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FILE NO:

COMINCO LTD.

EXPLORATION

WESTERN CANADA

NTS: 93L-7

ASSESSMENT REPORT

I.P./RESISTIVITY SURVEY

ON THE

CROW RAVEN PROPERTY

LATITUDE: 54° 17' N

LONGITUDE: 126° 50' W

OMINECA MINING DISTRICT, B.C.

TIME PERIOD: MAY 31 - JUNE 8, 1994
GEOLOGICAL BRANCH
ASSESSMENT REPORT

JULY 1994

23,465

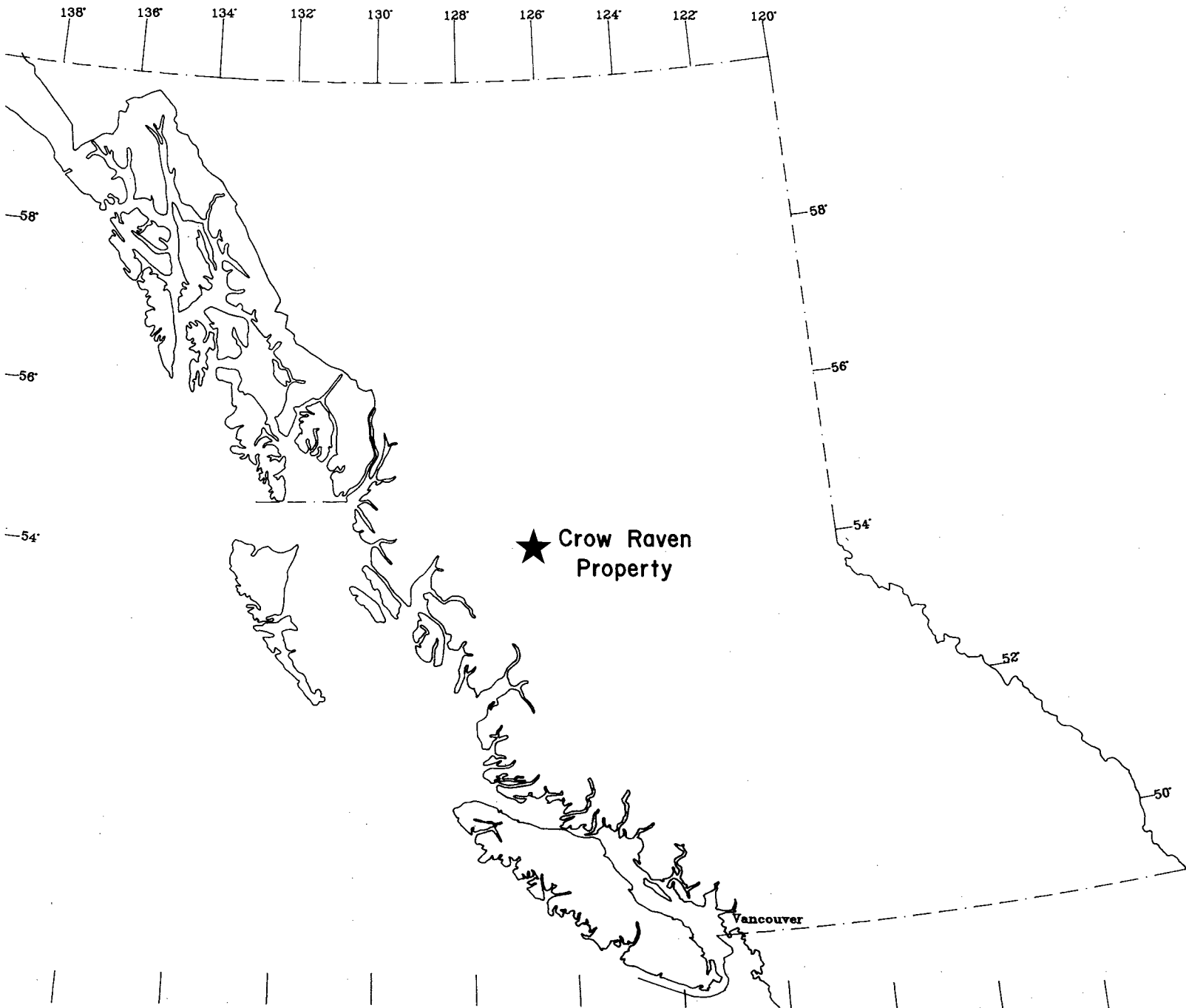
INGO JACKISCH

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N.T.S. 93 L/7

CROW RAVEN PROPERTY

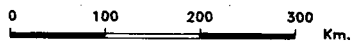


Drawn by:	Traced by:
Revised by:	Date:
Approved by:	Approved Date:

LOCATION MAP

OMINECA M.D., B.C.

SCALE: 1:8,000,000 DATE: July, '94 PLATE NO: 414-94-1



EXPLORATION

COMINCO LTD.

WESTERN CANADA

REPORT

ON

I.P./RESISTIVITY SURVEY

ON THE CROW RAVEN PROPERTY

I INTRODUCTION

During the time period May 31 - June 8, 1994, an Induced Polarization/Resistivity [I.P./Res.] survey was carried out by an in-house Cominco Ltd. geophysical crew on the Crow Raven Property. Geophysicist I. Jackisch and 4 summer students were present for the survey, which totalled 13.1 km.

The purpose of the geophysical survey was to test an area with a known copper showing for sulphide mineralization away from the showing, to determine the extent of the mineralization.

This report discusses the geophysical equipment and procedures, then presents and interprets the results.

PROPERTY HISTORY

The southern part of the Crow Raven Property was first staked in 1966 by Amax. The property was mapped, surveyed by I.P., trenched, and tested by six diamond drill holes. Falconbridge acquired the central and eastern parts of the property in 1970 and carried out mapping, soil, and EM/Magnetic surveys. City Services acquired the northern part of the property in 1977 and conducted mapping, soil and I.P. surveys, and bored one diamond drill hole.

This previous work was patchy and left large areas of the Crow Raven Property unexplored.

GEOLOGY

The eastern half of the Crow Raven Property is underlain by a thick section of Jurassic, Hazelton Formation basalt tuffs and flows intruded by an Eocene Nanika quartz monzonite plug. The western part of the property is largely covered by overburden except for two small pits with Nanika quartz monzonite stock and a poorly exposed breccia.

The property lies in a NE trending graben, to the east of a west bounding fault which extends from the Berg deposit [70 km to the SW] to the Bell-Granisle deposits [85 km to the NE]. The Berg porphyry Cu-Mo deposit, of similar age, contains 400 MT at 0.4% Cu and 0.04% Mo.

LOCATION AND ACCESS

The Crow Raven Property is located 15 km SW of Houston, B.C., at latitude 54°17'N, longitude 126°50'W, on N.T.S. 93L7. The lines are located at the foot of and to the northwest of Mount Morice, and are bordered on the west by a 2 lane dirt road. The western end of the survey lines begin at this road, are accessed from it, and are found from km 13 to km 17 [logging markers] along it. Two tributary 1 lane roads [in rough shape] head eastwards part of the way up Mt. Morice and are very useful in gaining altitude and accessing the east part of the grid.

The western part of the lines is on relatively flat ground, but is generally thickly vegetated. The eastern part of the lines is more open, but very steep [and can be thickly vegetated in some localities].

II GEOPHYSICAL SURVEYS

EQUIPMENT AND PROCEDURES

Two Hunttec Mark 4 time domain receivers and a Hunttec 7.5 KW Mark 4 constant current transmitter were used for the I.P.\Res. survey. A pole/dipole electrode array was used, with the current electrode to the west of the potential electrodes. The standard 2 second ON/OFF alternating square wave was transmitted.

The Mark 4 receivers were set to a delay time of 120 msec. and an integration time of 900 msec. Data was recorded both in notepad form and on a Solid State Memory [SSM] unit, manufactured by Lloyd Geophysics Ltd., which is installed inside the receivers. The SSM dumps directly onto a personal computer running on Geosoft software.

