3422

REPORT ON MAGNETOMETER & INDUCED POLARIZATION SURVEYS CROWN PROPERTY DEASE LAKE AREA, BRITISH COLUMBIA ON BEHALF OF DOLMAGE CAMPBELL AND ASSOCIATES LIMITED

104E/4W & 104F/1E

by

Peter J. Fominoff, B.A.Sc.

and

R. S. Adamson, B.A.Sc., P.Eng.

October 25, 1971

CLAIMS:

Name	
CROWN	11-12, 33-38

LOCATION:

About 16 miles south of Dease Lake, British Columbia
Liard Mining Division
130° 58° SW

DATES:

June 19 to June 23, 1971

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SUMMARY

The present induced polarization survey has revealed zones of increased chargeability responses on all of the three lines surveyed. A priority has been assigned for the further investigation of one line. Two other locations have also been recommended for investigation. Geochemical surveying and, if possible, trenching have been recommended as the next step in the evaluation of the property.

REPORT ON
MAGNETOMETER & INDUCED POLARIZATION SURVEYS
CROWN PROPERTY
DEASE LAKE AREA, BRITISH COLUMBIA
ON BEHALF OF
DOLMAGE CAMPBELL AND ASSOCIATES LIMITED

INTRODUCTION

During the period June 19 to June 23, 1971, a geophysical field party under the direction of Mr. Christian Zogg executed an induced polarization survey in the Dease Lake area, British Columbia on behalf of Dolmage Campbell and Associates Limited.

As shown on Plate 1, on the scale of 1 inch = 4 miles, the property lies approximately 16 miles south of Dease Lake, British Columbia. The topography of the area surrounding the property may be described as mountainous with the survey grid lying in a region of low brush. Access was by helicopter.

The claims covered by the present survey are listed on the cover page of this report and are shown on Plate 2, on the scale of 1 inch = 400 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 metallically conducting mineralization beneath

the grids covered. In the present area such mineralization could include pyrite, chalcopyrite and other metallic sulphide minerals. As well, minerals such as magnetite, sericite, chlorite and others may contribute to chargeability responses and may not always be distinguishable from responses due to sulphides.

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 this survey observations were taken for a = 200 feet, a = 400 feet, a = 800 feet and a = 1200 feet with station intervals of 200 feet for the two narrower electrode spacings and 400 feet for the two wider electrode spacings.

A grid as shown on Plate 2, totalling about 2.9 line miles was surveyed. The base line was oriented north-south and three widely spaced lines were cut perpendicular to it.

GEOLOGY

The regional geology of the Crown Property area is given on the Geological Survey of Canada Map sheets 104-I, Cry Lake, and 104-J, Dease Lake, both in British Columbia.

The major part of the Crown Property is underlain by Upper Triassic volcanics composed mainly of andesites, basalts, tuffs, breccias and volcanic sandstones and conglomerates. A narrow area on the western edge of the property is covered by unconsolidated quarternary material, mainly fluvial and glacial.

The target in the present survey was a large tonnage low grade

type of sulphide deposit which might lie within about 800 feet of ground surface. The induced polarization survey was carried out over the location of an air magnetometer "high" which was revealed by an air survey completed in 1970 and interpreted by Richard O. Crosby, B.Sc., P.Eng. for Dolmage Campbell and Associates Limited in a report published on June 11, 1971.

DISCUSSION OF RESULTS

Plate 2, on the scale of 1 inch = 400 feet shows the grid and the geophysical profiles. The vertical scale of the chargeability profiles (the induced polarization characteristic of the rock) is 1 inch = 20.0 milliseconds. The vertical scale of the resistivity profiles is 2 inches = 1 logarithmic cycle with line trace taken as 1000 ohm-meters.

The background chargeabilities vary from 2.0 milliseconds obtained with the 200 foot electrode spacings to 10.0 milliseconds obtained with the 400 foot electrode spacings. The chargeabilities range as high as 54.0 milliseconds.

Lines 8 N and 24 N both show above background chargeability increases. However since they are 1600 feet apart, a line to line correlation would not be valid.

The maximum chargeability response on Line 8 N at 32 E is 54.0 milliseconds obtained with the 400 foot electrode spacing. The zone of increased chargeabilities extends from about 12 E to about 40 E. From the chargeability results at all three electrode spacings it can be concluded that the source of the increased chargeabilities comes to within 150 feet of ground surface and extends down to at least 800 feet. The electronically conducting material content is about 6 percent by volume.

