

4207

Department of	
Mineral and Petroleum Resources	
ASSESSMENT REPORT	
NO. 4207	M.P.

REPORT ON
 INDUCED POLARIZATION SURVEY
 NANIKA LAKE AREA, BRITISH COLUMBIA
 ON BEHALF OF
 SCURRY-RAINBOW OIL LIMITED
 93E/12E, 13E

by

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

and

Michael J. Lewis, M.Sc.

October 16, 1972

CLAIMS:

- Name
- FEN 1 - 10 (inclusive)
- CUP 1 - 12 (inclusive)
- CUP 17 - 38 (inclusive)
- PUC 1 - 2 (inclusive)
- DW 1 - 14 (inclusive)
- XMAS 1 - 6 (inclusive)
- CORB 1 - 26 (inclusive)
- CORB 41 - 55 (inclusive)
- CORB 61, 62, 68, 69
- CORB 75 - 78 (inclusive)

Mining Recorder's Office RECORDED
DEC 21 1972
AT..... SMITHERS, B.C.

LOCATION:

On the Western side of Nanika Lake
 About 75 miles southwest of Smithers, B. C.
 Omineca Mining District
 127° 53° NW

DATES:

August 14 to September 11, 1972

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EXPLANATORY BROCHURE: Induced Polarization Method
by Dr. H. O. Seigel, 1970

FIGURES AND PLATES

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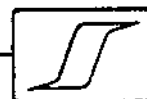


SUMMARY

The induced polarization survey has revealed three zones of anomalous chargeability and three other areas possibly requiring further induced polarization coverage.

Geological and geochemical follow-up is recommended for areas that have not yet been subjected to such coverage. Further induced polarization surveying may be carried out when Nanika Lake is frozen if it is deemed necessary to extend the present coverage.

Three diamond drill holes totalling 1800' have been suggested to examine one of the anomalous zones.



REPORT ON
INDUCED POLARIZATION SURVEY
NANIKA LAKE AREA, BRITISH COLUMBIA
ON BEHALF OF
SCURRY-RAINBOW OIL LIMITED

INTRODUCTION

During the period August 14th to September 11th, 1972, an induced polarization survey was carried out in the Nanika Lake area, British Columbia by Scintrex Surveys Limited on behalf of Scurry-Rainbow Oil Limited. The survey crew was under the direction of Mr. Francis Bourqui.

The survey property is located in the Omineca Mining District about 75 miles southwest of Smithers as shown in Figure 1. Access to the area is by float plane from Smithers. The terrain is rugged and well forested.

The claims covered, completely or partly, are listed on the front page of this report and are shown on the grid map (Plate 5).

DESCRIPTION OF METHOD AND INSTRUMENTATION

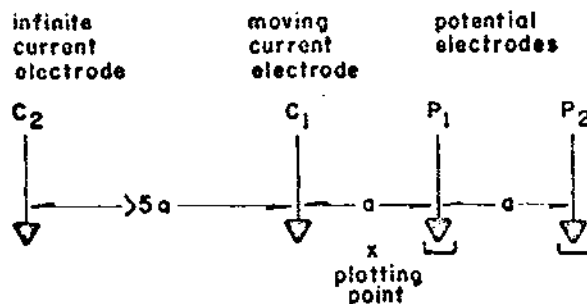
A Scintrex Mark VII 2.5 kw time-domain induced polarization unit was utilized on the present survey. This unit has a current "on" time of 2.0 seconds and a current "off" (potential measuring time) of 2.0 seconds. The polarization/transient voltages are integrated between the .45 to 1.1 second part of the "off" cycle and normalized to the "on" cycle voltage at the receiver. The resulting Chargeability, in milliseconds, is a measure of the induced polarization effect. The Resistivity, in ohm-meters, of the rocks in the measurement zone, is computed from the formula $R = CV_p/I$ where V_p = 'on' cycle voltage at the receiver, I = current output from the transmitter; C = a constant depending on the array geometry.



For the present survey the Three Electrode Array was utilized.

This array is shown schematically below in Figure 2.

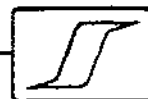
FIG. 2 THREE ELECTRODE ARRAY



Potential or "a" spacings of 300 feet and 600 feet were utilized throughout for reconnaissance purposes. Readings were taken at intervals of 200 feet. The plotting point for the Three Electrode Array is taken as the midpoint between the C1 and P1 electrodes (see Figure 2). Topographic variations and geological inhomogenities may result in the centre of the anomalous zone being shifted from its apparent location using this midpoint convention.

Induced polarization responses may arise from metallic or non-metallic agencies. The former include most sulphides (except sphalerite), arsenides, a few oxides such as magnetite and, unfortunately, graphite. Non-metallic sources include alteration minerals such as sericite, chlorite, serpentinite and some clay minerals. There is no reliable criterion for differentiating between over-voltage responses from metallic or non-metallic minerals or for distinguishing between the responses of one type of sulphide and another.

A more detailed description of the induced polarization method is contained in the attached copy of Dr. H. O. Seigel's paper entitled "Induced Polarization Method" dated 1970.



GEOLOGY AND THE PURPOSE OF THE SURVEY

The regional geology of the survey area is contained in the G.S.C. Map NTS 93 E, Whitesail Lake, British Columbia.

The entire survey area appears to be underlain by granites, granodiorites and diorites of the Coast Range intrusions.

Known economic mineralization in the area (apart from gold) consists of narrow lead-zinc veins near Mount Sweeney (located about 20 miles to the east) and of more extensive copper mineralization located about two miles south of the property.

Although the local geology of the property is unknown to the writers, copper sulphides have been located on the property by diamond drilling.

The purpose of the present survey was to define the known deposit and to search for other large tonnage disseminated sulphide occurrences.

A previous induced polarization survey on part of the property has been completed by Kenting Earth Sciences. Anomalous chargeabilities, coincident with the known sulphides, were observed.

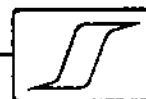
THE SURVEY GRID

The configuration and orientation of the survey grid are shown on Plate 5 on the scale of 1" = 1500'. Thirty-two parallel lines striking about east-west were laid out across the property grid east and grid west of a common base line. The interline separation was generally 800'. Lines were numbered L-80 S to L-48 S and L-24 S to L-192 N inclusive.

A total of 38.5 line miles of geophysical coverage were attained.

PRESENTATION OF RESULTS

The chargeability and resistivity data are presented in profile



form on Plates 1 and 2 respectively. Both Plates consist of two sheets on the horizontal scale of 1" = 400'. The interline separation is not to scale. The chargeability profiles have a vertical scale of 1" = 10.0 milliseconds. The resistivities are plotted on a vertical logarithmic scale of 2" = 1 log cycle - the base level is 1000 ohm-meters.

Plates 3 and 4 show the chargeability and resistivity results in contour form on the base scale of 1" = 400'. The contour intervals are 2.0 milliseconds for the chargeability and logarithmic for the resistivity.

DISCUSSION OF RESULTS

The Chargeability Data

The average background chargeabilities observed within the present area range from about 2.0 to 3.0 milliseconds for the 300' electrode spacing and from about 4.0 to 5.0 milliseconds for the 600' spread. Most of the property is underlain by material exhibiting such background values which may be considered typical of unmineralized rock formations.

