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# AMADEUS INVESTMENTS LTD.

433 MARINE BUILDING • 355 BARRARD STREET • VANCOUVER 1, B.C.

TELEPHONE (604) 683-2568

May 11th, 1972.

*LWD EXPLORATION & MINING CORP.*  
Mr. Lester Cox,  
P. O. Box Y,  
MIAMI, Arizona. *85539*

Dear Mr. Cox:-

Re: Corilla Property

Enclosed is a Map showing the lines in relation to the exploration shaft, which is just beside the road, and the veins at the north end of the property. The scale is 1"=500' so you should be able to locate your proposed location.

Yours truly,

Encl.

*James R. Glass*  
James R. Glass, B. Sc.

PHONE: 473-3021

ARCAN Posts had To Be Kicked Down the way Cody had staked them  
The Gorilla Claims.

- ② ARCAN PUT UP (21) CORNER POSTS FOR THE ENTIRE GROUP.
- ③ ARCAN DID NOT AMMEND TO NEW LOCATIONS, THEREFORE PLACING CODY'S CLAIMS IN JEOPARDY, + MAKING GORILLA CLAIMS INVALID.
- ④ ARCAN, ~~STAKED~~ <sup>LAID OUT</sup> GORILLA CLAIMS, INTO MOON LANDS, WHICH WOULD HAVE MADE GORILLA CLAIMS INVALID. WOULD HAVE BEEN CLAIM JUMPING, FOR CODY.
- ⑤ Fansler and Montsomery JUMPED "low", and Pi's Bonanza Claims. Then Fansler and Montsomery GAVE QUIT CLAIM deal, TO ARCAN MINE CO, Whom only had lease from Cody, Davis, and Valeruela. Fansler and Montsomery worked for ARCAN MINE CO, doing Location work, and DRILL HOLE LOCATIONS.

6. John Moore has <sup>the</sup> strip Between Moon + Gorilla -  
(~~Good~~ <sup>Good</sup> ~~strip~~ <sup>strip</sup>) ON North- of Gorilla END CORNER.

		2500
		300
2940		<hr/>
300		2700
<hr/>		
3240		

3544  
↓

50

FERY

MAW

27-280 Million Dollar

500,000

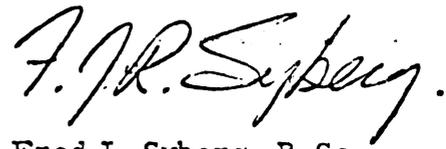
Next year by tomorrow they  
find me

Map of I.P. Lewis  
Attention

"See Page 10 to 12 of map"

be spotted on the baseline and between lines No. 3 and No. 4. All core holes should be drilled to a minimum of 800 feet vertical.

Respectfully submitted,

A handwritten signature in cursive script, reading "F. J. Syberg".

Fred J. Syberg, B.Sc.,

Consulting Geophysicist

November 15, 1970

## CONCLUSIONS AND RECOMMENDATIONS

The background chargeability appears to vary across the granite-schist contact with the background being estimated at about 3 to 4 milliseconds throughout the granitic rocks and as high as 7 milliseconds in the contact area or in the schist.

The anomalous areas vary from two times background to slightly above background. Then highly anomalous areas would suggest mineralization well in excess of 1% sulphides or equivalent oxides. This rule could be varied in light of the large electrode spacing such that a much smaller anomaly relative to background may be indicative of commercially interesting mineralization. The coincident geochemical anomalies and favourable rock units seem to support this suggestion.

Mineralization in the anomalous area could be massive in the area of the granite-schist contact. In the granitic rock units the mineralization is most likely disseminated as is suggested by the history of the Arizona metallogenic province.

It is recommended that further surveying be done along the eastern extensions of Lines No. 2 and No. 3.

It is further recommended that a diamond drill programme be undertaken to investigate the sources of the I. P. anomalies and the geochemical anomalies. At least three diamond drill holes should be spotted to investigate the I. P. anomaly crossing lines No. 1 and No. 2. Also, a drill hole should

Since only the reading at 16 W may be suggesting a continuous anomaly, some detail surveying should be done in this area in order to verify the high value. There appears to be no correlation between low resistivity and high chargeability.

#### CONTOUR PLANS

The contour map for  $n = 2$  suggests a high chargeability trend across lines No. 1, No. 2 and No. 3. In the neighbourhood of station 8 E along line No. 3 this trend coincides with a granite-schist contact. Along Line No. 2 this coincidence is fair, and along line No. 1 there exists no coincidence. Consequently, it is believed that the I. P. sources may not necessarily be related to the contact. The pattern of the contours in this area suggests an I. P. source which dips in a N. N. easterly direction and has a W. N. westerly strike. Along Lines No. 1 and No. 2 the anomalous pattern coincides with four geochemical anomalies striking in approximately the same direction.

A rather subtle anomaly may be suggested along the baseline and between Lines No. 3 and No. 4. The relief of this pattern is only slightly above background; however, it coincides with an anomalous geochemical condition. Since an electrode spacing as large as 800 feet was used it is possible, when using a 2.5 kw. transmitter, that anomalies due to interesting mineralization could be subtle due to averaging over very large volumes. The author of this report has in a number of surveys made such observations.

in the direction of the line. It is suggested that the vertical extent of the I. P. source is greater than 800 feet since no "double peaking" is evident. There appears to be some correlation between low resistivity and high chargeability.

Line No. 2

This line should be extended beyond the 11.2 milli-second reading, for  $n = 2$ , at the eastern end of the line in attempt to show a similar condition to that along Line No. 1. There is a good correlation between low resistivity and high chargeability. along this line.

Line No. 3

The background chargeability appears to charge from 4 milliseconds in the western area covered by this line to about 7 milliseconds at the eastern end. Therefore, an anomalous condition exists at the eastern end of this line which is open to the east. The correlation between resistivity and chargeability is not significant.

Line No. 4

No apparent anomalous conditions seem to appear along this line.

Line No. 5

No apparent anomalous conditions seem to appear along this line.

Line No. 6

The background chargeability of the area covered by this line appears to be of the order of 3 milliseconds suggesting an anomalous area in the neighbourhood of station 8 W.

The reading for any given set up is the mid-point between the centre point of the current electrodes and the centre point of the potential electrodes.

Contour plan maps of the apparent resistivity and chargeability were also plotted for  $n=2$ .

The data received by the author of this report is believed to be accurate and the survey appears to have been well executed.

### INTERPRETATION

The interpretation was based on a study of the existing chargeability and resistivity data both in "pseudo-section" as well as in contour form. Generally, highest priorities were given to anomalous areas having high chargeabilities and low apparent resistivities along with greatest lateral and depth extent.

The two-dimensional "pseudo-sections" were mainly used to obtain information regarding apparent dip, depth determinations, and vertical distribution of metallically conducting material along the lines surveyed.

The contour plans provide information concerning strike, true dip, lateral distribution between survey lines and were used to correlate chargeability and resistivity with geological and geochemical data.

### SECTIONS

Line No. 1

The maximum apparent chargeability was 15 milliseconds which is considered above a variable background chargeability across the property of an estimated maximum of 6 milliseconds in the area of this line. The shape of the profile suggests a good anomalous condition due to an I. P. source with an easterly dip

2. Primary voltage,  $V_p$ , between measuring electrodes during "current off" time.  $V_s$  divided by  $V_p$  gives the apparent chargeability (Ma) in milliseconds.

The apparent resistivity is calculated by dividing  $V_p$  by the current and multiplying by the geometrical factor appropriate to the electrode array being used.

#### Electrode Configuration:

The entire survey was carried out using the dipole-dipole configuration or array. The current electrodes  $C_1$  and  $C_2$  and the potential electrodes,  $P_1$  and  $P_2$  are moved in unison along the survey line. Current is applied to the ground at two points a distance (a) feet apart. The potentials are measured at two points (a) feet apart, in line with the current electrodes. The distance between the nearest current and potential is an integral number (n) times the basic distance (a). For this survey "a" was chosen to be 800 feet and "n" values of 1, 2, 3, and sometimes 4 were used.

The product of "n" and "a" is a rough approximation of the maximum depth of penetration. Covering the survey area using multiple separations provides more information as to depth, dip, location and metallic distribution of sources than does a single profile.

#### Presentation of Data:

The survey results are plotted in the two-dimensional "pseudo-section" manner with apparent resistivity in ohm-feet being plotted above the survey line and chargeability (Ma) in milliseconds below. This method of display is not to be taken as the vertical section of the electrical properties of the ground surveyed. The electrode separation is only one factor that determines the depth to which the ground affects a measurement. It is rather a convenient way of plotting all the data, especially lines of limited length.

## INTRODUCTION

This report contains the results of an Induced Polarization Survey which was carried out by Mr. Carlos Aiken, a geophysicist, employed by Metals, Petroleum & Hydraulic Resources Consulting Ltd. This report was prepared in Vancouver, B. C. in November, 1970.

## PROPERTY

The property consists of 50 contiguous claims which are located on the south-west side of Mineral Mountain, about ten miles north-east of Florence, Arizona.

The claims which are recorded in the Court House, Florence, Arizona are listed as follows:

<u>Claim Name</u>	<u>County</u>	<u>Docket</u>	<u>Page</u>
Lost Gorilla 1	Pinal	522	451
Lost Gorilla 2	Pinal	522	452
Lost Gorilla 3	Pinal	522	453
Lost Gorilla 4	Pinal	522	454
Lost Gorilla 5	Pinal	522	454
Lost Gorilla 6	Pinal	522	456
Lost Gorilla 7	Pinal	536	20
Lost Gorilla 8	Pinal	536	21
Lost Gorilla 9	Pinal	536	22
Lost Gorilla 10	Pinal	536	23
Lost Gorilla 11	Pinal	536	24
Lost Gorilla 12	Pinal	536	25
Lost Gorilla 13	Pinal	536	26
Lost Gorilla 14	Pinal	536	27
Lost Gorilla 15	Pinal	536	28
Lost Gorilla 16	Pinal	558	113
Lost Gorilla 17	Pinal	558	115
Lost Gorilla 18	Pinal	558	116
Lost Gorilla 19	Pinal	558	117
Lost Gorilla 20	Pinal	558	118
LEW 1 to 20 Incl.	Pinal	571	442-441

<u>Claim Name</u>	<u>County</u>	<u>Docket</u>	<u>Page</u>
Big Bonanza 1	Pinal	560	854
Big Bonanza 2	Pinal	562	802
Big Bonanza 3	Pinal	562	803
Big Bonanza 4	Pinal	562	804
Big Bonanza 5	Pinal	562	805
Big Bonanza 6	Pinal	568	533
Big Bonanza 7	Pinal	568	534
Big Bonanza 8	Pinal	568	535
Big Bonanza 9	Pinal	568	536
Big Bonanza 10	Pinal	568	537

### SURVEY SPECIFICATIONS

#### Instrumentation:

The Induced Polarization equipment used was 2.5 kw. pulse-type transmitter manufactured by Sharp Instruments combined with a Scintrex Newmont type MKVII receiver.

