REPORT ON A
MAGNETIC AND INDUCED POLARIZATION SURVEY
HOT 1 CLAIM #336092, LAIRD MINING DIVISION
BRITISH COLUMBIA

RECEIVED

JUN 04 1997

Gold Commissioner's Office
VANCOUVER, B.C.

NTS 104 P/5
LATITUDE: 59° 12'
LONGITUDE 129° 38'

FOR

CARTAWAY RESOURCES CORPORATION
SUITE 3, 1755 PLUMMER STREET
PICKERING, ONTARIO
L1W 3S1

R. W. Woolham, P.Eng.
Consulting Geophysicist
Pickering, Ontario
November 5, 1996

25,021

TABLE OF CONTENTS

REPORT

INTRODUCTION	1
Property Location and Access	1
Property Description	1
Previous History	2
GEOLOGY	2
THE MAGNETIC METHOD	2
THE INDUCED POLARIZATION METHOD	3
SURVEY PARAMETERS AND PRESENTATION	4
Magnetic Survey	4
Induced Polarization Survey	5
RESULTS AND CONCLUSIONS	5
Magnetic Survey	5
Induced Polarization Survey	6
RECOMMENDATIONS	7

LIST OF FIGURES

	After Page
Figure 1. Location Map	1
Figure 2. Properties Map	2
Figure 3. IP electrode arrays	3

LIST OF APPENDICES

Appendix I:	Personnel and Cost Statement
Appendix II:	Instrument Specifications
Appendix III:	Induced Polarization Pseudosections
Appendix IV:	Certificate of Qualifications

LIST OF MAPS
(In Map Pocket)

Map 1	Total Field Magnetic Survey, Contours, Scale 1:5,000
Map 2	Total Field Magnetic Survey, Values, Scale 1:2,500
Map 3	Averaged Chargeability Contours, Scale 1:5,000
Map 4	Averaged Resistivity Contours, Scale 1:5,000

INTRODUCTION

This report, prepared for Cartaway Resources Corporation (Cartaway) is an evaluation and interpretation of magnetic and induced polarization surveys performed on the Hot 1 claim block. The surveys were carried out by personnel employed by Cartaway during the period September 16 to October 25, 1996. A total of 6.2 km of magnetometer survey and 6.7 km of induced polarization survey was completed on the property. A list of personnel and days worked is contained in Appendix I. Geophysical survey coverage of all the cut survey lines was not possible as inclement weather, due to approaching winter, made it necessary to abort further surveying.

This report describes the logistics, parameters and results of the geophysical surveys.

Property Location and Access

The property is located in the Cassiar area of northern British Columbia about 80 km south of the Yukon border. The survey grid is 8 km east of Cassiar as shown on Figure 1. Location Map.

Access to the survey grid is gained from the Cassiar highway by a bush road that traverses the survey area.

Property Description

The survey grid covers the Hot 1 claim #336092 with 20 units staked in May, 1995. This claim is part of a much larger group of claims as shown on Figure 2. Properties Map. A 100% interest in the claims is held by Cartaway.

The author has not examined title to the claims and, accordingly, expresses no opinion as to the validity of title and property description.

Previous History

The area has undergone intensive exploration for base and precious metals over the last three decades. The claims surround properties containing past producing mines and gold occurrences. The Erickson mine on the Cusac property (see Figure 2 previous) produced 490,000 tonnes of ore grading 15.5 g/t gold and 11.9 g/t silver. The Taurus mine directly south of the survey grid area produced 240,000 tonnes with an average grade of 6 to 7 g/t gold. Additional probable ore reserves were also outlined. Both the Cusac and Taurus properties underwent a major exploration program by Cyprus Canada, Inc. in 1995/96.

