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*Part of Background
Material for
N.M. K.A.P.
proposal.*

PROPOSED EXPLORATION

MARC PROPERTY

UPPER WHITE RIVER DISTRICT

YUKON.

SILVER CITY MINES LTD.

November 10, 1966

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MAPS

(in pocket)

Figure 1- Location Plan

INTRODUCTION

Silver City Mines Ltd. is the owner of the Marc claim group which covers the site of the original copper discoveries made on Upper White River, southwest Yukon, in 1905. The writer visited the property on October 31, 1966 to inspect the rocks outcropping in the area and topographic conditions. The writer has worked as a geologist in the Yukon for almost four years and is completely familiar with northern conditions.

PROPERTY

The Marc property consists of 144 contiguous claims which are registered in Whitehorse, Yukon as follows:

<u>CLAIM NAME</u>	<u>NO.</u>	<u>GRANT NO.</u>	<u>OWNER</u>	<u>EXPIRY DATE</u>
Marc 1-32	32	Y4991-Y5022	Silver City Mines Ltd.	April 26, 1967
33-34	2	Y5304-Y5305	" "	May 5, 1967
35-56	22	Y5023-Y5044	" "	April 26, 1967
57-144	<u>88</u>	Y5216-Y5303	" "	May 4, 1967
Total	144			

In addition, Silver City Mines Ltd., under optional purchase agreement dated October 14, 1966, controls the following six claims which cover the site of the original *discovery* claim.

Sleggard 1-2	2	90561-90562	A. Rivers	Sept. 4, 1967
Goldenhorn 1-4	<u>4</u>	90563-90566	A. Rivers	Sept. 4, 1967

Where the term "Marc property" is used in this report, these six claims are included.

One claim exists within the boundaries of the Marc group which is not owned or controlled by Silver City Mines Ltd. The Last Treasure claim was patented on January 31, 1916 as #12081, Lot 15, Grant 901. It is wholly owned by the North American Transportation and Trading Co., Chicago, Illinois.

LOCATION AND ACCESS

The Marc property straddles White River at the Upper Canyon, just upstream from its confluence with the Klutlan (Generc) River. It is about fifteen air-miles from the nearest point on the Alaskan Highway, Mile 1168, which, in turn is 250 miles by road northwest of Whitehorse.

The nearest fixed-wing aircraft and helicopters are based in Whitehorse. Two small lakes are suitable for small aircraft, one on the Marc claims on the southeast side of White River, and the other a half mile north of the property boundary on the northwest side of the river. Because most of the property lies within the fork of the two rivers, both of which are glacier fed, wide and dangerous in spring and summer, it cannot be reached by all-weather road without the construction of a major bridge. A winter road about twenty miles long can be constructed along the east side of White River without much difficulty, crossing the Klutlan River on an ice bridge.

HISTORY

Prospectors searching for placer gold discovered native copper float in the gravels of White River in 1905. Further prospecting uncovered native copper and primary copper sulfide minerals filling narrow fractures and vesicles in fine textured, massive volcanic flows. A few shallow trenches and short adits were put in but failure to find any large exposures discouraged further exploration and the area has remained unexplored since that time. All the original claims, except the patented Lost Treasure, were abandoned. The first recent claims, for which records are available, were recorded in 1962. Until now, modern scientific exploration techniques have never been applied to the White River copper district.

REGIONAL GEOLOGY

According to Geological Survey of Canada map 19-1958, Slaggard Ridge is bounded on both sides by westerly dipping thrust faults. These are probably related in age and origin to the forces which produced the St. Elias uplift and the Shawkak Fault. Outcrop is relatively abundant to the west and consists of young volcanic flows and sediments, of Paleocene age, overlying older volcanics, probably of lower Permian age. Between the faults, the G.S.C. has mapped a wedge of yet a third group of volcanic rocks, upper Triassic or Jurassic in age, which are midway between the other two lava piles in the geological history of the area. These

latter flows overlies a sedimentary sequence closely related in time to the lower Permian volcanic rocks. Further to the southeast, along Slaggard Ridge, Permian Volcanics outcrop. To the northeast, a five-mile wide, drift-filled valley, the Duke Depression, trends northwesterly and separates the previously mentioned volcanics and sedimentary rocks from a granodiorite stock.

The lower Permian volcanics are greenish, sheared rocks which have been extensively altered to chlorite and amphibole. They can be well described as "greenstones". The related sediments consist of limy argillite and limestone with lesser amounts of sandstone, conglomerate and chert. It is not certain if the sediments, which generally dip about 60 degrees northeast, are conformable with the volcanics.

The Triassic-Jurassic volcanics are distinctive purple, amygdaloidal flows, consisting of chlorite, calcite and chert amygdules in a massive, fine-grained matrix. The attitude of these flows is not known.

MINERALIZATION

Information on the original prospecting done in the area is sketchy and is contained mainly in G.S.C. Memoir 50, 1921. The original showings were located in the purple flow rocks on the steep valley walls some 100-200 feet above the river. Native copper, chalcocite, cuprite, bornite and chalcopyrite were found as narrow veinlets and as amygdules.

The chalcocite, cuprite and native copper were thought to be secondary alteration minerals produced from the weathering of the primary copper sulfides, chalcopyrite and bornite. It was also felt that only the primary sulfides would be found below the zone of oxidation. Pieces of native copper weighing as much as a ton and one foot thick have been found.

