fairfield GEOTECHNOLOGIES

Background/Evolution of HTD studies

2011

A decade ago, Fairfield Geotechnologies built the largest contiguous database in the Delaware Basin. The DB1 survey conducted in 2011 had

five times

the density of previous surveys.

2019

Our latest surveys, which began in 2019, utilize improvements in design and sweep frequency that are

10.5 times

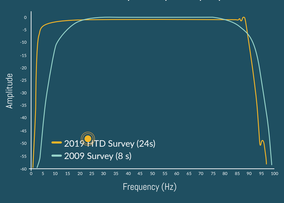
the density.

This is beyond what seemed possible only a few years ago.

How HTD Seismic Surveys Work:

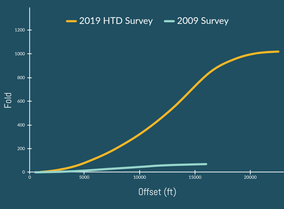
HTD seismic surveys enable higher-order imaging methodologies, utilizing full azimuth data and employing custom sweeps with extended low frequencies to generate more comprehensive subsurface images.

Vibroseis Sweep Frequency Spectra

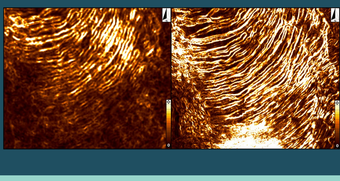


Because HTD acquisition designs combine high fold with a small bin size, they enhance the signal-to-noise ratio and reduce the noise floor, improving vertical and lateral resolution. The increased acquisition of near-offsets enhances the resolution of shallow events.

Fold vs Offset



The fine-scale details produced by HTD seismic surveys in the Midland Basin have served as strong foundations for integrating additional subsurface data and are proven to accomplish the same in more difficult geographies in other shale basins.

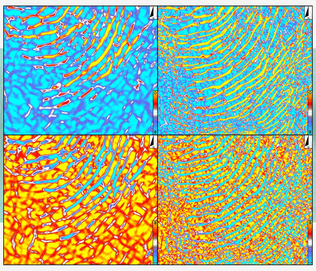


To see our HTD seismic surveys in action, view our paper on predicting facies controls on well performance in Lea County, New Mexico.

What's Happening and on the Horizon With HTD Studies:

These designs enable better steering information, drilling efficiencies, facies prediction, and optimized landing zones in difficult portions of the Delaware Basin. The NOW Frontier also permits higher degrees of data integration.

Using leak-off tests, dynamic formation integrity tests, and other pressure data, HTD studies enable facies predictions and improvements in elastic and reservoir properties knowledge. Additionally, by enhancing the spatial resolution of seismic images, they expose previously unresolved fine-scale geology and enhance fracture propagation modeling and structural and stratigraphic interpretations.



This all permits greater innovation in processing, imaging, and inversion technologies, as well as the potential integration of 4D analyses into exploitation strategies for re-frac and enhanced oil recovery operations.