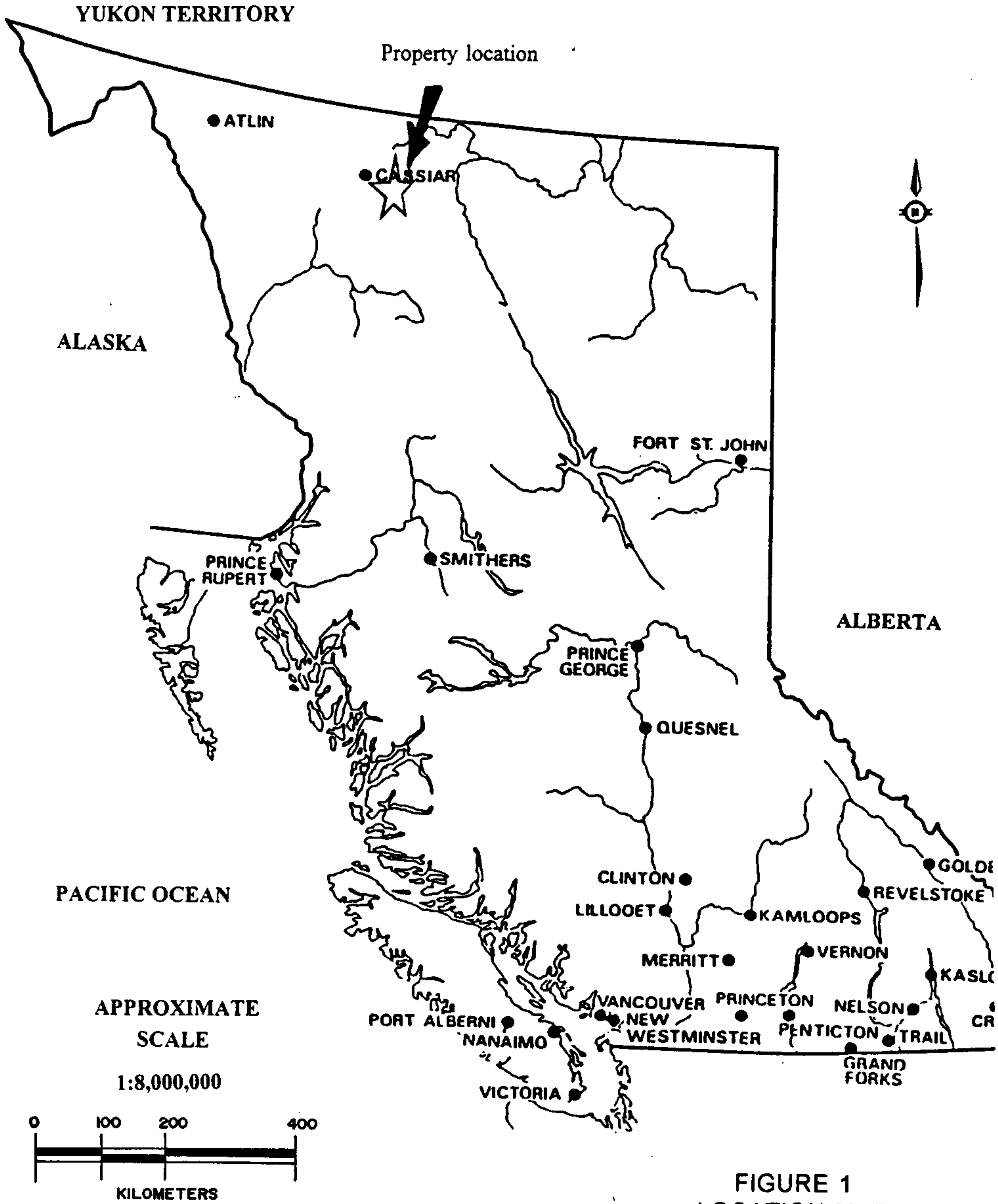
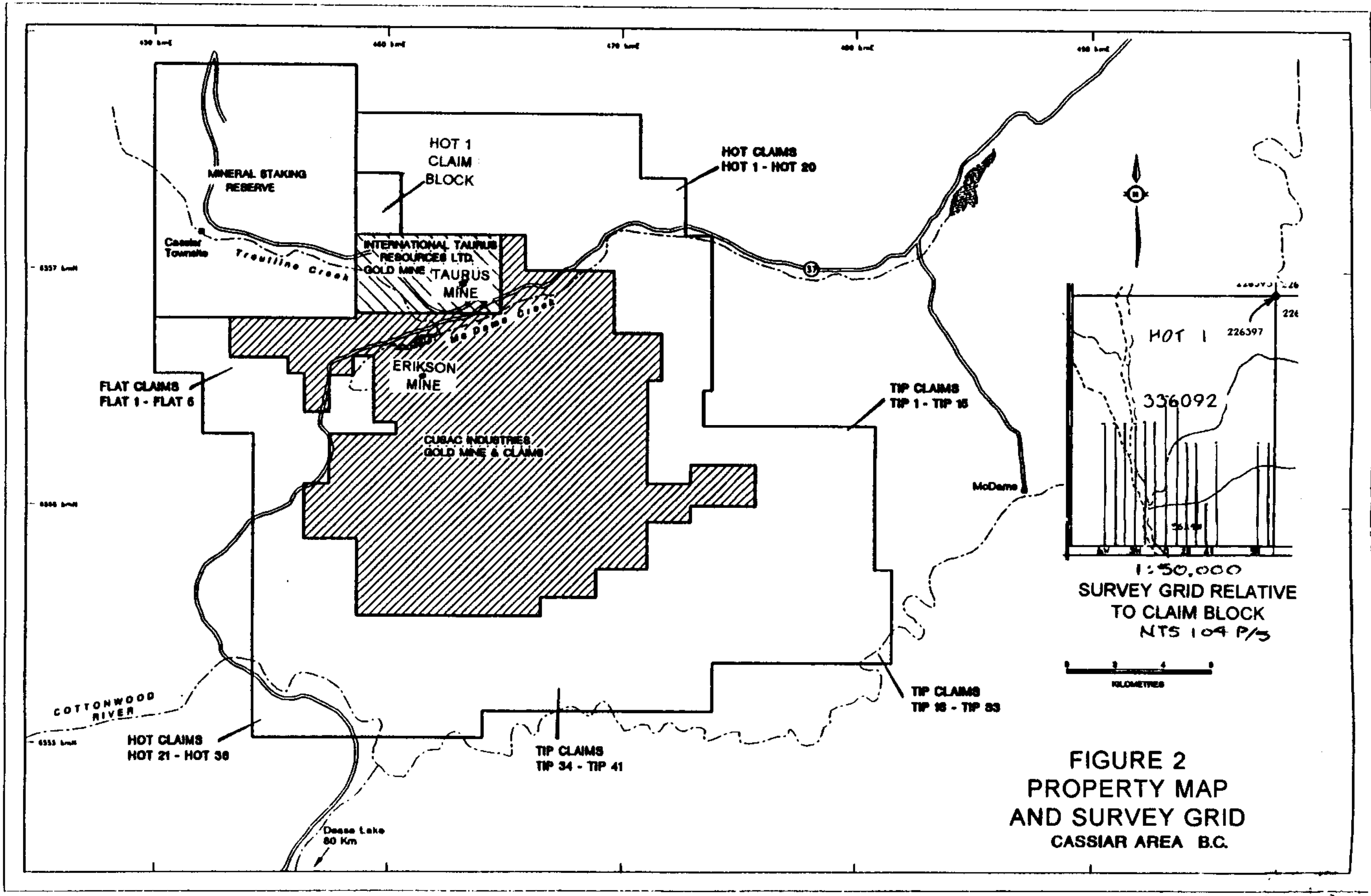


