

MONTAGE RESOURCES IMPROVES ZONAL ISOLATION AND CEMENT BOND

Fulcrum technology improves stage-to-stage isolation, resulting in higher fracture breakdown pressures, Ohio

In a head-to-head test in neighboring wells, Fulcrum* cement-conveyed frac performance technology improved cement bonding and interstage isolation as demonstrated by cement bond logs and higher breakdown pressures during subsequent fracturing operations.

MONTAGE RESOURCES' CONCERNS

Bond logs from conventionally cemented and completed wells indicated severe channeling behind the casing of multistage horizontal wells, which can reduce fracturing efficiency as fluids migrate into unintended zones.

WHAT THEY TRIED FIRST

Industry-accepted cementing best practices, including running centralizers.

WHAT SCHLUMBERGER RECOMMENDED

Add Fulcrum technology to the well cement to react with leftover drilling fluid; assess performance with the Isolation Scanner* cement evaluation service.

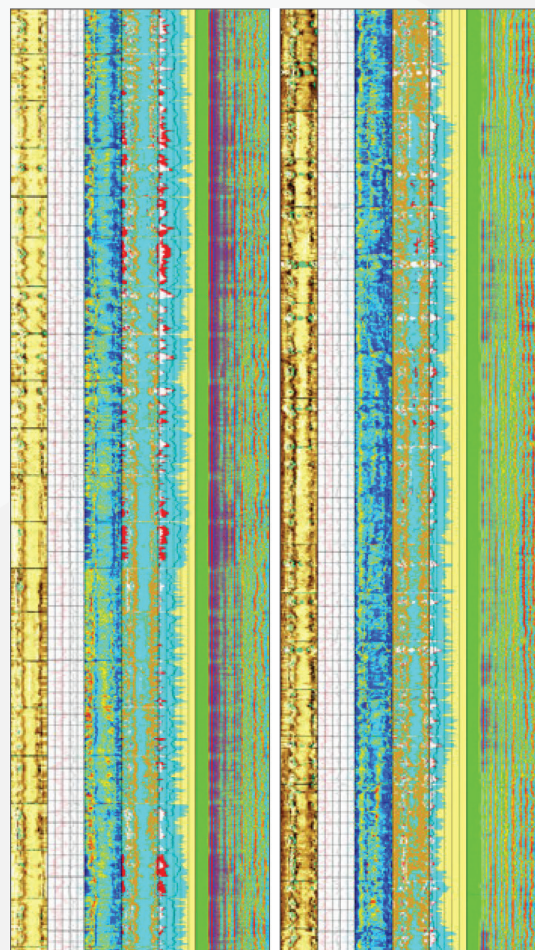
WHAT HAPPENED

Montage Resources engineers agreed to cement two horizontal wells conventionally and then cement two comparable neighboring wells with the same design except for the addition of the Fulcrum technology. In order to evaluate the difference, it was agreed to run Isolation Scanner service on one well that was cemented conventionally and on another well cemented with Fulcrum technology. The well cemented with Fulcrum technology showed better bonding and isolation both on the impedance boundary condition and the sonic tool.

Later, during stimulation, the two wells cemented with Fulcrum technology had an average of 800-psi higher breakdown pressure as compared with the breakdown pressures in two wells cemented with conventional cement systems. Higher breakdown pressure is associated with improved stage-to-stage isolation, which enables more efficient fracture placement.

WHAT THE OPERATOR GAINED

"We are having much better isolation from stage to stage with this product." Delvina Uka Oelkers, Completion Manager, Montage Resources



In the conventionally cemented well, left, the cement bond is poor, and material in the channel is weak and uniform, which is common for drilling fluid. In the well cemented with Fulcrum technology, cement bond is improved, and the higher impedance with texture in places indicates a uniform substance with some mechanical strength.