On Line 24 N, the main zone of increased chargeabilities extends

from about 12 E to 36 E. The maximum chargeability response is 47.0 milliseconds at 28 E. The chargeabilities are seen to decrease with decreasing electrode spacings indicating that the polarizable mineral content increases with depth. The source of chargeability increases approaches to within about 100 feet of ground surface and contains about 2 percent by volume of electronically conducting material at that depth. The source extends down to at least 800 feet and the electronically conducting material content increases to more than 5 percent by volume.

A chargeability increase is also present between 8 S and 14 S on Line 24 N. The source contains about 3 percent electronically conducting material by volume and approaches to within 100 feet of surface but is not detected by the 800 foot electrode spacing. Thus it is probably a near surface source not extending to more than 300 feet below surface.

The area covered by Line 32 N from 18 E to 44 E exhibits chargeabilities in excess of 12.0 milliseconds and may warrant further investigation since low grade sulphide deposits of sufficient dimensions may be economically significant. A chargeability increase reaching 26.0 milliseconds occurs between 37 E and 42 E. The increase is seen only with the 400 foot electrode spacings and its source contains up to 3 percent by volume of electronically conducting material.

The resistivity responses on Line 8 N range from about 300 to 2000 ohm-meters and average about 900 ohm-meters. There is a resistivity depression between 24 E and 36 E which may correlate with chargeability increases over the same zone. The depression is seen only with the 400 foot and 800 foot electrode spacings but not with the 1200 foot spacings. The lower resistivity readings are obtained with the narrower electrode spacings indicating that the resistivity increases with depth.

On Line 24 N the resistivities range from 100 to 15,000 ohm-meters and average about 2000 ohm-meters. There is a decrease in resistivity between 4 W and 14 W which correlates with chargeability increases over the same area. The lower resistivity responses are obtained for the narrower electrode spacings thus resistivity is seen to increase with depth. There is also a slight resistivity depression between 24 E and 40 E which may correlate with chargeability increases over the same area.

On Line 32 N the resistivity responses range from 1100 to 7000 ohm-meters. There is no definite correlation with the chargeability responses over the line.

Plate 3, on the scale of 1 inch = 400 feet shows ground magnetometer profiles over Line 24 N and Line 32 N on the left one-half of the Plate and an enlargement of airborne magnetometer measurements over the area of interest on the right half of the Plate.

The vertical scale of the magnetometer profiles is 1 inch = 2000 gammas. The airborne data have the following contours indicated: 5700, 6000, 6500 and 6800 gammas.

Ground data were obtained with a Scintrex MF-2, vertical force, fluxgate magnetometer along stations spaced every 200 feet.

Airborne data were obtained with a Gulf Research and Development total-field, fluxgate magnetometer.

The magnetic profiles both indicate shallow magnetic sources located east of 1500 E. The western one-half of the profiles contain fewer anomalies and suggest deeper sources. This could result from either deeper overburden or a change in the bedrock.

The airborne anomaly is typical of a basic intrusive which may be cut by a northeast trending fault on its northern flank.

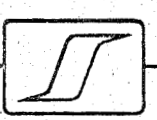


Plate 4, on the scale of 1 inch = 400 feet is a ground magnetometer contour plan over the Crown Property. The contour interval is 200 gammas. The data has been obtained by Dolmage Campbell and Associates Limited and contoured by Seigel Associates Limited. The survey line interval was 800 feet between all lines except between Lines 16 N to 21 N and Lines 29 N to 36 N.

Magnetic relief averages about 3000 gammas but ranges up to 16000 gammas on Line 60 N between 4 E and 16 E. The magnetic structure has a strong east-west trend, however the trend may be accentuated by the wide line spacing. Although line spacing is dependent upon the magnetic activity, 800 feet is rather far to interpolate in a ground magnetometer survey.

An area of increased magnetic susceptibility has been outlined indicating a basic rock within a relatively acidic surrounding rock. The depth to the source of the magnetic responses is interpreted to be shallow and the source may even outcrop.

Two possible faults have been interpreted trending a few degrees east of north. Additional intermediate lines, reduce the interline spacing to say 400 feet would greatly assist in the interpretation of contacts and faults. An area of 1600 gammas relief on Line 60 N east of 4 E may indicate a magnetite or pyrrhotite lens. The magnetic "high" is seen on only a single line.

CONCLUSIONS AND RECOMMENDATIONS

The induced polarization survey has revealed zones of increased chargeability responses on each of the three lines surveyed. The electronically conducting material content in the area covered by Lines

8 N and 24 N east of the base line ranges up to 6 percent by volume.

High priority is given to the area covered by Line 8 N in future investigations since the source of the chargeability increases extends from within 150 feet of ground surface down to more than 800 feet below surface. Line 8 N is located near a magnetic contact which may be indicative of a geological contact.

