

The Steen River Impact Structure in NW Alberta: An Impact-Generated Skarn Deposit

Erin L Walton

MacEwan University, Department of Physical Sciences

Summary (Heading in Arial 12pt bold)

Steen River is an ~25-km diameter complex impact structure in NW Alberta. The age of the impact event has been recently revised to be Late Jurassic (141 +/- 4 Ma). At the time of impact an ~1.3 km sequence of Devonian carbonates, shales and evaporates lay unconformably over crystalline basement rocks. Drill core intersecting the crater-fill deposits sampled an up to 164 m thick unit of polymict breccia, containing entrained fragments of shale and limestone. Subsequent thermal and hydrothermal metamorphism of this unit resulted in partial to complete decomposition of limestone. This process gave rise to an andradite + clinopyroxene + sanidine + titanomagnetite + titanite mineral assemblage, akin to an igneous limestone-replacing skarn deposit.