



Canada

Heavy Oil - 2200ft. - shallow wells. Production had completely stopped. After KODIAK, production started back up at 30 bpd. This is good for this type of well in this area.

Canada SAGD

Injection Well project-Heavy Oil- SAGD. Formation has 30% porosity with 2000 md. 35ea. 11ft. KODIAK gun runs were successful. Customer said it showed good communication with reservoir with the wells took a lot of fluid after the shots.

Oklahoma

Woodford Shale Formation porosity of 0.05% and permeability of .01 md Horizontal well 8900 ft. vertical and 5000 ft. lateral, total 13900 ft. TD - Plug & Shoot Pump Down. Perforating the toe with 6ea. 3-3/8in x 4ft 5-spf 60deg KODIAK guns spaced @ 100ft intervals using Owen 25gm Good Hole Charges. There were improved flow rates over a competitor's 6-spf GH system. Frac pressures required were approx. 15% less to break down than similar wells that did not use KODIAK.

Oklahoma

Woodford Shale KODIAK ran in conjunction with HTD-BLAST®, 6ea. 3-3/8 x 4ft. guns ran on Coil this time. Again, this repeat Client saw improved flow rates and reduced frac breakdown pressures.

Oklahoma

Woodford Shale, Ran KODIAK along with HDT-BLAST 10 ea. 3-3/8 x 4ft. guns on coil. Repeat Client continues to see results using KODIAK on these perf jobs.

North Dakota - Frac not an option

Red River Formation, Ran the 1st KODIAK w/ HTD-BLAST® using 7ea. 3-3/8 in. od X 21 ft. 5-spf 60 deg. KODIAK guns loaded with 80 KODIAK Pellets . Each Gun Assy had 4 ea. Time Delays assemblies. Well depth was total of 13,000 ft. and had an Open hole lateral of 3300 ft. These guns were run on "stick" tubing, leaving them in the hole overnight in excess of 12 hrs. at approx. 200 deg. F . Formation characteristics were Limestone rock, porosity 8%, permeability 8 md. Originally a natural completion, client wanted to increase production without fracing for there is a water zone approx. 60ft. from the wellbore. The initial production had dropped over time to 100 bpd. The STIMGUN® Licensee ran a PulsFrac® Model , which showed KODIAK to improve the near well bore



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area and also provided the estimated fracture length to be created by KODIAK. Soon after, the well was put back on line and it is at 180 bpd.

North Dakota

Three Forks, Horizontal well, 10,300' vertical and 8200' lateral, that they were not satisfied with the injection rate. They were having a hard time getting fracs away and the pressures were too high. PulsFrac Model predicted a peak psi generated by KODIAK to be approx. 14,573 psi, fracture length of only 2.9ft. out past the well bore. Formation Porosity .05%, Permeability 1.0md. There was not a lot of fracture extension but the breakdown is what's important in the application which showed a 100% breakdown in the Modeling. Licensee suggested KODIAK. Two 11'x 3-1/8" KODIAK 5spf guns loaded for a total of 50 HERO® SDP Charges and 40 KODIAK pellets, conveyed on tractor. Before KODIAK, injection rate was 1.9 bbl/min. After KODIAK, was 3 bbl/min. Client was happy with results and has other problem wells in which he is planning to treat with the same method.

North Dakota

Repeat, Red River formation, Ran on another horizontal in same field. This was a string of 21 of the 3-3/8"x 21' KODIAK Gun Systems. These were run again with HTD-BLAST® and 4 Time Delays per each gun due to the extra time needed while running with stick tubing. Any results from using KODIAK was not released due for Client did not want to make public.

Venezuela

Client was awarded 2 gas wells to recomplete and try out the KODIAK System. Both 11ft and 21ft KODIAK guns were used. The 1st well did not respond out of the ordinary. The 2ND well much differently with 2mmcf/d. More wells are being looked at.