SUMMARY & CONCLUSIONS

Amygdaloidal volcanic rocks containing higher than average amounts of disseminated copper are not uncommon in the Cordilleran. However, the possibility of finding a flow containing economic quantities of disseminated copper is relatively low, although it should not be ignored. It is the writers opinion that economic mineral deposits, if they exist in this area, will belong to either of the following two classifications:

- a. in volcanic rocks, as a structurally-controlled fissure filling or replacement body. The influencing structural feature might be a system of wide veins, a stockwork of narrow veins or breccia zone, which could be mined as one block using efficient large-tonnage techniques, or a selective replacement of a particular horizon localized by folding.
- b. in other local rocks, as a chemically and structurally localized deposit, such as the contact metasomatic deposits associated with limestone which are now being developed by New Imperial Mines Ltd. at Whitehorse.

The fact that copper mineralization has been found in this area by conventional prospecting, that major faults cross the claims and indicate that the local structure could be complex, and that modern exploration techniques have never been used in the area, make the Marc claims a very good exploration target.

Geochemical sampling should prove quite useful in locating mineralized areas that are overburden covered between the two faults. The area east of the thrust fault, however, will be less suitable due to its gentle topographic relief and its thicker overburden cover. Geophysics should not be attempted until a better understanding is gained of the type of mineralization present. Without more information on the occurrence and association of the minerals, their degree of dissemination, the depth of oxidation, and the magnetic susceptibility of each of the rock units, selection of a suitable geophysical method will be difficult and interpretation of the results impossible.

RECOMMENDATIONS

The initial exploration program should be designed as follows:

1. Detailed geological mapping of rock types and structure.
2. Sampling, by grab or channel methods of all mineralized areas.
3. Geochemical sampling of favourable overburden-covered areas.

- 4. Bulldozing and (or) diamond drilling of geochem. anomalies and mineralized outcrops.
- 5. If a suitable geophysical method is available, geophysical surveys to trace favourable zones beneath deeper overburden and locate new zones.

The exploration program ^{am}~~can~~ of the Marc property must be modified by three important considerations:

- 1. No geological or geochemical surveys can be done before the claims expire in late April, 1967.
- 2. From early May until October or November, the property will be completely isolated except ~~for~~^{by} light aircraft.
- 3. The geology of the half of the property lying east of the thrust fault is completely unknown and can probably only be learned by diamond drilling.

The following program is recommended to provide the most information for the least expenditure within the time limits available. Also, the program can be easily expanded or modified at the end of each stage, should results warrant it. At the end of Stage 4, a thorough assessment of the potential of the property will be possible.

Stage 1- Winter Road Construction

January, 1967

Construct a 20 mile winter road from the end of the existing Canalask Mine road to the Marc claims, following the east bank of White River.

20 miles @ \$350.00 \$7,000.00

Stage 2- Diamond Drilling

Feb.-April, 1967 (2 months)

Contract 1000 feet of A⁴ drilling, of which about 400 will be east of the thrust fault (2 or 3 short holes) and the remainder will be in overburden areas between the faults. This drilling will not be for sampling purposes but rather to aid in mapping the bedrock geology of the property. Camp and drill equipment can be moved to the property cheaply on the winter road, and if results are encouraging, can be kept there all summer. Enough small lakes are present that water supply will not be a serious problem. Drill results will allow a decision on whether or not to hold the area east of the thrust fault and will greatly assist geological interpretation following the mapping program of Stage 3.

1. Drilling- 1000 feet AX core @ \$10.00/foot	\$10,000.00
2. Camp operation- 2½ months @ \$3,000.00/mo.	7,500.00
3. Bulldozer & camp rental 2½ months @ \$5,000.00/mo.	12,500.00
4. Supervision- 3 months @ \$1,000.00/mo.	<u>3,000.00</u>
Sub-total	33,000.00
Contingencies- 10%	<u>3,000.00</u>
Total	\$36,000.00

Stage 3- Geological and Geochemical Surveys

June/August, 1967 (3 months)

A crew of four students, consisting of a senior geologist, a junior geologist and two assistants, will do geochemical sampling in conjunction with mapping. Air photos will be used for control and line-cutting will not be required. Detailed lines in promising areas will be at 400 foot intervals, and elsewhere will be on a reconnaissance basis at 3000 foot intervals, following claim base lines. Claims can be tagged at the same time at no extra expense. Helicopters will only be used when they are available locally.

1. Wages- 4 men x 3 months, including overhead. . . .	\$9,000.00
2. Camp costs, including radio- 3 months @ \$2,000. . . .	6,000.00
3. Transportation- fixed-wing and helicopter. . . .	5,000.00
4. Assaying, geochem analysis	2,500.00
5. Supervision- 4 months @ \$750.00	<u>3,000.00</u>
Sub-total	25,500.00
Contingencies-10%	<u>2,500.00</u>
Total	\$28,000.00

Stage 4- Bulldozer Trenching

September-October, 1967 (1 month)

An experienced operator could probably drive a bulldozer to the property sometime in September in a period of low water, although bringing in supplies would be difficult. Interesting zones located by mapping and geochem sampling can be exposed for better sampling. Stage 4 will only be

necessary if favourable results are obtained in Stages
2 and 3.

250 hours- D7 @ \$30.00 \$7,500.00
Total- Stages 1-4 \$78,500.00

Further exploration of results obtained in the initial
program, Stages 1-4, if required, will probably consist of
diamond drilling, geophysical surveys, and possibly some
additional geochemical sampling.

Respectfully submitted,
ARCHER, CATHRO & ASSOCIATES LTD.



R.J. Cathro

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