A chargeability source extending less than 300 feet below ground surface occurs west of 8 W and contains about 3 percent by volume of electronically conducting material. A similar source occurs between 37 E and 42 E. Both of the shallower sources are located in magnetically low areas.

The two shallower sources should also be investigated because their position over magnetic "lows" is favourable for the occurrance of sulphide mineralization. The magnetic "low" may indicate either an alteration zone or the absence of magnetic minerals such as pyrrhotite or magnetite which might have produced increased chargeability responses.

It is recommended that the grid area be surveyed geochemically and the results be correlated with the induced polarization data. Alternatively, if field investigations show the overburden to be sufficiently shallow to permit trenching, the areas of increased chargeabilities should be trenched. A decision to drill should be based upon the correlation of the induced polarization survey results and the data obtained geochemically or by trenching. If geological and geochemical data cannot

be obtained, exploratory drill hole locations can be recommended based upon the results of the present induced polarization survey.

Respectfully submitted,

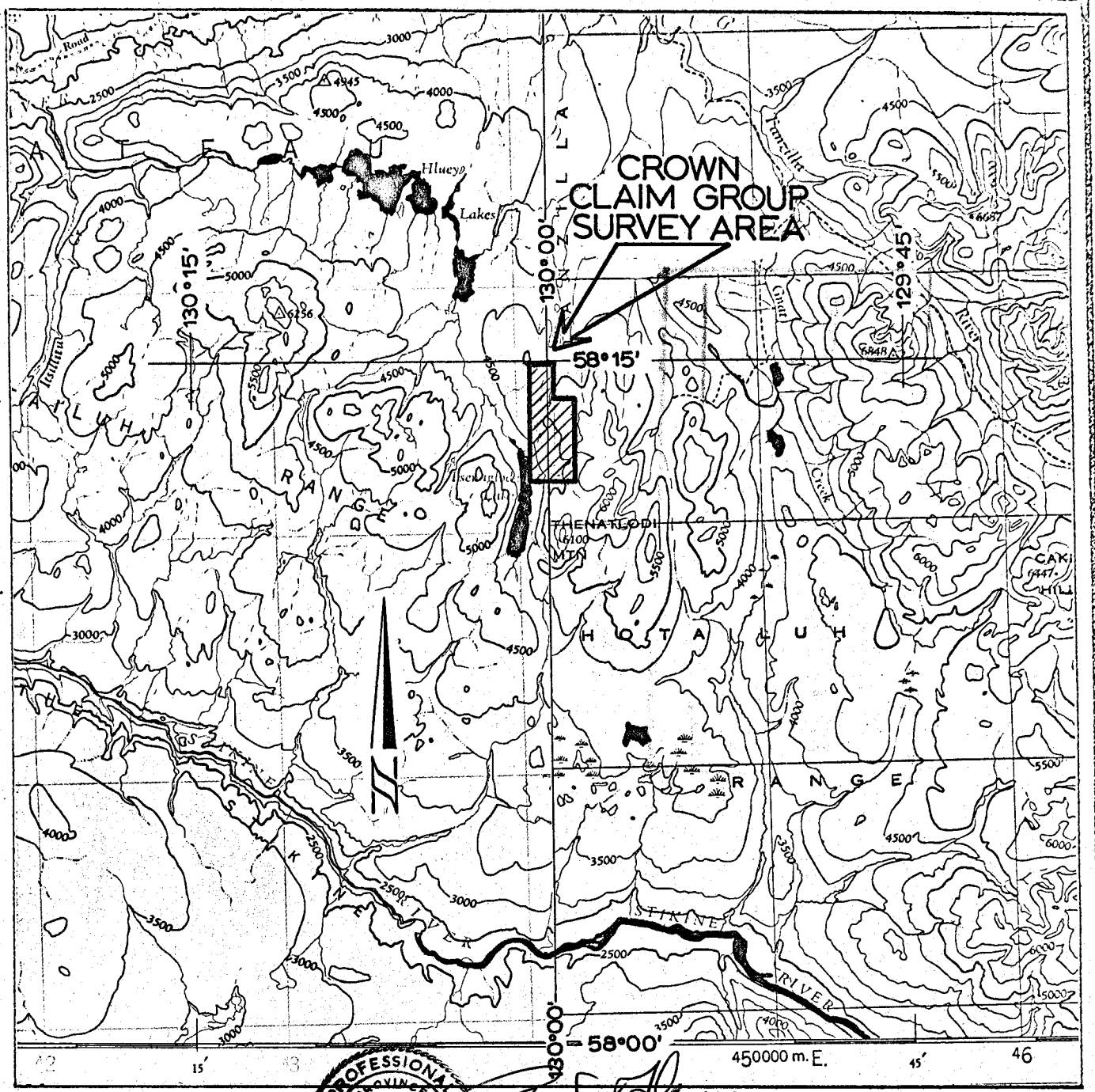
SEIGEL ASSOCIATES LIMITED

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. S. ADAMSON

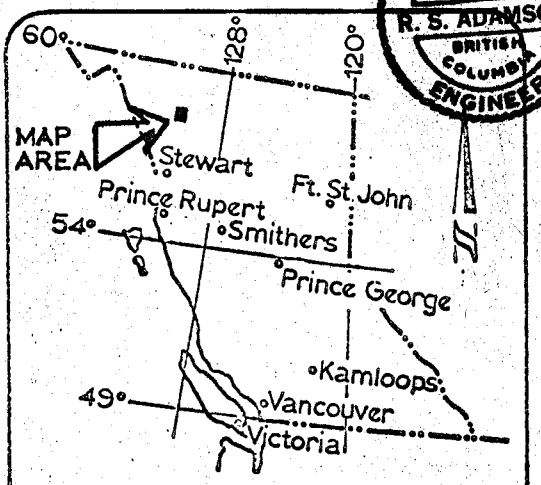
Peter J. Fominoff, B.A.Sc.
Geophysicist

R. S. Adamson, B.A.Sc., P.Eng.

Vancouver, B. C.
October 25, 1971



PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. S. ADAMSON



DOLMAGE CAMPBELL & ASSOCIATES LIMITED

LOCATION MAP
CROWN GROUP

DEASE LAKE AREA · BRITISH COLUMBIA

SCALE
1 : 250,000

4 miles 0 4 miles

