

2796

92L/12E/W

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2796 MAP

REPORT ON
INDUCED POLARIZATION SURVEYS
AUDREY AND SILVA GRIDS
PORT HARDY AREA, BRITISH COLUMBIA
ON BEHALF OF
GIANT EXPLORATIONS LIMITED

92L/12W

by

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

December 30, 1970

CLAIMS:

<u>Name</u>	<u>Record Numbers</u>
AUDREY GRID	
AUDREY 3	18262
LPS 1	17859
HPH 3	8599
AMY 1	22666
AMY 3	22668
SILVA GRID	
SILVA 7	18269
SILVA 13	33171

LOCATION:

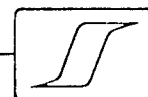
About 15 miles west of Port Hardy, B. C.
Nanaimo Mining Division
127° 50' NE

DATES OF FIELD SURVEY:

Audrey Grid: October 26 to 29, 1970
Silva Grid: In conjunction with a survey for
Swiss Aluminium Mining Company
carried out between October 23
and November 12, 1970.

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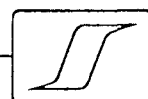
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SUMMARY

The present induced polarization surveys have revealed increased chargeability zones which may contain appreciable percentages of sulphides, graphite or other minerals known to give rise to induced polarization effects. Further examination of these areas should be predicated upon geological and geochemical evaluations.

Two low resistivity zones, one in each survey grid, appear to contain the conducting bodies responsible for the abnormal responses observed in an earlier helicopter borne electromagnetic survey.



REPORT ON
INDUCED POLARIZATION SURVEYS
AUDREY AND SILVA GRIDS
PORT HARDY AREA, BRITISH COLUMBIA
ON BEHALF OF
GIANT EXPLORATIONS LIMITED

INTRODUCTION

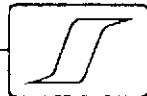
In October and November, 1970, a geophysical field party under the direction of Mr. Tony Guernier executed induced polarization surveys on two grids in the Port Hardy area, British Columbia on behalf of Giant Explorations Limited.

The property lies near Nahwitti Lake about 15 miles west of Port Hardy. Access is by vehicle from Port Hardy using the Port Hardy-Holberg road which traverses the property. Glacial drift and forest cover most of the surface of the property and topographic relief is moderate. As usual for this area in the fall of the year, heavy rain was experienced throughout the survey.

The claims covered, in whole or part, by these surveys are listed on the title page of this report and are shown on Plate 2 on a scale of 1" = 400'.

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 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



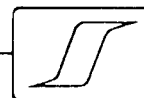
subsurface distribution of metallicly conducting mineralization beneath the grids covered. In the present area such mineralization could include chalcopyrite, molybdenite, pyrite and other metallic sulphide minerals. Metallic minerals such as graphite and magnetite as well as non-metallic minerals such 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. A schematic representation of this electrode array is shown on Plates 3 and 4. For the reconnaissance survey observations were taken for $a = 200'$ and $400'$. Station intervals were $200'$. On two profiles of the Audrey Grid observations were also taken in areas of increased chargeabilities with $a = 100'$ and $50'$ for additional detail.

For the present survey two grids, named Audrey and Silva Grids, were covered. The line orientation was approximately north-south and the interline spacing was $500'$. The total length of profile covered was 1.5 line miles for the Audrey Grid and 2.0 line miles for the Silva Grid. During the same period as the Silva Grid survey, a survey of the northerly extension of the grid was completed on behalf of the Swiss Aluminium Mining Company of Canada Ltd. (Samcan).

GEOLOGY

The geology and geochemistry of the present survey grids have



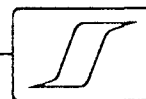
been studied by Ralph Gayfer and the staff of Giant Explorations. Geological and geochemical maps on the scale of 1" = 200' have been made available to the writer.

The major rock type underlying both grids is andesite, probably of the Karmutsen Series however outcrops of limestone and, on the Audrey Grid, of diorite, are also seen. Mapping by Samcan has indicated the possible occurrence of black shales near the north part of the Silva Grid. In places the Karmutsen Volcanics are quite pyritic.

The present grids were chosen to cover areas where conductive bodies had been indicated by a helicopter borne electromagnetic survey. The induced polarization technique was chosen for ground follow-up since the peak amplitudes of the airborne conductors were so low that ground electromagnetic methods might not have sufficient sensitivity (allowing a certain latitude for errors due to misorientation of coils in rough topography). It was also thought that the airborne conductors might represent structural features or narrow sulphide concentrations near which disseminated sulphides, only detectable by induced polarization, might occur.

Geochemical surveys have revealed areas, particularly one on the Silva Grid, where the soils contain above normal quantities of copper, lead and zinc.

The main target of the present surveys was a large-tonnage, low-grade type of copper sulphide deposit although a secondary goal was a smaller, vein-type sulphide deposit.



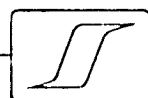
DISCUSSION OF RESULTS

Plate 2 shows plans of the Audrey and Silva Grids on the scale of 1" = 400'. Topographic features, claims and geophysical interpretation are shown.

Plates 3 and 4 show the chargeability (the induced polarization characteristic of the rock) and resistivity results in profile form for the Audrey and Silva Grids respectively. The vertical scales are 1" = 20.0 milliseconds for chargeability and 1" = 1 logarithmic cycle with the line trace taken as 100 ohm-meters for resistivity. The plan scale is 1" = 400' although in order to accommodate the profiles, the interline spacing is not to scale.

