

4155

92I/10E

GEOLOGICAL AND GEOCHEMICAL REPORT
on the
LED, NEW LED, G.G. AND M.B. CLAIM GROUPS
GREENSTONE MOUNTAIN
KAMLOOPS MINING DIVISION
50°38'N, 120°37'W
MAP 92 I W

for

MONETA PORCUPINE MINES LTD.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT by
NO. 4155 MAP



G. C. GUTRATH, P.Eng.
ATLED EXPLORATION MANAGEMENT LTD.

January, 1973

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Frequency to P.P.M. giving Population Distribution	

SCALE

1" = 2 miles
1" = 20 feet
1" = 1000 feet
1" = 1000 feet
1" = 1000 feet

AVINO MINES AND RESOURCES LTD.

Joint Venture with

MONETA PROCUPINE MINES LTD.

GREENSTONE MOUNTAIN PROPERTY

INTRODUCTION

The exploration program on the Led-Ex Claim Group was started on April 6, 1972 .

The program was carried out by Atled Exploration Management Ltd.

SUMMARY

The claim group is located on the northerly facing slope of Greenstone Mountain fifteen miles west of Kamloops, B.C.

The Led-Ex Group of some 120 claims is underlain by Nicola volcanics that have been intruded by diorite stocks related in age and composition to the Iron Mask Batholith. This Batholith is located 5 miles to the east of the claim group and has a number of copper deposits around its periphery that include Afton Mines Ltd. and Leemac Mines Ltd.

Approximately 48 miles of slope-corrected line was chained and compass surveyed over an area of some 20 square miles.

A grid system with a north south base line and east-west crosslines every 800 feet covers the northern two-thirds of the property. A total of 29.4 miles of slope corrected line has been cut and surveyed.

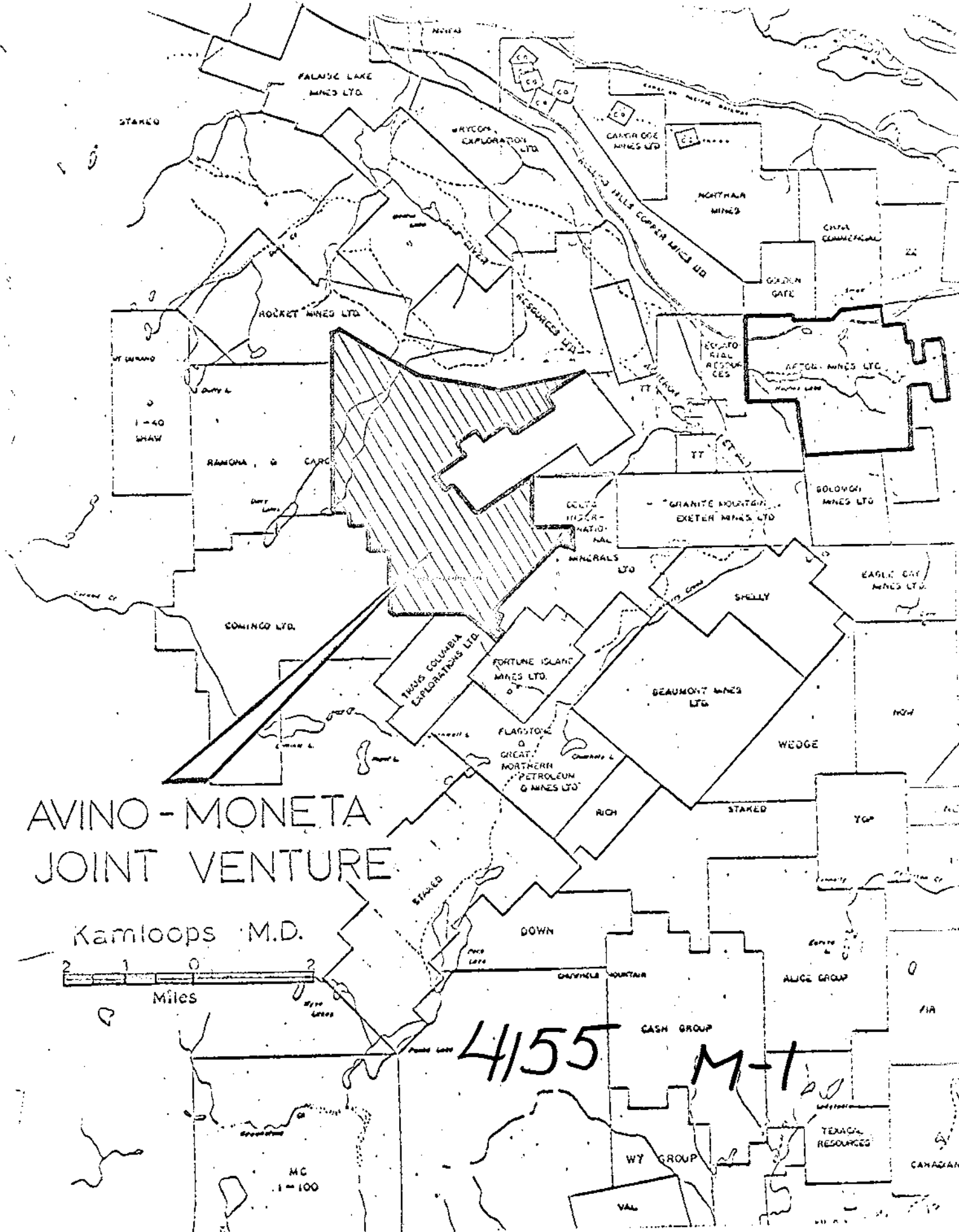
The geochemical survey results indicate that there is very little migration of the copper ions from the immediate vicinity of a copper occurrence. A soil sample taken directly down slope from the copper mineralized dump on the Led #74 claim gave a very low magnitude copper value of 74 ppm. It would appear that a significant copper occurrence could be masked by thin glacial overburden and may not be detected in even those soil samples taken down slope and a few feet from the outer limits of an occurrence.

