

Vaca Muerta Formation, Argentina

Illusion[®] dissolvable frac plugs enable extended laterals

Extended-reach lateral solution allows operator to gain greater access to reservoir

CHALLENGE

- Increase reservoir contact in extended-reach lateral
- Eliminate intervention

SOLUTION

Semi-customized unconventional solution based on well conditions

- Illusion[®] dissolvable frac plugs
- Fas Drill[®] Ultra composite frac plugs

RESULT

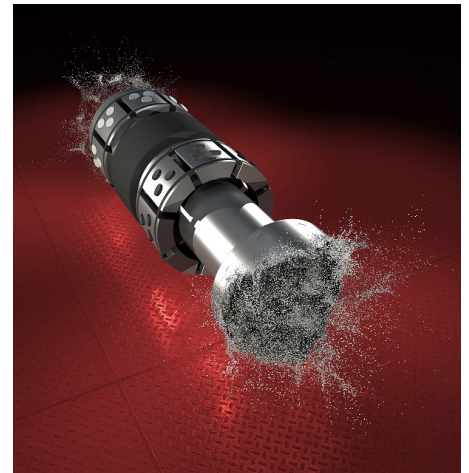
- Extended access to the reservoir by 500 m (1,640 ft), and reduced risk and total cost
- Produced from extended-reach zones without intervention

Overview

Achieving more with less seems to be a common goal for many companies that seek optimization and efficiency. Exploration and production (E&P) companies actively explore new ways to effectively increase contact with the reservoir in shale plays to increase ultimate recovery rates. Implementation of “game-changer” technology has allowed operators to not only extend lateral length, but also increase reservoir contact without the need for intervention, which thus lowers costs per BOE. In certain geographical locations, these game changer technologies can have a significant impact.

Challenge

A major operator in the Vaca Muerta shale formation wanted to extend lateral length and increase reservoir contact with the ultimate goal to increase cumulative well production. Shale plays on North America land have exhibited trends with lateral length extension and tightening cluster density. Historically, this operator used only composite frac plugs in its completion design. Although efficient and low-cost in nature, the composite plugs required intervention for their removal before wells were placed on production. The proposed increase in lateral length challenged the capabilities of available coiled tubing to mill plugs. The lack of available coiled tubing in country, along with the limitations based on the size of coiled tubing available, challenged the operator to find a practical, validated solution. Seeking solutions, the operator looked to Halliburton for assistance.



Solution

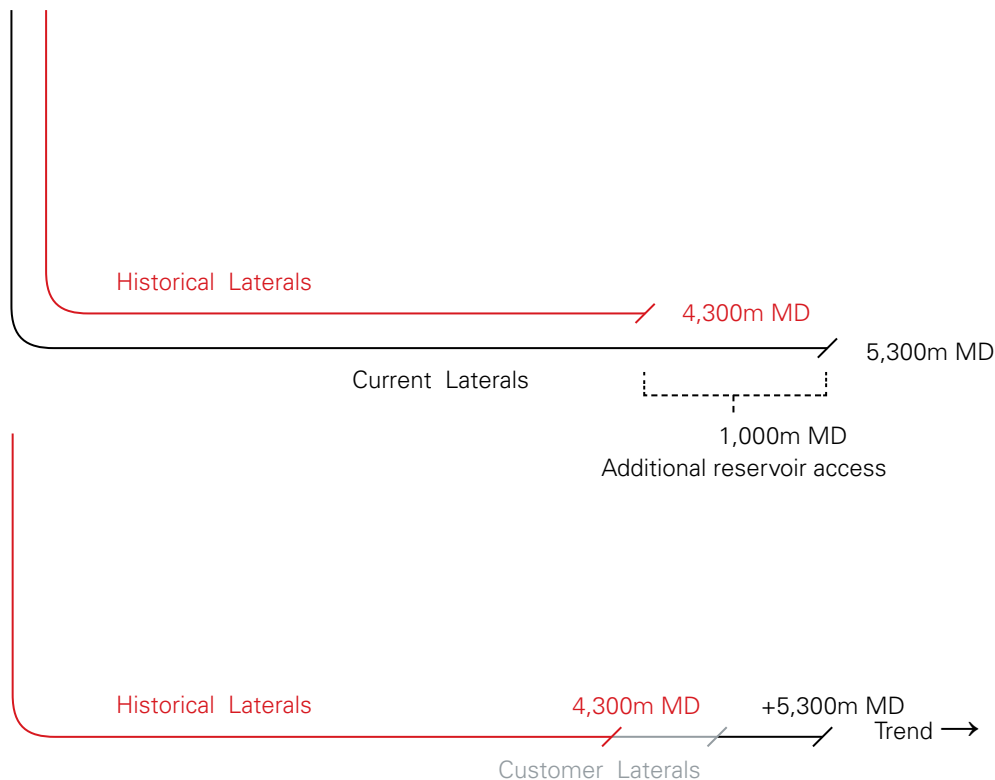
Listening to the operator's challenge and leveraging local experience and knowledge on dissolvable solutions, Halliburton proposed Illusion® dissolvable frac plugs for the extended-reach laterals and Fas Drill® Ultra frac plugs for the stages closer to the heel of the well. Working with the Halliburton Production Solutions product service line and the operator, Halliburton properly assessed the risks to determine an effective milling depth to provide an appropriate solution.

The Illusion plug's design is based on the field-proven Fas Drill® Ultra frac plug with pump-down rates that exceed that of many competitors. The proprietary Illusion dissolvable metals have several variants that help provide a semi-customized product solution based on well conditions. Halliburton's knowledge and experience

as one of the pioneers in the region promoting dissolvable frac plugs allowed us to choose the optimal solution for this operator.

Result

Using Illusion dissolvable frac plugs, the operator effectively stimulated the reservoir along an additional 500 m (1,640 ft) of lateral; and, in the stages closer to the heel of the well, the Fas Drill Ultra composite frac plugs were removed with minimal intervention effort. The well was then placed on production without additional intervention needs. The exposure time and salinity of the well at the toe was sufficient to ensure all the Illusion plugs were dissolved. Coiled tubing was deployed to effectively mill the composite plugs, clean out the well, and place the well on production.



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