$^{40}Ar/^{39}Ar$ chronological study of the Liscomb Complex, Meguma Terrane, southern Nova Scotia

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The Liscomb Complex (LC) of southern Nova Scotia consists of high-grade metavolcanic and metasedimentary gneisses (age unknown), granitic intrusions and gabbroic intrusions that are collectively enveloped by Lower Paleozoic Meguma Group lithologies. Field relationships indicate that (1) gneisses of the LC truncate Acadian-age structures in the Meguma Group, (2) xenoliths of gneisses occur within both the gabbroic and granitic intrusions, and (3) leucocratic dykes cut gabbroic rocks. Hence, the inferred chronology of emplacement is (1) diapiric emplacement of the gneisses, (2) gabbroic intrusion, and (3) granite intrusion; all phases are post-Acadian in age (i.e., ≤ ca. 400 Ma). In order to establish an absolute time frame of events and study the thermal history of the region, $^{40}Ar/^{39}Ar$ analyses of mineral phases from all units was attempted and preliminary results obtained on 2 amphiboles (amph), 7 biotite (bt) and 5 muscovites (ms) are reported.

Granitic intrusions: 5 concordant bt and ms age spectra indicate apparent ages of ca. 370 Ma; this includes a bt-ms pair

from one granite sample.

Gabbroic intrusions: 2 amph gave internally concordant age spectra with plateau ages of ca. 370 Ma, while 3 bt analyzed gave either older plateau ages (ca. 376 Ma) or internally discordant age spectra (integrated ages of 377 Ma to 385 Ma).

Gneisses: bt in gneiss immediately adjacent to granite gave a plateau age of ca. 375 Ma, while samples (2 bt, 1 ms) removed from the granite-gneiss contact gave plateau ages of ca. 375 Ma.

The $^{40}Ar/^{39}Ar$ data corroborate the field relationships and, furthermore, indicate that the gneisses may have been emplaced and cooled below the blocking temperatures of the mica phases (300-350°C) at 375 Ma, some 5 Ma prior to the intrusion of felsic and mafic rocks. The concordant amph, bt and ms ages for the intrusions indicate rapid post-crystallization cooling. The anomalously old ages for bt from the gabbroic samples may reflect an excess Ar contaminant.