

## Calibration of Pre-Stack Simultaneous Impedance Inversion using Rock Physics

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Rock Solid Images

### Summary

This paper is the third part in a reservoir characterization series. Its objective is to demonstrate the necessity of understanding the rock property responses of a reservoir so that the project results can correctly interpreted. The first step is to check and correct acoustic and density well log curves. For the current study a combination of Raymer for density and Greenburg-Castagna for Vs were applied in the shallow zone above the reservoir. Within the turbidite reservoir section a laminated sand fluid substitution was used to understand its behavior as fluid content varies, and a matrix substitution to understand its behavior as sand content varies. Synthetic gathers were calculated for all models using both ray traced and full waveform algorithms. These exercises showed that AVO analysis could be used to detect fluid changes in the seismic data but not for detecting sand content changes. Rock physics crossplots, however, could make this distinction. The seismic inversion was calibrated to acoustic impedance (AI), shear impedance ( $\mu$ ), and Poisson's Ratio (PR) well log curves and clearly revealed that acoustic anomalies seen in this prospect were the result of sand content changes and not the result of fluid saturation changes.