

Carboniferous Basins in eastern Cape Breton Island - Near but yet so far?*R.C. Boehner**Nova Scotia Department of Mines and Energy, Halifax, N.S. B3J 2X1*

The Sydney, Glengarry, and Loch Lomond structural basins are situated in eastern Cape Breton Island and are bounded on one or more sides by major faults and preCarboniferous basement rocks in the Kellys Mountain, East Bay and Fourchu Blocks. The major structures in the basins have a pronounced northeasterly trend with the larger Sydney Basin (synclorium) containing three major synclines with interveing arches formed by preCarboniferous rocks of the Coxheath and Boisdale Hills. The Glengarry and Loch Lomond Basins in contrast are relatively simple half graben basins with a common northwest border fault. All three basins appear to represent part of formerly more extensive basins that have been dislocated by faulting.

The stratigraphic successions within the Sydney Basin and the Glengarry Half Graben - Loch Lomond Basin range in age from Early to Late Carboniferous but are distinctly different in most respects - particularly in the Late Carboniferous.

The two principal differences (ignoring thickness and minor facies variations) are: (1) the absence of recognizable Early Carboniferous Horton Group and the earliest Windsor Group in Loch Lomond - Glengarry and; (2) the presence of a major hiatus (regional unconformity) in the early part of the Late Carboniferous in the Sydney Basin. These two features are particularly useful in interpreting the paleogeographic structural and depositional histories of these two areas, which are now in close proximity, but have distinctive stratigraphic records.

This disparity may be attributed to 1) juxtaposition of two distinct areas through lateral motion on the major transcurrent Lennox Passage - Bateston Fault, 2) very localized and dramatically differing subsidence-uplift history related to block faulting, or 3) a combination of 1) and 2). The combination alternative with transcurrent faulting predominant is the favoured explanation.