

3614

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3614 MAP

REPORT ON
AN INDUCED POLARIZATION SURVEY
HARRISON LAKE AREA, BRITISH COLUMBIA
ON BEHALF OF
G. M. EXPLORATIONS LIMITED (N.P.L.)

92H/12E

by

Peter J. Fominoff, B.A.Sc.

and

Jan Klein, M.Sc., P.Eng. (Ontario)

November 24, 1971

CLAIMS:

Name

Ni 1 - 6, 8, 25, 27

LOCATION:

About 20 miles north of Harrison Hot Springs, B.C.
East side of Harrison Lake
New Westminster Mining Division
121° 49° NW

DATES:

September 9 to September 20, 1971

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SUMMARY

An induced polarization survey completed over the present property has revealed several locations of increased chargeability responses. Some of these locations have been correlated with geochemical and ground magnetometer data in order to establish areas of priority in further investigations. Three areas have been given priority and others are suggested for continued exploration. Because the type of deposits being sought are known to be of small dimensions in comparison to the electrode spacing employed, the chargeability responses from such bodies may be only slightly above background.



REPORT ON
AN INDUCED POLARIZATION SURVEY
HARRISON LAKE AREA, BRITISH COLUMBIA
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INTRODUCTION

During the period September 9 to September 20, 1971, a geophysical field party under the direction of Mr. Christian Zogg, cut some survey lines and executed an induced polarization survey in the Harrison Lake area, British Columbia on behalf of G. M. Explorations Limited (N.P.L.).

The property lies about 20 miles north of Harrison Hot Springs and is reached by a gravel road negotiable by a pick-up truck. The property is located on a steep hillside and is heavily forested. It is typical of the rugged west coast mountain terrain.

The claims covered, in whole or part, by this survey are listed on the title page of this report and are shown on Plate 4 on a scale of 1 inch = 500 feet.

Scintrex Mk VII time-domain (pulse-type) induced polarization equipment has been employed on this property. The transmitting unit had a rating of 2.5 kilowatts and equal on and off times of 2.0 seconds. The receiving unit was a remote, ground-pulse type triggered by the rising and falling primary voltages set up in the ground by the transmitter. The integration of the transient polarization voltages takes place for 0.65 seconds after a 0.45 second delay time following the termination of the current on pulse.

The purpose of an induced polarization survey is to map the subsurface distribution of metallicly conducting mineralization beneath the grids covered. In the present area such mineralization could include



chalcopyrite, pyrite, pyrrhotite, and other metallic sulphide minerals. Metallic minerals such as graphite and magnetite as well as non-metallic minerals such as chlorite and sericite can give responses not always distinguishable from sulphide mineralization.

The three electrode array was employed for the survey. For this electrode array, one current electrode and two potential electrodes traverse the profiles with an interelectrode spacing called "a". The second or "infinite" current electrode is placed a distance greater than $5a$ from the measuring point which is defined as the midpoint between the moving current electrode and the near potential electrode. For the reconnaissance survey observations were taken for $a = 200$ feet and 400 feet. Station intervals were 200 feet. For detail some observations were also taken with $a = 100$ feet and 100 foot station intervals.

The grid cut and surveyed consisted of nine lines of various lengths oriented north-south. A plan map of the grid is shown on Plate 2. The survey totalled about 4.0 line miles.

GEOLOGY

A local geology map on the scale of 1 inch = 500 feet compiled by G. M. Explorations Limited (N.P.L.) has been made available to the writer. The grid area is underlain by two main rock types. The eastern part of the grid is underlain by diorites and the central and western portions are underlain by peridotite. A few outcrops mostly of peridotite occur in the survey area.

The target of the present survey was copper-nickel sulphide mineralization which is expected to be associated with the mafic and ultramafic rocks detected by an air magnetometer survey. The mineralization



sought would be similar to that of the nearby producing Giant Mascot Mine.

