

2973

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2973 MAP

REPORT ON
INDUCED POLARIZATION AND
MAGNETOMETER SURVEYS
ON SOME COUGAR CLAIMS
BABINE LAKE AREA, BRITISH COLUMBIA
ON BEHALF OF
NITTETSU MINING CO. LTD.
931/9W

by

P. J. Fominoff, B.A.Sc.

&

Jon G. Baird, B.Sc., P.Eng.

October 20, 1970

CLAIMS:

Name
COUGAR 1 - 40

LOCATION:

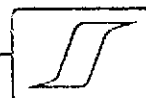
Babine Lake area, British Columbia
About 11 miles southwest of Topley Landing, B. C.
Omineca Mining Division
126° 54° NE

DATES:

August 18 to August 24, 1970

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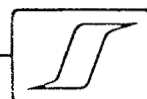


SUMMARY

The present reconnaissance induced polarization survey has revealed four areas which exhibit increased chargeabilities and are therefore interpreted to be underlain by bedrocks containing an above normal content of metallicly conducting mineralization, possibly sulphides or other minerals known to give induced polarization responses.

The magnetometer survey has revealed three areas of modestly increased magnetic intensities which may indicate intrusive rock types. However there are no correlatable induced polarization or resistivity responses indicative of such a rock type.

Geological and geochemical investigations should be carried out to determine which, if any, of the areas of increased chargeabilities may most likely be underlain by economic type of sulphide mineralization. Grids should then be cut and covered with detailed geological, geochemical and geophysical surveys prior to diamond drilling.



P I

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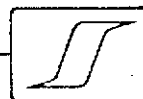
INTRODUCTION

During the period August 18th to August 24, 1970, a geophysical field party under the direction of Mr. Peter Fominoff, B.A.Sc., executed induced polarization and magnetometer surveys on some COUGAR Claims, Babine Lake area, British Columbia, on behalf of Nittetsu Mining Co. Ltd.

The property lies about 11 miles southwest of Topley Landing, B. C. and is reached by truck using a good gravel road. Glacial drift covers most of the surface of the property and topographic relief is moderate.

The claims covered, in whole or part, by this survey are listed on the title page of this report and are shown on Plate 2 on a scale of 1" = 1500'. These claims are held by Nittetsu Mining Co. Ltd.

Seigel Mk VII time-domain (pulse-type) induced polarization equipment has been employed on this property. The transmitting unit had a rating of 2.5 kw. 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.



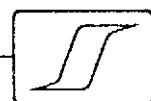
P 2

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 bornite, chalcopyrite, molybdenite, pyrite 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 $a = 400'$, the distance between observations being $400''$. Part of one profile was covered with $a = 200'$ and $200'$ station intervals.

A Scintrex MF-1 magnetometer was used for the magnetic survey. This is a vertical force fluxgate instrument with a reading accuracy of ± 5 gammas on the finest scale. For this reconnaissance survey, baselevel corrections were made by reading a master base station. In order to expedite the survey, checks were not made with the base station each hour as is normal practise. It is therefore not possible to make proper diurnal corrections.

On the present property, reconnaissance traverses were executed on two uncut and unchained east-west claim lines spaced $3000'$ apart. Three roads were also surveyed for a total survey of 9.4 line miles.



GEOLOGY

The geology of the area surrounding the present claims is shown on G.S.C. Map 671-A, Houston, on the scale of 1" = 4 miles. As well, the B. C. Minister of Mines Annual Report for 1965 gives a good discussion of the geology of Newman Peninsula and the Granisle copper deposit which lies about twenty miles north of the present property.

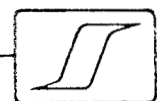
The G.S.C. Map shows the area to be heavily overburden covered and does not indicate any outcrops or interpreted bedrock geology. Volcanic rocks of the Hazelton Group have been mapped to the north and west of the property and granitic rocks are shown to the south and east. It is possible that the present property lies near a contact between the volcanics and the granite.