Type of Current	-	Direct current broken at periodic intervals
Pulse duration	-	2 seconds "current on" 2 seconds "current off" Alternate pulses have reverse polarity
Integrating time	-	650 milliseconds
Delay time	-	450 milliseconds
Maximum available current	-	5.0 amps

Measurements taken in the field were:

1. Current flowing through current electrodes  $C_1$  and  $C_2$ .

## TABLE OF CONTENTS

	Page
INTRODUCTION.....	1
PROPERTY.....	1
SURVEY SPECIFICATIONS.....	2
Instrumentation.....	2
Electrode Configuration.....	3
Presentation of Data.....	3
INTERPRETATION.....	4
CONTOUR PLANS.....	6
CONCLUSIONS AND RECOMMENDATIONS.....	7

## APPENDICES

Map of apparent chargeability

n = 2            Scale 1" = 500 feet

Author's certificate

42

GEOPHYSICAL SURVEY

In 1970 an induced polarization survey was carried out by Metals, Petroleum & Hydraulic Resources Consulting Ltd on behalf of Marguerite Lake Mines Ltd (N. P. L.) The survey was carried out along six lines spaced 1,000 feet apart with an electrode separation of 800 feet using a dipole-dipole configuration and searching to a theoretical depth of approximately 1,600 feet.

The results of this survey and the report prepared by Mr. Fred Syberg, geophysicist, are included with this report.

Mr. Syberg states that there is a definite high chargeability zone near the schist granite contact which may be caused by massive sulphides. He further states that a rather subtle anomaly with readings slightly above background is found over the area containing the surface mineralization. <sup>or Hammer</sup> Mr. Syberg recommends that diamond drilling be used to sample the bedrock under these two areas.

Respectfully submitted,



James R. Glass, B.Sc.,

Consulting Geologist

An old exploration shaft was sunk in the monzonite south of the main zone of mineralization. No copper mineralization was seen in this old working.

### GEOCHEMICAL SURVEY

During the year 1969, Arcan Mining & Smelting Ltd (N. P. L.) carried out a geochemical soil survey over the property. The results of this survey are plotted on map of scale 1" = 500 feet included with this report.

Background in the area is considered to be 30 parts per million of copper. Any value over 100 parts per million is considered to be anomalous. There are five areas on the survey that are anomalous, as well as a number of single "highs."

The main anomaly is of dimensions roughly 1,500' x 1,200' with an individual high of 23,500 ppm. This anomaly coincides fairly well with the main surface mineralization. Patches of mineralization however, are seen outside the anomalous area.

One lense-shaped anomaly is associated with the schist-monzonite contact. It has dimensions roughly 2,500' x 200' with an individual high of 290 ppm.

One anomaly is associated with the mineralized veins in the schist. It has dimensions roughly 1,500' x 200' with an high of 1,250 ppm.

Two anomalous zones exist on the west side of the property. Both these are "open" to the west so the ultimate size is unknown at this time. In the smaller anomaly the individual high is 198 ppm and the other peaks at 205 ppm.

Vein material consists of vuggy quartz, specular hematite with secondary limonite and jasper. Copper stain is noted in the material although no copper sulphides were seen. A band of altered limestone is associated with one of the veins.

Assays taken by Dr. A. C. Skerl returned the following:

<u>Vein No.</u>	<u>Au oz/ton</u>	<u>Ag oz/ton</u>	<u>Cu %</u>	<u>Width</u>
No. 1	0.17	0.10	1.24	4'
No. 2	0.14	0.14	Not assayed	dump
No. 3	0.11	0.3	Not assayed	4'

An assay taken by Marguerite returned the following:

No. 2	0.11	0.13	1.84	3'
-------	------	------	------	----

The surface expression of one of the veins can be seen extending to the north for many hundreds of feet.

There are some old workings in the ridge of altered limestone, but no economic mineralization was seen.

Small patches and stringers of "oxide" copper mineralization are seen in the quartz monzonite over an area approximately 3,000 feet by 2,000 feet. Some fairly local concentrations of copper are included in this area. With one exception the copper is found in the "oxide" form, i. e. chrysocolla, chalcantite. One vein of chalcocite was noted.

Molybdenite was seen disseminated in the granite in one location.

## REGIONAL GEOLOGY

The Gorilla property is on the western portion of the Tortilla Mountains, part of the basin and range province. These mountains consist of Precambrian granite, quartz monzonite, granodiorite and quartz diorite; locally there are other igneous rocks of post Paleozoic age. The granitic rocks intrude Precambrian Pinal schist and are overlain by Tertiary volcanics and sedimentary rocks.

## LOCAL GEOLOGY

The rocks underlying the property consist of Precambrian Pinal schist intruded by Precambrian quartz monzonite.

Schistosity is approximately N 15° W, dipping steeply to the west.

The quartz monzonite is altered somewhat, and is cut by aphanitic acidic dykes which are classified as rhyolite.

North of the schist monzonite contact is a prominent ridge of highly altered limestone which is overlying the Pinal Schist. The exact relationship however, is unknown at this time.

## MINERALIZATION

Three veins of widths from less than two feet to over twenty feet, are found in the Pinal Schist, in the northern portion of the property. These veins are in large shear zones, strike approximately N 15° W, and dip to the west at 65°. They are conformable with the schistosity.

## TOPOGRAPHY

The topography is gently rolling with elevations from 2,000 feet to 2,300 feet. Intermittent streams flow in the sand-filled gulleys during the rainy seasons.

## CLIMATE AND VEGETATION

The climate is desert-type. Winter temperatures seldom reach freezing point and summer temperatures peak around 110°F. Rainfall annually is less than eight inches. Vegetation includes many kinds of cactus, mesquite bushes and palo verde trees.

## HISTORY

There is no history of significant mining from the Gorilla property. Limited mining was done on one of the copper, silver, gold veins cutting the Pinal schist, but no shipment records exist.

An exploration shaft was sunk at least 60 feet which is located south of the main area of showings. No mineralization was observed in the dump of this shaft.

Arcan Mining & Smelting Ltd (N. P. L.) acquired an option to the property by an Agreement dated June 11, 1969, and Marguerite acquired an option from Arcan in July, 1970. Dr. A. C. Skerl (P. Eng.,) of Vancouver, Canada, visited the property in April of 1969, sampled two of the veins and made a brief geological examination and recommended that further work be done. To date Marguerite has performed a geochemical survey and Metals Petroleum and Hydraulic Resources Consulting Ltd has carried out an induced polarization survey and an extremely cursory geological examination.

PROPERTY AND LOCATION

Marguerite Lake Mines Ltd (N. P. L.) holds an option on 50 contiguous mining claims which are located some ten miles north-east of Florence, Arizona on the south-west side of Mineral Mountain. The claims are recorded in the Court House, Florence, Arizona, as follows:

<u>Claim Name</u>	<u>County</u>	<u>Docket No.</u>	<u>Page</u>
Lost Gorilla 1	Pinal	522	451
Lost Gorilla 2	Pinal	522	452
Lost Gorilla 3	Pinal	522	453
Lost Gorilla 4	Pinal	522	454
Lost Gorilla 5	Pinal	522	454
Lost Gorilla 6	Pinal	522	456
Lost Gorilla 7	Pinal	536	20
Lost Gorilla 8	Pinal	536	21
Lost Gorilla 9	Pinal	536	22
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Lost Gorilla 15	Pinal	536	28
Lost Gorilla 16	Pinal	558	113
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Lost Gorilla 18	Pinal	558	116
Lost Gorilla 19	Pinal	558	117
Lost Gorilla 20	Pinal	558	118
LEW 1 to 20 Incl.	Pinal	571	442-461
Big Bonanza 1	Pinal	560	854
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Big Bonanza 3	Pinal	562	803
Big Bonanza 4	Pinal	562	804
Big Bonanza 5	Pinal	562	805
Big Bonanza 6	Pinal	568	533
Big Bonanza 7	Pinal	568	534
Big Bonanza 8	Pinal	568	535
Big Bonanza 9	Pinal	568	536
Big Bonanza 10	Pinal	568	537

The 50 claims make up an area of approximately 1,050 acres.

The property can be reached by a fairly good gravel road maintained by local ranchers.

PHASE II

Diamond drilling, 3,400' @ \$10.00/ft	\$34,000.00
Drill pad preparation and bulldozer work	\$ 5,000.00
Engineering and Supervision	\$ 6,000.00
Living and accommodation	\$ 1,000.00
Administration and Communication	\$ 4,000.00
Sampling and Mapping	\$ 1,000.00
Vehicles	\$ 1,000.00
Contingencies	\$ 5,000.00
PHASE II TOTAL	\$57,000.00
PHASE I TOTAL	\$29,000.00
GRAND TOTAL	<u><u>\$86,000.00</u></u>

BUDGET FOR PROPOSED PROGRAMMEPHASE I

Geochemical Survey	\$ 2,000.00
Induced Polarization Survey	\$ 3,500.00
Surveying and geological mapping	\$ 1,000.00
Vehicles	\$ 1,000.00
Travel and living expenses	\$ 1,500.00
Diamond drilling 1,400' @ \$10.00/ft	\$14,000.00
Engineering-assaying, drafting etc	\$ 2,000.00
Administration	\$ 1,000.00
Contingency	\$ 3,000.00
	<hr/>
TOTAL	\$29,000.00
	<hr/> <hr/>

## RECOMMENDATIONS

### PHASE I

1. Perform a geochemical soil survey along the southern and western extensions of the present survey.
2. Perform an induced polarization survey to the north of the present survey and extend the coverage on lines No. 2 and No. 3 to the east.
3. Sample the bedrock under the present induced polarization anomaly by drilling holes to a depth of 700 feet. Sample the bedrock under the geochemical anomaly-moderate induced polarization anomaly by drilling one hole to a depth of 700 feet.

### PHASE II

4. <sup>or hammer</sup> Diamond drill any subsequent induced polarization anomalies found in the proposed survey. It is anticipated that 3,400 feet of drilling would adequately explore and sample any bedrock source.

