

COMINCO LTD.

EXPLORATION  
921/10

WESTERN DISTRICT

ASSESSMENT REPORT

GEOPHYSICAL SURVEYS

ON THE

VAAL 1-5 MINERAL CLAIMS

Record No's 8318-22

LOGAN LAKE AREA

Kamloops Mining Division

Latitude: 50°33' N      Longitude: 121°00' W

LOG NO: 0226	RD.
ACTION:	
FILE NO:	

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

19,685

FILMED

February 6, 1990

R.W. Holroyd

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VANCOUVER, B.C.

**ASSESSMENT REPORT**  
**GEOPHYSICAL SURVEYS ON THE**  
**VAAL 1-5 MINERAL CLAIMS**

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COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

ASSESSMENT REPORT

GEOPHYSICAL SURVEYS ON THE VAAL CLAIMS

I SUMMARY

The Vaal claims are situated about 20 kms west of Logan Lake B.C., covering an area which includes the Transvaal and Highland porphyry copper deposits. Geological mapping in 1981-83 suggests that the nature of fracturing and alteration in the area resembles that which capped the Bethlehem deposits prior to glaciation. Induced Polarization (IP) surveys were carried out on the claims in 1989 to test the potential for a Bethlehem-South Seas or Krain-type deposit at depths beneath the shallow drilling/trenching carried out to date.

No significant anomalies resulted from the geophysical surveys.

II INTRODUCTION

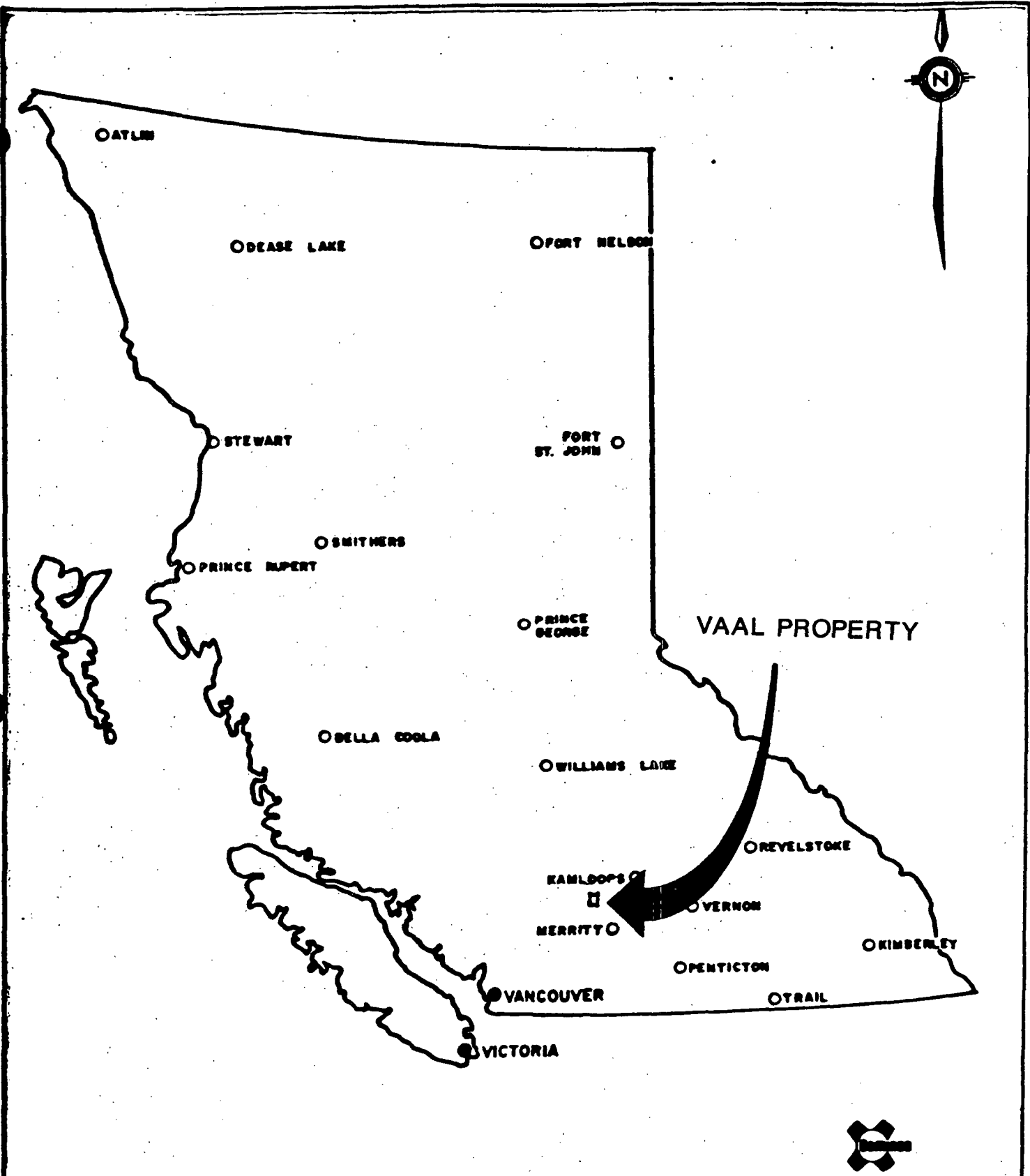
The area covered by the Vaal claims has been sporadically worked since about 1900, though in a very piecemeal fashion. Some significant ore-grade mineralized sections have been identified, but no substantial deposits outlined. Past exploration efforts have concentrated on shallow targets, with little work testing the depth potential. With the encouraging grades and mineralization style indicated near-surface, a small program involving reconnaissance IP surveys was undertaken in 1989 to determine if a large mineralized body exists at depth, or in areas of overburden cover.

III PREVIOUS EXPLORATION

This area has a long but sporadic exploration history. In about 1900, a shallow shaft and about 115 ft of drilling were done on the Central Highland Zone, and presumably about the same time, a short adit was put into the North Highland Zone. In 1901-7, a 200 ft shaft was put into the West Transvaal Zone, and a total of 550 ft of drifting was completed on two levels, ie. the 100 ft and 200 ft levels. Some encouraging thicknesses of 87 ft and 30 ft of 0.2% Cu were defined on the 200 ft level. In the 1960's, an adit was driven into the East Transvaal Zone, and from this about 700 ft of lateral work was done, intersecting some interesting mineralization, the best of which was a zone 85 ft by 5 ft of 3% Cu.

In the early 1960's 8 shallow diamond drill holes were drilled under a spectacular chrysocolla-malachite showing, but the results are not known. The Vaal claims have been extensively trenched in the past, but only locally tested with a small IP survey in the 1960's, which covered the East and West Transvaal zones, and the North Highland zone area, locating several moderate anomalies. Three diamond drill holes in the late 1960's, were designed to test some of these anomalies, but encountered little mineralization or alteration, and did not explain the anomalies. Several percussion holes were also drilled at this time, but these results also are not known. Despite the long exploration history the mineral potential of the immediate area has not been fully tested.