FIGURE 1
LOCATION MAP

Figure 2. Claim map



GEOLOGY

Sylvester Group volcanics and sedimentary rocks of Mississippian to Permian age predominate in the survey area. The gold mineralization at the Erickson and Taurus Mines is localized in quartz veins at the base of a very competent sedimentary unit which did not fracture at the time of the tectonic activity related to the gold hosting hydrothermal fluids. As a result the quartz vein systems occur as steep fractures in the basalts at the base of the sediments or follow the base of the sedimentary/volcanic contact. The quartz veins have extensive wall rock halos of pyrite and ankeritic alteration with gold values occurring in both the quartz and adjacent altered volcanics. The source of the veins is thought to be associated with a granitoid intrusion.

Polarizable material, such as small amounts of disseminated pyrite mineralization, can be detected by the induced polarization (IP) method. Silicification and fracturing often has a particular resistivity signature and a by product of the IP survey is a resistivity measurement. Thus, the IP method is an excellent geophysical tool for detecting alteration products associated with possible gold mineralization.

THE MAGNETIC METHOD

The total field magnetic responses reflect major changes in the magnetite content of the underlying rock units. The amplitude of the magnetic responses relative to the regional background help to assist in identifying specific magnetic and non-magnetic units related to, for example, mafic flows or tuffs, mafic to ultramafic intrusives, felsic intrusives, felsic volcanics and/or sediments etc. Alteration zones often have distinctive non-magnetic below background responses. Obviously, several geological sources can produce the same magnetic response. These ambiguities can be reduced considerably if basic geological information on the area is available to the geophysical interpreter.

