

A NEW FRONTIER IN EXPLORATION FOR CANADA EXPLORING FOR MINES THAT ARE NOT CONDUCTORS

A compilation of a number of DDH surveyed either with Pulse EM or with the GDD SWW probe indicates that the sulphides in many of the base and precious metal mines in Canada are not conductors. Within the ore these surveys detect usually however tiny veinlets of conductive pyrrhotite. A further review of surface EM past discoveries also suggest that many mines have been discovered when a DDH actually testing a graphitic or pyrrhotite conductor also intersected a nearby orebody. IP surveys usually will detect the rich sulphide targets, but they also discover so many barren targets that drilling all of them become hopeless. Many companies, often Australian, have attempted to select their targets by geochemistry but in Canada, anomalies in areas of glacial till, even when present, are usually erratic and often displaced down ice from the geophysical target.

To explore successfully in Canada we should remember that glaciers have scraped the rock surface and that fresh sulphides occur under the till and in floats hidden under the moss. In Quebec, glacial maps of surface depots of all areas covered by forests show that fresh rocks are hidden by one meter or less of till over 40 % of the area of the province. As most of the orebodies, even when not detected by geophysics, contain small, widely separated veinlets of pyrrhotite, a few junior and some major mining companies have been extremely successful at discovering, with modest budgets, a great number of new high grade surface showings. They systematically investigated ground or airborne geophysical targets by Beep Mat surveys. Today's Beep Mats record several times every second not only the conductivity of the ground but also the GPS co-ordinates of each reading. The digital record, once plotted, allows the exploration geologists to decide where to trench with a shovel or sample the floats or bedrock after blasting away the roots and overburden. An \$8 ICP assay plus gold for 36 elements allows to detect even hard to identify metals, such as cobalt, tungsten, vanadium, etc.

A case history over a poorly conductive but rich vein grading 14% copper and 3 gr/t Au of the gold copper Opemisca mine in Quebec, Canada will illustrate our talk.



A diamond drill hole (DDH) drilled under the showing graded 9% copper over a meter. The 9% copper did not react to the GDD SSW EM probe within the DDH, neither on the core. This confirmed that the 9% copper was totally non conductive. Only the pyrrhotite veinlets were reacting in term of conductivity and that is why the Beep Mat was able to detect indirectly the chalcopyrite showing from the surface. From the survey, it was also found that there was a lot of magnetite associated to the copper.



The showing was trenched with a shovel and blasted with explosives. One can see the rust at surface, hiding the sulfides. The Beep Mat detects it at close quarters.

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