

RESULTS OF DRILLING AND ITS IMPLICATIONS ON THE GALENA HILL PROPERTYSUMMARY

Drilling on the Galena Hill property has been concentrated in sections which show marked geophysical anomalies, with the purpose of testing these anomalies or of confirming the presence of vein-fault systems so that they could be traced into favourable massive quartzites where little or no geophysical anomalies exist.

The presence of two strong vein-fault systems with indications of silver-lead mineralization have now been proven and the pattern and occurrence of these systems suggest that they are very probably ore-bearing, similar to the Hector-Calumet and Elsa-Silver King systems which have produced most of the ore in the district.

Further drilling should now be concentrated where these vein-fault systems cut the favourable massive quartzites. It is expected that such work will lead to discovery of important ore-bearing sections.

A moderately mineralized drill intersection, even if not of ore grade, may be considered very significant in this section since grade cannot be evaluated by drilling in this district.

INTRODUCTION

Ore in the district tends to be localized near cross-faults, in massive quartzite or greenstone, at vein-fault intersections or branches, or where vein-faults pass upward into less competent rocks. Ore-bearing sections often occur 150 to 200 feet away from cross-faults or branches, and may be anywhere up to several hundred feet or more in length with ore occurring in 20 to 30% of this section, and with lesser mineralization in the rest of it.

Evidence on zoning suggests greater depth potential in this western section due to its structural and stratigraphic position. There is no evidence whatever that the presence of zinc in the Gerlitzki vein indicates bottoming of deposits in this vicinity since zinc content in the district appears to depend on availability of open space (structure) rather than mineralogic or temperature zoning. Individual ore shoots may bottom in zinc, but silver-rich ore does recur below such zinc sections.

The Silver Titan property covers the main Keno Hill quartzite section, within which the Silver King quartzite member lies near the top of the stratigraphic sequence. There is no doubt of the continuity of the favourable Keno Hill quartzite section throughout the property because it can be seen in outcrops, a large thickness exists to the west on Mt. Haldane, a similar section occurs across McQuesten Valley 4 miles to the north, and this quartzite formation has been traced about 130 miles west into the headwaters of the Klondike River by Geological Survey of Canada Operation Ogilvie in 1961.

Ore on the main productive section of Galena Hill occurs in two major cross-faulted vein-fault systems, the Hector-Calumet and Elsa-Silver King systems, and is localized where these systems cut massive quartzites of the Hector-Calumet member, and the Silver King member.

The Silver Titan property, equal in extent to the productive section (6½ miles) contains the same favourable quartzite members covered by moderate overburden; and prospecting, geophysical surveys, and diamond drilling have proven the presence of two similar major vein-fault systems of similar pattern with similar mineralization. Two more such systems are indicated farther west, still within the favourable section and well within the known district of high grade silver mineralization.

TITAN (LEO) SYSTEM

The Titan or Leo System of vein-faults extends for over two miles through the generally favourable Keno Hill quartzite formation, passing through massive quartzite low in the sequence, through the most massive Hector-Calumet quartzite member near the middle of the section, and through other higher sections which include the Silver King quartzite member near the south boundary of the property.

This zone was first discovered in 1956 by surface prospecting as the Gerlitzki vein which is a zone of crushed thin-bedded quartzite and gouge up to 20 feet wide and contains a 100-foot long section 10 feet wide which carries 10% zinc, 11 oz/ton silver and 0.5% lead. In this section a select sample assayed 853.6 oz/ton silver, 40.2% lead and 13.9% zinc across 0.5 feet, and a 30-foot length of varying width could be considered to be of ore grade. Drilling beneath the best mineralized section and to the west by United Keno Hill Mines in 1959 did not indicate any substantial ore shoot; two short check holes drilled with better equipment and superior core recovery in 1962 by Silver Titan Mines did not change this picture.

This Gerlitzki vein may represent the root of a pre-existing ore shoot controlled by formerly overlying greenstone, and its occurrence largely in thin-bedded quartzites does not encourage further exploration of this section of it at present.