Two types of ore deposits may occur in the Babine Lake area. A prime target would be a disseminated sulphide copper deposit such as the Granisle ore body occurring within an intrusive rock type. A target of secondary interest would be a lode deposit occurring in the volcanic rocks.

DISCUSSION OF RESULTS

Plate 2, on the scale of 1" = 400' shows the chargeability (induced polarization characteristic of the rock) resistivity and magnetic results in profile form. The vertical scales for these profiles are 1" = 10.0 milliseconds for chargeability, 1" = 500 ohm-meters for resistivity and 1" = 500 gammas for the magnetics. As well there is a plan map on the scale of 1" = 1500' showing the survey lines and claims.

The profiles indicate that the background chargeability values are between 3.0 and 5.0 milliseconds. This is within the normal

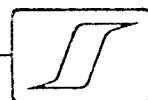


non-metallic chargeability range for either volcanic or granitic rocks. With such a low and uniform background, a uniform distribution of 1% by volume of metallicly conducting mineralization in the subsurface would be expected to increase the chargeability responses by about 10.0 milliseconds. Chargeability responses in excess of 10.0 milliseconds may be considered worthy of further investigation since deposits of low concentrations of copper and molybdenum of sufficient dimensions may have economic significance.

The profiles reveal five locations where chargeabilities are above 10.0 milliseconds and one location where they approach 8.0 milliseconds. The increased chargeabilities on the east end of Claim Line 1 and those on the north end of Road No. 3 may arise from the same extensive source. In addition, the local anomalies on the south ends of Road No. 1 and Road No. 3 may be correlateable. The four interpreted high chargeability areas are shown on Plate 2. For purposes of discussion, and not necessarily of priority, they have been labelled Area One through Area Four.

Since the present coverage is of a reconnaissance nature only, there are insufficient data to make precise quantitative interpretations as to the areal extent, attitude, depth below surface and metallicly conducting content of the bodies giving rise to the increased chargeabilities.

The range of resistivities is from about 50 ohm-meters to about 600 ohm-meters. Average resistivities are about 300 ohm-meters. Changes in resistivity may arise from changes in the type and thickness of the overburden or from changes in the character of the bedrock.



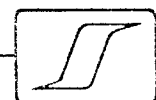
Traverses employing multiple electrode spacings are necessary to allow interpretation as to the possible causes of observed changes in resistivity.

Area One appears to be an extensive zone of high chargeability which exhibits resistivities of approximately 100 ohm-meters. The amplitudes of the peak chargeabilities indicate that the bedrock may contain 3% or more by volume of metallicly conducting material. The decrease in resistivities could be due to the higher metal content and/or to a change in rock types.

Area Two is revealed by two increased chargeability observations on Road No. 1 and one on Road No. 3. The line to line correlation is somewhat tenuous since the local indications are at least 1000' apart and since one shows a resistivity decrease while the other shows an increase. The high chargeabilities would indicate the presence of a zone of approximately 1% by volume of metallicly conducting material no more than 200' in width and possibly a much narrower zone containing a higher quantity of polarizable minerals.

Area Three is seen only on Claim Line 2. A portion of the profile approximately 1300' in length may be underlain by a body of rock containing approximately 1% by volume of metallicly conducting material. There is no distinct resistivity change correlatable with the area of increased chargeabilities.

Area Four is seen to have a peak chargeability of only 7.5 milliseconds however it does stand up from the background and may arise from a subsurface concentration of approximately 1/2 of 1% by volume of metallicly conducting material. The zone has no distinct resistivity characteristic.



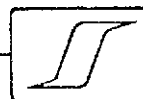
The magnetic profiles are seen to be rather flat and relief is generally no greater than a few hundred gammas. In places sharp local increases in magnetic intensity appear to arise from narrow, near surface magnetic sources, possibly even boulders in the overburden. There are three areas of broad magnetic intensity increases; between 44 S and 56 S on Road No. 1, between 68 S and 88 S on Road No. 3 and between 2 S and 13 S on Claim Line No. 2. In these areas the peak magnetic intensities are approximately 500 gammas above background over at least 1000' of profile. Such responses could arise from a rock type, possibly an intrusive, which contains a small percentage by volume of magnetite in excess of the surrounding rocks.

