

Geology and Exploration of the Keno Hill Silver District, Yukon, Canada

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Keno Hill, Yukon is Canada's second largest historic silver producing district with 214 million ounces of silver mined at an average grade of 44 oz/t from over forty occurrences between 1913 – 1989. As Canada's only primary silver producer, Alexco Resource Corp produced 5.6 million ounces silver from the underground Bellekeno Mine at an average grade of 725 g/t (23.1 oz/t) Ag, 9.5% Pb, 5.1% Zn between 2011 and 2013.

Since 2006, Alexco has conducted multidiscipline district scale exploration for high grade Ag-Pb-Zn resource over the 244 km² project area and have completed a total of 225,000 metres diamond drilling. The current silver resource base comprises 64 million ounces Indicated and 15 million ounces Inferred. The bulk of these resources are located within new blind discoveries made at the Flame & Moth and Bermingham prospects, where underground mining development is currently in progress.

The high grade Ag-Pb-Zn mineralization is deposited in narrow, hydrothermal siderite – quartz veining developed in the regionally extensive competent, but highly deformed, Mississippian Keno Hill Quartzite Formation. Vein formation is fault controlled and analysis of the distribution of mineralization in the Bellekeno Mine has led to an understanding of the structural controls of the wider mineral system and provided a tool for effective exploration targeting. Aerial geophysical surveys have guided understanding the geologic framework, with detailed petrology and geochemical study of the deposits providing additional exploration vectors.

The silver minerals associated with galena and sphalerite, belong predominantly to the tetrahedrite series, although pyragyrite and native silver are not uncommon. The mineralization is dated at 88 Ma and the deposits are spatially associated with the occurrence of 93 Ma Tombstone intrusive suite related to orogenic gold deposits in the region.