

Lime Rock Resources Saves USD 500,000 After Preventing Frac Hits Among Parent-Child Wells

Combination of BroadBand Shield, BroadBand Sequence, and WellWatcher Stim services prevented sanding cleanup costs and resulted in increased oil production

By deploying a combination of stimulation services during a multiwell completion, Lime Rock Resources prevented frac hits and sanding in parent wells, which resulted in USD 500,000 in savings by avoiding cleanup costs. At about a year, the best infill well production was only 10% less than the parent well with similar completion design, and the average infill well production was approximately 18% less than the parent well. After the infill wells received stimulation treatment, oil production in parent wells increased by an average of 118%.

Avoid sanding and maintain production in parent wells, while maximizing production performance of infill wells

Increased drilling of infill wells in the Bakken has led to growing concern over the effects of frac hits between parent and infill wells. Frac hits can cause decreased production in a parent well, as well as other negative effects such as wellbore sanding, casing damage, and reduced production performance from the infill well. Lime Rock wanted to maximize production of infill wells and decrease the frequency and severity of frac hits to parent wells. Their goal was to maintain production of the parent wells and avoid sanding, which had the potential to cause cleanouts costing about USD 175,000 per well.

Apply combined services to mitigate frac hits

After successfully trialing BroadBand Shield* fracture-geometry control service, BroadBand Sequence* fracturing service, and

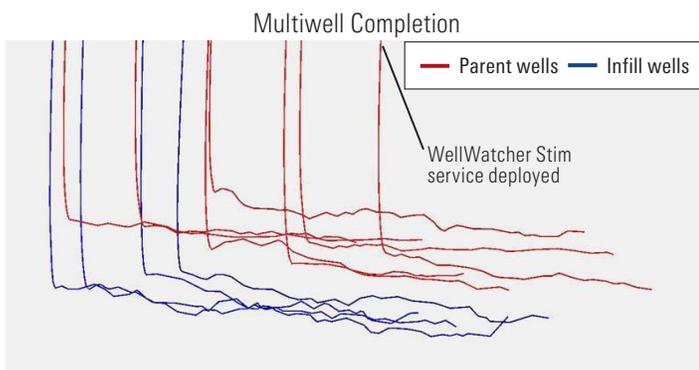
WellWatcher Stim* stimulation monitoring service for frac hit mitigation in the Williston Basin, Lime Rock deployed this combination of technologies in another set of wells within the basin. BroadBand Shield service delivers a fluid system that includes a proprietary blend of multimodal particles to bridge the fracture tip, preventing excessive fracture length and height growth. BroadBand Sequence service consists of a proprietary blend of degradable particles—with tetramodal size distribution and fibers—used to sequentially stimulate perforated clusters, maximizing perforation efficiency. The WellWatcher Stim service is used to monitor offset well pressure and identify when a frac hit occurs.

Saved sanding cleanup costs and increased production

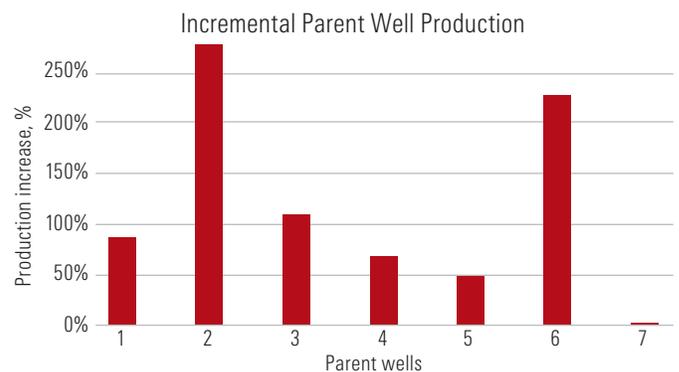
Combining completion technologies enabled real-time identification of parent-child well communication and design optimization and decreased the severity and frequency of frac hits in subsequent stages. The results indicated no negative frac hit effects and sanding in any of the parent wells, which ultimately translated to USD 500,000 saved in cleanup costs. At about a year, the best infill well production was only 10% less than the parent well with similar completion design, and the average infill well production was approximately 18% less than the parent well. After the infill wells received stimulation treatment, production results showed a positive uplift in oil production for all parent wells by an average of 118%.

“Schlumberger infill well completion technologies successfully mitigated frac hits to our parent wells, resulting in cost savings due to avoiding sand cleanup and improved production performance.”

Mark O. Reid, Vice President, Operations, Lime Rock Resources



BroadBand Shield service and BroadBand Sequence service were deployed in four infill wells, and WellWatcher Stim service was deployed in one parent well.



After the infill wells stimulation treatment, there were no negative effects on parent wells, and their oil production increased by an average of 118%.

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