The soil sample results do show that the general northeast corner of the claim group in which the copper mineralized quartz-calcite vein-shear zone is located is slightly copper anomalous.

The survey also located one anomalous sample on the most northerly crossline of 600 ppm copper that will probably be directly associated with a copper occurrence.

The soil sampling previously done by Nicanex on the southerly part of the Led claim group outlined a significant copper anomalous area approximately 3,000 feet long and up to 1,500 feet wide.

The geological mapping has located three areas of sulphide mineralization.



AVINO - MONETA
JOINT VENTURE

Kamloops M.D.
Miles

4155 M-1

1. Led #74 inclined shaft area

Chalcopyrite, bornite, specular hematite and pyrite occurs in a quartz-calcite vein-shear zone. The vein is up to 5 feet wide, strikes northeasterly and dips at -47° to the southeast. It appears to narrow to the southwest but it is obscured in both directions along strike by overburden. Minor chalcopyrite is disseminated in the wall rocks.

2. Gilbert Lake Area

Finely disseminated molybdenite, chalcopyrite and pyrite occur in a highly altered quartz monzonite intrusive. The extent of this occurrence has not been determined.

3. Greenstone Peak area

Disseminated pyrite and minor chalcopyrite occur in highly altered, brecciated andesitic volcanics. The extent of this zone has not been determined but it may be related to the extensive Nicanex copper geochemical anomaly.

The copper mineralized monzonite intrusive on Cominco's Rag Group is located 2 miles to the southwest of the Gilbert Lake area. The Cominco occurrence was located by magnetometer and I. P. surveys in an area almost totally covered by overburden. The mineralization consists of pyrite, chalcopyrite and bornite disseminated in the altered core of a small monzonite stock intruding Nicola volcanics.

CONCLUSION

The exploration program carried out on the Led-Ex claims has been successful in locating three mineralized areas.

The most significant of these is the highly altered monzonite intrusive carrying minor amounts of molybdenite, pyrite and chalcopyrite in the Gilbert Lake area. There has been very little work done on this zone because of snow conditions, but it is an important occurrence because the alteration and mineralization is typical of that found associated with a number of major porphyry type copper-molybdenum deposits.

Continued exploration of the pyritized-brecciated volcanics carrying minor copper mineralization at the top of Greenstone Mountain may lead to the location of a significant copper occurrence since the zone is associated with a 3,000 foot by 1,500 foot copper geochemical soil anomaly.

The copper mineralized quartz-calcite vein zone on the Led 74 claim is of limited size and value. However, this zone may be an indicator of more significant mineralization in the general area.

The geochemical survey has not been as good an exploration method as originally expected. Considering the wide line spacing, extensive overburden and lack of copper ion mobility it would be possible to miss a significant copper occurrence if this was the only exploration technique available.

The geophysical results on the Cominco property dramatically show that in this area combined magnetometer and I.P. surveys are one of the most successful exploration methods for outlining a drill target.

It is concluded that the Led-Ex group has good exploration potential and that a continued exploration program to cover the southern half of the property is definitely warranted.

RECOMMENDATIONS

The following exploration program is recommended.

1. Linecutting

Continue the grid south to cover the entire claim group. (Approximately 20 line miles)

2. Geochemical soil sampling and analysis

Collect soil samples at 200 foot intervals but initially analyse only those collected at 400 foot intervals. (250 samples for analysis)

3. Magnetometer Survey

Take readings at 200 foot intervals on the entire 45 miles of grid line using a base station recorder to expedite the completion of the survey.

4. Geological Mapping

Map the outcrop geology on the entire property in a reconnaissance fashion. Map the geology in detail in the mineralized areas. Prospect all the areas where geochemical soil anomalies have been located.

When these surveys have been completed the most favourable mineralized area should be I.P. surveyed to define drill targets. It may be possible that the initial work will locate obvious drill targets, but it is expected that the Gilbert Lake area, because of extensive overburden will be I.P. surveyed.

Drilling to test the anomalous areas will be contingent on the results of the surveys.

