ATTENTION MR. B. REEVE

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Observations on the Sibola prospect from examination of drill core.

The drill core exhibits some features characteristic of porphyry metal deposits. There are two broadly-defined rock types present, one composed mostly of porphyritic phenocrysts of plagioclase and hornblende, with some quartz and locally potassium feldspar and biotite, and a fine grained intrusive rock composed of feldspar, hornblende and quartz, described as quartz monzonite in the 1977 report from HBOG. These rock types are probably related and represent different stages in the evolution of a common parental magma. There is a broad zone of disseminated and vein sulfide mineralization (pyrite, chalcopyrite and probably some bornite), evident within both rock types, over a distance of several hundred feet in width and depth and several hundred yards in lateral extent. I have not seen the core from the fourth drill hole, a step-out hole 150 m to the east of holes 1-3, but from your description it is similar to hole # 3. This sulfide mineralization occurs in a broad zone of potassic alteration (K-feldspar and biotite), and locally intense silicification.

The sulfide plus silica mineralization is most abundant in the fine-grained intrusive phase. There are no unambiguous contact relations observed, but Gary Belik and myself independantly concluded that this fine-grained intrusive phase is earlier than the coarser grained porphyritic phases. The mineralization does not appear to be derived from within either the fine grained intrusive phase or the comparatively weakly mineralized porphyritic phases, implying that there is an as yet undiscovered source of sulfides, potassium and silica. It is possible that there is a higher grade "heart" of this system that has not been found yet.

There is a clear alkaline character to some of the intrusive rock, with potassium feldspar and biotite locally abundant. Elsewhere in western North America, there is an association between alkaline intrusions and porphyry gold mineralization. Gold concentrations are probably critical to the success of this exploration program.

Several factors suggest either that these holes did not intersect the core of the porphyry system, or that this system did not reach the extreme degree of concentration of volatiles and metals necessary to form a porphyry ore body, including the absence of stockwork quartz veinlets, intense sericite-quartz mineralization and hydrothermal breccias.

Five samples were collected from hole # 3 for study of fluid inclusions. Mr. Belik has promised to select more from hole # 4. We will have a sample suite collected from sufficient range in depth, width and length to characterize this system in three dimensions. From examination of these samples it should be possible to determine the temperatures and salinities of fluids responsible for mineralization. From this a reconstruction of the geometry of the system can be made. Gradients in temperature or salinity of fluids can point towards the center of a porphyry system such as this, which will be a useful guide to further exploration.

Jim Logan