From the Mineral Inventory Files

A Different Perspective on the Eastville Zn-Pb Deposit

Eastville, Colchester County (Fig. 1), is the site of an intriguing base metal deposit. The deposit consists of stratabound Zn and Pb in the Cambro-Ordovician Meguma Group along 10 km of the contact between the predominantly metawacke Goldenville Formation and the overlying, slate-dominated Halifax Formation. Elsewhere, this contact, known as the Goldenville-Halifax Transition Zone (GHT), is host to several occurrences of Sn, W and base metals. The GHT includes calcareous metawacke and metasiltstone, as well as Mn-rich 'coticule' horizons.

St. Josephs Exploration Ltd. discovered Eastville in 1976 during exploration for gold. The site was explored until 1982, with 28 diamond-drill holes focused on three main sites: the East, West and House zones (Fig. 1). It was thought that all occurred within a 100 m thick sequence of GHT rocks. Most of the diamond-drill holes at Eastville intersected 2-10 m of 1-3% combined Zn-Pb (Zn > Pb). However, there are several higher grade intersections, especially in the more faulted East Zone where 4.09% over 9.33 m, 6.51% over 2.13 m, and 2.19% over 19.8 m were found.

Eastville was deemed a SEDEX deposit based on its similarity to the Aquilar deposit in Argentina. SEDEX is short for sedimentary-exhalative, a class of base metal deposit known to form such giant deposits as Sullivan (B. C.), Red Dog (Alaska), and Broken Hill and Mt. Isa (Australia). SEDEX deposits are stratabound and syngenetic, formed by hydrothermal fluids venting from fault structures into deep submarine basins under black shale-dominated, anoxic conditions. Eastville clearly displays features suggesting a SEDEX origin, but let's examine a few features that do not.

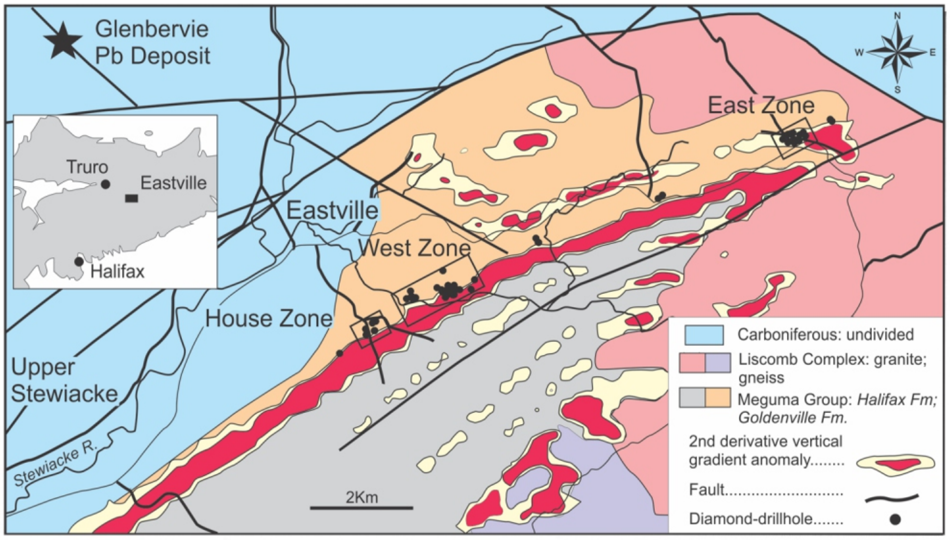

Fig. 1. *Geology of the Eastville deposit with second derivative vertical gradient data.*

(1) Mineralized zones at Eastville, although stratabound, have a definite structural control. The best developed zone is the highly faulted East Zone, where shear structures actually host a portion of the deposit. A study carried out by T. R. Stokes in 1986 (unpublished DNR data) showed that much of the Eastville mineralization is strongly associated with fractures, veins and veinlets.

(2) The Eastville area, especially the East Zone, is almost completely surrounded by granite and gneiss of the Liscomb Complex (Fig. 1). In fact, one of the East Zone drillholes bottomed in gneissic rocks. Before 1982 neither the full aerial extent of the Liscomb Complex nor its unique geology were known, but it may be significant that the complex hosts several base metal occurrences. One of these, the College Lake Pb-Sb Prospect, has the same Pb isotopic signature as the Eastville deposit.

(3) High resolution, second derivative vertical gradient data (Fig. 1) suggest that more than one stratigraphic unit is mineralized at Eastville. These data were not available during exploration of the site; geophysical data available then suggested that only one stratigraphic interval was mineralized. Figure 1 shows that the House and West zones occupy the same stratigraphic interval, but the East Zone may fall on a unit a few hundred metres to the north (i.e. stratigraphically lower). If so, the along-strike extension of the East Zone has never been tested by drilling.

(4) The GHT hosts significant deposits of Sn, W, Zn and Cu. All of these deposits (e.g. Dominique Sn-Zn-Cu, Duck Pond Sn-Zn, Pearl Lake Sn-Cu-Zn, Lazy Head W-Cu-Zn) are attended either by wide-spread skarn or skarnoid formation or by massive chlorite, pyrrhotite, silica, muscovite and garnet replacement alteration. In addition, these deposits are close to metal-rich, two-mica granite plutons and it appears that granite-derived mineralizing fluids, channeled along shear structures, infiltrated and reacted with the chemically receptive calcareous beds of the GHT. Similar processes may have played a role in the formation of the Eastville deposit. Any future exploration strategy at Eastville should address the possibility of structural control, and the chance that there may be more than one target stratigraphic interval.

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