GEOPHYSICAL REPORT ON THE GIANT NICKEL PROPERTY

N.T.S. 92-H/5 & 6
Latitude 49°28'N Longitude 121°30'W

NEW WESTMINSTER MINING DIVISION

SUB-RECORDER
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M.R. # .... $..............
VANCOUVER, B.C.

for

CORONA CORPORATION
1140 - 800 West Pender Street
Vancouver, B.C.
V6C 2V6

D. Johnson, B.Sc.
E.R. Rockel, B.Sc., P.Geoph., P.Eng.

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SUMMARY

Geophysical work, consisting of 44.8 miles (71.7 km) of magnetometer and VLF EM surveys and 10 miles (16km) of IP survey were conducted in 1988 on Corona Corporation's 'Giant Nickel" property near Hope B.C. This work was aimed at defining massive sulphide bodies similar to those which were mined from 1959 to 1974, yielding 4,620,257 tons grading 0.77% Ni and 0.34% Cu. Five zones of anomalous IP response have been outlined, of which at least four are interpreted as representing possible massive sulphides.

CONCLUSIONS

Several magnetic and VLF EM anomalies have been attributed to cultural features such as pipe and buildings resulting from previous mining operations on the property. Anomalies considered as legitimate generally fall within a broad east-west trending 'conductor swarm', believed to represent conductive portions of an east west structural zone. This zone may in fact be a channelway for fluids which deposited disseminated and/or massive sulphides which are believed to give rise to anomalous IP responses.

INTRODUCTION

LOCATION AND ACCESS

The Giant Nickel property is located in rugged mountainous terrain 12 km NNW of Hope B.C. Access is provided by rough mining and logging roads up Texas Creek (10km) and Emory Creek (15km), which leave Highway 1 near Choate. Extensive reconstruction of portions of the Texas Creek road were required prior to the 1988 geophysical work described in this report.

The steep craggy terrain with heavy timber and thick undergrowth are typical of the eastern flank of the Coast Range Mountains. Elevations range from 520m. at the tailings area at the east edge of the claims to over 1300 m. at the west end of Zofka Ridge.

HISTORY

Early prospecting in the area led to the discovery in 1923 of the Pride of Emory showing. Exploration, including 3 underground levels and more than 150,000 feet of diamond drilling, continued sporadically into the late 1950's.

The property was mined almost continuously from 1959 to 1974, yielding 4,620,257 tons of ore grading 0.77% Ni.,and 0.34% Cu., with a mill recovery of 85%. In later years, credit was paid for cobalt content which averaged 0.1% to 0.15%.

Ore was drawn from 24 separate stopes, none of which extended below the 2600 foot elevation. Three of these stopes yielded better than 500,000 tons; the Brunswick #2 at 694,500, the Pride of Emory at 681,300 and the 4600 with 662,000.

To allow compatibility with an extensive historical data base, Imperial measurement has been retained for recent exploration work on the property.

POTENTIAL

At the time of closing reserves were quoted as 1,027.151 tons (proven, probable, possible) grading .71% Ni. and .31% Cu.

Recent exploration programmes have been guided by the belief that considerable potential remains for discovery of additional sulphide pipes as well as extension of the known deposits below the 2600 level.

CLAIMS

The property consists of two mineral leases, 73 recorded claims and 92 crown granted claims as listed in Appendix 1. Area is 2300 hectares (5690 acres). The property is owned 100% by Corona Corporation and lies within the New Westminster Mining Division.

GEOLOGY

The Giant Nickel property lies within an ultrabasic complex intruded into granites, granodiorites and quartz diorites of the Coast Range batholith. This package is bounded on the east by the Hope Fault, a major north trending high angle structure marked by a band of serpentinite schist and amphibolite.

Ultrabasic rocks form an irregular intrusion about 5km long east to west and 1.5 km wide. This composite stock consists mainly of pyroxenites with peridotites as cores and segregations and lesser amounts of dunite. Contacts within the stock are generally gradational.

Mineralization consists of subvertical pipes of disseminated and massive pyrrhotite, pentlandite, chalcopyrite and pyrite. Sulphides tend to be concentrated at contacts within and peripheral to the ultrabasic stock, especially where the diorite and ultrabasic form embayments into one another. Pipes typically have a very limited cross sectional area but strong vertical continuity.

GEOPHYSICS

Geophysical work conducted between August 1 and October 23 1988 consisted of 44.8 line miles of VLF EM and magnetic surveys and 10 line miles of induced polarization over selected portions of the grid. This work succesfully outlined a broad east-west zone hosting several conductive areas suspected to indicate sulphide bodies. Survey work was contracted by Interpretex Resources Ltd. of Vancouver B.C.

A report by E.R.Rockel, B.Sc., P. Geoph., P.Eng. describing in detail the nature, extent and findings of the geophysical work is attached as Appendix 2.

STATEMENT OF QUALIFICATIONS

DARREL L. JOHNSON

I, Darrel L. Johnson, resident of the District of Coquitlam B.C., declare that:

1. I hold a B.Sc. degree in geology, granted by the University of British columbia in 1970;

2. I have worked as a geologist in all phases of exploration work throughout B.C.since 1970;

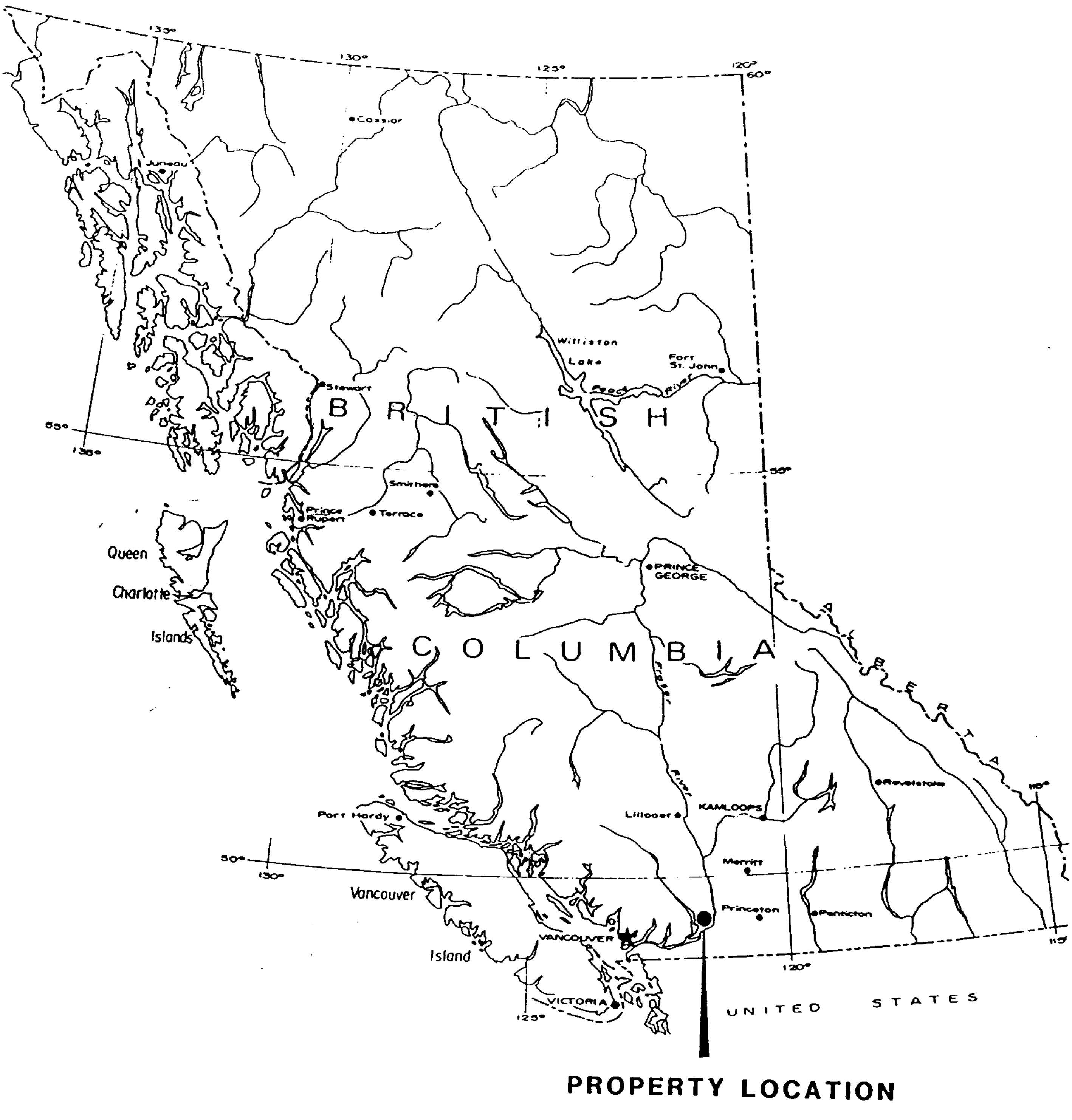
3. I Have been employed by Corona Corporation as a senior geologist since 1988:

4. I wrote the 'Summary and Introduction" section of this report, based on study of internal company reports, a visit to the Giant Nickel property and discussions with Corona geologists and E.R.Rockel.

Darrel L. Johnson

Signed this 8 day of November,

1989 at Vancouver B.C.

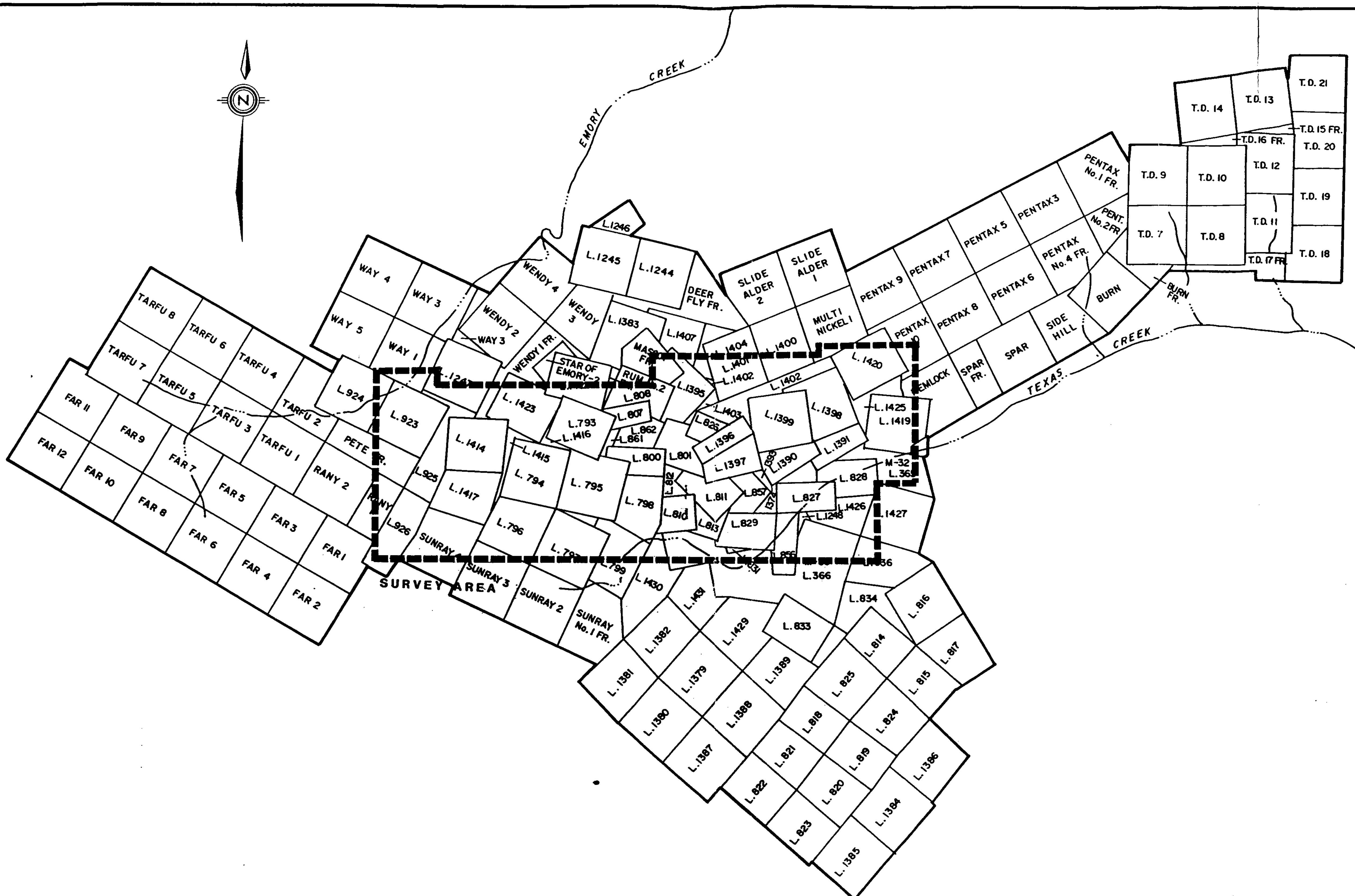


CORONA CORPORATION

GIANT NICKEL PROJECT

LOCATION MAP

DATE: MAY/1989	SCALE:	DRAWING No. 1



19305

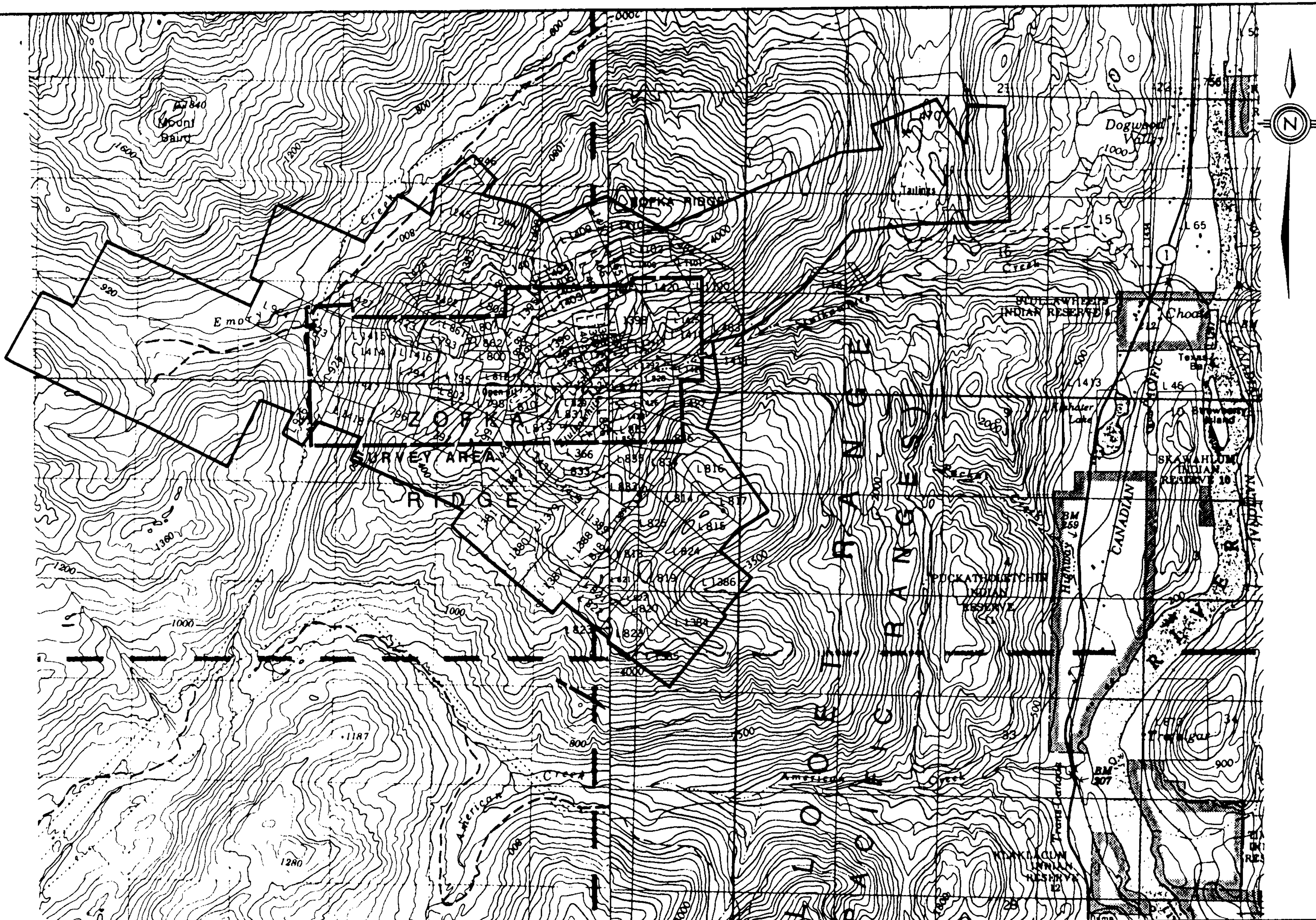
metres 1000 0 500 1000 metres

CORONA CORPORATION

GIANT NICKEL PROJECT

CLAIM MAP

DATE	OFFICE	DEPARTMENT	MAP INDEX NO.	SCALE	DRAWING NO.
OCT. /1987				1: 30,000	2



km 0 1 2 km

CORONA CORPORATION

GIANT NICKEL PROJECT

PROPERTY MAP

DATE: OCT. / 1987	SCALE: 1:50,000	DRAWING No. 3

APPENDIX 1

LIST OF CLAIMS

MINERAL TITLE - CANADA

GIANT NICKEL
1028

Province :B.C. Mining Division:NEW WESTMINSTER Land District :YALE Lat./Long. :49°27' /121°30' NTS :92H/5E,6W Location: 10 km NNW. of Hope	Owner :CORONA CORPORATION Operator :CORONA CORPORATION J.V. Partners: : : :

CROWN GRANTED CLAIMS

LOT NO.	CLAIM NAME	AREA (ha)	MINERAL LAND TAX FOLIO NO.	UNDER-SURFACE CHARGE NO.	CERTIFICATE OF TITLE (SURFACE)	REGISTERED OWNER (SURFACE)
1244	QUEEN CHARLOTTE	20.90	6029-1			
1245	GRAND FORKS	20.90	6029-1			
1246	NORTHERN STAR	6.10	6029-1			
1247	PROVINCE	19.33	12908-9			
1248	MITE FRACTION	0.73	12908-9			
1374	VIK FRACTION	2.16	12908-9			
1379	SUMMIT NO. 4	20.90	12908-9			
1380	SUMMIT NO. 5	20.90	6088-7			
1381	SUMMIT NO. 6	19.28	6088-7			
1382	SUMMIT NO. 7	17.22	12908-9			
1383	STAR OF EMORY NO. 5	13.63	6088-7			
1384	SUN NO. 1	20.65	6088-7			
1385	SUN NO. 2	20.28	6088-7			
1386	SUN NO. 3	19.34	6088-7			
1387	SUMMIT NO. 1	20.82	6088-7			
1388	SUMMIT NO. 2	20.47	12908-9			
1389	SUMMIT NO. 3	15.39	12908-9			
1390	APEX	8.39	12908-9			
1391	PRIDE OF TEXAS	7.37	12980-9			
1392	COUGAR FRACTION	2.80	12980-9			
1393	BLACK BEAR FRACTION	0.40	12908-9			
1395	IDA	10.15	12908-9			
1396	CLIMAX	7.48	6088-7			
1397	AZONE	9.88	12908-9			
1398	PIONEER	15.35	12908-9			
1399	DOLLY	18.69	12908-9			
1400	BLACK KNIGHT	17.33	12908-9			
1401	FARIVIEW	18.02	12908-9			
1402	NICKEL CORE FRACTION	11.76	12908-9			
1403	ST. JUILIAN FRACTION	1.12	12908-9			
1404	DOME NO. 2	3.42	12908-9			
1406	BAER FRACTION	0.21	12908-9			
1407	DOME NO. 1	9.01	6088-7			
1414	STAR OF EMORY NO. 3	18.18	12908-9			
1415	STAR FRACTION	1.81	6088-7			
1416	PRIDE FRACTION	0.74	12908-9			
1417	STAR OF EMORY NO. 4	16.37	12908-9			
1419	LAST STRIKE	18.75	12908-9			
1422	PRIDE OF EMORY NO. 4	14.82	12908-9			