The increased chargeabilities in Area Three lie east of one area of increased magnetic intensities. On Road No. 3, Area Two is seen to lie within a zone of increased magnetic response while on Road No. 1 it lies on the flank of such a zone. There is no correlatable magnetic response for either of Areas One or Four. Also, there are no correlatable induced polarization or resistivity responses which would support the interpretation that the areas of increased magnetic intensities are underlain by rocks such as intrusives which are different from the surrounding rocks.

CONCLUSIONS AND RECOMMENDATIONS

The present induced polarization survey has revealed four areas in which the bedrocks are interpreted to contain above normal amounts of metallicly conducting mineralization such as sulphides, graphite or other minerals known to give induced polarization responses.

It is recommended that geochemical and geological studies be made in order to determine which, if any, of the areas of increased



chargeability is most likely to be underlain by rocks containing economic type sulphide mineralization. If an area is selected for further exploration a grid should be cut with 500' line spacings. Detailed induced polarization, geochemical and geological studies should then be made over the grid. When definite targets are thus defined precise diamond drill locations may be proposed.

Respectfully submitted,

SEIGEL ASSOCIATES LIMITED

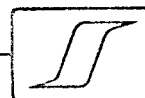
P. J. Fominoff for JGB

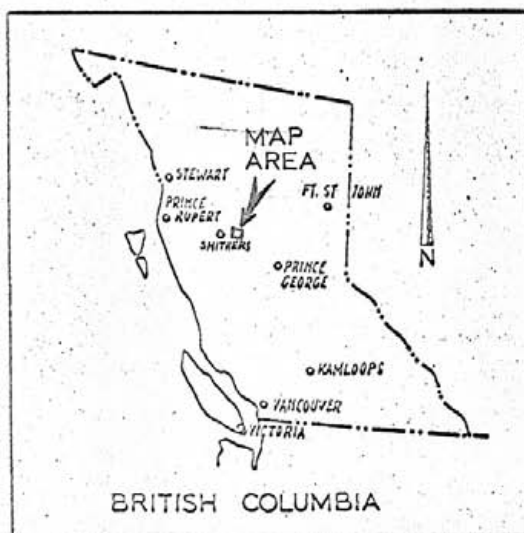
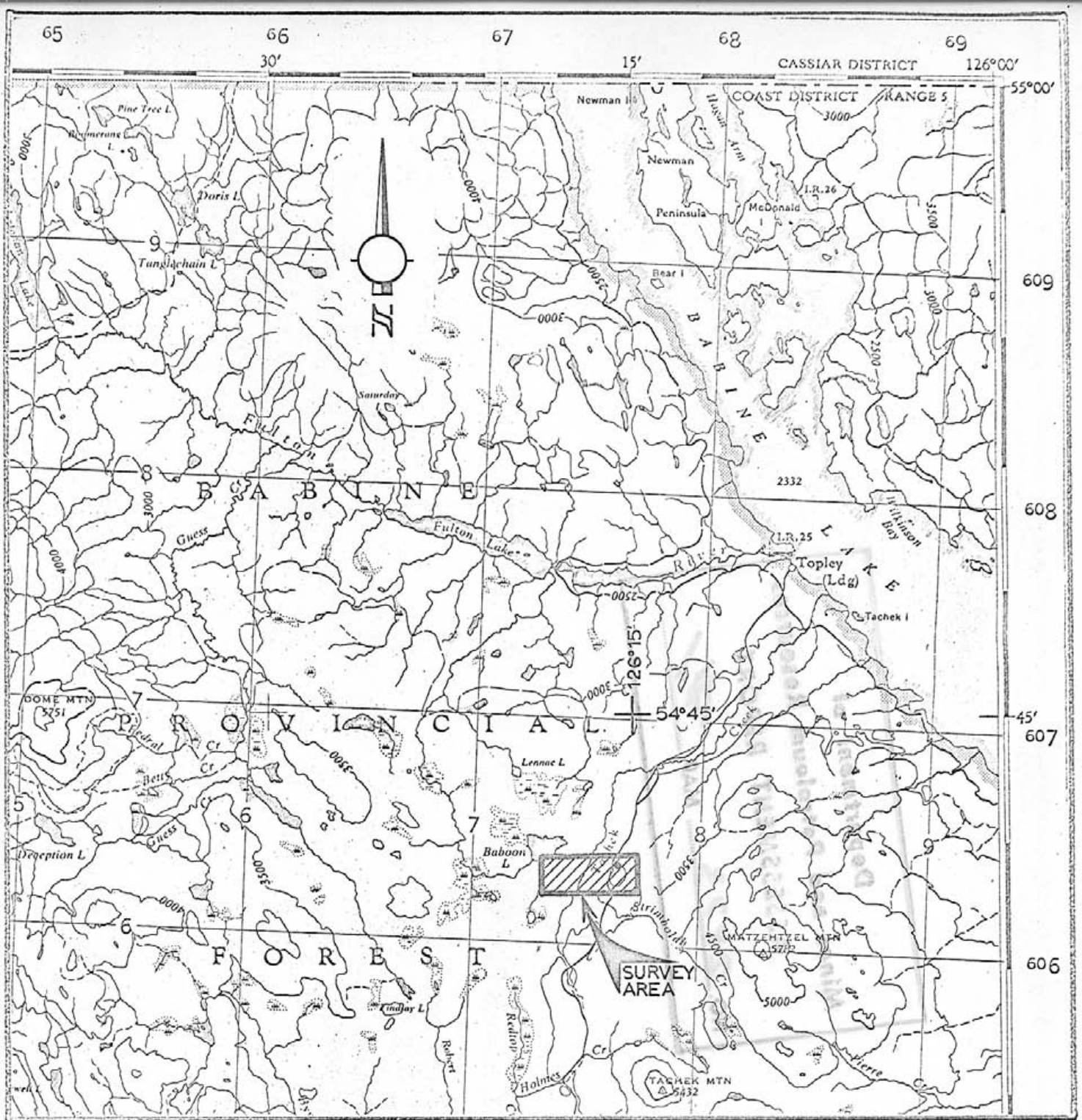
P. J. Fominoff, B.A.Sc.
Geophysicist

Jon G. Baird

Jon G. Baird, B.Sc., P.Eng.
Consulting Geophysicist

Vancouver, B. C.
October 20, 1970





NITTETSU MINING CO LTD.	
LOCATION MAP <i>Shind</i>	
- COUGAR GROUP -	
BABINE LAKE AREA / BRITISH COLUMBIA	
4 miles 0 4 miles	
Survey by SEIGEL ASSOCIATES LTD. August 1970	PLATE 1

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
TO WIT:

In the Matter of a geophysical survey on behalf of
Nittetsu Mining Company 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 COUGAR 1 - 40 claims, Babine Lake area, British Columbia between August 18 to August 24, 1970. The following expenses were incurred:

(1) Wages:			
	P. Fominoff	7 days @ \$35.00/day	\$245.00
	T. Guernier	4 days @ \$27.50/day	110.00
	R. Gibbons	7 days @ \$27.50/day	192.50
	F. Gfeller	7 days @ \$27.50/day	192.50
	O. Bangeter	3 days @ \$27.50/day	82.50
	C. Portmann	3 days @ \$27.50/day	82.50
			<u>\$905.00</u>
			\$905.00
(2)	Transportation and shipping to the job.		329.42
(3)	Transportation on the job.		263.00
(4)	Food and living expenses		481.40
(5)	Use of geophysical equipment		
		7 days @ \$60.00/day	420.00
(6)	Paid to Seigel Associates Limited to cover geophysicist's supervision, calculating, plotting and fairdrawing data and preparation of final reports		<u>1,250.83</u>
			\$3,649.73

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 February, 1971, A.D.

