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## **Integrated Multivariate Lateral Predictions For Reservoir Properties Via Geostatistical Modeling**

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### Summary:

Hydrocarbon production is a function of various elements such as reservoir quality, petrophysical properties, geophysical properties and also volume. Lateral extent of reservoir body is important information for estimation of hydrocarbon initially in place and the recoverable quantity. A method of integrated lateral prediction towards understanding reservoir geometry and rock properties towards enhanced hydrocarbon production is explored with dataset from Bohai bay, Northern China. The methods of conventional well log analysis, seismic interpretation and geostatistical modeling has been employed for this study. Computation of useful logs like Volume of shale, porosity, permeability, Acoustic impedance and Elastic impedance was primarily done on well logs followed by the identification of potential reservoir formation. Lateral extent of reservoir horizons was traced on seismic reflection data with precision through continuity and dominance. Seismic attributes were also computed to assist in better understanding of the characteristics of the rock units in structure and stratigraphy. Computation of variograms and data transformation was done prior to geostatistical simulations for all rock properties considered. The result shows an all encompassing realization on a static model of lateral rock properties within the zone of interest thereby making it easy for making decisions locating parts of the field with high values in rock and fluid properties as potential portions towards hydrocarbon production.

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