

Picking the Sweet Spot using Rock Physics

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Abstract

This paper presents the case histories of drilling three successful cretaceous gas sand wells in the WCSB using seismic and rock physics. Ordinary seismic data is used to obtain two key sections of rock properties.

- 1) incompressibility of the rock ($\lambda \cdot \rho$). This parameter is sensitive to pore fluid (gas).
- 2) rigidity of the rock ($\mu \cdot \rho$). This parameter is sensitive to the rock framework or the lithology.

This presentation goes through the actual steps of interpreting the seismic and rock properties sections as well as the crossplots to show how we:

- 1) reduced the risk for drilling well #1.
- 2) prevented a shale plug from being drilled for well #2.
- 3) confirmed that a bright spot on the seismic section was not a tight streak.

Well #1 and #2 are both producing at 2 mmcf per day while well #3 has no production data as it was not near a pipeline. Well #3 does have 3 good reservoir gas zones as seen on the logs and the sections. This practical approach using live examples really helps the geophysicist and geologist understand how this AVO/LMR technology can be used to effectively pick the sweet spot.