ESTIMATED COSTS

1.	<u>Linecutting and soil sampling</u>		
	20 line miles @ \$80.00/mile		\$ 1,600
2.	<u>Magnetometer Survey</u>		
	45 line miles @ \$80.00/mile		3,600
3.	<u>Geological Mapping and Prospecting</u>		
	10 days @ \$150.00/day		1,500
4.	<u>Analysis</u>		
	a) Geochemical analysis	\$ 250.00	
	b) Assaying	<u>100.00</u>	350
5.	<u>Transportation</u>		
	2 trucks		500
6.	<u>Living expenses</u>		
	60 man days @ \$10.00/days		<u>600</u>
		SUB-TOTAL	8,150
7.	<u>Induced Polarization Survey</u>		
	10 line miles @ \$450.00/mile		<u>4,500</u>
		SUB-TOTAL	12,650
		Contengencies @ 10%	<u>1,265</u>
			13,915
8.	Percussion Drilling will be contingent on the results of the above work.		7
	Estimate 3,000 feet at an overall cost of \$5.00/foot		<u>15,000</u>
			<u>\$ 28,915</u>

GENERAL INFORMATION

The exploration program was started at the north end of the claim group at an elevation of 2500 feet near the base of Greenstone Mountain. There were patches of snow in this area, and to the south in the central portion of the claim group above the elevation of 4000 feet, there was continuous snow cover to the top of Greenstone Mtn. at the 5800 foot elevation. The first three weeks of April were unseasonably cool with an additional 6 inches to 1 foot of snowfall.

The snow receded to the south of the Gilbert Lake area at the 4700 foot elevation. Soil samples could not be collected on the south end of the claims because of snow and frozen ground.

The 4 to 5 man crew working on the property stayed in Kamloops and drove the 15 miles to the property each day. Because of snow and "break-up" conditions the only roads open in the area were the Beaton Creek road at the north end of the property and the road to the Micro-Wave Station at the top of Greenstone Mountain, a distance of 14 miles from the Cherry Creek turnoff. There are a number of logging roads that are passable in the summer months and give better access to the central portion of the claim group in the Gilbert Lake area.

There is no cultivated or range land within the area of the claim group. As a result, no bonds had to be placed with the Mining Recorder for access to the property as many of the exploration companies had to do working in the Kamloops area.

CLAIMS

<u>NAME</u>	<u>RECORD NUMBER</u>	<u>EXPIRY DATE</u>
Led 1 - 22	103075 - 103096	January 18, 1973
Led 23 - 48	103097 - 103122	January 18, 1973
Led 49 - 64	103123 - 103138	January 18, 1973
Led 65 - 80	103139 - 103154	January 18, 1973
Led 81 - 98	113641 - 113658	April 27, 1973
Led 109 - 130	113659 - 113680	April 27, 1973
Led 131 - 134	113681 - 113684	April 27, 1973
Led 139 - 142	113711 - 113714	April 27, 1973
Ex 1 - 8	113685 - 113692	April 27, 1973
Ex 10	113694	April 27, 1973
Ex 12 - 18	113696 - 113702	April 27, 1973
GG 1 - 2	119128 - 119129	May 24, 1973
GG 3 - 11	118012 - 118020	May 15, 1973
MB 1 - 4	112650 - 112653	April 24, 1973

Linecutting and Grid Survey:

A 14,000 foot slope-corrected north-south baseline with stations every 200 feet has been cut and surveyed from the beaton Lake road south to the Gilbert Lake area. Slope corrected East-West crosslines with stations every 200 feet have been cut and surveyed at 800 foot intervals along the baselines. The crosslines to the west are 6,400 feet long and to the east vary from 8,000 feet to 2,000 feet long.

A total of 155,200 feet (29.4 line miles) of grid survey has been completed.

Geochemical Soil & Silt Sampling:

The soil samples are collected with stainless steel trowels and stored in Kraft paper bags. At each sample location, a standard form was filled out giving the location, terrain, slope, drainage, soil type, colour, vegetation, depth and any other remarks that would assist in interpreting the geochemical results.

The samples are collected from the top of the "B" soil horizon 4 in. to 1 foot below surface. Samples were taken at 200 foot intervals from the surveyed claim location lines and the grid lines that were clear of and where the ground was not frozen.

Silt samples were taken from any streams that were crossed by the surveyed lines. Approximately 1000 samples have been collected and sent to Chemex Laboratories at 212 Brooksbank Ave., North Vancouver. Because the area is so large, only those samples collected at 400 foot intervals on the grid lines were initially prepared for analysis.

In the laboratory, geochemical samples are dried at 80°C for a period of 12 to 24 hours. The dried sample is sieved to -80 mesh fraction through a nylon and stainless steel sieve. A 0.50 gram portion of the sample is weighed into a calibrated test tube. The sample is digested using hot 70% HClO_4 and concentrated HNO_3 . The Digestion time is 2 to 3 hours. The sample volume is adjusted to 25 mls. using demineralized water. Sample solutions are homogenized and allowed to settle before being analyzed by atomic absorption procedures. The detection limits using Techtron A.A.5 atomic absorption unit for Copper is ± 0.5 ppm.

