

Predicting Lithological Properties along Horizontal Well Paths, Using Seismic Data

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Abstract

With the increase in the number of horizontal wells being drilled from a single well pad, the ability to predict lithological properties from seismic data would greatly enhance well path determining decisions. Identifying potential drilling target zones from seismic data prior to making drilling decisions would also ensure achieving high production rates from the decided horizontal wells within each well pad.

The above task would be accomplished by correlating the existing well log curves from the horizontal wells to the derived seismic lithology attributes such as porosity and impedance. Zones with high porosity and low impedance would be picked up at the well locations and matched with the production rates from those wells. Depending on the degree of such correlations, attempts will be made at predicting the production rates from the proposed wells.

This case study is from a gas producing formation in the Western Canadian Sedimentary Basin. The application of the above method will be illustrated by using the seismic, well, and other relevant data and the success will depend on their quality as well as the degree of correlation that is achieved between them.