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Memo To: R. H. Pinsent **cc:**

From: D. G. Mallalieu

Date: 90-05-10

Subject: East Arm Massive Sulphide Evaluation

Recommendations

The RIME VMS does not warrant further exploration. Placer Dome Inc. should not become involved in the Bond Gold Canada Inc. joint venture proposal.

Background

The East Arm mineral occurrences are part of a series of Cyprus/Besshi-type massive sulphides that are hosted within Upper Triassic Alexander terrane intermediate to mafic composition flows and interflow terrigenous and chemical sedimentary rocks. The Windy Craggy massive sulphide deposit lies approximately 5km to the west.

A prominent magnetic anomaly (RIME anomaly) near the centre of the East Arm glacier was detected by SAMCAN in 1975. A 1980 gravimeter survey by SAMCAN failed to detect a gravity high indicative of a significant sulphide accumulation. The magnetic anomaly was drilled by the St. Joe Canada Inc./Newmont Mines Ltd. joint venture in 1987. Two narrow lenses of pyrite-rich massive sulphide (3.35m and 1.89m) were intersected. A linear UTEM anomaly detected in 1989 strikes southwest from the prominent magnetic high. It was found to be caused by graphitic and pyrrhotitic argillites. Ludwig (1990) mathematically downward continued St. Joe Canada Ltd.'s magnetic survey data and determined that the magnetic response could reflect the presence of a 545mT sulphide deposit.

Bond Gold Canada Inc. (BGC), 100% owner of the RIME claims which cover the known mineral occurrences has approached Placer Dome Inc. with the offer of a 50:50 joint venture for future exploration of the claims. BGC has indicated that drill testing of the RIME magnetic anomaly and massive sulphide is of prime importance.

Local Geology

Mineral occurrences within the immediate vicinity of the East Arm glacier have been classified by Kennedy and Vogt (1986), and Brisco (1987), as being of stratiform syngenetic, fracture controlled epigenetic, and pyrometasomatic nature. All occurrences are hosted within a northerly trending, subvertically dipping, complex sequence of intercalated intermediate to mafic composition flows, calcareous shales, siltstones, argillaceous limestones and minor chert. Younging direction is ambiguous. Kennedy and Vogt (1986) suggested that the sequence is part of a complexly deformed fault block.

Previous exploration concentrated on those occurrences recognized as being of a syngenetic origin. These included the X-Showing, and Pampero (Fig. 22, Kennedy and Vogt, 1986). The X-Showing consists of finely banded layers of pyrrhotite, chalcopyrite, and pyrite hosted within calcareous argillite. Mineralization is exposed for about 20m along strike. The mineralized horizon yielded results up to 4000 ppb Au, 25.0 ppm Ag, 0.56% Cu and 1.06% Zn. The structural hanging wall contains "abundant" quartz/carbonate veins. Pampero is characterized by weak to strong hydrothermal alteration of a sequence of dacitic to andesitic, amygdaloidal, usually pillowed flows and interflow calcareous argillites and ergillaceous limestones. The sequence is weakly mineralized by stockwork-type sulphides.

Drilling (DDH EA87-01,02; Brisco, 1987) of the RIME magnetic anomaly resulted in the intersection of a sequence of graphitic? black shales hosting two pyrite-chalcopyrite-sphalerite-rich lenses. The lenses are 3.35m and 1.89m in thickness respectively. Shallow core axis intersection angles (0-4^{o}) suggests that the dip of the sulphide body is vertical to subvertical. The massive sulphide intervals taken together averaged 2.16% Cu, 0.82% Zn, and 1.3 g/T Au over 5.95m.

Four short diamond drill holes (EA89-03-06, 1055m) tested UTEM anomalies interpreted to reflect strike extensions of the massive sulphide intersected by DDH EA87-01 (Brisco, 1989). The holes consistently intersected alternating units of mafic flows and graphitic argillite. The argillite units were mineralized with "streaks" of pyrite-pyrrhotite, occasionally with millimetre-wide discordant stringers of sphalerite, and 2cm wide bands of pyrrhotite.

The form of mineralization at the X-Showing and RIME occurrence is analogous to mineralization observed at Windy Craggy. Mineralization occurs at the contact between mafic pillowed/amygdaloidal flows and shales, minor cherts and carbonates. Mafic dykes and sills occur stratigraphically beneath the massive sulphide mineralization at Windy Craggy. Preliminary exploration of the sulphide bodies at East Arm has failed to reveal any dyking.

Analysis

Significant accumulations of sulphide mineralization in this geological setting is dependent upon the activity of metal-rich hydrothermal systems during the hiatus marked by the end of active volcanism, and the pouring in of sediments. The presence of frequent repetitions of volcanic-sedimentary stratigraphy in the East Arm glacier area indicates that hiatuses between active volcanism and sedimentation were relatively short. On this basis large masses of VMS's would be unlikely to accumulate as coherent masses.

Mafic dykes occur in the footwall of the Windy Craggy deposit but seem to be absent (or have not been recognized in the East Arm area). Mafic dyking may be an important indicator of areas where there has been a greater intensity of rifting. Rifting areas generally have sufficient heat flows to generate sulphide-rich hydrothermal systems and potential deposits.

Overwhelming evidence suggests that the RIME magnetic anomaly is generated by pyrrhotitic argillites enclosing a minor VMS deposit. No significant gravity response is associated the magnetic anomaly. The UTEM survey failed to generate a

response that would be consistent with a pyrrhotite-rich, coherent massive sulphide body. Drilling has revealed banded/bedded pyrrhotite within argillite units. These factors suggest that the RIME magnetic anomaly reflects pyrrhotite in argillites enveloping a minor sulphide body rather than pyrrhotite as a coherent mass as part of a major sulphide body.

References

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LUDWIG, C. S. 1990: Magnetic-EM Target Potential, East Arm Project, British Columbia; unpublished Bond Gold Exploration Inc. internal memorandum, 5 p.