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To: G. H. Davenport  
From: D. H. James  
Subject: Re Lustdust

March 19, 1964.

Work on the Lustdust property in the 1963 season was primarily designed to obtain more detailed knowledge of the #1 zone which contains the highest silver values, to clean out for reexamination trenches on the other zones, and to survey and correlate the Canyon Creek copper showings with the rest of the property.

A crew of four men spent about 8 weeks on the work. I visited them twice and examined all the showings.

#### History

Previous work has been described in detail in Emil Bronlunds reports on 1952, 1953, 1954, and 1960 field seasons. I summarized the results in a report dated August 24, 1962. Hrkac in a report dated Jan. 21, 1964 has worked out some possible tonnages and values as an aid to evaluation.

#### Geology

##### Zoning

An interesting feature of the regional geology has not been previously described. It is the apparent zoning from northwest to south-east. The showings in Canyon Creek at the north and of the property consist of minor chalcopyrite in massive garnet skam in which flakes of specular hematite are common.

South of Canyon Creek the #4 zone consists primarily of massive pyrrhotite and pyrite with marmatite, although some Jamesonite occurs in separate stringers. The Canyon Creek and #4 zones are approximately in line.

Farther south and east in a parallel structure is the #3 zone. The showings are entirely oxidized at surface, and cannot be accurately related mineralogically.

Again south and east is the #1 zone which contains primarily Jamesonite, galena, sphalerite, and pyrite as lenses in a vein which contains a good deal of gouge and is a low-temperature type of deposit.

##### Bedrock

Formations in the area are limestone, argillite, and intermediate volcanics. They appear to be, complexly folded in detail, but on the broad scale strike a few degrees west of north and dip steeply west. They are intersected by quartz monzonite and andesite dykes which tend to strike parallel to the bedded rocks.

The mineralization is later than the acidic dykes.

#### Showings

The zones will be described separately, most of their common features having already been mentioned.

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To:

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#1 Zone

This zone is a gougy fault zone in which occur lenses of mineral, both massive and disseminated. It probably has numerous branches, and these with the irregularity of the vein itself give erratic drilling results. I do not agree with Bronlund that the vein is faulted.

The vein cuts limestone, argillite, and dyke, and appears to be weak and gougy where the walls are argillite. It has been traced for 1500 feet on surface, has been drifted on for 320', and has been drilled with 10 holes. The vein appears to dip steeply east.

On surface four shoots are indicated. The first two are each 25 feet long. A drift under them obtained very poor results and indicates the vertical continuity is not much better than the lateral.

Drilling started under the best shoot which is 255' long, 7' wide, and averages .13 oz gold and 23 oz silver. Results were uncertain due to core loss, but in each hole some mineralization was found which correlates with the structure, and in holes 2 and 33 values were cut which indicate the main shoot continues on dip for at least 250 feet. In this shoot tonnage potential is 135 tons per vertical foot.

The fourth shoot is 75 feet long and lower grade. One hole below it obtained indifferent results. Hole 9

The main potential of #1 zone is thus some 34,000 tons at .13 oz Au and 23 oz Ag plus possibilities of smaller shoots at comparable grades. This shoot is worth roughly \$ 1 million gross, but would not in itself support an operation in this location. Accurate profiles are not available, but a first underground look at this zone would involve about 500 feet of crosscut and 1000 feet of drift for a total cost of roughly \$90,000.

#2 Zone

This zone is small and so thoroughly oxidized that values are uncertain. It is to be regarded merely as an adjunct to the other zones.

#3 Zone

Two types of showings are found in this zone, both completely devoid of sulfides on surface.

The first type is a light orange - brown material composed of porous earthy impure limonite and hemimorphite, a hydrous zinc silicate. The zinc content averages over 10% and attains 25%. Lead ranges from nil to 10%, silver from  $\frac{1}{2}$  to  $3\frac{1}{2}$  oz, and gold mostly trace with ore assay of .30 oz, and two or three others about .1 oz.

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One set of three trenches H 21-23 indicates a continuous deposit over 100 feet long, but the rest are erratic in shape. The material appears to lie in depressions in limestone and has not been proven to have any depth.

The other type of showing is represented by one large lense of dark reddish brown earthy limonite with some quartz fragments. Surface assays were low in lead, 1-4% zinc, 1-4 oz silver, tr - .26 oz gold. A 20' length of trench J 5 averages .23 oz gold and this assay has been checked and confirmed.

Four holes were drilled in this zone in 1953 and six in 1954. Very little core was recovered. Results in general were similar to those on surface. Some sulfides were encountered at depths of 160 feet - reportedly pyrite and arsenopyrite. The zone appears to dip steeply west. Two deep holes cut fault gouge from which sludge assays ran 11% and 17% zinc with negligible gold and silver.

Bronlund has interpreted this as a fault cutting off the main sulfide zone in a similar manner to the #1 zone. It appears equally likely that the fault is the vein itself, and that the oxidized area has developed in and adjacent to a mineralized shoot within this zone or branching from it. Acid generated in a pyritic vein can alter a large volume of limestone wallrock.

The potential of #3 zone is unknown with respect to both tonnage and primary grade. The main structure appears to be a vein containing mineralized shoots. Deeper drilling appears to be the only method of testing the vein in primary mineralization. Oxidation and graphitic argillite probably rule out geophysical methods.

#### #4B Zone

Except for 2-3 feet of hard "iron cap type" gossan mineralization in these showings is fairly fresh. It appears to be a replacement body of pyrrhotite, pyrite, and sphalerite with some jamesonite and chalcopyrite. Two gold assays of .44 and .78 are recorded, but most are in the range .04 - .12 oz. Silver, lead, and antimony are low except in a lense of massive jamesonite. Copper is less than .5% with one exception. Zinc is the only mineral of possible commercial interest with assays concentrated in the 6 - 10% range.

The mineralization occurs at the contact of limestone with argillite-schist or greenstone. This contact strikes a few degrees west of north and dips steeply west, but the structure may be more complex - in some trenches irregular drag folding is evident. This zone has never been drilled. It is exposed on strike for 500 feet in 6 trenches, although some of the trenches were sited on magnetometer anomalies and may be concentrated on the best mineralization. Limited trenching and magnetometer work has not been able to extend the known zone.

Potential of #4 zone is in the order of 500 tons per vertical foot at .08 oz Au, .5 oz Ag, 4% Zn, .5% Pb. This is decidedly low grade, but some

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drilling in search of greater widths may be in order.

Canyon Creek Zone

This zone was apparently first referred to as zone 4 or 4A. The mineralization found to date is very minor and low grade, consisting of chalcopyrite in limestone near skarn.

Conclusions

Nothing so far known on this property constitutes commercial ore. There is so much mineralization, however, that some continued exploration is desirable. Because surface oxidation is so deep and overburden is so prevalent, deep drilling is the best method of continuing work.

To permit the most effective spotting of holes it is recommended that during the 1964 season a series of profiles be run across the main showings, access routes be located to drill sites, and possible adit locations be investigated.

Following this a minimum of six 500-foot holes can be drilled, two each in zones 1 and 3, and two in zone 4 after shallower drilling has established the dip.

DHJ/sd

