

Cordilleran Structural Geometry in the Fort Liard Region: Influence of Subsurface Features

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Recent mapping by the Central Foreland NATMAP Project in the Fort Liard (95B) and La Biche (95C) map areas is combined with potential field and seismic data to evaluate the geometry and evolution of structures in the Liard region. Exposed structures are box folds and subsidiary thrust faults, detached on a regional décollement in shale of the Besa River Formation. Foreland and hinterland verging asymmetry are equally represented in the structures, indicative of a mechanically weak underlying décollement.

Mapped structures illustrate two relevant characteristics: folds with northeast trends interfere with folds having north-northwest trends; and individual folds are offset *en echelon* from adjacent structures. Together, these features produce large structures many tens of kilometres long with apparently sinuous traces. These regional structures are actually composites, with local culminations and saddles, implying that gas accumulations along the structure may form distinct and unconnected pools.

Previous analogue (centrifuge) models indicate that variations in the mechanical properties of the deforming succession (e.g., facies changes) can produce similar interference patterns when their orientation is oblique to the shortening direction. The north-northwest trending structures are parallel to the regional Cordilleran deformation trend; whereas the northeast trending structures are parallel to, and appear to reflect the influence of, deeper features related to the Liard Line and/or facies changes within the overlying Paleozoic succession. Potential field and seismic data are used to assist in the recognition of such features and improve our understanding of the three-dimensional geometry of these complex structures.