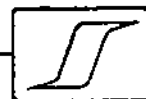
Anomalous chargeability responses were observed along two major lineaments as indicated on Plate 3. These anomalies are designated Zones 1, 2 and 3. A few other minor chargeability increases were also observed - note the grey areas on the contour plan.

Anomaly 1 - is about 1200' wide and at least 4200' long. It strikes about N 35° E across Lines 16 N to 56 N inclusive and is open to the northeast. Chargeability peaks were observed as follows:

Line 40 N; 4 + 50 E - 33.0 milliseconds (a = 300')

Line 32 N; 1 + 50 W - 29.5 milliseconds (a = 300')

The amplitude and slope characteristics of the anomaly suggest 2 - 3% by volume of disseminated metallicly conducting mineralization



(sulphides, graphite, etc.) lying below the zones of peak response.

Diamond drilling has indicated that interesting copper sulphide mineralization has been found in coincidence with Anomaly 1. Such mineralization may extend northeast under Nanika Lake as suggested by the openness of the anomaly in that direction. Additional induced polarization coverage (over the lake area) may be required to delimit its extent and configuration.

Anomaly 2 - is about 3300' long and about 700' wide. It extends from Line 48 N to Line 16 S along a lineament trending about N 35° W (see Plate 3).

Chargeability peaks were observed at the following locations:

Line 40 N; 47 + 50 W - 18.0 milliseconds (a = 300')

Line 24 N; 37 + 50 W - 11.0 milliseconds (a = 300')

Line 8 S; 13 + 50 W - 12.0 milliseconds (a = 300')

Anomaly 2 could be caused by 1 - 2% by volume of disseminated metallically conducting mineralization (sulphides, graphite, etc.) or by greater amounts by volume of other substances known to give induced polarization responses (chlorite, sericite, carbonaceous material, etc.). Such mineralization comes to within less than about 150' of the ground surface below the 300' peaks - a rather vague estimate due to the limited coverage.

Anomaly 3 - is about 1200' wide and at least 1800' long. It lies on Lines 00, 8 N and 16 N directly due south of Anomaly 1. It is open to the east and northeast. It gave a peak chargeability response of 22.5 milliseconds at 4 + 50 E; Line 8 N.

Anomaly 3 could reflect up to 2% by volume of disseminated



metallically conducting material coming close to the ground surface in the vicinity of the peak amplitudes. It is likely related to Anomaly 1 although probably separated from the latter by faulting. It contains known copper sulphide mineralization (as indicated by the Kenting Survey and subsequent diamond drilling). Such mineralization may extend under Lake Nanika and further induced polarization coverage may be required along strike to trace its extent and spatial distribution.

Other areas of residual interest which would require additional induced polarization surveying in order to resolve their significance are along Lines 32 S and 48 S. Some chargeability peaks to note in these areas are:

Line 32 S; 5 + 00 E - 9.0 milliseconds (a = 300')

Line 32 S; 7 + 50 W - 11.0 milliseconds (a = 600')

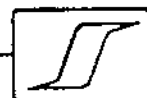
Line 48 S; 14 + 50 W - 13.0 milliseconds (a = 300')

Note that the 600' data on Line 32 S and 40 S show high anomalous chargeabilities relative to the 300' results suggesting a possible concentration of polarizing material at depth.

The single anomaly on Line 104 N at 12 + 50 E (see Plate 3) is likely an erratic response since it only appears on one spacing and at one point. For the present it is unlikely to be significant.

The Resistivity Data

The resistivities observed within the Nanika Lake area range from as low as about 400 ohm-meters to a high of about 20,000 ohm-meters. In the northern part of the grid the resistivities average around 1500 ohm-meters; in the southern portion around 2500 ohm-meters. Generally the 300' values are higher than those observed using the 600' spread



suggesting a general increase in the conductivity with depth.

Resistivity feature of special interest is the circular 'high' about 1/2 mile in diameter centred on Line 16 N Station 40 W (see Plate 4) - note the 20,000 ohm-meters which may indicate an intrusive body. The 'high' is flanked grid north, east and south by several 'lows' (alteration zones, etc.) some of which coincide with anomalous chargeability values.

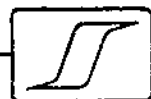
A strong lineament, striking about N 35° W is shown on Plate 4. This likely reflects a major fault zone.

Areas showing values of less than 1000 ohm-meters have been shaded on Plate 3. The resulting (shaded) bands may be related to geological structures (fracture zones, stratigraphic horizons, etc.). Two of these trends are, more or less, parallel to the lineament associated with Anomaly 1 - note the belt of 'lows' stretching across Lines 16 S to 64 N inclusive and the second parallel belt extending across Lines 48 N to 112 N inclusive.

CONCLUSIONS AND RECOMMENDATIONS

Three major zones of anomalous chargeability were observed within the Nanika Lake grid. These are designated Anomalies 1, 2 and 3 on Plate 3.

Anomaly 1 - strikes about N 35° E across Lines 16 N to 56 N inclusive. This indication was outlined by the Kenting Survey; it appears to have been adequately sampled by diamond drilling and in fact reflects interesting copper sulphide mineralization. This mineralization may extend northeast under Nanika Lake and additional induced polarization coverage (over the lake area) may be required to delimit its extent and configuration. Such coverage should be undertaken during the winter season whilst the lake is frozen.



Anomaly 2 - extends from Line 48 N to 16 S along a lineament trending about N 35° W (see Plate 3). It could be caused by 1 - 2% by volume of disseminated metallicly conducting mineralization (sulphides, graphite, etc.) or by greater amounts by volume of other substances known to give induced polarization responses (chlorite, sericite, carbonaceous material, etc.). This material appears to come to within less than about 150' of the ground surface near the point of peak chargeability response. Anomaly 2 lies just north-northeast of a prominent resistivity 'high' - a possible intrusive body.

Anomaly 2 is a high priority indication by virtue of its geophysical characteristics and its proximity to known copper mineralization (Anomalies 1 and 3). It merits further exploratory attention (geological and geochemical coverage, etc). It may be sampled by the following diamond drill holes:

<u>COLLAR</u>	<u>DIP</u>	<u>DIRECTION</u>	<u>MINIMUM LENGTH</u>
L 8 S; 15 + 00 W	-45°	East	600'
L 24 N; 38 + 50 W	-45°	East	600'
XL 38 N; 50 + 00 W	-45°	North 45° East	600'

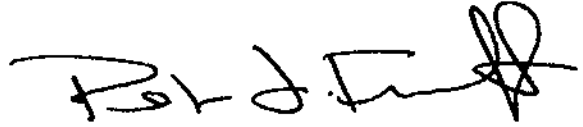
Anomaly 3 - lies directly south of Anomaly 1 and appears to have been adequately drilled - interesting copper mineralization was encountered. Because of its possible extension into Lake Nanika however, further induced polarization surveying may be warranted along the extensions of Line 16 N to 24 N inclusive in order to delimit the sulphides. Such coverage should, again, be undertaken during the winter season.



Additional (relatively) minor induced polarization 'anomalies' were observed on L 32 S and L 48 S. These warrant geological and geochemical investigations and possibly, additional induced polarization coverage in order to delimit their extent and significance. A meaningful interpretation of these responses is not possible on the basis of the present data. Ground investigation of the chargeability 'high' on L 104 N at 12 + 50 W may explain its source although it is suggested that it is purely spurious.