The chargeability profiles for the Audrey Grid exhibit values of less than 10.0 milliseconds at their north and south ends. Chargeability values ranging from about 1.0 to 10.0 milliseconds are considered to constitute a normal non-metallic response range for most rock types. If the rock underlying a survey area contains a uniform distribution of metallically conducting material, then an increase of about 10.0 milliseconds for each 1% by volume of metallically conducting material is expected up until heavy concentrations of such material are encountered when the response may be less than 10.0 milliseconds per percent.

The chargeability results for the Audrey Grid show peak chargeabilities of between 40.0 and 70.0 milliseconds on the central portions of all profiles. These increased responses are interpreted to arise from an east-west trending body of rock approximately 800' in width by at least 1500' in length whose interpreted contacts have been shown on Plate 2. This body of rock is interpreted to contain up to



5% by volume of metallicly conducting material which approaches to 15' and perhaps closer to the earth surface near 14 N on lines 5 W and 15 W where detailed traverses have been carried out.

The resistivity profiles for the Audrey Grid show resistivities in the hundreds of ohm-meters decreasing to the north to values well below 100 ohm-meters in the area between 16 N and 20 N on all profiles. These lowest values may be caused by a narrow zone of very low resistivity such as a fault, a contact, or a low resistivity rock type having boundaries approximately as shown on Plate 2.

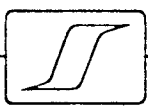
The chargeability responses for the entire Silva Grid range from about 20.0 to 40.0 milliseconds, a high background response range by normal standards. Except for the south ends of L 35 W and L 40 W where some decrease in chargeability is noted, the grid may be considered as entirely underlain by rocks containing 2% to 4% by volume of metallicly conducting material.

The resistivity profiles for the Silva Grid are similar to those for the Audrey Grid both in amplitude and decreasing gradient to the north. A zone of lowest resistivity has been shown on Plate 2.

CONCLUSIONS AND RECOMMENDATIONS

The induced polarization survey of the Audrey Grid has revealed a well defined body of increased chargeability flanked on the north by a zone of decreased resistivity. The survey of the Silva Grid indicates that the entire grid is underlain by rocks of higher than normal chargeability within which a low resistivity zone occurs.

It is likely that the sources of the airborne electromagnetic conductors lie within the observed low resistivity zones. Since both



low resistivity areas exhibit above normal chargeabilities they, as well as the surrounding increased chargeability area, may contain sulphides, graphite or other minerals known to give increased chargeability responses.

The present surveys have shown that metallicly conducting material, possibly sulphides, occurs within each survey grid. Further investigations such as by trenching or drilling should be carried out predicated upon geological and geochemical evaluations as to whether the increased induced polarization responses may indeed arise from base metal type sulphides.

