

## **New Geological Compilation of the Liard - La Biche Region Provides New Insights into Cordilleran Structural Evolution**

Larry Lane\*

Geological Survey of Canada, Calgary, Alberta, Canada  
llane@nrcan.gc.ca

and

Karen Fallas and Lisel Currie

Geological Survey of Canada, Calgary, Alberta, Canada

### **Abstract**

Recent detailed mapping in the western Liard Basin has significantly revised previous mapping and generated new insights into the depositional history and structural evolution of this region. The area lies within a transition zone where the deformation front and Paleozoic facies and thickness trends deflect eastward. The distribution of stratigraphic units and their facies variations is clarified and facies boundaries of lower Paleozoic units are better resolved. Also, lower Paleozoic strata have been subdivided according to their equivalents on the MacDonald Platform to the south, and the Mackenzie Platform to the north. Sinuous structural trends resolve, in detail, into an interference pattern between north- to northeast-trending structures of the Mackenzie Mountains, and northwest-trending structures of the Rockies.

Intrusive rocks previously mapped as Pool Creek syenite comprise a Late Proterozoic body (Pool Creek Syenite) and an early Eocene syenite of the Ting Suite. Also, subvolcanic trachyte plugs of the Eocene Beaver River Alkaline complex are associated with volcanic and volcano-sedimentary rocks. A newly documented Paleocene basalt overlies Tertiary gravels in the Beaver River valley. These new data help constrain the Late Cretaceous to Tertiary structural evolution in this part of the Cordillera.

A new regional cross-section illustrates low strains, reflected by a thin Cretaceous clastic apron and low thermal maturities at the surface. Such low taper orogens reflect a dominance of low-strength lithologies. A balance of both foreland- and hinterland-directed structures above the Besa River indicates that this unit has very low strength, consistent with the low-taper geometry.