

Regional Geological Models South of the Peace River Arch

Peter Dankers*
Divestco Inc., Calgary, AB, Canada
peter.dankers@divestco.com

The area south of the Peace River Arch has attracted much attention recently with several new discoveries and extensive new seismic acquisition programs. Regional geological models, based on clean formation tops can greatly enhance the interpretation and integration of different datasets.

A basinwide three-dimensional geological model of the Devonian provides the basic regional framework. It shows large-scale trends, major tectonic zones and subcrop edges of all major formations. Equivalences between formations are reconciled at this stage. When focussing on specific areas within the Western Canada Sedimentary Basin (WCSB), all regional trends are maintained and combined with more detailed local features. Because local formation grids have a much smaller gridcell size, they make much more accurate models. However, local models should always be compatible with a larger model and contours of two neighbouring local models should match seamlessly at their boundaries.

3D geological models can be integrated with seismic data and interpretations. Time to depth conversion is more accurately done using geological grids rather than just geological tops from wells. 3D velocity models build based on this concept result in more accurate depth models. Seismic attributes can also be converted to assist in developing geological concepts and interpretations.

These principles will be demonstrated in a large regional model south of the Peace River Arch. It shows the relationships between the different formations and the features that contribute to play concepts.