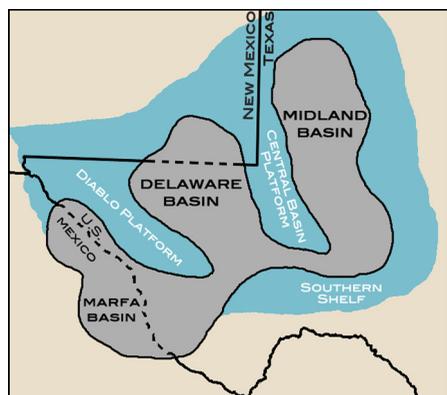


CASE STUDY

PREDATOR™ OPENHOLE SYSTEM

PERMIAN/DELAWARE BASIN OPENHOLE COMPLETION – 13,700 FT TOTAL DEPTH



CHALLENGE

Efficiently complete 13,700 ft TD well with 4,800 ft lateral, 7" intermediate casing, 4.5" Liner P110 13.5 lb/ft. The formation is considered to be in a complex geologic setting containing complex carbonates and siliclastic sediments.

Rock properties are variable both vertically and laterally with low porosity and low permeability, posing a stimulation challenge with previously experienced high stimulation pressures. Planned frac treatment is to pump acid and slick water with proppant.

SOLUTION

Peak provided the Predator™ Extreme Service Openhole Multistage Completion System - 15k psi rating. System design consisted of initial stage HydroPort™, drillable StrataPort™ frac sleeves, Predator™ dual element isolation packers, permanent liner hanger with extended seal bore. Stage spacing was variable from 300 ft to 380 ft and averaged 350 ft.

The Predator™ Openhole System is the ideal solution for increasing the reliability and efficiency of multistage stimulation.

RESULT

The completion tool string was run in the well and set on depth. The stimulation pressures experienced were as designed and independent isolation and sleeve isolation pressures were observed.

The operator was able to drastically reduce the time and money for the completion resulting in the decision to standardize the Predator™ system. The reduced mechanical and operational risks compared to plug-and-perf method, in addition to the accelerated production from each well, were just a few of the significant benefits the Peak solution was able to provide.



CASE STUDY

PREDATOR™ OPENHOLE SYSTEM

REDUCE COMPLETION TIME

An operator in the Western Permian/Delaware Basin was using the plug-and-perf method to fracture stimulate wells with cemented liners. The operator was experiencing long pump times to place plugs and guns on depth. The goal was to drastically reduce completion time and operational costs while improving the fracture treatment effectiveness.

RIGLESS ALTERNATIVE TO PLUG-AND-PERF

Peak Completions presented the operator with a rigless alternative to plug-and-perf using a 15k psi rated Predator™ Openhole Completion System. The system included a toe assembly specifically designed for the well that included a HydroPak 55™ anchor to prevent movement during fracturing and a HydroPort™ to hydraulically open the first stage. Isolation of individual stages was accomplished with Predator™ Extreme Service openhole isolation packers. After placing the assembly on depth, a completion fluid was circulated in the lateral section. The system was set by increasing the pressure within the string.

The first stage was opened by activation of the Peak HydroPort™ and stimulation treatment was delivered as planned. Remaining stages were initiated with drillable StrataPort™ frac sleeves that were activated by dropping Peak's proprietary frac balls. The ball drop was timed to open the next stage as the end of the previous stage pumping schedule was completed. The ball drop was repeated until all stages were completed.

Each stage was successfully isolated with up to 9,600 psi treating pressure experienced. Surface treating pressures ranged from 5,900 to 9,600 psi. The extended seal bore installed with the permanent

liner hanger accommodated the expected high stimulation treating pressure.

As each stage was completed, the pressure to open the next stage indicated the stimulation treatment was successful in accessing the target reservoir and the well would flow after completion of the stimulation program. The well did indeed flow back after the stimulation treatment at initial pressures and initial rates consistent with other wells in the field area.

JOB PUMP TIME IN LESS THAN ONE DAY

The Peak Completions Predator™ Openhole Completion System performed flawlessly and reduced the total stimulation time to less than one day. All stages were opened as planned at the designed pressures and each zone was stimulated. The operator was able to make decisions about each stage's treatment during the pumping operation allowing for maximum stimulation of each zone.

With no transition time between stages, the entire stimulation job time and amount of acid and frac fluid was minimized. This along with the elimination of plug and gun equipment, reduced the time and cost of the completion. Employees on location were exposed to less risk and the company was able to lower their environmental impact. Peak Completions effectively solved the operator's challenges with a highly reliable, efficient, and inexpensive solution. The accelerated production led the operator to continue to utilize the system in order to improve project economics and strengthen their acreage position.