The Hunttec receiver measures the chargeability in 10 windows, each 90 msec. in duration, for a total of 900 msec. The instrument displays and records each of the 10 windows as well as the total chargeability, which is the value plotted on the pseudo-sections. This chargeability value is equivalent to the eighth slice [M7, measuring from 690 to 1050 msec. after transmitter shutoff] of the Scintrex IPR-11 receiver.

The resistivity values [R] are in units of ohmmetres [ohmm] and are calculated from the formula:

$$R = \frac{V K}{I} \quad \text{where } K = 2\pi a n [n+1] \quad a=100m, n=1,2,3,4$$

V = voltage at receiver [volts]
I = transmitter current [amperes]

The survey procedure was to reel out the wire [leading from the transmitter] to the end of the survey line, leaving a stainless steel rod at each 100 metre station. The survey line is then read

back to the beginning of the line by the following procedure. The current electrode man cuts the wire at each 100 metre picket and attaches the end leading to the transmitter to the steel electrode. The wire and rods discarded by the current man are used as potential electrodes by the receiver operators [one receiver taking n=2,1 readings, the other taking n=4,3 readings]. The current electrode man moves up in 100 metre intervals and hammers the rod into the ground while the readings are in progress. When both receiver operators are finished with their readings, the current is shut off, and the current man cuts the wire for the new current station and connects the wire to the rod, then asks for the power to be turned on at the new station. This procedure is repeated in 100 metre increments until the entire line is read.

PRESENTATION OF RESULTS

The I.P./Resistivity data is presented in pseudosection form on Plates 414-94-3 and -4, with chargeability and apparent resistivity plotted at a scale of 1:5000 for each survey line. Plan maps of Resistivity and Chargeability are presented on Plates 414-94-5 and -6 at a scale of 1:20,000. Apparent Resistivity is in units of ohm-metres, chargeability values are in units of milli-seconds [msecs.].

Chargeability anomaly bars are categorized as strong [>30 msecs.], moderate [20-30 msecs.], and weak [10-20 msecs.]. These bars are plotted on the pseudosections to highlight anomalous chargeability zones.

III INTERPRETATION

The I.P./Res. survey generally shows a contact [sharp on some lines] situated at approximately the midpoint of all the survey lines. To the east of this contact the resistivity values range from 300 to 6000 ohm-metres and the chargeability values from 10 to 45 msecs. These values are much lower to the west of the contact where resistivities range from 30 to 100 ohm-metres and chargeabilities from 1 to 5 msecs.

The I.P./Res. survey is thus mapping out two discreet rock units, basalt tuffs on the east and thick overburden on the west, with a sharp contact [fault] separating them.

The only exceptions to the correlation between resistivity and chargeability occur on the eastern parts of Lines 1000N and 1500N, where elevated chargeabilities do not occur along with the higher resistivities. This could be indicating the presence of a quartz monzonite plug.

The high chargeabilities occurring on the east side of the fault are corresponding directly to fine grained pyrite in the basalt tuffs.

IV CONCLUSIONS

13.1 kms of I.P./Resistivity were surveyed by Cominco Ltd. from May 31 to June 8, 1994, on the Crow Raven Property.

Two rock units, basalt tuffs on the east [characterized by high resistivities and high chargeabilities] and thick overburden [characterized by low resistivities and low chargeabilities] on the west of the survey lines, were identified. These units are separated by a fault which runs approximately through the middle of the grid.

The high chargeabilities corresponding to the basalt tuffs are open to the north, east, and south, but are believed to be responding to pyrite only. It was therefore decided not to continue with the I.P. survey or to close off this feature.

No further geophysical surveying is recommended for the Crow Raven Property.

Report by : Ingo Jackisch
Ingo Jackisch
Geophysicist, P.Geo

Approved for John Hamilton
Release by : J.M. Hamilton, P.Eng/P.Geo
Manager, Exploration
Cominco Ltd.
Western Canada

Distribution:

- [2] Mining Recorder
- [1] D. Wagner - Geologist, Western District
- [1] Western District, Central Files
- [1] Geophysics File, Vancouver, B.C.
- [1] Owner

APPENDIX I
IN THE MATTER OF THE B.C. MINERAL ACT
AND IN THE MATTER OF A GEOPHYSICAL PROGRAMME
CARRIED OUT ON THE CROW RAVEN PROPERTY
LOCATED 27 KMS SW OF HOUSTON, B.C.
IN THE OMENICA MINING DIVISION OF THE
PROVINCE OF BRITISH COLUMBIA,
MORE PARTICULARLY
N.T.S. 93L/7

S T A T E M E N T

I, Ingo Jackisch, of 424 Somerset Street, in the City of North Vancouver, in the Province of British Columbia, make oath and say:

1. That I am employed as a geophysicist by Cominco Ltd. and, as such have a personal knowledge of the facts to which I herein-after depose;
2. That annexed hereto and marked as "Exhibit A" to this statement is a true copy of expenditures incurred on a geophysical survey on the CROW RAVEN Property;
3. That the said expenditures were incurred from May 31 to June 8, 1994, for the purpose of mineral exploration on the above noted property.

Ingo Jackisch
Ingo Jackisch
Geophysicist
Cominco Ltd.

Dated this 7 day of July, 1994
at Vancouver, B.C.

APPENDIX II - EXHIBIT "A"

STATEMENT OF EXPENDITURES

CROW RAVEN PROPERTY - MAY 31 - JUNE 8, 1994

1.	SALARIES	I. JACKISCH	\$3600	
		A. ROBULACK	1125	
		J. ALLARDYCE	963	
		T. DIXON	918	
		I.B. MAWER	963	
				<u>\$7569.00</u>
2.	REPORT WRITING, DRAFTING			\$3115.00
3.	EQUIPMENT RENTAL	I.P. RECEIVER	\$700	
		I.P. TRANSMITTER	875	
		MISC.	175	
		COMPUTER, PRINTER	350	
				<u>\$2100.00</u>
4.	TRUCK RENTAL			\$2500.00
5.	EXPENSE ACCOUNTS	I. JACKISCH	\$2198.81	
		A. ROBULACK	330.00	
		J. ALLARDYCE	254.00	
		T. DIXON	257.00	
		I.B. MAWER	254.00	
				<u>\$3294.32</u>

