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REPORT OF THE EXPLORATION DIRECTOR

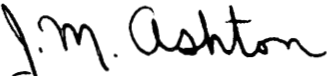
The President and Board of Directors,  
Nicola Lake Mining Company Ltd. (N.P.L.),  
601 - 850 West Hastings Street,  
Vancouver 1, B. C.

9 May 1967.

Dear Sirs:

Presented herewith is a report of the exploration results obtained from data gathered during the summer of 1966 of the Company's Mouse mineral claim property located immediately south of Nicola Lake, British Columbia.

Respectfully submitted,

  
J.M. Ashton, B. A. Sc.

EXPLORATION CRITERIA

As Nicola Lake Mining Company's Mouse Mineral Claim property possesses similar geology to that of Craigmont Mines Ltd., it should follow that an exploration programme of the property should initially be conducted in a similar manner.

Following the discovery of the Craigmont ore body, Rennie (1962), senior geologist of Craigmont Mines Ltd. (N.P.L.) postulated a set of desirable conditions that may be responsible for a similar deposit;

1. "An area must be selected around an intrusive body within the recognized copper belt where there is a probability of limestone of the Nicola series being in close proximity to the intrusive body."
2. "Areas of overburden or young volcanics should receive careful consideration on the possibility that they would be underlain by favourable rocks."
3. "Careful surface mapping may reveal favourable rocks and structures that could be projected to the vicinity of the intrusive contact."  
"The cautious use of geophysics" (i.e. magnetometer, and induced polarization, etc.) "may provide some immediate exploration targets."
4. "Careful attention to rock alterations during surface mapping or core logging may provide clues on the proximity to mineralization. Garnet epidote skarn developed in the limey rocks and silicification of the non-limey rocks is evidence of hydrothermal alteration activity that could have produced an orebody nearby. Since chloritization is closely associated with mineralization at Craigmont, this type of alteration should be considered an encouraging sign."
5. "Once favourable geology has been determined, an extensive program may be required to exhaust the possibilities or to find the desired orebody. It is unlikely that future orebodies will be easily discovered and therefore well conducted long range programs are required if other orebodies are to be found in the Nicola rocks."

Nicola Lake adopted this exploration criteria for the preliminary exploration stage, further enhancing it with a photo-geological interpretation. The results have thus far been encouraging. Geological mapping and a magnetometer survey of the property, to be completed early this summer, will complete the surface analysis described by this criteria. Diamond drilling of the most favourable anomalies will then follow.

#### EXPLORATION

During the summer of 1966, Nicola Lake Mining Company, Limited (N.P.L.) spent approximately \$40,000 on a preliminary exploration program on its 133 Mouse

mineral claim property, located immediately south of Nicola Lake in the Province of British Columbia. The exploration programme consisted of the following items of work:

1. Preliminary surface prospecting and geology.
2. Bulldozer trenching of mineralized rock outcrops and gossans.
3. Geological mapping of trenches.
4. A fracture density study, using aerial photographs, of the entire property except areas of heavy overburden (Chapman, 1966).
5. A reconnaissance geochemical soil survey covering approximately twenty-five percent of the property (Mitchell, 1967).
6. A reconnaissance induced polarization survey covering approximately seven percent of the property (Norgaard, 1966).

Three large anomalous areas worthy of further exploration were found on the property. In each case a combination of two or more of the above mutually independent techniques proved coincident anomalies.

Anomalous Area 1 was located on the west side of the property and was found to have a length of over ten thousand feet on a strike between N20W to N30W, commencing at the south-east corner of Mouse mineral claim 70 at co-ordinates 0 north, 13,500 west.

Anomalous Areas 2 and 3 are located within a rectangle approximately eight thousand feet long by seven thousand feet wide. The eastern margin begins within the boundary of Mouse mineral claim 25, southwest co-ordinates 0 north, 7,500 degrees west, and extends for eight thousand feet on a bearing of N40E.

### Anomalous Area 1

An hypothesis of the fracture density study describes a portion of this region as an expression of an underlying intrusive apophysis with an alteration affect apparent over the roof. A plan of resistivity values taken from the induced polarization survey indicates a direct coincidence of high electrical resistivity approximately  $7 \times 10^5$  square feet over the largest area ( $7.5 \times 10^5$  square feet) of highest relative fracture frequency. This high resistivity averages 4,600 ohm-meters, and may be characteristic of intense alteration in the form of silification often occurring near the top of pipe like structures due to hydrothermal activity. Hence, support of the hypothesis is given. Also directly coincident with the target is a geochemical high.