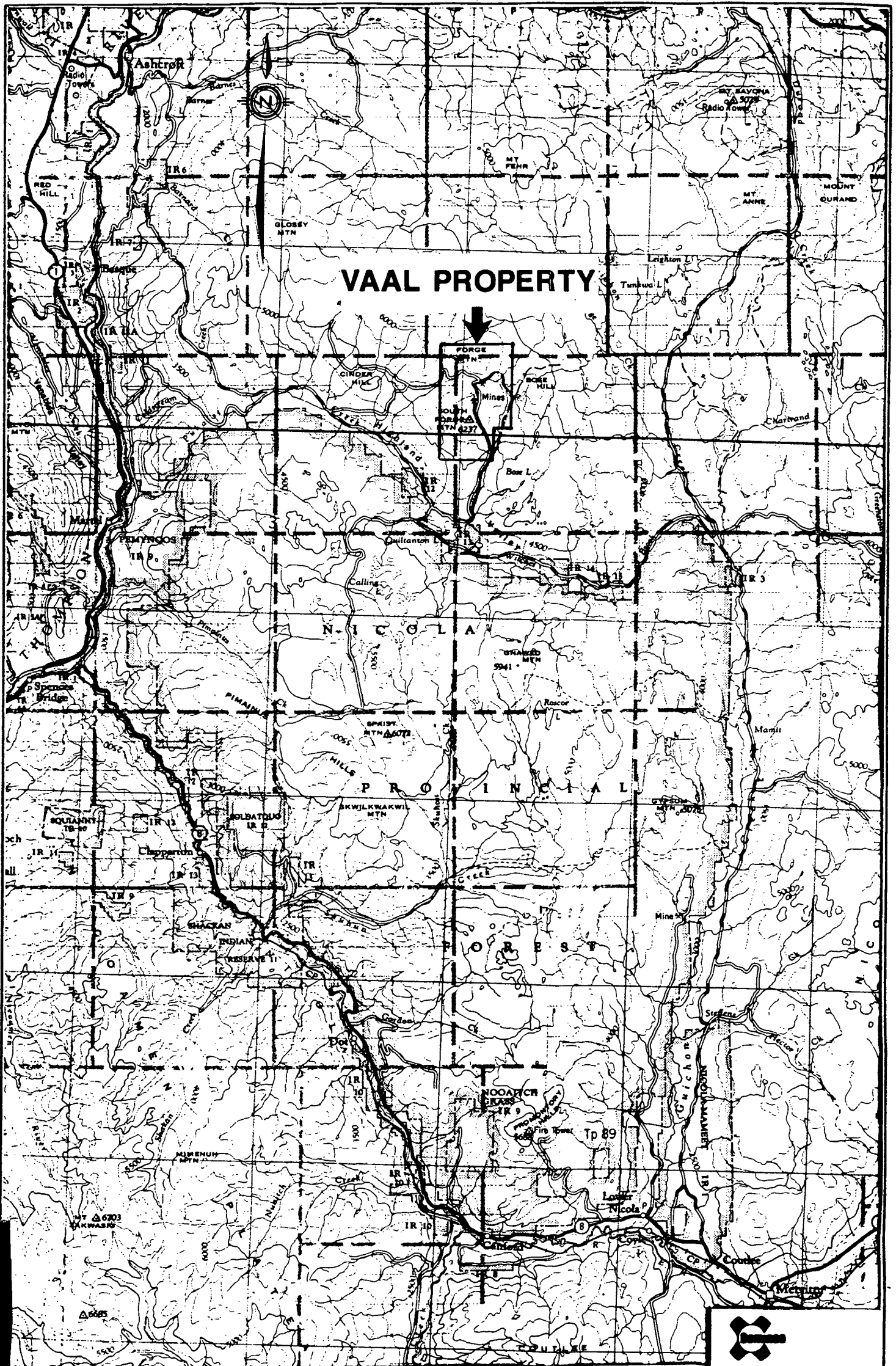
Regional mapping in 1981 indicated the presence of an extensive zone of coincident fracturing, alteration and patchy, widespread mineralization, suggesting the potential a Bethlehem-South Seas or Krain-type deposit (Casselman, 1982 Year End Report). More detailed mapping in 1982 traced this zone of fracturing and alteration over 800-1100 m E-W and 2000 m N-S, covered by Tertiary



Drawn by:		Traced by:	
Revised by	Date	Revised by	Date

**VAAL PROPERTY  
LOCATION MAP**

Scale: 1:7,500,000      Date: Feb./90      Plate: /



Drawn by:		Traced by:	
Revised by	Date	Revised by	Date

# VAAL PROPERTY LOCATION MAP

Scale: 1:50,000      Date: Feb./90      Plate: 2

volcanics to the north and overburden to the south.

#### IV TENURE

The property consists of five Claims, Vaal 1 to 5, Record No's: 8318-22. The claims are fully owned by Cominco Ltd. Expenditures in 1989 totalled \$16,265.00. Details are given in appendix I.

#### V AREA GEOLOGY

The local geology consists of Guichon variety rocks, and is extensively cut by N-S striking Bethlehem dykes. The alteration shows five centres of zonation, ie. the West, Central and North Highland, and West and East Transvaal. This alteration contains moderate to strong fracturing to brecciation, moderate to strong tourmaline-chlorite (and minor epidote) veining, and weak to moderate chrysocolla and malachite mineralization, with all components of the alteration decreasing considerably outward from the centres. The Vaal claims are located immediately adjacent to a strand of the Lornex fault along which occur the Bethlehem, South Seas and Krain deposits (Casselman, 1982).

#### VII GEOPHYSICAL SURVEYS

During the period October 24-30, 1989, induced polarization and magnetometer surveys were conducted over the Vaal claims, about 20 kms northwest of Logan Lake B.C. These reconnaissance style IP/magnetic surveys covered an area between the Krain deposit to the north, and the South Seas deposit to the south, including the Transvaal and Highland deposits. The work was conducted by Scott Geophysics Ltd. on behalf of Cominco Ltd. A total of 20.7 kilometers of IP and 20.3 kilometers of magnetic surveys were completed on the Vaal property, involving seven east-west lines, with a nominal line spacing of approximately 500 metres.

##### Equipment and Procedures

A Scintrex IPR-11 time domain receiver and a Scintrex 2.5kw IPC-7 transmitter were used for the IP survey. A 2-second alternating square wave was output at the transmitter, and the decay of that signal during the off time was measured at the receiver. The receiver recorded chargeabilities for 10 time slices (M0-M9), as well as the primary voltage (Vp) and self potential (SP) for each of 4 potential electrode pairs at each station.

A Geometrics G816 total field proton precession magnetometer was used for the magnetometer survey, with a Geometrics G836 total field proton precession magnetometer as the base station, which was set up at the IP transmitter site. Both magnetometers were read during moves of the IP array, ie. when the transmitter was off.

All survey data was archived, processed, and plotted using a Toshiba 1200 microcomputer, using Scintrex Soft II, IGS, and proprietary software.

The survey was done in a reconnaissance fashion with a pole-dipole array configuration utilized for the IP survey. Readings were taken at an 'a' spacing of 25 metres for N=1, 2, and at an 'a' spacing of 75 metres for N=1,2. The station interval was generally 75 metres, though a 50 metre interval was utilized over chargeability highs.

Total field magnetometer measurements were taken at 25 metre intervals and were corrected for diurnal drift with reference to a fixed base station.

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Total field magnetometer measurements were taken at 25 metre intervals and were corrected for diurnal drift with reference to a fixed base station.

#### Presentation of Data

The IP data is presented as pseudo-sections, and contour plans of chargeability and apparent resistivity. The pseudo-sections are presented at a scale of 1:2,500 for each of the survey lines, incorporating the N=1,2 chargeability and calculated resistivity data from both the 25 and 75 metre 'a' spacings. The chargeability values plotted on the pseudo-sections and contour plans are those from the eighth slice (M7 - 690 to 1050 milliseconds after shutoff, with a midpoint of 870 milliseconds). As indicated on the pseudo-sections, the current electrode positions are north of the receiving electrodes, though on L-500E and L-1000E short sections north of the road utilized an array with C, south of the potential electrodes. The contour plan maps of chargeability and apparent resistivity for N=1 a=75m, are plotted at a scale of 1:15,000 with contour intervals of 1.0 mV/V and 100 ohm-metres respectively. Anomaly bars are plotted on the pseudo-sections, and are categorized as strong, moderate, or weak anomalies based on shape and chargeability. For this property, chargeabilities greater than 4 mV/V are considered weakly anomalous, greater than 20 mV/V are moderately anomalous, and greater than 30 mV/V are strong anomalies.

The corrected total field magnetic data is presented at a scale of 1:12,500 as a contour plan map, with a contour interval of 500 nT. The posted magnetic data has had a constant 50,000 nT subtracted from the actual value to reduce the size of the postings.

#### Discussion of Results


The geophysical surveys carried out on the Vaal claims during 1989 outlined some weak IP responses near the margins of the claims, i.e. in the northwest, northeast, and southeast corners of the property, and weak feature in the centre of the claim group. These chargeability anomalies are generally quite weak, in

possibly reflecting the presence of numerous dykes which are known to dominate the area.

## VII CONCLUSIONS AND RECOMMENDATIONS

Though the local geological environment has been identified as a porphyry-Cu setting, the 1989 reconnaissance IP/mag survey shows no anomalies indicative of significant mineralization. Well defined anomalies with chargeabilities of over 10 mV/V would be required to warrant follow-up for such a target. No further work is recommended based on these results.

