

Identifying Gas Channel Sweet Spots through Multi-Component Seismic Interpretation

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Abstract/Excerpt

Lower Cretaceous fluvial sands offer tantalizing, yet challenging gas plays in the Rocky Mountain basins of Canada and the United States. Reservoirs range from single sand channels, often with high porosity and permeability, to stacked sequences of channels hundreds or even thousands of feet thick, generally of low porosity and permeability. Across this spectrum of reservoir types the similar objective is to identify drilling “sweet spots” using available seismic and other E&P data.

In this case study, the effectiveness of multi-component seismic interpretation is compared for two very different gas plays. The first example, from the Western Canadian Sedimentary Basin, illustrates how mode-converted (PS) seismic amplitudes complement traditional (PP) channel interpretation to highlight prospective drilling targets. The second example, from the US Piceance Basin, illustrates how mode-converted and traditional seismic data can be coupled to highlight fault and fracture trends and guide well placement for 250-metre thick tight-gas sand sequences. Emerging techniques for registering and interpreting multi-component seismic data will be introduced and compared.