
**Basement-cover relationships in the
Paleoproterozoic Amer Group, Nunavut**

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The Paleoproterozoic Amer Group, central Nunavut, comprises four sequences (Ps1 through Ps4) unconformably overlying Archean basement of the Rae sub-province. Basement of the study area around South Amer Lake is quartzo-feldspathic gneiss with subordinate metabasalt, intruded by diorite. Ps1 in the Amer Group is the Ayagaq quartzite formed as a stable fluvial to marine platform. Ps2 is a transgressive sequence of Resort Lake siltstone shallowing up to Aluminium River dolomite and intercalated Five Mile Lake basalt. Ps3 comprises

three units recording an overall coarsening- then shallowing-upward sequence, involving siltstone to feldspathic arenite; the Three Lakes, Ora Lake, and Showing Lake formations. Above a profound post- D_1 unconformity, Ps4 Itza Lake arkose is preserved in a small area of outcrop in the study area.

The structural history of the Amer basin is spatially and temporally variable. The regional map pattern is defined by shallowly doubly plunging synclinoria (D_2) affected by later open D_3 folds. Field mapping has documented at least three preceding deformation generations, grouped as D_1 . The basement-cover contact varies throughout the study area; the nature of this boundary is central to elucidating the structural history of the area. The basal unconformity of the Ayagaq quartzite is commonly marked by a distinctive polymictic conglomerate with a schistose matrix. In some places this contact is just a schistose layer, or a sharp discontinuity.

Immediately adjacent to the basement-cover contact, D_1 deformation in the quartzite includes bedding parallel displacements and meso- to macroscopic isoclinal folds; hence, the layered quartzite sequence lying on the basement is defined by fold limbs. Proximal Archean gneiss foliations are sub-parallel to axial planes of the quartzite isoclinal folds. Gneiss and quartzite were first folded together during latest D_1 consistent with a significant decoupling of basement and cover during much of the pre- D_2 deformation. Folding of the basin during D_2 created steep axial planar cleavage. The two-stage development of the tectonic architecture is seen in the post-fabric folding of the basal schist, a presumed detachment, with the basement during D_2 . A primary conclusion is that large tracts of Paleoproterozoic units may be allochthonous with respect to the underlying Archean basement.