Survey by
SEIGEL ASSOCIATES LIMITED
JUNE 1971

PLATE 1

APPENDIX I

STATEMENT OF LABOUR COSTS - CROWN CLAIM GROUP

Magnetometer Survey

Name	Dates	No. of Days	Daily Rate	Cost
G. Gulajec	June 20	1	$45.00	$45.00
W. van der Poll	Aug. 30-31	2	$28.75	$57.50
				$102.50

Line Cutting - 12 line miles

Name	Dates	No. of Days	Daily Rate	Cost
R. Cartledge	May 21-23	3	$19.90	$59.70
A. Learmonth	May 21-23	3	$45.00	$135.00
G. Gulajec	May 21-23	3	$45.00	$135.00
W. van der Poll	Aug. 22-29	8	$28.75	$230.00
D. Nesbit	Aug. 22-27	7	$19.90	$139.30
A. Learmonth Jr.	Aug. 27-29	3	$18.80	$56.40
TOTAL	Days: 27 man days			$755.40

Declared before me at the City of Vancouver, in the Province of British Columbia, this 2nd day of December 1971, A.D.

G. Gulajec

G R Phillips

A Commissioner for taking Affidavits within 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

I, **G. Gulajec**

of **1000 - 1055 West Hastings St., Vancouver 1, B. C.**

in the Province of British Columbia, do solemnly declare that **expenditures for work performed on the Crown Claim Group between May 20 and August 31st are as follows:**

I.P. Survey

Contracted by Seigel Associates Ltd. (June 20-23, 1971) = 2.85 line miles.	
Invoices B. C. 10719	**$1,964.00**
B. C. 11019	**$ 105.00**
Camp maintenance (Food, fuel, etc.) (15 man days @ $10/man/day)	**$ 150.00**

Magnetometer Survey - 12.0 line miles

Wages - G. Gulajec (magnetometer operator) June 20	**$ 45.00**
W. van der Poll (magnetometer operator)Aug.30-31	**$ 57.50**
Magnetometer Rental - one week @ $285/month	**$ 71.25**
Camp Maintenance (Food, fuel, etc.) (3 man days @ $10.00/man/day)	**$ 30.00**

Line Cutting - 12.0 line miles

Wages	**$ 755.40**
Camp maintenance (Food, fuel, etc.) 27 man days @ $10.00/man/day	**$ 270.00**