L. A. Merrifield

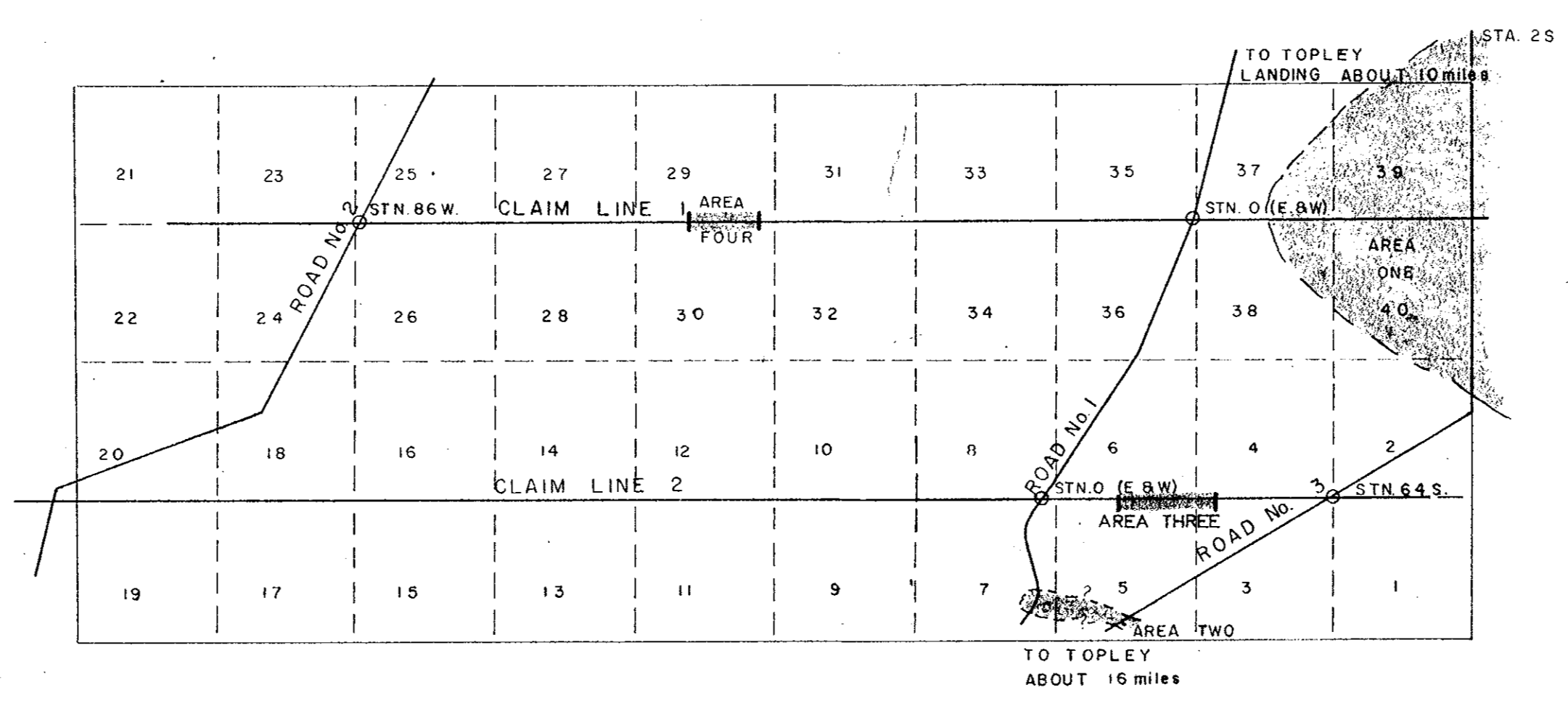
Jan Turner

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

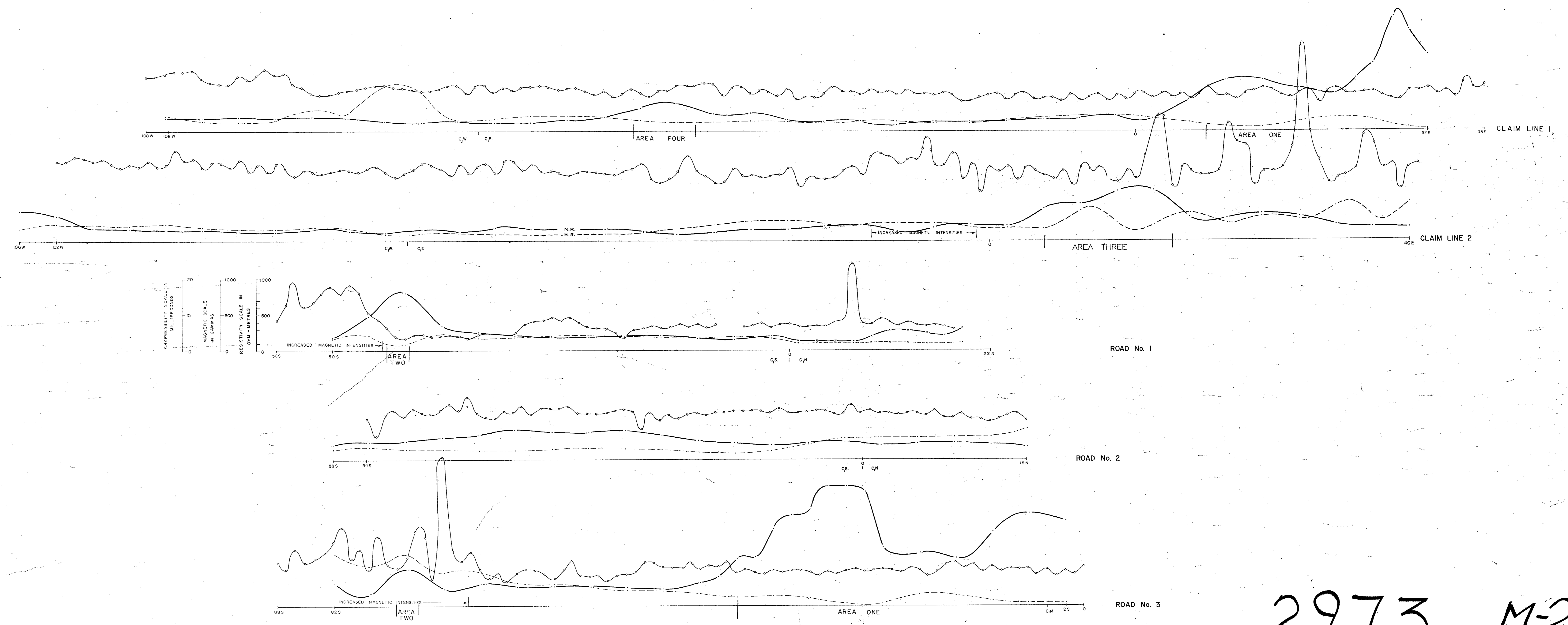
SUB - MINING RECORDER

INCREASED CHARGEABILITIES
SEEN ON ONE LINE

POSSIBLE AREA OF INCREASED
CHARGEABILITIES



COUGAR GROUP 1-40
APPROXIMATE SCALE 1" = 1500'



2973 M-2

LEGEND

CHARGEABILITY SCALE: 1" = 10 MILLISECONDS
ELECTRODE SPACING: $\text{---} \cdot \text{---} \cdot \text{---}$ $\phi = 400'$
 $\text{---} \times \text{---} \times \text{---}$ $\phi = 200'$

