Subsurface Geology of Eagle Plain, northern Yukon

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ABSTRACT
Eagle Plain is a proven hydrocarbon-bearing basin with identified oil and gas reserves in Carboniferous reservoirs. This intermontane basin has been affected by a succession of tectonic events throughout the Phanerozoic, including extensional events of early Paleozoic and Jurassic-Cretaceous ages; and orogenic events of early Carboniferous and latest Cretaceous-Tertiary ages. These events have influenced depositional facies, truncation and preservation of units beneath unconformities, and the evolution of structural traps. All of these features are significant for hydrocarbon exploration in the basin.

A basin-wide grid of seismic lines tied to wells was used to create basin-scale maps of key horizons in Eagle Plain basin. Paleozoic tectonic and paleogeographic elements are readily identified, including early Carboniferous structures in the north, and basin margin facies of early and late Paleozoic ages. A sub-Mesozoic subcrop map illustrates basin-scale truncations influencing the present-day distribution of potential reservoir strata. Mesozoic extensional features have local significance for preservation of units beneath the Late Cretaceous Eagle Plain Group. Tertiary thrust faults, detached folds and triangle zones provide additional potential traps throughout the basin.