

# Study shows avoiding overflushing could hike production 10%: Permian

Sweeping fracture-height analysis with non-radioactive tracer projects 30% higher near-wellbore conductivity.

## Permian, West Texas

### The challenge

Relatively new to the Permian, the client requested quantifiable data to help optimize its stimulation and completion programs. A well completed with five frac stages and a cumulative 11 perforation intervals was targeted as the test subject to measure the propped fracture height as well as the impact, if any, of overflushing on the connectivity between the near-wellbore and formation.

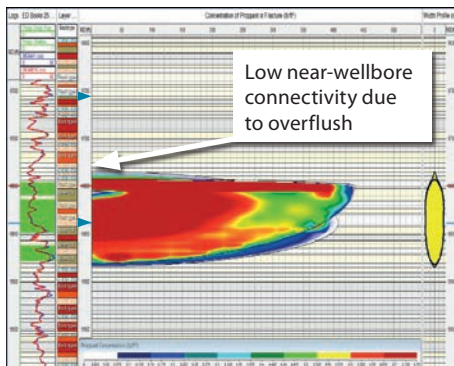
### The solution

To meet the client’s objective to determine the effects of overflushing, STRATAGEN® fracture supervision & advisory services employed the pacesetter FRACTUREVISION™ proppant-delivered fracture evaluation service, which enables precise measurement of propped fracture height to model fracture geometry.

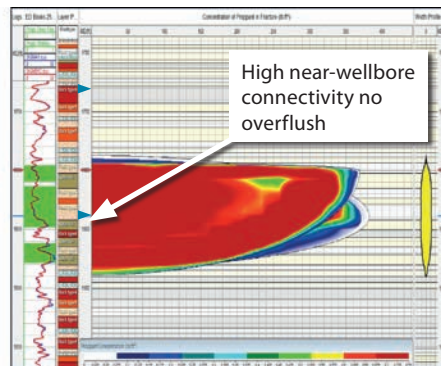
The FRACTUREVISION service was used to measure the effective fracture height and provide an evaluation of the propped fracture height. The service is enabled by CARBONRT® ULTRA inert tracer technology, a unique tracer specifically engineered for the evaluation of sand completed wells. The inert tracer allows the location of near-wellbore proppant location to be precisely detected using a standard pulsed neutron logging tool run. The log is then interpreted to provide fracture measurements as part of the service.

In each of the five stages of the subject well, the fracture treatment data and the measured propped fracture height were considered in a pressure-matched simulation to evaluate the effects of overflushing on both near-wellbore connectivity and fracture height.

Stage 1 Overflush



Stage 1 No overflush



In this Stage 1 comparison, the adverse effect of overflushing is reflected in the low near-wellbore connectivity (left), while eliminating overflushing (right) shows high near-wellbore connectivity.

### Well Data

- Location:** Permian, West Texas
- Operator:** Independent operator
- Well type:** Oil
- Well depth:** 10,124 ft TD
- No. stages/clusters:** 5 stages/11 cumulative clusters
- Completion design:** Perf & plug
- Diagnostics:** FRACTUREVISION proppant-delivered fracture evaluation service enabled by CARBONRT ULTRA inert tracer technology



## The results

Results of the comparative analysis clearly illuminated the adverse impact of overflushing on connectivity and, hence production. Of the five stages evaluated, only one (Stage 5) exhibited the high wellbore connectivity that accompanies the avoidance of overflushing. By contrast, only two of the six clusters in Stage 1 accepted proppant as a result of overflushing. Stage 2 displayed high near-wellbore connectivity, but low perforation efficiency with only one of two clusters showing proppant, while both Stages 3 and 4 were shown to have low near-wellbore connectivity and extremely short propped fracture height. STRATAGEN consultants advised the client that avoiding overflushing by any amount in future stimulation and completion programs would increase near-wellbore connectivity by 30% with a corresponding 10% increase in production.

### Other recommendations included:

- Using a viscous fluid system, either crosslinked or linear, for the entire treatment to ensure uniform proppant distribution in the near-wellbore area.
- Based off of the low treating pressure observed during the final four treatments, it was recommended to increase the proppant concentration during the final 40/70-mesh with 40/70 CARBOLITE® proppant with integrated CARBONRT ULTRA tracer technology.

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