

Preliminary geophysical interpretations of the Antigonish-Mabou subbasin

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The Hollow Fault Zone separates the Antigonish-Mabou Carboniferous subbasin from the main Magdalen Basin. Some parts of the Magdalen Basin are deformed in a similar manner to the St. Georges Bay area, while other areas are not deformed and are much different. Geophysical correlations between these basins suggest a difference in sediment thickness and varying seismic stratigraphy across the Hollow Fault Zone. Seismic reflection data immediately north of the Hollow Fault Zone record 2000 to 4000 m of strata, locally folded and faulted. Seismic profiles across the Hollow Fault Zone suggest at least 2000 m of down-to-the-south movement on the fault. Several negative gravity anomalies observed on land in the Antigonish-Mabou subbasin coincide with evaporite deposits, confirmed by drilling. At least six similar anomalies are interpreted from the

gravity and seismic data as low density, evaporite structures beneath St. Georges Bay. The distribution of sediments around these salt cored structures suggests salt flowage coeval with sedimentation. The catalyst for salt movement appears to be unknown, external, tectonic forces. Faults, of uncertain age, offset the base Windsor Group reflection and suggest that low angle, reverse faulting has occurred beneath St. Georges Bay. The base of Windsor Group time structure map indicates the basin is deepest (6000 m) in the northeast and thinning of the sediments and/or evaporites occurs in the northwest and south parts of St. Georges Bay. Computer modelling of gravity anomalies, incorporating interpretations from deep reflection data, is continuing in an effort to better understand overall basin structure and the mechanics of the formation of evaporite structures.