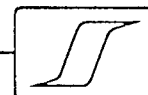
Respectfully submitted,

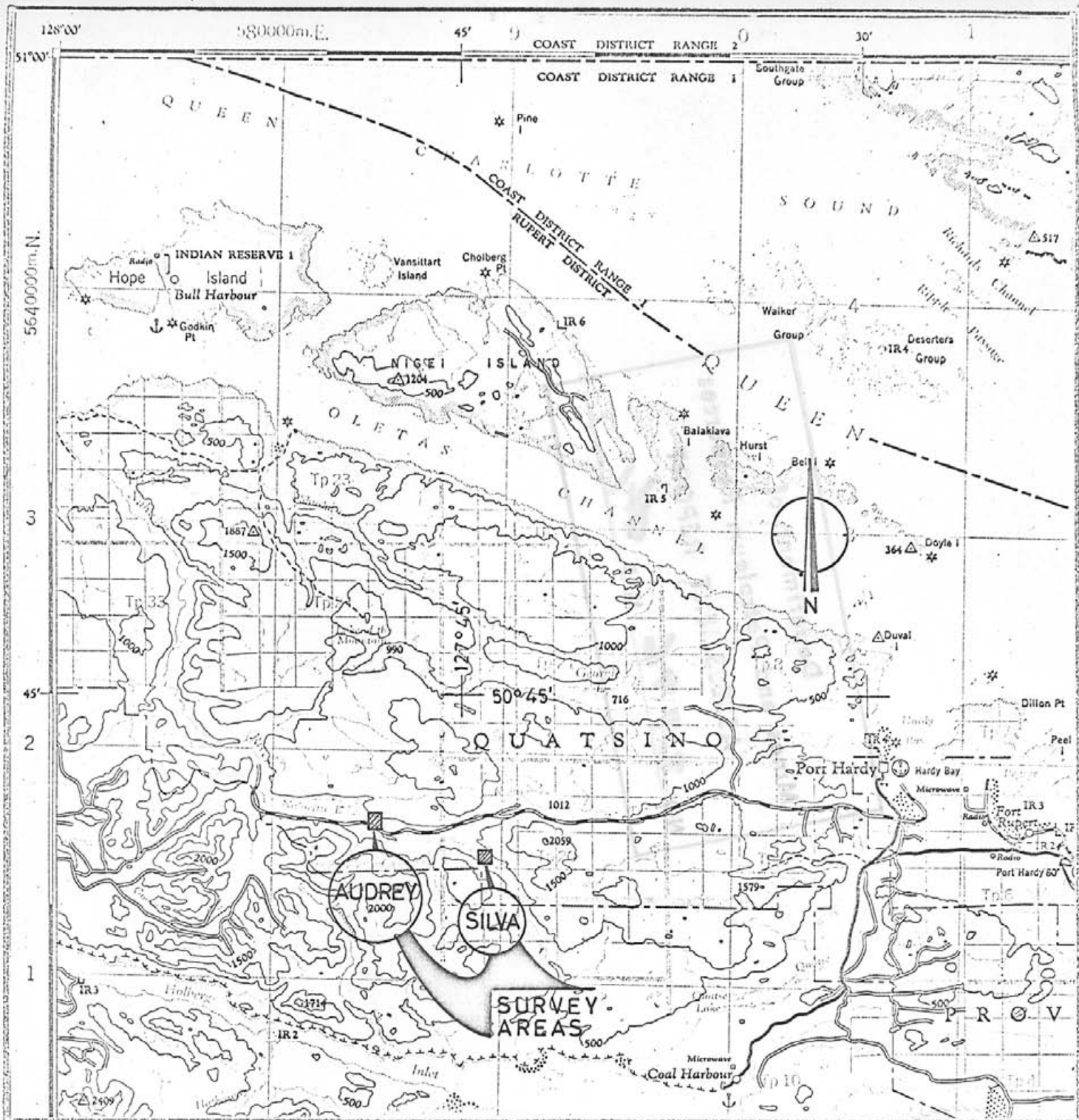
SEIGEL ASSOCIATES LIMITED



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

Vancouver, B. C.
December 30, 1970

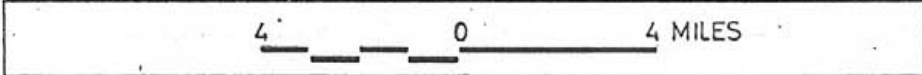




GIANT EXPLORATIONS LIMITED NPL

LOCATION MAP
AUDREY AND SILVA GRID *J. David*

PORT HARDY AREA BRITISH COLUMBIA



Survey by
SEIGEL ASSOCIATES LTD.
OCT. NOV. 1970

PLATE 1

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

In the Matter of a geophysical survey on behalf of
Giant Explorations Ltd. (N.P.L.)

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 AUDREY, LPS, HPH, AMY and SILVA claims Port Hardy area, British Columbia between October 26, 1970 to November 12, 1970. The following expenses were incurred:

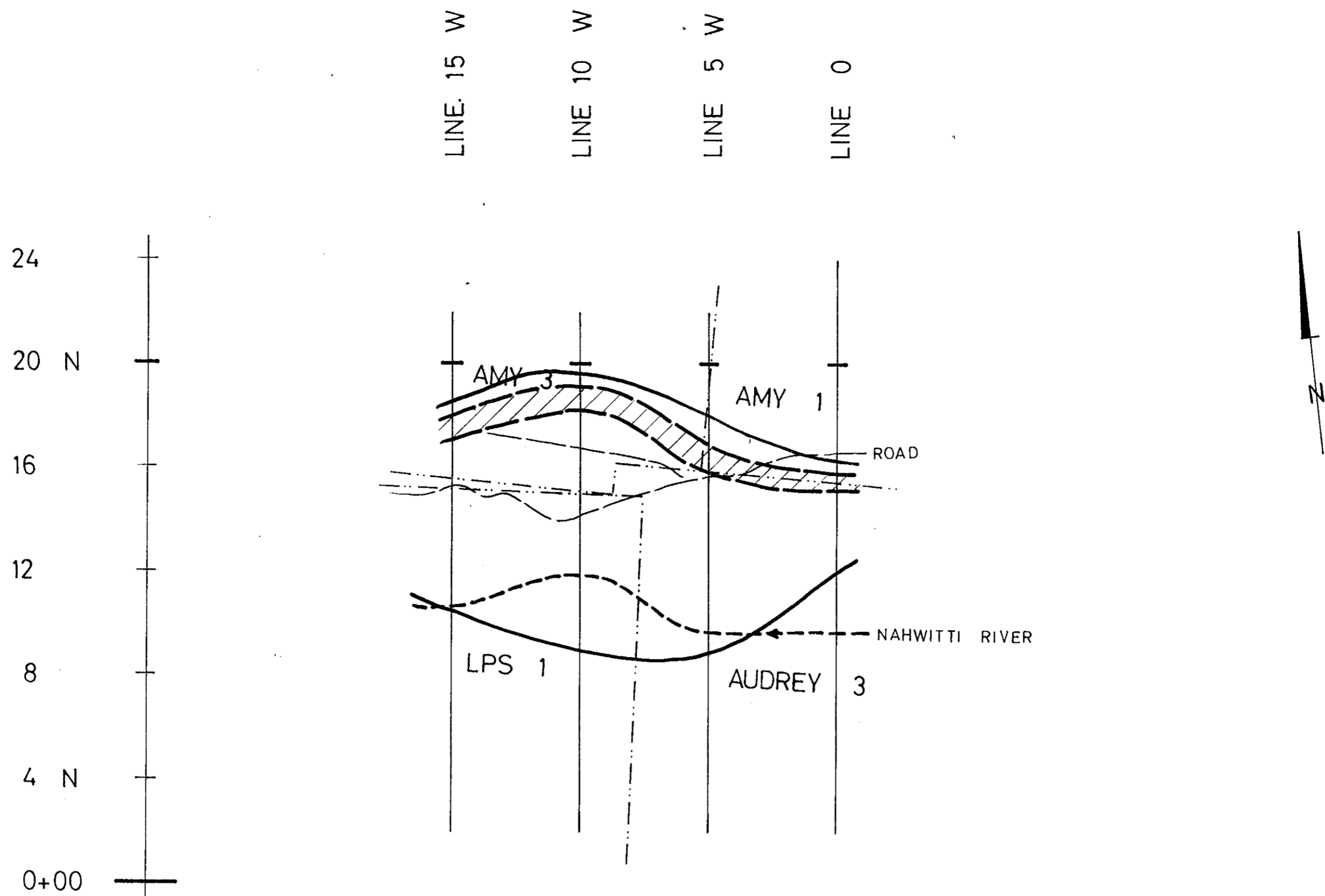
(1) Wages:			
	T. Guernier	5 1/2 days @ \$50.00/day	\$275.00
	R. Albert	4 days @ \$27.50/day	110.00
	G. Budgell	5 1/2 days @ \$27.50/day	151.25
	W. Murray	1 1/2 days @ \$27.50/day	41.25
	R. Paradis	5 1/2 days @ \$27.50/day	151.25
	H. Winzeler	5 1/2 days @ \$27.50/day	151.25
			<u>\$880.00</u>
			\$880.00
(2)	Transportation & shipping to the job		142.51
(3)	Transportation on the job		77.85
(4)	Food & living expenses		271.52
(5)	Use of geophysical equipment		
		5 1/2 days @ \$60.00/day	330.00
(6)	Paid to Seigel Associates Limited to cover geophysicist's supervision, calculating, plotting and fairdrawing data and preparation of final reports.		<u>845.00</u>
			\$2,546.88