REPORT ON  
AN INDUCED POLARIZATION SURVEY  
GORILLA PROPERTY  
PINAL COUNTY, ARIZONA

Owned by

MARGUERITE LAKE MINES LTD (N. P. L.)

for

METALS PETROLEUM & HYDRAULIC RESOURCES  
CONSULTING LTD

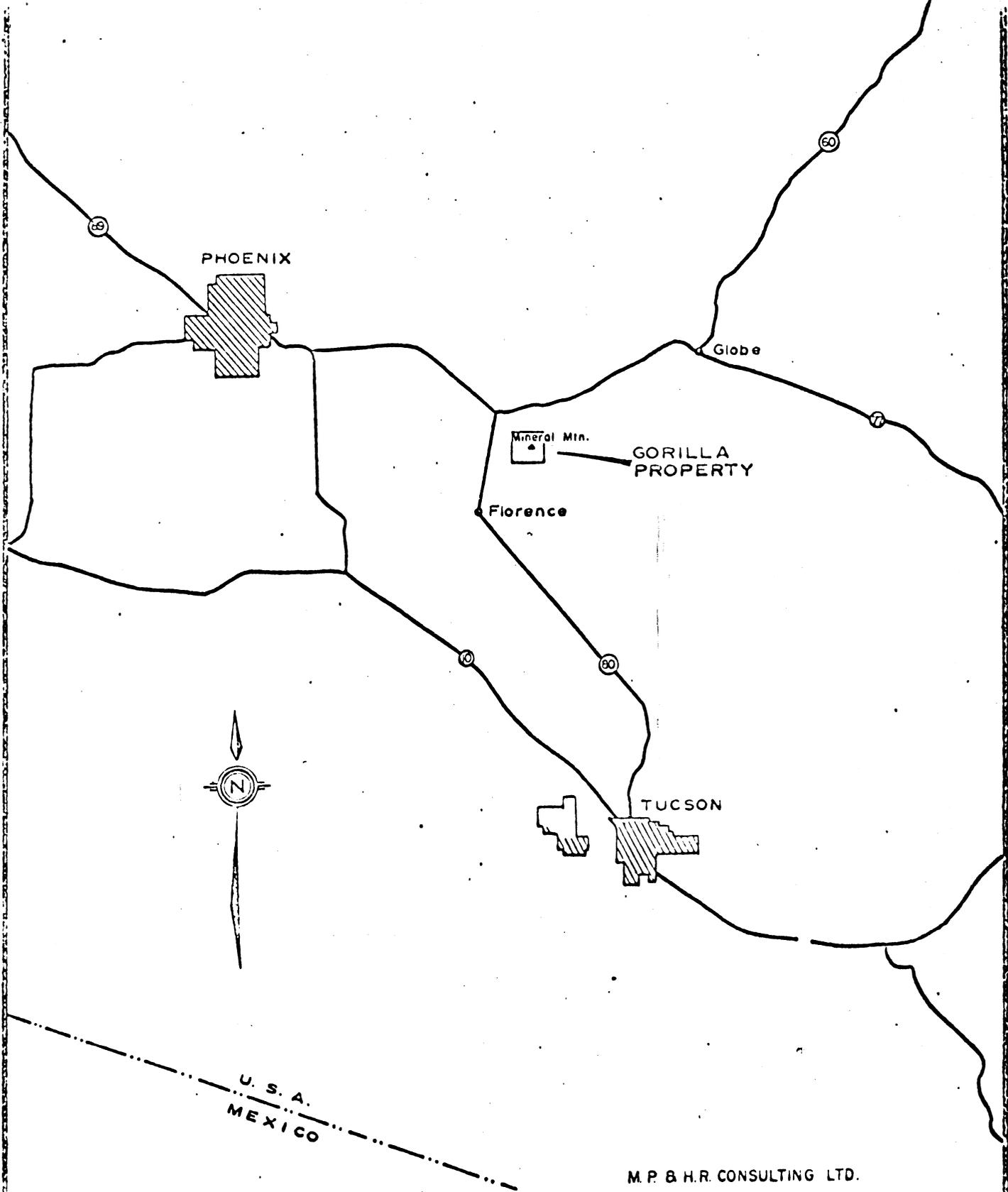
by

FRED J. SYBERG, B.Sc.,

November 15, 1970

**APPENDIX "A"**

**Report on Induced  
Polarization Survey by  
Fred Syberg, Geophysicist**



PHOENIX

Globe

Mineral Min.

GORILLA PROPERTY

Florence

TUCSON



U. S. A.  
MEXICO

M. P. & H. R. CONSULTING LTD.  
MARGUERITE LAKE MINES LTD. (N.P.L.)

**LOCATION MAP**

GORILLA PROPERTY  
PINAL COUNTY, ARIZONA  
SCALE: 1" = 21 mi. Approx.

Nov 1970

JRG

## CONCLUSIONS

1. Sporadic copper mineralization has been found in Precambrian quartz monzonite over an area approximately 3,000 feet by 2,000 feet. This copper occurs mainly as a chrysacolla stain on fracture planes but it is also disseminated through the rock at times. One vein containing chalcocite has been noted and minor amounts of molybdenum have been seen.
  
2. Three veins containing copper, gold and silver cut the Pinal schist. Samples of these veins as reported by Dr. A. C. Skerl returned the following assays:

<u>Vein</u>	<u>Cu</u>	<u>Au</u>	<u>Ag</u>	<u>Width</u>
No. 1	1.24	0.17	0.10	4'
Dump of vein mat- erial	not assayed		0.14	0.10

The extension of one of the veins can be seen for many hundreds of feet with the vein swelling to a width of 20 feet in places.

3. Anomalous amounts of copper are found in the soil in five separate zones in the vicinity of the known copper mineralization. Two of these zones are "open" to the west.
  
4. An induced polarization survey performed over part of the property shows an area of high chargeability near the contact between Pinal schist and the Precambrian quartz monzonite and an area of moderate chargeability over the main geochemical anomaly.

## SUMMARY

Marguerite Lake Mines Ltd (N. P. L.) holds the rights to 50 contiguous mining claims, located about ten miles north-east of Florence, Arizona.

Kennecott's 23,000 ton per day open pit mine at Ray, is seventeen miles east of the Marguerite property. Newmont's 1,500 ton per day underground mine at Superior is fourteen miles to the north-west and the Miami copper camp with a combined production of some 36,000 tons per day is thirty miles to the north-west.

The rock formations underlying the claim group are Precambrian Pinal schist and Precambrian quartz monzonite. Pinal schist is host rocks for copper mineralization at the Ray Mine and at the Miami mining camp. The Precambrian monzonite is host rock for the copper mineralization in other mines in Arizona.

Three parallel veins containing gold, silver and copper cut the Pinal schist. A small amount of mining has been done on these veins, although no shipments have been recorded.

Copper mineralization has been found over a wide area in the Precambrian granite and subsequent geochemical soil surveys and induced polarization surveys have indicated coincidental anomalous conditions.

It is recommended that an exploration programme be initiated on this property which should include the following:

1. Reconnaissance geochemical soil sampling
2. Reconnaissance induced polarization survey
3. Diamond drilling *or hammer*

It is anticipated that the budget for this programme would be \$86,000.00 divided into two phases.

## TABLE OF CONTENTS

	Page
SUMMARY.....	1
CONCLUSIONS.....	3
RECOMMENDATIONS.....	4
BUDGET FOR PROPOSED PROGRAMME.....	5
PROPERTY AND LOCATION.....	7
TOPOGRAPHY.....	8
CLIMATE AND VEGETATION.....	8
HISTORY.....	8
REGIONAL GEOLOGY.....	9
LOCAL GEOLOGY.....	9
MINERALIZATION.....	9
GEOCHEMICAL SURVEY.....	11
GEOPHYSICAL SURVEY.....	12
CERTIFICATE.....	13

## APPENDICES

Report on Induced Polarization Survey by  
Fred Syberg, Geophysicist

Map of Geochemical Results - Scale 1" = 500 feet

Map of Induced Polarization Results - Scale 1" = 500 feet

Dudley W. Lewis  
3450 N. Mountain Ave  
Tucson, Ariz  
388 5719

Keep  
Only copy we have  
Only 3 boxes to be  
had

Dudley: Hope this is  
all you need. Good  
fortune in getting proper  
people to develop & operate  
this fabulous property.  
Emil & Mary

PRELIMINARY REPORT  
ON  
GORILLA PROPERTY  
FLORENCE, ARIZONA

for

MARGUERITE LAKE MINES LTD (N. P. L.)

November 30th, 1970

James R. Glass  
Consulting Geologist

The green copper mineral observed in outcrops has been provisionally identified as chalcocite.<sup>1</sup> The molybdenum occurs as molybdite and also as a secondary mineral. Both minerals can be observed both in the disseminated copper zone and also within quartz stringers carrying both copper and molybdenum.

As indicated, copper is found disseminated and in vertical quartz stringers. These stringers are oriented in an E-W direction and follow the joint pattern of the intrusive rock. Hence unless there is a change of pattern with depth, the potential expectation will be disseminated copper with local enrichment along the quartz-copper veinlets.

The 60-foot exploration shaft was collared and ladders placed for access. Unfortunately the walls of the shaft contained much loose rock and the hazardous conditions made for only a cursory examination. A few rock specimens were taken from 10 feet above water level. These did not show mineralizations of interest apart from a scattered showing of a soft mineral having the appearance of foxy chalcocite.

#### GEOCHEMICAL EXPLORATION

A systematic soil sampling program has been conducted at the Gorilla. The control lines were laid out 500 feet apart in a north-south direction and samples taken at 200-foot intervals. This whole survey embraces an area about 9000 feet long and 3500 feet wide with a total of 265 samples. The samples were submitted for geochemical analysis and anomalous results obtained (see attached geochemical and frequency diagram).

Geochemical determinations were also made for molybdenum and although anomalous results were obtained for this element, there is little correlation between copper and molybdenum.

#### PROPOSED INDUCED POTENTIAL SURVEY

Based on the evidence to date, including the geochemical data, it is proposed to run an I.P. survey over the area that appears to offer potential.

The parallel veins to the north have a strike of about S 20 E and hence a base line was laid out having this direction. The baseline starts at a point about 800 feet east of the exploration shaft and runs N 20 W. I.P. lines have been surveyed normal to the baseline and spaced 400 feet apart. The first line has a bearing S 70 W and is some 200 feet south of the exploration shaft. The lines vary in length from 1800 to 2200 feet and cover the geochemical anomaly.

#### SUMMARY AND CONCLUSIONS

The Gorilla Group is still only a prospect, but as a prospect it has much merit on the favorable locality for copper mineralization, the environment and nature of the mineralization observed and the results from soil sampling. It is recommended that the proposed I.P. survey be carried out. Subsequent exploratory work will depend on the results of this survey.

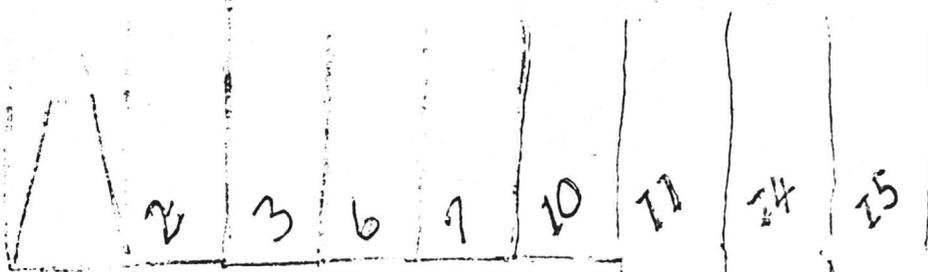
Florence, Arizona.  
July 15, 1969.