Transportation - Helicopter

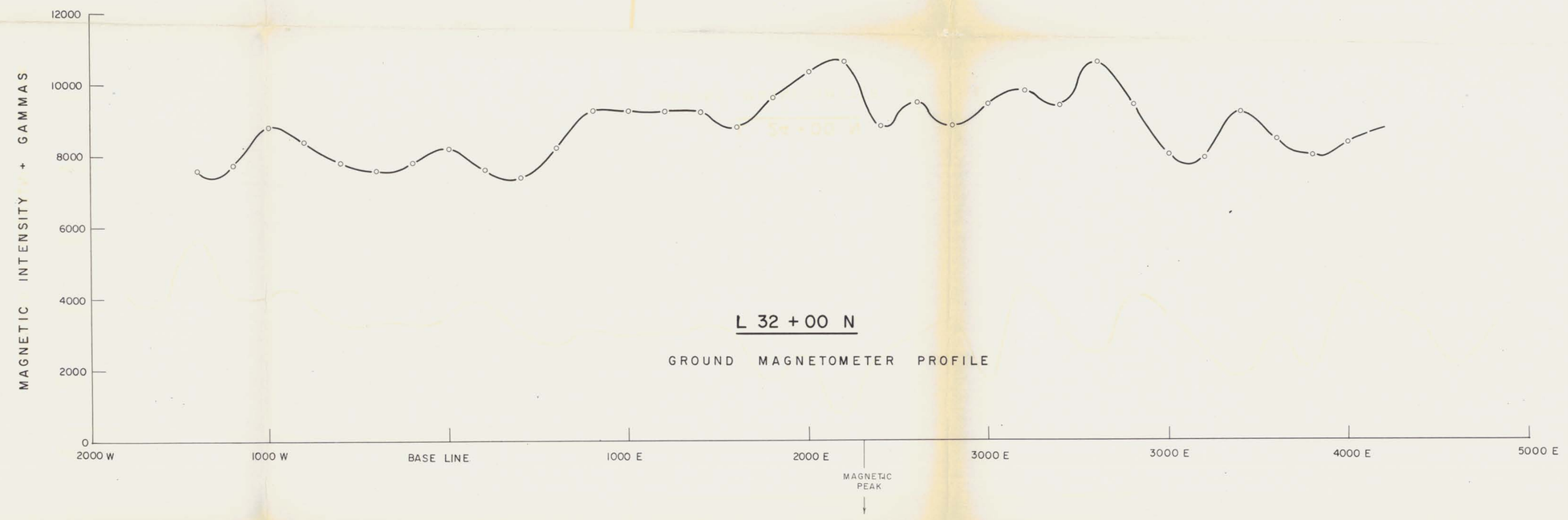
Jet Ranger 0 hrs. 50 min. @ $240/hr.	**$ 200.00**
Hughes 500 3 hrs. 24 min. @ $230/hr.	**$ 782.00**
Bell Super-G 3 hrs. 0 min. @ $130/hr.	**$ 390.00**
TOTAL	**$4,820.15**

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 2nd day of December 1971, A.D.