Geochemical and ground magnetometer data has been made available by G. M. Explorations Limited (N.P.L.) to the writer and is used as supporting data in the interpretation of the induced polarization results.

DISCUSSION OF RESULTS

Plate 3 on the scale of 1 inch = 500 feet shows the chargeability (induced polarization characteristic of the rock) and the resistivity results in profile form. The vertical scales for these profiles are 1 inch = 20.0 milliseconds for chargeability and 2 inches = 1 logarithmic cycle with the line trace taken as 1000 ohm-meters for resistivity.

The background chargeability ranges from about 2.0 milliseconds to about 15.0 milliseconds. Such a background indicates a widespread distribution of about 1 percent by volume of metallicly conducting material. From the background responses, the chargeabilities from the wider spaced electrodes are seen to be greater in amplitude by more than 50 percent. This indicates an increasing content of chargeable material with depth. The large difference in amplitude for the two spacings on Line 2-32 probably indicates increasing overburden thickness. Chargeability responses of greater than 40.0 milliseconds occur over most of Lines 2-24 and 2-25. The source of the responses is interpreted to contain more than 4 percent by volume of metallicly conducting material.

A source of chargeability responses reaching 40.0 milliseconds and indicating up to 4.0 percent by volume of metallicly conducting material occurs on Line 2-26. The source dips to the north and is near surface between 30 N and 34 N. Several other areas of chargeability increases have been picked. All the areas are plotted on Plate 2 together



with any magnetic and geochemical correlations.

It should be noted that since small sulphide deposits of less than 100 feet in diameter are being sought, the chargeability responses from the 200 and 400 foot electrode separations may be only slightly above background. The sulphide content would be averaged over the total area influenced by the electrode spread and over the intervening overburden layers.

The resistivity responses are very similar for both electrode spacings on all lines except Line 2-32 and the southern end of Line 2-29. The higher resistivity with narrower electrode spacings on the latter two lines indicates decreasing resistivity with depth. There is a resistivity gradient across the property increasing to the west. The increase is apparent on both the 200 and 400 foot electrode spacings and thus is attributed to a gradual change in bedrock resistivity rather than overburden.

There is also a marked increase in resistivity on the north ends of Lines 2-27 to 2-30. The resistivity contact is shown on Plate 2 and it may indicate a change in rock phase or type.

There is no definite correlation between the chargeability and the resistivity responses from the 200 and 400 foot electrode separation results. The chargeability increases located with the 100 foot electrode separations can be correlated with resistivity increases.

CONCLUSIONS AND RECOMMENDATIONS

The present induced polarization survey has revealed several areas of chargeability increases as shown on Plate 2. The locations of increases have been correlated with geochemical data and ground magnetometer data in order to determine the most favourable locations for further



exploration. Because of the small size of sulphide bodies sought, line to line correlation is not possible. In most cases the shape of the chargeability profile changes completely between adjacent lines. Also because the bodies may be of small dimensions, the increases on the 200 and 400 foot electrode separations may be small when the sulphide content of the body is averaged over a larger area.

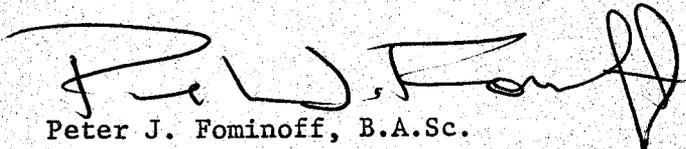
For further exploration, areas of increased geochemical response and decreased magnetic susceptibility have been correlated with locations of increased chargeability. The areas are listed as follows:

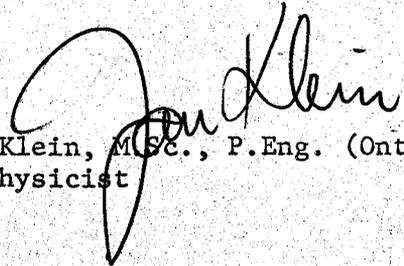
<u>LINE</u>	<u>LOCATION</u>
2-24	46 N - 50 N
2-25	39 N - 42 N
2-26	33 N - 38 N

The latter three areas are recommended as priority areas in further investigations. Other areas of interest are shown on Plate 2.