A total of 620 samples have been analysed for copper.

Geological mapping

Using aerial photographs, surveyed locations lines, and grid lines, the majority of the claim group clear of snow has been geologically examined.

The immediate area around the old shaft and trenches on the Led #74 claim has been surveyed and geologically mapped on a scale of 1 inch equals 20 feet. Preliminary geology has been mapped at 1 inch = 1,000 feet scale.

Roads and bulldozer trenching

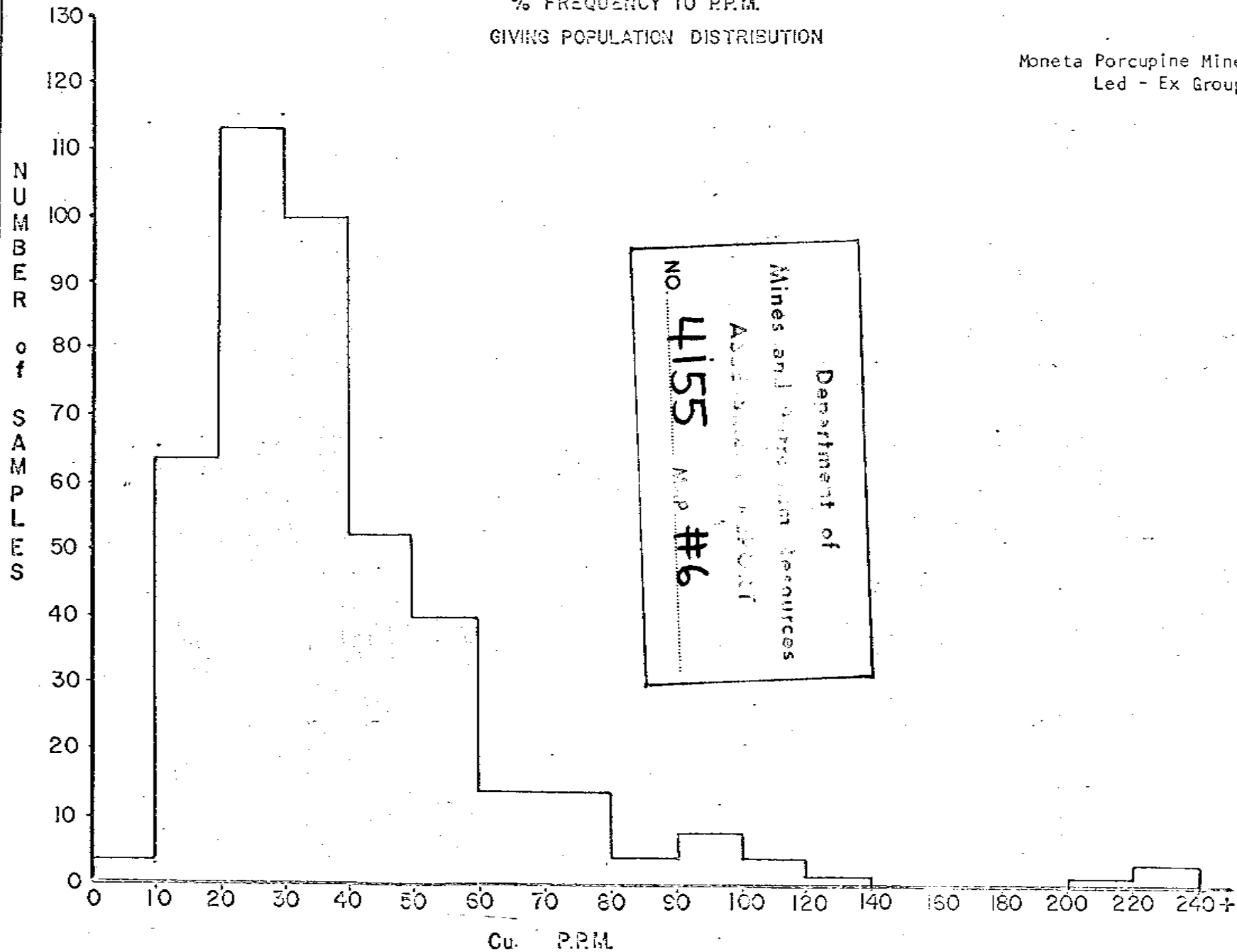
A D-8 was trucked into the property on May 4 to repair the Beaton road and to clear an old logging road into the shaft area on the Led Creek claim. There is approximately 1,000 feet of road to construct from the logging road to the shaft. Trenches were cut but did not locate the extension of the quartz-calcite shear zone.

Geochemical soil and silt sampling

The grid lines in most part paralleled the contour on the northerly facing slope of Greenstone Mountain. This was purposely done so that any down slope migration of metal ions from mineral occurrence would be crossed by a grid line and in all probability, would be located by the soil sampling. However, the nature and chemistry of the soil in this area appears to inhibit the migration of metal ions any distance from the actual mineral occurrence. This is particularly obvious on crossline 16S between station 58 east and station 62 south. The stations are located on a 20° slope directly below the dumps from the inclined shaft sunk on the copper mineralized quartz-calcite vein on claim 74.