Reported by:

  
Robert W. Hoffroyd  
Geophysicist

Approved for  
Release by:

\_\_\_\_\_  
W. J. Wolfe  
Manager, Exploration  
Western Canada.

February 6, 1990.



REFERENCES

Casselman. M.J. 1982 Year End Report, Cominco Ltd. Internal Report, January, 1983.

Scott, A. Logistical Report- Induced Polarization and Magnetometer Surveys, Highland Valley Area, On Behalf of Cominco Ltd., November, 1989.

Dist: Cominco Files (1)  
Mining Recorder (2)

APPENDIX I  
VAAL PROPERTY  
STATEMENT OF EXPENDITURES

Planning, supervision, Report

M.J. Casselman, 2 days @ \$400.00/day	800.00
R.W. Holroyd 2 days @ \$390.00/day	780.00
A.P. Roberts 2 days @ \$300.00/day	600.00

Survey materials	100.00
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Truck Rental and fuel	
1 day @ \$50.00	50.00

Geophysical surveys (IP, mag)	
20.7 km @ \$659.00/km as per invoice	13,635.00

Drafting 2 days @ \$150	300.00
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TOTAL	<hr/> \$16,265.00
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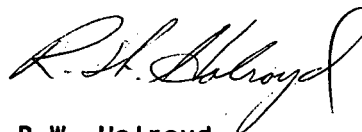
APPENDIX II

STATEMENT OF QUALIFICATIONS

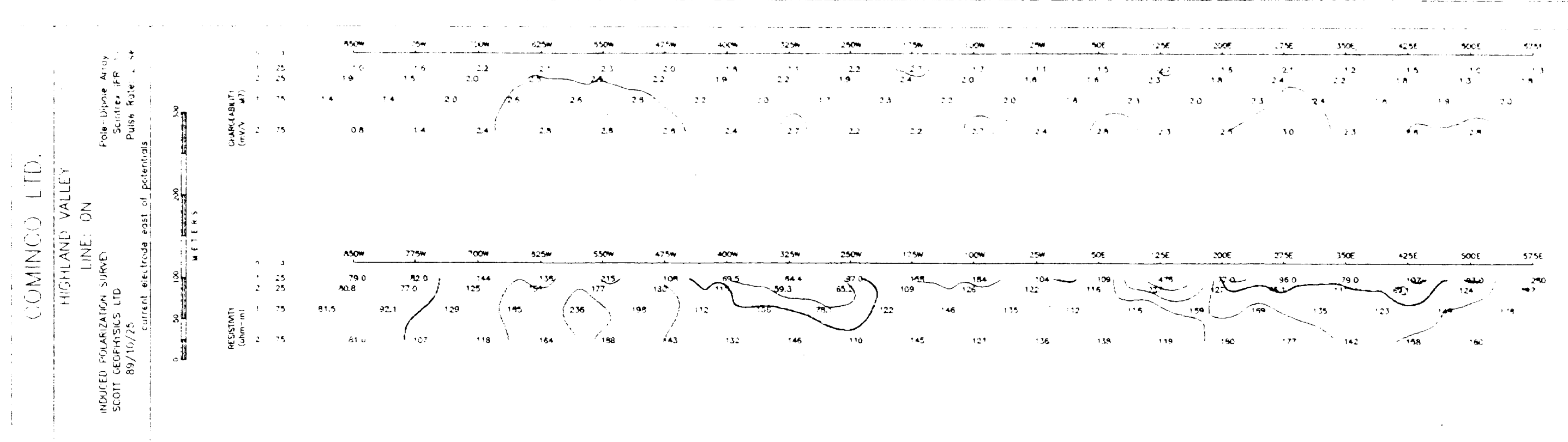
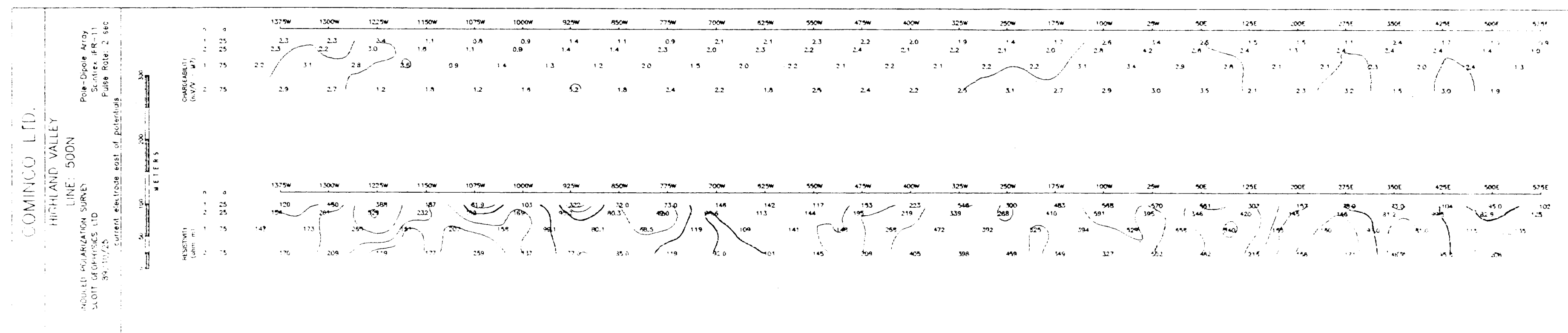
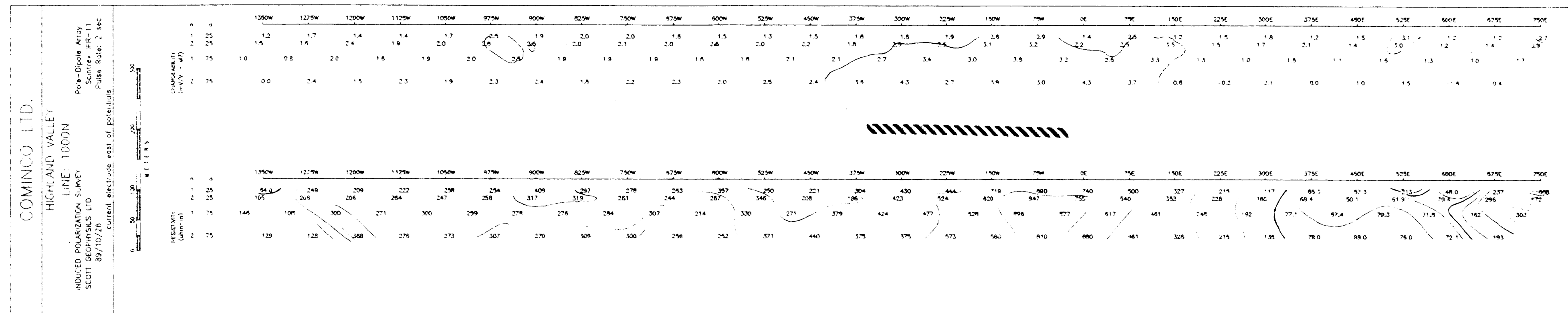
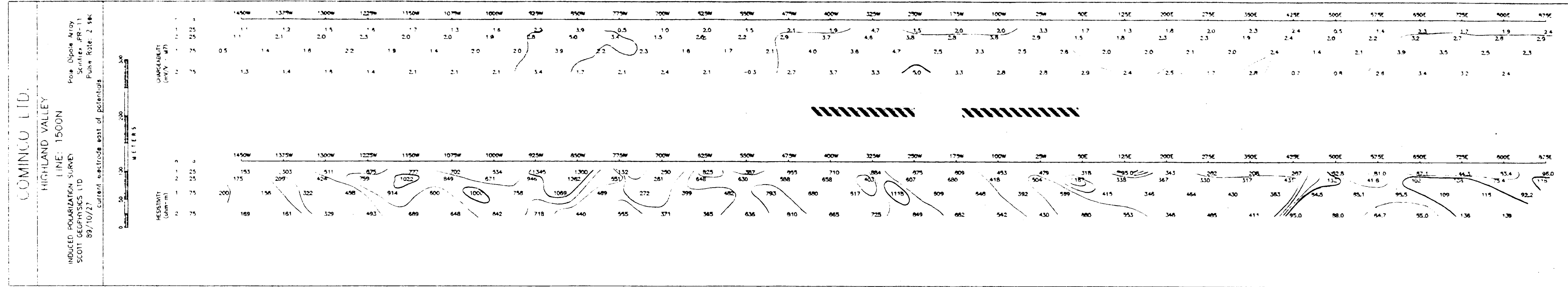
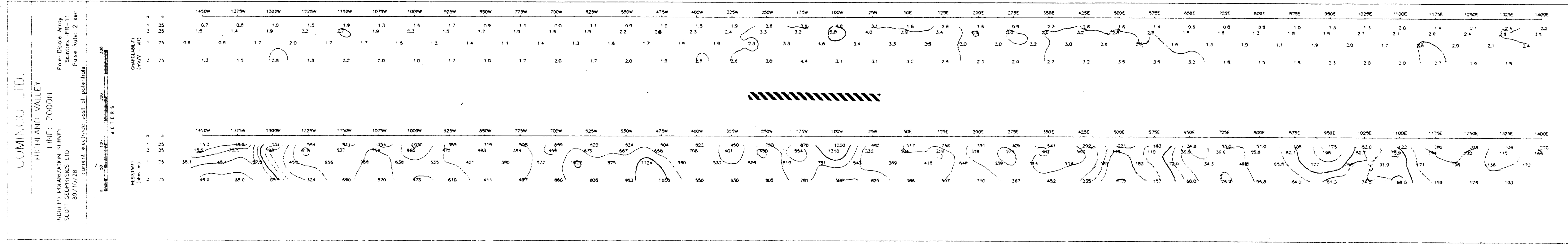
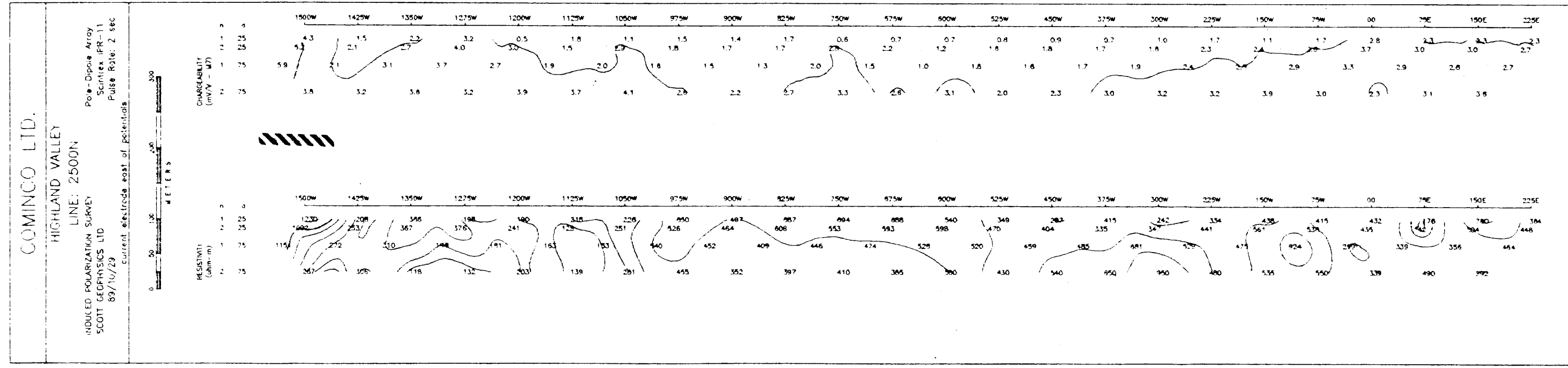
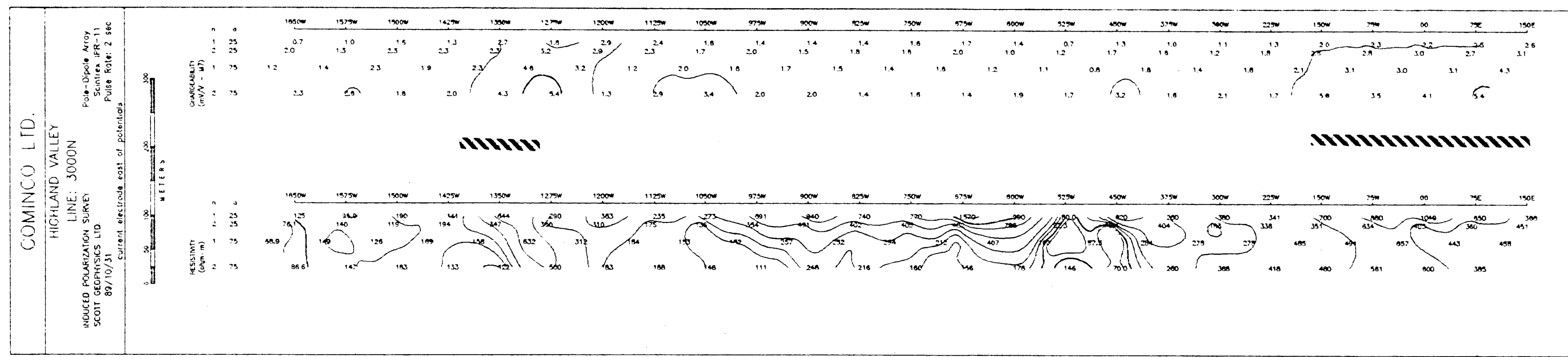
I, ROBERT W. HOLROYD, of 2752 Dollarton Highway, in the City of North Vancouver, in the Province of British Columbia, do hereby certify that:

1. I graduated from the University of Waterloo in 1977 with an Honours Bachelor of Science in Applied Geology.
2. I am Vice President of the British Columbia Geophysical Society.
3. I have been engaged as a Geophysicist with Cominco Ltd. since April 1977.

DATE: Feb. 5, 1990



R.W. Holroyd,  
Geophysicist.



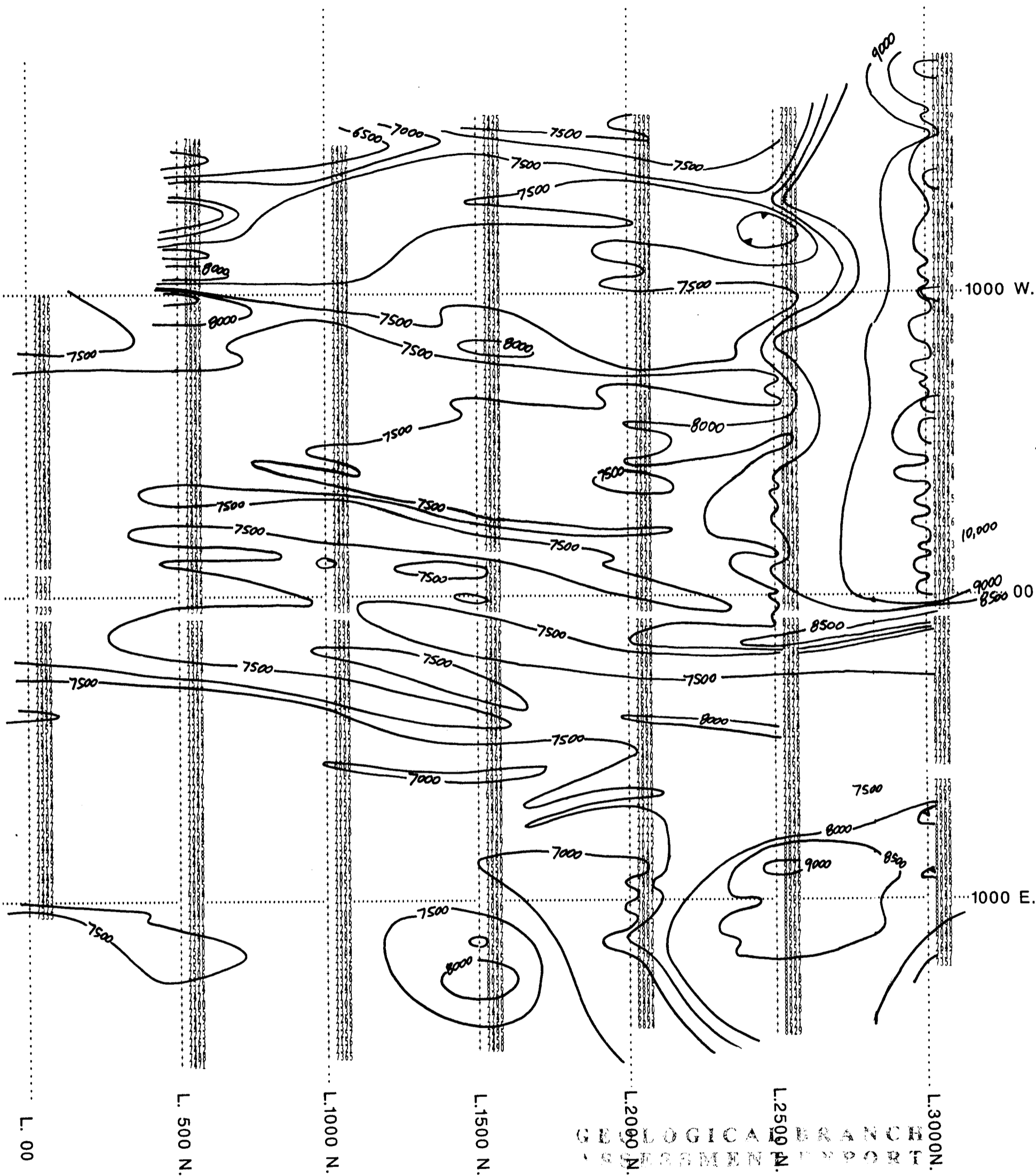
LEGEND  
IP ANOMALIES

- STRONG (>30mV/V)
- MODERATE (20-30mV/V)
- WEAK (<10mV/V)

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

19,685

<b>VAAL PROPERTY</b>	
Drawn by	Traced by
Checked by	Reviewed by
IP SURVEY PSEUDO-SECTIONS a=25m, 75m n=1.2 POLE-DIPOLE ARRAY WEST SHEET	
Scale: 1:5000	Date: JAN, 1990
Plate: 4a	



