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SILVER STANDARD MINES LIMITED
(NON-PERSONAL LIABILITY)

September 18, 1969

Mr. W. M. Sirola, P. Eng.
Kerr Addison Mines Ltd.
402 - 112 West Pender Street
Vancouver, B. C.

SUBJECT: Liard Copper Mines Ltd.

Dear Bill:

Our consultant, Dr. R. H. Seraphim, has recently spent four days at the Schaft Creek property. I enclose for your information, a copy of the brief report he compiled upon his return.

We are again generally encouraged by the result of this year's work. In particular, the fact that the good grade breccia zone appears a further 3,000 feet north opens up a lot of ground with good potential. The program for this year is virtually complete. Hecla has recently stated that they are leaving the two drills on the property over the winter months and that much drilling remains to be done.

Yours very truly,

SILVER STANDARD MINES LTD. (N.P.L.)

A. C. Ritchie, P. Eng.
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MEMO TO

SILVER STANDARD

RE

SCHAFT CREEK PROPERTY

LIARD COPPER MINES

INTRODUCTION:

The following text, and accompanying maps, provide a summary of the information gathered during my visit September 9 to 12 inclusive. Hecla expects to complete their ninth drill hole within the next few days, and this will end their on site work this season. The data from this remaining drilling and assaying should be acquired later, and assembled in a more complete report.

SUMMARY:

The 1969 season's work showed some very encouraging and some disappointing results. The West or Breccia Zone of high grade was not extended appreciably by two holes, one to the north and the other to the south. The Central Zone (V-west limb) was tested by one new hole with fair results. The Eastern Zone (V-east limb), and largest zone, is confirmed by two 'fill-in' holes at 500N and 500S, but was not extended with good size and grade by the further holes to the north

and at depth. The most encouraging development is the good width of mineralization intercepted in the Paramount Hole P-3, 3,000 ft. north of and on trend of the West or Breccia Zone.

GEOLOGICAL:

The work has expanded the geological information, without changing the facts that we have a great deal to learn yet about the habits of the mineralization, and that we should continue to remain wary of becoming dogmatic regarding any particular hypothesis. We know that in general the better mineralization is associated with faults, broken zones, breccia, and changes in rock types and well altered (feldspathized) zones. However, the number of locations where these favourable conditions appear, and are not accompanied by good grade mineralization, continues to be frustrating. One other frustrating item is that in spite of the exacting detail with which Hecla personnel have logged the core, one still has to examine the core to see what it looks like. Their system leaves out one important visual aid for rock identification - namely color; and one other rock characteristic which might prove to be the most important of the local ore controls on the property - namely brittleness.

We still do not know the stratigraphy of the volcanics within the mineralized zone but when the remaining data becomes available, we might try to work the fragmental volcanic horizon or horizons through on the sections. I sus-

pect that the fault zones will make correlations unreliable, but the exercise could be worth a try.

WEST OR 'BRECCIA' ZONE:

Drill hole 39 showed the breccia zone is almost terminated by a fault at 1,000 south. A small intercept (20 ft.) of well mineralized (2.89% Cu) was cut, followed by gougey chloritic material. The fault is a 'major' and with little doubt the same one which was previously intercepted in holes 37, 31, and 27.

Drill hole 41, at 500 North, also failed to obtain the hoped-for copper values in the breccia zone. It did intercept the breccia itself, just west of the collar of hole 24, but the mineralization found therein is chiefly pyrite. The breccia zone, however, continues to the north, and probably lies west of holes 20 and 21. Both magnetics and I.P. suggest the zone continues on trend, and in fact it may even continue 3,000 ft. north of hole 41 to join up with the breccia in Paramount hole P-3. (See map.)

We know of no reason at present why the zone should become more pyritic and less cupriferous in places as in hole 41 - perhaps it is related to the rock type transgressed, but as yet we have no correlation whatever regarding stratigraphy within the mineralized zone.