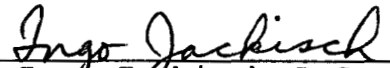
		TOTAL	\$18,578.32	

APPENDIX III

CERTIFICATION OF QUALIFICATIONS

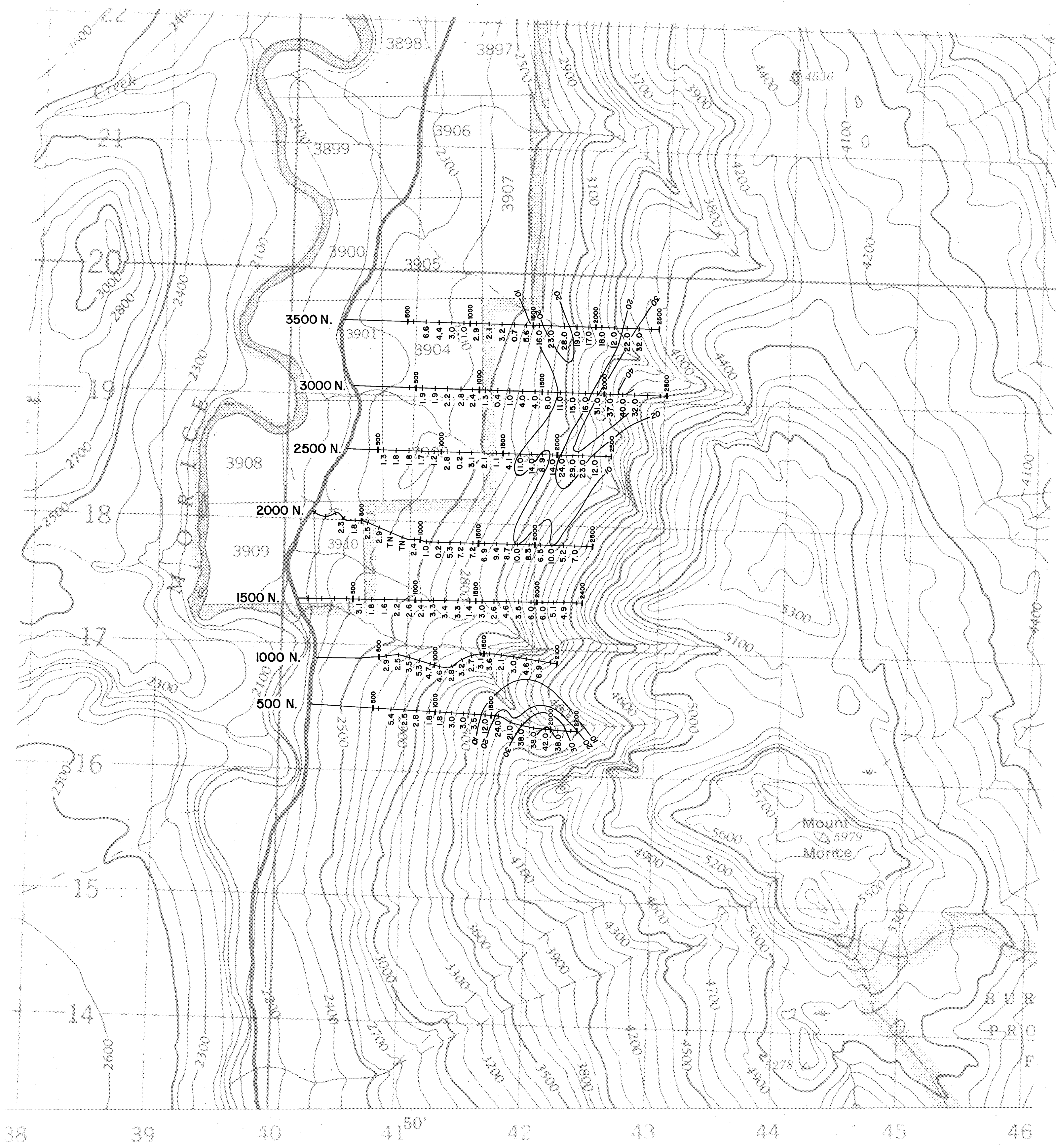
I, INGO JACKISCH, of 424 Somerset Street, in the City of North Vancouver, in the Province of British Columbia, do hereby certify:

- i. THAT I graduated with a B.Sc. in Geophysics from the University of British Columbia in 1975.
- ii. THAT I am a member in good standing of the Association of Professional Engineers and Geoscientists of the Province of British Columbia.
- iii. THAT I have been actively practising Geophysics from 1975 to 1994, and have been an employee of Cominco Ltd. from 1980 to 1994.



Ingo Jackisch, B.Sc. P.Geo.
Geophysicist

July, 1994

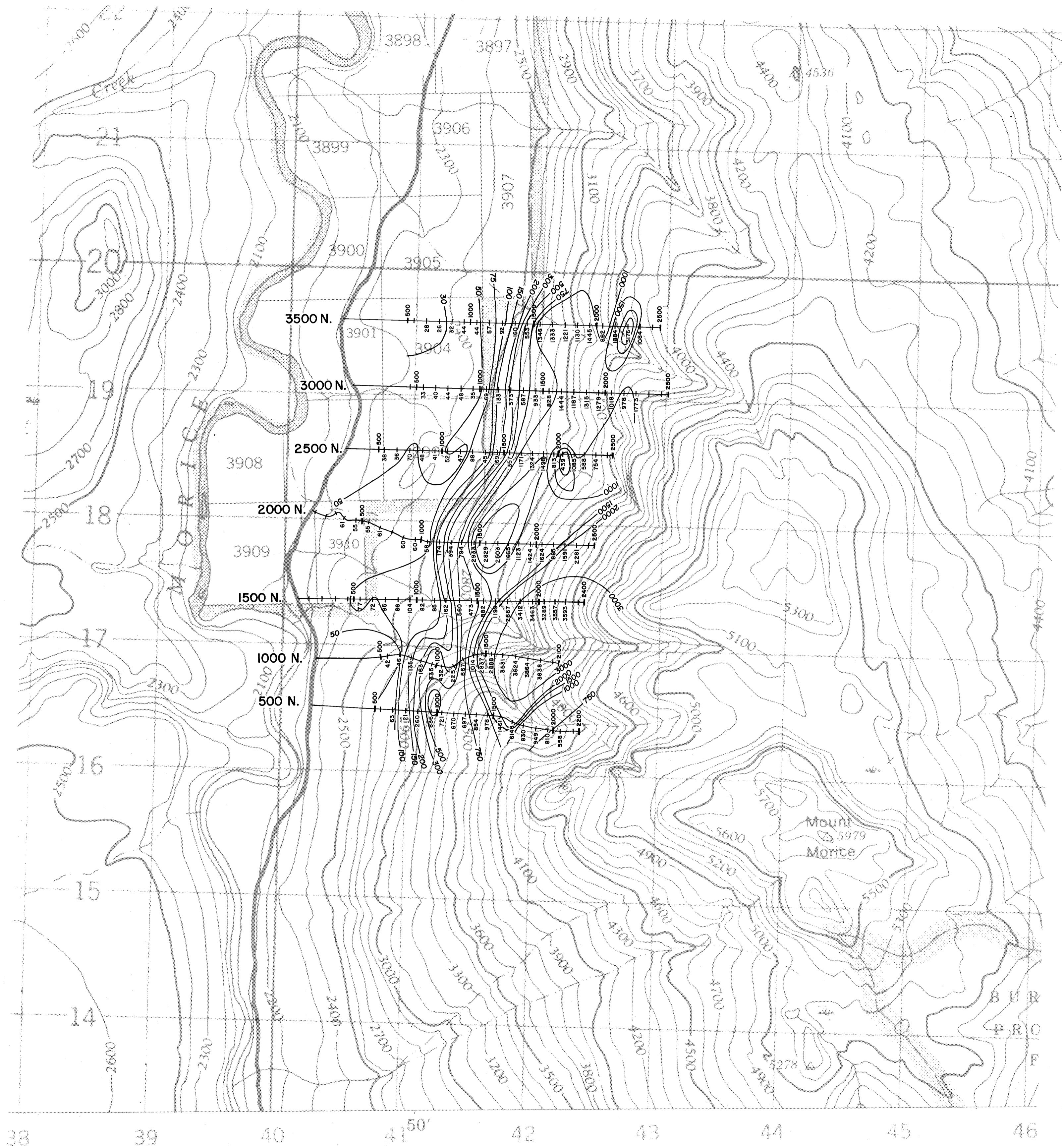


GEOLOGICAL BRANCH
ASSESSMENT REPORT

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38 39 40 41 50' 42 43 44 45 46

CROW RAVEN				93 L/7
Drawn by: I. J.	Traced by: a. m. a.		CHARGEABILITY (milliseconds) N=1 a=100m	
Revised by: Date:	Revised by: Date:			
				OMINECA M.D., B.C.
				Scale: 1 : 20,000 Date: July, '94 Plate: 414-94-5



