Case Study

Packers Plus SF Cementor reduces well cost and operation time in the Wolfcamp

United States, Permian Basin
SF Cementor Stage Collar

Background

The Permian Basin is one of the most prolific oil-producing areas in the United States. This basin is an unconventional trend comprising a mix of fine sandstone and siltstone, interbedded with various shale and carbonate layers. The Wolfcamp is a shale formation that extends throughout the basin and has the ideal mineralogy and grain-size distribution to behave as both a source rock and a reservoir.

The Wolfcamp has pockets of high porosity and permeability, but the majority of the reservoir interval ranges from 5 to 8% porosity and 0.001 to 1.0 mD permeability. This formation is further broken into 5 subplays, one of which is located in the Ozona Arch area of West Texas.

Challenge

An operator working on the outskirts of the Ozona Arch subplay of the Wolfcamp wanted to effectively design, install, and stimulate a 38-stage completion system within a short time frame. The operator’s previous wells in the area were long string wells, also known as monobore wells, and completed using cemented casing plug-and-perf (CCPP) techniques. These wells were uneconomic, or at best break even, leading the operator to pursue alternative methods.

To gather the best data and design the most efficient completion possible, the operator was prepared to collaborate with several energy service companies during all stages of design, pre-installation and prestimulation of the well.

Solution

The operator chose to run the Packers Plus SF Cementor™ stage collar as part of the monobore open hole completion system. In place of the intermediate casing, the build section of the wellbore was cemented back to surface using the SF Cementor.

Torque and drag (T&D) modeling for the system was based on a 40-stage well to ensure no issues would be encountered while running the tool string to an estimated depth of 10,792 ft. The completion design included software modeling of an aggressive proppant ramp during each stage to minimize slurry volumes as well as excessive fracture height growth.
Results

The successful operation from initial planning to drilling took place in less than 1 month. In approximately half a month (from drilling to rig release), the operator drilled an 8.75-in. open hole wellbore from the surface casing to total depth and installed a 38-stage StackFRAC® HD completion system on 5.5-in. production casing.

The fracture treatment was executed without incident at 100% and all 38 stages were stimulated within 28 hours of daylight pumping time, with no drilling failures and no screenouts. From the initial to the last stage, more than 35,000 bbl of fluid was pumped and proppant concentration increased by over 80%.

The initial production rate exceeded the operator’s previous wells in this subplay. Post-completion cost audits revealed a total savings of $320,000 using the Packers Plus SF Cementor as part of the StackFRAC HD completion system, compared to the 27 wells drilled and completed by the operator over 2 years prior to this project. Stimulation time was also reduced from 8 days for a typical CCPP well to 3 days (daylight pumping only) for a StackFRAC HD system.

As an industry leader in designing and engineering solutions for a variety of challenging applications, Packers Plus provides operators with the highest level of operational experience and best practices for running open hole multi-stage completion systems.