A new frontier in exploration for Canada

Except for diamonds, Canada is slowly becoming a nation of old mines, mining lower grade or deeper deposits, and therefore facing closures. Several smelters have closed down and others are facing a similar fate. This results of course because of the competition of new mines in the rest of the world, but also because there are too few new high-grade deposits discovered in Canada. New rich deposits were always able to compete in the world markets.

Edwin Gaucher with a Beep Mat and a gaz plugger, respectively used to find conductors and to sample them.

In this article, we wish to suggest a rather unpleasant hypothesis: basically that the lack of discoveries is due to inappropriate methods of exploration, partly due to misleading descriptions of how past discoveries were made, such descriptions then transmitted uncritically to future explorationists at universities. We came to this conclusion ourselves by making mistakes. Because every one was looking for conductors, we created a prospecting tool, the Beep Mat, to directly discover conductive floats or subcrops rich in base metals. We then redesigned the Beep Mat into a drill hole probe, the SSW, to selectively mine orebodies and reduce dilution by testing every blast hole, and thus, accurately define the limits of the ore even while mining with 60 meters long blast holes. The SSW turned out to be a great success in Canadian nickel mines, allowing to not only define the limits of the ore, but also, providing a satisfactory estimate of the nickel grade. Today, in all of the nickel mines of Canada, every blast hole is surveyed, either, by an SSW or a similar probe.

But in all the metal mines tested, The SSW demonstrated that none of the ores are sufficiently conductive to be detected by any type of EM survey. This was true not only for zinc or gold rich ores but also even in rich high-grade sulfide copper ores. The nickel mines can successfully use the SSW because the nickel grade of a given ore shoot seems usually to correlate closely with the percentage of pyrrhotite present. So far, all the other metal orebodies are not conductors, except when the probe happens to cross a veinlet of pyrrhotite or a layer of graphite. We confirmed our observations by testing the DDH cores of a number of metal mine with our MPP probe, a miniaturized Beep Mat.

Our compilation of a small number of pulse surveys across orebodies confirmed our observations, in all of the cases, the original conductor detected by an airborne or ground EM surveys was caused by a layer of graphite or pyrrhotite that either crossed the orebody or, more often, occurred besides the ore, in one case over a hundred meters away.

In Canada geochemical surveys are, to put it mildly, often difficult to interpret because or the glacial scouring. Today prospectors have already examined most lakeshores, rivers and rusty outcrops that can be spotted from the air. Prospectors who are examining new roads (railroads) cuts, responsible for so many of past discoveries, are

generating new targets, but not at a sufficient rate. We have therefore to invent for Canada a new approach to exploration for "rich" metal deposits, deposits that we have to discover with the small budgets available today. Flying expensive high penetration airborne surveys to discover deeper hidden EM targets may not be the most cost effective approach except perhaps in proven mining camps. There are millions of known but untested airborne targets available.

Base metal mines do often occur in areas characterized by extensive formational conductors. We, of course, are convinced that where they occur in shallow overburden areas, sampling by blasting thousands of small and big conductors signalled by Beep Mats may help to define new valuable drill targets. Even if the metal ores cannot be detected, Beep Mats detect tiny pyrrhotite veinlets or other micro conductors, which often do occur in precious and base metal ores. Gravity surveys, using our digital chain levels, can probably define valuable massive sulfide concentrations along conductors or IP anomalies. And of course, now that it is established that most metal orebodies are not conductors, new approaches to exploration in Canada will be, we hope, established. For one, any copper or zinc showings that were not investigated because they did not react to a MaxMin Survey should be re-examined. We also found rewards by working with Indian trappers who led us to many untested gossans that we blasted by sampling.

Of course, we also believe that one should also spend every year as much on sampling the bedrock under any anomalies discovered as on finding new anomalies. Otherwise, one will spend 10 million dollars to discover new anomalies to finally leave them untested and only sample by four DDH holes two old showings discovered half a century ago.

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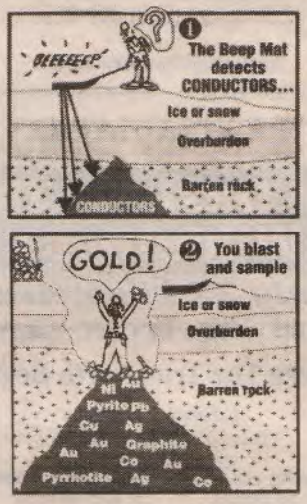

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