Case Study

High-Rate Stimulation Increases Production by 85%

United States, Marmaton
StackFRAC HD System

By combining the Packers Plus StackFRAC® HD completion system with a new high-rate stimulation technique, an operator working in the Marmaton formation overcame wells on vacuum to achieve desired stimulation, and gained an estimated 85% increase in production.

Challenge

The Marmaton formation stretches across northwestern Texas and the Oklahoma panhandle. This carbonate reservoir is characterized by natural fractures, which contribute to negatively pressured wellbores. Wells on vacuum in this region have been known to take completion fluid at up to 100 barrels per minute (bpm). An operator working in the Marmaton was looking for a solution to effectively complete these wells.

Solution

To overcome the negative pressure of the formation and improve fracture height growth, Packers Plus helped the oeprator implement a high-rate (over 150 bpm) water stimulation technique. To mitigate the potential risks of premature sleeve shifts or erosion of ball seats, the largest possible actuation balls were used in the initial 12-stage ball-drop completion system to provide maximum possible surface area between ball and ball seats. With the planned rate of pumping and hydraulic horsepower required, two full fracturing fleets, including 20 pump trucks and two blenders, were brought on site and wellsite equipment was reconfigured for safety considerations.

Results

The Packers Plus StackFRAC HD system handled the high-rate stimulation treatment without issue. More than 50,000 bbl of fluid and 1 million lbs of proppant were placed in the well as pump rates reached 155 bpm.

The success of the first high-rate completion led to the technique being applied to other wells in the formation. Each subsequent well was completed at a higher rate, reaching 190 bpm.

After 6 months of production, the high-rate stimulation wells had an average of 85% higher production than offset wells completed within the same timeframe.