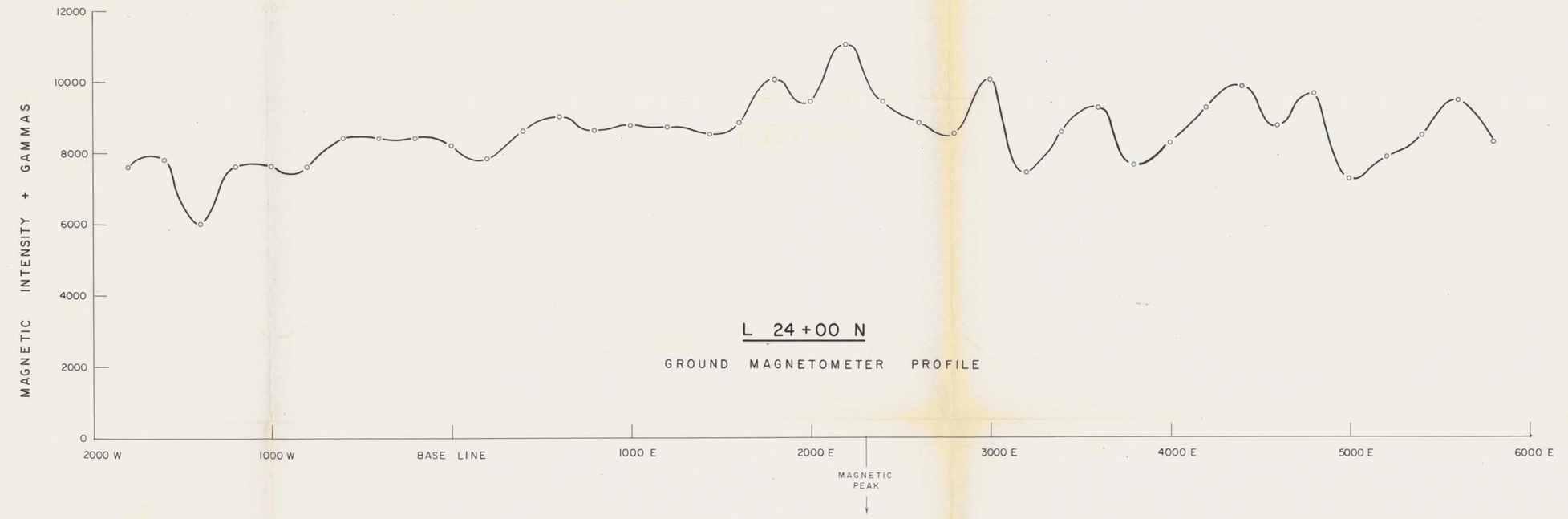
G. Gulajec

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



L 32 + 00 N

GROUND MAGNETOMETER PROFILE



L 24 + 00 N

GROUND MAGNETOMETER PROFILE

AIRBORNE MAGNETOMETER CONTOUR PLAN

CROWN PROPERTY

PROFESSIONAL ENGINEER R. S. ADAMSON BRITISH COLUMBIA

PLATE 3

DOLMAGE CAMPBELL & ASSOCIATES LIMITED

CROWN PROPERTY

DEASE LAKE AREA, BRITISH COLUMBIA

GROUND AND AIRBORNE MAGNETOMETER SURVEY