RESISTIVITY SCALE: 1" = 500 OHM-METRES
ELECTRODE SPACING: $\text{---} \cdot \text{---} \cdot \text{---}$ $\phi = 400'$
 $\text{---} \times \text{---} \times \text{---}$ $\phi = 200'$

MAGNETOMETER SCALE: 1" = 500 GAMMAS

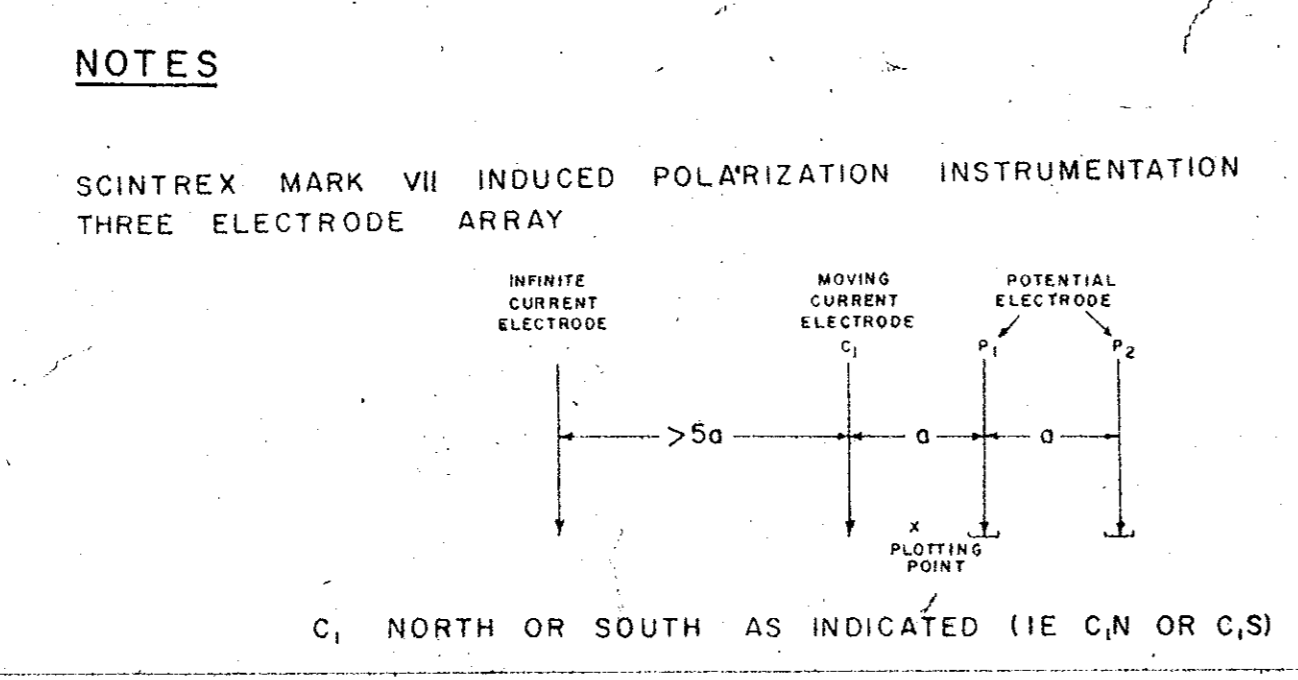


PLATE 2

NITTETSU MINING CO. LTD.
COUGAR GROUP
BABINE LAKE AREA, BRITISH COLUMBIA

INDUCED POLARIZATION AND
MAGNETOMETER SURVEYS

1" = 400'
SCALE IN FEET

TO ACCOMPANY A GEOPHYSICAL REPORT BY
P.J. FOMINOFF AND J.G. BAIRD DATED OCTOBER 20, 1970

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2973 MAP # 2

SURVEY BY SEIGEL ASSOCIATES LIMITED
AUGUST 1970