Schlumberger

Cementing Change Increases Oil by 16%, Gas by 37% in NM

Fulcrum technology boosts production by improving isolation between perforation clusters, Permian Basin

Four wells cemented using Fulcrum* cement-conveyed frac performance technology outproduced two conventionally cemented wells on the same pad after comparable multistage hydraulic fracturing treatments.

The operator's concerns

In a geometric completion with perforation clusters every 23.5 ft, long drilling fluid channels behind the casing would enable fracturing fluid and energy to migrate far from the intended cluster, reducing fracturing efficiency, reservoir contact, and well production potential.

Initial solutions

Industry-accepted cementing best practices, including running centralizers.

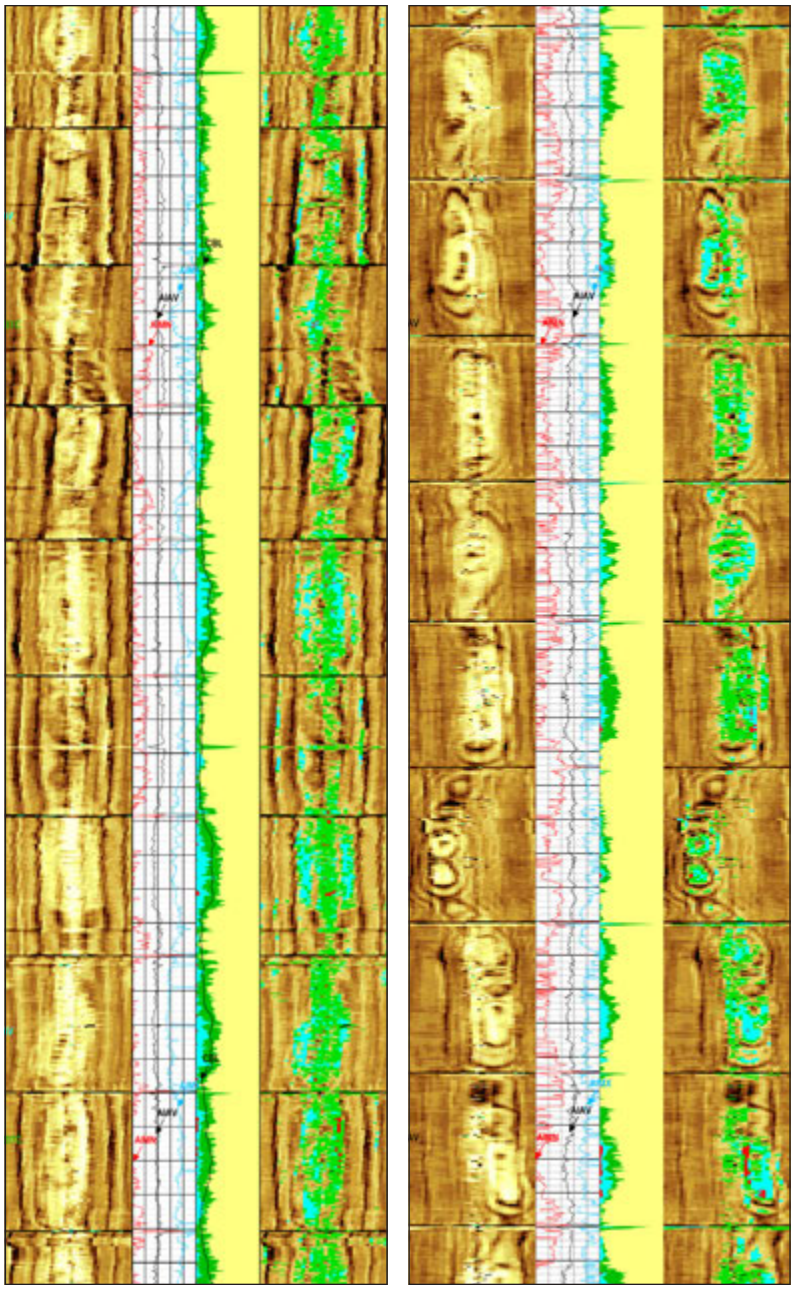
What Schlumberger recommended

Add Fulcrum technology to the cement in four wells on the pad to react with leftover drilling fluid and cement the other two pad wells conventionally. Then assess the cementing performance with the USI* ultrasonic imager and, after multistage fracture stimulation, monitor and compare well production.

What the technology achieved

Logs indicated a well cemented conventionally had long channels behind the casing, where the well cemented with Fulcrum technology had small pockets of lower-quality cement but no long channels that would permit fracturing fluid migration between stages.

After 10 months of production, average cumulative oil production was 16% higher and gas production was 37% higher for the wells cemented with Fulcrum as compared with those cemented conventionally. The increase amounted to more than 50,500 bbl of incremental oil and 238 million scf of gas.



In one of the conventionally cemented wells, left, the cement bond is mostly acceptable; however, a long and continuous channel exists and could carry fracturing fluid between perforation clusters. In a well cemented with Fulcrum technology, the cement bond is improved, and the small channels are not connected, so fracturing fluid cannot migrate very far.