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Water avoidance, induced seismicity, landing, and sweetspotting solutions for the Permian Basin

David Paddock[1], Dianna Shelander[1], Sagnik Dasgupta[1], Colin Sayers[1], David Ng[2], Andy Walz[1], Carol Boyd[1], and Vasudhaven Sudhakar[1]

[1]WesternGeco[2]Consultant

Twenty-two Delaware Basin Wolfcamp "A" lateral wells within the area of Reeves County with the highest lease cost were examined for profitability. Their seismic attributes were examined for associated causality. A B30 (best 30 days of production) cutoff of 15,000 barrels was determined and used as a breakeven metric. Only ten of the 22 wells passed that hurdle.

Poor wells were found to be afflicted by one or more of the following: landing 200 feet or more too low, fracking into poor reservoir, and/or producing excessive water associated with faulting either above or below the Wolfcamp "A" target stratigraphic level. Use of the seismic data would mitigate the risk of landing too low to hydraulically fracture up into the reservoir. Seismic data could also be used to predict the adequacy of reservoir quality. Finally, surface seismic data could be used to detect the risk of faults that can bring water from either above or below the lateral. The use of seismic data was found to be a crucial tool for ensuring economic success in the Wolfcamp play.

An example of seismic-based geomechanical modeling is also included to address the emerging issue of the prediction of induced seismicity.