One thousand feet, on a bearing N30W from the northern most edge of the highest relative fracture frequency, defined as target 1, a narrow geochemical anomaly was defined for a strike length of approximately 1,200 feet. Coincident with the geochemical anomaly is an induced polarization anomaly estimated to represent 0.5% to 1.0% sulphides at 100 feet below the surface.

A section was made through the maximum chargeability response obtained in the induced polarization survey at co-ordinates 16,600 W, 4,500 N, and compared in magnitude with the response observed over part of the main orebody at Craigmont (Faessler, 1962). The Craigmont response for electrode spacing of  $a=100'$  compares with the Nicola Lake response for  $a=200'$  with the Nicola Lake peak frequency being approximately 1.3 milliseconds less in amplitude. For an electrode spacing of  $a=200'$  over the Craigmont orebody the response was observed to have two peaks with an

amplitude of 5.6 and 3.0 milliseconds and a period of 300' with a saddle point between. The Nicola Lake response for  $a=400'$  was also observed to have two peak frequencies, with amplitudes of 5.3 and 4.3 milliseconds and a period 225'. Generally, a double-peaked chargeability response is indicative of a narrow width of the upper part of polarizable material. Hence, a comparative relationship was found to exist between the induced polarization chargeability of Craigmont and Nicola Lake with Nicola Lake suspect of being deeper as similar chargeability responses were observed with an electrode spacing factor of 2 relative to Craigmont.

Eighteen hundred feet, and along a possible shear structure from the induced polarization response at co-ordinates 16,000 W, 4,500 N, another induced polarization anomaly was observed. The polarizable material located at that point was estimated to be close to the surface and have a maximum concentration of 0.5% sulphides average by volume. This zone was found to border the east flank of fracture density target 3 which was described as the hub of a radial set of fractures with a strong alteration pattern. Chalcopyrite and malachite mineralization was found in fracture fillings on the extreme west flank of this structural anomaly.

It has been reported, but not yet confirmed, that the core from a diamond drill hole, made approximately twenty years ago, in the area described as fracture density target 3 showed chalcopyrite mineralization.

Approximately one thousand feet west of the west edge of fracture density target 1, a geochemical anomaly was discovered. The anomaly extends for approximately 4,500', N20W and appears to be open on the north end. The strike of the anomaly is

focused on the center of fracture density target 3. One flank of the geochemical anomaly is coincident with fracture density target 2, which may be a mineralized shear.

### Anomalous Area 2

Anomalous area 2 is characterized by a topographic high 4,866 feet above sea level and located at co-ordinates 5,200W, 7,000N. Mineralization in this area was found by preliminary prospecting. As a further aid to its discovery, most of the larger veins encountered had been previously trenched by others and were therefore made obvious. The mineralization is in the form of numerous steeply dipping veins located within an area bounded by a point 1,200 feet east of the summit to a point 600 feet west of the summit. The general strike of the vein system is between N30E to N70E, the same direction as the regional structure of the area. The vein material is quartz and calcite with metallic mineralization in the form of galena, chalcopryite, bornite, chalcocite and malachite. Alteration occurred in the form of silicification in one vein observed. Closely associated with some of the mineralized veins were areas of weathered limonitic stained rock which may have formed as a result of the oxidation of copper mineralization. On the east flank of the hill an old trench was sampled across seven feet in width and yielded on assay, 0.90% copper, 0.70 oz Ag per ton.

Sherwin Kelly, (personal communication) geophysicist, of Merritt, British Columbia, indicated that the trenches encountered in this area were made by the Merritt Mining Syndicate in 1961 and that an exploration programme recommended by him at that time was never completed. Further to this it was also found that Oscar Schmidt, prospector, sank a small shaft on a well mineralized vein located nearby some thirty-seven years ago.

The fracture density study made in this area shows a fracture frequency high on both the east and west flanks of the topographic high. On the east flank a direct coincidence of vein location and fracture frequency high was found. On the west flank the veins thus far encountered were found to lie some four hundred feet east of fracture frequency target 4 described by D. A. Chapman as a dike.