In addition to amplitude variations, magnetic patterns related to the geometry of the particular rock unit also help in determining the probable source of the magnetic response. For instance, long narrow linear magnetic patterns usually reflect mafic tuff/flow horizons or mafic intrusive dyke structures while semi-circular features with complex magnetic amplitudes may be produced by local plug-like intrusive sources such as pegmatites or carbonatites.

THE INDUCED POLARIZATION METHOD

A time domain IP system was utilized for this survey. In this type of method the ground is energized by a pulsed current using a pair of grounded electrodes. When the current is interrupted the secondary current in the ground decays slowly depending on the physical properties of the underlying material. This decay time is measured by a pair of receiver electrodes. The decay time is the polarization measurement. In simple terms it is a measure of the capacitive effect of the ground. The polarization measurement or chargeability, as it is called in the time domain, is in units of millivolt seconds per volt, written mV/V or milliseconds. This is a measurement of the decay of the off-time voltage in the ground normalized by the on-time primary voltage. Since the primary current and voltage are measured, the resistivity can be easily calculated from the current and voltage values.

The chargeability is a measure of the polarizability of the material energized within the influence of the electrode array. It is a volume measurement. Various electrode arrays can be used to take this measurement. Several different types of arrays are utilized in the IP method. Figure 3. IP electrode arrays shows three electrode array configurations used in IP surveys. For the dipole-dipole and pole-dipole arrays, the volume measured and therefore the depth of exploration expands as the separation between the transmitter electrodes and receiver electrodes increases. Increases in separation are multiples of the electrode pair spacings "a". These multiples, denoted "n", are for n= 1, 2, 3 etc.

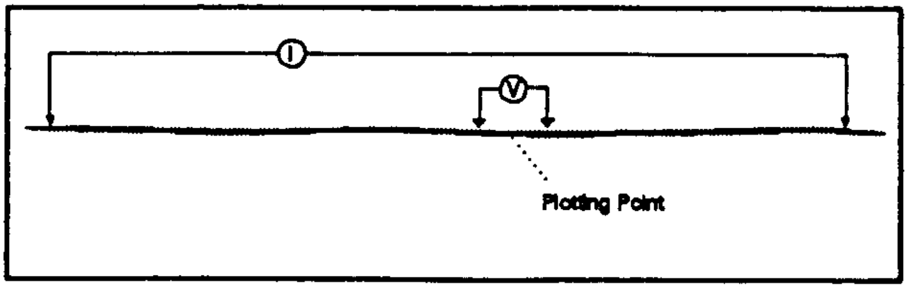
The approximate depth to the centre of the volume measured for any "n" spacing is equal to "n" times "a" times 0.5. If the maximum values for an anomaly start at "n"=1 and if say "a"=100 m, then the top of the source of the anomaly is at 50 m or less. The exact determination of the depth to the top of the source is not possible as many factors are involved including the source geometry and contained polarizable material, location of the electrodes relative to a source with at least one dimension smaller than the "a" spacing, conductivity of the material hosting the polarizable body and the effect of the greater volume being measured for increasing "n" values.

The dipole-dipole and pole-dipole are the array of choice in IP surveys with the dipole-dipole array most favoured because of its symmetry. Unfortunately, survey logistics can be difficult in some areas and the pole-dipole array is therefore often used. The gradient array, logistically more efficient, has lower sensitivity and depth of exploration and is influenced more by conductive overburden effects.

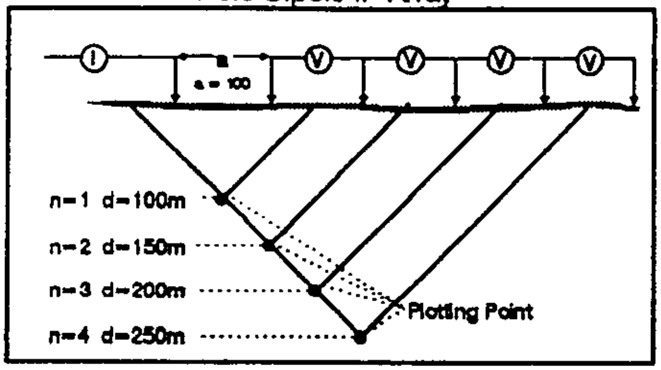
The IP pseudosection, by its very name, implies a plot that roughly represents an electrical cross-section of the ground but in actual fact includes effects from the volume of material either side of the section. Interpretation of the location of the anomalous responses of interest is a qualitative procedure. Anomaly widths and positions are dictated by the dipole length and cannot be less than one dipole width as a narrow anomalous source can be located anywhere within the influence of the dipoles. Very narrow sources, relative to the dipole spacing, will have responses that are diluted and averaged over a large dipole distance.

