The Stratigraphy and Sedimentology of the Connecting Point Group and related rocks, Bonavista Bay, Newfoundland: An example of a Late Precambrian Avalonian Basin

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The Connecting Point Group in the Bonavista Bay area is composed of <3.5 km of Late Precambrian epiclastic, marine turbiditic sandstone, siltstone, shale and silicified sediment; pyroclastic sediment is intercalated in the lower 500 m. Six lithostratigraphic units and ten distinctive lithofacies are recognized. Lithofacies were deposited in basinal and slope settings, prograding fan lobes and channel-levee complexes of submarine fans. Predominance of Ta turbidites and poor development of sequences in the lower 800 m of the group suggest that sediments were deposited on low-efficiency submarine fans as part of a thick volcaniclastic apron that lay adjacent to a volcanic centre. The well-developed channel-levee complex of the next 1000 m of the succession suggests a change to a more efficient fan with time. A shale transition containing thin siltstones and cherts, small to large scale slumps, and a regionally significant olistrostromal mixtite deposit overlie the lower sequence. Above the transition, a sequence of silicified, classical turbidites are arranged in stacks of coarsening- and thickening-upwards sequences, suggesting the existence of a series of well-developed, overlapping, prograding submarine fan lobes. The separation of the sediments into two distinct sequences coincident with: (1) introduction of mixtite into the basin; (2) intrusions of mafic dykes and plutons; and (3) influx of coarse volcanic detritus indicative of volcanic source uplift, suggests an episode of basin extension. The lithostratigraphy and characteristics of the upper part of the underlying Love Cove Group and of the Connecting Point Group resemble Cenozoic models of sedimentation of volcanic arc basins. The linear Precambrian volcanic and sedimentary belts in the Avalon Zone may reflect an ancient arc-basin geometry affected only slightly by subsequent deformation.