Utah

Horizontal TCP completion in the Paradox Basin where there is no fracing due to lack of water availability. Local residents are concerned there isn't enough for both culinary and Oil & Gas industry. KODIAK was modeled in which showed positive results. 9 ea. of the 21ft x 4-1/2" KODIAK Gun Assy's were run on TCP. The results have not been released due to Clients policy.



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Utah

KODIAK job which to date, is the longest land job of continuous perf guns. The gun string was just over 5544ft. Consisting of 222 Standard 4-1/2" od x 21' gun assy's and also 42 of the 21ft KODIAK assy's. This Perf Gun assy contained 25,560 39 gm SDP HERO® Charges. Total length was 1.05 miles long. Any results are being held as non-public.

New Mexico

Client commonly encounters problems with Toe breakdown in the Delaware formation on long horizontals, so after discussions with TCP Service provider, it was decided to try KODIAK Enhanced Perforating System™. It was decided to run a 3-1/8" x 11' gun assy., but soon after changed to one 21' gun assy. to ensure the maximum KODIAK effect. He said that this well showed the break down pressure in the KODIAK zone was "much lower". A second well was set up and the same results "lower break down pressures was seen in the areas KODIAK was used." This well 3 ea. 3-1/8" x 11' KODIAK Guns were ran. "The next well is planned to frac in the 3rd or 4th qtr. and we will use KODIAK guns."

West Texas

Client had an old nonproducing 3300' vertical well that he wanted to try to stimulate and turn back into a producer. The 1st run down hole showed that debris had filled up on top of the old perforations so the work over crew bailed out the debris down past the upper set of perfs. A 3-1/8" x 15' KODIAK Enhanced Perforating System™ gun was ran and successfully perforated and stimulated on the same run. This well was put on line with 8bbl./d production. Since then, 2 more wells in same Field have also been turned into producers.

South Texas

This Heavy Oil bearing zone is filled with many shallow wells right around the 900' vertical depths. This Client allowed Owen to use a few of these wells as a testing project for KODIAK Enhanced Perforating Systems™. We ran over 25 single wireline gun runs using 11' and 15' long KODIAK gun assy's. All were successful and as a bonus, the Client was able to turn one well into a 40bbl./d producer.

West Texas

A Client in the Permian Basin had a 4 well zipper frac program in which they choose KODIAK Enhanced Perforating System with the PerFRAC perforating charges to optimize their performance.



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3960 ft. of KODIAK guns and over 19,000 PerFRAC charges were used on this 30 day project. The Client was pleased and has reported excellent results in lower breakdown pressures and production results. Compared to “look alike” wells, the wells perforated with the KODIAK Enhanced Perforating System exhibited 15% higher I.P.’s., 5 to 15% higher estimated E.U.R. , notably higher near wellbore permeability, notably lower skin factor and they had no screen out during this operation.

North Central Texas

A small independent Producer has the constant problem with low production with his multiple stripper wells and with the current Industry condition, is very limited on Funds. Using KODIAK is more expensive than just regular perforating, but now he is finding the reduced need for acids. He is also seeing acceptable results using KODIAK for re-stimulation of small zones in these shallow wells. Stimulate one well today, then another next month.

West Texas

Kodiak Enhanced Perforating System™ provides a solution to breakdown issues

An Operator was recently experiencing issues with high breakdown pressures on a horizontal unconventional well in West Texas while using conventional shaped charges. Core Laboratories LP was able to provide a solution utilizing Kodiak enhanced perforating in conjunction with PerFRAC™ consistent hole size perforators. The Operator was willing to change their cluster design during the completion to accommodate the enhanced perforating strategy. A 3ft KODIAK Cluster was recommended over the standard 1ft Cluster. The change to the Kodiak PerFRAC™ system provided the operator with a significant change in breakdown pressure (by as much as 25%), allowing them to increase concentration of fluid and Proppant placed during stimulation operations.

Results: Breakdown pressures were reduced as much as 25% providing the Operator the ability to stimulate at higher rate, resulting in higher concentrations of fluid and Proppant placement. The Operator plans to incorporate the Kodiak PerFRAC™ system in its subsequent wells starting in Q4 2018.