Date Revised: 89.11.06

MINERAL TITLE - CANADA

GIANT NICKEL
1028

LOT NO.	CLAIM NAME	AREA (ha)	MINERAL LAND TAX FOLIO NO.	UNDER-SURFACE CHARGE NO.	CERTIFICATE OF TITLE (SURFACE)	REGISTERED OWNER (SURFACE)
1423	STAR OF EMORY NO. 1	16.32	12908-9			
1424	STAR OF EMORY NO. 2	3.79	12908-9			
1425	MAX FRACTION	4.91	12908-9			
1426	EAGLE FRACTION	8.33	12908-9			
1427	CHOATE NO. 7	19.46	12908-9			
1429	SLIDE FRACTION	19.55	12908-9			
1430	FALLS FRACTION	15.33	12908-9			
1431	RAVEN FRACTION	12.59	12908-9			
793	PRIDE OF EMORY NO. 1	15.61	12908-9			
793	PRIDE OF EMORY NO. 1	15.61	12908-9			
794	PRIDE OF EMORY NO. 2	20.90	12908-9			
794	PRIDE OF EMORY NO. 2	20.90	12908-9			
795	PRIDE OF EMORY NO. 3	20.51	12908-9			
795	PRIDE OF EMORY NO. 3	20.51	12908-9			
796	PRIDE OF EMORY NO. 5	18.97	12908-9			
796	PRIDE OF EMORY NO. 5	18.97	12908-9			
797	PRIDE OF EMORY NO. 6	20.90	12908-9			
797	PRIDE OF EMORY NO. 6	20.90	12908-9			
798	POLLY	13.88	12908-9			
798	POLLY	13.88	12908-9			
799	BETTY	15.18	12908-9			
799	BETTY	15.18	12908-9			
800	MOLLY	7.48	12908-9			
800	MOLLY	7.48	12908-9			
801	PROGRESS	9.33	12908-9			
801	PROGRESS	9.33	12908-9			
802	TED FRACTION	1.28	6012-7			
802	TED FRACTION	1.28	6012-7			
807	CHOATE VIEW	4.77	12908-9			
807	CHOATE VIEW	4.77	12908-9			
808	CHOATE VIEW NO. 2	11.91	12908-9			
810	RUBY	7.28	12908-9			
811	BLUE BIRD	10.18	12908-9			
812	NICKEL STAR	2.61	12908-9			
813	COPPER KING	3.72	12908-9			
814	HEATHER NO. 1	14.84	6012-7			
815	HEATHER NO. 2	15.24	6012-7			
816	HEATHER NO. 3	19.49	12908-9			
817	HEATHER NO. 4	16.45	6012-7			
818	HILLTOP NO. 1	14.26	6012-7			
819	HILLTOP NO. 2	14.24	6012-7			
820	HILLTOP NO. 3	16.17	6012-7			
821	HILLTOP NO. 4	15.06	6012-7			
822	HILLTOP NO. 5	15.73	6012-7			
823	HILLTOP NO. 6	16.56	6012-7			
824	HILLTOP NO. 7	17.85	6029-1			
825	HILLTOP NO. 8	20.13	6029-1			
826	LEONARDO	3.94	6029-1			

Date Revised: 89.11.06

MINERAL TITLE - CANADA

GIANT NICKEL
1028

LOT NO.	CLAIM NAME	AREA (ha)	MINERAL LAND TAX FOLIO NO.	UNDER-SURFACE CHARGE NO.	CERTIFICATE OF TITLE (SURFACE)	REGISTERED OWNER (SURFACE)
827	REED ROSE	10.59	12908-9			
828	EAGEL	10.28	12908-9			
829	GOOD HOPE	10.67	12908-9			
831	ELK FRACTION	0.38	6029-1			
832	CHOATE NO. 1	2.83	12908-9			
833	CHOATE NO. 2	15.01	12908-9			
834	CHOATE NO. 3 FRACTION	10.99	12908-9			
836	CHOATE NO. 5 FRACTION	15.15	12908-9			
856	ANTLER	7.66	12908-9			
857	BLUE BIRD EXTENSION	5.66	12908-9			
861	LAST CHANCE FRACTION	0.89	12908-9			
862	OLD CROW	5.74	12908-9			
923	SOUTH FORK	20.90	6029-1			
924	CANION	20.90	6029-1			
925	DONNA FRACTION	11.22	12908-9			
926	ASTA FRACTION	15.00	6029-1			
Total:	103 claims	1,288				

Date Revised: 89.11.06

MINERAL TITLE - CANADA

GIANT NICKEL
1028

Province :B.C.	Owner :CORONA CORPORATION
Mining Division:NEW WESTMINSTER	Operator :CORONA CORPORATION
Land District :YALE	J.V. Partners:
Lat./Long. :49°27' /121°30'	:
NTS :92H/5E,6W	:
Location: 10 km NNW. of Hope	:

MINERAL LEASES

LEASE	LEASE NO.	LOT NO.	AREA (ha)	RECORD DATE	EXPIRY DATE	RENT	PAID TO
MERCURY 2 FRACTION			0.00	. .	. .	0.00	. .
VENUS FRACTION			0.00	. .	. .	0.00	. .
MERCURY			0.00	. .	. .	0.00	. .
MERCURY 1 FRACTION			0.00	. .	. .	0.00	. .
MERCURY 3 FRACTION			0.00	. .	. .	0.00	. .
GREG FRACTION	M-32	365	13.22	71.11.15	92.11.15	70.00	90.11.15
JUPITER FRACTION	M-33	366	54.97	71.11.15	92.11.15	275.00	90.11.15
Total - 7 Leases			68			345.00	

Date Revised: 89.10.31

MINERAL TITLE - CANADA

GIANT NICKEL
1028

Province :B.C.	Owner :CORONA CORPORATION
Mining Division:NEW WESTMINSTER	Operator :CORONA CORPORATION
Land District :YALE	J.V. Partners:
Lat./Long. :49°27' /121°30'	:
NTS :92H/5E,6W	:
Location: 10 km NNW. of Hope	:

LOCATED MINERAL CLAIMS

CLAIM	UNITS	AREA (ha)	RECORD NO.	RECORD DATE	EXPIRY DATE	WORK REQUIRED
Burn	1	21.0	13819	64.11.26	99.11.26	$ 200.00
Burn Fraction	1	21.0	13822	64.11.26	99.11.26	$ 200.00
Deerfly Fraction	1	21.0	11363	61.07.26	90.07.26	$ 200.00
Far 1	1	21.0	29534	74.10.04	99.10.04	$ 200.00
Far 10	1	21.0	29543	74.10.04	99.10.04	$ 200.00
Far 11	1	21.0	29544	74.10.04	99.10.04	$ 200.00
Far 12	1	21.0	29545	74.10.04	99.10.04	$ 200.00
Far 2	1	21.0	29535	74.10.04	99.10.04	$ 200.00
Far 3	1	21.0	29536	74.10.05	99.10.04	$ 200.00
Far 4	1	21.0	29537	74.10.04	99.10.04	$ 200.00
Far 5	1	21.0	29538	74.10.04	99.10.04	$ 200.00
Far 6	1	21.0	29539	74.10.04	99.10.04	$ 200.00
Far 7	1	21.0	29540	74.10.04	99.10.04	$ 200.00
Far 8	1	21.0	29541	74.10.04	99.10.04	$ 200.00
Far 9	1	21.0	29542	74.10.04	99.10.04	$ 200.00
Hemlock	1	21.0	13821	64.11.26	99.11.26	$ 200.00
Mascot Fraction	1	21.0	11859	62.06.22	90.06.22	$ 200.00
Multi Nickel I	1	21.0	13416	64.08.05	90.08.05	$ 200.00
Pentax 1 Fraction	1	21.0	21467	69.05.15	90.05.15	$ 200.00
Pentax 10	1	21.0	21476	69.05.15	90.05.15	$ 200.00
Pentax 2 Fraction	1	21.0	21468	69.05.15	90.05.15	$ 200.00
Pentax 3	1	21.0	21469	69.05.15	90.05.15	$ 200.00
Pentax 4 Fraction	1	21.0	21470	69.05.15	90.05.15	$ 200.00
Pentax 5	1	21.0	21471	69.05.15	90.05.15	$ 200.00
Pentax 6	1	21.0	21472	69.05.15	90.05.15	$ 200.00
Pentax 7	1	21.0	21473	69.05.15	90.05.15	$ 200.00
Pentax 8	1	21.0	21474	69.05.15	90.05.15	$ 200.00
Pentax 9	1	21.0	21475	69.05.15	90.05.15	$ 200.00
Pete Fraction	1	21.0	12691	63.08.14	99.08.14	$ 200.00
Rany 1	1	21.0	11846	62.06.22	90.06.22	$ 200.00
Rany 2	1	21.0	11847	62.06.22	90.06.22	$ 200.00
Rum 2 Fraction	1	21.0	11362	61.07.26	90.07.26	$ 200.00
Sidehill	1	21.0	13820	64.11.26	99.11.26	$ 200.00
Slide Alder 1	1	21.0	13414	64.08.05	90.08.05	$ 200.00
Slide Alder 2	1	21.0	13415	64.08.05	90.08.05	$ 200.00
Spar	1	21.0	13823	64.11.26	99.11.26	$ 200.00
Spar Fraction	1	21.0	13824	64.11.26	99.11.26	$ 200.00
Sunray 1 Fraction	1	21.0	11862	62.07.04	90.07.04	$ 200.00
Sunray 2	1	21.0	11863	62.07.04	90.07.04	$ 200.00
Sunray 3	1	21.0	11864	62.07.04	90.07.04	$ 200.00

Date Revised: 89.08.13

CLAIM	UNITS	AREA (ha)	RECORD NO.	RECORD DATE	EXPIRY DATE	WORK REQUIRED
Sunray 4	1	21.0	11865	62.07.04	90.07.04	$ 200.00
Tarfu 1	1	21.0	11851	62.06.22	90.06.22	$ 200.00
Tarfu 2	1	21.0	11852	62.06.22	90.06.22	$ 200.00
Tarfu 3	1	21.0	11853	62.06.22	90.06.22	$ 200.00
Tarfu 4	1	21.0	11854	62.06.22	90.06.22	$ 200.00
Tarfu 5	1	21.0	11855	62.06.22	90.06.22	$ 200.00
Tarfu 6	1	21.0	11856	62.06.22	90.06.22	$ 200.00
Tarfu 7	1	21.0	11857	62.06.22	90.06.22	$ 200.00
Tarfu 8	1	21.0	11858	62.06.22	90.06.22	$ 200.00
TD 10	1	21.0	11336	61.07.06	90.07.06	$ 200.00
TD 11	1	21.0	16295	66.08.11	99.08.11	$ 200.00
TD 7	1	21.0	11333	61.07.06	90.07.06	$ 200.00
TD 8	1	21.0	11334	61.07.06	90.07.06	$ 200.00
TD 9	1	21.0	11335	61.07.06	90.07.06	$ 200.00
TD 12	1	21.0	16296	66.08.11	99.08.11	$ 200.00
TD 13	1	21.0	16297	66.08.11	99.08.11	$ 200.00
TD 14	1	21.0	16298	66.08.11	99.08.11	$ 200.00
TD 15 Fraction	1	21.0	23414	70.04.15	90.04.15	$ 200.00
TD 16 Fraction	1	21.0	23457	70.04.28	90.04.28	$ 200.00
TD 17 Fraction	1	21.0	26137	71.06.11	90.06.11	$ 200.00
TD 18	1	21.0	26138	71.06.11	90.06.11	$ 200.00
TD 19	1	21.0	26139	71.06.11	90.06.11	$ 200.00
TD 20	1	21.0	26140	71.06.11	90.06.11	$ 200.00
TD 21	1	21.0	26141	71.06.11	90.06.11	$ 200.00
Way 1	1	21.0	29495	74.09.09	99.09.09	$ 200.00
Way 2	1	21.0	29496	74.09.09	99.09.09	$ 200.00
Way 3	1	21.0	29497	74.09.09	99.09.09	$ 200.00
Way 4	1	21.0	29498	74.09.09	99.09.09	$ 200.00
Way 5	1	21.0	29499	74.09.09	99.09.09	$ 200.00
Wendy 1 Fraction	1	21.0	11836	62.06.22	90.06.22	$ 200.00
Wendy 2	1	21.0	11837	62.06.22	90.06.22	$ 200.00
Wendy 3	1	21.0	11838	62.06.22	90.06.22	$ 200.00
Wendy 4	1	21.0	11839	62.06.22	90.06.22	$ 200.00
Total - 73 claims	73	1,533.00				14,600.00

Date Revised: 89.08.13

APPENDIX 2

GEOPHYSICAL REPORT

APPENDIX REPORT ON

GEOPHYSICAL SURVEYS

ON THE GIANT NICKEL PROPERTY

1. INTRODUCTION

1.1 SURVEY SPECIFICATIONS

Survey Parameters
- survey line separation - reconnaisance - 500 ft.
  - normal - 250 ft.
  - detail - 125 ft.
- survey station spacing - VLF EM and Magnetic survey - 50 ft.
  - Induced Polarization survey - 100 ft.
- horizontal control - survey lines were located with flagging bearing station coordinates (felt marker pen) for VLF-EM and Magnetic survey
  - flagged lines were cut out for I.P. survey
- baseline "7000 N" direction - east-west
- survey lines were perpendicular to the baseline
- survey totals - VLF EM survey and magnetic survey 44 miles
  - Induced Polarization survey 10 miles.

Equipment Parameters

VLF Electromagnetic Survey
- EDA "Omni Plus" VLF EM/Magnetometer used for all survey
- transmitting station - primary - Annapolis, Maryland
  - secondary - Seattle, Washington
- anomalous inflection (facing) - northerly
- in-phase (dip angle, %), out-of-phase (quadrature, %) and relative field strength components measured at each station

Total Field Magnetic and Magnetic Gradiometer Survey
- EDA "Omni Plus" VLF EM/Magnetometer used for all survey
- EDA Omni IV automatic magnetic base station
- measured total magnetic field and vertical magnetic gradient in gammas
- magnetic variations controlled and corrected by automatic magnetic base station recording
- instrument accuracy +/- 1 gamma
- station repeatability better than +/- 3 gammas.

Induced Polarization Survey
- Huntec Mk II 2.5 kilowatt transmitter
- Huntec Mk IV time domain receiver
- apparent chargeability measured in milliseconds
- potential electrode voltage measured in millivolts
- time delay = 160 mSec., window width = 65 mSec.
- apparent resistivity calculated in ohm-meters
- dipole spacing "a" = 100 feet, n = 1 to 6
- pole-dipole method with pole southerly and dipole northerly except lines 500 E, 750 E, 1000 E, 10500 E, 10750 E and 11750 E where the pole was northerly and the dipole southerly.

...2

Calculations

VLF Electromagnetic Survey

No calculations were performed on VLF EM data.

Total Field Magnetic Survey

Total field magnetic readings were individually corrected for variations in the earth's magnetic field using magnetic base station values recorded at the same time.

Induced Polarization Survey

Apparent resistivity values were calculated using the formula;

Pa = 2n(n + 1)PI*a*(V/i) = ohm-meters

where: n = "n" value of 1 to 6
PI = 3.14
a = electrode separation (meters)
V = observed voltage (millivolts)
i = observed curent (amps)
* = "multiplied by"

Equipment Specifications - in Appendix GP1 of this report

1.2 PRESENTATION

VLF Electromagnetic Survey

- VLF EM in-phase, out-of-phase and field strength readings are presented as tables in Appendix GP2 of this report showing values located with respect to line number and station number
- VLF EM in-phase, out-of-phase and field strength readings are presented in profile form on a plan map at a scale of 1 inch = 500 ft.

Total Field Magnetic Survey

- Total field and vertical gradient magnetic readings are presented as tables in Appendix GP2 of this report
- Final total field magnetic values are presented as contours on a plan map at a scale of 1" = 500 ft.
- Final total field values and vertical gradient values are plotted in profile form on a plan map at a scale of 1" = 500 ft. A datum level of 59,000 gammas on the survey line was used for profiling total field values.

Induced Polarization Survey

- Pseudosections were plotted "westward looking" (south on the left hand side) for easy comparison with theoretical pseudosection plots computed with the pole to the left and dipole to the right
- Pseudosections are presented on Figures # PS - 1 to PS - 6 at a scale of 1" = 200 ft.
- Field readings and calculated values are listed in a data list in Appendix GP2 of this report
- IP anomalies are presented on the IP pseudosections as rectangles

...3

- Fraser Filter values for N = 1 to 6 of apparent chargeability and apparent resisitivty are presented as contours on a plan map at a scale of 1" = 500 ft.

Interpretation

- A composite interpretation map at a scale of 1" = 500 ft. presents the geophysical interpretation.

2. DISCUSSION

VLF EM data profiles show the effect of steep topography in the form of a positive bias on in-phase readings when facing uphill and a negative bias when facing downhill. Topography effect and cultural objects caused spurious VLF EM anomalies in some areas otherwise VLF EM data from the Annapolis transmitter were mostly noise free. Seattle/Hawaii VLF EM data showed more noise than the primary frequency, Annapolis. Level changes at baseline 7000 N can be seen when the Hawaii transmitter was used during secondary frequency, Seattle, off times.

The field strength profile was used to recognize topography induced inflections caused by abrupt topographic changes. Very steep slopes, cultural objects such as buildings and other untraversable terrain were responsible for gaps in survey coverage on some lines. Overburden was not considered to be a problem in this area because of its shallow depth on steep slopes.

VLF EM results showed a full range of electromagnetic response from weak to strong. A number of conductive trends were discovered trending mainly easterly. Some conductive trends were proven to be due to cultural features such as metal buildings or pipes.

Magnetic results contained noise, in certain areas, from cultural features such as old metal mine buildings and pipes. Within the grid area large positive anomalies such as one over 62,000 gammas (relative to a 58,000 area range value) were observed. The higher magnetic activity containing large positive anomalies was evident mainly in the northwest quarter of the grid. Magnetic trends were not readily evident from the magnetic total field contours, however magnetic profiles suggested that some minor trends were roughly east-west.

Induced polarization survey was carried out on a portion of the main VLF EM and magnetic survey grid. Lines of various lengths in three portions of the grid were surveyed in an attempt to follow expected east- west mineralized trends. On some short lines only parts of anomalies were observed, indicating that additional anomalous values could be expected beyond I.P. coverage.

Induced polarization pseudosections showed that both apparent chargeability and apparent resistivity varied over a wide range of values. Apparent chargeability ranged from a background of less than 10 milliseconds to strong anomalous values of over 70 milliseconds.

...4

Anomalous threshold was considered to be 10 milliseconds with an "anomalous background" from 10 to 20 milliseconds. Significant anomalies were believed to be above 20 milliseconds. Apparent resistivity ranged from resistivity lows of 200 to 500 ohm-meters through a general background in the low thousands up to values over 20,000 ohm-meters in highly resistive regions. Data quality remain good with no observable noise. Fraser Filter contours of apparent chargeability and apparent resistivity showed a northeasterly chargeable trend related to a zone of low resistivity. A different trend, east of the major trend mentioned above, shows anomalous chargeability associated with higher resistivity rock. This more resistive trend also seems to strike northeast.

3. CONCLUSIONS

A number of cultural VLF EM and magnetic anomalies have been indicated as spurious by describing them as "pipe", "buildings", etc. on the Annapolis VLF EM profile map and magnetic contour map. Conductor systems considered significant and believed to be related to bedrock conductivity have been delineated by drawing interpreted conductor axes on the VLF-EM profile map and on the Interpretation Map. As mentioned above, conductivity appears to trend roughly east-west. The conductors shown appear to form what might be called a "conductor swarm". Most interpreted bedrock conductors seem to occur in discontinuous groups which wind their way in an east-west direction through the grid. When magnetic contours are superimposed onto the conductive trends some conductors can be seen to be related to moderate strength magnetic highs. Adding the contoured values of the Fraser Filtered apparent chargeability from the I.P. survey shows some correlation between high chargeability and conductivity and, in some cases, conductivity that is magnetic.

