

**The Carboniferous Bay St. George Subbasin, western Newfoundland: Structural interpretation from a geophysical perspective**

Gerald J. Kilfoil

*Newfoundland Department of Mines, P.O. Box 4750, St. John's, Newfoundland A1C 5T7*

Hugh B. Miller and Samuel T. Peavy

*Department of Earth Sciences, Memorial University of Newfoundland*

*St. John's, Newfoundland A1B 3X5*

The Bay St. George Subbasin of western Newfoundland represents the northeast extension of the Maritimes Basin which opened by northeast right-lateral wrench tectonics along the Cabot Fault system initiated during Devonian time. Gravity, magnetic and reflection seismic data were compiled and interpreted to determine the basement structure and the present configuration of intra-basin lithologies for the offshore portion of the subbasin.

Negative gravity gradients correlate with increasing depth to seismic basement to delimit the offshore subbasin structure as a southeast dipping half-graben filled with up to 5 km of low

density Codroy (Mississippian) sediment. The half-graben terminates against a northeast oriented high-angle fault at the southeastern coastline of St. George's Bay, which uplifts magnetic basement onshore. Basement structure can be traced northward onto the Port au Port Peninsula on the basis of magnetic signatures.

A series of east-west dextral strike-slip faults has altered the subbasin structure, displacing late Mississippian sediments and earlier structural features on the order of 5 km. This overprinting relationship may indicate fault reactivation during late Pennsylvanian time.