### Anomalous Area 3

Anomalous Area 3 is located relative to the topographic high found at coordinates 5200W, 7000N. 4,500 feet south of this point a limestone bed dipping steeply to the east was traced for 3,500 feet along a strike of N 35W, beginning at coordinates 500N, 7200W. The limestone bed widens out to greater than 100 feet at the north end from a width of less than 50 feet at the south end where it emerges from the overburden. The north extension has not been determined due to overburden. Located in the limestone bed at coordinates 6000W, 2000N an old trench shows extensive malachite stain along with some chalcopyrite and bornite mineralization across 15 feet wide and 80 feet long. Three grab samples in this area assayed, 2.12% Cu, and 0.86 oz Ag. Five hundred feet N 35 W from this mineralized area in the same limestone bed, more malachite staining was found. East of the limestone bed beginning in the vicinity of coordinates 4000N, 3000W, a geochemical anomaly was defined for 1,200 feet on a strike of S 33E. Two hundred feet and 1,200 feet due east and 2,300 feet N 45 E of this anomaly three smaller geochemical anomalies were also defined.

Recent geological mapping of the area east of the limestone bed, in the vicinity of the 1,200 foot geochemical anomaly, has disclosed the presence of a diorite intrusive which projects more than 6,000 feet into the property. The diorite appears to be the northern extension of a large diorite mass shown on the Geophysical Survey of Canada Map and which is located south east of the property. A limestone and diorite contact at depth may be the controlling factor in the mineralization thus far found associated with the limestone at the surface. Hence at depth, close to the contact, the limestone may be replaced with copper and other mineralization to form a replacement orebody. If magnetite is associated with the contact area a magnetometer should define its location. In the Craigmont orebody, diorite of the Guichon batholith is considered to be the source for the hydrothermal solutions responsible for the alteration and mineralization of the limestone.

#### SUMMARY

The Mouse mineral claims are located in the recognized copper belt in the Nicola volcanic series. The claims are in close proximity to the Central Nicola batholith which is exposed on the north side of Nicola Lake. Hence the intrusive is suspected of underlying the property and being the cause of the mineralization and anomalies discovered.

Combinations of coinciding results obtained from mutually independent mineral exploration methods; a geochemical and induced polarization survey, a fracture density study and preliminary geology; have disclosed three areas of maximum probability where



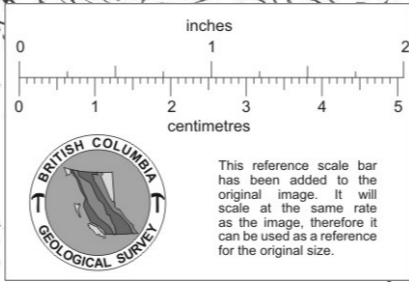
an economic ore deposit may exist. Two apparent similarities to the Craigmont deposit, located 14 miles to the west, have been found; one in geology and the other in an induced polarization chargeability anomaly. The two similarities are associated with different locations on the property.

A magnetometer survey and detailed geological mapping, including rock alteration patterns, are scheduled for early completion this summer. The results obtained will be correlated with the present information and the exact locations and attitudes of diamond drill holes will then be determined.

#### REFERENCES CITED

- Chapman, D.A., 1966; Fracture density analysis of the Mouse mineral claims of Nicola Lake Mining Company Limited (N.P.L.)
- Faessler, C.W., 1962; Geophysical exploration in the Princeton, Merritt, Kamloops area: Presented at the Prospecting and Exploration Conference, B. C. and Yukon Chamber of Mines, Vancouver, February 16th, 1962.
- Mitchell, J.A., 1967; Geochemical survey on the Mouse mineral claims for Nicola Lake Mining Company Limited (N.P.L.).
- Norgaard, P., 1966; Report on induced polarization survey on the Mouse claim group, British Columbia for Nicola Lake Mining Company Limited.
- Rennie, C.C., 1962; Copper deposits in the Nicola rocks, Craigmont mine: Presented at the 50th anniversary meeting, B. C. and Yukon Chamber of Mines, Victoria, B. C.

UPPER NICOLA



92I/2W  
92I/SE-47

2055'

nicola lake

TO ACCOMPANY "REPORT OF THE  
EXPLORATION DIRECTOR" for  
NICOLA LAKE MINING COMPANY LTD. (N.P.L.)

9 MAY, 1967