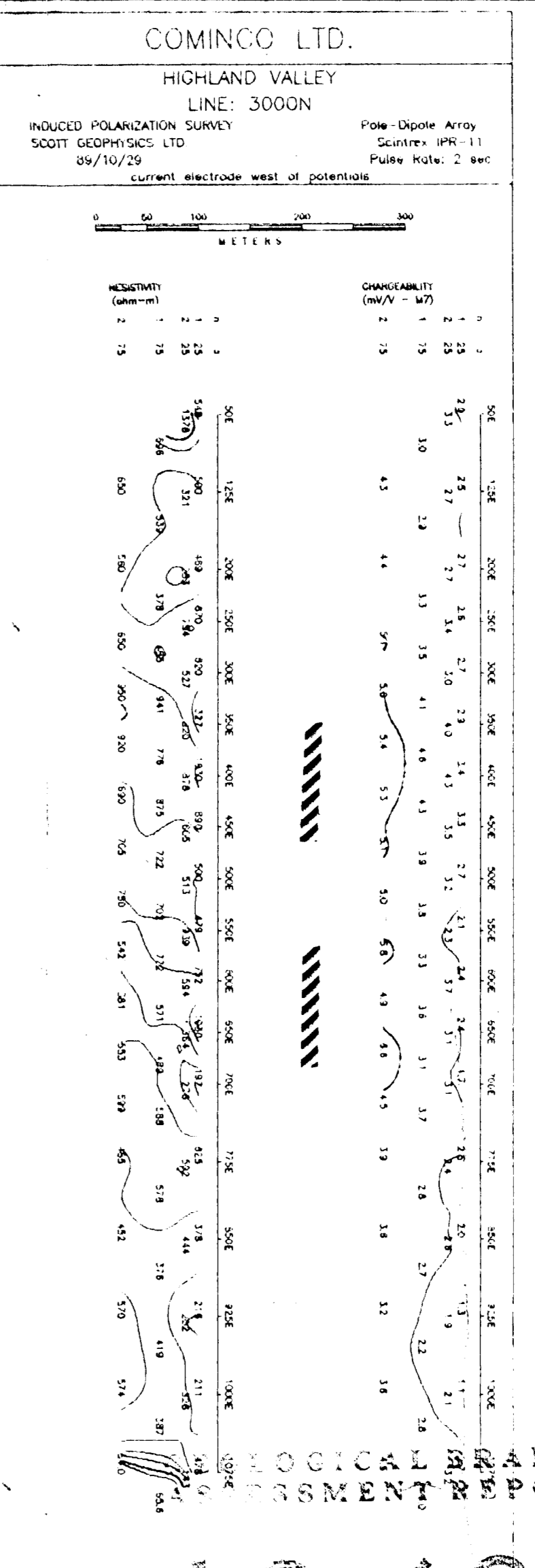
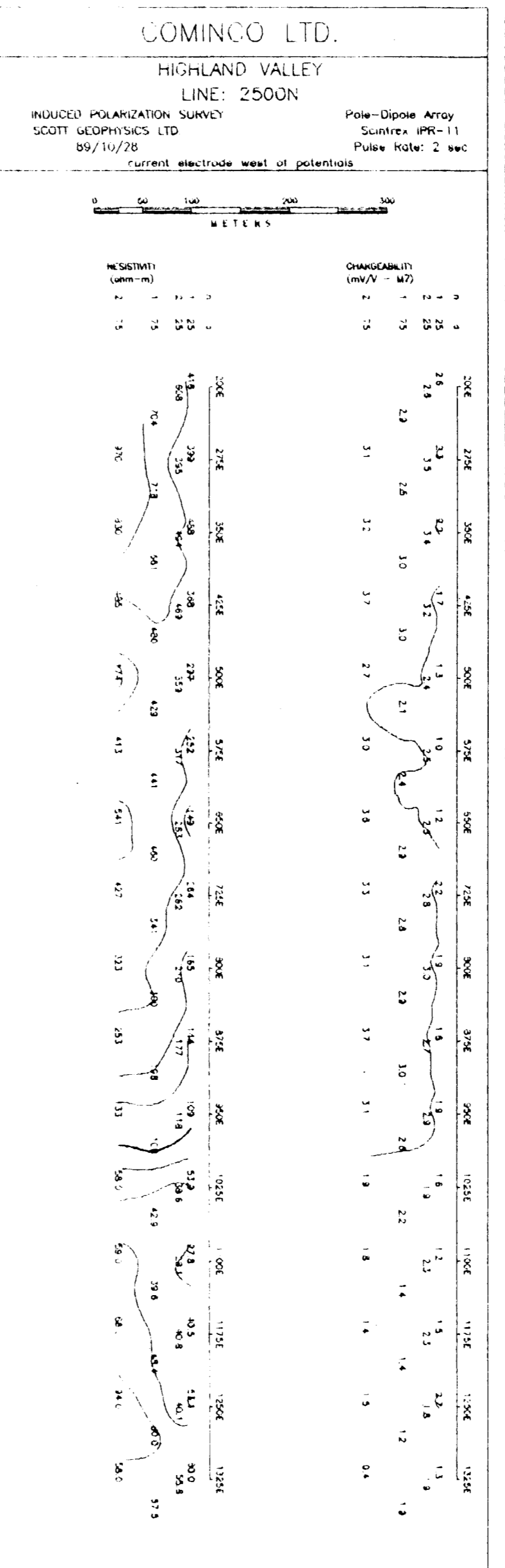
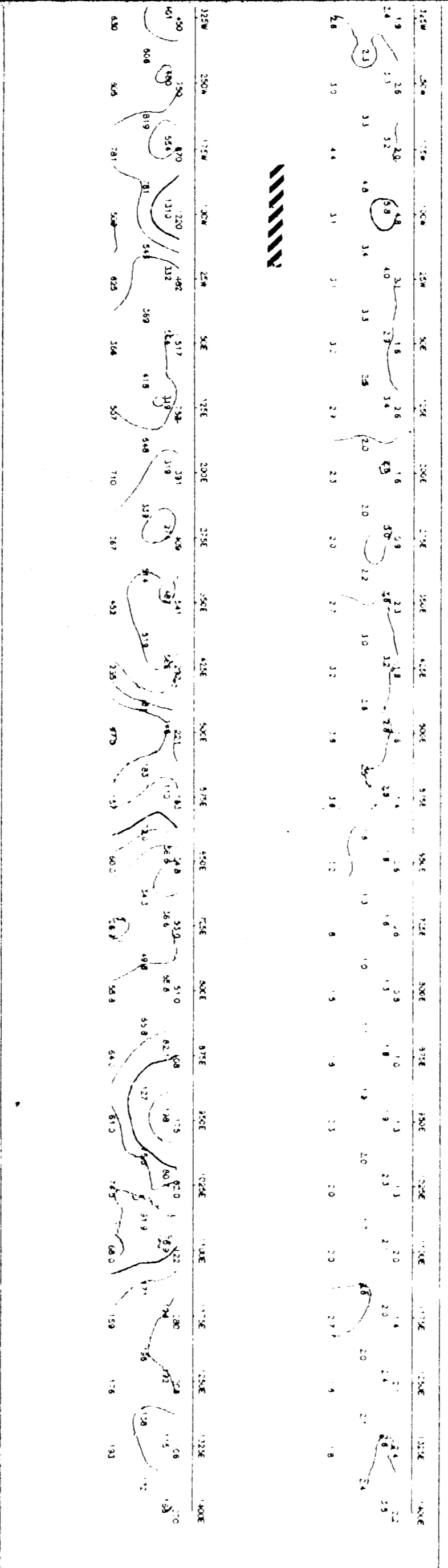
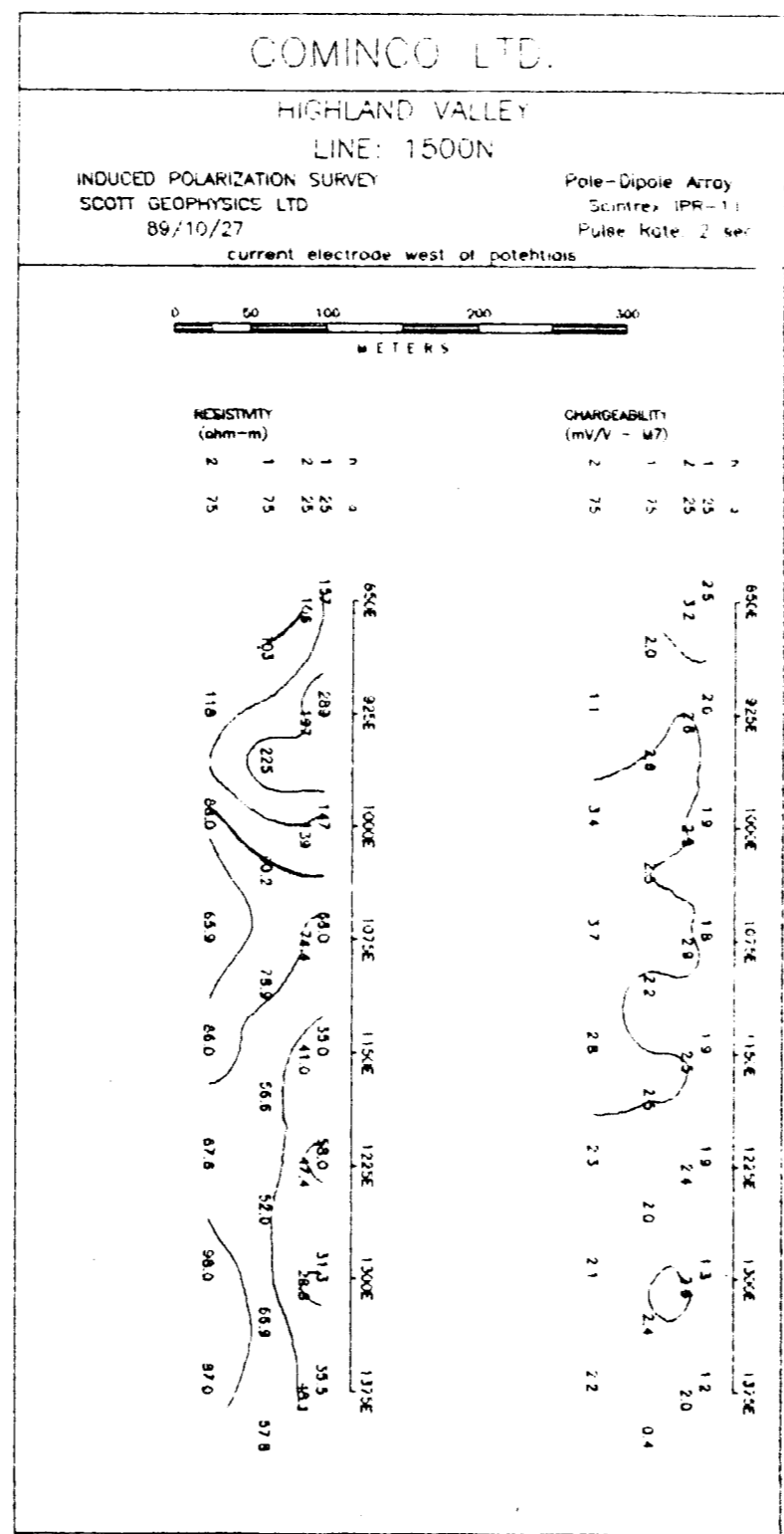
