

Petrography and Geochemistry of Late- to Post-Collisional Felsic Suites in the Laird and White Lake Areas of the Northern Glennie Domain, Saskatchewan

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Over the summer of 2017, a Saskatchewan Geological Survey field crew continued work on a bedrock mapping investigation for a project that commenced in 2015. The B.Sc. project that this poster is based on took place in the Laird and White lake areas of northern Saskatchewan. The objective of this B.Sc. project is to characterize the granitoids and granitic pegmatites in the northern Glennie Domain of Saskatchewan. A total of twenty-four samples were collected for this project. The samples will be used to determine the origin and emplacement of the rocks. Four techniques will be used to determine the origin of the rocks: field and orientation observations, geochemical analysis, petrography and scanning electron microscope (SEM) analysis. The project area is in the northern Glennie Domain of the Reindeer Zone. The rocks were formed from the collision between the Rea-Hearne, Superior, and Sask Craton. In the late stages of major tectonic activity associated with the Trans-Hudson Orogeny, there was an emplacement of late- to post- tectonic granitoids and granitic pegmatites. These rocks were emplaced near the end of the D₃ event and deformed by the final deformation event. There are 4 main late- to post- tectonic magmatic suites that are characterized by mineralogy, grain size, foliation/trend and the relationship to the host rock. The Suite I rocks are interpreted to be the oldest of the three main suites. These rocks are characterized by the abundance of plagioclase feldspar (~25-60%) and are relatively deficient in potassium feldspar (~10-20%). The Suite II rocks are characterized by potassium feldspar (~20-65%) and plagioclase feldspar (~10-50%). These rocks are deficient in biotite (<5%) and contain no amphibole. The Suite III rocks are characterized by the abundance of potassium feldspar (>45%) and quartz (~25-35%). Suite IV rocks are characterized by the abundance of potassium feldspar (~45-60%). In the field, the Suite IV rocks were observed in a fault that displaced a Suite III granitic pegmatite dyke which was then infilled with the Suite IV rock. The rocks from Suite I and II contain a weak foliation that follows the regional trend and this indicates that the rocks were most likely emplaced during or after peak metamorphism. Based on field relationships, the Suite I rocks were emplaced before the Suite III rocks as seen in an outcrop that contained both suites. This outcrop contains a Suite III rock that cut directly across the Suite I rock.