

A Cambrian carbonate platform in the Québec Reentrant: new insights from in situ platform core data and slope conglomerates

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The passive margin platform record in Western Newfoundland at the St. Lawrence Promontory consists of an initial Lower Cambrian mixed siliciclastic – carbonate fluvial to shallow marine succession (the Labrador Group) followed by a well developed, extensive but narrow Middle to Upper Cambrian carbonate high energy platform (the Port au Port Group) and capped by a Lower Ordovician extensive and wide low energy carbonate platform (the St. George Group). More than two decades of detailed stratigraphic, paleontologic and sedimentologic studies resulted in a comprehensive evolution framework for this passive margin evolution.

The passive margin platform record in southern Québec in the Québec Reentrant is significantly different. Unconformably overlying the Precambrian basement, the preserved outcrop record consists of an initial Upper (?) Cambrian fluvial to marginal marine succession (the Potsdam Group) overlain by a Lower Ordovician low energy peritidal carbonate platform (the Beekmantown Group) which marks the end of the passive margin stage of the Sauk Sequence. Interestingly, the Beekmantown Group in southern Québec as well as its time equivalent Romaine Formation in Anticosti

Island are both, facies-wise, similar to the upper part of the St. George Group in Western Newfoundland.

The presence of an enigmatic and unexposed Cambrian carbonate platform in the Québec Reentrant has long been known through the documentation of Lower to Upper Cambrian shallow marine carbonate clasts in conglomerates found in the Appalachian Humber Zone which preserved the passive margin slope record. Lithologies documented in these clasts argue for a highly facies-diversified platform (thrombolites, laminites, bioclastic-intraclastic-oolitic grainstones and packstones). Detailed examination of cores from the St Lawrence Platform in southern Québec revealed the presence within the Upper (?) Cambrian Potsdam Group of a previously unreported 10-20 m thick interval of mixed siliciclastics and marine carbonates. These carbonates (impure bioclastic and intraclastic dolomitic grainstones) represent the *in situ* nearshore expression of a Cambrian carbonate platform that existed in the Québec Reentrant. This finding has significant implication for the overall reconstruction of Laurentia passive margin.