23,465

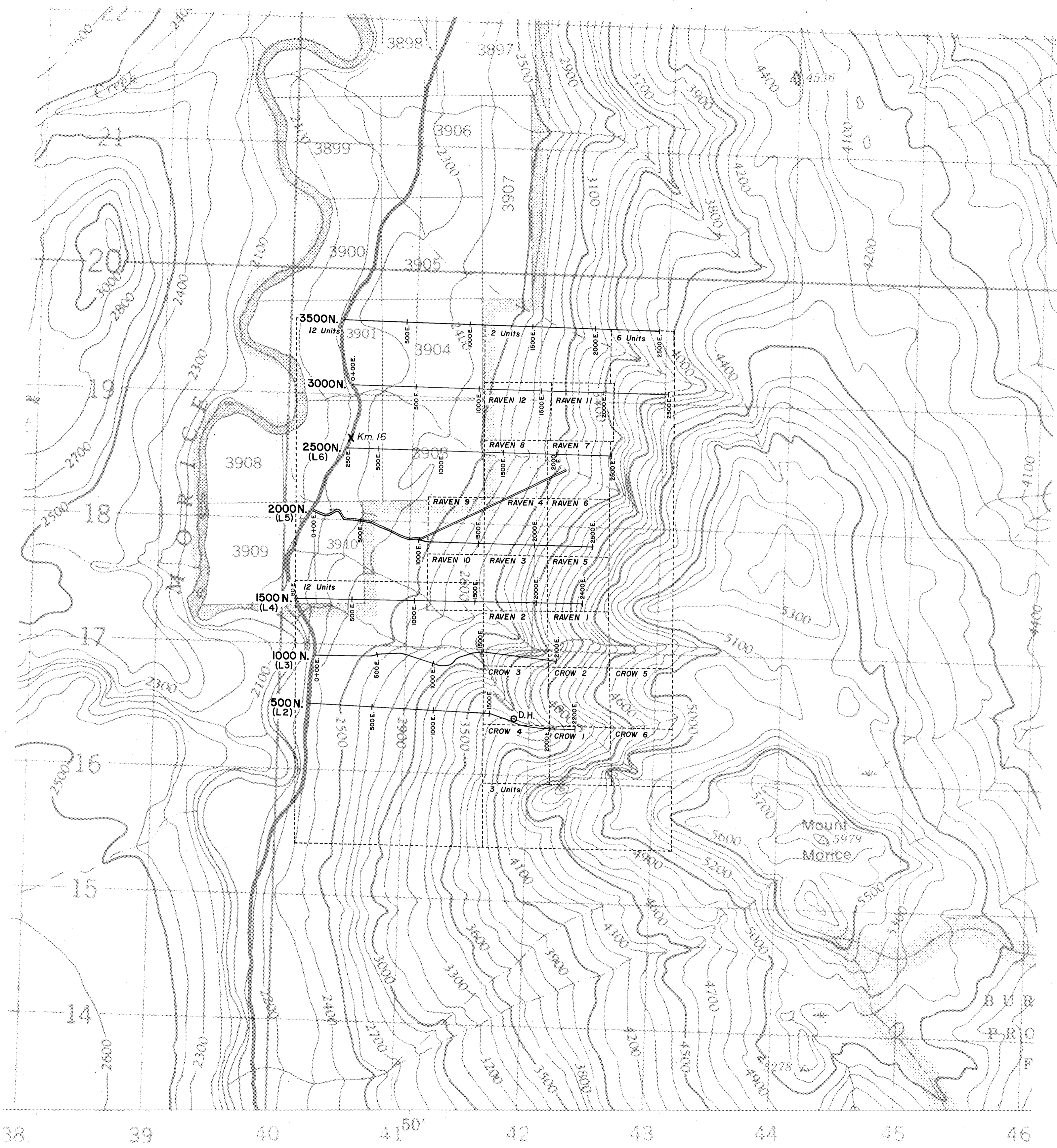
CROW RAVEN 93 L/7

Drawn by: I. J.		Traced by: a. m. a.	
Revised by	Date	Revised by	Date

RESISTIVITY ($\Omega \cdot m$)
N = 1 a = 100m

OMINECA M.D., B.C.