% FREQUENCY TO P.P.M.
GIVING POPULATION DISTRIBUTION

Moneta Porcupine Mines Ltd.
Led - Ex Groups



Department of
Mines and Geographical Resources
ASSESSMENT REPORT
NO. 4155 M.P. #6

The dump is at least 30 years old and under normal conditions, the spring run off and ion migration down this steep slope would have spread the copper ions out onto the flats so that the anomalous copper ion would have been detected on the east baseline. In this case, the copper ions have not migrated even a few feet since the most anomalous sample below the dump is 22 to 36 ppm copper on the 85 crossline 800 to the north there is one threshold anomalous sample of 73 ppm. Although there is ample pyrite and chalcopyrite to form an acidic environment for good migration it would appear that the low rainfall and alkali soils completely stops any significant ion migration.

The frequency of the copper population indicates a background of 6 to 40 ppm, threshold values of +60ppm, anomalous values of +80 ppm and very anomalous would be +200 ppm copper.

There are three anomalous samples in the northwesterly corner of the claim group. These are probably related to copper mineralization in quartz veins similar to that found in the shaft area. There are five anomalous samples on the northern part of the grid. One of these is 600 ppm copper and would be expected to be directly related to a copper occurrence. There are two other anomalous samples of 85 ppm and 92 ppm on this same line.

Geological Mapping

(a) General

The claims are underlain by a complex sequence of Nicola Group volcanic rocks of Triassic Age, that has been intruded by stocks of diorite to monzonite composition.

The volcanics are commonly massive augite porphyry, andesite interbedded with tuffaceous fragmentals, and flow breccia. Consistent bedding of interpretive value has not been recognized.

(b) Mineralization

Three areas of sulphide mineralization have been located on the property. The first is the quartz-calcite vein - shear zone on the Led #74 claim. This vein is mineralized with chalcopyrite, pyrite, bornite and specular hematite in a gangue of quartz and coarse crystalline calcite. The vein cuts massive andesite that has been weakly chloritized and epidotized near the vein. Minor disseminated chalcopyrite has been noted in the wall rock.

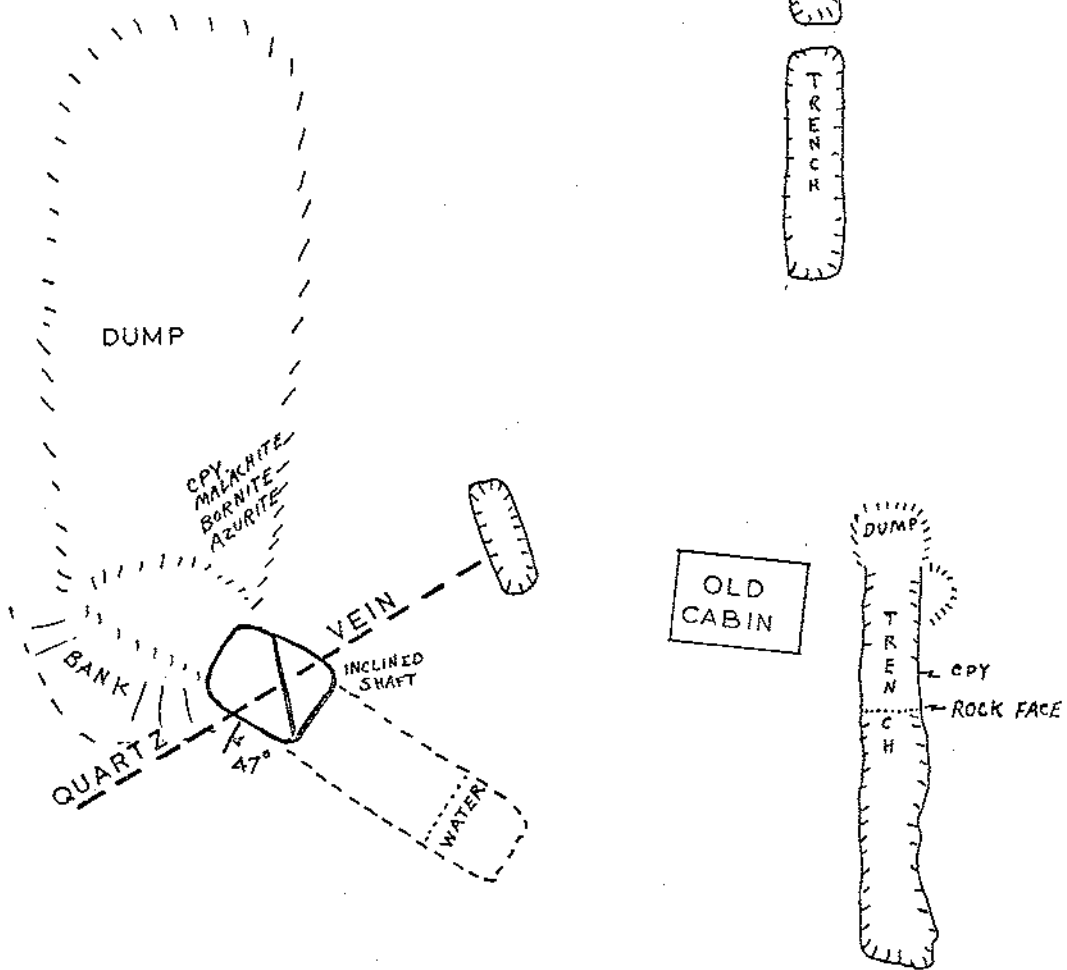
The vein strikes in a northeasterly direction and dips at -47° to the southeast. A few feet to the south west of the shaft, the vein is 6 inches to 1 foot wide, but in the area of the shaft and at a depth of 20 feet, it is 5 feet wide. The vein is obscured by overburden to the northeast.