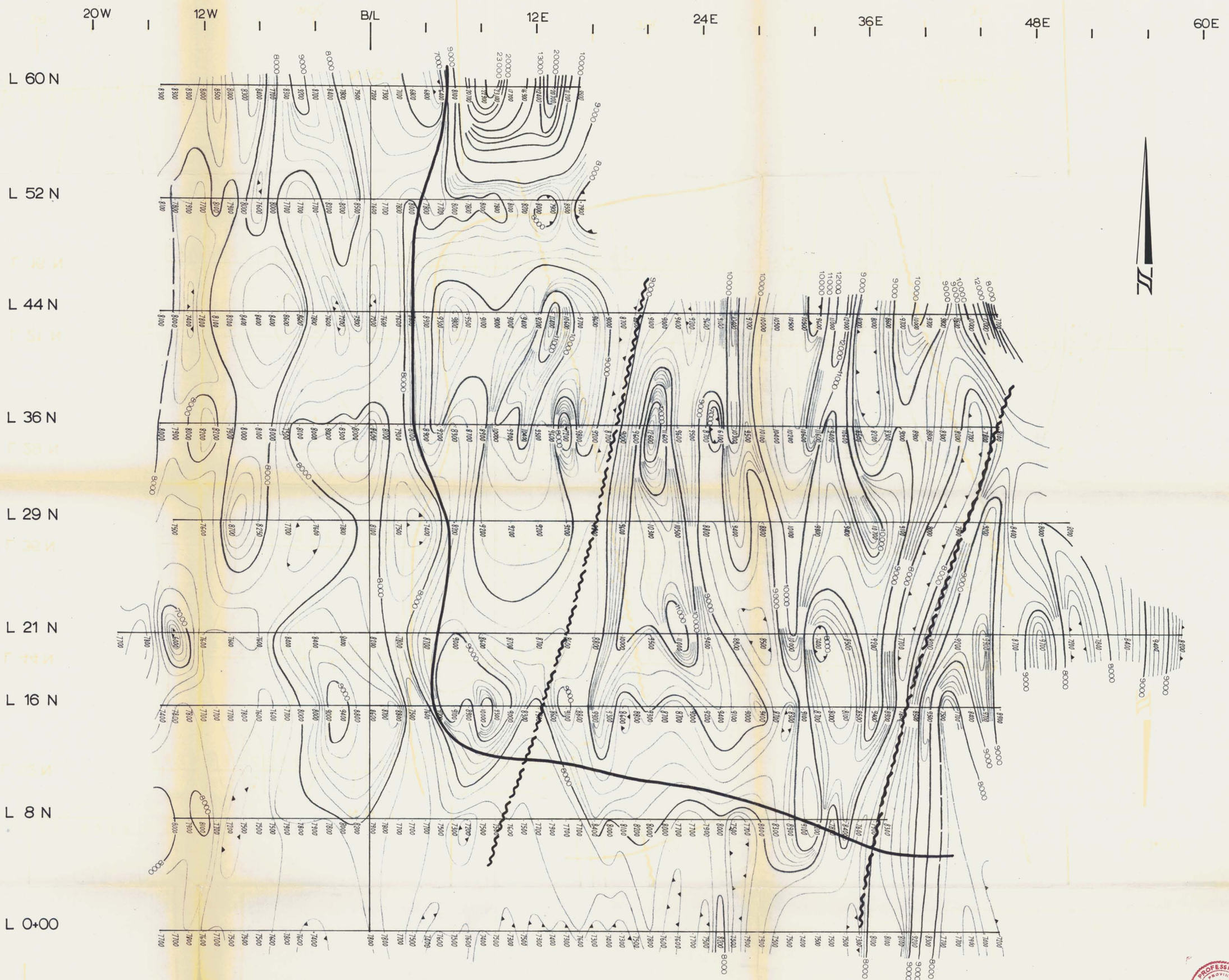
GROUND MAGNETOMETER GRID AND CLAIM MAP

SCALE: 1 inch = 400 feet

400 feet 0 400 feet

INTERPRETATION BY SEIGEL ASSOCIATES LIMITED OCTOBER 1971

TO ACCOMPANY A GEOPHYSICAL REPORT BY P. J. FOMINOFF and R. S. ADAMSON DATED NOVEMBER 2, 1971



LEGEND

- LINETRACE WITH MAGNETIC VALUES IN GAMMAS
- 1000 GAMMA CONTOUR INTERVAL
- 200 GAMMA CONTOUR INTERVAL
- POSSIBLE FAULT
- MAGNETIC CONTACT