Donald E. Anderson,  
Geological Engineer,  
Washington, No. 04565  
(Professor of Mining Engineering,  
University of Washington)

- 1 Geologic Map of Arizona by Eldred D. Wilson and Richard T. Moore, Arizona Bureau of Mines and John R. Cooper, U.S. Geological Survey, 1959.
- 2 Gorilla Property by A. C. Short, May 2, 1960.
- 3 Distribution of Gorilla Geochemical Samples.
- 4 Geochemical & Proposed Induced Polarization Lines.
- 5 Geochemical - Geological Composite.

DEKT 558 PG 114

SEC. 17



BRIDGE

CONCRETE

PROVISION

STEP 11

- ...
- ...
- ...
- ...

... DRAW ...

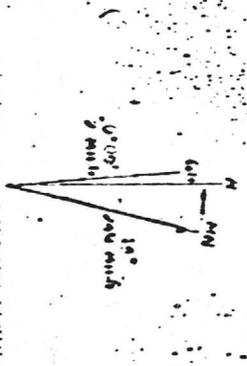
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1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30



prepared, edited, and published by the Geological Survey,  
 under the direction of W. H. DICKENS,  
 Chief Geologist.  
 Prepared by photogrammetric methods from aerial  
 photographs taken 1902. Field checked 1904.  
 Azimuthal projection. 1927 North American datum.  
 Level foot and based on Arizona coordinate system, central zone  
 and under Universal Transverse Mercator grid ticks  
 and as shown in blue



BONANZA & FIELD CLAIMS  
 MINERAL MT. PEARL COUNTY  
 ARIZ.  
 H. REARD

MADE BY  
 H. REARD

REPORT ON  
AN INDUCED POLARIZATION SURVEY  
GORILLA PROPERTY  
PINAL COUNTY, ARIZONA

Owned by

MARGUERITE LAKE MINES LTD (N. P. L.)

for

METALS PETROLEUM & HYDRAULIC RESOURCES  
CONSULTING LTD

by

FRED J. SYBERG, B.Sc.,

November 15, 1970

# AMADEUS INVESTMENTS LTD.

---

433 MARINE BUILDING • 355 BURRARD STREET • VANCOUVER 1, B.C.

TELEPHONE (604) 683-2568

May 11th, 1972.

Mr. Lester Cox,  
P. O. Box Y,  
MIAMI, Arizona.

Dear Mr. Cox:-

Re: Gorilla Property

Enclosed is a Map showing the lines in relation to the exploration shaft, which is just beside the road, and the veins at the north end of the property. The scale is 1"=500' so you should be able to locate your proposed location.

Yours truly,

Encl.

  
James R. Glass, B. Sc.

The gray copper mineralization in certain localities has been noted. The molybdenum content of the gray mineralization is probably higher than that of the gray mineralization both in the distribution of copper and in the amount of molybdenum. The gray mineralization is probably a copper-molybdenum deposit.

As indicated, copper is found in certain localities in which quartz veins are oriented in an E-W direction and follow the joint pattern of the hard rock. These veins are a change of pattern with depth, the potential expectation will be mineralized copper with local enrichment along the quartz-copper veins.

The 60-foot exploration shaft was collared and failed prior to its completion. Unfortunately the walls of the shaft contained much loose rock and the hazardous conditions made for only a cursory examination. A few rock specimens were taken from 10 feet above water level. There is no further mineralization of interest apart from a scattered showing of a soft mineral having the appearance of talc or chlorite.

#### GEOCHEMICAL EXPLORATION

A systematic soil sampling program has been conducted at the Gorilla. The control lines were laid out 500 feet apart in a north-south direction and samples taken at 100-foot intervals. This whole survey embraces an area about 9000 feet long and 3000 feet wide with a total of 269 samples. The samples were submitted for geochemical analysis and anomalous results obtained (see attached geochemical and frequency diagram).

Geochemical determinations were also made for molybdenum. Although anomalous results were obtained for this element, there is little correlation between copper and molybdenum.

#### PROPOSED INDUCED POTENTIAL SURVEY

Based on the evidence to date, including the geochemical data, it is proposed to run an I.P. survey over the area that appears to offer potential.

The parallel veins to the north have a strike of about S10E and hence a base line was laid out having this direction. The baseline starts at a point about 500 feet east of the exploration shaft and runs N20W. I.P. lines have been surveyed normal to the baseline and spaced 400 feet apart. The first line has a bearing S70W and is some 200 feet south of the exploration shaft. The lines vary in length from 1500 to 2200 feet and cover the geochemical anomaly.

#### SUMMARY AND CONCLUSIONS

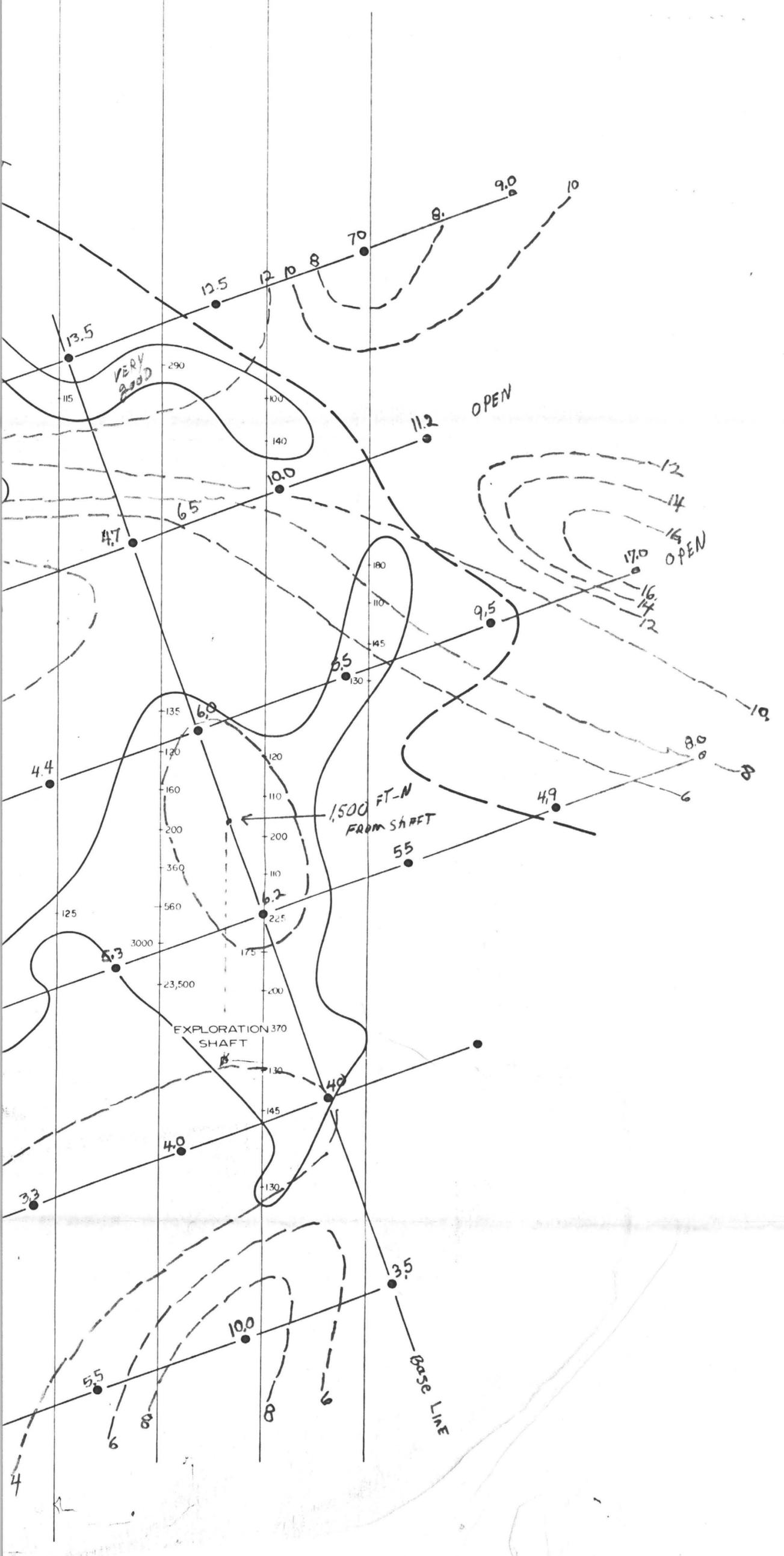
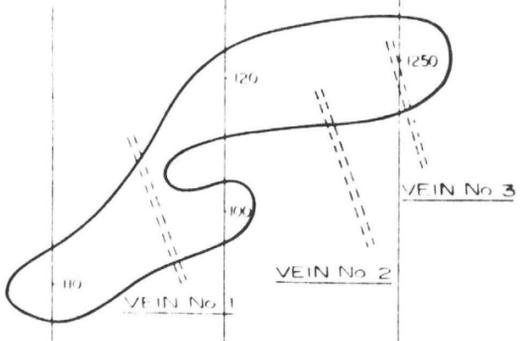
The Gorilla Group is still only a prospect, but as a prospect it has much. Based on the favorable locality for copper mineralization, the environment and nature of the mineralization as observed and the results from soil sampling, it is recommended that the proposed I.P. survey be carried out. Subsequent exploratory work will depend on the results of this survey.

Florence, Arizona.  
July 15, 1969.

Donald E. Anderson,  
Geological and Civil Engineer,  
Washington, No. 04805  
(Professor of Mining Engineering,  
University of Washington)

- 1 Geologic Map of Arizona by Eldred D. Wilson and Richard T. Moore, Arizona Bureau of Mines and John R. Cooper, U.S. Geological Survey; 1959.
- 2 Gorilla Property by A. C. Shea, May 2, 1969.
- 3 Distribution of Gorilla Geochemical Samples.
- 4 Geochemical & Proposed Induced Polarization Lines.
- 5 Geochemical - Geological Composite.





