GeoConvention 2015
GEOSCIENCE
new horizons
Telus Convention Centre • 4-8 May 2015 • Calgary, AB Canada

Exploring the Mannville Group: New insights on an old reservoir

David Cho[1], Thomas Chan[2], Colin Rowell[1] and Evan Mutual[1]

[1]Qeye Labs Canada Ltd.

[2]Citibank Canada

Summary

The Mannville Group in central and southern Alberta consists of various hydrocarbon bearing units including the Glauconitic Sandstone, Ostracod Beds and Ellerslie Member. These targets have been explored extensively in the past, but with varying degrees of success. The spatial extent of these geological trends have been well established, however, the internal reservoir architecture can be complex and drilling success will depend on whether the sands can be properly imaged.

Interpretation of conventional stacked seismic data presents various challenges in mapping the prospective zones. As the stratigraphic column consists of various sand shale sequences, class 2 AVO behaviour is common and amplitudes can potentially stack out due to polarity reversals in the data. Furthermore, the low velocity Mannville coals directly overlying the target zone cause various complex wave propagation effects that can obscure the seismic signal illuminating the zone of interest. This results in mis-ties between well and seismic data that are seen directly at the target zone.

In this study, we address the above issues by demonstrating that an AVO inversion can help resolve the issues related to interpretation on a conventional stacked image by better imaging the sand shale sequences. In addition, the well to seismic mis-ties were investigated through the use of a local Q attenuation function (Liner, 2014) and its effect through the low velocity coals. This has implications related to the time-depth relationship. Furthermore, the effects of deconvolution are discussed to understand and improve the mis-tie at the target zone.

References

Liner, C. L., 2014, Long-wave elastic attenuation produced by horizontal layering: The Leading Edge, **33**, no. 6, 634-638.