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."

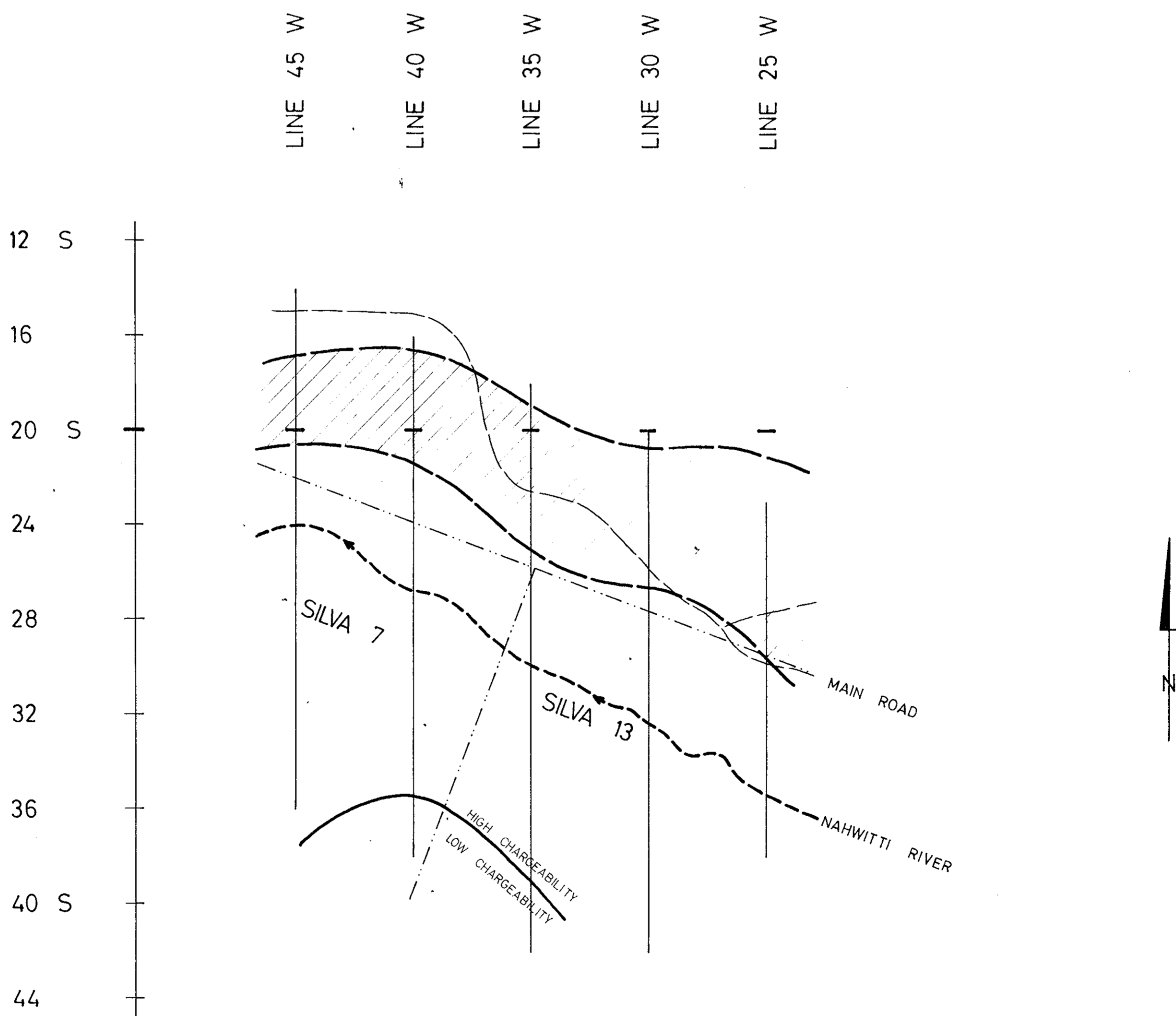
Declared before me at the City
of Vancouver, in the
Province of British Columbia, this 31st
day of December, 1970, A.D.