It is estimated that the shaft is a minimum of 50 feet deep. The size of the dump would indicate approximately 400 feet of underground workings. There are a number of other old trenches and pits in the area, but only a few of these found bedrock and none appear to have located the vein. Minor amounts of chalcopyrite and pyrite are found in the weakly chloritized andesite in the trenches.

The second mineralized area is at the east end of Gilbert Lake. Finely disseminated molybdenite, pyrite and chalcopyrite occur in a bleached, light whitish-grey, fine grained, sericitized and weakly silicified quartz monzonite. This mineralization is believed to occur in the highly altered contact zone of a stock that is mapped by the GSC as extending from near the top of Greenstone Mountain into the Gilbert Lake Area. Because of snow conditions, there was practically no linecutting, prospecting or mapping done in this area to determine the extent of this zone.



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
 No. **4155** MAP **#2**



• POST
 • POST
 893468 I

ALL OUTCROPS AND TRENCHES IN THE
 SHAFT AREA CONSIST OF ANDESITIC
 NICOLA VOLCANICS. MINOR CHALCOPYRITE
 AND WEAK CHLORITIZATION OCCUR IN
 SOME TRENCHES.

NEW BULLDOZER TRENCHES NOT SHOWN

INCLINED SHAFT LED MINERAL CLAIMS

SCALE: 1 INCH = 20 FEET

MAY, 1972

G. B. P.

The third mineralized area is at the northern end of the claim group near the top of Greenstone Mountain near the peak and extending to the north and east. The volcanics are highly brecciated and cemented with quartz and calcite. Fine grained pyrite is disseminated throughout the breccia, ranging from 2 to 5 per cent. There are coarse blebs of pyrite and some chalcopyrite associated with the quartz and calcite. The andesite fragments are often chloritized and epidotized. The extent and significance of this brecciated area have not been determined.

HISTORY AND DEVELOPMENT

The copper mineralized quartz-calcite vein on the Led #74 claim was probably found in the early 1900's and worked in the 1930's.

Cominco's Rag Group, that adjoins the Led Group to the southwest was staked in 1969. The property has been I.P. surveyed and magnetometer surveyed. A number of percussion holes have been drilled to test the anomalous areas. The results of Cominco's 1970 program on this property is documented in an assessment work report filed with the Department of Mines in Victoria.

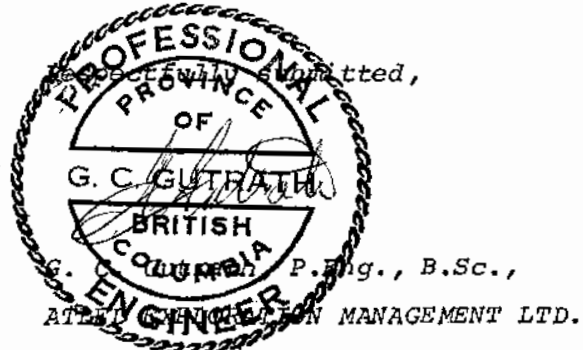
The I.P. Survey outlined a pyritic-dioritized contact zone between Nicola volcanics and a small stock of monzonite composition. The core of the stock gave only a low I.P. metal factor, but when drilled it was found to be mineralized with disseminated pyrite and minor chalcopyrite and bornite. The I.P. response was of much higher magnitude in the hybrid, diorite-volcanic pyritized and magnetite rich contact zone, that envelopes the monzonite core.

The magnetometer survey was particularly interesting since it outlines the monzonite core as a distinct low and the dioritized contact zone as a distinct high.

In 1969 Nicanex staked the Ned Group that adjoined the Cominco ground to the west. These claims were allowed to lapse and in most part are now covered by the southeastern Led Group. Nicanex filed an assessment work report to keep the claims in good standing for one year.

The Nicanex report is based on a geochemical soil sampling program carried out on approximately 58,500 feet of widely spaced grid line covering 15 claims. The Ned claims and a portion of the grid have been found on the Led Group, but there is not enough survey control in the area to accurately establish the location of the grid. It is interesting that the geochemical survey outlined a significant copper anomalous area in the southern part of the Led Group.

