

Tectonic implications of regional gravity studies in the Central Carboniferous Basin, New Brunswick

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In 1980, Regional, Residual and 2nd Derivative gravity maps (1:250,000 scale) of New Brunswick were compiled from approximately 7000 gravity data points published by the Earth Physics Branch (E.M.R.). This data base has increased to 20,500 points as a result of an accelerated gravity mapping project undertaken by the New Brunswick Department of Natural Resources. The writers are now in the process of computing a new set of gravity maps utilizing the larger data base.

Interpretation of the 1980 gravity maps indicate very close correlation of major faults with well defined gravity linears in both Carboniferous and Pre-Carboniferous strata. Perhaps the most important aspect of this correlation however, is the delineation of major gravity lows forming distinct linear patterns in the Central Carboniferous Basin. The writers have interpreted these northeasterly

striking features of alternating gravity highs and lows as horst and graben structures in the Pre-Carboniferous basement. Five major grabens are proposed of which at least two are associated with coal deposits identified from drilling. Distinct differences in the palynomorphs present over short distances support a horst and graben model. Major north-westerly trending faults have also been delineated by the filtered gravity data and are identified by the abrupt changes and breaks in the "horst-graben" trends identified in the Residual and 2nd Derivative maps.

Confirmation of the horst and graben structures will aid in assessing the mineral potential and also provide possible targets for further drilling in the Central Basin. To this end, integrated studies of magnetic, gravity, seismic and geologic data are underway in the region.