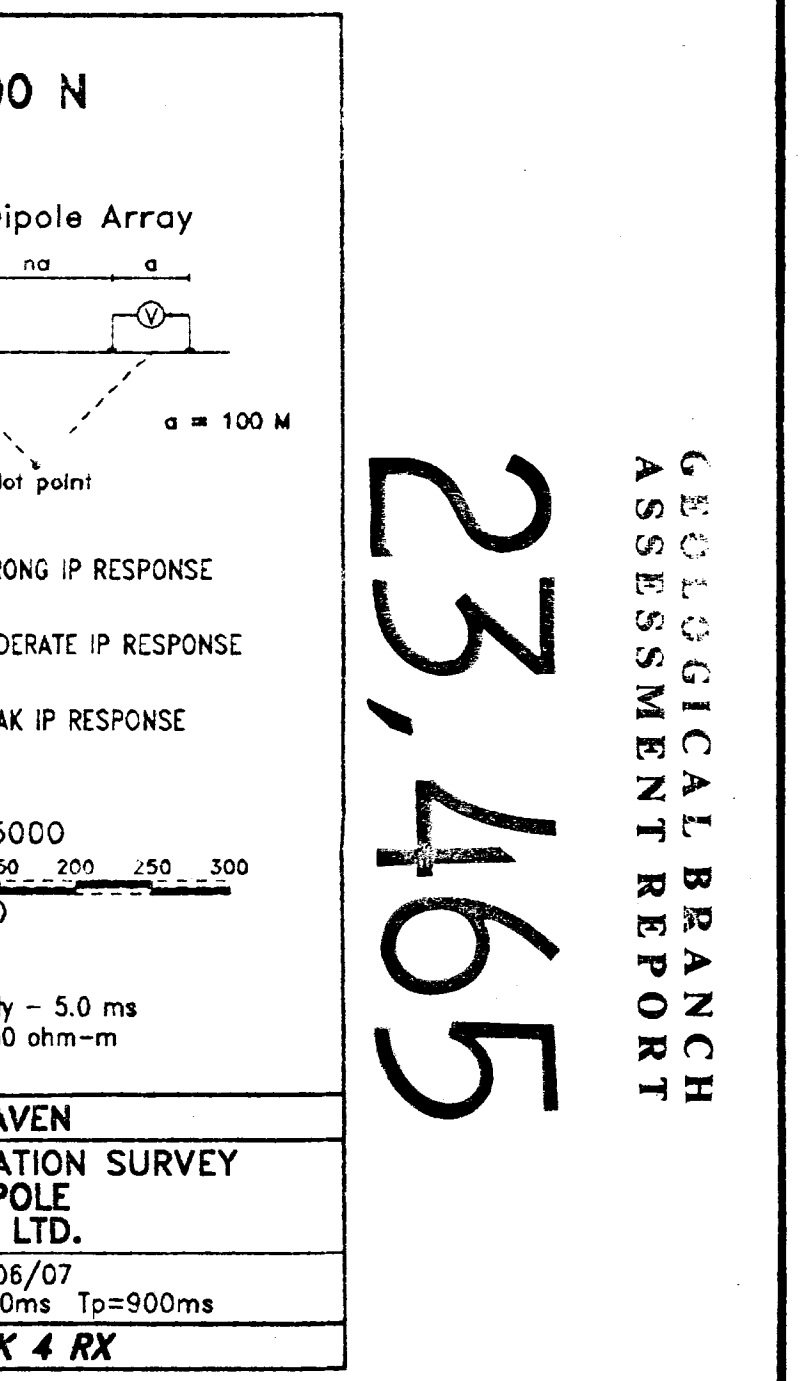
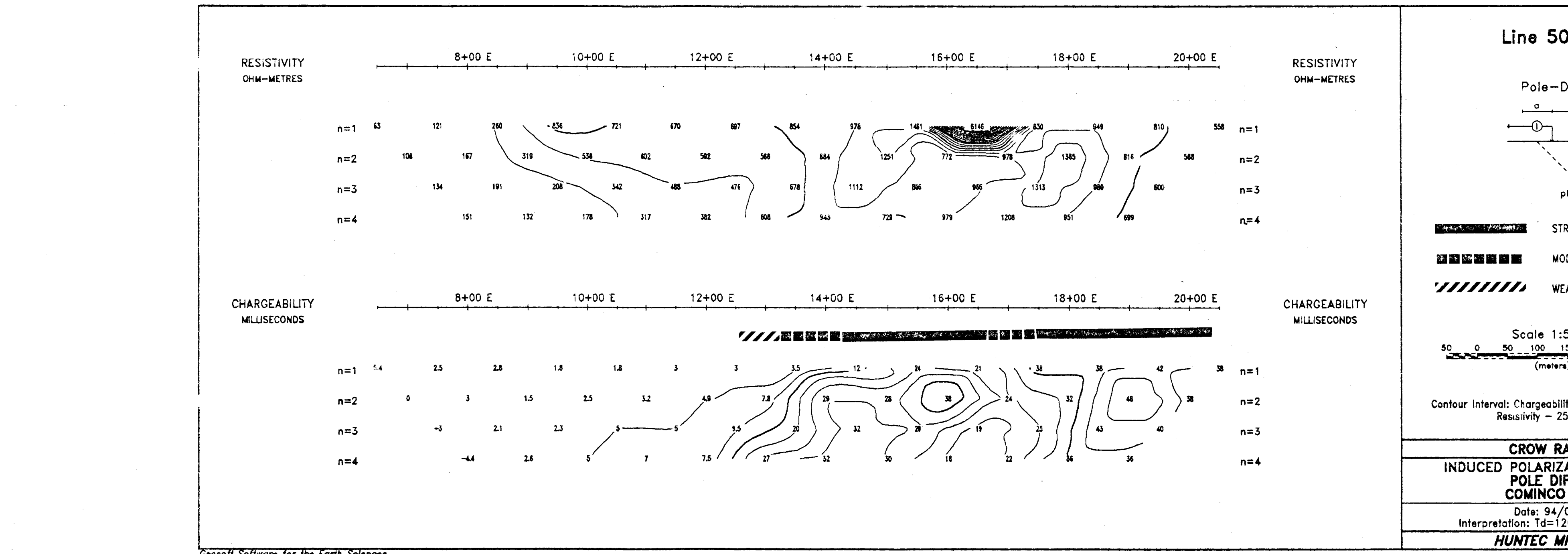
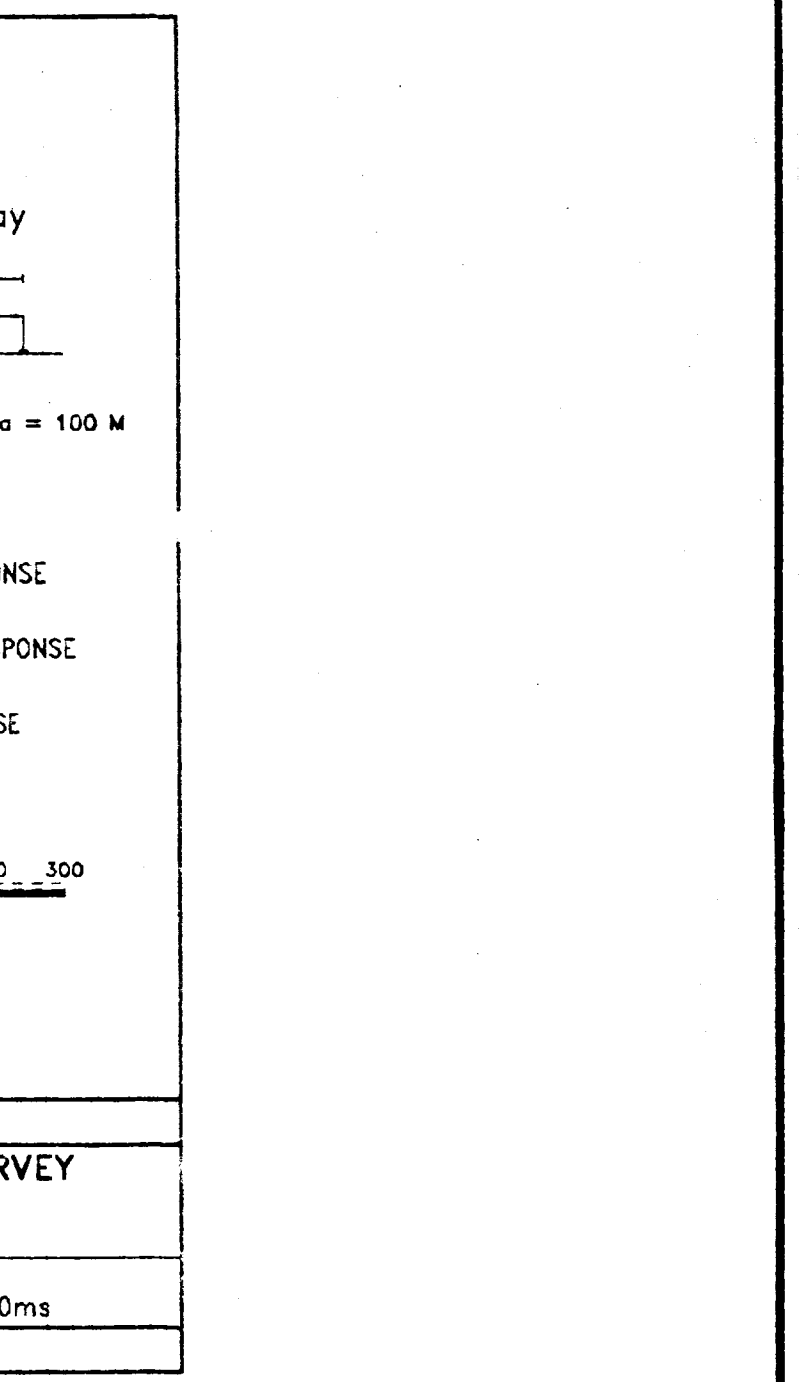
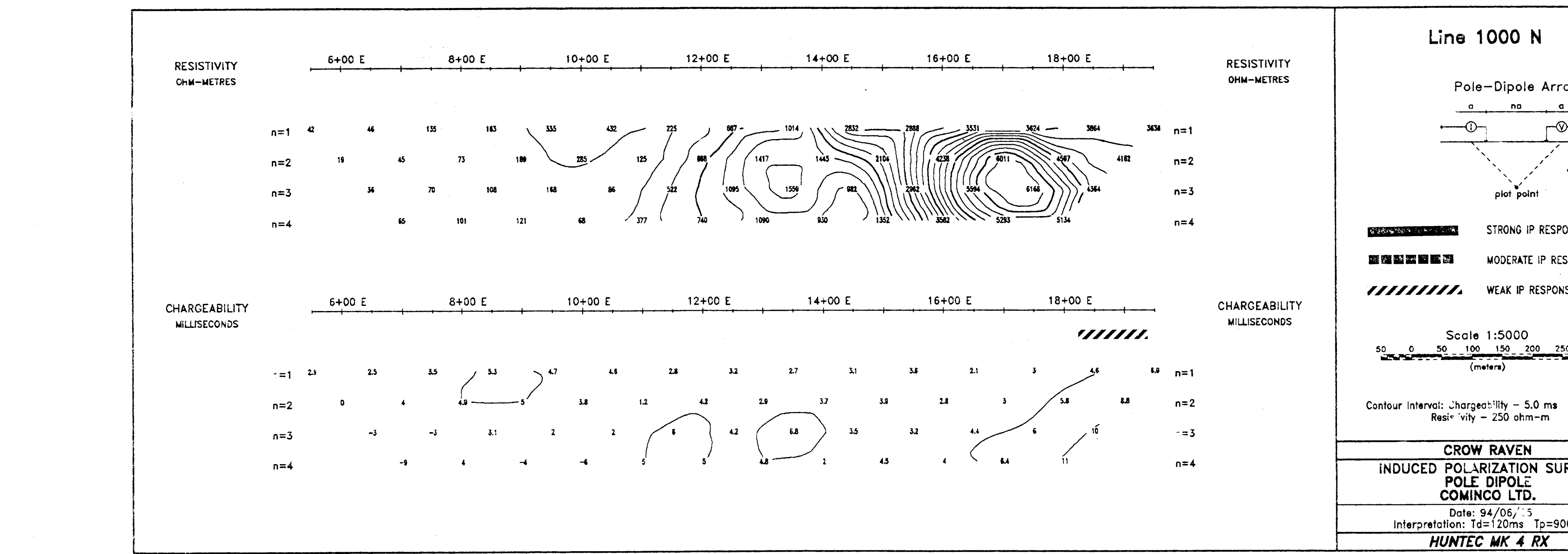
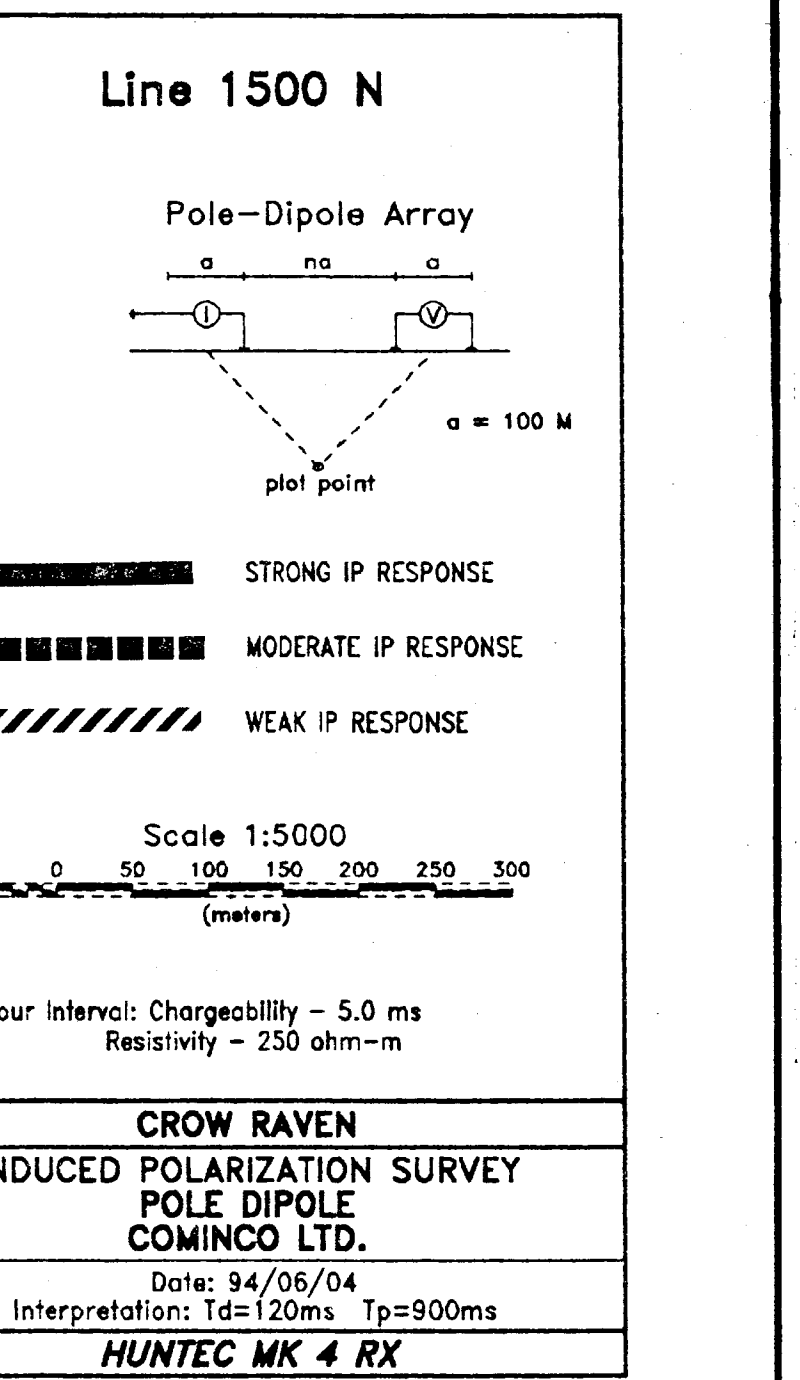
