

Deformation in the Denison Potacan Sylvinite Ore Body, Clover Hill, New Brunswick

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The sylvinite ore body mined at the Clover Hill mine near Sussex, New Brunswick is part of the Windsor Group (Cassidy Lake Formation) of the Moncton sub-basin. The sylvinite is situated close to the NE-SW-trending Clover Hill Fault within a

pillow shaped salt body that has undergone strong internal folding. Lithologies above and below the salt pillow are relatively undeformed, being only mildly warped and fractured by minor faults and joints. The Clover Hill Fault was active prior to

the Carboniferous and again subsequent to the deposition of the Hopewell Formation and has undoubtedly played an important role in the structural development of the basin.

From underground studies it is apparent that southeasterly directed movement occurred across the top of the evaporite body in post-Mississippian times. This resulted in drag fold development within the sylvinitic, as exemplified by the predominantly SE vergence of the folding.

In the past, the Clover Hill Fault has been interpreted to be a high-angle reverse fault which, in itself, is not fully adequate to explain the structures observed underground. As well as the vertical displacement component along the main fault, southeast-

erly directed, top-over-bottom movement has also occurred within the lithologies of the Marchbank Syncline. From a regional viewpoint, the structure can be explained in three ways: (1) General thrusting towards the SE due to regional compression with the main Clover Hill Fault ramping up to the surface and splay décollement occurring across the top of the salt at depth. (2) Strike-slip along the Clover Hill Fault in a transpressional regime with associated sub-horizontal thrusts forming a local "flower" structure. (3) Listric décollement along the top of the salt associated with late extensional events (e.g., the opening of the Atlantic during the Triassic).