Drill hole T-3, on the north or footwall side of the vein, intersected another parallel vein zone or zones from 144 feet to 158 feet (14') and from 163 feet to 185 feet (22'), consisting chiefly of crushed quartzite and quartz with minor traces of galena and sphalerite. This hole did not extend far enough to test another parallel resistivity anomaly to the north which appears, from its trend, to be a third main sub-parallel vein zone.

Drill hole T-7, placed about 500' NE along strike from the above holes, intersected considerable brecciation, shearing, and quartz with scattered pyrite and a trace of silver-lead mineralization, the main zone being intersected between 159 and 182 feet (23'). This hole proves northeast continuity of the vein system, and shows that it is a strong structure characteristic of

the producing section of Galena Hill. The hole apparently was not extended far enough to test the third zone indicated to the north by geophysics.

Although the third zone to the north, and in fact any of these zones, may contain ore in this vicinity, the general thin-bedded character of the quartzites is not as favourable as the more promising sections of massive Hector-Calumet quartzite to the northeast. Such a strong, branching, vein-fault system with high silver-lead ratios indicated in it may be expected to make ore in these massive quartzites, especially since a major cross-fault indicated near this quartzite member would favour localization of ore in its vicinity.

On the northeast projection of this vein-fault system several drill holes have confirmed the continuation of strong vein-fault zones where indicated by resistivity anomalies.

Hole R-1, drilled to test an attractive combination of resistivity, electromagnetic, and gravity anomalies intersected two strong but barren-looking shear or vein-fault zones from 196 feet to 211 feet (15') and from 225 feet to 238 feet (13').

Hole No. 2, drilled in 1956, intersected gouge and shattered quartzite between 103 and 118 feet (15'). Hole No. 3, also drilled in 1956, intersected three sections with no core recovery between 235 feet and 271 feet (36'), 288 feet and 312 feet (24') and 313 feet and 324 feet (11'), from which hole abundant pyrite and minor galena and sphalerite in mixed up sludge gave an assay of 1.9 oz/ton silver and a trace of lead from panned sludge.

Hole R-2 drilled to test a strong resistivity anomaly at a projected vein-fault intersection, passed through a sheared vein-fault zone between 153 feet and 174 feet (21').

Further drilling on this vein-fault system should now consist of 4 or 5 holes spotted to intersect the projected vein zone indicated as passing through the massive quartzite section where resistivity results show a definite but weaker trend between areas of high resistivity indicative of massive quartzites. Since each of the other two similar vein-fault systems on Galena Hill, the Hector-Calumet and Elsa, have been very productive in this quartzite member, it is anticipated that sufficient drilling should encounter similar ore in this system.

KPO NO. 1 SYSTEM

Resistivity anomaly trends, checked by electromagnetic results, indicate a strong system of probably two northeast vein-faults extending through KPO No. 4 and KPO No. 1 claims northeast into the Leo claims. A 30-foot test shaft on KPO No. 1 claim intersected steeply-dipping graphitic phyllite with a minute stringer of galena, apparently some distance on the hanging wall side of the zone.

On the Leo claims outcrops of the Hector-Calumet quartzite members show rusty fractures from which a 15-ounce silver assay was obtained, again apparently on the hanging wall side of the general zone through which projections of this KPO system would extend.

To the northeast of this section, drill holes T-1 and T-2 both intersected strong vein-fault shear zones which carried considerable pyrite and traces of galena. T-1 intersected one zone between 84.6 and 105.3 feet (20.7') and T-2 intersected two zones between 46.5 and 60.0 feet (13.5'), and 100.5 and 112.0 feet (11.5').

The strength of zones and pyrite mineralization favours this vein-fault system as a second structure which very likely would contain ore in the Hector-Calumet quartzite member.

WESTERN SYSTEMS

On KPO No. 18 claim another northeast vein-fault system is indicated in the vicinity of the projection of the Hector-Calumet quartzite section, and on KPO No. 28 claim still another strong branching system is indicated by resistivity results.

Neither of these localities have been tested by drilling or other means but from their pattern, trend, and occurrence in the same favourable section, they may be expected to be similar in character and potential to those already known since they also occur in the main silver-bearing part of the district.