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





AUDREY GRID



SILVA GRID

2796 M-2

LEGEND

-  ZONE OF INCREASED CHARGEABILITY
-  ZONE OF LOW RESISTIVITY

TO ACCOMPANY A GEOPHYSICAL REPORT
BY J.G. BAIRD DATED DECEMBER 30, 1970

PLATE 2

GIANT EXPLORATIONS LIMITED (NPL)
NAHWITTI PROJECT
PORT HARDY AREA, BRITISH COLUMBIA

INDUCED POLARIZATION SURVEY
GRIDS, CLAIMS AND INTERPRETATION

SCALE: 1 inch = 400 feet

400 FEET 0 400 800

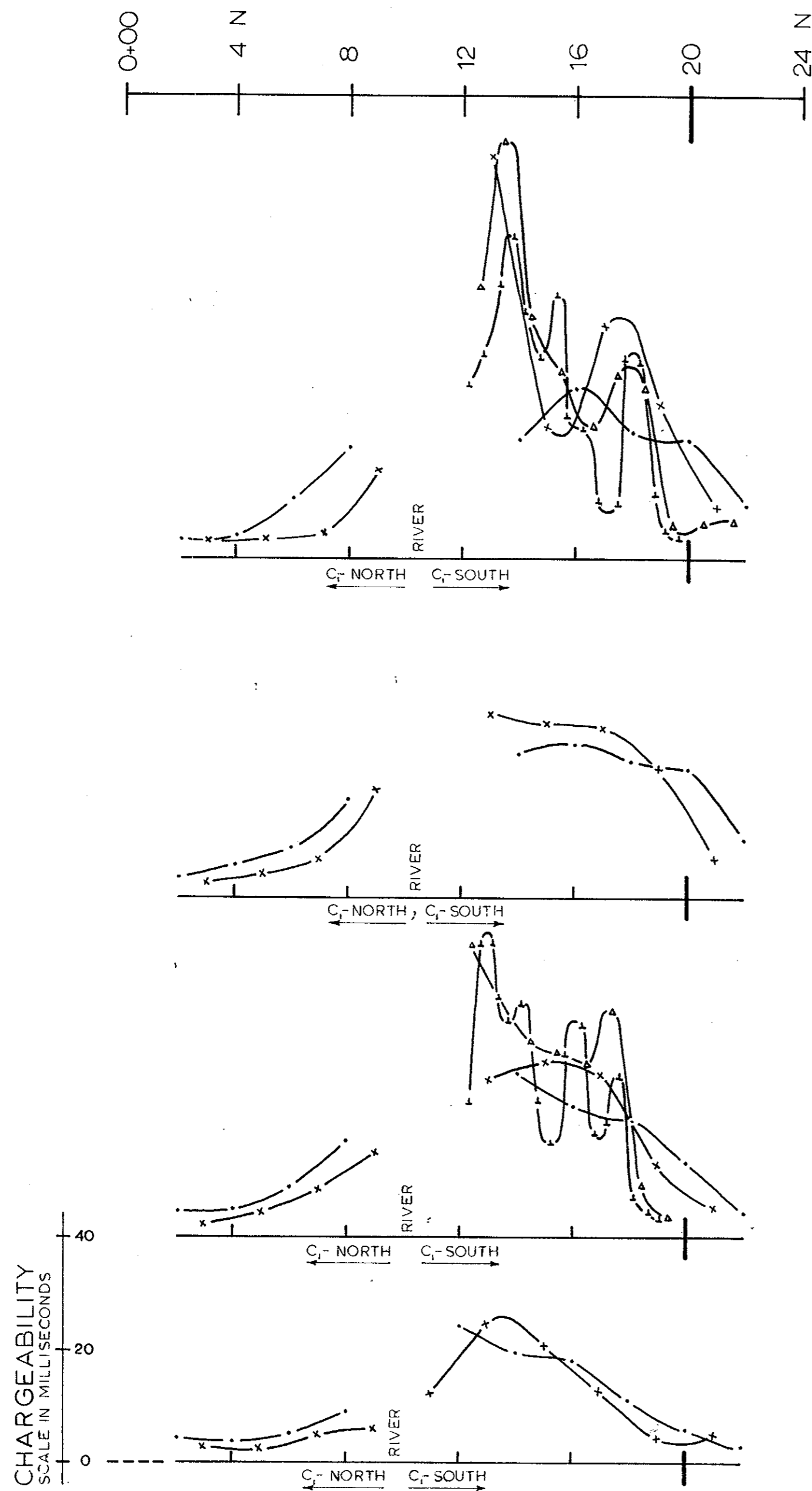
SURVEY BY SEIGEL ASSOCIATES LTD. OCT. NOV. 1970