Respectfully submitted,

SCINTREX SURVEYS LIMITED



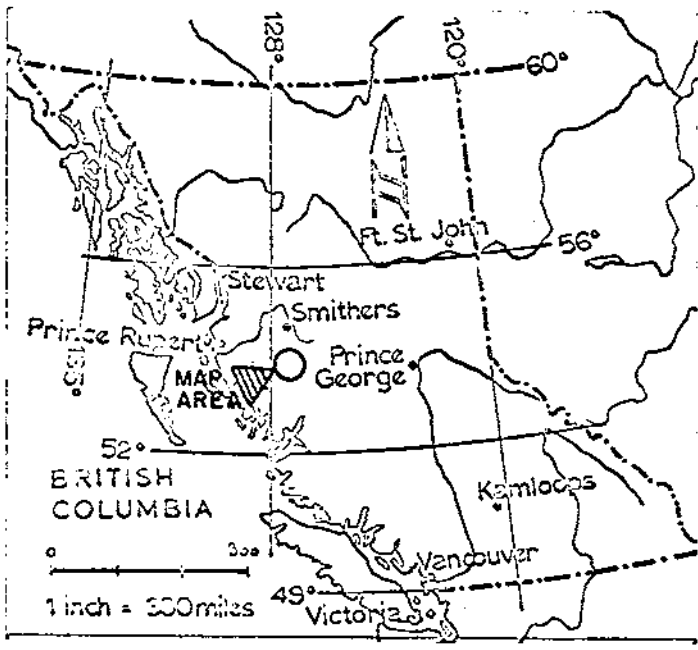
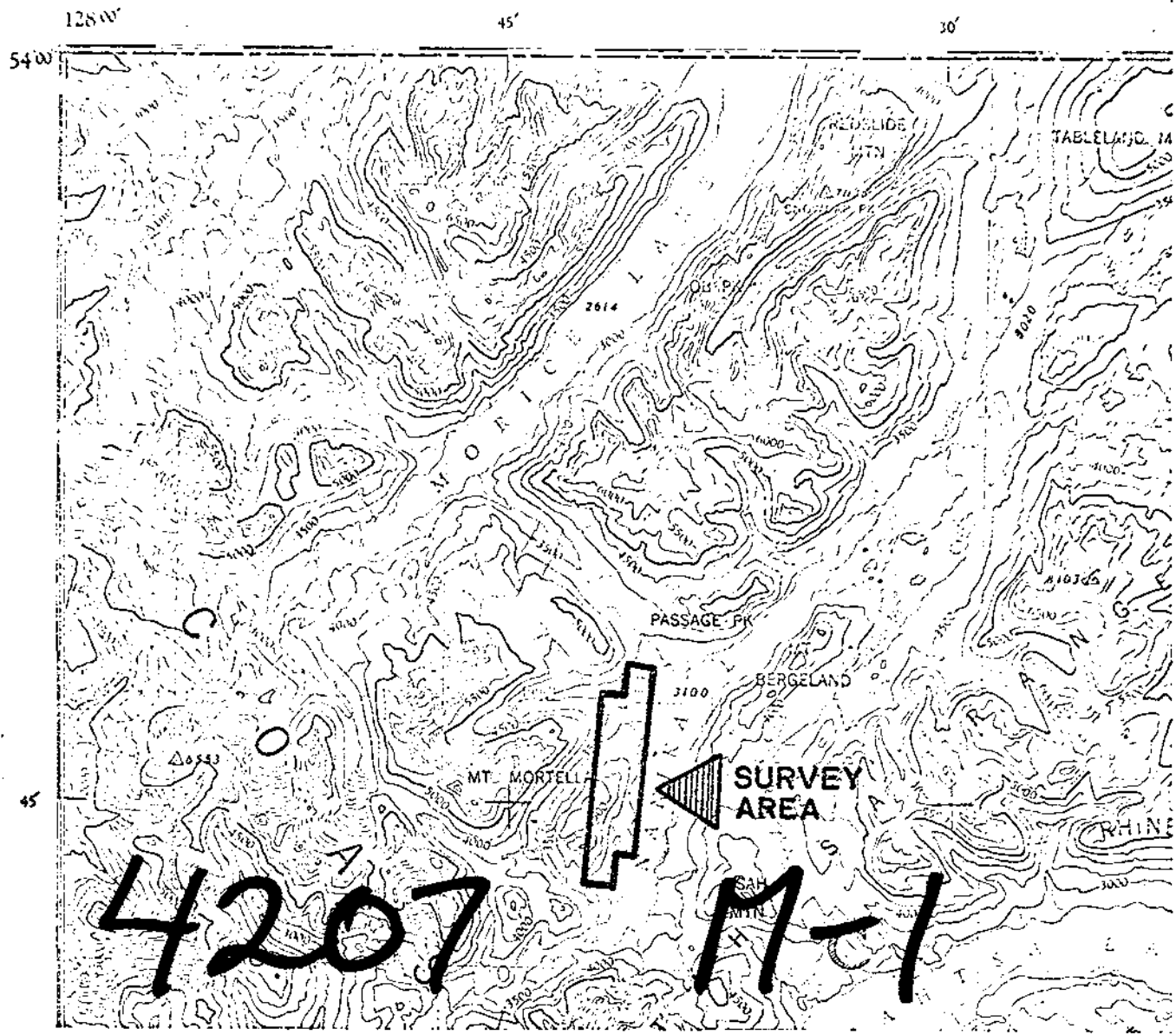
Peter J. Fominoff, B.A.Sc., P.Eng.
Geophysicist



Michael J. Lewis, M.Sc.
Geophysicist

Vancouver, B. C.
October 16, 1972





SCURRY RAINBOW OIL LTD.

LOCATION MAP

Rev J. H. ...

NANIKA LAKE AREA - B.C.