**LEGEND**

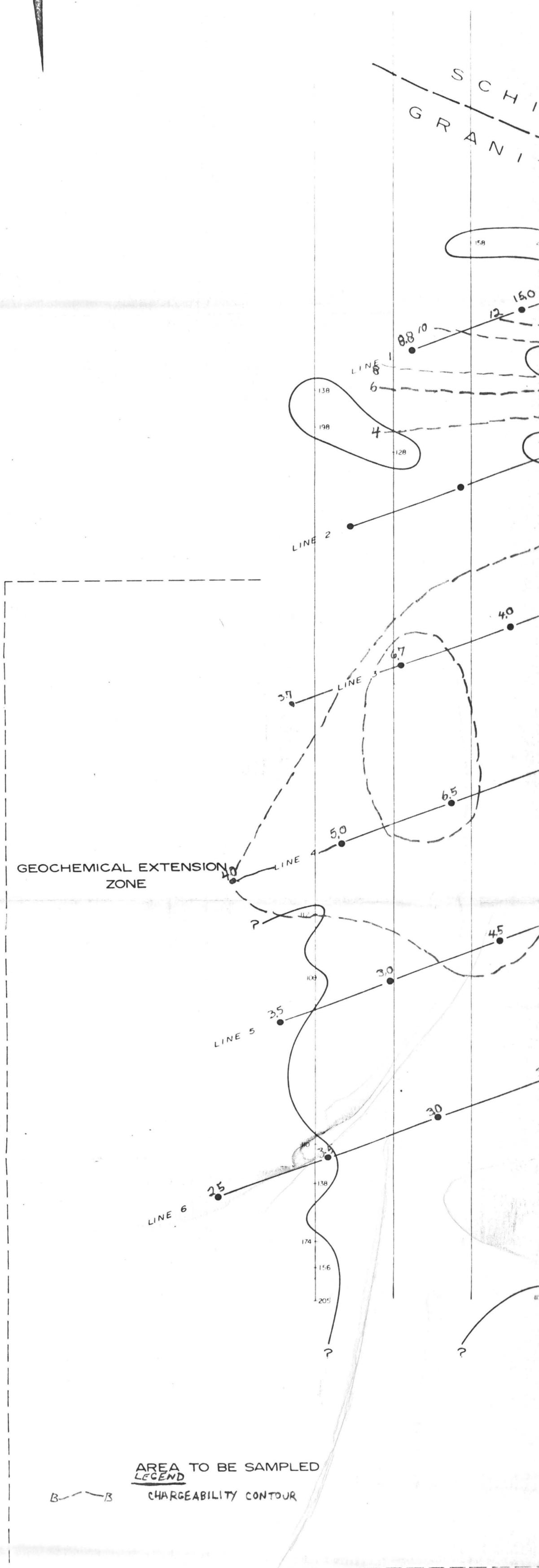
- — I.P. STATION
- — GEOCHEMICAL ANOMALY

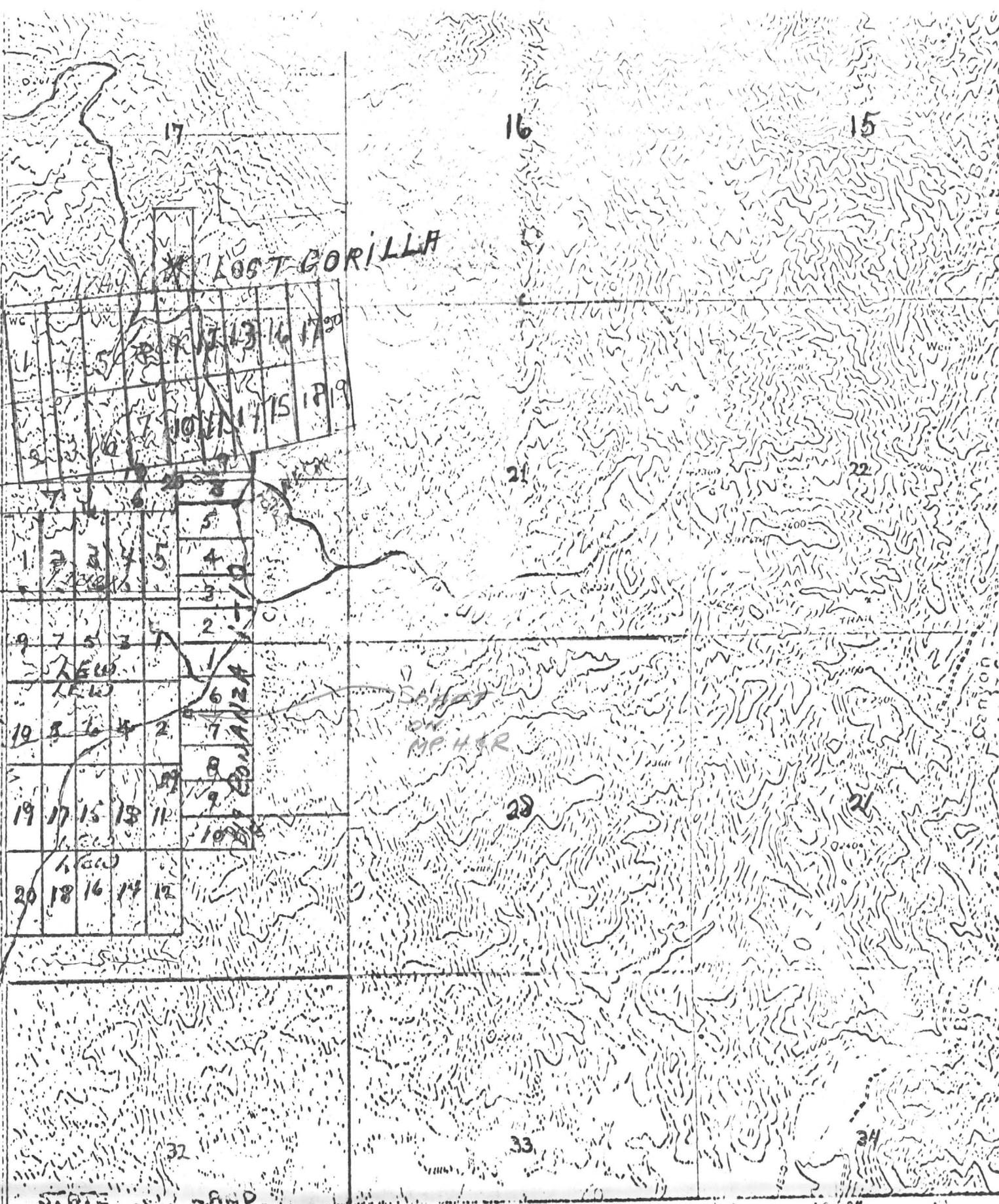
MP & HR CONSULTING LTD  
 MARGUERITE LAKE MINES LTD. (NPL.)  
**GEOCHEMICAL SURVEY & GEOLOGY**  
 GORILLA PROPERTY





SCH  
GRANI





Mapped, edited, and published by the Geological Survey.

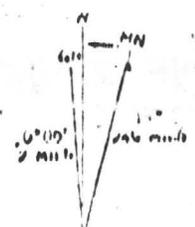
Control by USGS and USGS 443

Topography by photogrammetric method from aerial photographs taken 1962. Contour interval 100 feet.

Polyconic projection. U.S. National datum. 14,400-foot and based on Azimuthal conic map system, Central Zone.

1:50,000 scale. Universal Transverse Mercator grid ticks, zone 12, shown in blue.

SON Center for  
#27  
N End Center  
#14



USE THIS ANGLE ONLY IN CONNECTION WITH THE DECLINATION OF SECTION OF GRID

NEW CHAIMS  
MINERAL MT. PINAL COUNTY  
ARIZ.

SE. Cor. 29  
12  
HAWK Co. #10  
Bar #10

U.S. GEOLOGICAL SURVEY

## TABLE OF CONTENTS

	Page
INTRODUCTION.....	1
PROPERTY.....	1
SURVEY SPECIFICATIONS.....	2
Instrumentation.....	2
Electrode Configuration.....	3
Presentation of Data.....	3
INTERPRETATION.....	4
CONTOUR PLANS.....	6
CONCLUSIONS AND RECOMMENDATIONS.....	7

## APPENDICES

Map of apparent chargeability

n = 2            Scale 1" = 500 feet

Author's certificate

## INTRODUCTION

This report contains the results of an Induced Polarization Survey which was carried out by Mr. Carlos Aiken, a geophysicist, employed by Metals, Petroleum & Hydraulic Resources Consulting Ltd. This report was prepared in Vancouver, B. C. in November, 1970.

## PROPERTY

The property consists of 50 contiguous claims which are located on the south-west side of Mineral Mountain, about ten miles north-east of Florence, Arizona.

The claims which are recorded in the Court House, Florence, Arizona are listed as follows:

<u>Claim Name</u>	<u>County</u>	<u>Docket</u>	<u>Page</u>
Lost Gorilla 1	Pinal	522	451
Lost Gorilla 2	Pinal	522	452
Lost Gorilla 3	Pinal	522	453
Lost Gorilla 4	Pinal	522	454
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Lost Gorilla 7	Pinal	536	20
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Lost Gorilla 12	Pinal	536	25
Lost Gorilla 13	Pinal	536	26
Lost Gorilla 14	Pinal	536	27
Lost Gorilla 15	Pinal	536	28
Lost Gorilla 16	Pinal	558	113
Lost Gorilla 17	Pinal	558	115
Lost Gorilla 18	Pinal	558	116
Lost Gorilla 19	Pinal	558	117
Lost Gorilla 20	Pinal	558	118
LEW 1 to 20 Incl.	Pinal	571	442-441

<u>Claim Name</u>	<u>County</u>	<u>Docket</u>	<u>Page</u>
Big Bonanza 1	Pinal	560	854
Big Bonanza 2	Pinal	562	802
Big Bonanza 3	Pinal	562	803
Big Bonanza 4	Pinal	562	804
Big Bonanza 5	Pinal	562	805
Big Bonanza 6	Pinal	568	533
Big Bonanza 7	Pinal	568	534
Big Bonanza 8	Pinal	568	535
Big Bonanza 9	Pinal	568	536
Big Bonanza 10	Pinal	568	537

### SURVEY SPECIFICATIONS

#### Instrumentation:

The Induced Polarization equipment used was 2.5 kw. pulse-type transmitter manufactured by Sharp Instruments combined with a Scintrex Newmont type MKVII receiver.