Respectfully submitted,

SEIGEL ASSOCIATES LIMITED


Peter J. Fominoff, B.A.Sc.
Geophysicist


Jan Klein, M.Sc., P.Eng. (Ontario)
Geophysicist

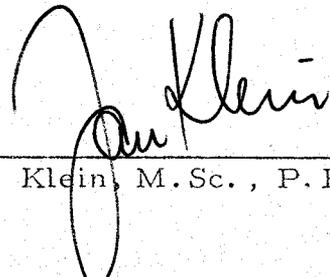
Vancouver, B. C.
November 24, 1971



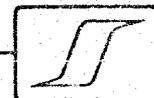
1. I, Jan Klein, reside at 375 Cloverdale Court, Newmarket, Ontario.
2. I have an M.Sc. (1965) from the Technical University of Delft, The Netherlands.
3. I am a Professional Engineer in the Province of Ontario (1968).
4. I have applied for a non-resident Engineers Licence in British Columbia.
5. I have worked in Europe, Africa, South America and Canada.
6. I possess experience in both airborne and ground geophysics, since 1965.
7. I am a member of the Society of Exploration Geophysicists (SEG), the European Association of Exploration Geophysicists (EAEG), and the Canadian Exploration Geophysicists Society (KEGS).

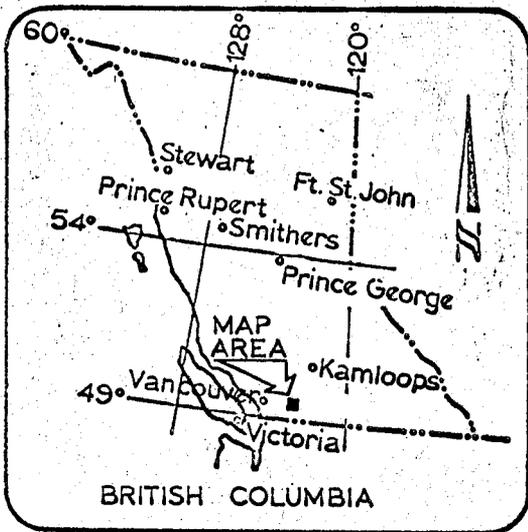
Dated at Toronto, Ontario this

11th day of January, 1972



J. Klein, M.Sc., P. Eng.

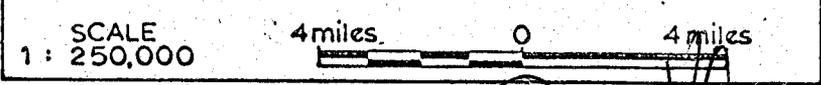




G.M. EXPLORATIONS LTD.

LOCATION MAP

HARRISON LAKE AREA BRITISH COLUMBIA



Survey by SEIGEL ASSOCIATES LIMITED
 SEPTEMBER 1971

[Handwritten signature]
 PLATE

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
To Wit:

In the Matter of a geophysical survey on behalf of
G.M. Explorations Limited

I, L. A. Merrifield for Seigel Associates Limited
of 750 - 890 West Pender Street, Vancouver

in the Province of British Columbia, do solemnly declare that an induced polarization survey and some line cutting has been completed on some Ni claims in the Harrison Lake area, British Columbia between September 9 to September 20, 1971. The following expenses were incurred:

(1) Wages:			
C. Zogg	10 1/2 days @ \$35.00/day	\$367.50	
K. Murback	10 1/2 days @ \$27.50/day	288.75	
R. Amis	6 1/2 days @ \$27.50/day	178.75	
E. Novotny	6 1/2 days @ \$27.50/day	178.75	
H.P. Winzeler	6 1/2 days @ \$27.50/day	178.75	
R. Paradis	4 days @ \$35.00/day	140.00	
		<u>\$1,332.50</u>	\$1,332.50
(2) Transportation & shipping on the job			13.42
(3) Transportation on the job			221.15
(4) Food & living expenses			62.17
(5) Use of geophysical equipment			
	6 1/2 days @ \$50.00/day		325.00
(6) Paid to Seigel Associates Limited to cover geophysicist's supervision, calculating, plotting and fairdrawing data and preparation of final reports.			<u>1,095.01</u>
			\$3,049.25

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 18th
day of January, 1972, A.D.

L. A. Merrifield

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

Sub - mining Recorder

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
To Wit:

In the Matter of

a geophysical survey on behalf of
G.M. Explorations Limited

I, L. A. Merrifield for Seigel Associates Limited

of 750 - 890 West Pender Street, Vancouver

in the Province of British Columbia, do solemnly declare that an induced polarization survey has been executed on some Ni claims in the Harrison Lake area, British Columbia between September 18 to September 19, 1971. The following expenses were incurred:

(1) Wages:			
	C. Zogg	1 1/2 days @ \$35.00/day	\$52.50
	R. Amis	1 1/2 days @ \$27.50/day	41.25
	K. Murback	1 1/2 days @ \$27.50/day	41.25
	H.P. Winzeler	1 1/2 days @ \$27.50/day	41.25
	E. Novotny	1 1/2 days @ \$27.50/day	41.25
			<u>\$217.50</u>
			\$217.50
(2) Use of geophysical equipment			
		1 1/2 days @ \$50.00/day	75.00
(3) Paid to Seigel Associates Limited			
	to cover geophysicist's supervision,		
	calculating, plotting and fairdrawing		
	data and preparation of final reports.		<u>385.00</u>
			\$677.50

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."