Vertical gradient magnetic profiles are useful for determining relative depths and edges of magnetic bodies. A sharp positive vertical gradient will indicate that the magnetic body is near surface whereas a more broad gradient will reflect a greater depth of burial. A negative vertical gradient can help to determine the edge of a magnetic body or to indicate a separation between two magnetic bodies. A negative vertical gradient is caused by a greater depletion of magnetic flux lines closer to the ground. This results when a strong magnetic body "gathers" magnetic flux lines within itself, leaving the surrounding space depleted. When the body is near surface, or on surface, the depletion will be great near surface (causing a very low value of the magnetic total field) and the depletion will be less slightly farther from the surface (causing a value of the magnetic total field which is higher than that near surface). When the magnetometer records a reading the top sensor will record a higher total magnetic field than the lower sensor resulting in a negative vertical gradient. The present magnetic vertical gradient data were not rigorously interpreted due to the lack of geological and geochemical information required to perform a detailed study of the correlation between surface mineralization and magnetic bodies.

...5

Geophysical results have been divided into five "zones", shown on the interpretation map as "A" through "E", for discussion. Zone "A" was labelled for discussion only because I.P. survey was conducted over the area. It seems to be the least important, relative to the others, due to a lack of high apparent chargeability. This zone contains "high background" chargeability, a weak conductive trend and a relative large, discontinuous magnetic anomaly. The chargeability is believed to represent a background occurrence of sulphides. The conductor may be related to the "conductor swarm" mentioned earlier and is believed to be structural. The magnetic anomaly is probably caused by local occurrences of magnetite.

Zone "B" seems unique because much of it is comprised of high apparent chargeability associated with high apparent resistivity, is without conductivity and contains no significant magnetism. I.P. pseudosections show, however, that zone "B" has not been completely covered by the induced polarization survey. Line 7500 E was extended south beyond neighboring lines to 6000 N and shows a strong, wide apparent chargeability anomaly from 6300 N to 7300 N. This wide anomaly is believed to represent the missing southern portions of the apparent chargeability anomaly within zone "B". Closer examination of the wide anomaly reveals that only part of the chargeability anomaly (from 7000 N to 7300 N) is related to higher resistivity while the rest correlates with a resistivity low. This suggests that chargeable minerals such as sulphides may encompass a contact with a more resistive environment on one side and a less resistive environment on the other. The lack of conductivity in the more resistive portion may indicate that the sulphide particles are insulated by nonconductive minerals, possibly olivine. Although zone "B" seems to be a separate zone, comparison of line 7500 E pseudosection with that of line 5750 E, as well as the south extremities of the intermediate lines 6000 E to 7250 E, suggests that zone "B" may extend from line 8500 E all the way down to line 5750 E and, in fact, be part of zone "C".

According to apparent chargeability Fraser Filter contours, zone "C" exhibits the normal relationship between chargeability and resistivity, namely high apparent chargeability associated with low apparent resistivity. Examination of pseudosections reveals multiple chargeable anomalies correlating with higher and lower resistive environments forming a large anomalous zone which averages out on the Fraser Filter contours as a large highly chargeable zone. This large highly chargeable zone contains a number of the conductors from the "conductor swarm". Parts of some of the conductors seem to be associated with magnetic anomalies, possibly indicating spotty occurrences of magnetic pyrrhotite. Most of zone "C" seems to exclude the very high magnetic anomalies perhaps suggesting alteration of some of the magnetite to a nonmagnetic state. Conductors within the zone may relate to a massive sulphide core within a zone of disseminated sulphides or to structure which has provided a conduit for emplacement of mineralization. The very high apparent chargeability values observed, for example at about 6400 N on line 5250 E, indicate a high percentage of disseminated sulphides. The low apparent resistivity is believed to be due to the large amount of sulphides possibly coupled with a retrograde type of alteration such as chlorite alteration.

...6

Zone "D" is comprised of VLF EM conductors from the "conductor swarm". These conductors are believed to be similar to those within zone "C" and it is expected that if I.P. survey was to be performed in this region, apparent chargeability anomalies similar to those in zone "C" would be found. Some of the VLF EM conductors seem to correlate with magnetism and therefore magnetic pyrrhotite may contribute to conductivity. Three I.P. lines (500 E, 750 E, and 1000 E) were surveyed to the west of zone "D" and produced strong apparent chargeability anomalies on all three lines. These anomalies, as well as VLF EM conductors (again part of the "conductor swarm") have been grouped to form zone "E". Here again it appears that portions of the conductors may be magnetic and may be caused, at least partly, by magnetic pyrrhotite.

The conductors referred to as a "conductor swarm" are believed to represent conductive portions of an east-west structural zone. This structural zone may then have provided access for intruding mineralizing fluids which have deposited disseminated sulphides detected by the present induced polarization survey.

When viewing all I.P. pseudosections together and when considering the possible genetic relationship between the conductor swarm, interpreted as a structural feature, and dissemniated sulphide mineralization, it seems reasonable to speculate that zones "B" through "E" may be parts of one large mineralized body.

Total field and vertical gradient magnetic profiles were used to see how magnetism correlated with occurrences of disseminated sulphides interpreted from induced polarization data. In many cases near surface magnetism, probably due to magnetite, seems to occur contiguous to strongly anomalous apparent chargeability values. In some cases the high chargeability appears to be bounded by magnetism. This, then, may suggest some genetic relationship between sulphides and magnetite. More detailed geological information would be required to speculate further on the type of relationship between magnetite and sulphide mineralization.

4. RECOMMENDATIONS

Induced polarization pseudosections show a number of strong near surface apparent chargeability anomalies which should be investigated on the ground. Inexpensive surface investigations using a back hoe or blasting is recommended on the following near surface anomalies in order to confirm the presence of sulphides and to test for the presence of economic minerals:

- line 5250 E - station 6350 N
- line 5250 E - station 6650 N
- line 4500 E - station 7050 N
- line 5750 E - station 6650 N
- line 6000 E - station 7750 N
- line 5500 E - station 7200 N

...7

I.P. anomalies which are deeper, of the order of 100 to 150 feet, should be tested by drilling. They are as follows:

line 5500 E - station 6750 N
line 5250 E - station 7050 N
line 5500 E - station 7100 N
line 7500 E - station 6450 N
line 5750 E - station 6800 N

Targets worthy of investigation from a geophysical standpoint which are interpreted to be between about 150 feet and 300 feet are as follows:

line 5000 E - station 7100 N
line 6250 E - station 8450 N
line 7500 E - station 6650 N
line 7500 E - station 7100 N
line 8250 E - station 7600 N
line 4500 E - station 7400 N

If subsurface investigations of targets listed above provide indications of economic mineralization then additional induced polarization is recommended to more completely define the sulphide mineralization which is believed to continue from zone "B" through zone "E".

Interpretex Resources Ltd.
Vancouver, B.C.
Dec. 13, 1988

Respectfully Submitted

INTERPRETEX RESOURCES LTD.

Vancouver, British Columbia

PERMIT TO PRACTICE
INTERPRETEX RESOURCES LTD.
Signature
Date Oct. 12, 1989
PERMIT NUMBER: P 3100
The Association of Professional Engineers,
Geologists and Geophysicists of Alberta

E.R. ROCKEL

Consulting Geophysicist

CERTIFICATE

I, EDWIN ROSS ROCKEL, Geophysicist of Vancouver, British Columbia, Canada, hereby certify that:

1. I received a B.Sc. degree in Geophysics from the University of British Columbia in 1966.

2. I am a Consulting Geophysicist and owner of Interpretex Resources Ltd. of Box 48239, Bentall P.O., in the City of Vancouver, in the Province of British Columbia.

3. I currently reside at 6571 Cooney Rd., in the Municipality of Richmond, in the Province of British Columbia.

4. I have been practising my profession since graduation.

5. I am a Professional Geophysicist registered in the Province of Alberta.

6. I am a Professional Engineer registered in the Province of Saskatchewan.

7. I am a Certified Professional Geological Scientist registered in the United States of America.

8. Geophysical work described in this report, and the interpretation of data therefrom were performed by employees of Interpretex Resources Ltd., under my direct supervision.

9. This report may be used for the development of the property, provided that no portion will be used out of context in such a manner as to convey meanings different from that set out in the whole.

10. Consent is hereby given to the company for which this report was prepared to reproduce the report or any part of it for the purposes of development of the property, or facts relating to the raising of funds by way of a prospectus and/or statement of material facts.

Date: Oct. 12, 1989

Signed:

Vancouver,
British Columbia

Edwin Ross Rockel
B.Sc., P.Geoph., P.Eng.

APPENDIX GP1

Equipment Specifications

OMNIPLUS VLF/Magnetometer System

EDA

Specifications*

Frequency Tuning Range	15 to 30 kHz, with bandwidth of 150 Hz; tuning range accommodates new Puerto Rico station at 28.5 kHz
Transmitting Stations Measured	Up to 3 stations can be automatically measured at any given grid location within frequency tuning range
Recorded VLF Magnetic Parameters	Total field strength, total dip, vertical quadrature (or alternately, horizontal amplitude)
Standard Memory Capacity	800 combined VLF magnetic and VLF electric measurements as well as gradiometer and magnetometer readings
Display	Custom designed, ruggedized liquid crystal display with built-in heater and an operating temperature range from −40°C to +55°C. The display contains six numeric digits, decimal point, battery status monitor, signal strength status monitor and function descriptors.
RS232C Serial I/O Interface	2400 baud rate, 8 data bits, 2 stop bits, no parity
Test Mode	A. Diagnostic Testing (data and programmable memory) B. Self Test (hardware)
Sensor Head	Contains 3 orthogonally mounted coils with automatic tilt compensation
Operating Environmental Range	−40°C to +55°C; 0 – 100% relative humidity; Weatherproof
Power Supply	Non-magnetic rechargeable sealed lead-acid 18V DC battery cartridge or belt; 18V DC disposable battery belt; 12V DC external power source for base station operation only.
Weights and Dimensions	
Instrument Console	2.8 kg, 128 x 150 x 250 mm
Sensor Head	2.1 kg, 130 dia. x 130 mm
VLF Electronics Module	1.1 kg, 40 x 150 x 250 mm
Lead Acid Battery Cartridge	1.8 kg, 235 x 105 x 90 mm
Lead Acid Battery Belt	1.8 kg, 540 x 100 x 40 mm
Disposable Battery Belt	1.2 kg, 540 x 100 x 40 mm

*Preliminary

EDA Instruments Inc.,
4 Thorncliffe Park Drive,
Toronto, Ontario
Canada M4H 1H1
Telex: 06 23222 EDA TOR,
Cables: Instruments Toronto
(416) 425-7800

In USA,
EDA Instruments Inc.,
5151 Ward Road,
Wheat Ridge, Colorado
U.S.A. 80033
(303) 422-9112

Printed in Canada

OMNI IV "Tie-Line" Magnetometer

EDA

Specifications

Dynamic Range	18,000 to 110,000 gammas. Roll-over display feature suppresses first significant digit upon exceeding 100,000 gammas.
Tuning Method	Tuning value is calculated accurately utilizing a specially developed tuning algorithm
Automatic Fine Tuning	± 15% relative to ambient field strength of last stored value
Display Resolution	0.1 gamma
Processing Sensitivity	± 0.02 gamma
Statistical Error Resolution	0.01 gamma
Absolute Accuracy	± 1 gamma at 50,000 gammas at 23°C ± 2 gamma over total temperature range
Standard Memory Capacity	
Total Field or Gradient	1,200 data blocks or sets of readings
Tie-Line Points	100 data blocks or sets of readings
Base Station	5,000 data blocks or sets of readings
Display	Custom-designed, ruggedized liquid crystal display with an operating temperature range from −40°C to +55°C. The display contains six numeric digits, decimal point, battery status monitor, signal decay rate and signal amplitude monitor and function descriptors.
RS 232 Serial I/O Interface	2400 baud, 8 data bits, 2 stop bits, no parity
Gradient Tolerance	6,000 gammas per meter (field proven)
Test Mode	A. Diagnostic testing (data and programmable memory) B. Self Test (hardware)
Sensor	Optimized miniature design. Magnetic cleanliness is consistent with the specified absolute accuracy.
Gradient Sensors	0.5 meter sensor separation (standard), normalized to gammas/meter. Optional 1.0 meter sensor separation available. Horizontal sensors optional.
Sensor Cable	Remains flexible in temperature range specified, includes strain-relief connector
Cycling Time (Base Station Mode)	Programmable from 5 seconds up to 60 minutes in 1 second increments
Operating Environmental Range	−40°C to +55°C; 0–100% relative humidity; weatherproof
Power Supply	Non-magnetic rechargeable sealed lead-acid battery cartridge or belt; rechargeable NiCad or Disposable battery cartridge or belt; or 12V DC power source option for base station operation.
Battery Cartridge/Belt Life	2,000 to 5,000 readings, for sealed lead acid power supply, depending upon ambient temperature and rate of readings
Weights and Dimensions	
Instrument Console Only	2.8 kg, 238 x 150 x 250mm
NiCad or Alkaline Battery Cartridge	1.2 kg, 235 x 105 x 90mm
NiCad or Alkaline Battery Belt	1.2 kg, 540 x 100 x 40mm
Lead-Acid Battery Cartridge	1.8 kg, 235 x 105 x 90mm
Lead-Acid Battery Belt	1.8 kg, 540 x 100 x 40mm
Sensor	1.2 kg, 56mm diameter x 200mm
Gradient Sensor (0.5 m separation-standard)	2.1 kg, 56mm diameter x 790mm
Gradient Sensor (1.0 m separation-optional)	2.2 kg, 56mm diameter x 1300mm
Standard System Complement	Instrument console; sensor; 3-meter cable, aluminum sectional sensor staff, power supply, harness assembly, operations manual.
Base Station Option	Standard system plus 30 meter cable
Gradiometer Option	Standard system plus 0.5 meter sensor

E D A Instruments Inc.
4 Thorncliffe Park Drive
Toronto, Ontario
Canada M4H 1H1
Telex 06 23222 EDA TOR
Cable: Instruments Toronto
(416) 425 7800

In U.S.A.
E D A Instruments Inc.
5151 Ward Road
Wheat Ridge, Colorado
U.S.A. 80033
(303) 422 9112

Printed in Canada

M-4 SERIES

M-4 Induced Polarization Receiver

DESCRIPTION

The Huntec M-4 is a microprocessor based receiver for time and frequency domain IP and complex resistivity measurement. It is:

Easy to operate. One switch starts a measurement, of up to 33 quantities simultaneously. The optional Cassette DataLogger records them all in seconds. Calibration, gain setting and SP buckout are all automatic.

Reliable. Using advanced digital signal processing techniques, the M-4 delivers consistently accurate data even in noisy, highly conductive areas. For mechanical reliability it is packaged in a rugged aluminum case for backpack or hand carrying.

Versatile. The operator may adjust delay and integration times, operating frequency and other measurement parameters to adapt to a wide range of survey conditions and requirements. An independent reference channel facilitates drillhole and underground work, and guarantees transmitter-receiver synchronization in high-noise conditions.

Highly accurate. With a frequency bandwidth of 100 Hz and noise-cancelling digital signal stacking, the M-4 delivers very precise results. The details are summarized in a table overleaf.

Sensitive. The same features that make the M-4 accurate allow detection of very weak signals. The Huntec receiver requires lower transmitter power than any other, for a given set of operating conditions. Automatic correction for drifts in self-potential and gain allow long stacking times for significant signal-to-noise improvements.

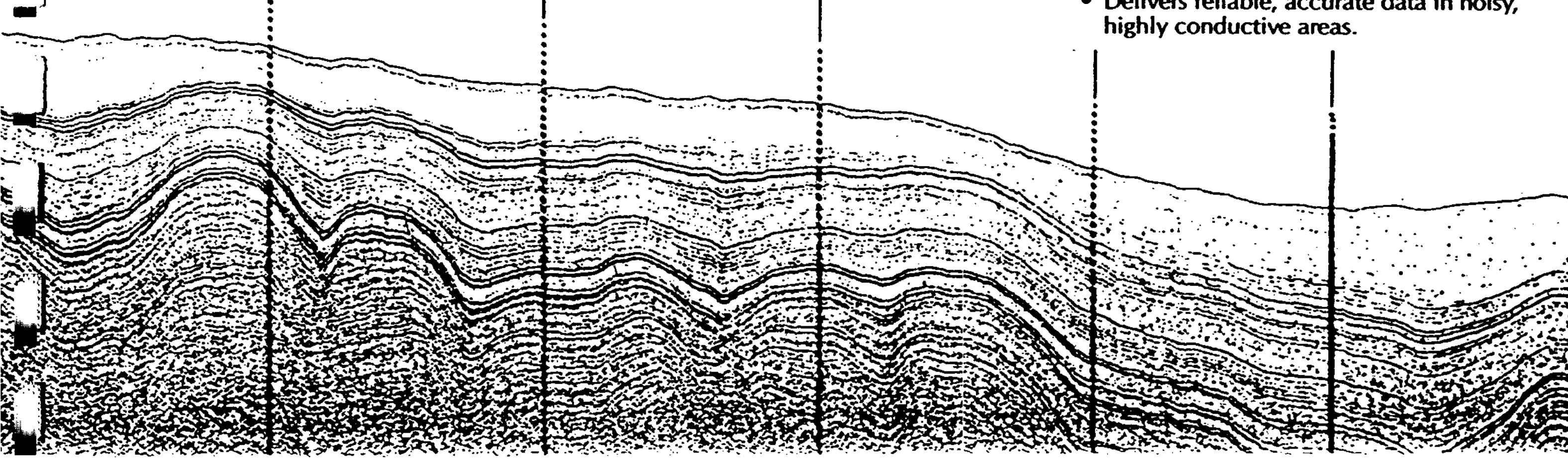
Intelligent. Under the control of a powerful 16-bit microprocessor, the M-4 calibrates and tests itself between measurements. Coded error messages, flashed onto the display, inform the operator of any malfunction.

The M-4 Receiver is complemented by Huntec's new M-4 transmitters, which offer precisely timed constant-current output and both time and frequency domain waveforms, compatible with the receiver's accuracy and multi-mode measurement capabilities. The RL-2 Reference Isolator connects any IP transmitter to the receiver's reference channel.

Contact Huntec for more information on the benefits offered by the M-4 product line.

FEATURES

- Time and Frequency domain IP and Complex Resistivity operation.
- Simultaneous Time domain and Complex Resistivity measurement.
- Automatic calibration
  gain setting
  SP cancellation
  fault diagnosis
  filter tuning.
- Independent reference channel for drillhole and underground work.
- 42 quantities, displayable on large 3½ digit low-temperature liquid-crystal readout.
- Analogue meter for source resistance measurement.
- 10^9 ohms differential input resistance
- 8 hours continuous operation with replaceable, rechargeable nickel-cadmium battery pack (2 supplied).
- Optional Cassette DataLogger fits inside case, has read-after-write error checking. Up to 350 stations per tape.
- Conveniently packaged for backpacking or hand carrying.
- 100 Hz bandwidth, fine time-resolution.
- Advanced digital signal stacking.
- Delivers reliable, accurate data in noisy, highly conductive areas.



SPECIFICATIONS

INPUTS

Signal Channel

Range: 5×10^{-5} to 10 volts. Automatic ranging. Overload indication

Resistance: Greater than 10^9 ohms differential

Bandwidth: 100 Hz

SP Cancellation: −5 to +5 volts (automatic)

Protection: Low-leakage diode clamps, gas discharge surge arrestors, replaceable fuses.

Reference Channel

Level: 500 mV minimum, 10 volts peak maximum, overload indication

Resistance: 2×10^5 ohms differential

CONTROLS AND FUNCTIONS

Operating Controls

Keypad: 16 keys, calculator format, function associated with each key.