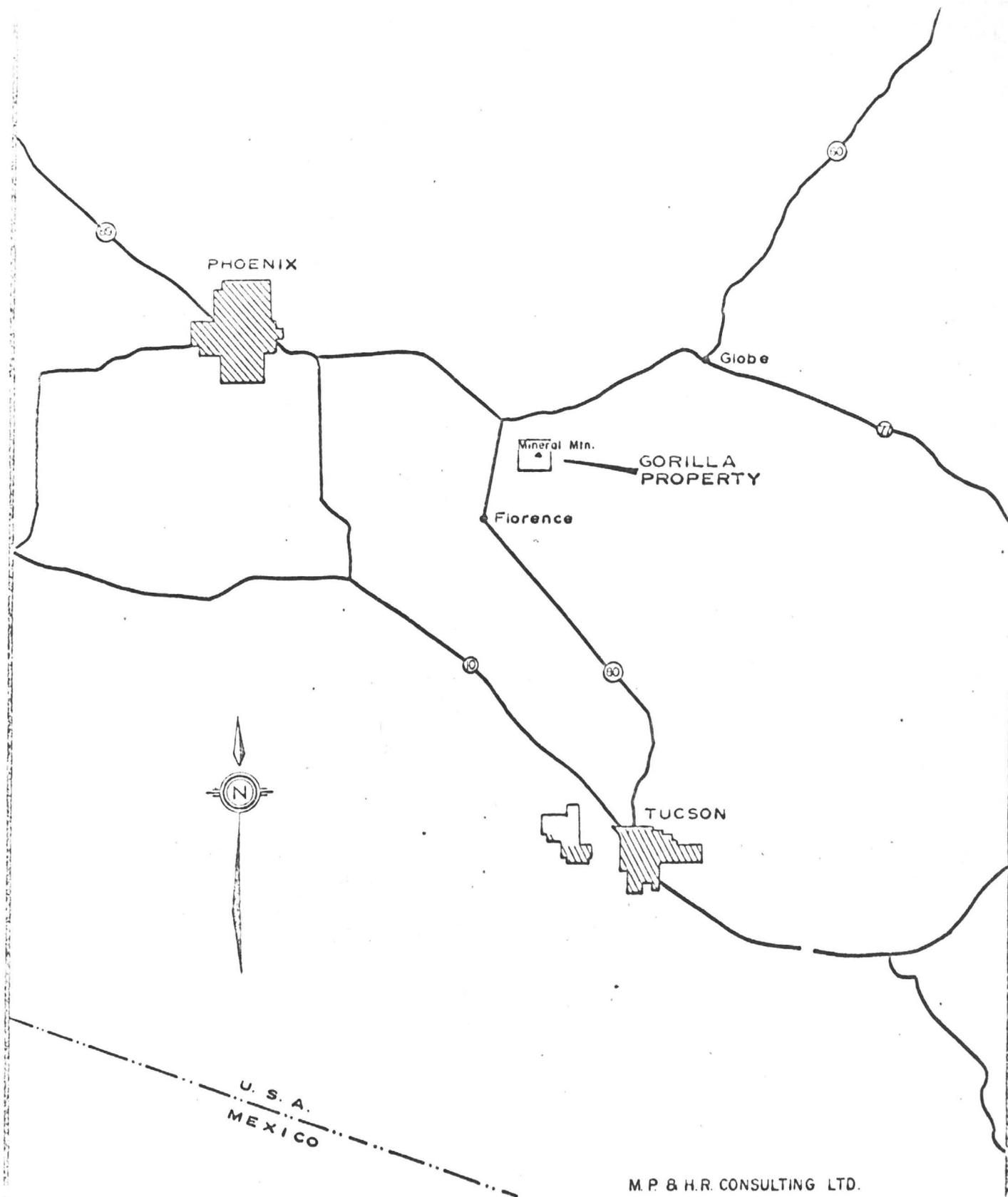
Type of Current	-	Direct current broken at periodic intervals
Pulse duration	-	2 seconds "current on" 2 seconds "current off" Alternate pulses have reverse polarity
Integrating time	-	650 milliseconds
Delay time	-	450 milliseconds
Maximum available current	-	5.0 amps

Measurements taken in the field were:

1. Current flowing through current electrodes  $C_1$  and  $C_2$ .

APPENDIX "A"

Report on Induced  
Polarization Survey by  
Fred Syberg, Geophysicist



M. P. & H. R. CONSULTING LTD.  
MARGUERITE LAKE MINES LTD. (N.P.L.)

**LOCATION MAP**

GORILLA PROPERTY  
PINAL COUNTY, ARIZONA

SCALE: 1" = 21 mi. Approx.

Nov 1970

JRG

(ARCAN) Posts had to be kicked down the way Cody had staked them  
The Gorilla Claims.

(1) ARCAN PUT UP (41) CORNER POSTS FOR THE ENTIRE GROUP.

(2) ARCAN DID NOT AMEND TO NEW LOCATIONS, THEREFORE  
PLACING CODY'S CLAIMS IN JEOPARDY, + MAKING GORILLA CLAIMS  
INVALID.

(3) ARCAN, <sup>Laid Out</sup> ~~STAKED~~ GORILLA CLAIMS, INTO MOON LOTS, WHICH WOULD HAVE  
MADE GORILLA CLAIMS INVALID. WOULD HAVE BEEN CLAIM JUMPING,  
FOR CODY.

(4) Fenster and Montsomery JUMPED "Low", and Pi's Bonanza Claims -  
Then Fenster and Montsomery GAVE QUIT CLAIM DEAL, TO ARCAN MINE CO,  
Whom only had lease from Cody, Davis, and Valenzuela.  
Fenster and Montsomery worked for ARCAN MINE CO, Davis Location work,  
and Drink Hole locations.