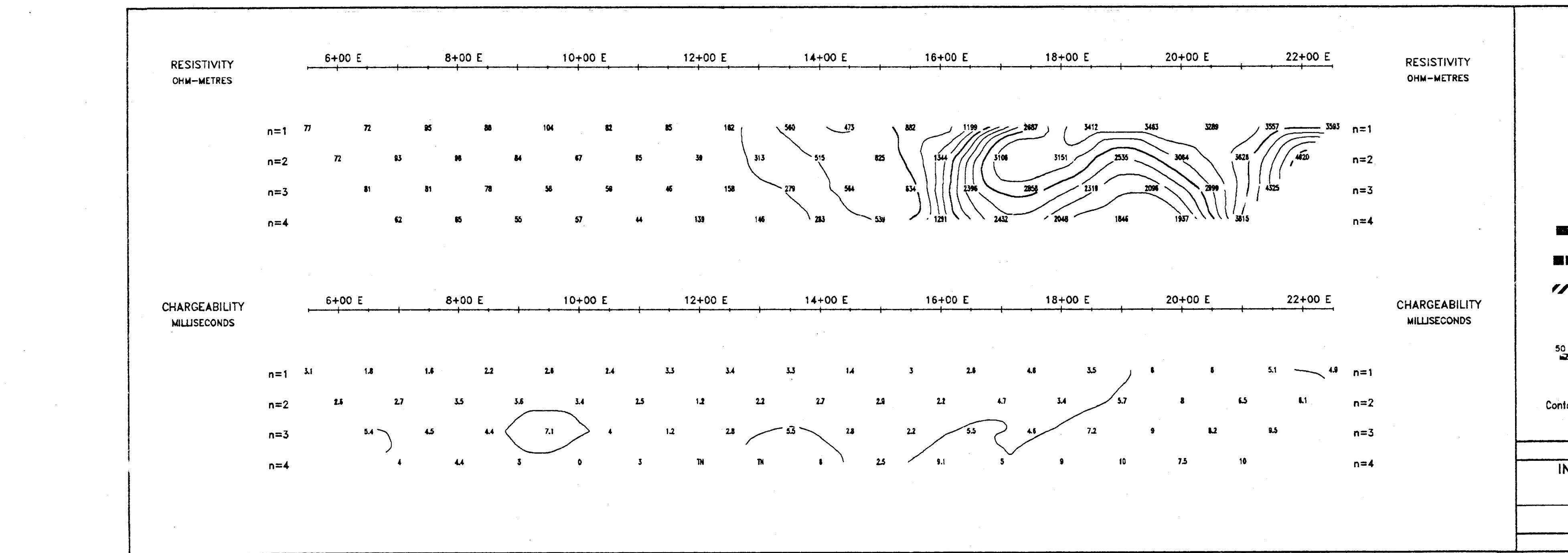
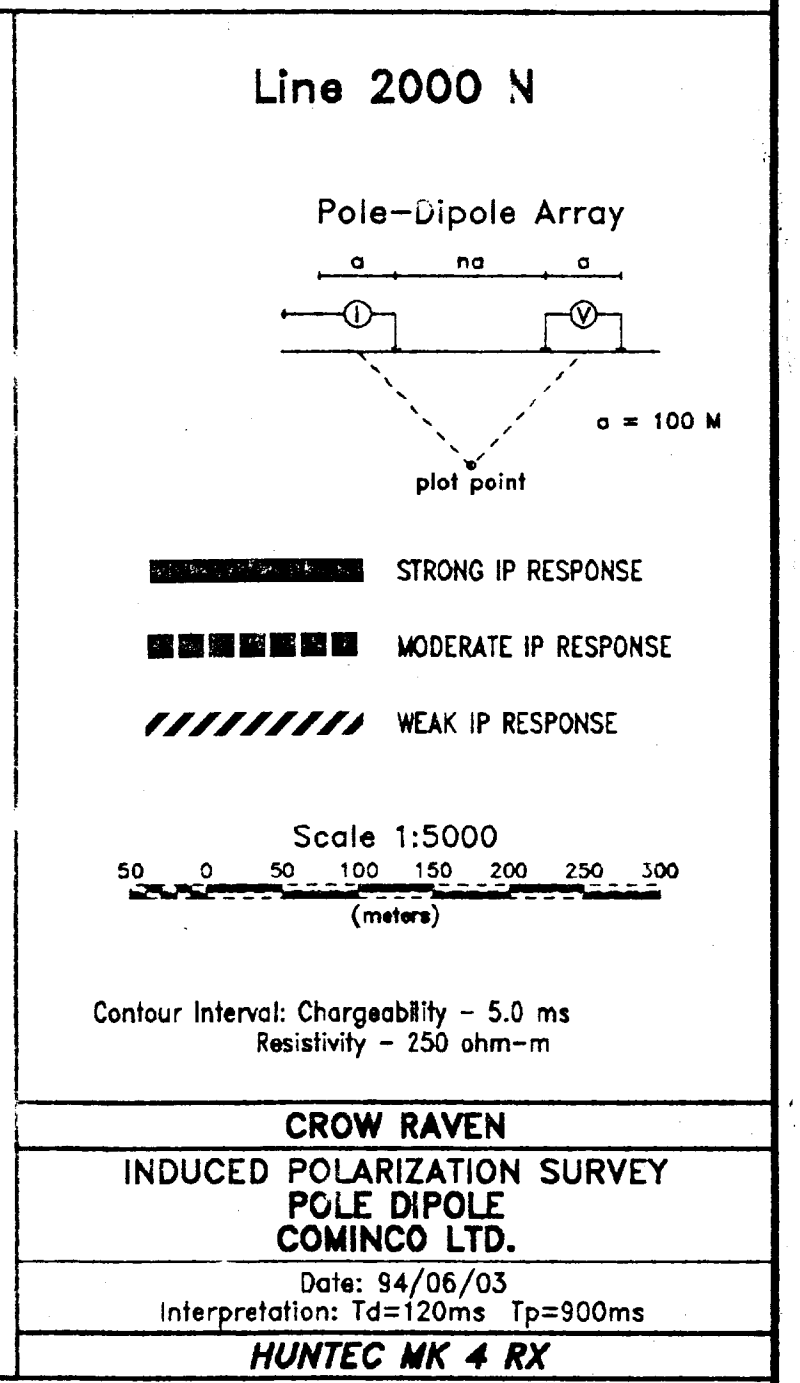
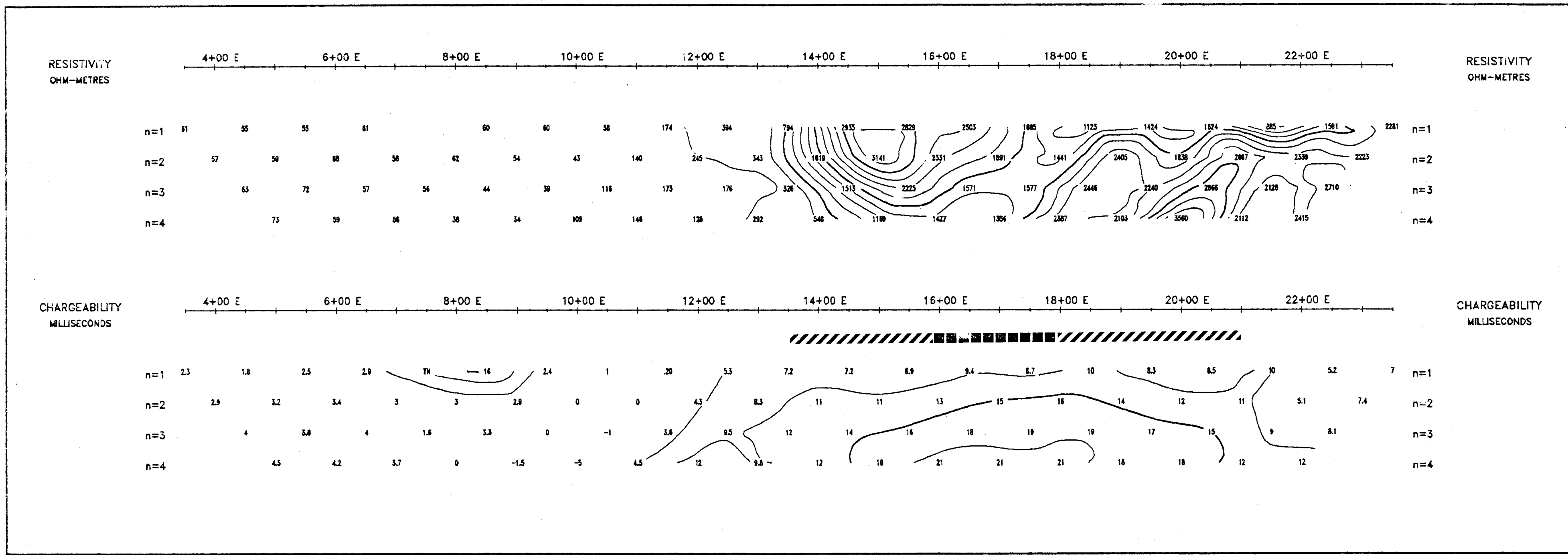
Scale: 1 : 20,000 Date: July, '94 Plate: 414-94-6