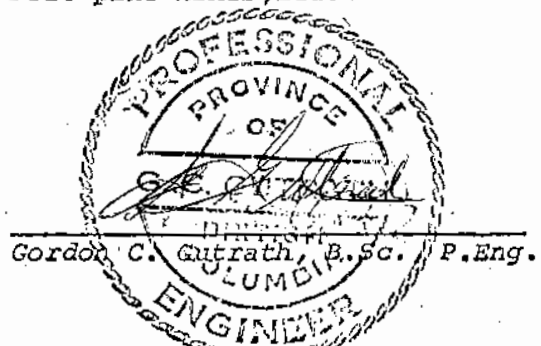
There is no other exploration work known to have been done in the area of the Led-Ex Claim Group. There were exploration programs carried out in 1972 on the K.M. Group, QQ Group and the Carol-Ramona Group, that adjoined the Led-Ex Claim Group.



ENGINEER'S CERTIFICATE

I, GORDON C. GUTRATH, of 3636 Lakedale Avenue, in the Municipality of Burnaby, in the Province of British Columbia, DO HEREBY CERTIFY:-

1. That I am a consulting geologist with a business address of 420 - 475 Howe Street, Vancouver 1, British Columbia.
2. That I am a graduate of the University of British Columbia where I obtained my B. Sc. in geological science in 1960.
3. That I am a Registered Professional Engineer in the Geological Section of the Association of Professional Engineers in the Province of British Columbia.
4. That I have practised my profession as a geologist for the past ten years, and
5. That I have no interest, direct or indirect, in the property with which this report is concerned, nor do I expect to receive any such interest. I am a director of Moneta Porcupine Mines, Ltd. and own one (1) share of Moneta Porcupine Mines, Ltd.



DATED at the City of Vancouver, Province of British Columbia, this day of , 1972.

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.

To Wit:

In the Matter of COSTS INCURRED IN COMPLETION OF THE
EXPLORATION SURVEY REPORTED IN THE GEOLOGICAL AND GEO-
CHEMICAL REPORT ON THE LED-EX GROUPS BY G.GUTRATH OF
JANUARY, 1973

I, George Phelps
of Vancouver

in the Province of British Columbia, do solemnly declare that the following are the minimum expenditures incurred in carrying out the exploration program.

PERSONNEL:

Supervision and Geology, G.Gutrath 9 days	\$ 1,210.00	
Field Supervision and Geology, G.B.Phelps P.Eng. 32 days	2,080.00	
Line cutting, grid survey and soil sampling		
- T. Blaine 30 days	1,050.00	
- Kelly Harper 30 days	900.00	
- M. Bell 32 days	1,120.00	
- K. Lerner 9 days	270.00	
Reconnaissance Geology and Sampling		
- J. Lerner 13 days	715.00	\$ 7,345.00

TRANSPORTATION:

Ford 4x4 truck 38 days, 3040 miles	708.00	
Ford 4x4 pickup 14 days	146.00	
Ford Pickup - 1 week - rental 2 wheel drive	198.00	1,052.00

ROOM AND BOARD:

171.5 man days		1,958.65
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SOIL SAMPLE ASSAYING:

706.02

EQUIPMENT AND FIELD SUPPLIES:

137.00

FIELD EQUIPMENT RENTAL:

32 days @ \$5.00/day		160.00
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REPORT AND DRAFTING:

