

From the Mineral Inventory Files

Tin, Tungsten, 'Eagle Egg' Breccias and Buried Granite at Caledonia, Queens County

In late 1977 Shell Canada Resources Limited discovered Sn- and W-bearing boulders of quartz and altered Meguma Supergroup metasedimentary rocks south of Caledonia, Queens County (Fig. 1). Follow-up exploration by Shell (1978-1981) then Billiton Canada Limited (1982-1983) consisted of prospecting, geological mapping, till geochemical and geophysical surveys, trenching and diamond-drilling. The exploration returned promising results, but by 1985 the collapse of global Sn prices, low W prices and a bleak outlook for both resulted in Billiton abandoning the property. In 1987, the Nova Scotia Department of Mines and Energy drilled a 681 m vertical drillhole to test for the presence of a buried altered granitic cupola, suggested as underlying the property by gravity surveys carried out by Shell and Billiton. Even though this hole did not intersect granite, thick sequences of highly altered and thermally metamorphosed metasediment were found in the core, as well as numerous skarnoid zones rich in scheelite (up to 1.88% W).

Every exploration effort carried out on the Caledonia property has been promising; collectively, they weave an attractive tapestry. The site is 7 km south of the nearest outcrop of granite, the Devonian-Carboniferous South Mountain Batholith. Exploration results, however, all indicate the property is underlain by a highly evolved satellite pluton of the batholith. It's believed that dyke and breccia offshoots, as well as Sn-W-rich hydrothermal fluid, emanated from this pluton into the enclosing Meguma Supergroup metasediments, producing three main styles of granophile element mineralization.

Foremost is a composite albite granite dyke and breccia complex discovered by Shell. The complex intrudes metasediments along a zone of at least 400 m strike length northwest of Meagher Lake (Fig. 1). This intrusion consists mostly of albitite and albite granite. Brecciated portions of the complex up to 2 m thick contain rounded fragments of albitite and potassic granite, and angular fragments of metasediment. The rounded shape of the granite clasts

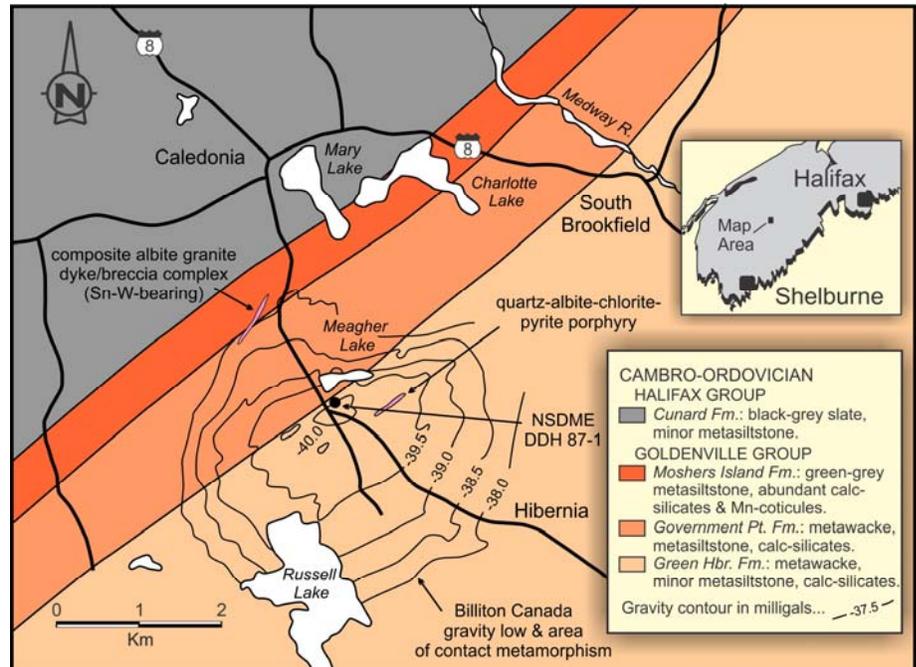


Figure 1. Geology of the Caledonia Sn-W prospect showing the location of a cassiterite-scheelite-bearing albite granite dyke/breccia complex, as well as a gravity low determined by Billiton Canada Limited in 1983.

resulted in the exploration geologists referring to the dykes as 'eagle egg' breccias. These breccias carry cassiterite and scheelite and returned Sn and W levels in the hundreds to thousands of ppm. Associated with these granite dykes and breccias is a system of vuggy quartz veins that have produced the most impressive mineral specimens on the property. The veins commonly have spectacular crystals of cassiterite and scheelite occurring along the vein-metasediment contact and concentrations of 3.8% Sn and 0.75% W have been reported. A third style of mineralization is widespread throughout much of the property as lens- or cigar-shaped pods or beds of skarnoid from a few centimetres up to 1 m thick. These skarnoids are interpreted to be calcareous concretions that have been metasomatized by granophile-rich hydrothermal fluids emanating from an underlying granite. Most of these skarnoids carry impressive amounts of scheelite and typically thousands of ppm W. Shell reported a level of 3% W from a

skarnoid just south of Meagher Lake and a skarnoid with 1.8% W was found in the Mines and Energy diamond-drill hole (Fig. 1).

The abundance of Sn-W occurrences and the presence of cordierite spotting (thermal metamorphism) in slate units over much of the property led both Shell and Billiton to carry out gravity surveys in an attempt to locate the suspected granite cupola. Neither the Shell nor the Mines and Energy drill attempts to locate this pluton were successful, but it is still likely that a pluton is present. Given the highly evolved nature of the granite dykes and breccias, and the abundance of Sn-W occurrences, finding the source granite is vital as it may represent a complete and intact mineralized cupola. Recent years have seen a marked rise in the global prices of both W and Sn. A property like Caledonia, which has strong indications of both elements and exploration targets that have yet to be followed up, should be explored.

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