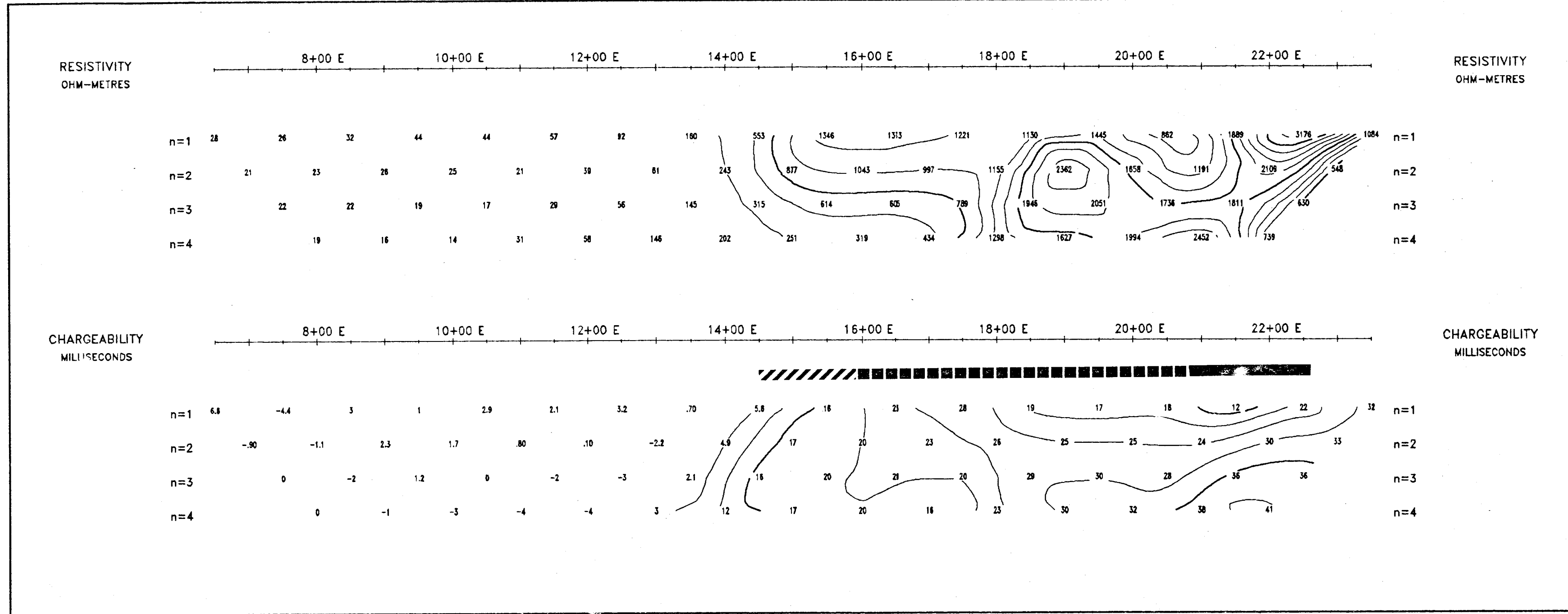
GEOLOGICAL BRANCH
ASSESSMENT REPORT

23,465

CROW RAVEN				93 L/7
Drawn by: I.J.	Traced by: a.m.a.			
Revised by: _____	Date: _____	Revised by: _____	Date: _____	
CLAIM and GRID MAP				
OMINECA M.D., B.C.				
Scale: 1 : 20,000	Date: July, '94	Plate: 414-94-2		