360.00

TOTAL COST \$ 11,718.67

PHYSICAL WORK: Road work and trenching D-8 Cat \$ 538.00

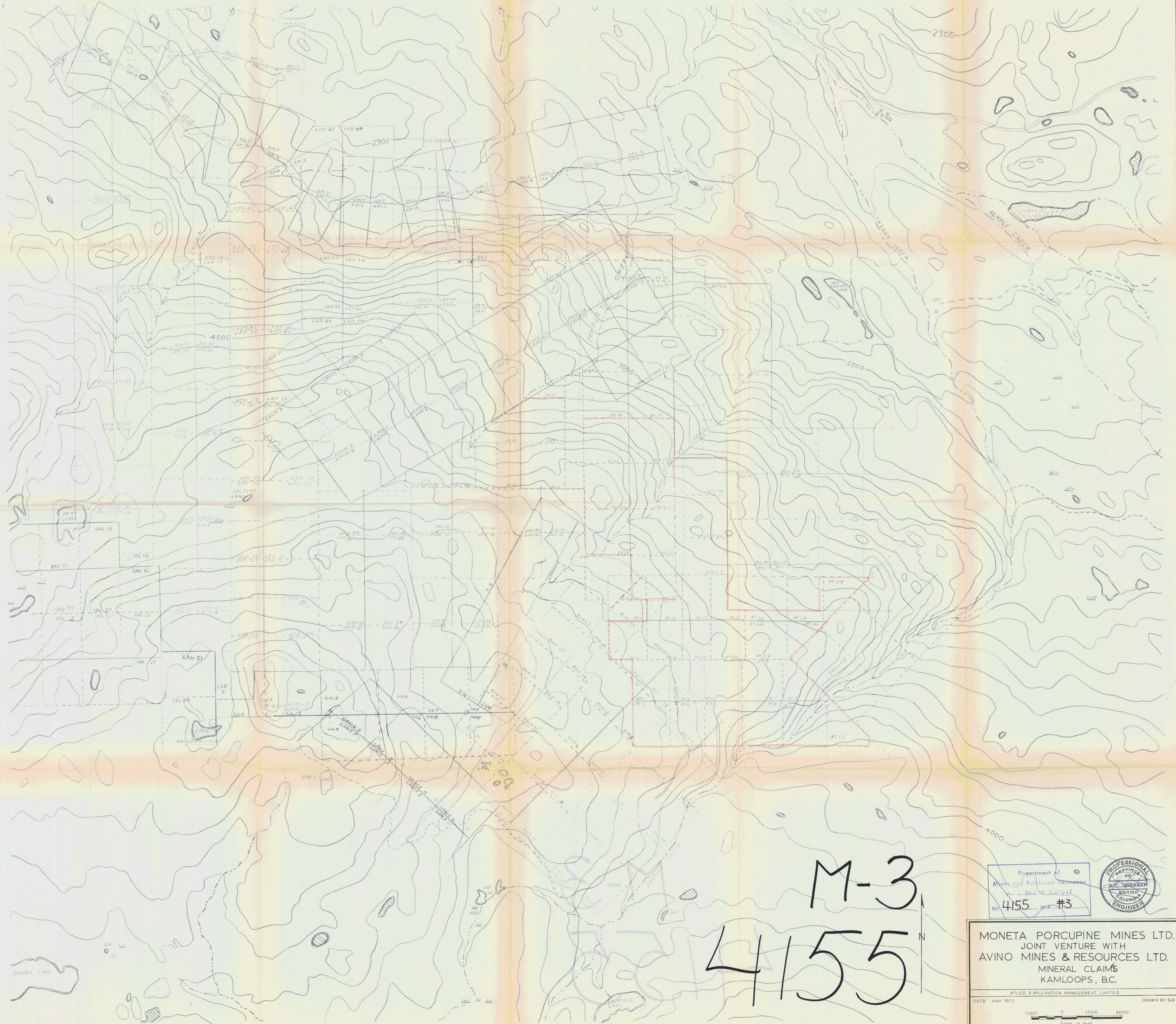
And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City
of Vancouver, in the
Province of British Columbia, this 31
day of January, 1973, A.D.

George Phelps

A. Jeanette
A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.

Sub-mining Recorder



M-3
4155

Department of
Mines and Petroleum Resources
A. S. SHAW REPORT
NO. 4155 MAP #3



MONETA PORCUPINE MINES LTD.
JOINT VENTURE WITH
AVINO MINES & RESOURCES LTD.
MINERAL CLAIMS
KAMLOOPS, B.C.

ATLED EXPLORATION MANAGEMENT LIMITED
DATE MAY 1972 DRAWN BY G.B.P.
Scale in feet 0 1000 2000



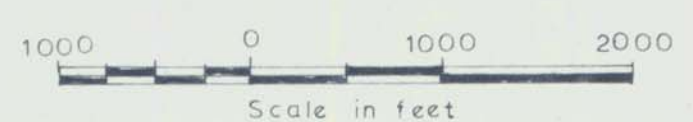
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4155 MAP #4

COPPER PPM.
● + 60
● + 80
● + 200



MONETA PORCUPINE MINES LTD.
JOINT VENTURE WITH
AVINO MINES & RESOURCES LTD.
GEOCHEMICAL SURVEY

ATLED EXPLORATION MANAGEMENT LIMITED
DATE MAY 1972 DRAWN BY G.B.P.



E-W BASE LINE

8 S

16 S

24 S

32 S

40 S

48 S

56 S

64 S

72 S

80 S

N-S
BASE LINE

BEATON CREEK

PENDLETON CREEK

NED ROBERTS CREEK

DAIRY LAKES

GILBERT LAKE

Mo Fe SULFIDES

Cu OLD WORKINGS
NEW TRENCHES

COMINCO
RAG MINERAL CLAIMS

NICOLA VOLCANICS
DIORITE

MONZONITE CORE
Cu SULPHIDES

DIORITE

KWILALKWILA LAKE

5884
GREENSTONE
MTN.
BRECCIATED
PYRITIZED
VOLCANICS

LEGEND

- A GRANODIORITE
- B SERICITIZED ACIDIC INTRUSIVE
- C EPIDOTE, MAGNETITE, & PYRITE WITH PRECIPITATION of NICOLA VOLCANICS
- APPROXIMATE MAJOR CONTACT
- ASSUMED GEOLOGICAL CONTACT
- OUTLINE OF GENERAL OUTCROP AREA



MONETA PORCUPINE MINES LTD.
JOINT VENTURE WITH
AVINO MINES & RESOURCES LTD.
GEOLOGY MAP

ATLAD EXPLORATION MANAGEMENT LIMITED
DATE MAY 1972
DRAWN BY G.B.P.