Thus, detail profiling at shorter dipole configurations is necessary to accurately delineate the location of the anomaly source. For the surveys on the property discussed in this report a dipole spacing of 25 m was used. This spacing is considered a detailed survey

Gradient IP Array



Pole-Dipole IP Array



Dipole-Dipole IP Array

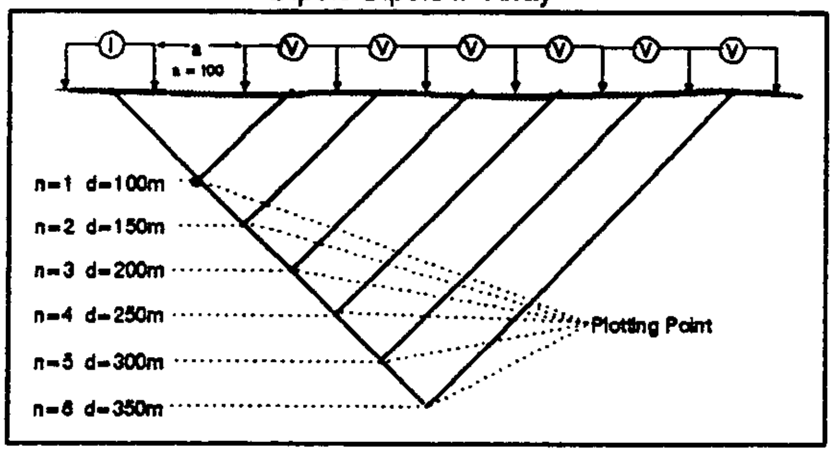


FIGURE 3
IP ELECTRODE ARRAYS

configuration while a 100 metre spacing would be used for reconnaissance surveys. The larger spacing is suitable for evaluating large areas, locating the position of anomalous zones of interest and/or for delineating very large zones of mineralization.

SURVEY PARAMETERS AND PRESENTATION

Magnetic Survey

A Gem Systems Inc. GSM-19 total field magnetometer was used for the survey. This instrument is microprocessor- controlled and can be programmed to automatically record the station location, time and magnetic value. Diurnal correction control was obtained by looping through pre-established base stations at intervals that did not exceed one and one-half hours.

Instrument specifications are contained in Appendix 2. Readings were taken along grid lines spaced 100 m apart at 12.5 m station intervals. In all, 6.2 line kilometres of data were recorded in this way. As mentioned previously, additional survey work was planned but inclement winter weather set in and surveying was discontinued.

The magnetic values recorded in the field were corrected for diurnal variations using the appropriate time and diurnal change information stored in the magnetometer memory. Office compilation consisted of entry of the field values into a computer system for editing and machine plotting and contouring. A regional datum value of 57,800 nanotesla (nT) was subtracted from all readings. A posted value map at a scale of 1:2,500 and a contour map at a scale of 1:5,000 were generated with appropriate title and legend with a contour interval of 25 nT (see maps 1 and 2 in pocket at back of report)

Induced Polarization Survey

The survey utilized time domain induced polarization equipment manufactured by Scintrex Ltd.(see instrument specifications Appendix 2) The survey configuration consisted of a pole-dipole electrode array with "n" spacings of 1, 2, 3, 4 and 5 and "a" spacing of 25 m. Profiles were completed on seven lines 100 m apart. Bad weather made it necessary to abort further efforts in the rugged terrain. A total of 6.7 line km of survey data was collected which totalled approximately 1,300 readings.

The results were machine plotted and contoured as pseudosections at a horizontal scale of 1:2,500. These pseudosections are bound with this report (Appendix 3). The sections consist of, from top to bottom, a resistivity plot in ohm-metres and a chargeability plot in millivolts/volt. The chargeability is a measure of the polarizability of the material energized within the influence of the electrode array.

