OptiStriker system refractured six zones in one trip, boosted Permian well production

An operator in the Permian Basin needed to find a way to revive an existing well while keeping operational and remediation costs low. The well had originally been drilled and completed with a traditional plug-and-perf completion method, but our customer needed a way to boost production by fracturing zones that had originally been bypassed.

For the solution, the operator asked Baker Hughes, a GE company (BHGE), to analyze well conditions and recommend alternative completion methods that would provide targeted stimulation for new and old perforations, as well as minimize tool trips to keep remediation costs low. BHGE recommended the **OptiStriker™ straddle packer system** that allows targeted fracturing of pay zones bypassed during the original completion, and refracturing of existing zones that are underperforming. The OptiStriker system is the first of its kind to use two mechanically resettable packers to isolate individual clusters and precisely deliver controlled treatment volumes in unconventional wells.

Some of the 30 perforations in this vertical well were within 21 ft (6.4 m) of other perforations due to the thin layers of the targeted formation. This pose the risk of pressure communication to the nearby zones resulting in frac screen outs. To overcome and react to this risk, the Optistriker system features multiple ports that provide circulation around the packers for quick screen out recovery. Resettable packers were deployed on the workover rig using 174 ft (53 m) of straddle, allowing the operator to stimulate six zones in a single trip while maintaining a fluid treatment rate of 25 bbl/min, ensuring effective fracture growth. The OptiStriker system also required less fluid overall, as compared to pumping the treatment fluid through casing, saving additional dollars in flowback and disposal costs.

Rapid depth correlation was achieved by using the BHGE mechanical casing-collar locator service which ensured the packers were set at correct depths every time. This not only improved overall operational efficiency, but also ensured that the packers were reliably set securely in place.

The OptiStriker system also monitored pressure and temperature throughout the bottomhole assembly (BHA). Memory gauges that record pressure and temperature were placed above, between, and below the packers assisting with confirmation of isolation during the fracturing of each stage, and aiding in the understanding of formation reaction to the fracturing treatment.

The customer successfully treated six stages, stimulating 795 ft (242 m) of the vertical well using 174 ft (53 m) of straddle, and deployed resettable packers at an average repositioning time of 38 minutes per stage—all in one trip, keeping costs low, resulting in an optimal production outcome.

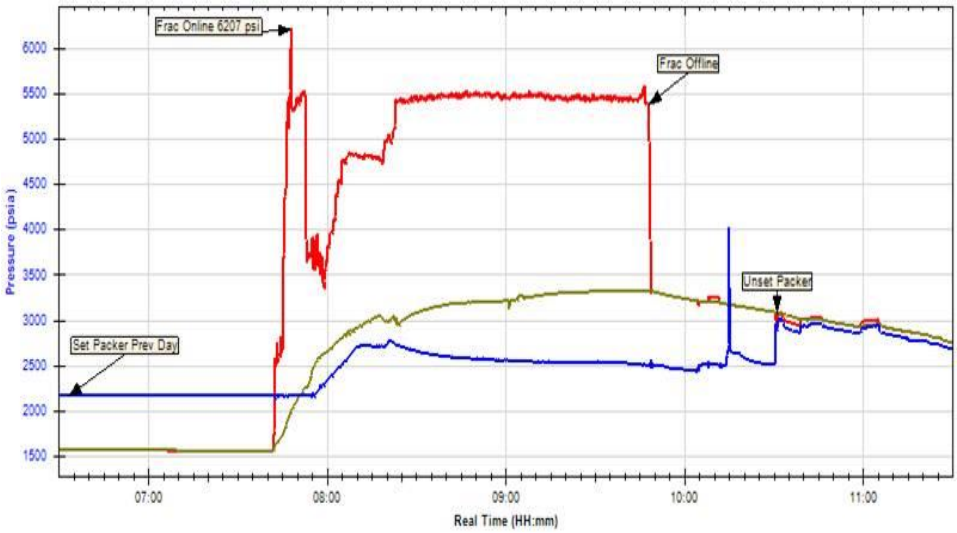
Challenges

- Stimulation of bypassed and underperforming frac zones in an existing vertical well
- High remediation costs due to multiple tool trips
- Frac screen outs resulting from pressure communication issues

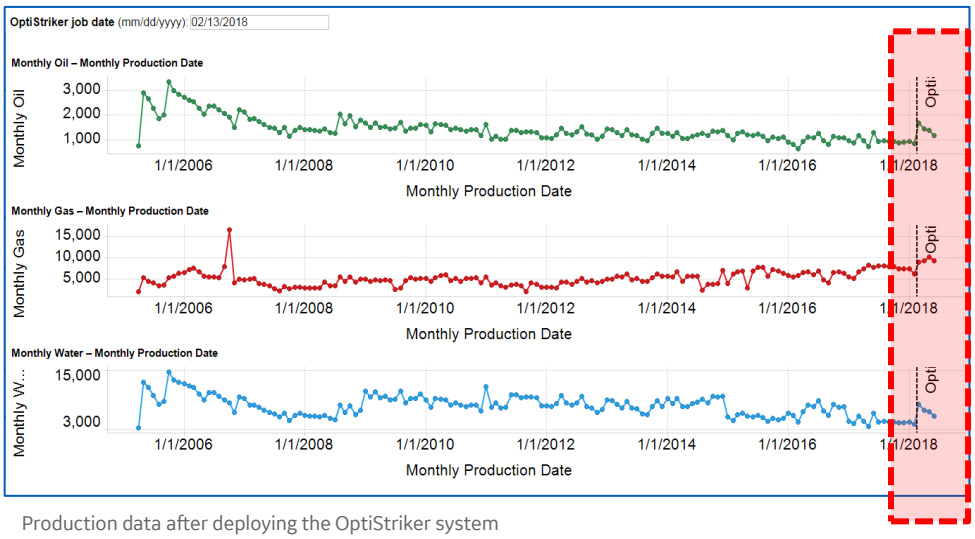
Results

- Reduced fluid requirements resulting in cost savings
- Reduced flowback and disposal costs
- Achieved rapid depth correlation
- Reduced fluid and HHP requirements by more than 30% compared to traditional plug-and-perf methods
- Minimized tool trips with the use of Optistriker sytem stimulating six zones in a single trip, using resettable packers at an average repositioning time of 38 minutes per stage
- Greater packer placement reliability and quicker setup between stages – six times faster than traditional plug-and-packer method

Operational Summary	
Total stages	6
Max frac rate	25 bbl/min
Total acid	181 bbl
Total light weight proppant	47,367 lbs
Average bottomhole treating pressure	6,750 psi
Average time between stages	38 min
Max well depth	6,038 ft



Recorded data from memory gauges during the refracture treatment. Red is the injection pressure into the formation. Blue is below the packers. Green is above the packers.



Production data after deploying the OptiStriker system

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