

Reperforating on TuffTRAC Tractor Increases Injectivity up to 300%

Tractor makes 66 trouble-free descents totaling 47,132 ft in four wells, Kenai gas field

CHALLENGE

Remediate horizontal injector wells in the Kenai gas field by reperforating to minimize perforation damage.

SOLUTION

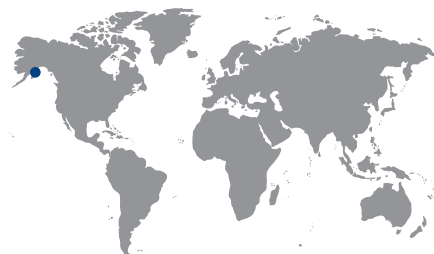
Use TuffTRAC* cased hole services tractor to convey perforating guns loaded with PowerJet Omega* deep penetrating perforating shaped charges to create perforations that bypass the existing damage zone.

RESULTS

Increased injection rates by 50% to 300% in the four wells that were reperforated with 1,790 ft of guns conveyed on 66 TuffTRAC descents totaling 47,132 ft.

“Given the number of tractor runs, I expected we might experience some tool down time. It was a very pleasant surprise that we experienced no tool failures. In my experience with other large projects of this type, this is exceptional.”

Rick Gentges
Project Manager
CINGSA



Underperforming horizontal injection wells

Cook Inlet Natural Gas Storage Alaska (CINGSA) had drilled and completed five horizontal natural gas storage wells in the Kenai gas field. The wells were perforated highly overbalanced on TCP because the reservoirs were depleted, but the initial flow tests were below expectations. Remedial action was needed before the wells could be brought online. It was determined that reservoir pressure would be increased and the wells reperforated at balanced pressure to minimize perforation damage.

Robust tractor conveyance for perforating

To deliver the deep penetration needed to bypass the existing damage, PowerJet Omega deep penetrating perforating shaped charges were chosen. TuffTRAC cased hole tractor service was selected to convey the perforating gun systems in the horizontal wells because it is engineered to withstand the impact of the gun detonations and it also has low sensitivity to well conditions. Although the TuffTRAC tractor is the shortest tractor in the industry, its modular configuration has built-in critical perforation systems for electrical release, head tension, and shock absorption for increased operating safety, reliability, and versatility.

Up to 300% increase in injection rate

The durable TuffTRAC tractor made 66 trouble-free descents, totaling 47,132 ft, to shoot 1,790 ft of perforating guns using PowerJet Omega deep perforating charges. This robust performance resulted from the application of exclusive active traction control, which continuously controlled the radial force applied by the TuffTRAC tractor arms to compensate for any slippage in difficult well sections. Reperforating conveyed on the TuffTRAC tractor delivered the results that CINGSA wanted: the injection rate was increased 50% to 300% for the four wells that were remediated.



The bidirectional TuffTRAC tractor provides large pull and push forces that are precisely controlled from the surface. Sensors incorporated in the tractor enable the engineer to monitor tractor response and the progress of downhole operations while controlling the tractor for optimal performance.

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Production