Reference Registers: Keypad may be used to store up to ten 3½ digit numeric values with floating decimal point to represent station number, line number, operator, time, date, weather, transmitter current, etc. for recording on cassette.

Programming Controls

Sub-panel: All programming controls are on a covered sub-panel.

Thumbwheel Switches: Select delay time t_D in milliseconds chargeability window t_p in milliseconds; operating frequency; PFE frequency ratio.

Displayable Quantities

Time domain: Primary voltage; self-potential; chargeability (total or each of 10 windows of equal width); phases of odd harmonics 3 to 15; amplitudes of odd harmonics 1 to 15; cycle count; repeating display of polarization potential and total chargeability.

Freq. domain: Primary amplitude; Percent Frequency Effect; self-potential; cycle count.

Complex Resistivity: Phases of odd harmonics 3 to 15; amplitudes of odd harmonics 1 to 15; fundamental phase (with ref. input); cycle count.

Any mode: Battery voltage, Frequency error.

OUTPUTS

Displays

Digital Display: 3½ digit, low-temperature liquid crystal display. Indicates measurement results and diagnostic error messages.

Analogue Meter: Ohms scale for source resistance; also gives qualitative indication of signal-to-noise ratio.

CASSETTE DATALOGGER (OPTIONAL)

Description: Accommodated within M-4 chassis. If not acquired with receiver, may be retrofitted by user at any time. Two recording modes:

Partial: All sub-panel settings, measurement results, and contents of reference registers are recorded (2 seconds recording time).

Full: As in partial mode, but also recorded is one cycle of averaged signal waveform (28 seconds recording time). If external reference is used, one cycle of reference waveform is also recorded (60 seconds recording time). Extra memory and soft-ware available to average and store the reference waveform for advanced offline resistivity computation.

Format: ANSI/ECMA/ISO standard for saturation recording: 80 bytes/record, all data recorded in ASCII code.

Verification: Read-after-write data verification (automatic).

MECHANICAL

M-4 Receiver with battery pack: 45 cm x 33 cm x 14 cm, 10.0 kg.

M-4 Receiver with battery pack and Cassette DataLogger: Dimensions as above, 11.0 kg.

Replaceable Battery pack: 33 cm x 11 cm x 4.5 cm, 3 kg.

ENVIRONMENTAL

Temperature: Operation: −20°C to +55°C.
Storage: −40°C to +70°c.

Humidity: Moisture-proof, operable in light drizzle.

Altitude: −1,525 m to +4,775 m.

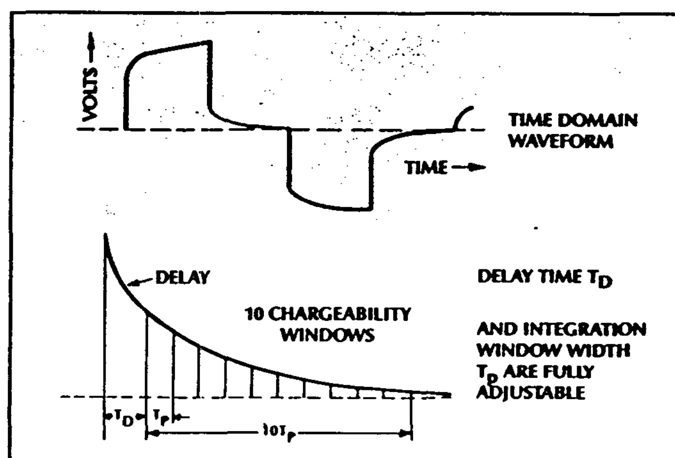
Shock, Vibration: Suitable for transport in bush vehicles.

OUTPUT ACCURACY AND SENSITIVITY

	PHASES	AMPLI-TUDES	Vp	SP	CHARGE-ABILITY	PFE
UNITS	millradians	volts	volts	volts	seconds	%
ACCURACY	2milli-radians(1)	1% to 40Hz 2% to 80Hz	±1%	±1%	0.1%(2)	0.1%(3) full scale
SENSITIVITY	0.01 milliradians	10^{-6} volts	10^{-3} volts	10^{-3} volts	10^{-6} seconds	0.001% full scale

(1) Frequency domain mode: at harmonic frequencies up to 15 Hz, increases to not more than 5 milliradians at 80 Hz.
Time domain mode: at harmonic frequencies up to 7.5 Hz, increases to not more than 5 milliradians at 30 Hz.
(2) of total OFF time
(3) Full scale defined as 100% PFE.
Cassette Data: recorded in ASCII, 9 digits with decimal point fixed for four decimal digits.
Display Data: 3½ digits, floating decimal point.
Resolution of averaged waveform limited by A/D converter to one part in 4096 x (square root of cycle count).
Resolution of reference waveform (not averaged) limited by available memory to one part in 256. Additional memory and averaging software available as option.

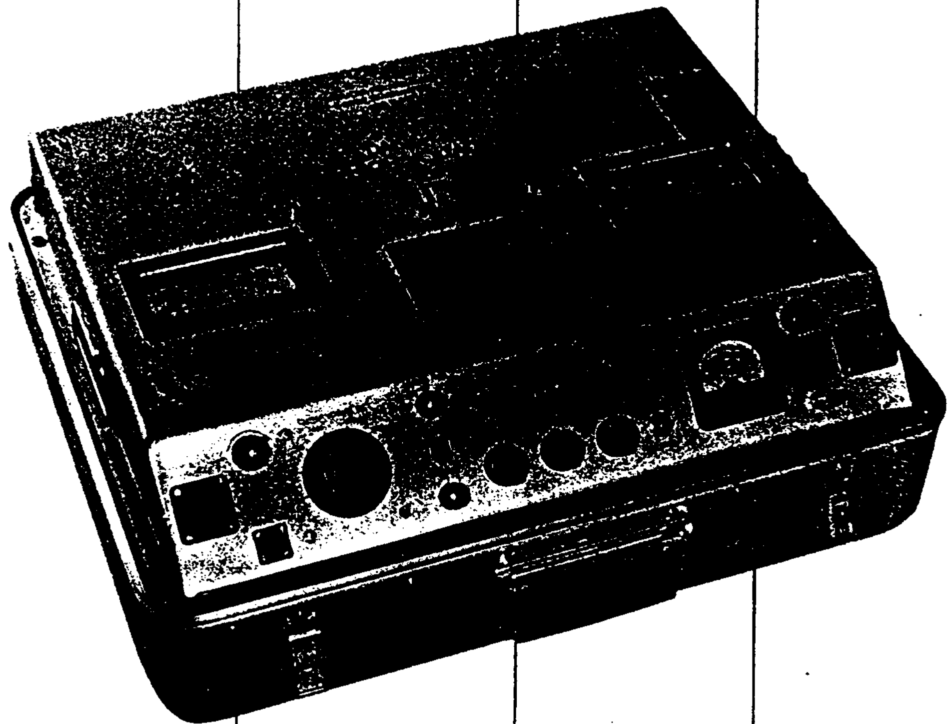
CHARGEABILITY WINDOWS



HUNTEC
1750 Brimley Road, Scarborough
Ontario, Canada M1P 4X7
Phone: (416) 299-4100 Telex: 06-963640

M-4 SERIES

Induced Polarization/ Resistivity 2.5 kW Transmitter

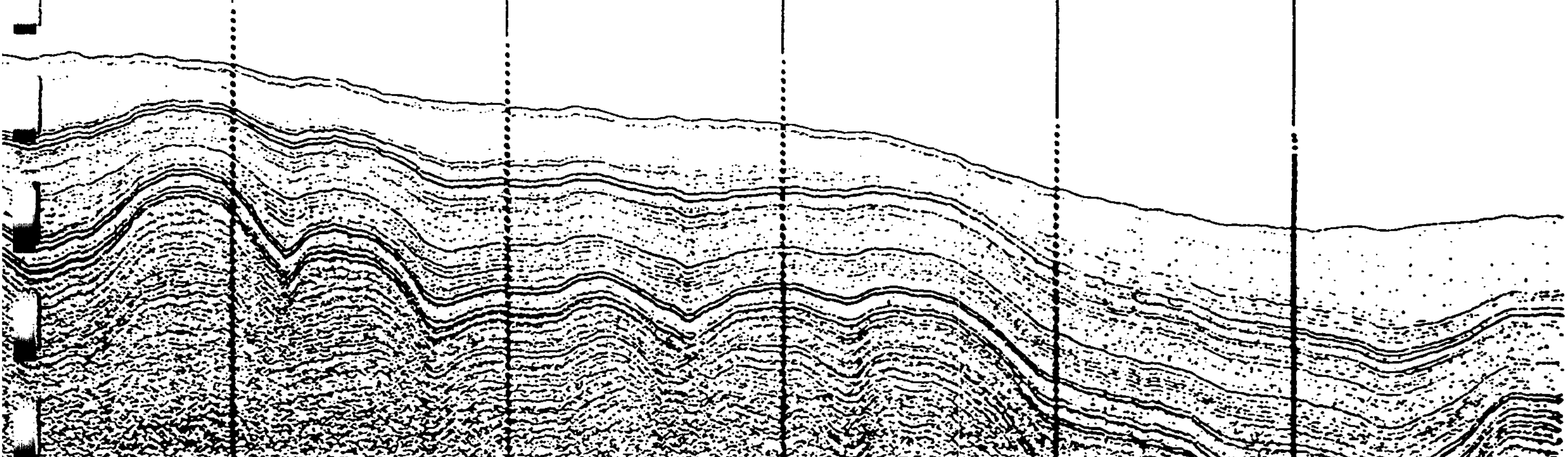


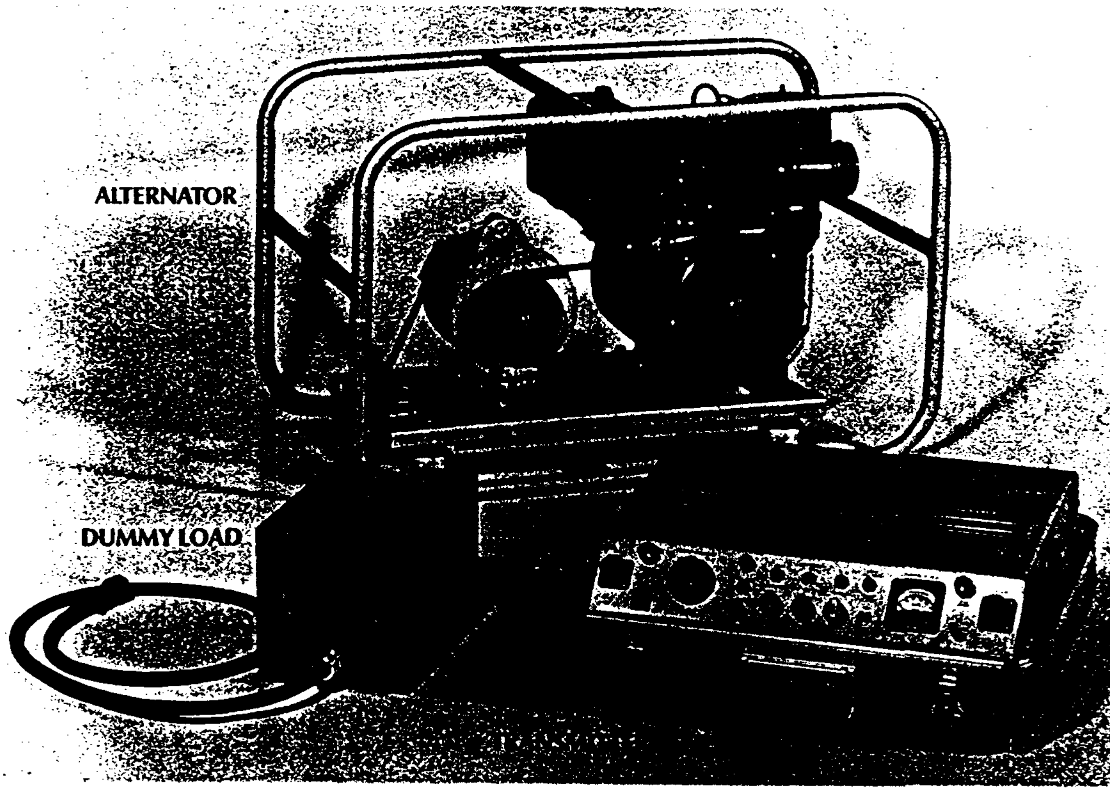
DESCRIPTION

The HUNTEC M-4 2.5 kW Induced Polarization transmitter is designed for time domain, frequency domain (PFE) and complex resistivity applications. The unit converts primary 400 Hz ac power from an engine-alternator set to a regulated dc output current, set by the operator. Current regulation eliminates output waveform distortion due to electrode polarization effects. It is achieved in the transmitter by varying the alternator field currents. The transmitter is equipped with dummy loads to smooth out generator load variations.

FEATURES

- Solid-state switching for long life and precise timing.
- Open circuit during the "off" time ensures no counter current flow.
- Resistance measurement for load matching.
- Precision crystal controlled timing.
- Failsafe operation protects against short-circuit and overvoltage.
- Automatic regulation of output current eliminates errors due to changing polarization potential and load resistance.





SPECIFICATIONS

M-4 2.5 kW Transmitter

Power input:	96 — 144 V line to line 3 phase, 400 Hz (from Huntec generator set)
Output:	Voltage: 150 — 2200 V dc in 8 steps Current: 0.2 — 7 A regulated**
Current regulation:	Less than ±0.1% change for ±10% load change
Output frequency:	0.0625 Hz to 1 Hz (time domain, complex resistivity) 0.0625 Hz to 4 Hz (frequency domain) selectable from front panel An additional range of frequencies between 0.78 and 5.0 Hz is available and can be selected by an internal switch.
Frequency accuracy:	±50 ppm −30°C to +60°C
Output duty cycle: $T_{on}/(T_{on} + T_{off})$	0.5 to 0.9375 in increments of 0.0625 (time domain) 0.9375 (complex resistivity) 0.75 (frequency domain)
Output current meter:	Two ranges: 0-5 A and 0-10 A
Ground resistance meter:	Two ranges: 0-10 kΩ, 0-100 kΩ
Input voltage meter:	0-150 V
Dummy load:	Two levels: 500 kW and 1.75 kW
Temperature range:	−34°C to +50°C
Size:	53 cm x 43 cm x 29 cm
Weight:	26 kg

***Smaller currents are obtainable, but outside the current regulation range the transmitter voltage is regulated, not the current.*

SPECIFICATIONS

M-4 2.5 kW Engine Driven Alternator

Output:	120 V ac 400 Hz 3.5 kVA maximum
Engine:	Briggs & Stratton 6 kW air cooled, single cylinder four cycle piston engine with manual start
Fuel:	Regular grade gasoline, tank capacity 3.8 L to give 4 h duration
Alternator:	Delta connected heavy duty automobile type, belt driven, air cooled
Construction:	Tubular protective carrying frame with resiliently mounted engine and alternator
Size:	51 cm x 48 x 76 cm
Weight (dry):	61 kg

HUNTEC GEOPHYSICS
1750 Brimley Road, Scarborough
Ontario, Canada M1P 4X7
Phone: (416) 299-4100
Telex: 06-963640

P.O. Box 851, Dartmouth
Nova Scotia, Canada B2Y 3Z5
Phone: (902) 463-2380
Telex: 019-31446
LOCATED AT: ARGO BUILDING,
BEDFORD INSTITUTE OF OCEANOGRAPHY

[redacted]

APPENDIX 3

STATEMENT OF EXPENDITURES

DATE	SOURCE	RATE/DAY $C	#DAYS	MAG/VLF SURVEY	MAG/VLF STANDBY	MAG/VLF PROCESSING INTERP	IP SURVEY	IP STANDBY	IP PROCESSING INTERP	MOB	TOTAL
1-14AUG88	VLF/MAG	685	10	6850							
	STANDBY	495	2		990						
	MOB	FLAT	2							1500	
15-31AUG88	VLF/MAG	685	13	8905							
	STANDBY	495	3		1485						
	N.P.	N.C.	1								
22-25AUG88	PROCESSING INTERP	325	2.5			812.50					
	REPLOTTING	N.C.	1.5								
1-15SEPT88	VLF/MAG	685	8	5480							
	STANDBY	495	4		1980						
	N.P.	N.C.	3								
	IP	1690	1				1690				
	MOB	FLAT								1250	
12,13SEPT88	PROCESSING INTERP	325	2			650					
16-31SEPT88	IP	1690	10				16900				
	STANDBY	800	4					3200			
	N.P.	N.C.	1								
	VLF/MAG	685	3	2055							
	STANDBY	495	1		495						
	N.P.	N.C.	11								
3,4,11,15OCT88	PROCESSING INTERP	325	2.5						812.50		
1-15OCT88	IP	1690	12				20280				
	STANDBY	800	3					2400			
16-23OCT88	IP	1690	5				8450				
	STANDBY	800	3					2400			
16,17OCT88	PROCESSING	325	2						650		
	INTERP	325									
7,8,9,14,15NOV88	PROCESSING	325	2.25			731.25					
	INTERP	325	2.25						731.25		
16,18,25,26,27NOV88	PROCESSING	325	2.25			731.25					
	INTERP	325	2.25						731.25		
4-9,13,15DEC88	PROCESSING	325	3.25			1056.25					
	INTERP	325	3.25						1056.25		
				23290	4950	3981.25	47320	8000	3981.25	2750	94272.50

* N.P.= no production
* N.C.= no charge

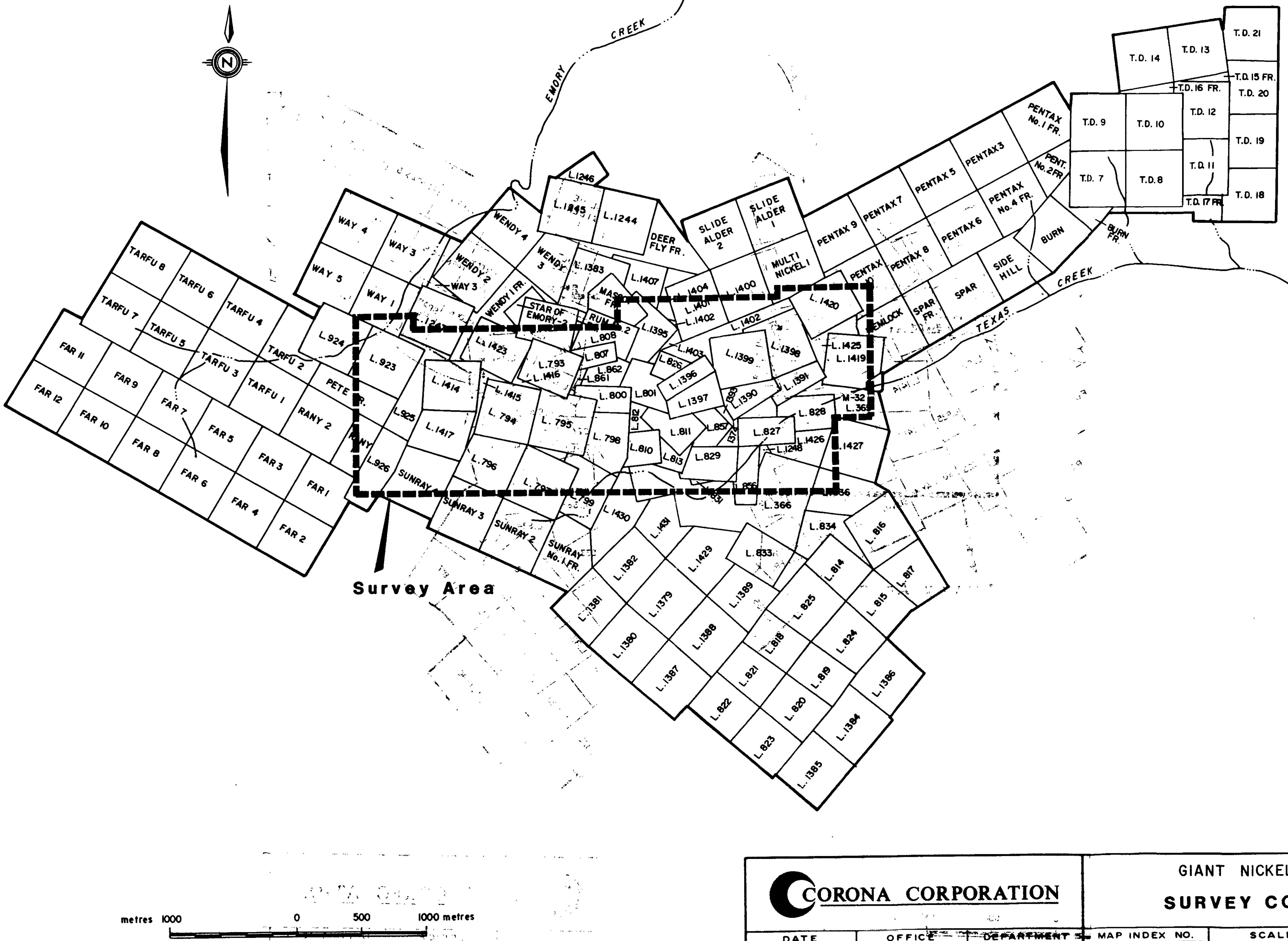
PERSONNEL

The following personnel worked on the property and/or were engaged in supervision for all or part of the days noted (includes mobilization and demobilization):