CENTRAL ZONE:

Hole 43 intercepts this zone, but the hole is not long enough to ensure that it has cut the full zone. The intercept shown on the map has a weighted average of 0.48% Cu - 0.028% MoS_2 across 410 ft. Hole 41 has a short intercept of good grade near the collar - 34 ft. of 0.56% Cu - 0.02 MoS_2 which may belong to the Central zone. Hole 45, now drilling, should intercept the zone in the bottom part of the hole. The Central zone will need cross-sectioning at 500N and 500S before it can be considered continuous. This Central zone may, on its northwesterly trend, merge with the West or Breccia zone west of drill holes 21 and 22 (Holes 21 and 22 show highly pyritic and altered core, though little copper sulfide). Both the I.P. and magnetics indicate continued favorable ground west of (and east of too for that matter) drill holes 21 and 22.

EAST ZONE:

The Holes 43 and 45 (visual inspection of the core only on the latter as assay results are not yet in) continue to show a large barren area between the Central and the East zones, confirming the results in Hole 35. The East Zone itself, however, is well filled in by this season's drilling of Holes 40, 42, 44, and 45. Holes 40 and 45(visual inspection only) confirm the strike continuity of the zone, and will now permit some detailed work which can give some approximations of grade and stripping ratios to within a margin of error of perhaps 10 to 20%.

Hole 42 drilled under Hole 36, and 44 drilled 500 ft. north of 36, were both disappointing holes, though assays are not yet all available. Neither 42 or 44 showed the large amounts of strongly feldspathized rock or intrusive, such as was intercepted in #36, and neither contained the long intercept of abundant molybdenum which characterized 36. The "intrusive" showing in Hole 36 must be sill-like, or perhaps a southerly plunging pipe-like structure. These feldspathized volcanics or syenitic intrusive have been found in similar deposits elsewhere to make unusually irregularly shaped structures.

PARAMOUNT: (See 400 scale map)

Two holes P2 and P3 were drilled to complete a cross-section with the old P1 hole. P2 was drilled 801 ft. westerly towards the main intrusive contact, and cut much intrusive, and the following mineralization:

Ft.	Cu	MoS2
30 - 60	0.057	0.001
60 - 130	0.40	0.006
130 - 800	0.057	0.001

P3 was collared 800 ft. east of the old P1, and cut the aforementioned breccia zone from 220 ft. to 341 ft. The remaining hole was well broken up by feldspathic dykes. Mineralized intercepts are as follows:

Ft.	% Cu	% MoS2
40	0.05	0.002
70 - 150	0.64	0.142
or 70 - 450	0.43	0.079
450 - 760	0.14	0.027
760 - 790	0.32	0.07
790 - 1200	assays to come	

RECOMMENDATIONS:

The cross-sections show many large blank spaces near surface, in spite of the fact that near surface information is almost invariably obtained with least expense and time. Further, many areas outside of the main area of drilling remain as prime prospecting targets.

Much valuable information could be obtained cheaply by percussion holes to 300 or 400 ft. depth. It should be realized that angle holes as shallow as 45 degrees are possible in favorable percussion drilling conditions such as are believed to pertain at Schaft Creek. Further, the airstrip there has been tested by the Bristol freighter last season, and found acceptable so that the required large equipment can be moved in easily now. The $3 or so direct costs per foot for percussion drilling are in sharp contrast to the $10 to $14 direct costs per foot for diamond drilling. The speed of percussion drilling also tends to lower overhead costs.

I continue to recommend that this method of drilling

be used to precede and complement the diamond drilling. Percussion drill holes could be used at Schaft to fill in near surface on the present cross-sections; determine the south limits of mineralization (south of 33 and 38); locate and sample the higher grade zones such as the West or Breccia Zone on say 250 ft. section lines; prospect the north trend of the Breccia Zone and Central Zone towards the Paramount drill holes and follow the Paramount mineralization south and north. Diamond drilling at depth of the larger and better grade sections is of course a necessity, but the location of the diamond drill holes can be much more discriminatory, and their number and length can be substantially decreased.

The above may sound critical of Hecla's work, but constructive criticism is, after all, a reason for the inspection. One has also to complement Hecla in that the work they are doing is also completely constructive and their records of it are far more careful and detailed than commonly found in the industry. I enjoyed the visit, and continue to be optimistic regarding the property's future.

R. H. Seraphim

September 1969