SCALE 1 : 250,000

4 miles 0 4 miles

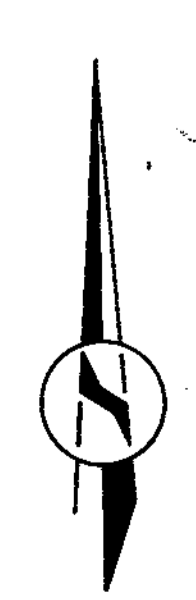
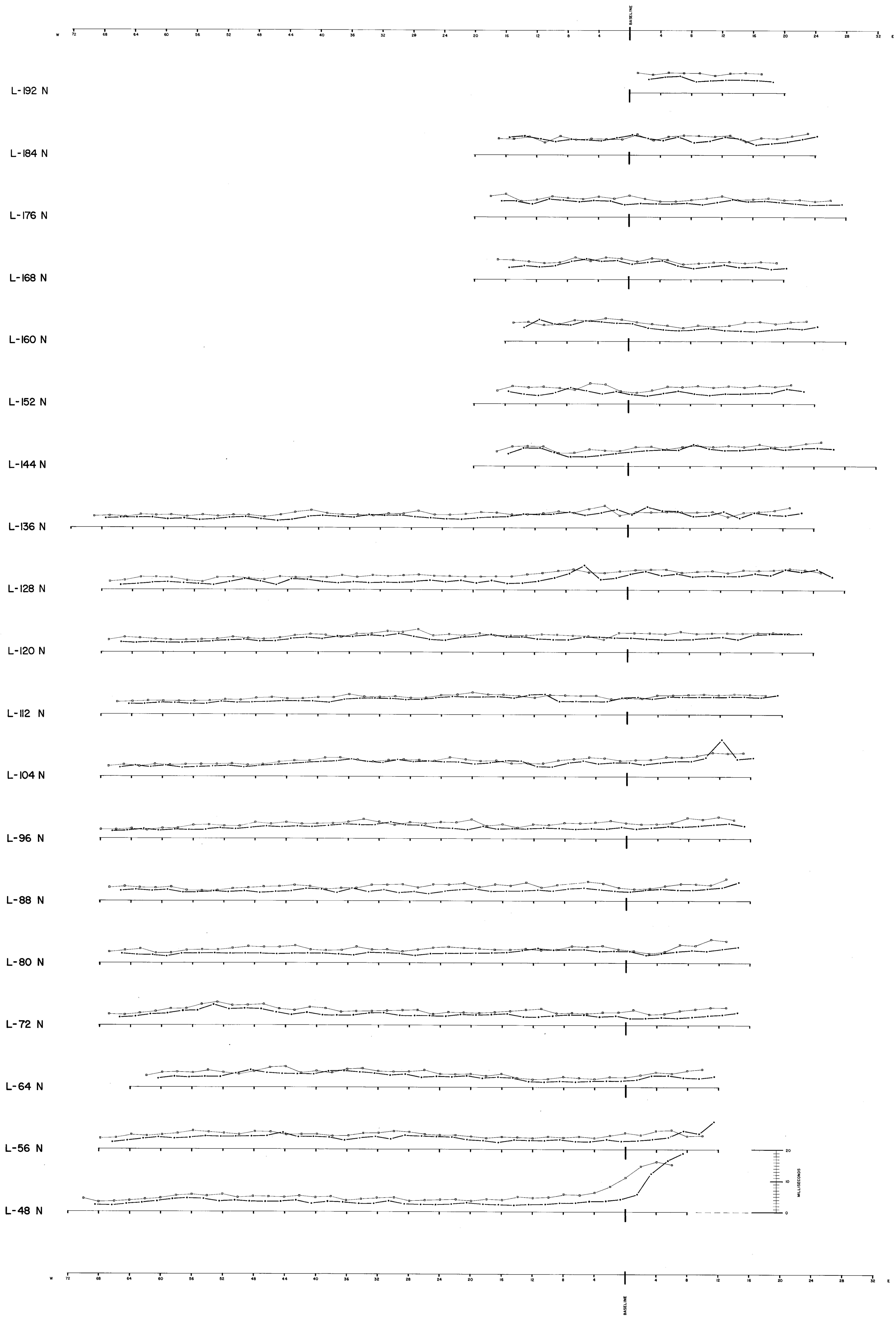
Survey by SEIGEL ASSOCIATES LIMITED

OCT. 1972

F.C. 1

1-M 7024

Department of
Minas and Petroleum Resources
ASSESSMENT REPORT
NO. 4207 MAP #1



LEGEND

CHARGEABILITY SCALE 1 inch = 10 MILLISECONDS

ELECTRODE SPACING
 •• 300' ————
 •• 600' ————

NOTES

SCITREX MK VII INDUCED POLARIZATION INSTRUMENTATION.

THREE ELECTRODE ARRAY

infused current electrode moving current electrode potential electrodes

C_2 C_1 P_1 P_2

plotting point

INTERLINE SPACING NOT TO SCALE.

PLATE I

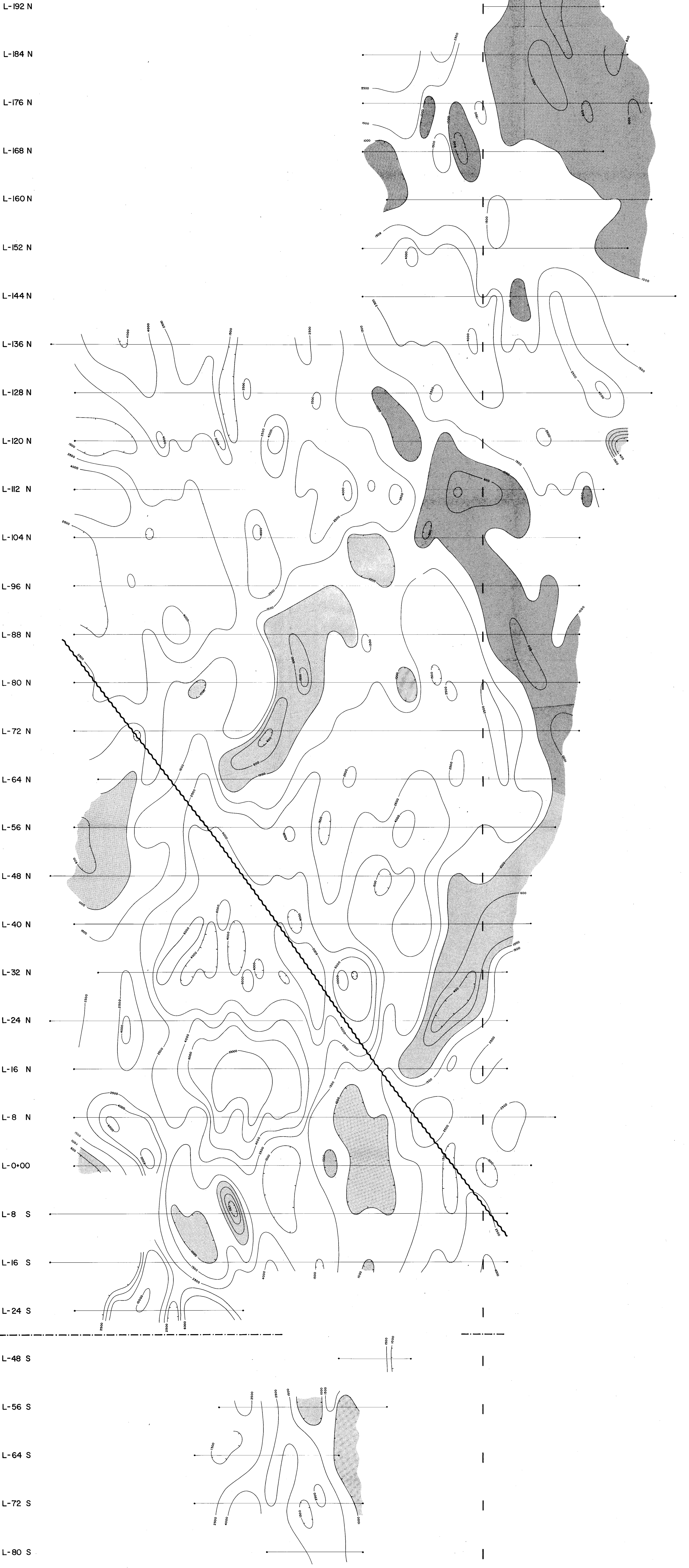
SCURRY RAINBOW OIL LIMITED
 NANIKA LAKE AREA, B.C. Division of
 Mines and Geoscience Resources
 ASSESSMENT REPORT
 NO. 4207 AND #2

CHARGEABILITY PROFILES
 OF
INDUCED POLARIZATION SURVEY

SCALE 1 = 400'
 BY
 SEIGEL ASSOCIATES LIMITED
 VANCOUVER B.C.