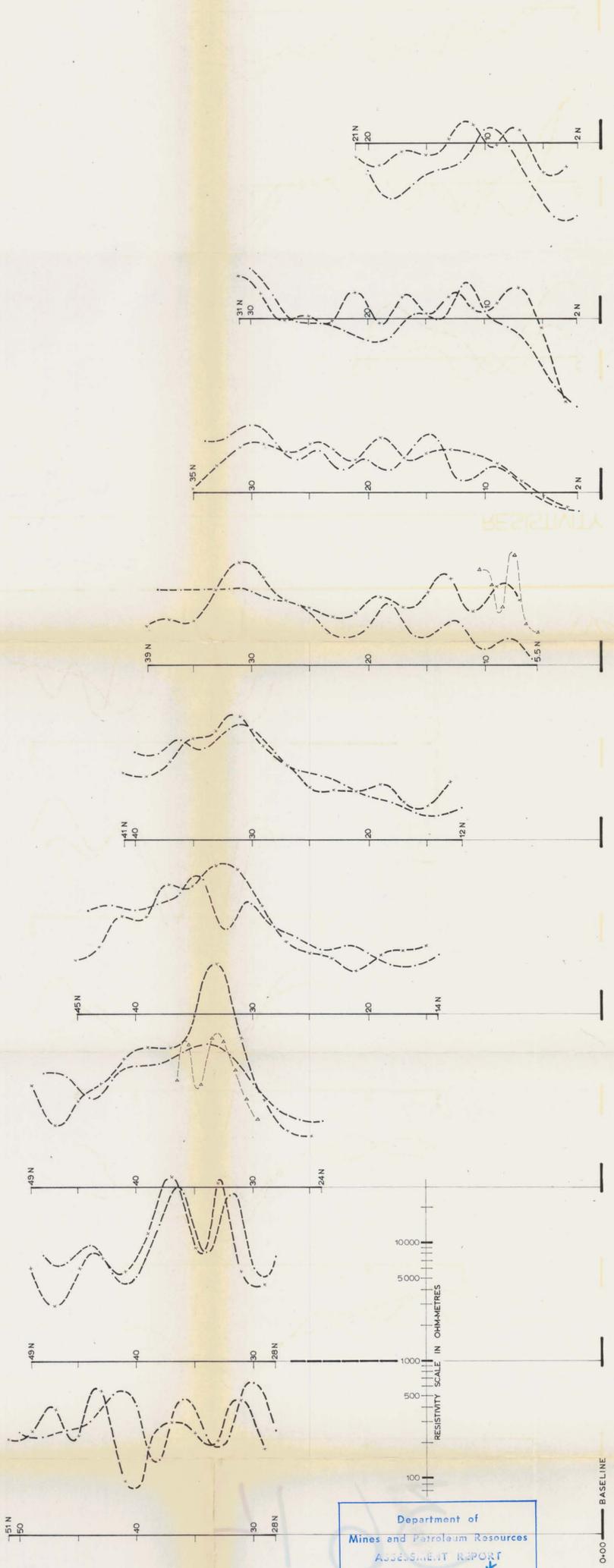
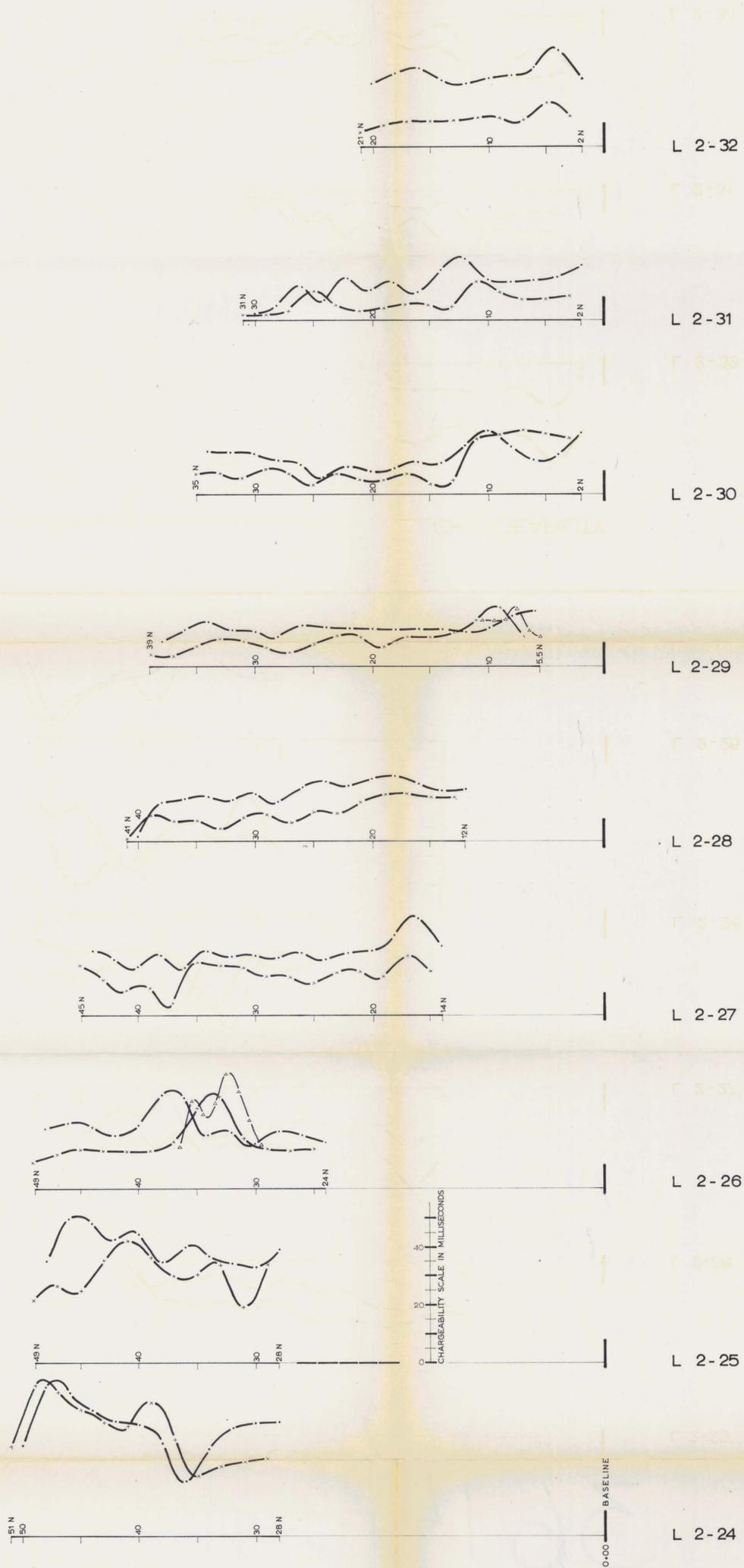
Declared before me at the City
of Vancouver, in the
Province of British Columbia, this 18th
day of January, 1972, A.D.

