Case Study

StackFRAC Slimhole restimulation of cased hole horizontal well leads to increased production

United States, Cotton Valley
StackFRAC Slimhole System

Background

The Cotton Valley Lime formation, also known as the Haynesville Limestone and the Gilmer Limestone, lies above the Bossier and Schuler formations of the Cotton Valley group. The formation contains rock strata from the Upper Jurassic period, consisting of oolite shoal, lime mudstone and wackestone, and peloidal packstone. Porosity values can range from 4 to 17%.

The oolite shoal in the Cotton Valley Lime has been productive since the 1950s and has been the source for the vast majority of production in the formation. Ultimate recoveries for wells have typically ranged from 2 to 5 Bcf of gas, with hydraulic fracturing contributing significantly to production.

Challenge

An operator targeting the Cotton Valley Lime in Texas completed a 5-stage cased hole horizontal well in the Farrar field in 2008. The well reached peak production in September 2008 with a monthly volume of 7,493 BOE. In less than 3 years, production plummeted in June 2011 to a monthly volume of 66 BOE. With such little production, the operator would need to abandon the well or look at increasing hydrocarbon recovery using restimulation. Restimulation was considered a viable option because the operator would save the time and cost of drilling and completing a new well.

Solution

The operator decided to run a 5-stage StackFRAC® Slimhole system on a 2.875-in. liner. To target unstimulated portions of the reservoir, five new sets of perforations were shot into the 4.5-in. cemented casing at different depths. The StackFRAC Slimhole system consisted of RockSEAL® II cased hole packers for annual stage isolation along with FracPORT™ sleeves that were aligned with the new perforations. Pup joints with a 3.5-in. outside diameter were swaged in between the 2.875-in. completion tools using crossover joints to maximize flow area for production. Stage spacing between the new perforations ranged from 240 ft to 305 ft.
Results

The well was successfully restimulated with a slickwater treatment. While the original completion used a total of 742,090 lbs of proppant, the restimulation used a total of 400,057 lbs of proppant. The average monthly BOE for the five months after the restimulation program (2,685 BOE) was 1.5 times higher (relative) than the average monthly BOE for the five months prior to restimulation (1,072 BOE).

The StackFRAC Slimhole system comes in different liner sizes for reentering vertical or horizontal wells. Packers Plus specializes in providing solutions for multi-stage completion systems and technically challenging applications in horizontal, vertical, multi-lateral and high pressure/high temperature wells. Well solutions are customized based on operator requirements and can be adapted based on changing industry demand.