F. J. E.

TO ACCOMPANY A GEOPHYSICAL REPORT BY MICHAEL J. LEWIS AND R. J. FOMINOFF DATED: 16. OCTOBER 1972	WORK COMPLETED: 10. 9. 1972 DRAFTED: 11. 10. 1972 GJ REV:	JOB NUMBER 886	SHEET NUMBER 1 OF 2
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LEGEND

- MODIFIED LOGARITHMIC CONTOUR INTERVAL AS INDICATED
- AREAS OF LESS THAN 1000 OHM-METERS RESISTIVITY SHADING
- RESISTIVITY LINEAMENT

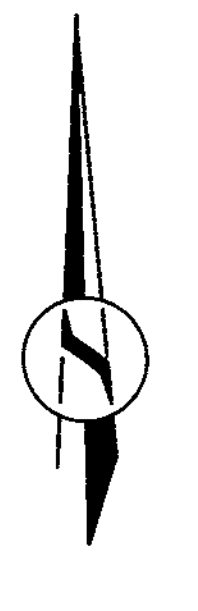


PLATE 4

SCURRY RAINBOW OIL LIMITED
 NANKA LAKE AREA, B.C. Department of
 Mines and Geotechnical Resources
 ASSESSMENT REPORT
 NO. 4207 Min #7

RESISTIVITY CONTOUR PLAN
 OF
INDUCED POLARIZATION SURVEY

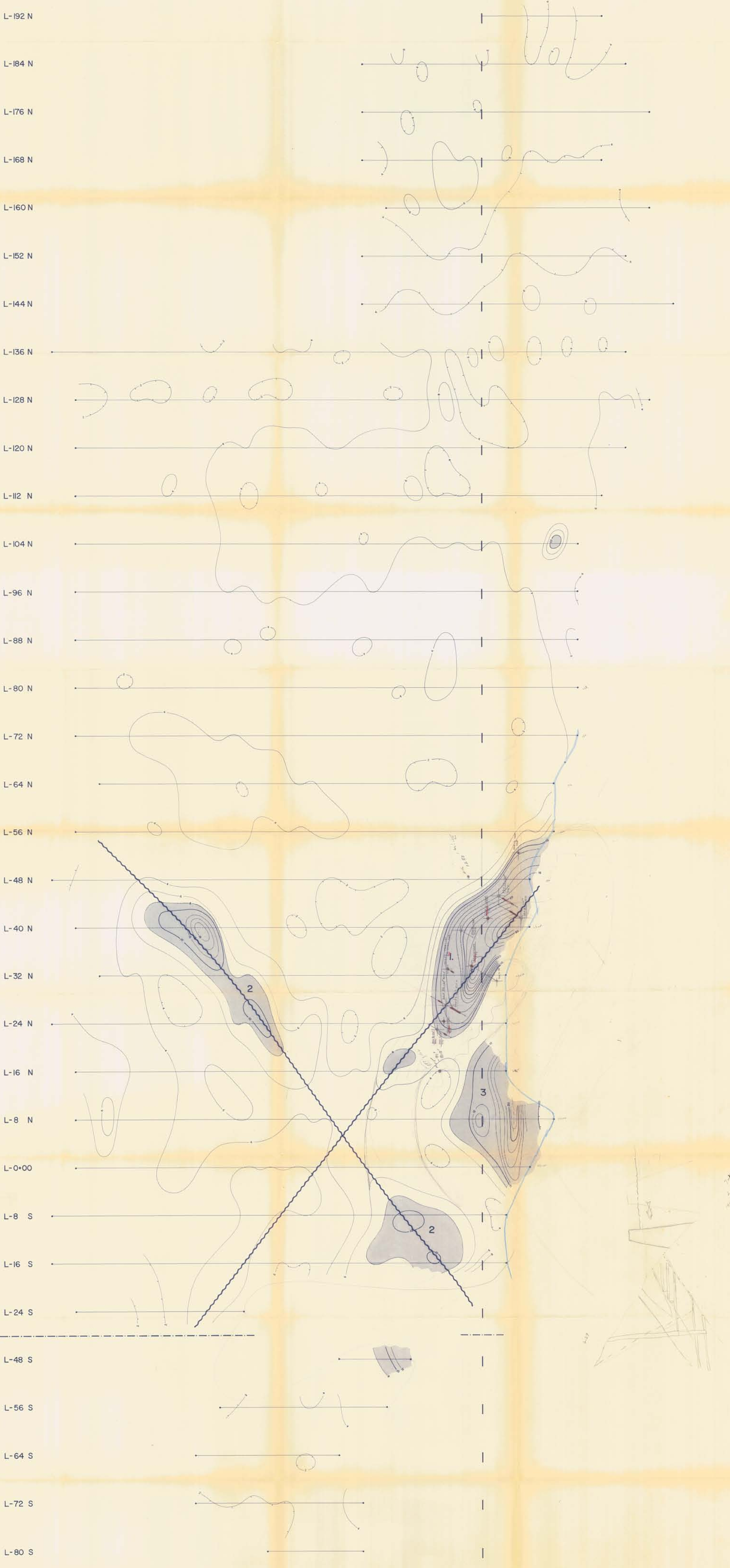
300' ELECTRODE SPACING
 SCALE 1" = 400'

BY
 SEIGEL ASSOCIATES LIMITED
 VANCOUVER B.C.

R. J. Seigel

10. ACCURACY & PRECISION REPORT BY DATE: OCTOBER 1972	WORK COMPLETED 10.9.1972 DRAFTED 9.10.1972 BY REV.	JOB NUMBER 886	SHEET NUMBER 1 OF 1
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72 68 64 60 56 52 48 44 40 36 32 28 24 20 16 12 8 4 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72