L.A. Merrifield

Julie Turner
A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.
SMB - Mining Recorder

CHARGEABILITY

RESISTIVITY



LEGEND

CHARGEABILITY SCALE: 1 inch = 20 MILLISECONDS
 ELECTRODE SPACING: a = 400' ————
 a = 200' - - - - -
 a = 100' - - - - -

RESISTIVITY SCALE: 2 inches = 1 LOGARITHMIC CYCLE WITH LINE TRACE TAKEN AS 1000 OHM-METRES
 ELECTRODE SPACING: a = 400' ————
 a = 200' - - - - -
 a = 100' - - - - -

NOTES

SCINTREX MK VII INDUCED POLARIZATION INSTRUMENTATION
 THREE ELECTRODE ARRAY

infinite current electrode moving current electrode potential electrodes

INTERLINE SPACING NOT TO SCALE

TO ACCOMPANY A GEOPHYSICAL REPORT
 BY P. J. FOMINOFF AND J. KLEIN DATED NOVEMBER 24, 1971

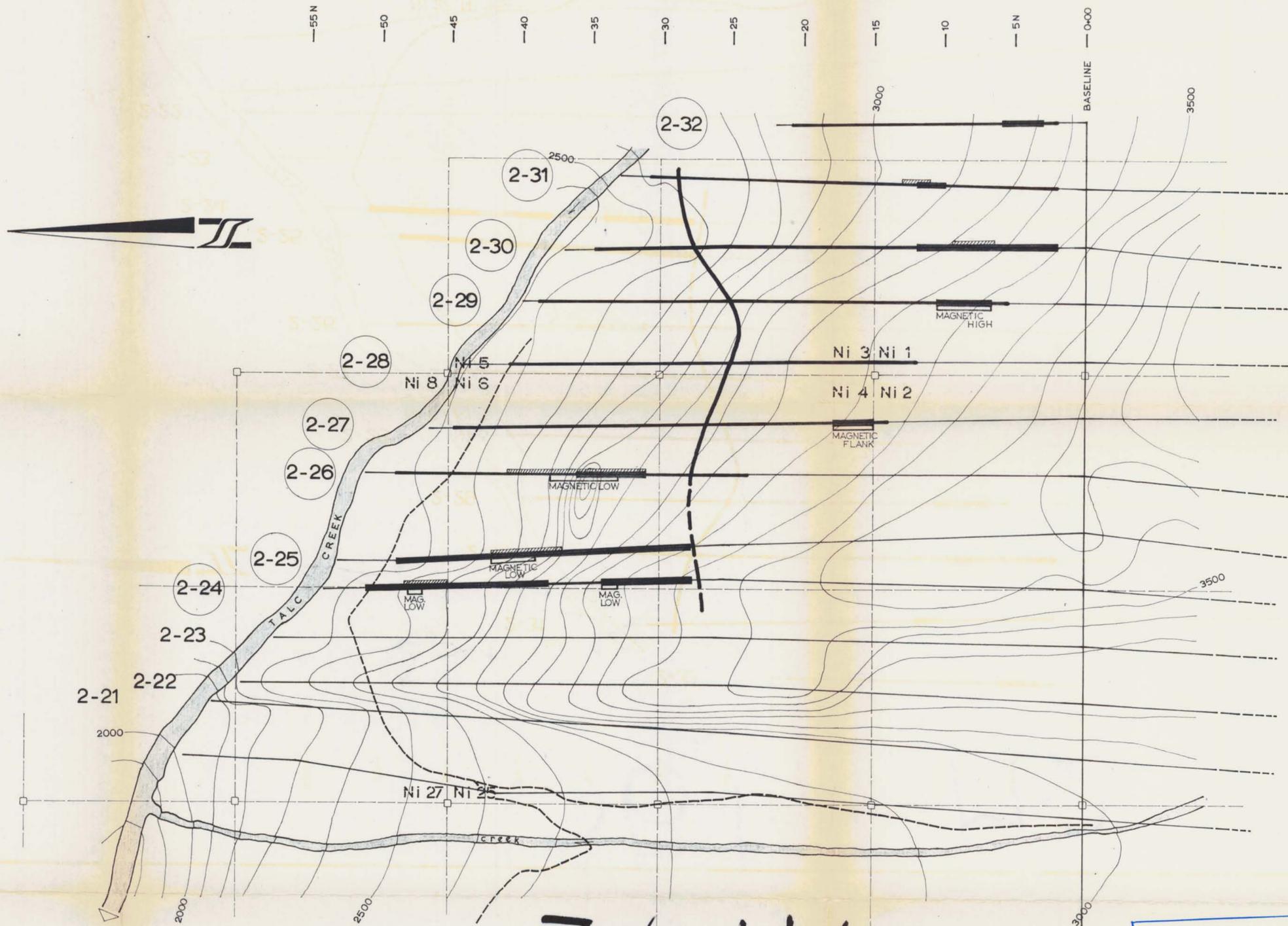
Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 No. 3614 M.P. #3

PLATE 3
 G. M. EXPLORATIONS LTD.
 NICKEL SYNDICATE
 GRID AREA No. 2
 HARRISON LAKE AREA - BRITISH COLUMBIA

INDUCED POLARIZATION SURVEY
 CHARGEABILITY AND RESISTIVITY PROFILES

SCALE 1 inch = 500 feet
 500 feet 0 500 feet

SURVEY BY SEIGEL ASSOCIATES LIMITED SEPTEMBER 1971



3614 M-2

Department of
Mines and Petroleum Resources
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NO. 3614 MAP #2

LEGEND

- ROAD
- CREEK
- 100' ELEVATION CONTOUR INTERVAL
- 2-22 — LINE NUMBER AND GRID LINE
- 2-26 — LINE COVERED WITH I.P.
- Ni 3 — CLAIM NAME AND NUMBER
CLAIM LIMIT
CLAIM POST
- RESISTIVITY CONTACT
- ANOMALOUS NICKEL GEOCHEMICAL VALUES
- EXTENT OF CHARGEABILITY INCREASES
MAGNETIC CORRELATION
- LINE COVERED BY SURVEY

PLATE 2
G.M. EXPLORATIONS LTD.
NICKEL SYNDICATE
GRID AREA No. 2
HARRISON LAKE AREA · BRITISH COLUMBIA

INDUCED POLARIZATION SURVEY

SCALE 1 inch = 500 feet
500 feet 0 500 feet

SURVEY BY SEIGEL ASSOCIATES LIMITED SEPTEMBER 1971

Jack Klein