

**Mineralization indicators in granitoid plutons of  
Cape Breton Island, Nova Scotia**

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Various types of economic mineral deposits commonly occur in genetic association with granitoid rocks, and hence the abundant granitoid plutons of Cape Breton Island are appropriate targets for exploration. In fact, several of these plutons are already known to be

associated with Cu, Mo, Zn, W, and/or other metal occurrences. A study of granitoid plutons in Cape Breton Island was begun in 1978 in cooperation with the Nova Scotia Department of Mines and Energy, to assess the economic potential of plutonic rocks in Cape Breton Island and also to identify aspects of petrology and background geochemistry which may be guides to mineralization. The project includes mapping and sampling followed by petrographic and geochemical studies.

Studies of 16 plutons are completed or in progress. The results show that these plutons generally have I-type characteristics and hence are more favourable for Cu-Mo-W mineralization than Sn or U. Elemental indica-

tors of Sn-specialized or uraniumiferous granites such as Rb, F, Li, Sn, and U and ratios K/Na, K/Rb, and Li/Zn which have proved successful in other areas also suggest little potential for Sn or U mineralization associated with these plutons. A comparison of five of the plutons in Cape Breton Island known to have Cu-Mo±W mineralization with the apparently unmineralized plutons shows differences in geochemistry, especially higher mean background values, wider ranges, and larger standard deviations in As, Ba, Cu, Mo, Pb, Zn, S, and possibly W in the mineralized plutons. Hence this study suggests that some plutons in Cape Breton Island are poor targets for mineral exploration. However, many other plutons have yet to be assessed.