

Gravity models over the Shubenacadie-Stewiacke Carboniferous subbasin, Colchester and Hants counties, Nova Scotia

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The gravity compilation over the low density evaporite (salt) deposits in the Shubenacadie-Stewiacke Carboniferous sedimentary subbasin of south central Nova Scotia has been expanded to cover the area 45°00' to 45°15'N and 63°15' to 63°36'W at a standardized scale of 1:35 000. The compilation now involves almost 1975 historic and modern gravity stations. These data have now been contoured with the "Surfer" contouring package to produce a more accurate contoured representation of the gravity data. The addition of 235 stations to the west has allowed better definition of the area of more positive Bouguer gravity anomaly values to the northwest and to extend the main negative anomaly to the southwest. This work has been sponsored by CanEnerco Limited in support of exploration for possible underground storage of natural gas in salt caverns.

Three geological cross-sectional models have been constructed across the axis of the basin along with one longitudinal model tied to two deep drillholes drilled in the mid-1970's. These two boreholes provide the only calibration to the models to date. Geological sections produced by Giles and

Boehner in their early 1980s mapping and Boehner's major 1986 *Salt and Potash Resources in Nova Scotia*, Bulletin No. 5, provided the necessary background information. The gravity models have led to some significantly different interpretations from the earlier work. a) The Stewiacke Formation (salt) is continuous along the axis of the basin but does not appear to extend northwest of the Otter Brook and Roulston Corner faults or southeast of the Milford Station-Meadowvale fault system. It may be terminated by a steeply dipping fault to the southwest. b) To the northwest of the Otter Brook and Roulston Corner faults the Horton Group sedimentary rocks become much thinner. c) The Admiral Rock Anticline is a salt-cored anticline and there is no evidence for the northeasterly extension at the basement ridge of higher density Meguma Group metasedimentary rocks in the core of the anticline. d) There is a suggestion of a buried granite basement body in the Meguma Group metasedimentary rocks in the southeast part of this area or alternatively there is a large area of lower density Goldenville Formation quartzite.