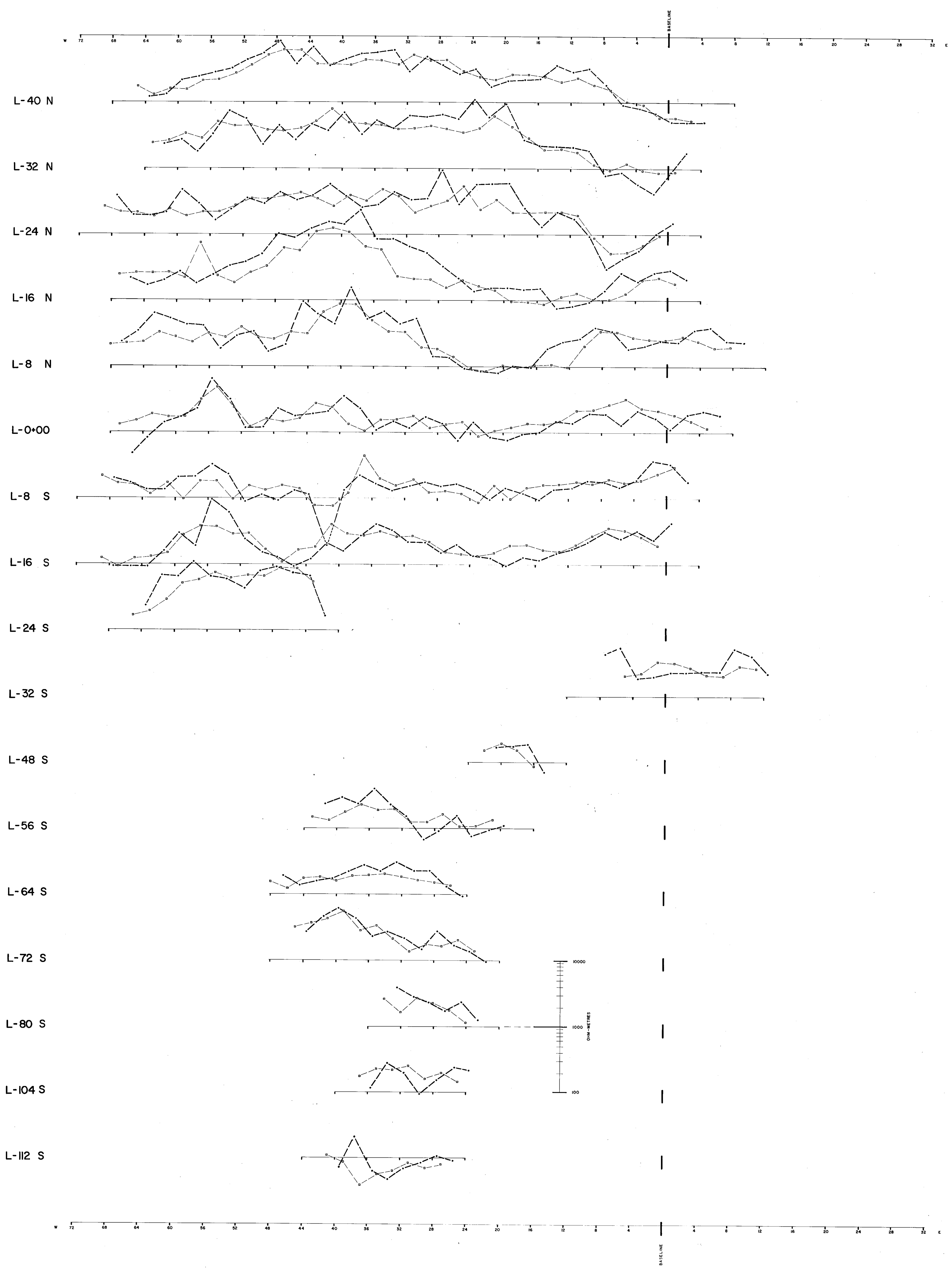


LEGEND
2 MILLISECOND CONTOUR INTERVAL
AREA OF MORE THAN 2 MILLISECONDS SHADDED
GEOPHYSICAL LINEMENTS



PLATE 3
SCURRY RAINBOW OIL LIMITED
NANKA LAKE AREA, B.C. Department of
Mines and Geophysical Resources
ADDRESS REPORT
NO. 4207, #6
CHARGEABILITY CONTOUR PLAN
OF
INDUCED POLARIZATION SURVEY
300' ELECTRODE SPACING
SCALE 1" = 400'
BY
SEIBEL ASSOCIATES LIMITED
VANCOUVER B.C.

TO ACCOMPANY A GEOPHYSICAL REPORT BY MICHAEL S. LEVY AND P.J. FURNESS
WORK COMPLETED: 10.1.1972
DRAWN: 4.10.1972
REV.
DATE: 4. OCTOBER 1972
JOB NUMBER 686
SHEET NUMBER 1 OF 1



LEGEND

RESISTIVITY SCALE: 2 inches = 1 LOGARITHMIC CYCLE WITH BASELEVEL
 TAKEN AS 1000 OHM-METRES
 ELECTRODE SPACING: $s = 300'$ (---) $s = 600'$ (---)

NOTES

SCINTREX MK VII INDUCED POLARIZATION INSTRUMENTATION.
 THREE ELECTRODE ARRAY
 infinite current electrodes: C₁, C₂
 moving current electrode: C₃
 potential electrodes: P₁, P₂
 plotting point: P
 INTERLINE SPACING NOT TO SCALE.

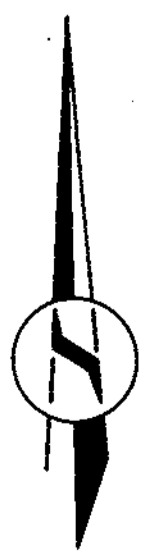


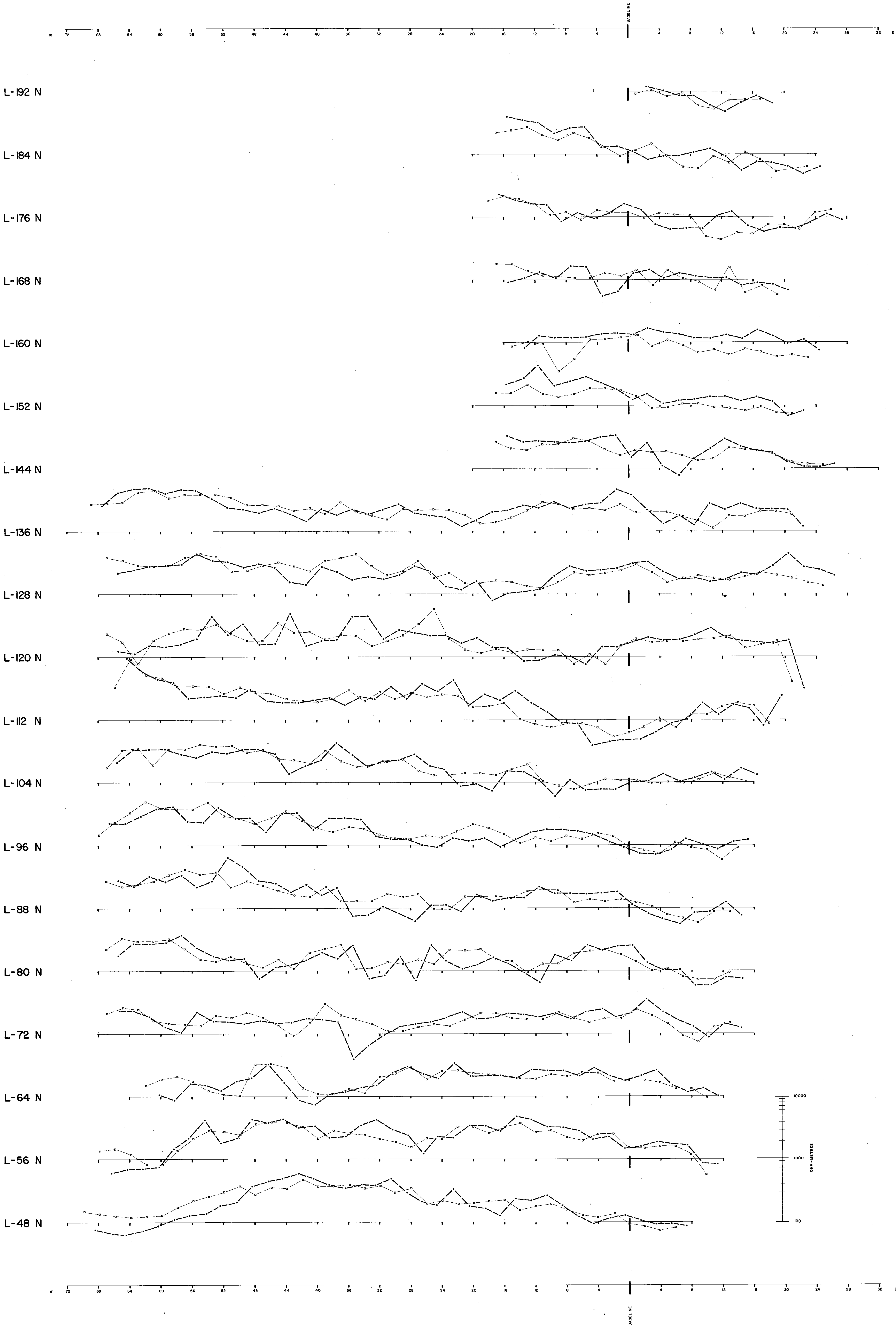
PLATE 2

SCURRY RAINBOW OIL LIMITED
 NANKA LAKE AREA B.C. Department of
 Mines and Petroleum Resources
 Associate Report
 No. 4207 MSP #5

RESISTIVITY PROFILES
 OF
INDUCED POLARIZATION SURVEY
 SCALE 1" = 400'
 BY
 SEIGEL ASSOCIATES LIMITED
 VANCOUVER B.C.