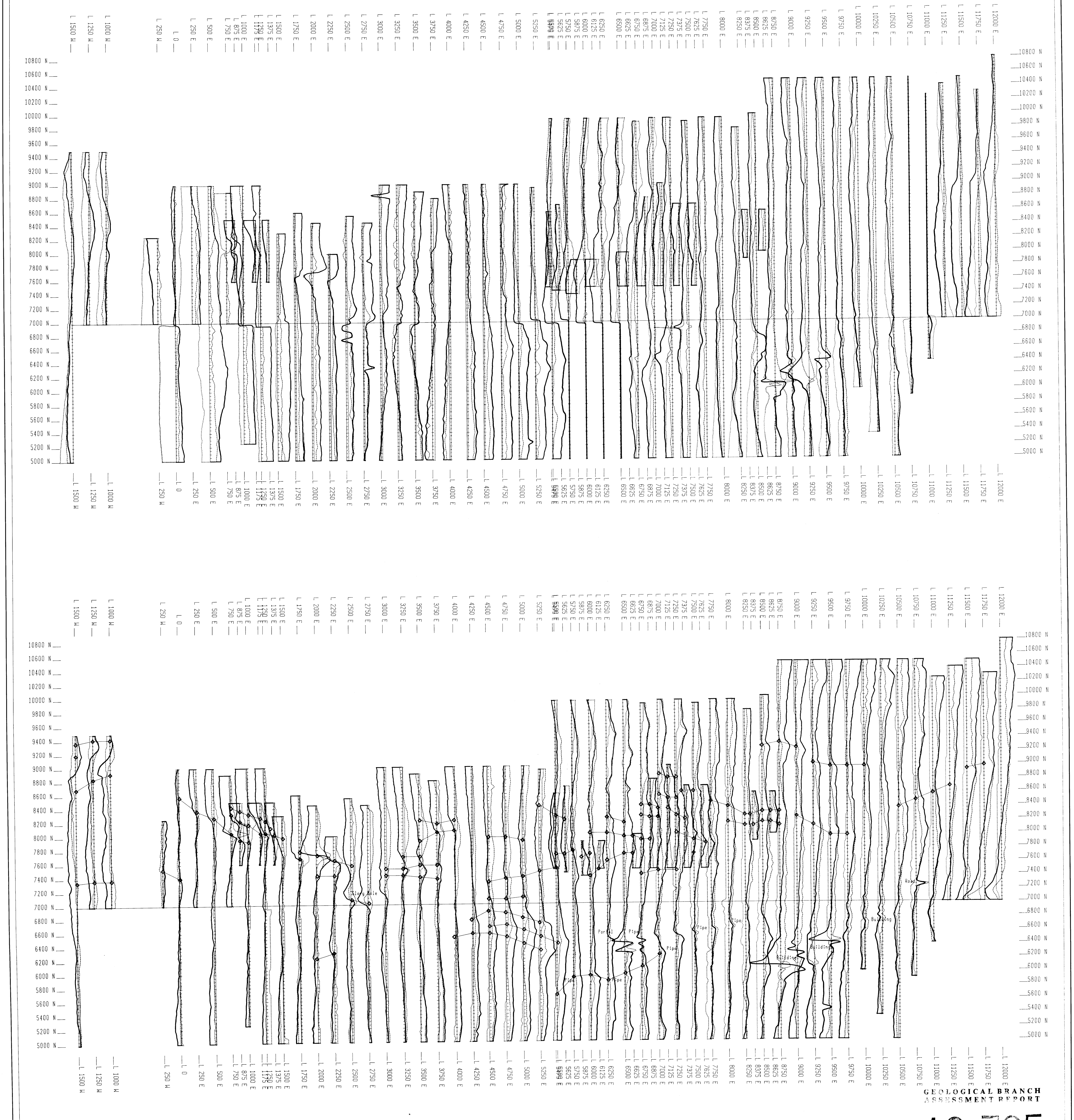
Name	Position	Dates
J.A. Martin Vancouver, B.C.	Geophysical Technician	Aug. 1 - 20, 22 - 31 Sept. 1 - 3, 7 - 15, 17 - 22 & 24, 1988
L.M. Bzdel Saskatoon, Sask.	Geophysicist	Sept. 14 - 16, 18 - 30, Oct. 1 - 23, 1988
J. McIntosh Naramata, B.C.	Geophysical Assistant	Sept. 21 - 30 Oct. 1 - 23, 1988
T.A. Iannone Naramata, B.C.	Geophysical Assistant	Sept. 14 - 16, 18 - 30, Oct. 1 - 23, 1988
D. Segal Kamloops, B.C.	Geophysical Assistant	Sept. 14 - 16, 18 - 30, Oct. 1 - 23, 1988
B. McPhee Penticton, B.C.	Geophysical Assistant	Sept. 14 - 16, 1988
M. Gawne Penticton, B.C.	Geophysical Assistant	Sept. 14 - 16, 1988
L. Reed Naramata, B.C.	Geophysical Assistant	Sept. 18 - 30, Oct. 1 - 23, 1988

The following personnel were involved in data preparation or reporting of the project for part or all of the days noted:

Name	Position	Dates
E.R. Rockel Richmond, B.C.	Consulting Geophysicist	Nov. 16, 18, 25 - 27, Dec. 4 - 9, 13 - 15, 1988.



CORONA CORPORATION			GIANT NICKEL PROJECT SURVEY COVERAGE		
DATE	OFFICE	DEPARTMENT	MAP INDEX NO.	SCALE	DRAWING NO.
OCT. / 1987				1: 30,000	FIG. 5



GEOLOGICAL BRANCH
ASSESSMENT REPORT

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LEGEND

Anomalous Inflection (In-Phase)

In-Phase
Quadrature } 1 in. = 100 % (125 % for Seattle)

Field Strength 1 in. = 25 units (500 units for Seattle)

VLF-EM Conductor

SCALE 1 inch = 500 feet

500 0 500 1000 1500

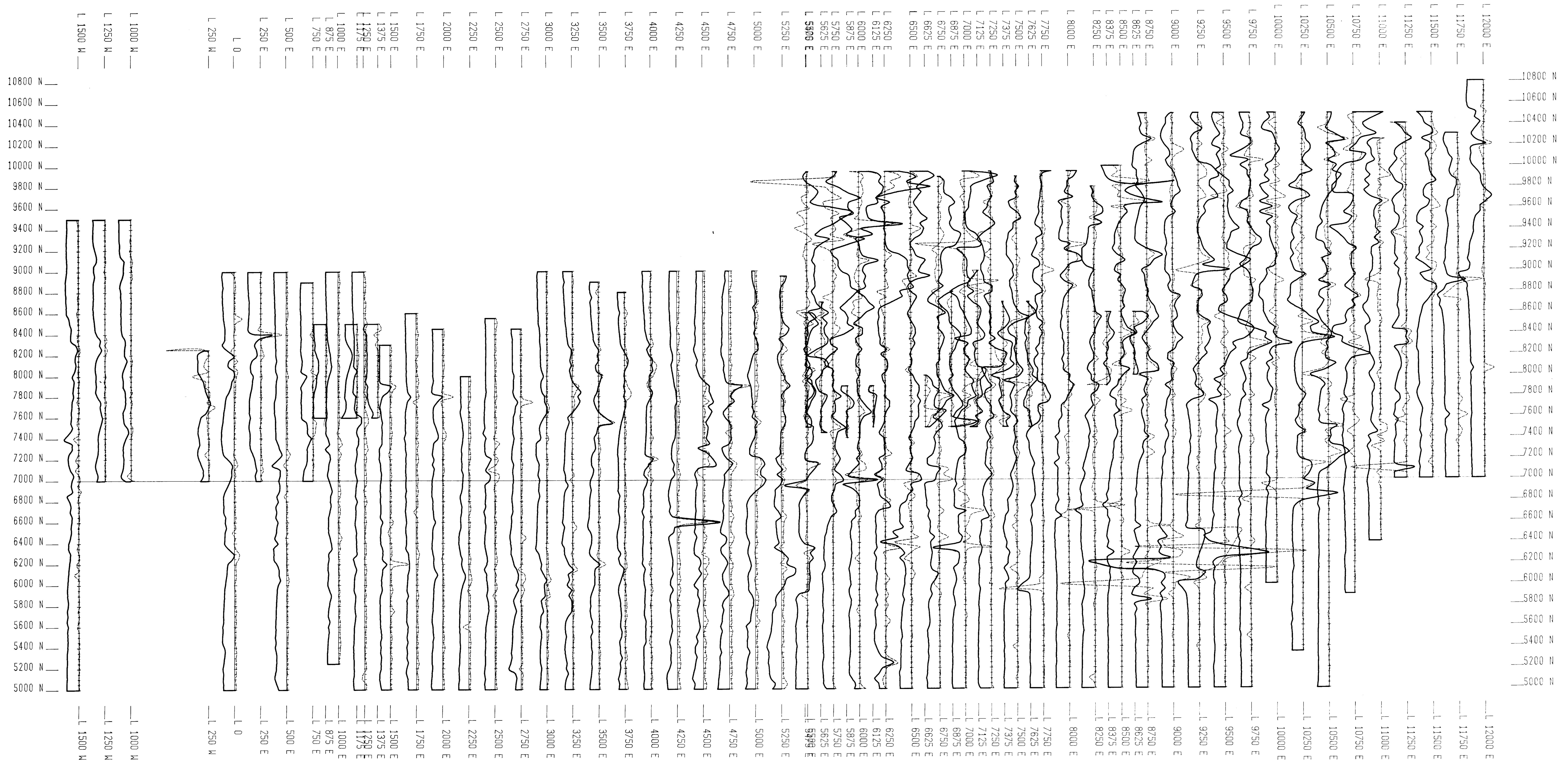
CORONA CORPORATION

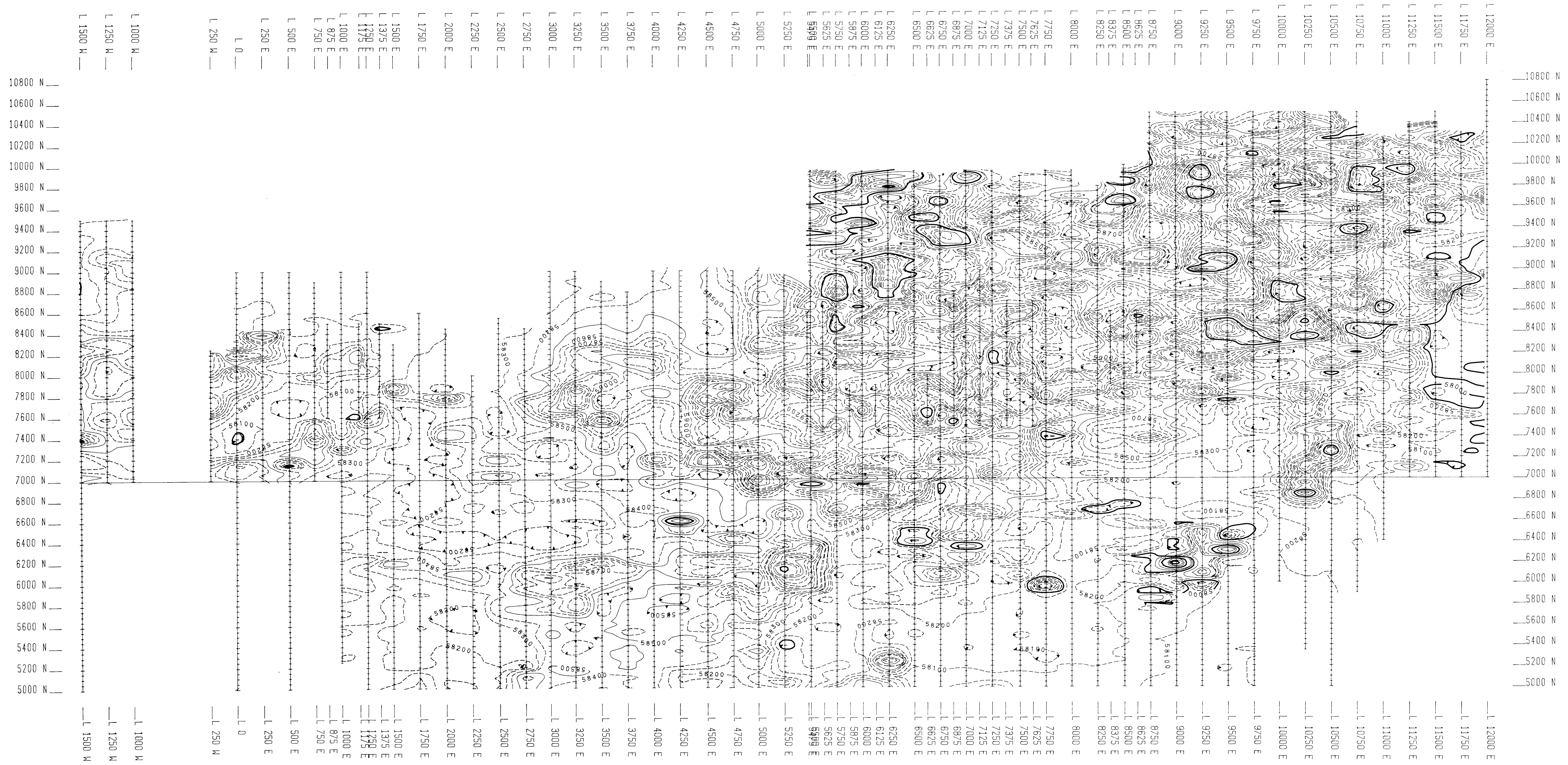
VLF-EM Profiles

Seattle (upper), Annapolis (lower)
GIANT NICKEL PROJECT
Hope Area
New Westminster Mining Division, B.C.
NTS 92 H/6

Interpretex Resources Ltd.
Report by E.R. Rockel
Project # Corona 6828
December 1988

Figure # GP - 1 File Name GNVLFP.PLT





GEOLOGICAL BRANCH
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CORONA CORPORATION

Total Field Magnetic Contours & Profiles

Profiles (upper), Contours (lover)
GIANT NICKEL PROJECT
Hope Area
New Westminster Mining Division, B.C.
NTS 92 H/6

Interpretex Resources Ltd.
Report by E.R. Rockel
Project # Corona 6828
December 1988