NO. 2796

Mines and Petroleum Resources
ASSESSMENT REPORT

Department of

J. Baird

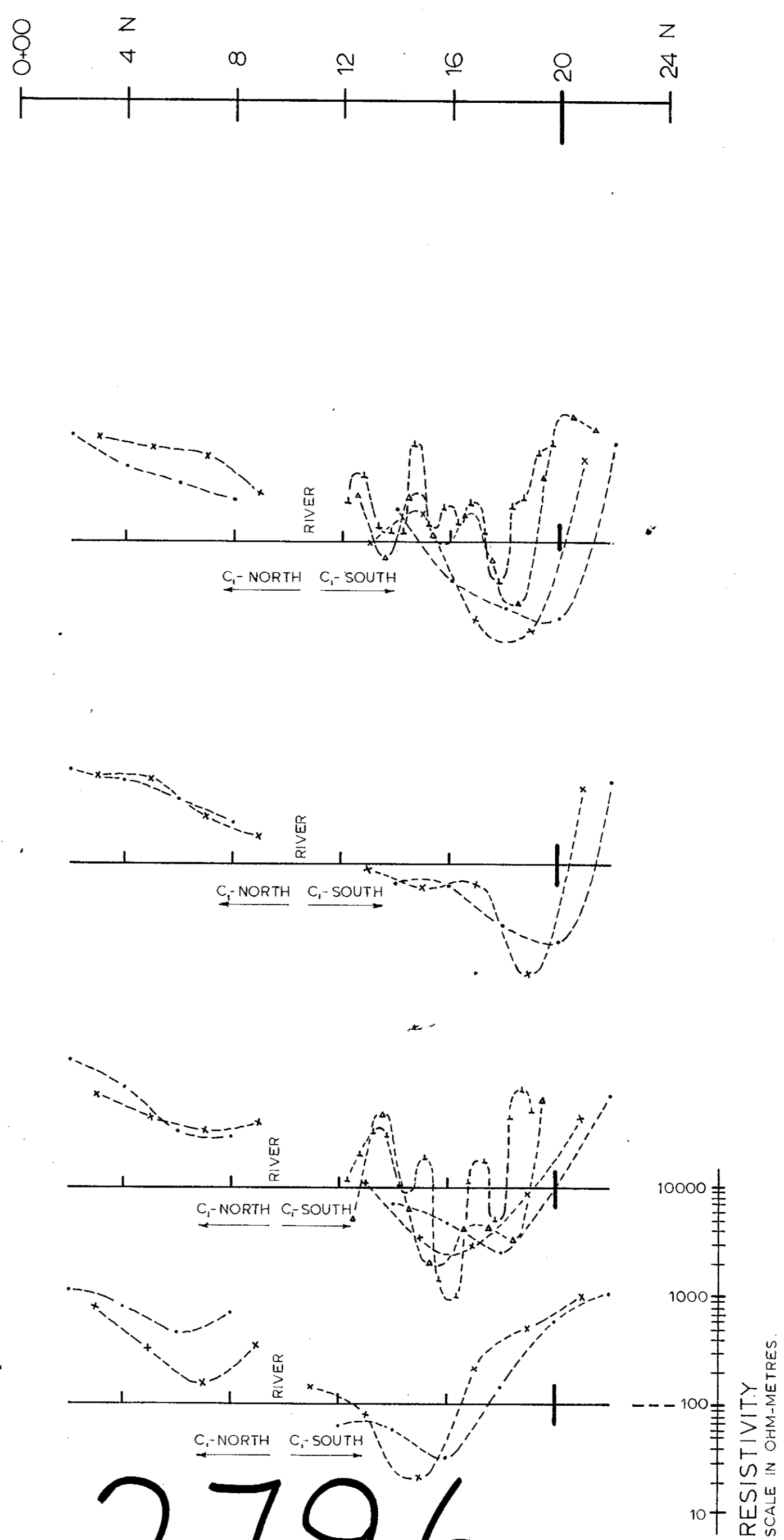


L 15 W

L 10 W

L 5 W

L 0+00



M-3

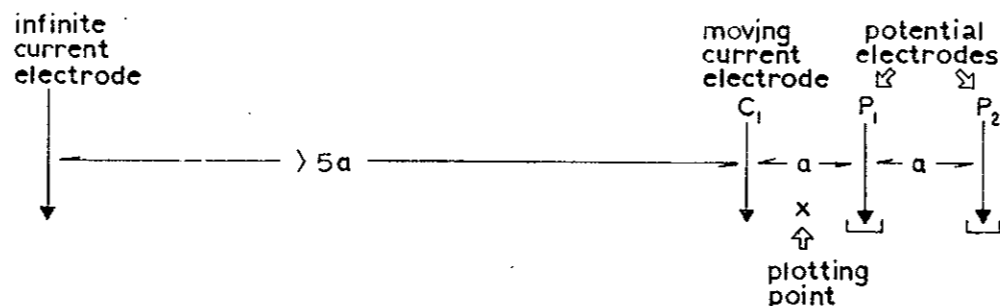
2796

LEGEND

CHARGEABILITY	SCALE 1 inch = 20 MILLISECONDS
ELECTRODE SPACING	a = 50'
	a = 100'
	a = 200'
	a = 400'
RESISTIVITY	SCALE 1 inch = 1 LOGARITHMIC CYCLE WITH LINE TRACE TAKEN AS 100 Ω - METRES
ELECTRODE SPACING	a = 50'
	a = 100'
	a = 200'
	a = 400'

NOTES

SCINTREX MK VII INDUCED POLARIZATION INSTRUMENTATION
THREE ELECTRODE ARRAY



INTERLINE SPACING NOT TO SCALE

TO ACCOMPANY A GEOPHYSICAL REPORT
BY J.G. BAIRD DATED DEC. 30, 1970.