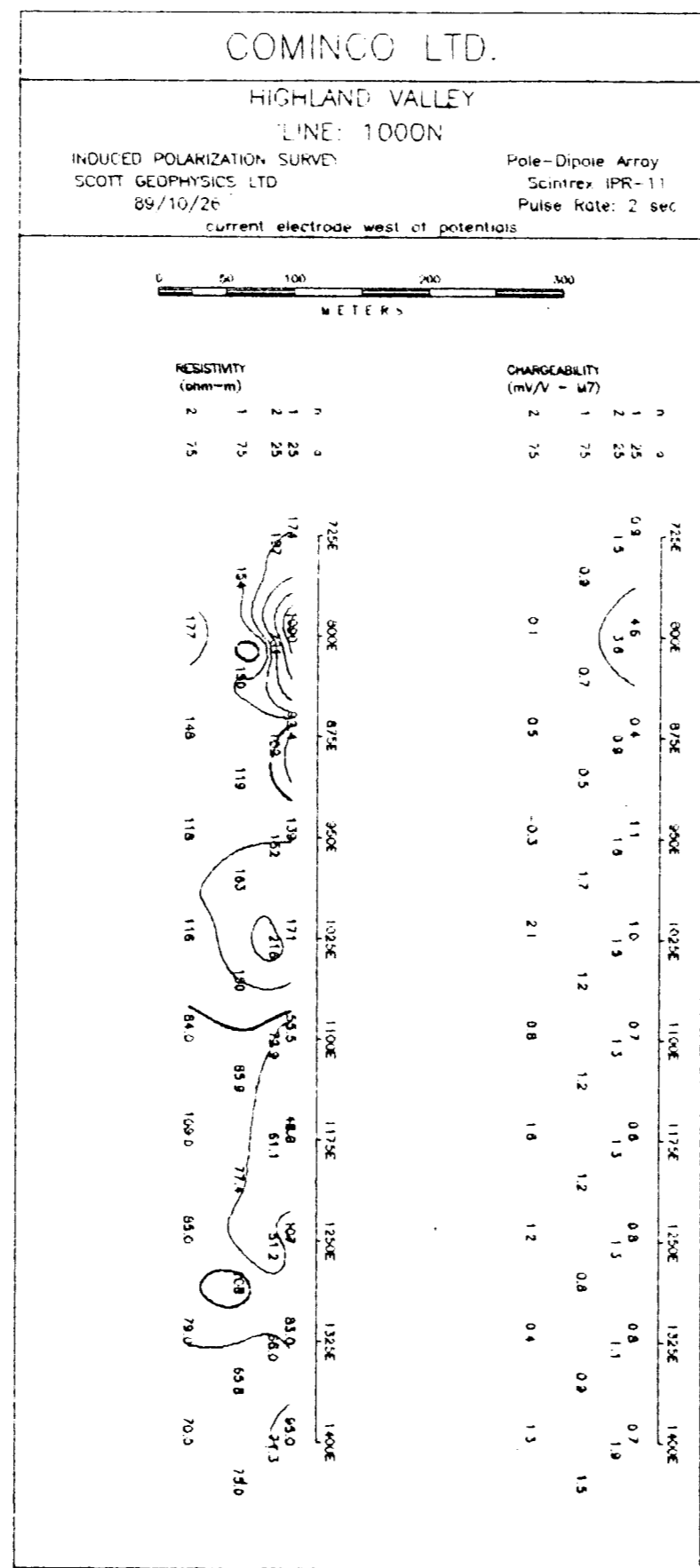
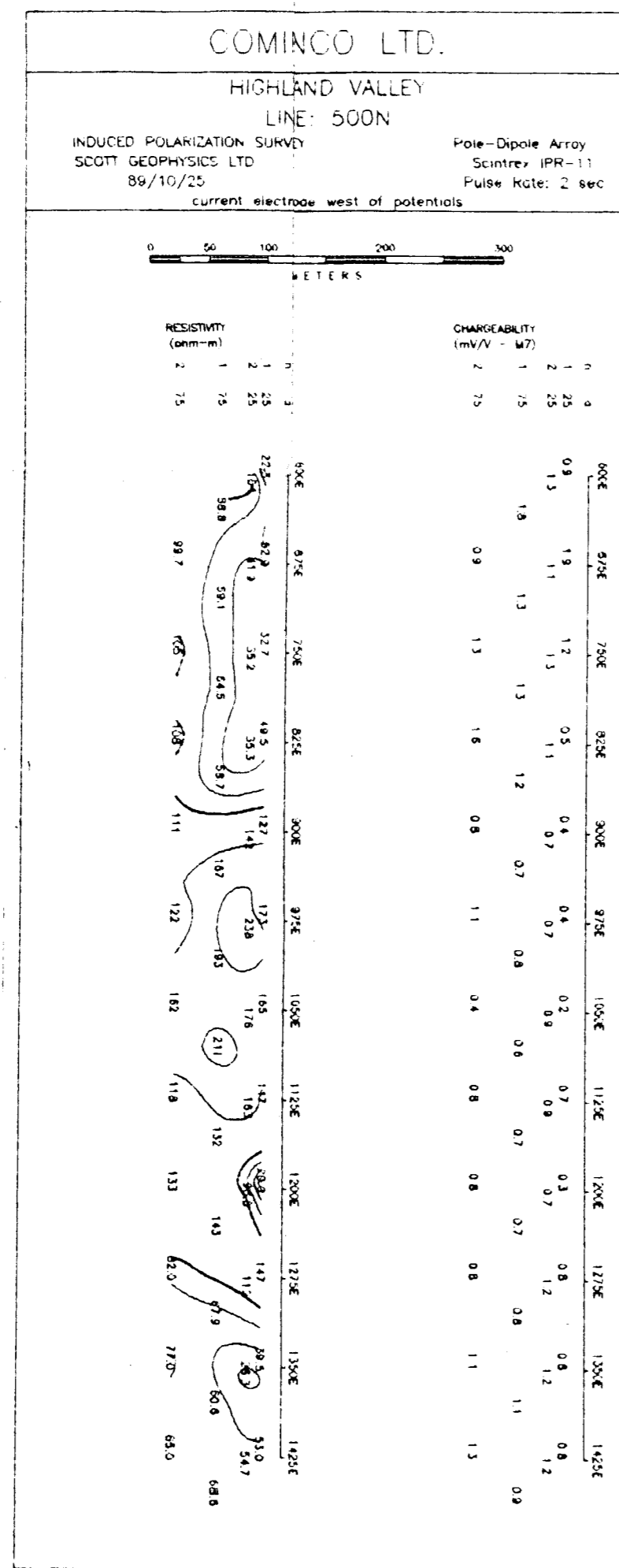
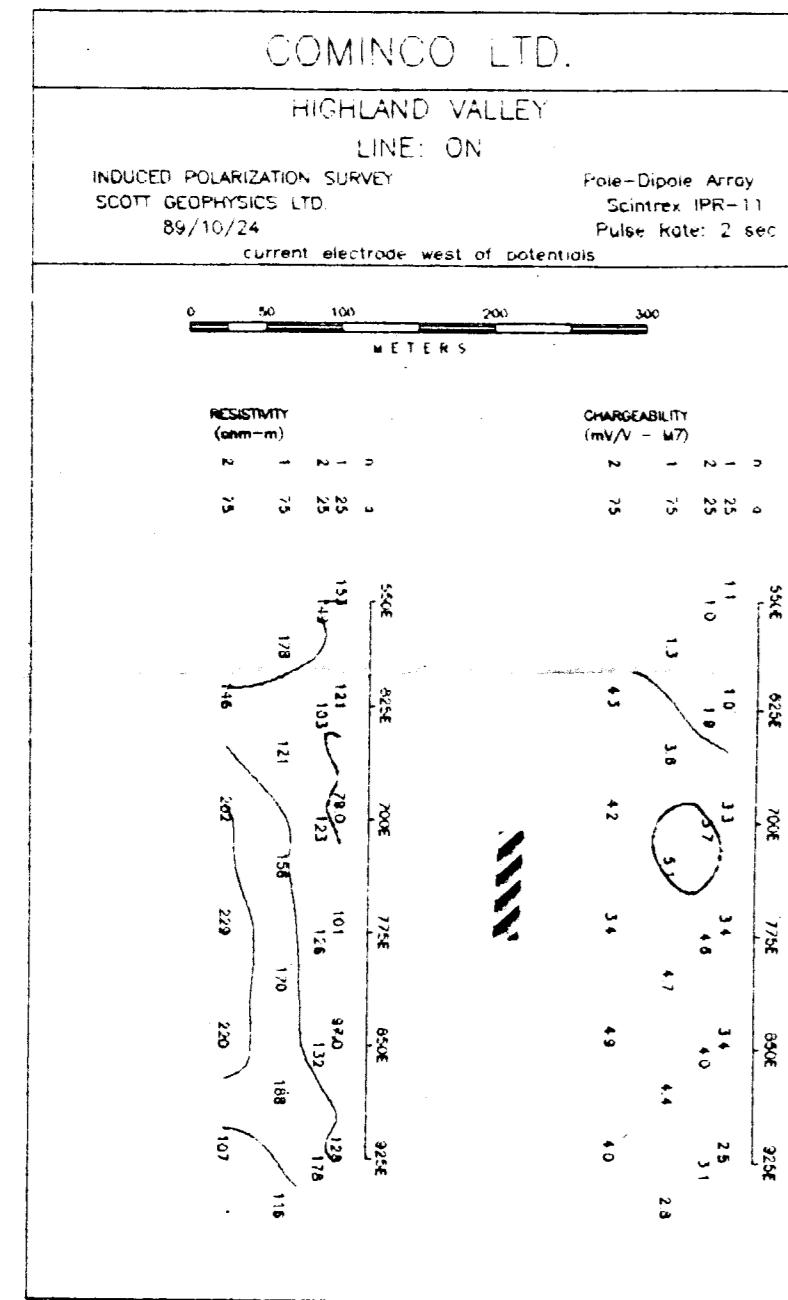
NOTE: A base level of 50,000 nT has been subtracted from all data.

