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BroadBand Sequence Service Temporarily Isolates Natural Fractures for Complete Wellbore Coverage

Tracer logging confirms 100% perforated interval coverage in horizontal well compared with 70% coverage along the lateral using conventional methods, Montney Formation

CHALLENGE

Improve the number of effectively stimulated fractures in a horizontal well located in a formation with high fracture initiation pressure.

SOLUTION

Optimize wellbore coverage and reservoir contact using BroadBand Sequence* fracturing service.

RESULTS

- Achieved complete wellbore coverage by temporarily isolating natural fractures to target higher-stress regions for stimulation and improve cluster placement.
- Confirmed 100% perforated interval coverage with proppant along the lateral treated with BroadBand Sequence service by using tracer logs, compared with approximately 70% coverage along the lateral treated using conventional methods.

Low stimulated reservoir volume needed improvement

An operator knew after evaluating several wells that the Leland field had high initiation pressures and required larger volumes of acid to faciliate hydraulic fracturing treatments. To investigate whether that all clusters in the interval were effectively stimulated, the operator conducted a number of stepdown tests, which indicated that less than 15% of the perforations were open after using acid to break down the well.

Sequenced fracturing maximized stimulated volume

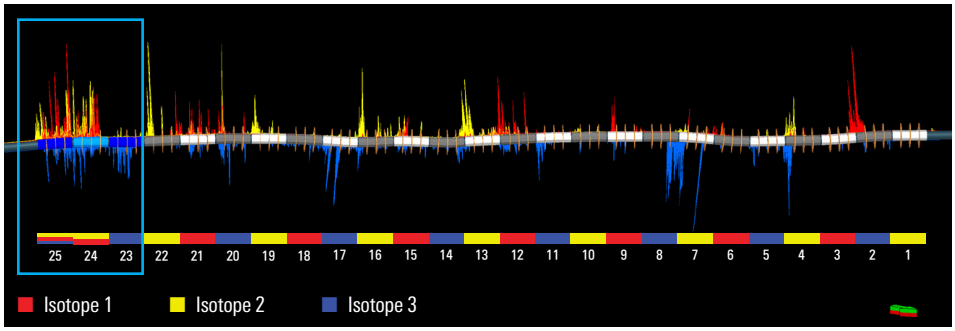
To overcome this lack of open perforations, the operator decided to implement BroadBand Sequence fracturing service, which uses composite pills to temporarily divert stimulation fluid into targeted clusters. The service sequentially isolates and stimulates each zone, promoting uniform stimulation, enhancing well production, and improving estimated ultimate recovery.

The operator selected a candidate well with 25 intervals separated by mechanical bridge plugs. Schlumberger stimulated all intervals with a proppant fracturing stage after a third-party tagged each stage with a radioactive tracer to evaluate wellbore coverage after treatment.

For the last three intervals, Schlumberger applied the Broadband Sequence fracturing service followed by an acid spearhead to overcome high fracture initiation pressure and to accommodate fracture propagation in the unstimulated formation. In intervals 23 and 24, Schlumberger split the treatment into two individual stimulation stages separated by one composite diversion pill. In the final interval, Schlumberger divided the original job design into three stimulation stages separated by two rounds of the BroadBand Sequence fracturing service's composite pill.

BroadBand Sequence service delivered 100% perforation coverage

The treatment plots indicated a new fracture was initiated after every composite pill. The tracer log confirmed 100% perforation interval coverage in intervals 23 to 25 stimulated with BroadBand Sequence fracturing service, a 43% increase in comparison with other intervals in the same well treated using conventional methods.



The tracer log from the study well confirmed that Broadband Sequence fracturing service delivered 100% perforation coverage in intervals 23 to 25.

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