PLATE 3

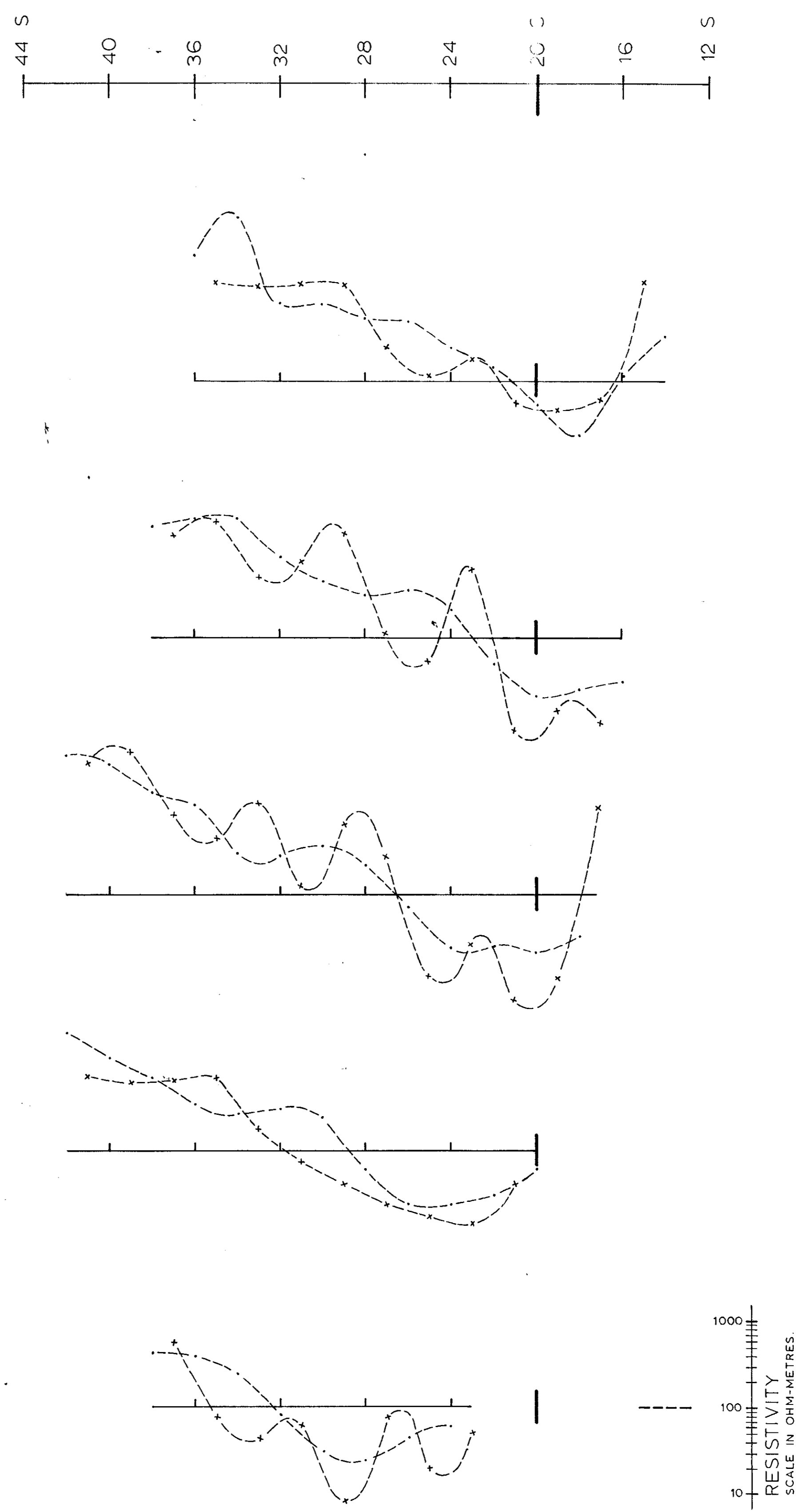
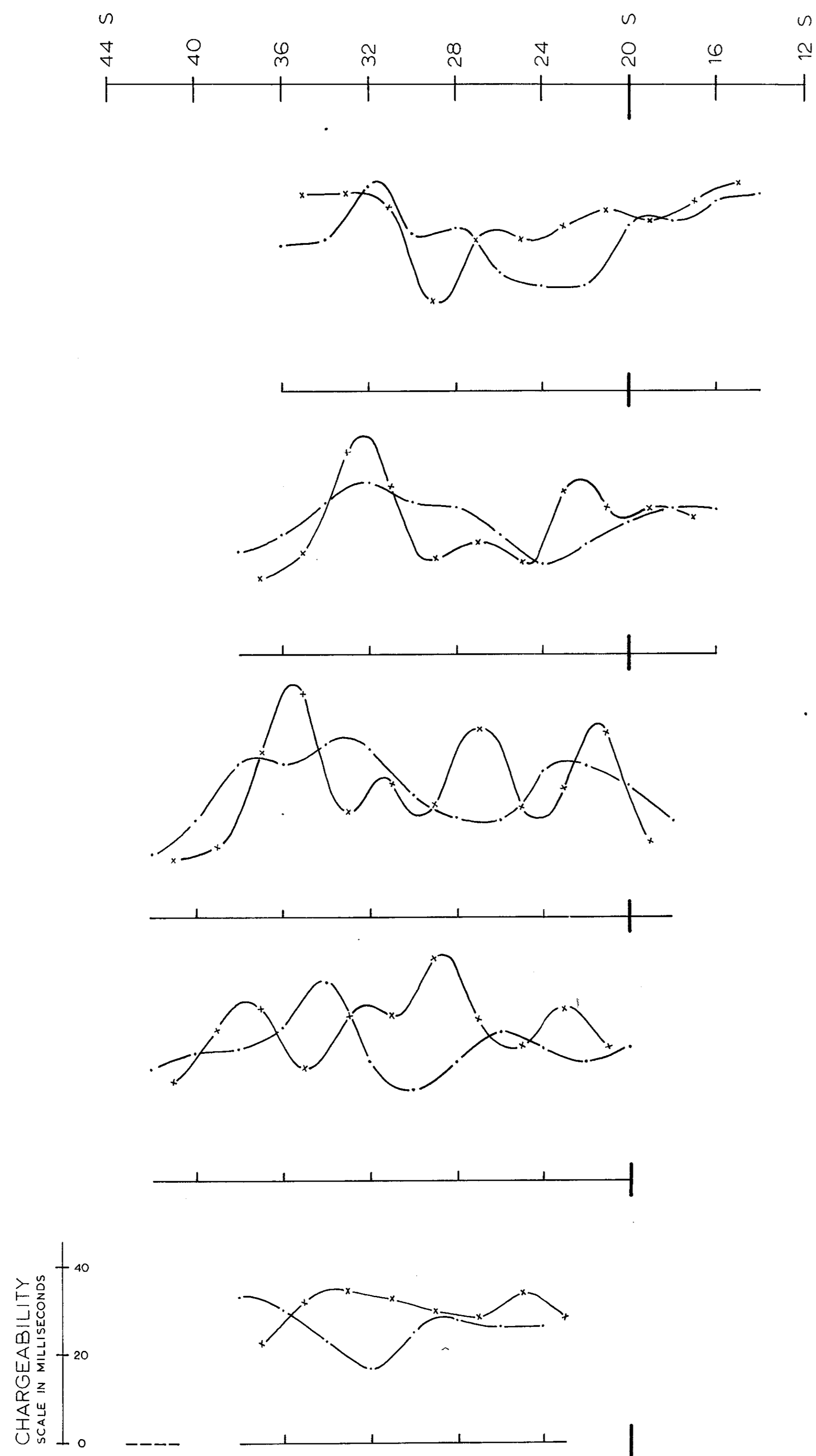
GIANT EXPLORATIONS LIMITED (NPL)
NAHWITTI PROJECT
PORT HARDY AREA, BRITISH COLUMBIA
AUDRY GRID

