

Fulcrum Technology Increases Liquids Production up to 41% in the Permian Basin

Minimizing interstage communication during fracturing treatment results in higher normalized 3-month cumulative production

CHALLENGE

Improve liquids production in multizone horizontal wells by increasing fracturing performance and efficiency and avoiding interstage fracture communication.

SOLUTION

Deploy Fulcrum* cement-conveyed frac performance technology in five new wells.

RESULTS

Increased 3-month cumulative liquids production by

- 22% as compared with 56 nearby offset wells and normalized by lateral length
- 41% as compared with the offsets and normalized by mass of proppant placed.



Long horizontals challenge fracturing efficiency

A Permian Basin operator drills long horizontal wells with 10,000-ft laterals to accommodate multistage plug-and-perf completions with hydraulic fracturing. Production results met expectations, but the operator believed that further efficiency improvement was possible.

The operator was particularly concerned that zone-to-zone fracture communication behind the casing might be reducing the efficiency of the fracturing operations. Although the operator uses industry-recognized cementing best practices to maximize mud removal, engineers recognized that in such long horizontals, mud channels might remain. That would leave pathways for fracturing fluid and pressure to communicate behind the casing and reduce efficiency. Literature data show that more than 30% of stages may communicate with previously stimulated intervals. This can lead to reduced hydraulic fracturing performance and efficiency as fracturing fluid escapes the intended intervals; consequently, the wells produce below their potential.

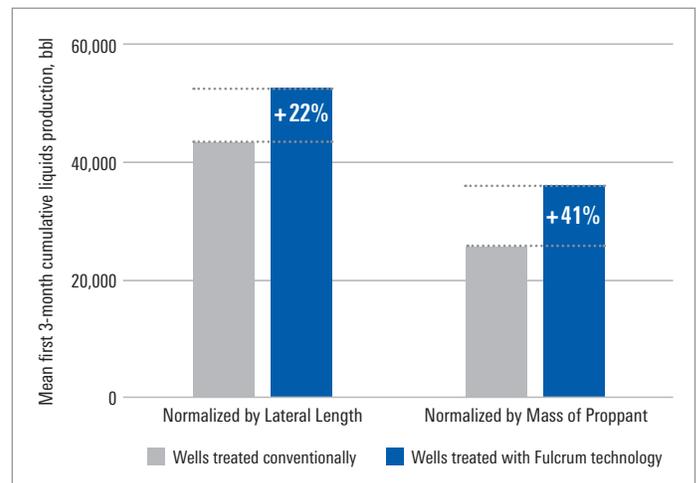
Cement-conveyed technology limits interstage communication

To optimize hydraulic isolation in the lateral and support more efficient fracturing without adding operational complications and costs, Schlumberger recommended using Fulcrum technology in five new wells.

Delivered during cementing, Fulcrum technology interacts with residual nonaqueous fluid (NAF) left after drilling to reduce the potential for frac fluid communication through channels, improve fracture efficiency, and waste less fluid, proppant, and energy.

Normalized three-month cumulative production increases

The wells were constructed using Fulcrum technology and stimulated by the OneStimSM integrated completions team. After flowback, their production was compared with public data from 56 offset wells constructed and stimulated within the last 2 years in a 10-mile radius. Normalized by lateral length, mean 3-month cumulative liquids production in the wells treated with Fulcrum technology was 22% higher as compared with the conventionally treated wells. Normalized by mass of proppant placed, mean 3-month cumulative liquids production in the wells treated with Fulcrum technology was 41% higher as compared with the conventionally treated wells. For both cases, the production improvements were found to be statistically significant.



Initial liquids production from the five wells treated with Fulcrum technology exceeded that of 56 recent offsets within a 10-mile radius.

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