R.L. J. [Signature]

TO ACCOMPANY A GEOPHYSICAL REPORT BY MICHAEL J. LEWIS AND P.J. POMINOFF	WORK COMPLETED: 10.9.1972 DRAFTED: 7.10.1972 of REV.:	JOB NUMBER 886	SHEET NUMBER 2 OF 2
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LEGEND

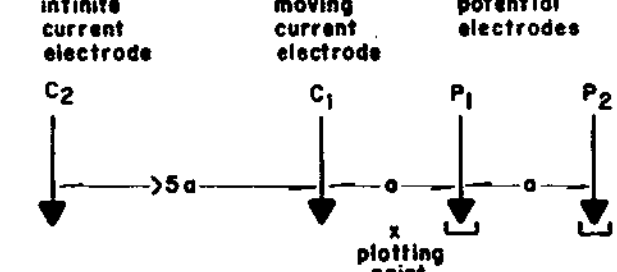
RESISTIVITY SCALE: 2 inches = 1 LOGARITHMIC CYCLE WITH BASELEVEL TAKEN AS 1000 OHM-METRES

ELECTRODE SPACING: \square = 300' \square = 500'

NOTES

SCHITREX AND VIB INDUCED POLARIZATION INSTRUMENTATION.

THREE ELECTRODE ARRAY



INTERLINE SPACING NOT TO SCALE.

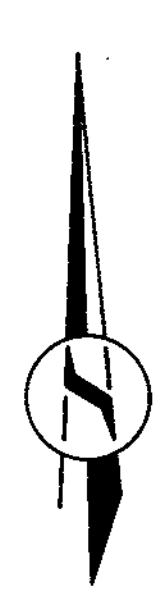


PLATE 2

SCURRY RAINBOW OIL LIMITED
NANIKA LAKE AREA, B.C.

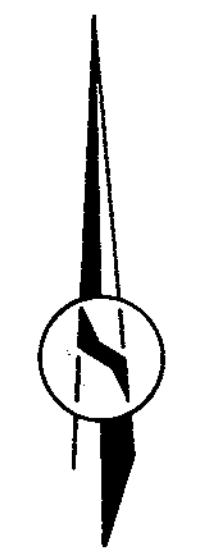
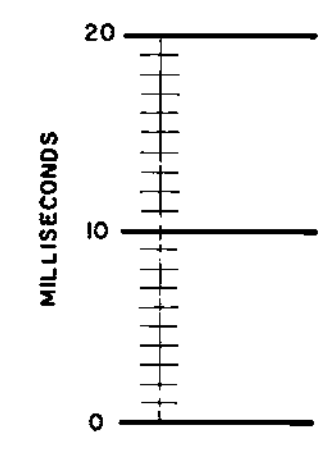
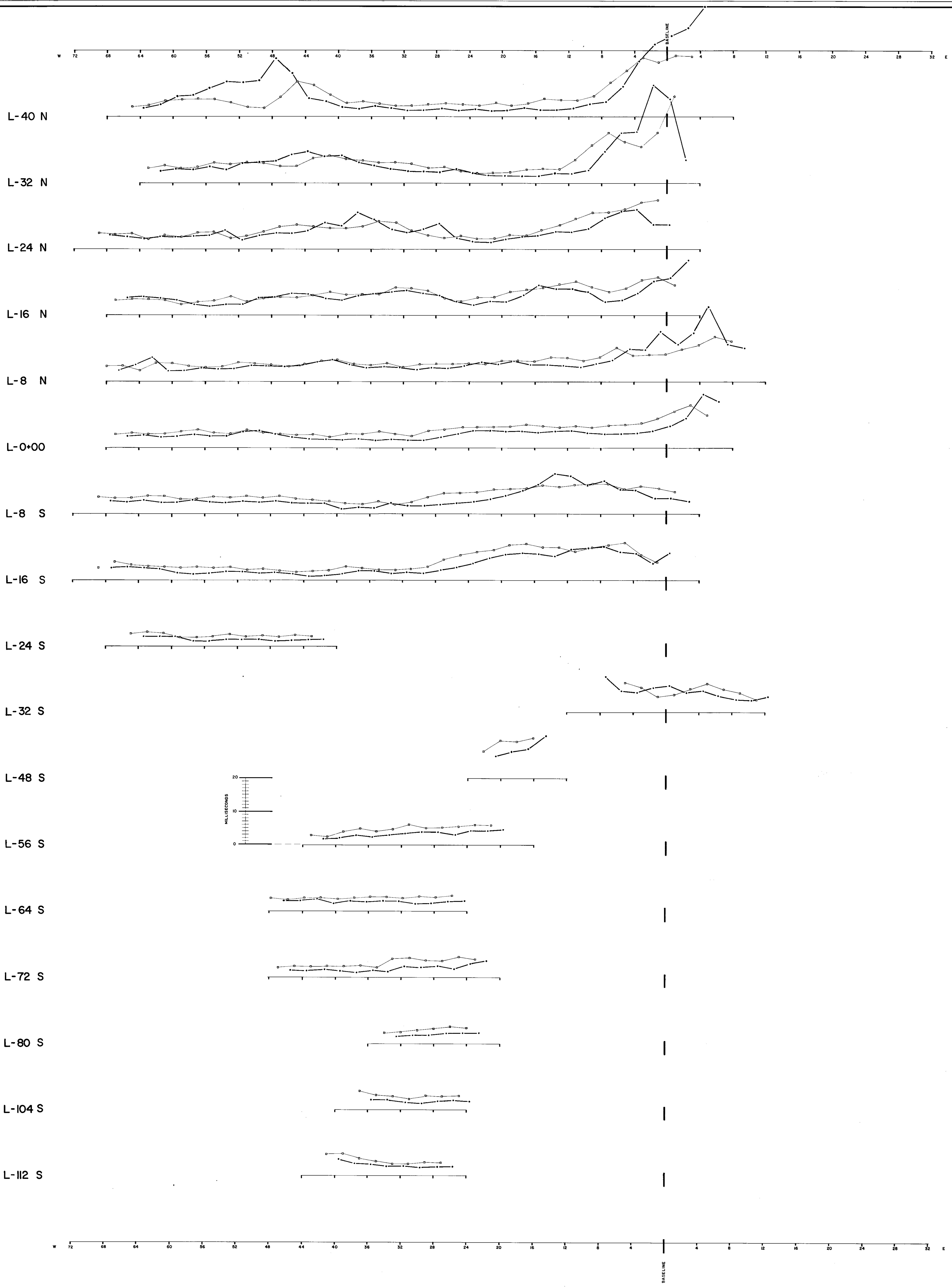
Department of
Mines and Petroleum Resources
Assessment Report
NO. 4307 #4

RESISTIVITY PROFILES
OF
INDUCED POLARIZATION SURVEY

SCALE 1 = 400'
BY
SEIGEL ASSOCIATES LIMITED
VANCOUVER B.C.