Figure # GP - 2 File Name GNMAGP.PLT

LEGEND

Contour Interval

- - - - - - - - 100 Gammas

__________ 500 Gammas

__________ 2000 Gammas

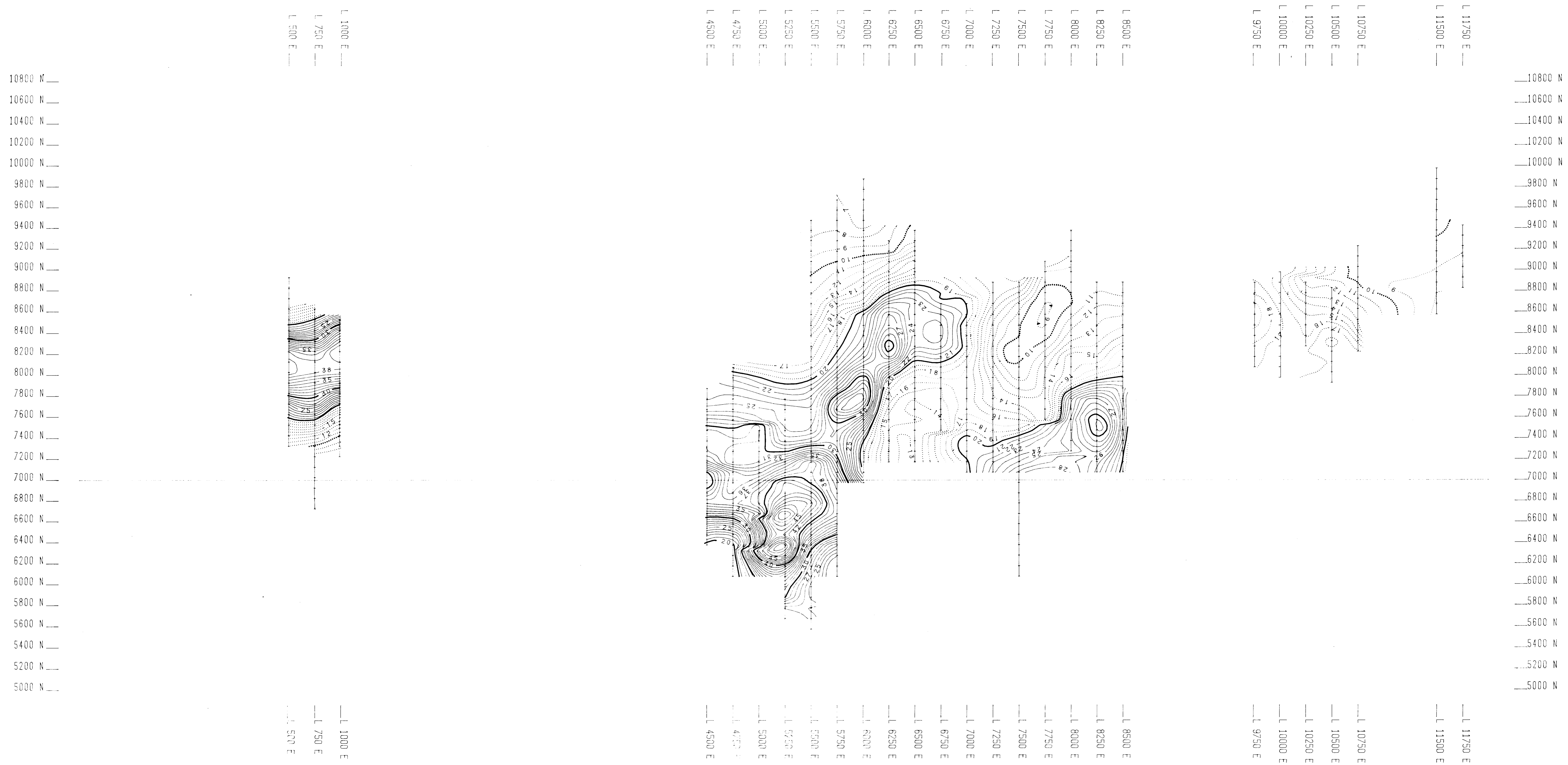
Profile Legend

______ Total Magnetic Field Strength 1 in. = 4000 Gammas

- - - - Vertical Gradient 1 in. = 1000 Gammas

SCALE 1 inch = 500 feet

500 0 500 1000 1500



SCALE 1 inch = 500 feet

500 0 500 1000 1500

LEGEND

Contour Interval

1 - 20 Msec	> 20 Msec	
		1 Msec
		5 Msec
		10 Msec

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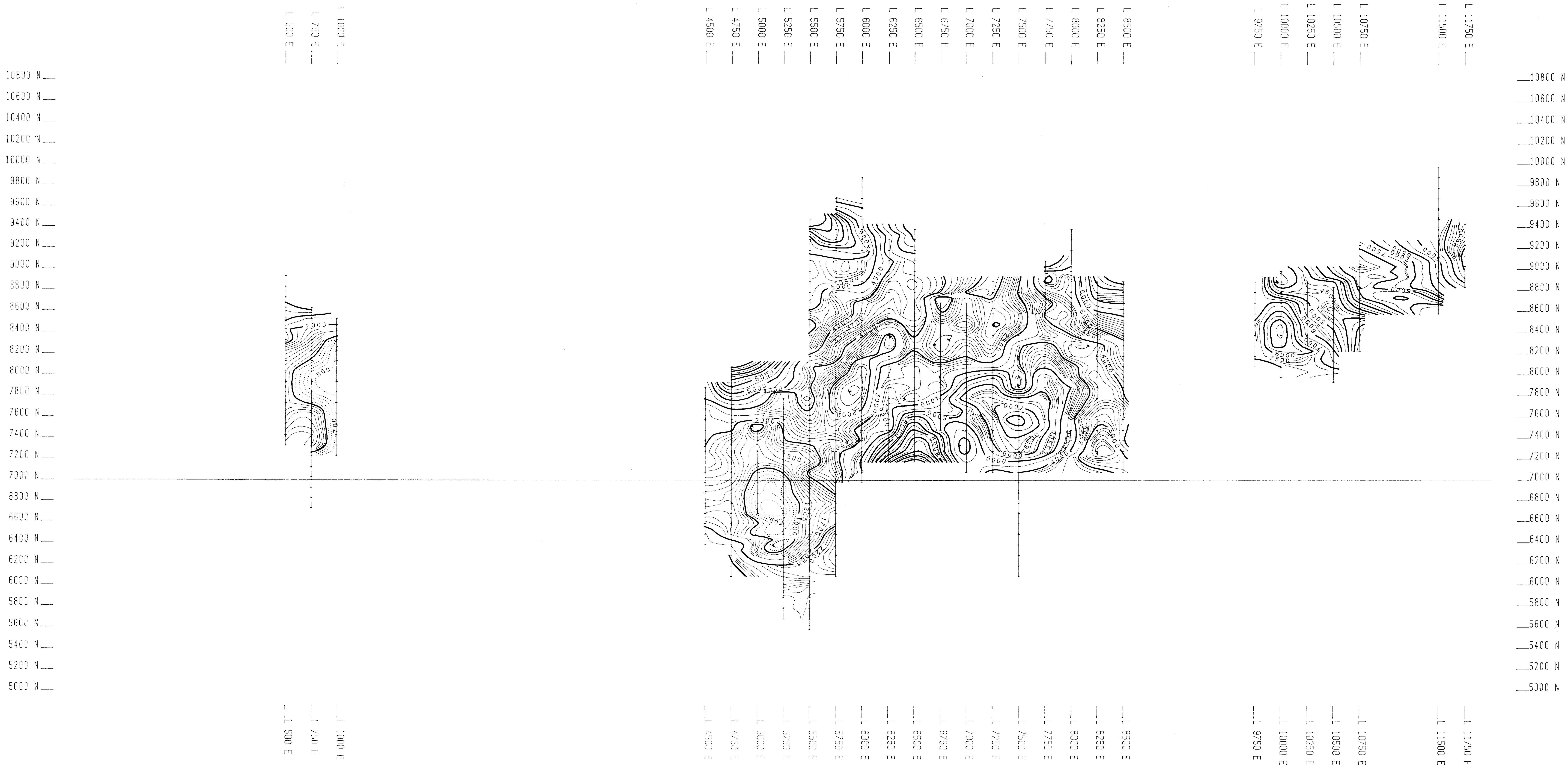
CORONA CORPORATION

Chargeability Contours
GIANT NICKEL PROJECT
Hope Area
New Westminster Mining Division, B.C.
NTS 92 H/6

Interpretex Resources Ltd.
Report by E.R. Rockel
Project # Corona 6828
December 1988

Figure # GP - 3 File Name GNMAP.PLT



SCALE 1 inch = 500 feet

500 0 500 1000 1500

LEGEND

Contour Interval

< 1000 Ohm m.	> 1000 Ohm m.	
....	———	100 Ohm m.
....	———	500 Ohm m.
....	———	1000 Ohm m.

GEOLOGICAL BRANCH
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CORONA CORPORATION

Resistivity Contours

GIANT NICKEL PROJECT
Hope Area
New Westminster Mining Division, B.C.
NTS 92 H/6

Interpretex Resources Ltd.
Report by E.R. Rockel
Project # Corona 6828
December 1988

Figure # GP - 4   File Name GNPAP.PLT

LEGEND

- VLF-EM Conductor
- Ma 20.0 to 30.0 Msec.
- Ma 30.0 to 40.0 Msec.
- Ma Greater Than 40.0 Msec.
- Fraser Filter Chargeability Values 20 to 40 Msec.
- Fraser Filter Chargeability Values Greater Than 40 Msec.

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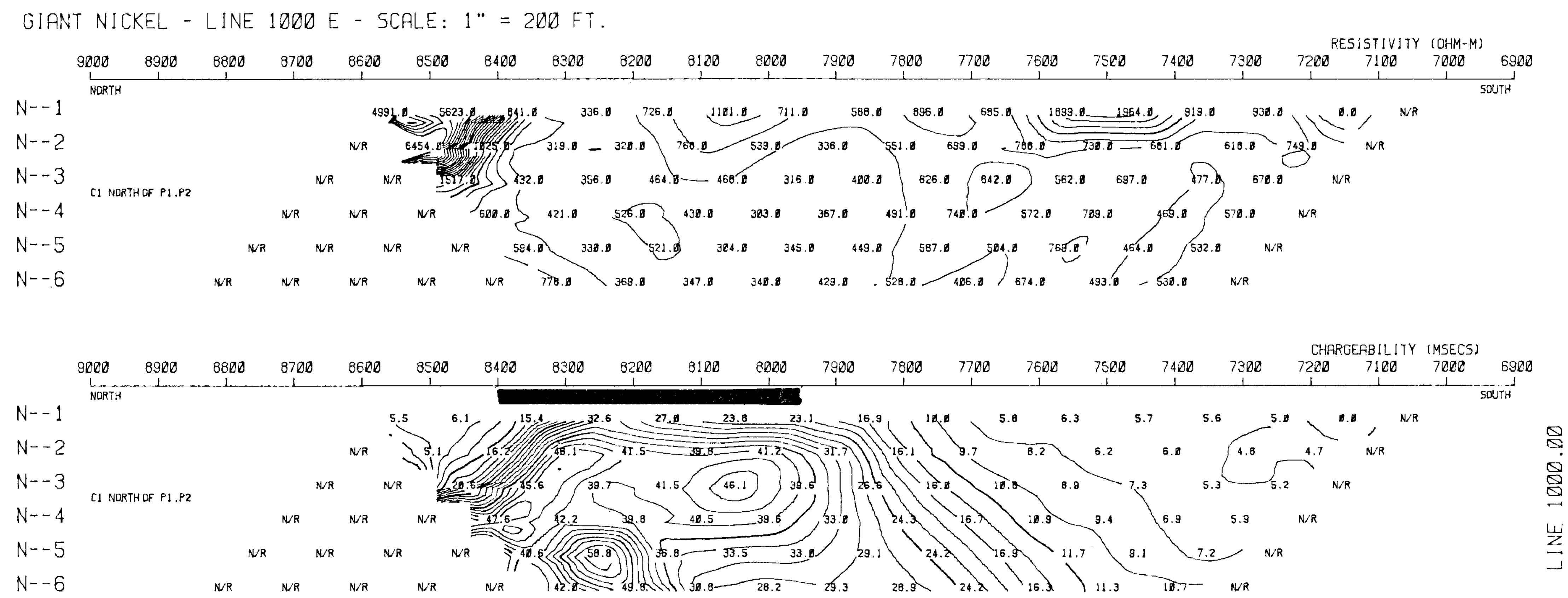
CORONA CORPORATION

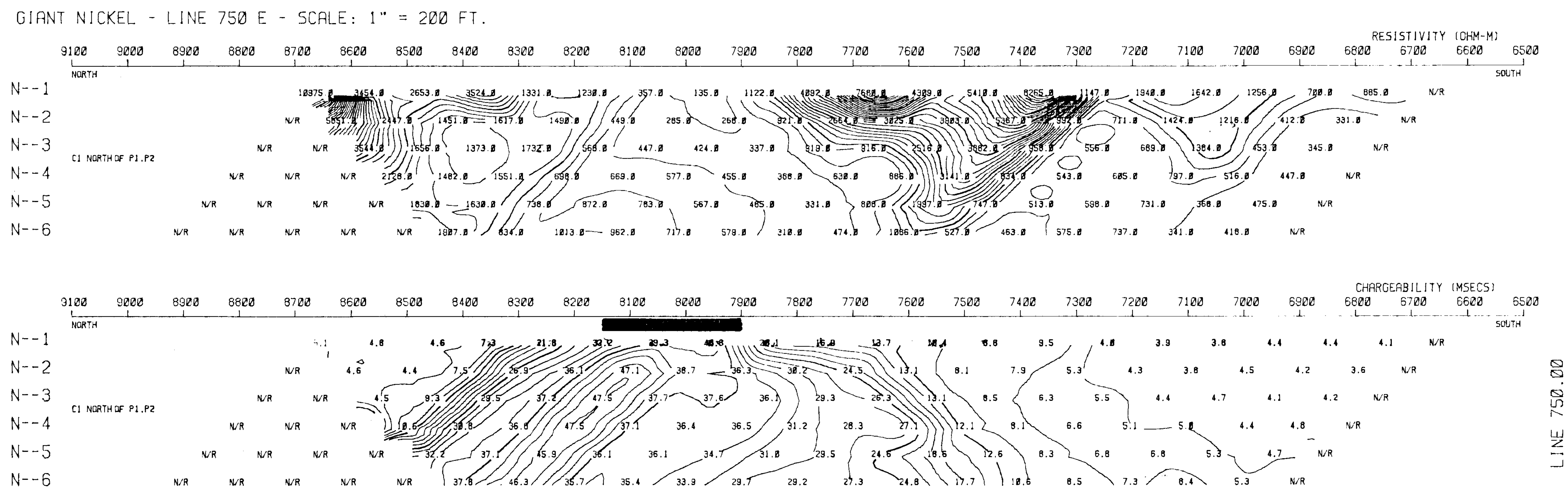
Geophysical Interpretation Map

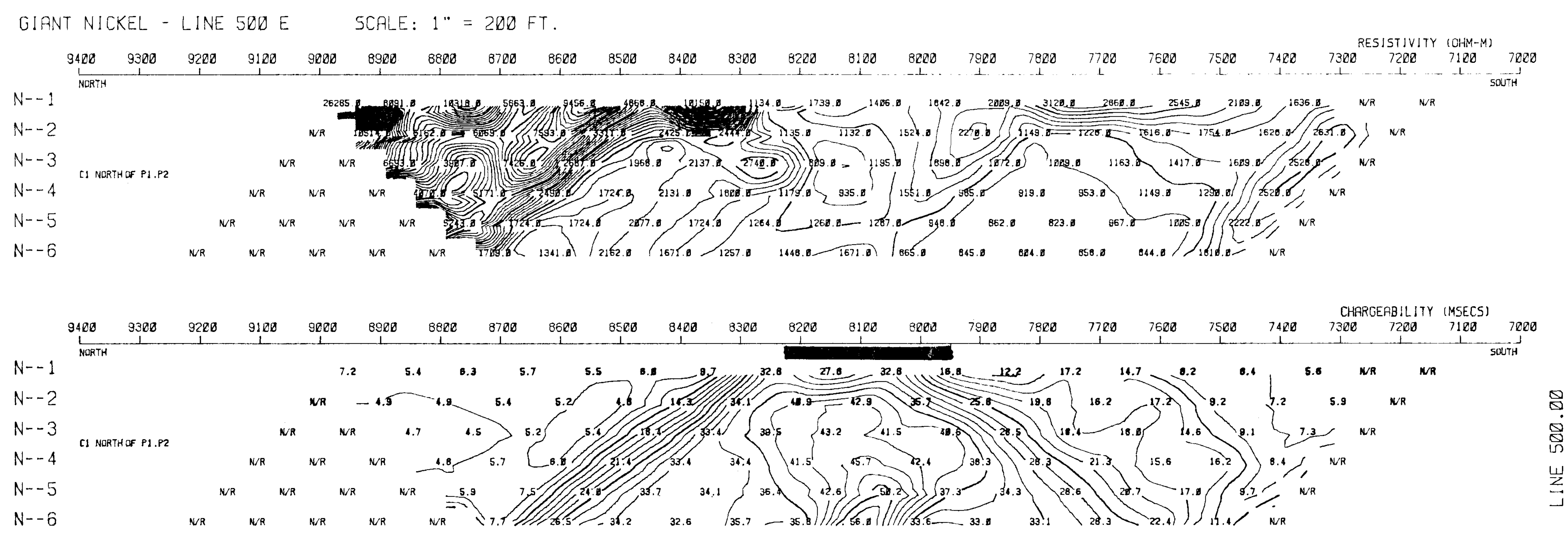
GIANT NICKEL PROJECT
Hope Area
New Westminster Mining Division, B.C.
NTS 92 H/6

Interpretex Resources Ltd.
Report by E.R. Rockel
Project # Corona 6828
December 1988

Figure # GP - 5 File Name GNIN.PLT



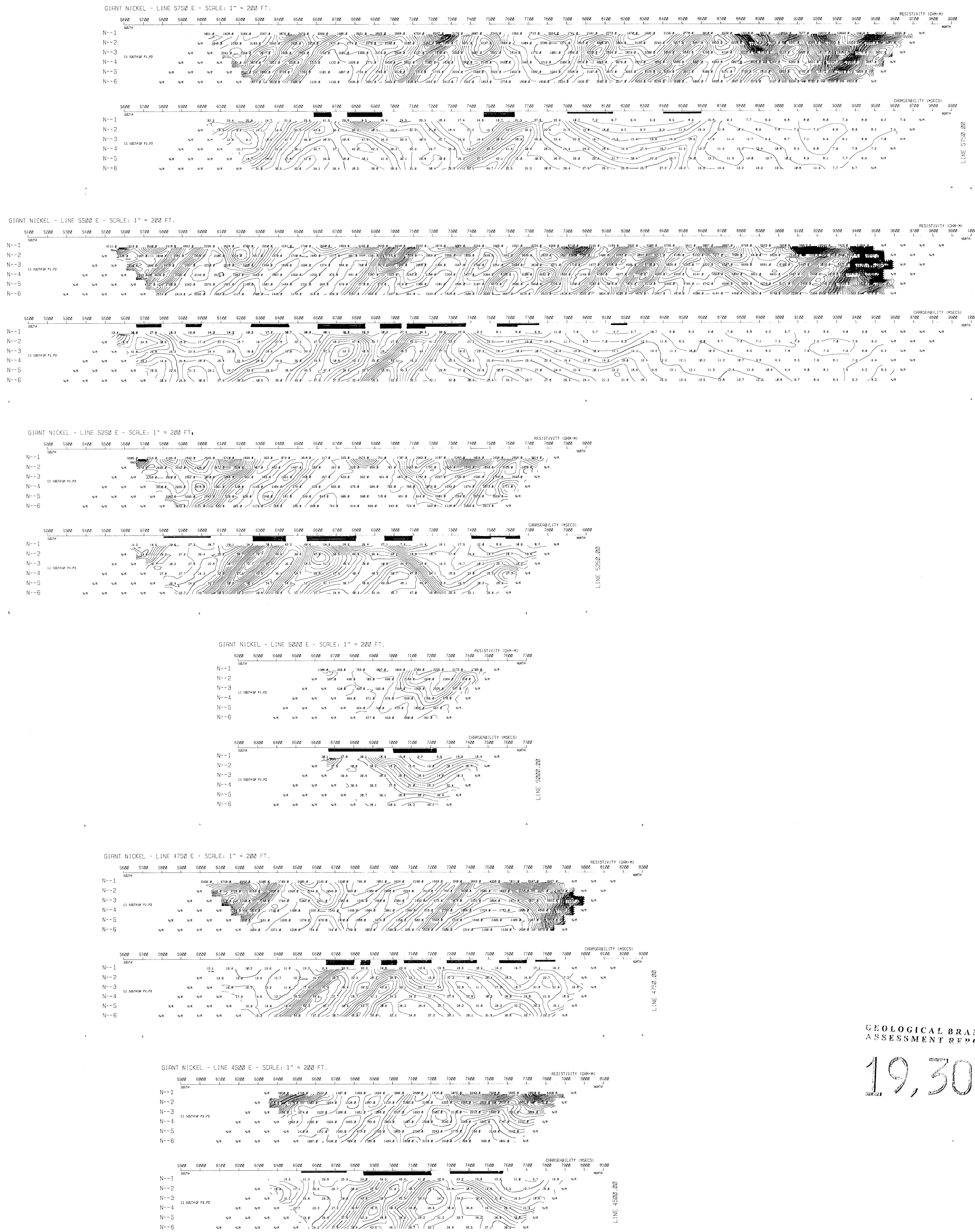




GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,305

SURVEYED BY: INTERPRETEX RESOURCES LTD.	DRAWN BY: INTERPRETEX	CORONA CORPORATION VANCOUVER, B.C.	GIANT NICKEL GRID - I.P. PSEUDOSECTIONS HOPE AREA, NEW WESTMINSTER MINING DIVISION, BRITISH COLUMBIA L - 500E TO 1000E REPORT BY: E. R. ROCKEL DATA COMPILATION BY: INTERPRETEX RES.	SCALE: 1" = 200 FT.
RESISTIVITY CONTOUR INT = 250 OHM-METERS	DATE: NOV. 8, 1988			PROJECT NO.: CORONA 6028
CHARGEABILITY CONTOUR INT = 2.5 MSEC.	FIGURE # PS - 1			N.T.S. NO.: 92 H/6