TO ACCOMPANY A GEOPHYSICAL REPORT BY P. J. FOMINOFF and R. S. ADAMSON DATED NOVEMBER 2, 1971

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA R. S. ADAMSON

PLATE 4

DOLMAGE CAMPBELL & ASSOCIATES LIMITED

CROWN PROPERTY

DEASE LAKE AREA, BRITISH COLUMBIA

MAGNETOMETER SURVEY

MAGNETIC CONTOUR PLAN

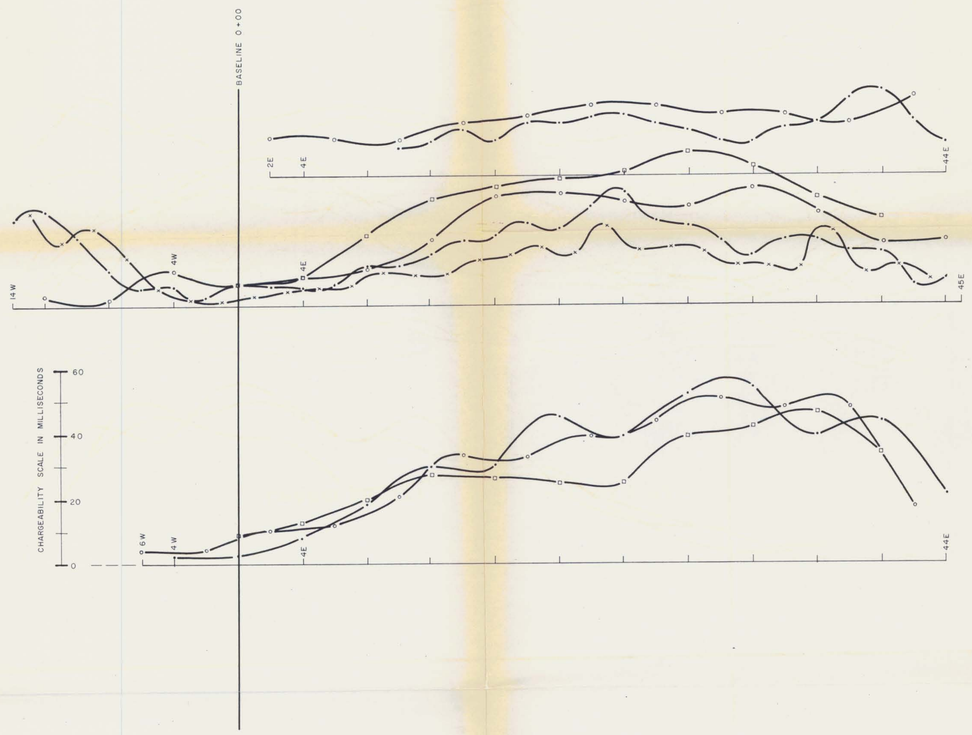
SCALE 1 inch = 400 feet

400' 0 400 feet

COMPILATION BY SEIGEL ASSOCIATES LIMITED SEPTEMBER 1971

SURVEY BY DOLMAGE CAMPBELL & ASSOCIATES LIMITED AUG. SEPT. 1971

CHARGEABILITY

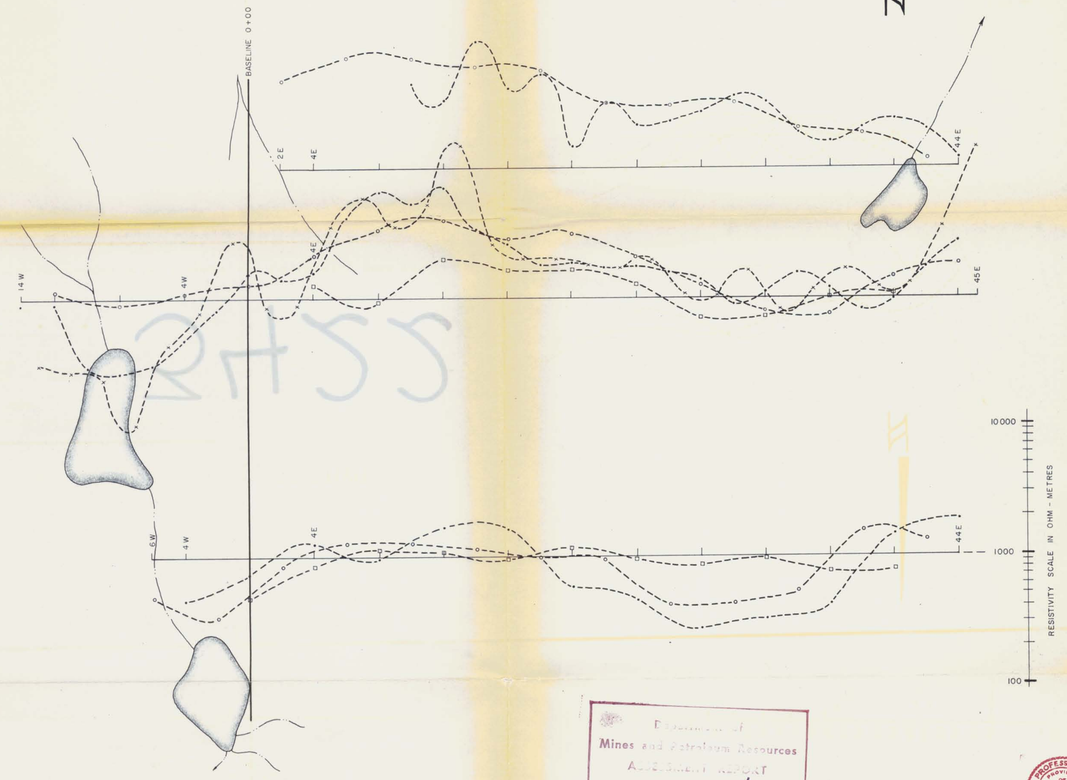


L 32 N

L 24 N

L 8 N

RESISTIVITY



R S Adamson

LEGEND

CHARGEABILITY SCALE: 1 inch = 20 MILLISECONDS

ELECTRODE SPACING
- a = 200'
- a = 400'
- a = 800'
- a = 1200'

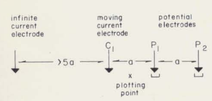
RESISTIVITY SCALE 2 inches = 1 LOGARITHMIC CYCLE WITH LINETRACE TAKEN AS 1000 OHM-METRES

ELECTRODE SPACING
- a = 200'
- a = 400'
- a = 800'
- a = 1200'

NOTES

SCINTREX MK VII INDUCED POLARIZATION INSTRUMENTATION

THREE ELECTRODE ARRAY



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TO ACCOMPANY A GEOPHYSICAL REPORT BY P.J. FOMINOFF and R.S. ADAMSON DATED NOVEMBER 2, 1971

PLATE 2

DOLMAGE CAMPBELL & ASSOCIATES LIMITED

CROWN PROPERTY

DEASE LAKE AREA, BRITISH COLUMBIA

M-2

INDUCED POLARIZATION SURVEY

CHARGEABILITY AND RESISTIVITY PROFILES

SCALE: 1 inch = 400 feet

400 feet 0 400 feet

SURVEY BY SEIGEL ASSOCIATES LIMITED JUNE 1971