6. John Moore has <sup>the</sup> Strip Between Moon + Gorilla -  
(Cook ~~points~~) ON NORTH-OF GORILLA END CORNER.

2600
300
2940
300
3240

N 34 W

20

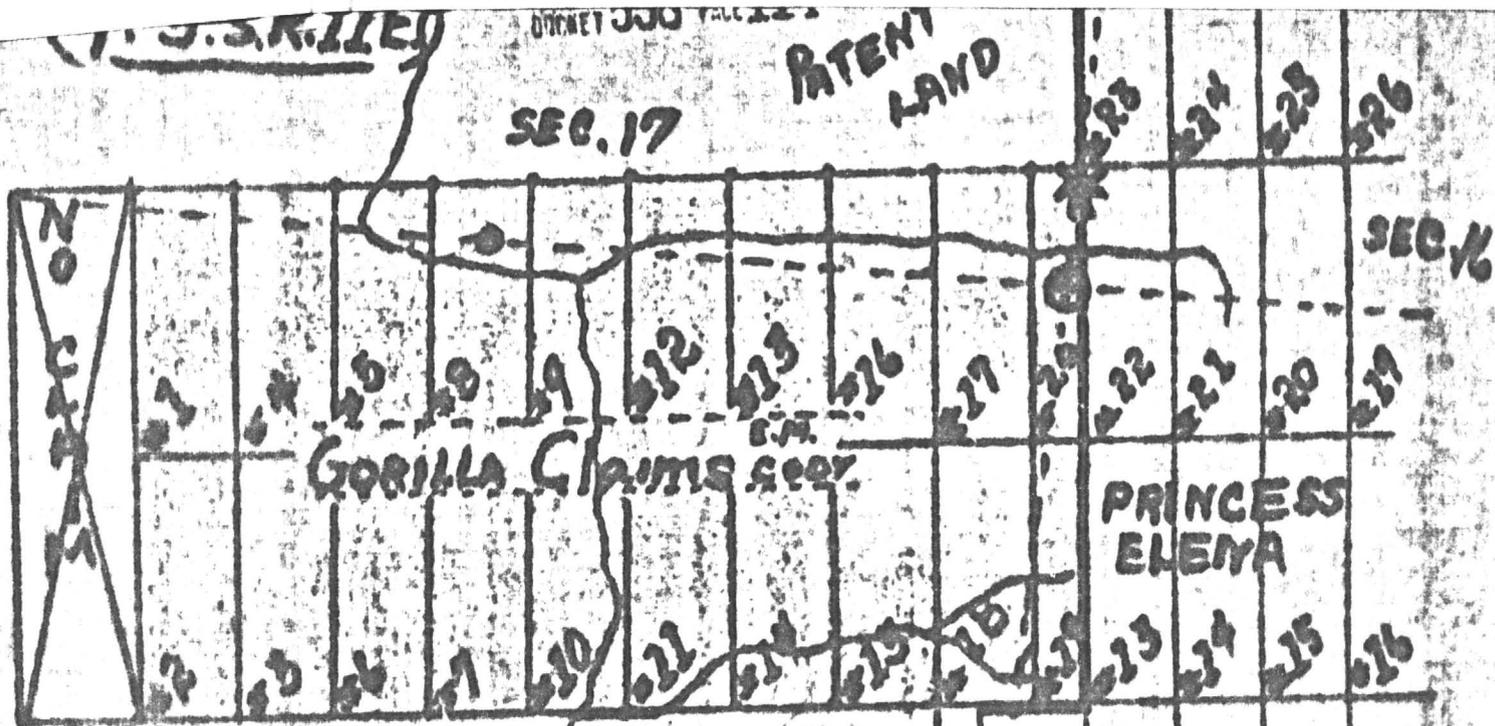
FORY

Shaw, Yaw

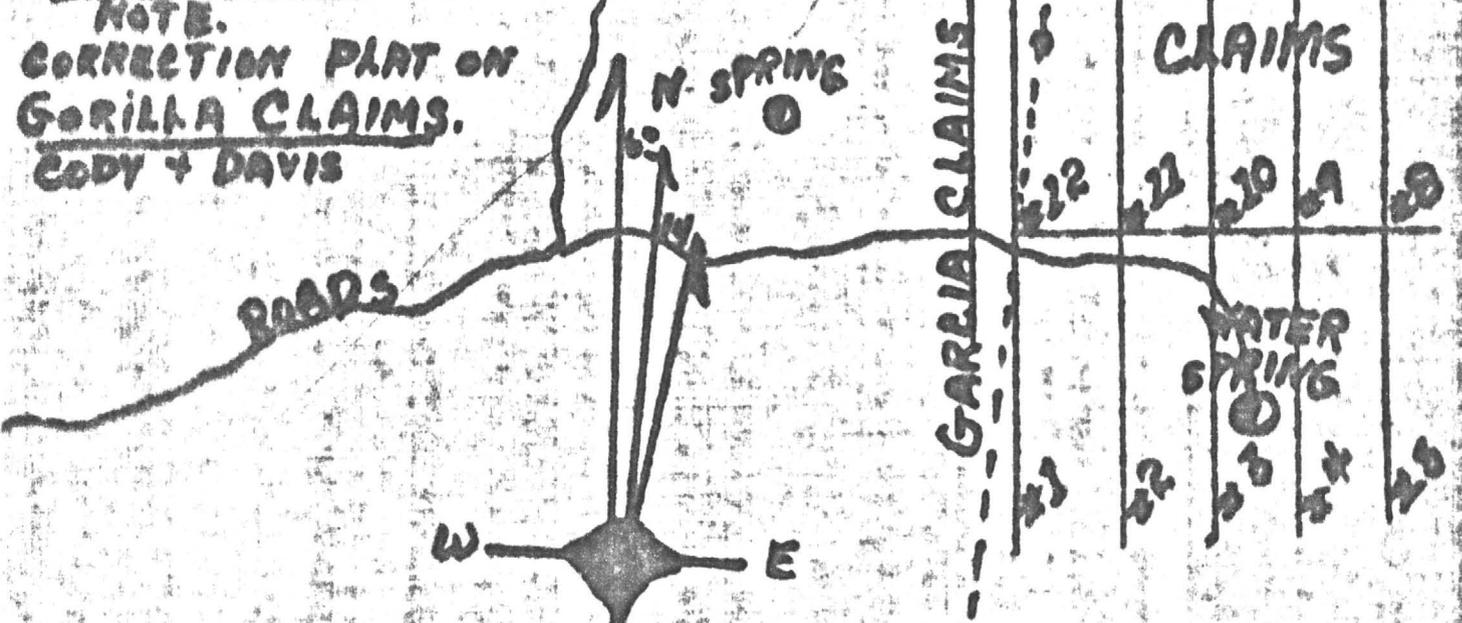
27-280 Million Dollars

500,000

The Mack...  
Group of IP...  
Mack...  
Location



NOTE.  
CORRECTION PLAT ON  
GORILLA CLAIMS.  
CODY + DAVIS



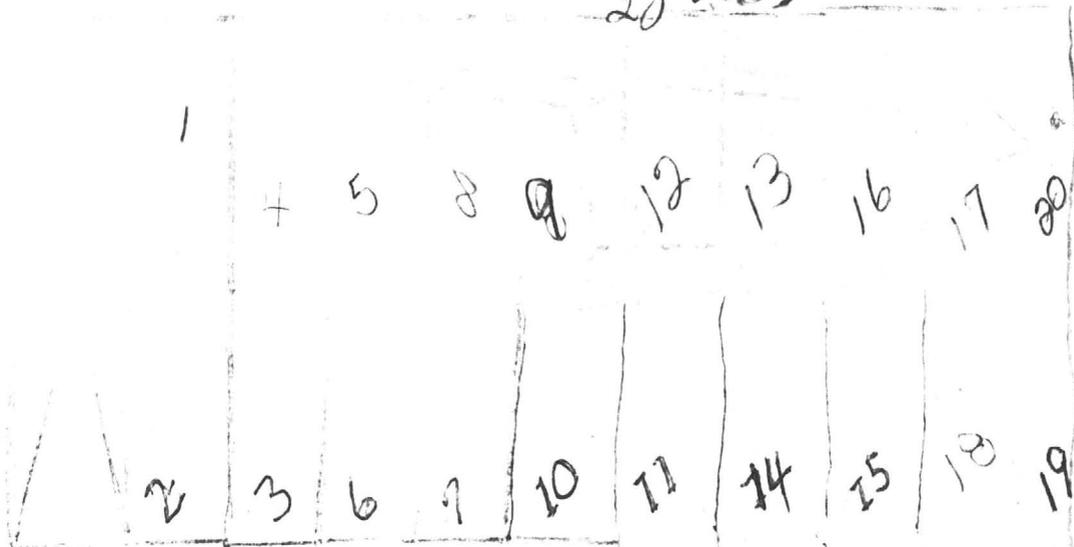
LEGEND

- SEC. CORNER
- GRASS GAP
- \* MINERAL SERVEY No. 3752
- \* SEC. GAPS
- SPRINGS

NOTE. PLAT FROM U.S.G.S. MAP  
MINERAL MOUNTAIN QUAD. DAN  
GORILLA CLAIMS (EMIL CODY VALENTIN  
RALPH DAVIS and  
PLAT BY J.P. MARCUS (ENGINEER)  
M. D. C. I.  
CLAIMS 6'.00 MIN. W of True North.

DOCT 558 P. 114

SEC. 17  
20 vs 35



Burned

~~20~~

19

~~20~~

Proportion

DAY  
FLYING

20

Dudley W. Lewis  
3450 N. Mountain Ave  
Tucson, Ariz  
388 5719

Keep  
(Only copy we have)  
Only know to see  
Lead

Dudley: Hope this is  
all you need. Good  
fortune in getting proper  
people to develop & operate  
this fabulous property,  
Emil & Mary

PRELIMINARY REPORT  
ON  
GORILLA PROPERTY  
FLORENCE, ARIZONA

for

MARGUERITE LAKE MINES LTD (N. P. L.)

November 30th, 1970

James R. Glass  
Consulting Geologist

## TABLE OF CONTENTS

	Page
SUMMARY.....	1
CONCLUSIONS.....	3
RECOMMENDATIONS.....	4
BUDGET FOR PROPOSED PROGRAMME.....	5
PROPERTY AND LOCATION.....	7
TOPOGRAPHY.....	8
CLIMATE AND VEGETATION.....	8
HISTORY.....	8
REGIONAL GEOLOGY.....	9
LOCAL GEOLOGY.....	9
MINERALIZATION.....	9
GEOCHEMICAL SURVEY.....	11
GEOPHYSICAL SURVEY.....	12
CERTIFICATE.....	13

## APPENDICES

Report on Induced Polarization Survey by  
Fred Syberg, Geophysicist

Map of Geochemical Results - Scale 1" = 500 feet

Map of Induced Polarization Results - Scale 1" = 500 feet

## SUMMARY

Marguerite Lake Mines Ltd (N.P.L.) holds the rights to 50 contiguous mining claims, located about ten miles north-east of Florence, Arizona.

Kennecott's 23,000 ton per day open pit mine at Ray, is seventeen miles east of the Marguerite property. Newmont's 1,500 ton per day underground mine at Superior is fourteen miles to the north-west and the Miami copper camp with a combined production of some 36,000 tons per day is thirty miles to the north-west.

The rock formations underlying the claim group are Precambrian Pinal schist and Precambrian quartz monzonite. Pinal schist is host rocks for copper mineralization at the Ray Mine and at the Miami mining camp. The Precambrian monzonite is host rock for the copper mineralization in other mines in Arizona.

Three parallel veins containing gold, silver and copper cut the Pinal schist. A small amount of mining has been done on these veins, although no shipments have been recorded.

Copper mineralization has been found over a wide area in the Precambrian granite and subsequent geochemical soil surveys and induced polarization surveys have indicated coincidental anomalous conditions.

It is recommended that an exploration programme be initiated on this property which should include the following:

1. Reconnaissance geochemical soil sampling
2. Reconnaissance induced polarization survey
3. Diamond drilling *or hammer*

It is anticipated that the budget for this programme would be \$86,000.00 divided into two phases.

## CONCLUSIONS

1. Sporadic copper mineralization has been found in Precambrian quartz monzonite over an area approximately 3,000 feet by 2,000 feet. This copper occurs mainly as a chrysacolla stain on fracture planes but it is also disseminated through the rock at times. One vein containing chalcocite has been noted and minor amounts of molybdenum have been seen.
  
2. Three veins containing copper, gold and silver cut the Pinal schist. Samples of these veins as reported by Dr. A. C. Skerl returned the following assays:

<u>Vein</u>	<u>Cu</u>	<u>Au</u>	<u>Ag</u>	<u>Width</u>
No. 1	1.24	0.17	0.10	4'
Dump of vein mat- erial	not assayed	0.14	0.10	

The extension of one of the veins can be seen for many hundreds of feet with the vein swelling to a width of 20 feet in places.

3. Anomalous amounts of copper are found in the soil in five separate zones in the vicinity of the known copper mineralization. Two of these zones are "open" to the west.
  
4. An induced polarization survey performed over part of the property shows an area of high chargeability near the contact between Pinal schist and the Precambrian quartz monzonite and an area of moderate chargeability over the main geochemical anomaly.

## RECOMMENDATIONS

### PHASE I

1. Perform a geochemical soil survey along the southern and western extensions of the present survey.
2. Perform an induced polarization survey to the north of the present survey and extend the coverage on lines No. 2 and No. 3 to the east.
3. Sample the bedrock under the present induced polarization anomaly by drilling holes to a depth of 700 feet. Sample the bedrock under the geochemical anomaly-moderate induced polarization anomaly by drilling one hole to a depth of 700 feet.

### PHASE II

4. <sup>or hammer</sup> Diamond drill any subsequent induced polarization anomalies found in the proposed survey. It is anticipated that 3,400 feet of drilling would adequately explore and sample any bedrock source.

BUDGET FOR PROPOSED PROGRAMMEPHASE I

Geochemical Survey	\$ 2,000.00
Induced Polarization Survey	\$ 3,500.00
Surveying and geological mapping	\$ 1,000.00
Vehicles	\$ 1,000.00
Travel and living expenses	\$ 1,500.00
Diamond drilling 1,400' @ \$10.00/ft	\$14,000.00
Engineering-assaying, drafting etc	\$ 2,000.00
Administration	\$ 1,000.00
Contingency	\$ 3,000.00
	<hr/>
TOTAL	\$29,000.00
	<hr/> <hr/>

PHASE II

Diamond drilling, 3,400' @ \$10.00/ft	\$34,000.00
Drill pad preparation and bulldozer work	\$ 5,000.00
Engineering and Supervision	\$ 6,000.00
Living and accommodation	\$ 1,000.00
Administration and Communication	\$ 4,000.00
Sampling and Mapping	\$ 1,000.00
Vehicles	\$ 1,000.00
Contingencies	\$ 5,000.00
PHASE II TOTAL	<u>\$57,000.00</u>
PHASE I TOTAL	<u>\$29,000.00</u>
GRAND TOTAL	<u><u>\$86,000.00</u></u>

PROPERTY AND LOCATION

Marguerite Lake Mines Ltd (N. P. L.) holds an option on 50 contiguous mining claims which are located some ten miles north-east of Florence, Arizona on the south-west side of Mineral Mountain. The claims are recorded in the Court House, Florence, Arizona, as follows:

<u>Claim Name</u>	<u>County</u>	<u>Docket No.</u>	<u>Page</u>
Lost Gorilla 1	Pinal	522	451
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LEW 1 to 20 Incl.	Pinal	571	442-461
Big Bonanza 1	Pinal	560	854
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Big Bonanza 3	Pinal	562	803
Big Bonanza 4	Pinal	562	804
Big Bonanza 5	Pinal	562	805
Big Bonanza 6	Pinal	568	533
Big Bonanza 7	Pinal	568	534
Big Bonanza 8	Pinal	568	535
Big Bonanza 9	Pinal	568	536
Big Bonanza 10	Pinal	568	537

The 50 claims make up an area of approximately 1,050 acres.

The property can be reached by a fairly good gravel road maintained by local ranchers.

## TOPOGRAPHY

The topography is gently rolling with elevations from 2,000 feet to 2,300 feet. Intermittent streams flow in the sand-filled gulleys during the rainy seasons.

## CLIMATE AND VEGETATION

The climate is desert-type. Winter temperatures seldom reach freezing point and summer temperatures peak around 110°F. Rainfall annually is less than eight inches. Vegetation includes many kinds of cactus, mesquite bushes and palo verde trees.

## HISTORY

There is no history of significant mining from the Gorilla property. Limited mining was done on one of the copper, silver, gold veins cutting the Pinal schist, but no shipment records exist.

An exploration shaft was sunk at least 60 feet which is located south of the main area of showings. No mineralization was observed in the dump of this shaft.