[Signature]

TO ACCOMPANY A GEOPHYSICAL REPORT BY MICHAEL J. LEWIS AND T. J. FOMHOFF	WORK COMPLETED: 10.9.1972 DRAFTED: 6.10.1972 REV: 1	JOB NUMBER 886	SHEET NUMBER 1 OF 2
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LEGEND

CHARGEABILITY SCALE 1 inch = 10 MILLISECONDS

ELECTRODE SPACING
 ○ = 300'
 ○ = 600'

NOTES

SCINTREX MK VII INDUCED POLARIZATION INSTRUMENTATION.

THREE ELECTRODE ARRAY

infinite current electrode moving current electrode potential electrodes

C₂ C₁ P₁ P₂

plotting point

INTERLINE SPACING NOT TO SCALE.

PLATE 1

SCURRY RAINBOW OIL LIMITED
 NANIKA LAKE AREA, B.C. Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 4207 #3

CHARGEABILITY PROFILES
 OF
INDUCED POLARIZATION SURVEY

SCALE 1" = 400'
 BY
 SEIGEL ASSOCIATES LIMITED
 VANCOUVER B.C.

R. J. Fomhoff

TO ACCOMPANY A GEOPHYSICAL REPORT BY MICHAEL J. LEWIS AND P. J. FOMHOFF	WORK COMPLETED: 10.9.1972 DRAFTED: 10.10.1972 of REV:	JOB NUMBER 886	SHEET NUMBER 2 OF 2
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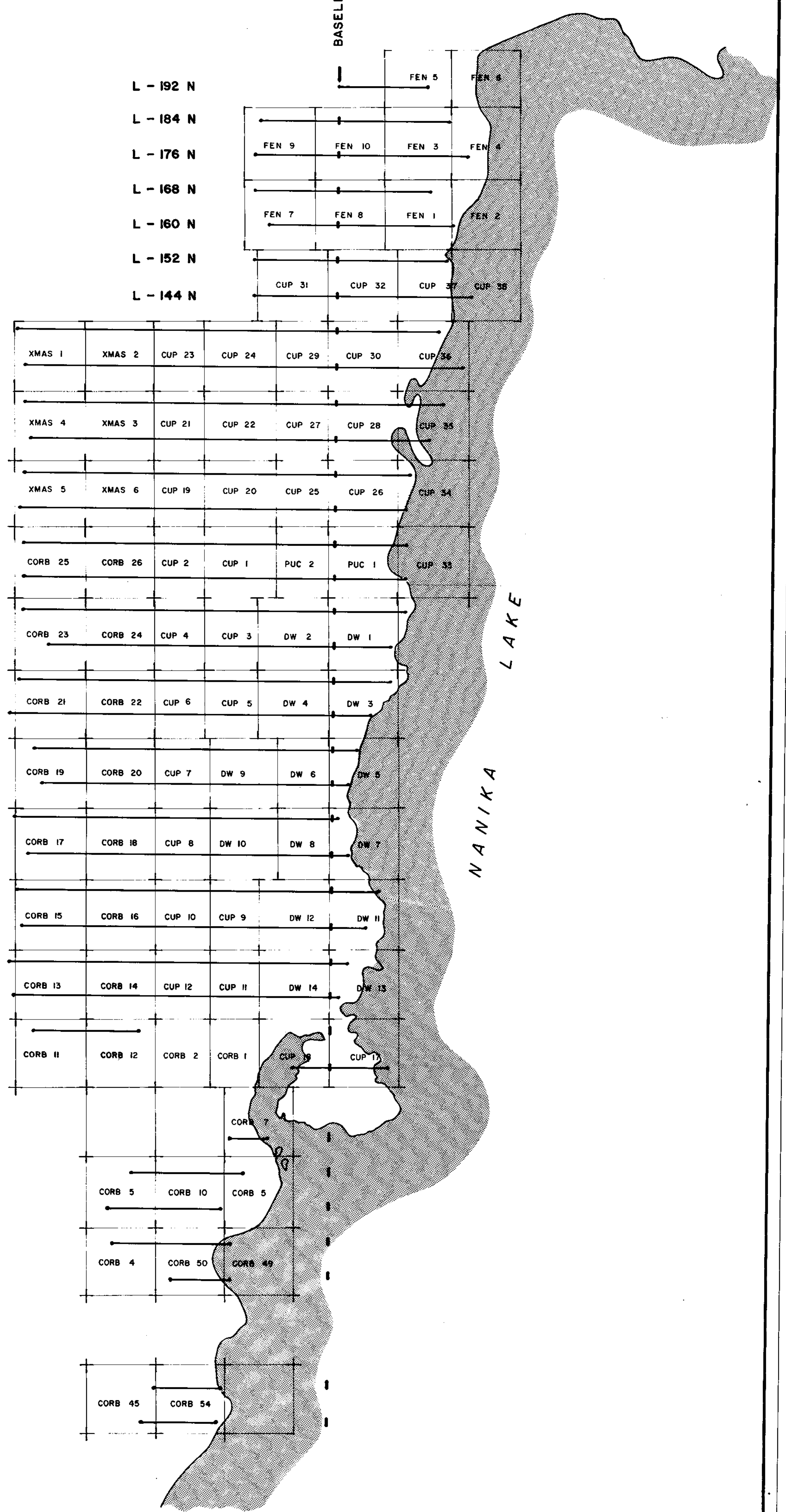
BASELINE

L - 192 N
L - 184 N
L - 176 N
L - 168 N
L - 160 N
L - 152 N
L - 144 N

L - 136 N
L - 128 N
L - 120 N
L - 112 N
L - 104 N
L - 96 N
L - 88 N
L - 80 N
L - 72 N
L - 64 N
L - 56 N
L - 48 N
L - 40 N
L - 32 N
L - 24 N
L - 16 N
L - 8 N
L - 0+00
L - 8 S
L - 16 S
L - 24 S
L - 32 S

L - 48 S
L - 56 S
L - 64 S
L - 72 S
L - 80 S

L - 104 S
L - 112 S



LEGEND




-  SURVEY LINE
-  CLAIM BOUNDARIES
-  APPROX. LAKE SHORE

PLATE 5

SCURRY RAINBOW OIL LIMITED

NANIKA LAKE AREA, B.C.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

GRID, CLAIM LOCATION, AND INTERPRETATION NO. **4207** MAP #8

INDUCED POLARIZATION SURVEY

SCALE 1" = 1500'

BY
SEIGEL ASSOCIATES LIMITED
VANCOUVER B.C.

TO ACCOMPANY A GEOPHYSICAL REPORT BY MICHAEL J. LEWIS AND R.J. FOMINOFF DATED: 16. OCTOBER 1972	WORK COMPLETED: 10.9.1972 DRAFTED: 12.10.1972 REV:	JOB NUMBER 886	SHEET NUMBER 1 OF 1
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