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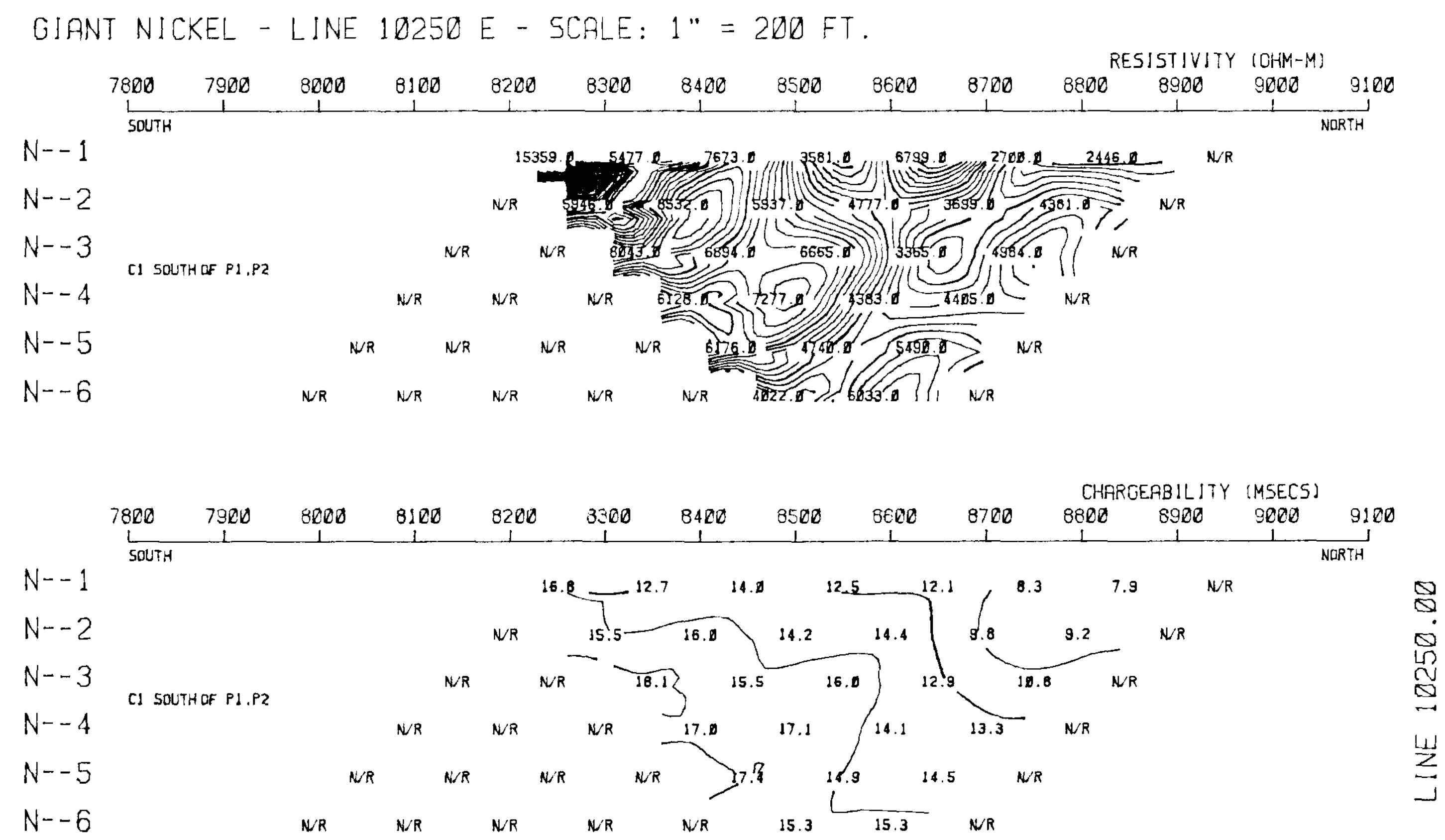
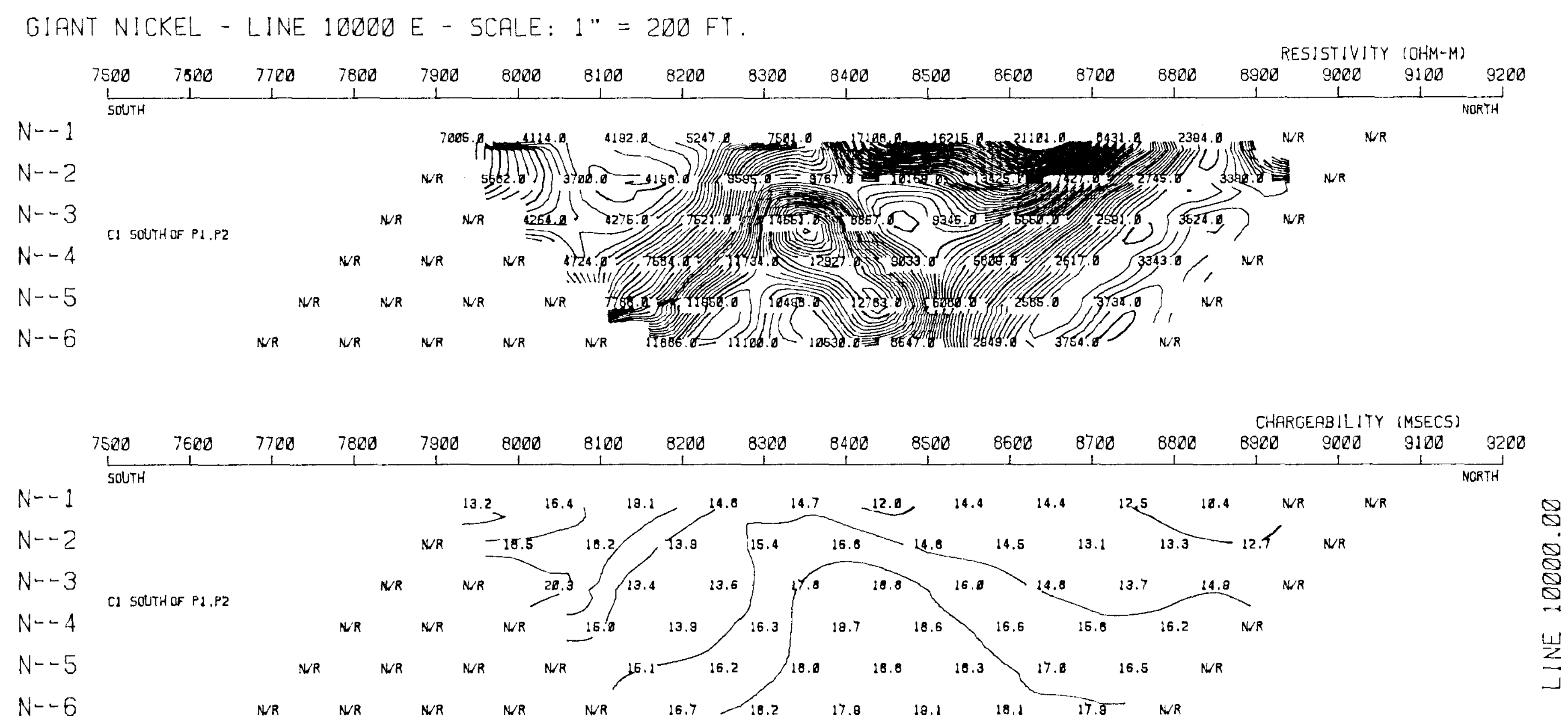
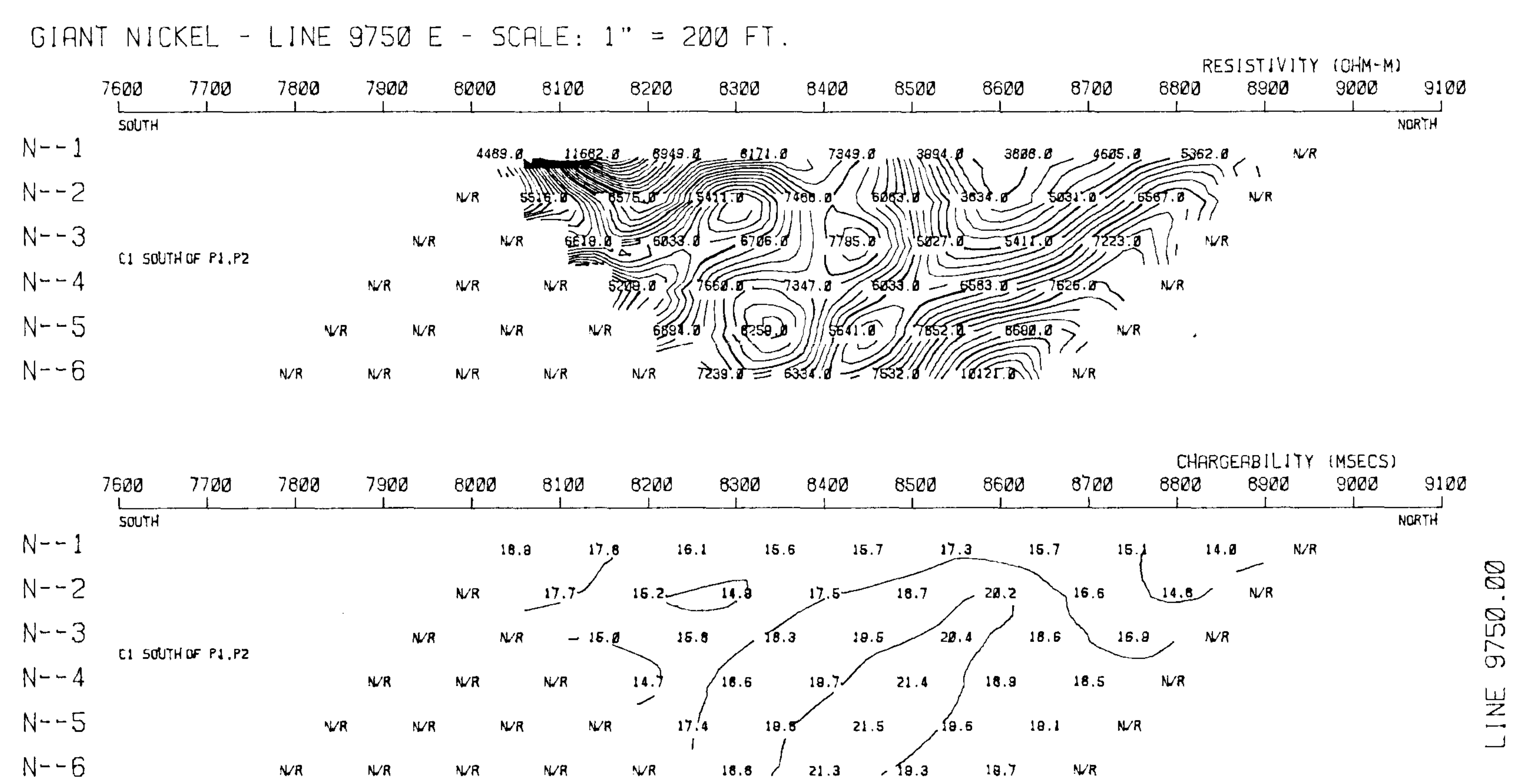
19,305

SURVEYED BY: INTERPRETEX RESOURCES LTD.	DRAWN BY: INTERPRETEX	CORONA CORPORATION VANCOUVER, B.C.	GIANT NICKEL GRID - I.P. PSEUDOSECTIONS HOPE AREA, NEW WESTMINSTER MINING DIVISION, BRITISH COLUMBIA L - 4500E TO 5750E REPORT BY: E.R. ROCKEL DATA COMPILATION BY: INTERPRETEX RES.	SCALE: 1" = 200 FT.
RESISTIVITY CONTOUR INT = 250 OHM-METERS	DATE: NOV. 8, 1988			PROJECT NO.: CORONA 6828
CHARGEABILITY CONTOUR INT = 2.5 MSEC.	FIGURE # PS - 2			N.T.S. NO.: 92 H/6







GEOLOGICAL BRANCH
ASSESSMENT REPORT

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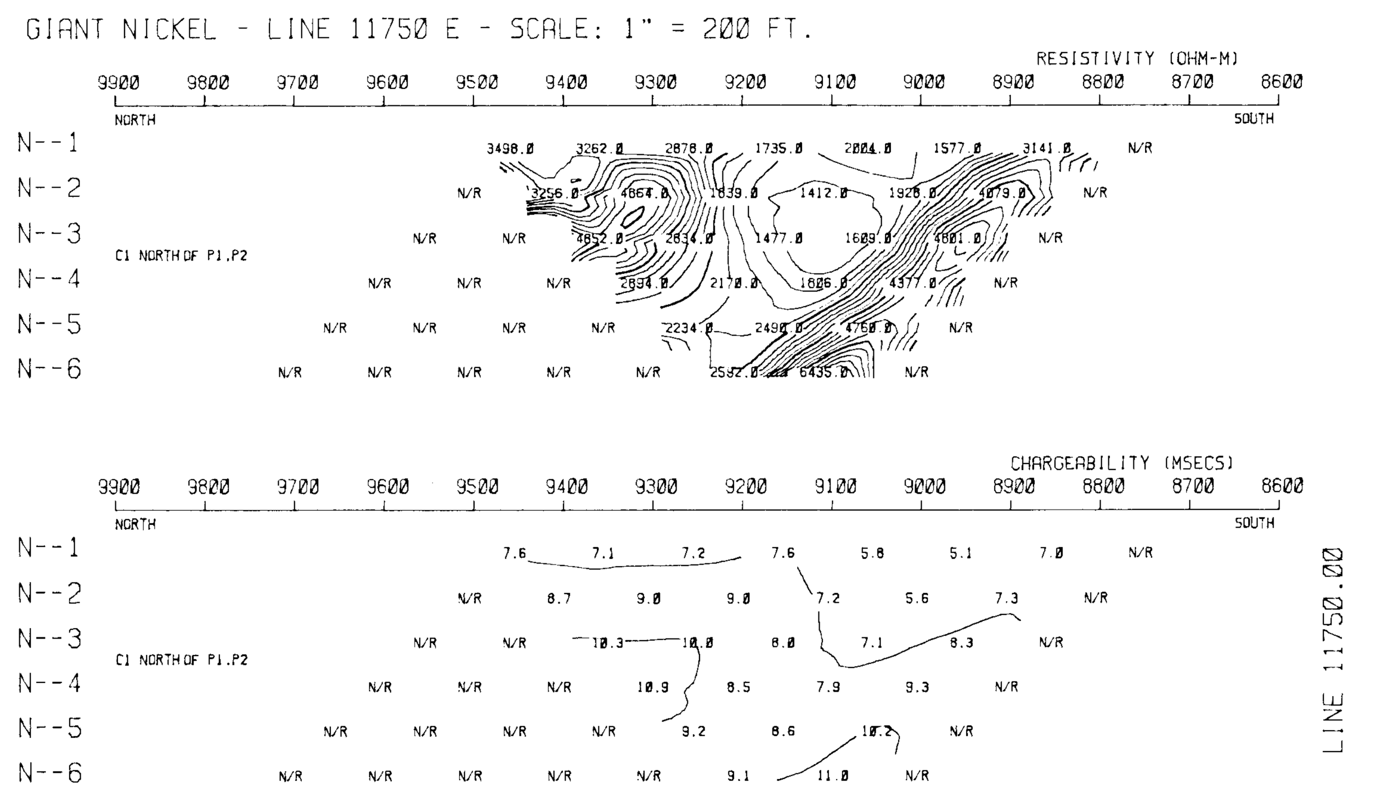
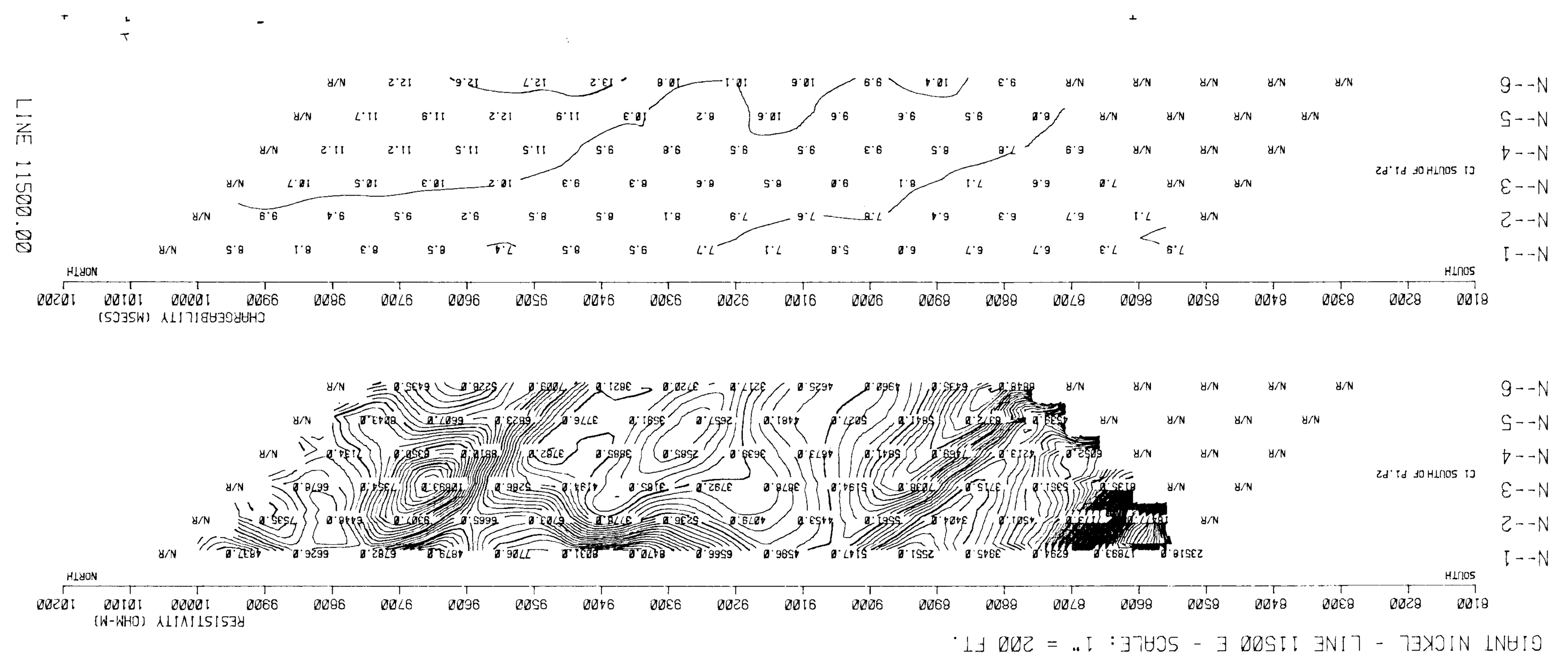
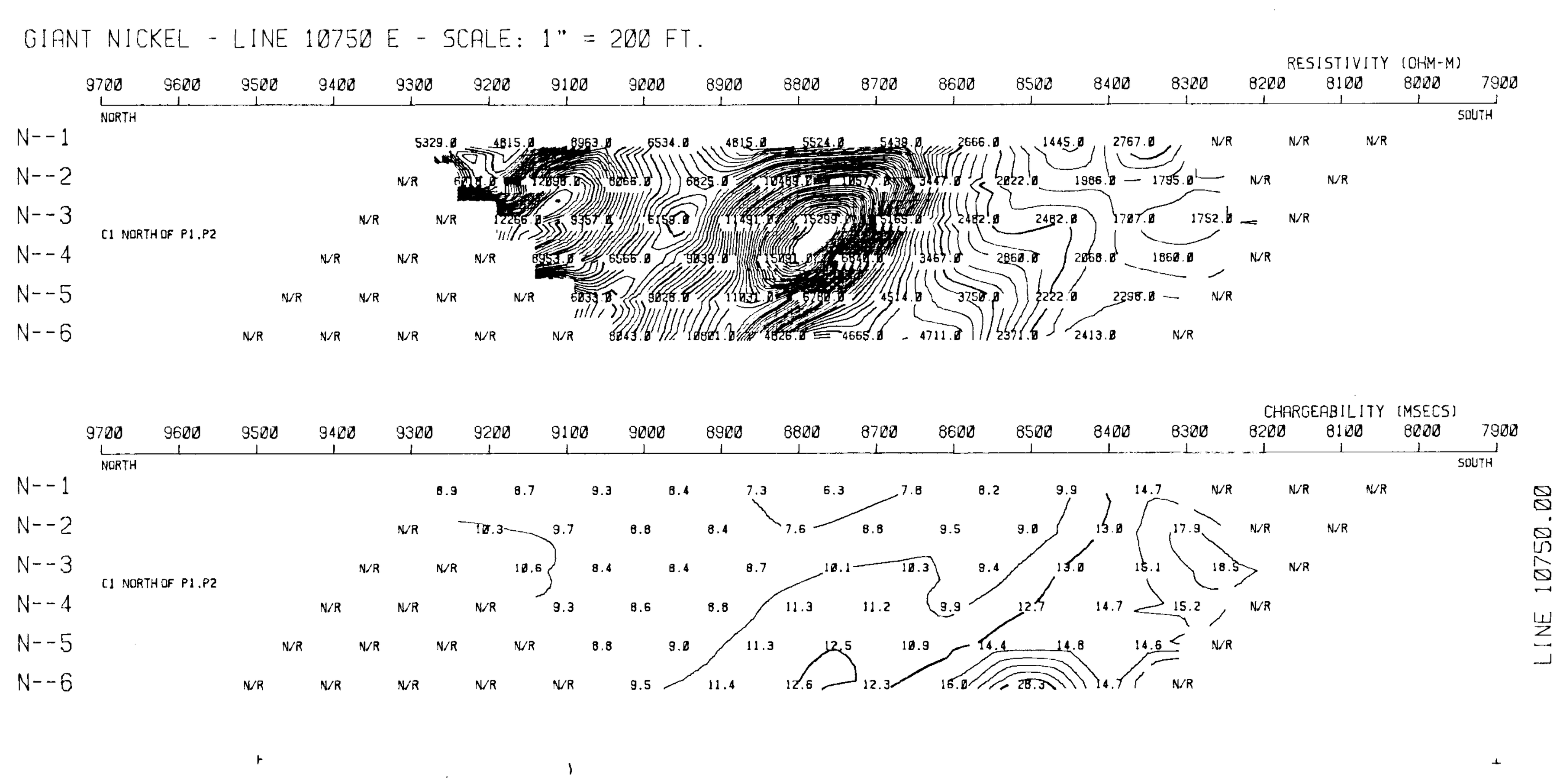
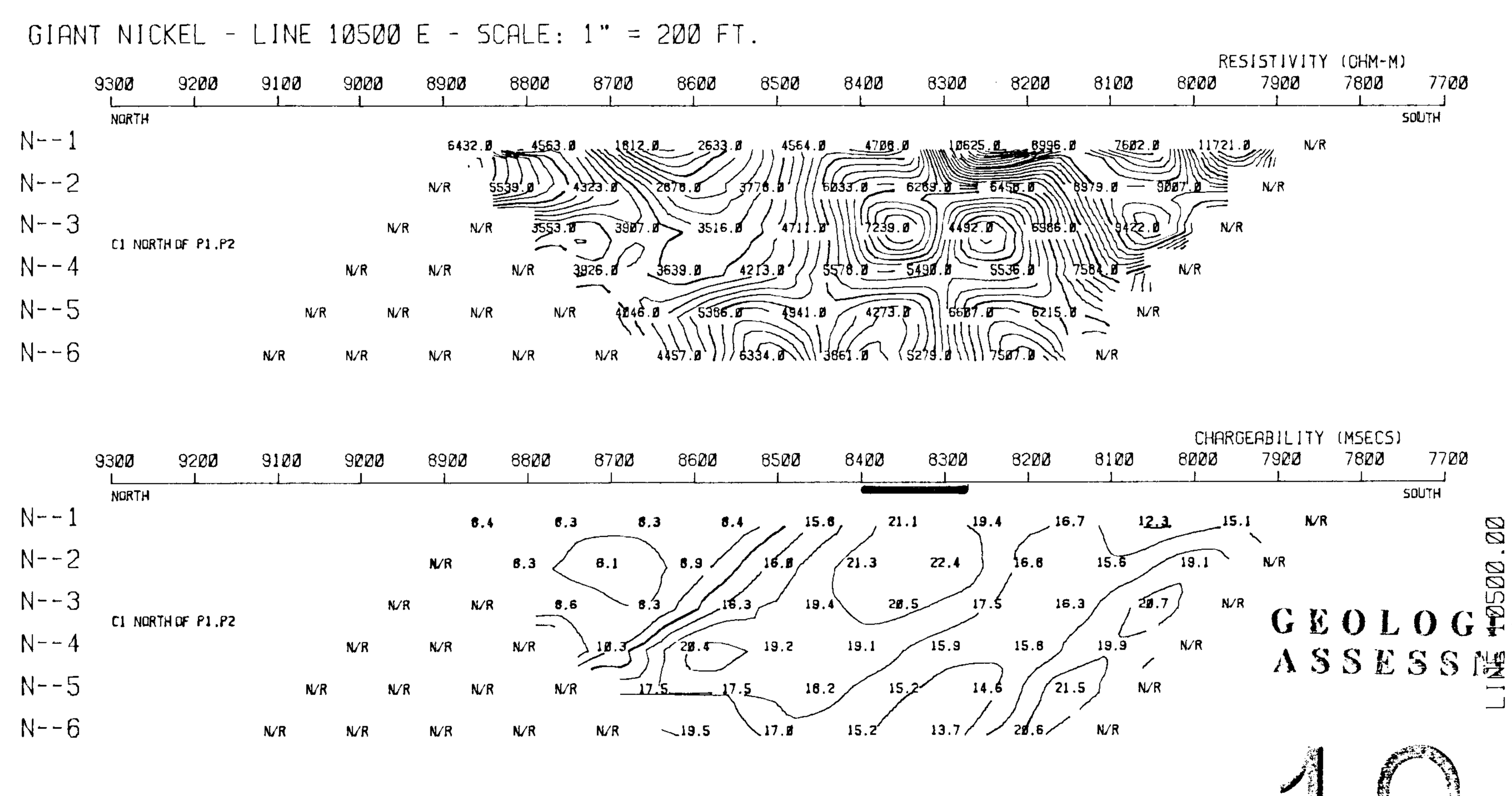
SURVEYED BY: INTERPRETEX RESOURCES LTD.	DRAWN BY: INTERPRETEX	CORONA CORPORATION VANCOUVER, B.C.	GIANT NICKEL GRID - I.P. PSEUDOSECTIONS HOPE AREA, NEW WESTMINSTER MINING DIVISION, BRITISH COLUMBIA L - 9750E TO 10250E REPORT BY: E.R. ROCKEL DATA COMPILATION BY: INTERPRETEX RES.	SCALE: 1" = 200 FT.
RESISTIVITY CONTOUR INT = 250 OHM-METERS	DATE: NOV. 8, 1988			PROJECT NO.: CORONA 6828
CHARGEABILITY CONTOUR INT = 2.5 MSEC.	FIGURE # PS - 5			N.T.S. NO.: 92 H/6









