

## CASE STUDY

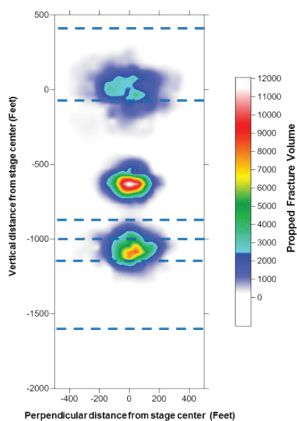
# OPERATOR IMPROVES WELL SPACING TO INCREASE PRODUCTION IN THE PERMIAN



## ! CHALLENGE

The Permian Basin is widely known for its stacked play geology – formations which make it a desirable basin to own acreage in, but also a challenging area in which to optimize completions. This case study highlights an independent oil and gas operator in the Permian that is focused on maximizing recovery in order to provide growth and return opportunities for its shareholders. Taking into account the multiple stacked pay zones in the oil-rich core of the basin, initial analysis yielded the identification of 940 horizontal drilling locations. However, there was still uncertainty around the feasibility of drilling into plays such as the Clearfork and the Jo Mill. To help address the uncertainty, the operator hired MicroSeismic, Inc. (MicroSeismic) to help determine ideal lateral and vertical wellbore spacing, the number of wells required for optimal recovery, and optimal completion design parameters.

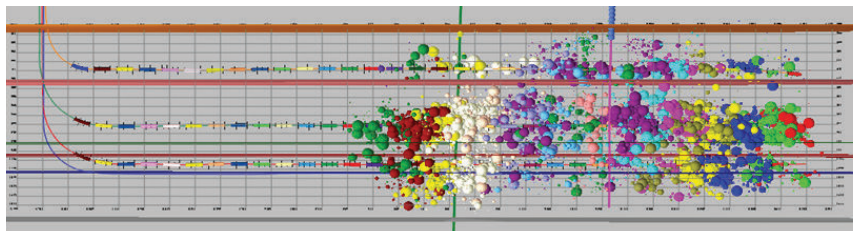
## ✓ SOLUTION



MicroSeismic worked closely with the operator to define clear project objectives and the scope of work to achieve these objectives. MicroSeismic employed both a downhole microseismic array and a mega FracStar® array during the hydraulic fracturing of 3 wells targeting the Middle Spraberry, Lower Spraberry and Wolfcamp A. This report focuses on the results of the downhole acquisition and processing.

The downhole array consisted of 20 levels with 50 foot spacing. The downhole data was processed with MicroSeismic's patented PSET® Downhole technology, which allowed for more accurate and less subjective results than traditional P&S picking technologies.

After processing the downhole data with full waveform imaging, MicroSeismic applied its Completions Evaluation services to quantify the vertical extent of the propped fractures. This analysis showed sufficient vertical propped frac coverage for the Middle Spraberry and Wolfcamp A wells, but insufficient coverage for the Lower Spraberry well.



Analysis concluded that vertical coverage may be improved by a combination of optimizing the well placement on the Lower Spraberry well and by adding another well into the Jo Mill formation. It was also determined that ideal lateral well spacing for all three formations should be between 300 and 400 feet; at higher injection rates for best results.

## RESULTS

Microseismic results helped the operator to further hone in on its ideal well spacing, both vertical and lateral. The analysis also identified the ability to drill into the previously undeveloped gap between the Middle and Lower Spraberry. The operator is now exploring plans to drill an additional 5 wells per section – a move that will significantly increase production. It is estimated that the value of incremental returns resulting from this change will more than cover the incremental drilling and completions costs and provide a huge return on investment in microseismic services.