CONCLUSIONS

Although drilling to date has not proven up an orebody, this work is now recognized as having been done in the less favourable sections, and considering the similarity in pattern, extent, rock types, silver mineralization, strength, and all other factors, the four known and indicated vein-fault systems could very well contain the same type of highly productive ore bodies that have characterized the main producing systems of the district.

The chief producers, Elsa and Hector-Calumet, lie in the massive Hector-Calumet quartzite section, forming only two such major vein-fault systems. Since the history of the camp shows that productive veins occur at intervals from a few thousand feet to 4 miles apart along the south limb of the McQuesten anticline, there is little doubt that such potentially productive veins do indeed occur on the Silver Titan property, corresponding to recently confirmed zones and geophysical patterns which are identical in pattern to the known vein zones.

The Silver Titan property could thus have a potential similar to that of the productive portion of Galena Hill which has produced over \$125

million (about \$200 million at present prices) in silver-lead-zinc and cadmium from very profitable operations, and still has considerable future productive potential.

The initial risk expenditure of about \$125,000 in drilling of this property is thus well justified.

ADDITIONAL NOTES ON GALENA HILL PROPERTY

Low resistivity values and some pronounced electromagnetic anomalies occur in two principal situations:

1. Along or next to vein-faults or cross-faults where graphitic sections have been sheared or pyrite and other sulfides provide conductors.

2. At principal contacts of massive or competent beds or in narrow graphitic beds within them where longitudinal or bedding-plane slippage has occurred in incompetent graphitic beds, providing conductors. The localization of most conductors along such E-W bedding-plane trends even next to known or indicated NE vein-fault trends indicates that most strong resistivity lows or electromagnetic anomalies are caused by graphitic material. The two most pronounced or continuous E-W trends are:

- (a) Electromagnetic anomalies on the AA group and resistivity trends on the KPO group corresponding to the approximate upper contact of the main quartzites (approximately equivalent to top of Silver King quartzite member)

- (b) Resistivity and some electromagnetic anomalies near the top and bottom of the Hector-Calumet quartzite member on the Leo and KPO claims.

Detailed contouring of all resistivity values shows the trend of NE-striking vein-fault zones more completely than indicated by contours of only the lowest values shown as on the compilation map. These additional extensions of known, confirmed, or indicated zones, as well as other incompletely indicated zones, are shown on the compilation by further intermittent lines.

Where the vein-fault zones cut across the most competent quartzite sections, their trend changes (to a more northerly direction), a commonly recognized characteristic of faults in general when cutting rock types of differing competence. This change in direction leads to hindered movement, branching of the structure, and localization of favourable open space for ore deposition in the competent quartzite sections. Localities where such deviations in trend occur in passing from incompetent sections (or low resistivity values) into competent sections (or higher resistivity) are as follows:

Locality

Deviation Northerly as Vein-Fault
Passes NE into Competent Rocks

Hector-Calumet	10 - 15° progressively into vicinity of Hector-Calumet quartzite
Elsa	Insufficient data due to being faulted off, but shows northerly strike.
Silver King	15° into Silver King quartzite
Leo Zone	5 - 10° into Hector-Calumet quartzite
KPO #1	15° into projection of Silver King quartzite 25° out of Hector-Calumet quartzite into Lower Schist
KPO #18 & 20	15° into projection of Hector-Calumet quartzite
KPO #28 & AA#21	15° into high resistivity area

In accordance with known localization of ore in such competent quartzite sections, these localities where a more northerly trend is indicated within known competent quartzite or corresponding high resistivity areas, should be the prime targets for diamond drilling.

The chief proposed target zones are thus in these sections, primarily in the LEO and KPO No. 1 zones (4 or 5 holes each), secondarily in the KPO No. 18 and No. 28 zones, and perhaps also in localities such as NW corner of KPO #20, SE corner of KPO #18, and southwest corner of KPO #17. The first two zones, about which most is known, should provide information and mineralized intersections upon which further drilling at the other zones would be warranted.

The compilation of information to date gives a good structural picture upon which a sound programme of exploration can be based.