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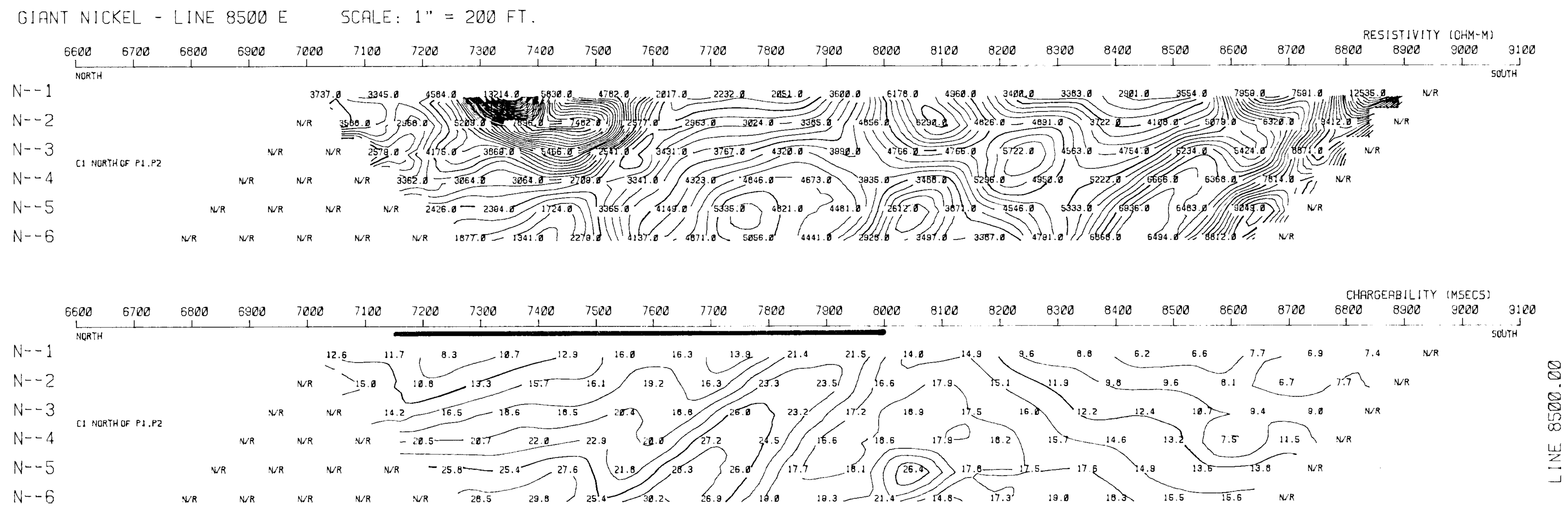
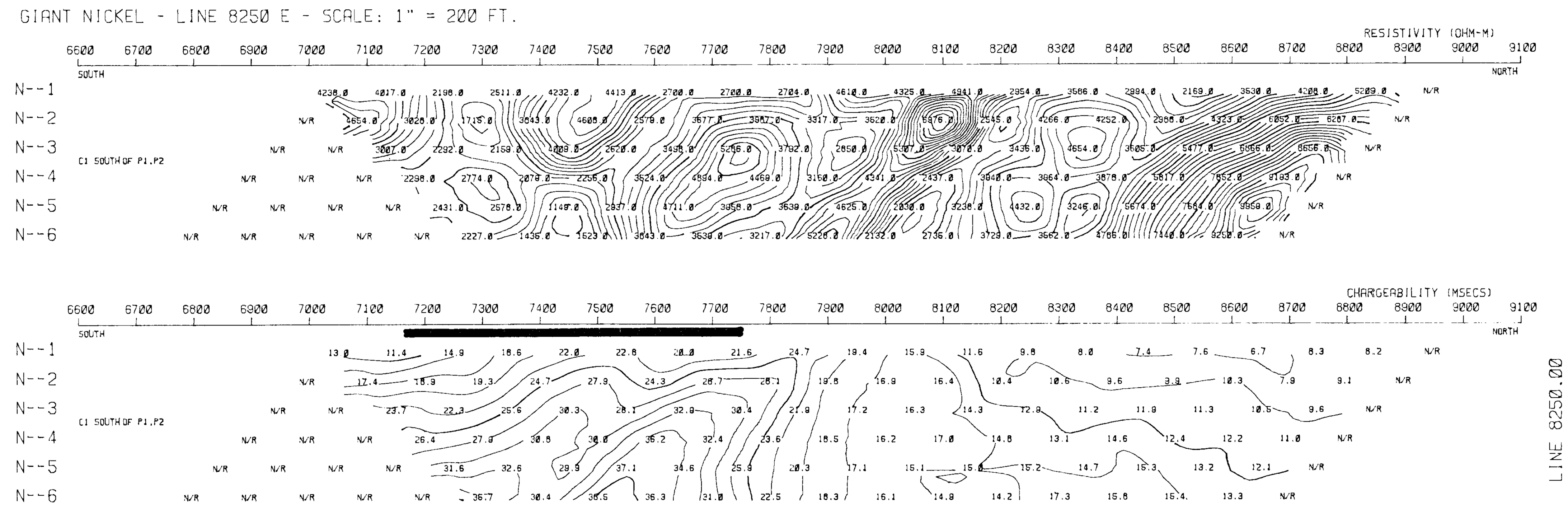
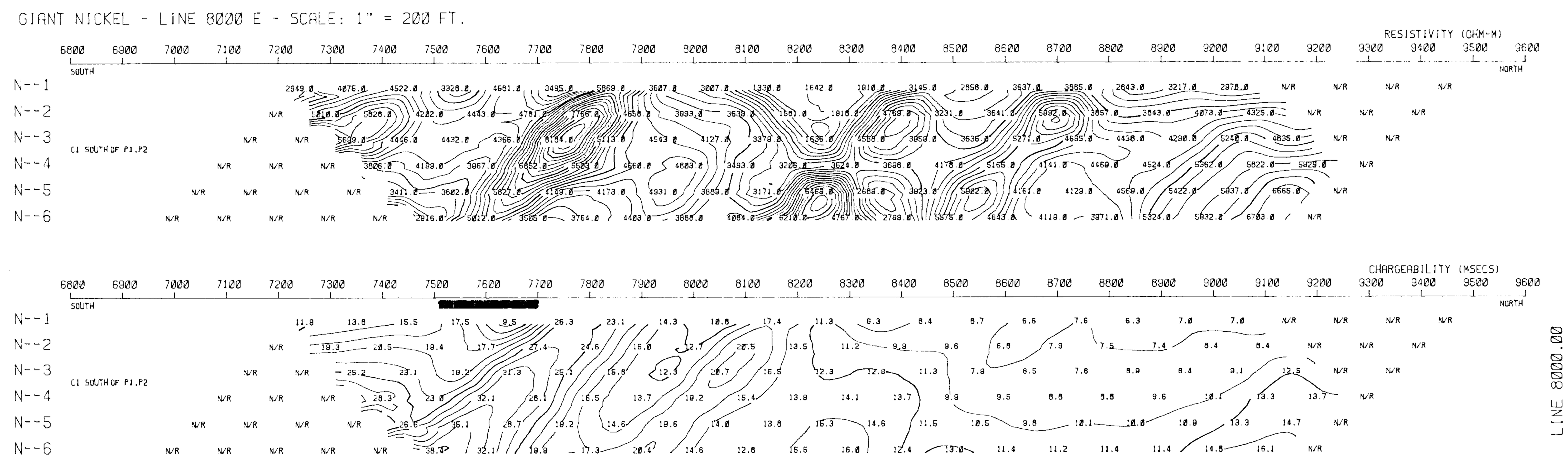
ASSESSMENT REPORT

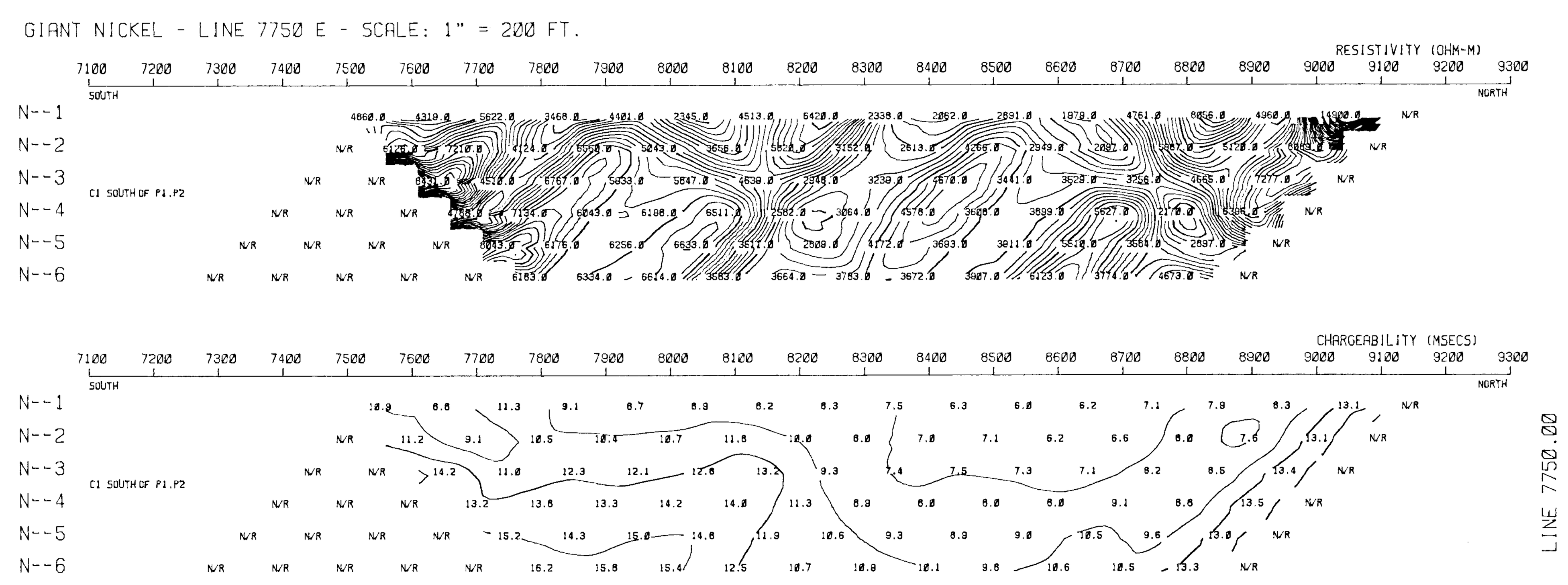
19,305

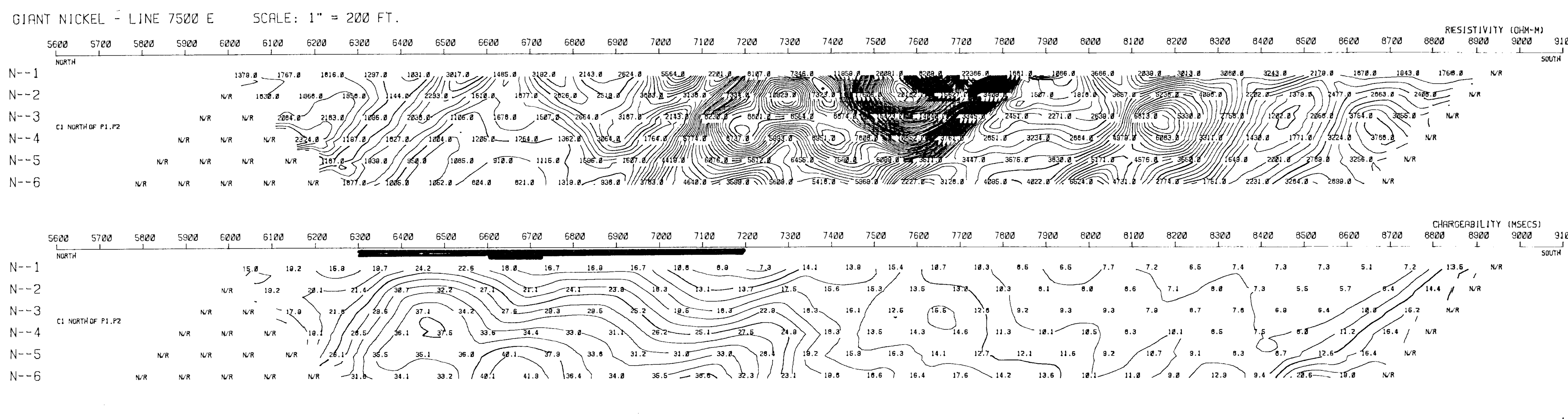
SURVEYED BY: INTERPRETEX RESOURCES LTD.	DRAWN BY: INTERPRETEX	CORONA CORPORATION	GIANT NICKEL GRID - I.P. PSEUDOSECTIONS	SCALE: 1" = 200 FT.
RESISTIVITY CONTOUR INT = 250 OHM-METERS	DATE: NOV. 8, 1988	VANCOUVER, B.C.	HOPE AREA, NEW WESTMINSTER MINING DIVISION, BRITISH COLUMBIA L - 10500E TO 11750E	PROJECT NO.: CORONA 6828
CHARGEABILITY CONTOUR INT = 2.5 MSEC.	FIGURE # PS - 6		REPORT BY: E.R. ROCKEL DATA COMPILATION BY: INTERPRETEX RES.	N.T.S. NO.: 92 H/6











GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,305

SURVEYED BY: INTERPRETEX RESOURCES LTD.	DRAWN BY: INTERPRETEX	CORONA CORPORATION	GIANT NICKEL GRID - I.P. PSEUDOSECTIONS	SCALE: 1" = 200 FT.
RESISTIVITY CONTOUR INT = 260 OHM-METERS	DATE: NOV. 8, 1988	VANCOUVER, B.C.	HOPE AREA, NEW WESTMINSTER MINING DIVISION, BRITISH COLUMBIA L - 7500E TO 8500E REPORT BY: E.R. ROCKEL	PROJECT NO.: CORONA 6828
CHARGEABILITY CONTOUR INT = 2.5 MSEC.	FIGURE # PS - 4		DATA COMPILATION BY: INTERPRETEX RES.	N.T.S. NO.: 92 H/6

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ASSESSMENT REPORT

19,305

SURVEYED BY: INTERPRETEX RESOURCES LTD.	DRAWN BY: INTERPRETEX	CORONA CORPORATION VANCOUVER, B.C.	GIANT NICKEL GRID - I.P. PSEUDOSECTIONS HOPE AREA, NEW WESTMINSTER MINING DIVISION, BRITISH COLUMBIA L - 6000E TO 7250E REPORT BY: E.R. ROCKEL DATA COMPILATION BY: INTERPRETEX RES.	SCALE: 1" = 200 FT.
RESISTIVITY CONTOUR INT = 250 OHM-METERS	DATE: NOV. 8, 1988			PROJECT NO.: CORONA 6828
CHARGEABILITY CONTOUR INT = 2.5 MSEC.	FIGURE # PS - 3			N.T.S. NO.: 92 H/6