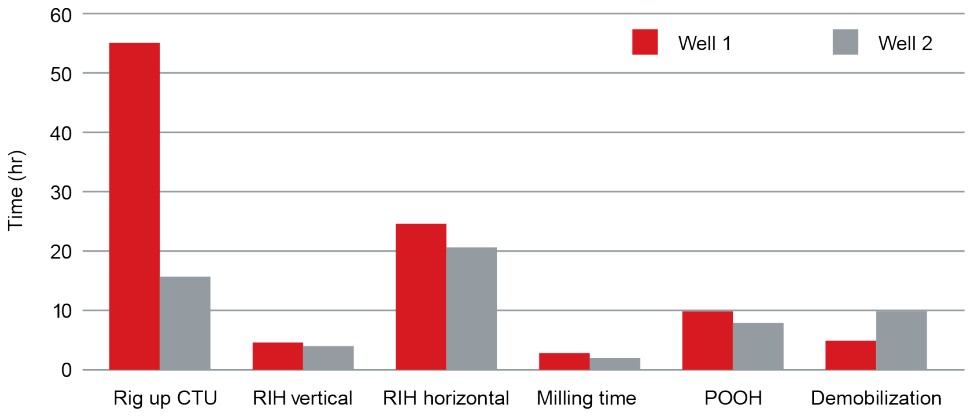
By virtue of its shorter design and the most advanced composite and rubber materials, this plug helps reduce millout time, which leaves less debris to recover from the wellbore. With no metal content, it also helps preserve drill-bit life and avoid casing damage.

Result

A total of 66 Fas Drill Ultra frac plugs were pumped and set at the desired depths without issues. The operator safely removed all plugs from the first well in less than 41 hours, which included run in hole (RIH) and pul out of hole (POOH) operations, with an average milling time of 4.2 minutes per plug. For the second well, all plugs were removed in 35 hours, with an average milling time of 3.6 minutes per plug. The milling time in the first well only represented 2.3% of the total time, which included the rig-up operation – while, for the second well, the milling time was 3.3% of the total time. Both values were negligible compared to the entire job time.

The small amount of debris from the Fas Drill Ultra frac plugs helped the operator retrieve the plugs more easily at the surface, which reduced risk and saved significant time and cost by allowing the operator to perform the operation without any short trips.

Significant reduction to the duration of the coiled-tubing millout saved the operator tens of thousands USD in costs, along with days of operation. The operator is focused on efficiency and collaboration with Halliburton for the completion solutions.



Average milling time accounts for less than 3 percent of the job's total time.

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