23,465
 GEOLOGICAL BRANCH
 ASSESSMENT REPORT



Line 3500 N

Pole-Dipole Array

STRONG IP RESPONSE

MODERATE IP RESPONSE

WEAK IP RESPONSE

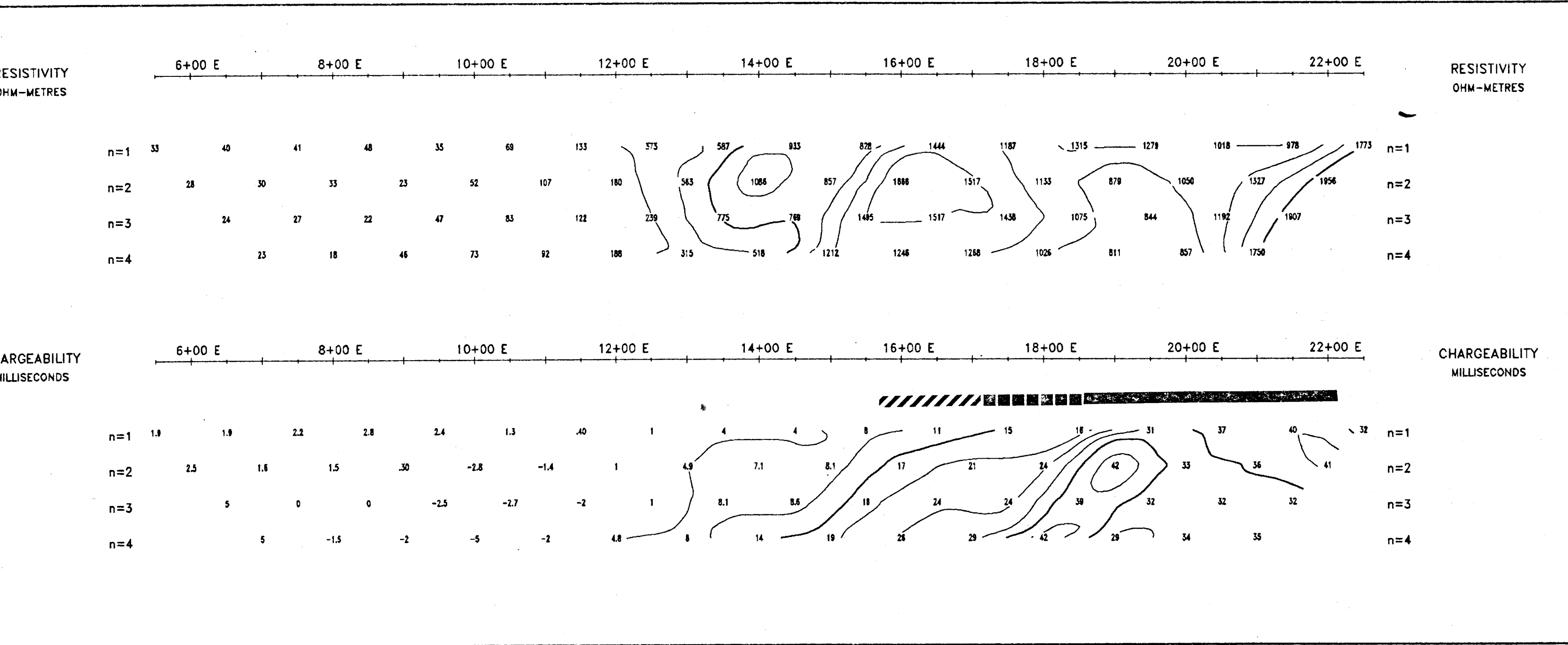
Scale 1:5000

50 0 50 100 150 200 250 300 (meters)

Contour Interval: Chargeability - 5.0 ms
Resistivity - 250 ohm-m

CROW RAVEN
INDUCED POLARIZATION SURVEY
POLE DIPOLE
COMINCO LTD.
Date: 94/06/08
Interpretation: Td=120ms Tp=900ms
HUNTEC MK 4 RX

Geosoft Software for the Earth Sciences



Line 3000 N

Pole-Dipole Array

STRONG IP RESPONSE

MODERATE IP RESPONSE

WEAK IP RESPONSE

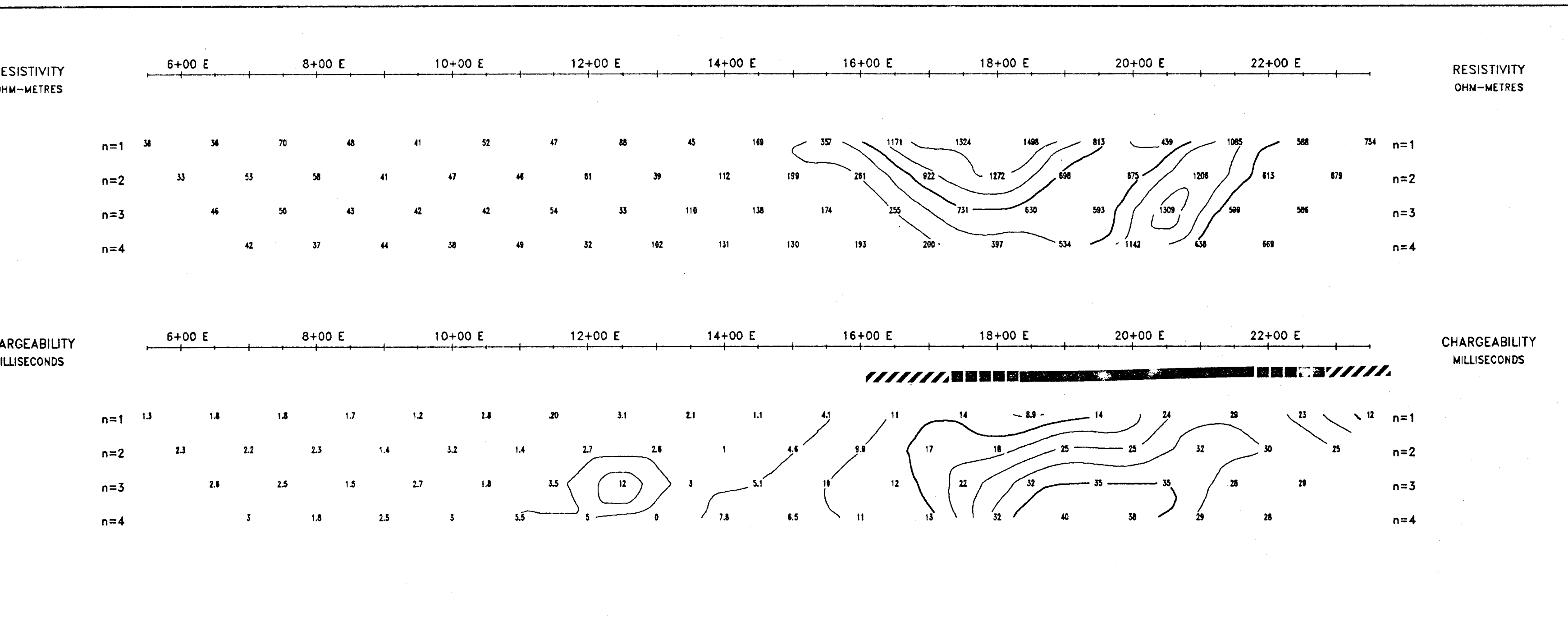
Scale 1:5000

50 0 50 100 150 200 250 300 (meters)

Contour Interval: Chargeability - 5.0 ms
Resistivity - 250 ohm-m

CROW RAVEN
INDUCED POLARIZATION SURVEY
POLE DIPOLE
COMINCO LTD.
Date: 94/06/07
Interpretation: Td=120ms Tp=900ms
HUNTEC MK 4 RX

Geosoft Software for the Earth Sciences



Line 2500 N

Pole-Dipole Array

STRONG IP RESPONSE

MODERATE IP RESPONSE

WEAK IP RESPONSE

Scale 1:5000

50 0 50 100 150 200 250 300 (meters)

Contour Interval: Chargeability - 5.0 ms
Resistivity - 250 ohm-m

CROW RAVEN
INDUCED POLARIZATION SURVEY
POLE DIPOLE
COMINCO LTD.
Date: 94/06/03
Interpretation: Td=120ms Tp=900ms
HUNTEC MK 4 RX

Geosoft Software for the Earth Sciences

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

23,465

CROW RAVEN 93 L/7

Drawn by:	Traced by:	INDUCED POLARIZATION PSEUDOSECTIONS	
Reviewed by:	Checked by:	LINES 2500 N., 3000 N., 3500 N.	
		OMINECA M.D., B.C.	
		Scale: 1 : 5,000	Date: July '94
			Plate: 414-94-4