INDUCED POLARIZATION SURVEY
CHARGEABILITY AND RESISTIVITY PROFILES

SCALE : 1 inch = 400 feet

SURVEY BY SEIGEL ASSOCIATES LTD. OCT. NOV. 1970

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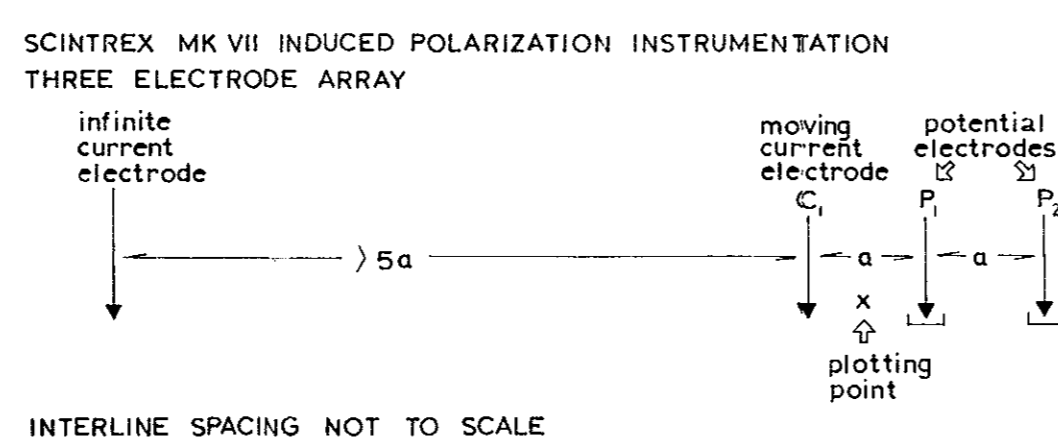


2796 M-4

LEGEND

CHARGEABILITY : SCALE 1 inch = 20 MILLISECONDS
 ELECTRODE SPACING : a = 200' ---x---x---
 a = 400' ---.---.---.---
 RESISTIVITY : SCALE 1 inch = 1 LOGARITHMIC CYCLE
 WITH LINE TRACE TAKEN AS 100 Ω - METRES
 ELECTRODE SPACING : a = 200' ---x---x---
 a = 400' ---.---.---.---

NOTES



TO ACCOMPANY A GEOPHYSICAL REPORT
 BY J.G. BAIRD DATED DEC. 30. 1970.

PLATE 4
 GIANT EXPLORATIONS LIMITED (NPL)
 NAHWITTI PROJECT
 PORT HARDY AREA, BRITISH COLUMBIA
 SILVA GRID

INDUCED POLARIZATION SURVEY
 CHARGEABILITY AND RESISTIVITY PROFILES

SCALE : 1 inch = 400 feet

400 feet 0 400 800 feet

SURVEY BY SEIGEL ASSOCIATES LTD. OCT. NOV. 1970

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 2796 L 2 #4

J. Baird