Arcan Mining & Smelting Ltd (N. P. L.) acquired an option to the property by an Agreement dated June 11, 1969, and Marguerite acquired an option from Arcan in July, 1970. Dr. A. C. Skerl (P. Eng.,) of Vancouver, Canada, visited the property in April of 1969, sampled two of the veins and made a brief geological examination and recommended that further work be done. To date Marguerite has performed a geochemical survey and Metals Petroleum and Hydraulic Resources Consulting Ltd has carried out an induced polarization survey and an extremely cursory geological examination.

## REGIONAL GEOLOGY

The Gorilla property is on the western portion of the Tortilla Mountains, part of the basin and range province. These mountains consist of Precambrian granite, quartz monzonite, granodiorite and quartz diorite; locally there are other igneous rocks of post Paleozoic age. The granitic rocks intrude Precambrian Pinal schist and are overlain by Tertiary volcanics and sedimentary rocks.

## LOCAL GEOLOGY

The rocks underlying the property consist of Precambrian Pinal schist intruded by Precambrian quartz monzonite.

Schistosity is approximately N 15° W, dipping steeply to the west.

The quartz monzonite is altered somewhat, and is cut by aphanitic acidic dykes which are classified as rhyolite.

North of the schist monzonite contact is a prominent ridge of highly altered limestone which is overlying the Pinal Schist. The exact relationship however, is unknown at this time.

## MINERALIZATION

Three veins of widths from less than two feet to over twenty feet, are found in the Pinal Schist, in the northern portion of the property. These veins are in large shear zones, strike approximately N 15° W, and dip to the west at 65°. They are conformable with the schistosity.

Vein material consists of vuggy quartz, specular hematite with secondary limonite and jasper. Copper stain is noted in the material although no copper sulphides were seen. A band of altered limestone is associated with one of the veins.

Assays taken by Dr. A. C. Skerl returned the following:

<u>Vein No.</u>	<u>Au oz/ton</u>	<u>Ag oz/ton</u>	<u>Cu %</u>	<u>Width</u>
No. 1	0.17	0.10	1.24	4'
No. 2	0.14	0.14	Not assayed	dump
No. 3	0.11	0.3	Not assayed	4'

An assay taken by Marguerite returned the following:

No. 2	0.11	0.13	1.84	3'
-------	------	------	------	----

The surface expression of one of the veins can be seen extending to the north for many hundreds of feet.

There are some old workings in the ridge of altered limestone, but no economic mineralization was seen.

Small patches and stringers of "oxide" copper mineralization are seen in the quartz monzonite over an area approximately 3,000 feet by 2,000 feet. Some fairly local concentrations of copper are included in this area. With one exception the copper is found in the "oxide" form, i. e. chryso-colla, chalcantite. One vein of chalcocite was noted.

Molybdenite was seen disseminated in the granite in one location.

An old exploration shaft was sunk in the monzonite south of the main zone of mineralization. No copper mineralization was seen in this old working.

### GEOCHEMICAL SURVEY

During the year 1969, Arcan Mining & Smelting Ltd (N. P. L.) carried out a geochemical soil survey over the property. The results of this survey are plotted on map of scale 1" = 500 feet included with this report.

Background in the area is considered to be 30 parts per million of copper. Any value over 100 parts per million is considered to be anomalous. There are five areas on the survey that are anomalous, as well as a number of single "highs."

The main anomaly is of dimensions roughly 1,500' x 1,200' with an individual high of 23,500 ppm. This anomaly coincides fairly well with the main surface mineralization. Patches of mineralization however, are seen outside the anomalous area.

One lense-shaped anomaly is associated with the schist-monzonite contact. It has dimensions roughly 2,500' x 200' with an individual high of 290 ppm.

One anomaly is associated with the mineralized veins in the schist. It has dimensions roughly 1,500' x 200' with an high of 1,250 ppm.

Two anomalous zones exist on the west side of the property. Both these are "open" to the west so the ultimate size is unknown at this time. In the smaller anomaly the individual high is 198 ppm and the other peaks at 205 ppm.

## GEOPHYSICAL SURVEY

In 1970 an induced polarization survey was carried out by Metals, Petroleum & Hydraulic Resources Consulting Ltd on behalf of Marguerite Lake Mines Ltd (N. P. L.) The survey was carried out along six lines spaced 1,000 feet apart with an electrode separation of 800 feet using a dipole-dipole configuration and searching to a theoretical depth of approximately 1,600 feet.

The results of this survey and the report prepared by Mr. Fred Syberg, geophysicist, are included with this report.

Mr. Syberg states that there is a definite high chargeability zone near the schist granite contact which may be caused by massive sulphides. He further states that a rather subtle anomaly with readings slightly above background is found over the area containing the surface mineralization. Mr. Syberg recommends that diamond drilling be used to sample the bedrock under these two areas.

Respectfully submitted,



James R. Glass, B. Sc.,

Consulting Geologist

2. Primary voltage,  $V_p$ , between measuring electrodes during "current off" time.  $V_s$  divided by  $V_p$  gives the apparent chargeability (Ma) in milliseconds.

The apparent resistivity is calculated by dividing  $V_p$  by the current and multiplying by the geometrical factor appropriate to the electrode array being used.

#### Electrode Configuration:

The entire survey was carried out using the dipole-dipole configuration or array. The current electrodes  $C_1$  and  $C_2$  and the potential electrodes,  $P_1$  and  $P_2$  are moved in unison along the survey line. Current is applied to the ground at two points a distance (a) feet apart. The potentials are measured at two points (a) feet apart, in line with the current electrodes. The distance between the nearest current and potential is an integral number (n) times the basic distance (a). For this survey "a" was chosen to be 800 feet and "n" values of 1, 2, 3 and sometimes 4 were used.

The product of "n" and "a" is a rough approximation of the maximum depth of penetration. Covering the survey area using multiple separations provides more information as to depth, dip, location and metallic distribution of sources than does a single profile.

#### Presentation of Data:

The survey results are plotted in the two-dimensional "pseudo-section" manner with apparent resistivity in ohm-feet being plotted above the survey line and chargeability (Ma) in milliseconds below. This method of display is not to be taken as the vertical section of the electrical properties of the ground surveyed. The electrode separation is only one factor that determines the depth to which the ground affects a measurement. It is rather a convenient way of plotting all the data, especially lines of limited length.

The reading for any given set up is the mid-point between the centre point of the current electrodes and the centre point of the potential electrodes.

Contour plan maps of the apparent resistivity and chargeability were also plotted for  $n = 2$ .

The data received by the author of this report is believed to be accurate and the survey appears to have been well executed.

### INTERPRETATION

The interpretation was based on a study of the existing chargeability and resistivity data both in "pseudo-section" as well as in contour form. Generally, highest priorities were given to anomalous areas having high chargeabilities and low apparent resistivities along with greatest lateral and depth extent.

The two-dimensional "pseudo-sections" were mainly used to obtain information regarding apparent dip, depth determinations, and vertical distribution of metallicly conducting material along the lines surveyed.

The contour plans provide information concerning strike, true dip, lateral distribution between survey lines and were used to correlate chargeability and resistivity with geological and geochemical data.

### SECTIONS

Line No. 1

The maximum apparent chargeability was 15 milliseconds which is considered above a variable background chargeability across the property of an estimated maximum of 6 milliseconds in the area of this line. The shape of the profile suggests a good anomalous condition due to an I. P. source with an easterly dip

in the direction of the line. It is suggested that the vertical extent of the I. P. source is greater than 800 feet since no "double peaking" is evident. There appears to be some correlation between low resistivity and high chargeability.

Line No. 2

This line should be extended beyond the 11.2 millisecond reading, for  $n = 2$ , at the eastern end of the line in attempt to show a similar condition to that along Line No. 1. There is a good correlation between low resistivity and high chargeability. along this line.

Line No. 3

The background chargeability appears to change from 4 milliseconds in the western area covered by this line to about 7 milliseconds at the eastern end. Therefore, an anomalous condition exists at the eastern end of this line which is open to the east. The correlation between resistivity and chargeability is not significant.

Line No. 4

No apparent anomalous conditions seem to appear along this line.

Line No. 5

No apparent anomalous conditions seem to appear along this line.

Line No. 6

The background chargeability of the area covered by this line appears to be of the order of 3 milliseconds suggesting an anomalous area in the neighbourhood of station 8 W.

Since only the reading at 16 W may be suggesting a continuous anomaly, some detail surveying should be done in this area in order to verify the high value. There appears to be no correlation between low resistivity and high chargeability.

#### CONTOUR PLANS

The contour map for  $n = 2$  suggests a high chargeability trend across lines No. 1, No. 2 and No. 3. In the neighbourhood of station 8 E along line No. 3 this trend coincides with a granite-schist contact. Along Line No. 2 this coincidence is fair, and along line No. 1 there exists no coincidence. Consequently, it is believed that the I. P. sources may not necessarily be related to the contact. The pattern of the contours in this area suggests an I. P. source which dips in a N. N. easterly direction and has a W. N. westerly strike. Along Lines No. 1 and No. 2 the anomalous pattern coincides with four geochemical anomalies striking in approximately the same direction.

A rather subtle anomaly may be suggested along the baseline and between Lines No. 3 and No. 4. The relief of this pattern is only slightly above background; however, it coincides with an anomalous geochemical condition. Since an electrode spacing as large as 800 feet was used it is possible, when using a 2.5 kw. transmitter, that anomalies due to interesting mineralization could be subtle due to averaging over very large volumes. The author of this report has in a number of surveys made such observations.

## CONCLUSIONS AND RECOMMENDATIONS

The background chargeability appears to vary across the granite-schist contact with the background being estimated at about 3 to 4 milliseconds throughout the granitic rocks and as high as 7 milliseconds in the contact area or in the schist.

The anomalous areas vary from two times background to slightly above background. Then highly anomalous areas would suggest mineralization well in excess of 1% sulphides or equivalent oxides. This rule could be varied in light of the large electrode spacing such that a much smaller anomaly relative to background may be indicative of commercially interesting mineralization. The coincident geochemical anomalies and favourable rock units seem to support this suggestion.

Mineralization in the anomalous area could be massive in the area of the granite-schist contact. In the granitic rock units the mineralization is most likely disseminated as is suggested by the history of the Arizona metallogenic province.

It is recommended that further surveying be done along the eastern extensions of Lines No. 2 and No. 3.

It is further recommended that a diamond drill programme be undertaken to investigate the sources of the I. P. anomalies and the geochemical anomalies. At least three diamond drill holes should be spotted to investigate the I. P. anomaly crossing lines No. 1 and No. 2. Also, a drill hole should

be spotted on the baseline and between lines No. 3 and No. 4. All core holes should be drilled to a minimum of 800 feet vertical.

Respectfully submitted,

A handwritten signature in cursive script that reads "F. J. Syberg".

Fred J. Syberg, B.Sc.,

Consulting Geophysicist

November 15, 1970