CONTOUR INTERVAL: 500 nT

GEOLOGICAL BRANCH  
SURVEYING REPORT

1975

<b>VAAL PROPERTY</b>				
Drawn by:		Traced by:		<b>TOTAL FIELD MAGNETICS</b>
Revised by	Date	Revised by	Date	
				Scale: 1:15,000
			Date: FEB. 1990	Plate: 7



- LEGEND  
IP ANOMALIES
- STRONG (>30mV/V)
  - MODERATE (20-30mV/V)
  - WEAK (<10mV/V)

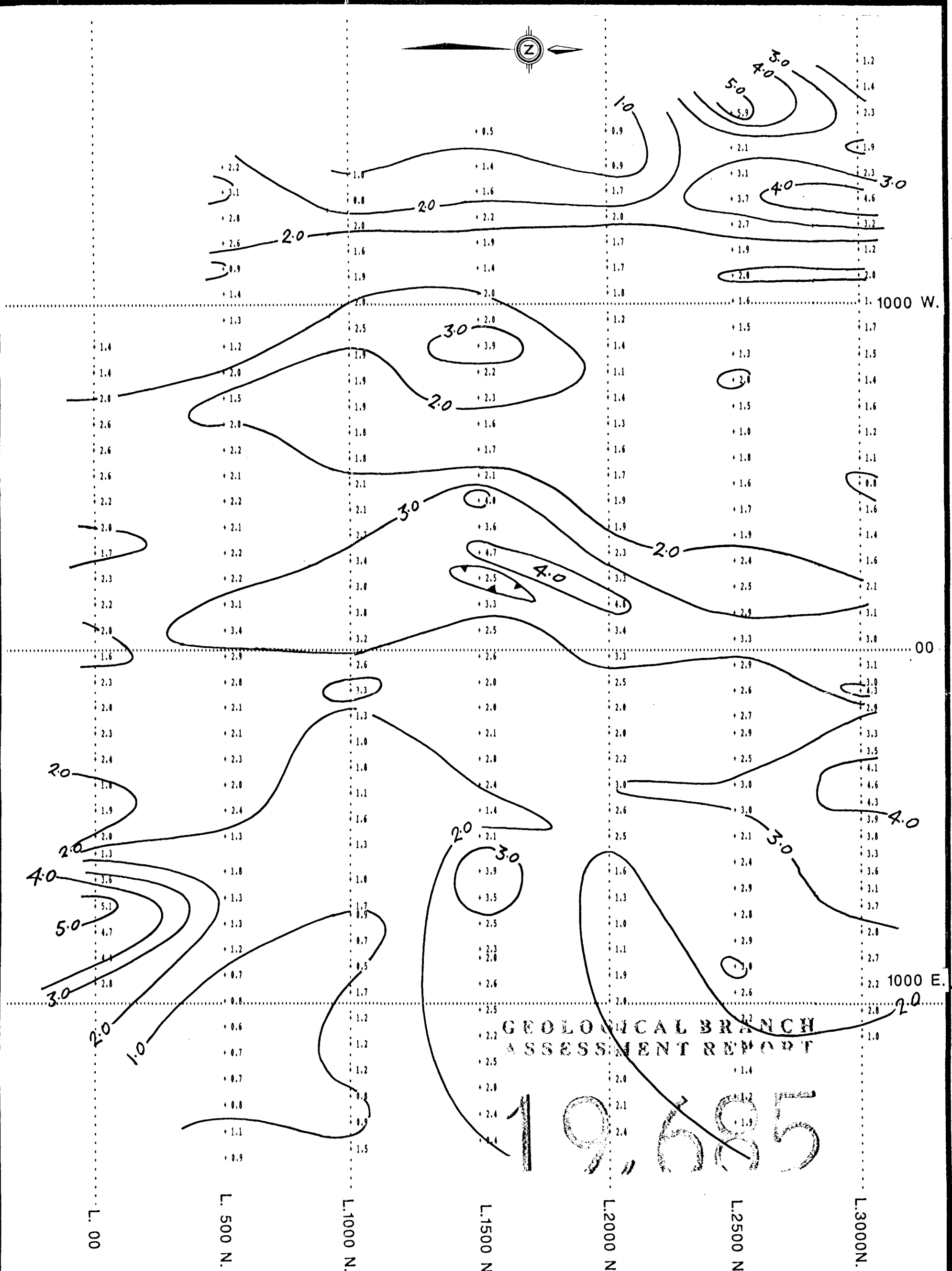
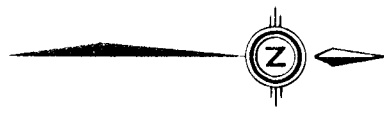
19,685

VAAL PROPERTY

IP SURVEY PSEUDO-SECTIONS  
a=25m, 75m n=1, 2 POLE-DIPOLE ARRAY  
EAST SHEET

Scale: 1:5000 Date: JAN 1990 Plate: 46

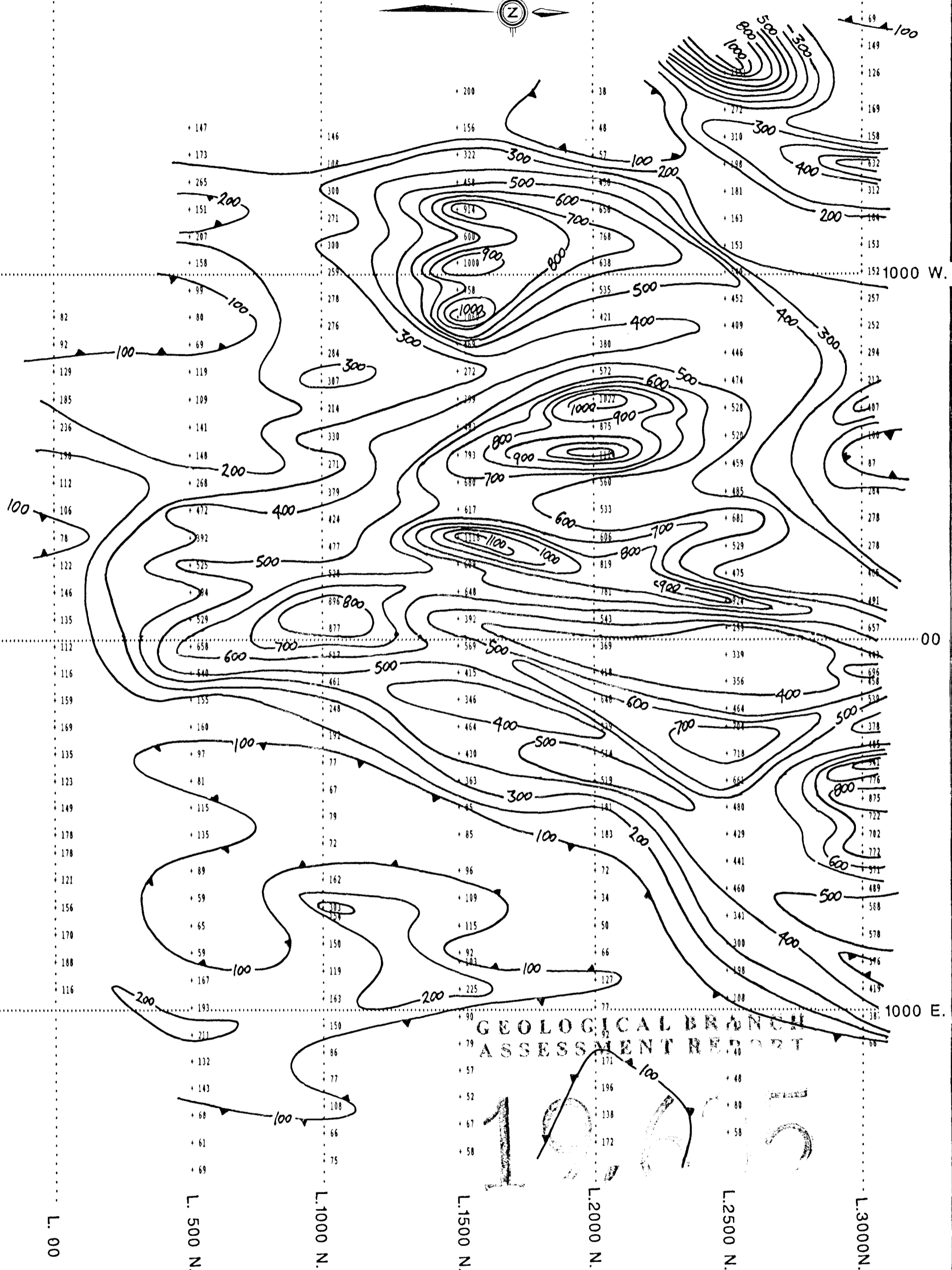
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Revised by Date	Revised by Date



CONTOUR INTERVAL:  
1.0 mV/V

<b>VAAL PROPERTY</b>				
Drawn by:		Traced by:		<b>IP SURVEY CHARGEABILITY (M7)</b> <b>CONTOUR PLAN</b>
Revised by	Date	Revised by	Date	
Scale: 1:15,000		Date: FEB. 1990		Plate: 5





GEOLOGICAL BRANCH  
ASSESSMENT REPORT

1990

CONTOUR INTERVAL:  
100 ohm-m.

<b>VAAL PROPERTY</b>					
Drawn by:		Traced by:		<b>IP SURVEY APPARENT RESISTIVITY CONTOUR PLAN</b>	
Revised by:	Date:	Revised by:	Date:		
Scale: 1:15,000		Date: FEB. 1990		Plate: 6	