Induced polarization data in pseudosection format are difficult to present in a form that is comprehensible to the inexperienced interpreter or explorationist. Usually, anomalous zones are designated by the geophysicist with a bar symbol and indicated on a plan map. Interpretation of the location of the anomalous responses of interest is a qualitative procedure. Anomaly widths and positions are dictated by the dipole length and cannot be less than one dipole width as a narrow anomalous source can be located anywhere within the influence of the dipole. Very narrow sources, relative to the dipole spacing, will have responses that are diluted and averaged over a large dipole distance. Thus, detail profiling at shorter dipole configurations is necessary to accurately delineate the locations of potential drill targets. For this survey, however, the dipole spacing of 25 m is considered a detailed configuration.

The anomaly locations, as interpreted from the pseudosections, are shown on the sections as bar anomalies. In some cases, in order to provide a more comprehensive presentation of the induced polarization/resistivity results, the average of a pyramid of values at each station is calculated, plotted and contoured on a plan map. Deep-seated anomalous responses are considerably attenuated or lost with this data manipulation technique and it is therefore necessary to show, in addition, the interpreted bar anomaly locations. The contoured average chargeability and resistivity values and anomaly locations are shown on Maps 3 and 4, respectively, contained in a pocket at the back of this report.

RESULTS AND CONCLUSIONS

Magnetic Survey

The background is interpreted to be 57,875 nT. The only significant response on this grid is an erratic high amplitude anomaly, greater than 2,000 nT above background, located at the north end extension of line 0. This anomaly is coincident with a topographic high. The line was extended to cover a magnetic anomaly detected by a helicopter-borne magnetic survey over the area. The airborne survey detected other numerous semi-circular high amplitude magnetic anomalies and almost all are coincident with topographic highs. It is suspected the source of these high amplitude and high topographic correlations may be flat lying to gently dipping capping basalt flow rocks.

The remaining area is quite flat magnetically with variations of 25 to 125 nT above background. One feature worth a comment can be seen on the plan contour map. It is a broad 200 metre wide anomaly extending from line 0 to line 200 west where it abruptly terminates at line 300 west. A slightly magnetic volcanic unit is the probable source of this anomaly. The sudden termination of the anomaly between line 200 west and 300 west, as well as more subtle magnetic patterns to the north, suggests a north-south fault structure may be present in proximity to line 300 west. This is further substantiated by the IP survey results to be discussed in the following section.

Induced Polarization Survey

The IP results indicate background chargeability values are in the order 5 to 10 mV/V. Threshold anomalous values are considered to be from 15 to 20 mV/V. As a rule of thumb this could represent from 2% to 4% disseminated polarizable material. These threshold level polarization responses are shown with open bar symbols while more significant responses, approaching 25 to 30 mV/V, or specific unique anomalies are shown with cross hatching. An example of the latter is present at the south end of line 500 west centred at about 240 north. This anomaly marks the beginning of a high resistivity zone with higher resistivity values to the north of the IP anomaly. It is suggested a contact is present in the locality of the IP response and the polarization effect could be related to a narrow seam of pyrite or other mineralization associated with the contact. The resistivity contrast is not as obvious on line 400 west but the higher resistivity zone is at depth. If the mineralization occupies a relatively small volume it will not be detected at depth.

Two additional anomalies of interest are also located on line 500 west centred about 650 north and 1000 north. The former is coincident with a resistivity low. The anomaly and accompanying low resistivity can be traced east to line 400 west with the low resistivity zone continuing right through to line 0. The averaged resistivity contour map illustrates the extent and position of this zone. This low resistivity zone may be a slightly less resistive sedimentary or volcanic unit or a wide shear zone structure. What is interesting is the apparent termination of the eastward extension of the IP anomaly at line 300 west. This corresponds to the postulated north-south fault structure position interpreted from the magnetic anomaly patterns. The other IP anomaly at 1000 north on line 500 west also appears to dissipate at line 300 west. Examination of the overall averaged resistivity anomaly contour patterns provides further evidence of this north-south fault break. Thus the polarization anomaly at 650 north is close to the intersection of two possible fault or shear structures a propitious environment for hydrothermal activity.

The anomaly at 1000 north differs from the one to the south in that the former correlates with a high resistivity zone (compare maps 3 and 4). The source of the high resistivity could be either an underlying felsic intrusive rock such as granite or the result of silicification associated with alteration processes. Both can be interrelated processes and both potential sources could contain polarizable material such as pyrite. In any event, both IP anomalies on lines 400 and 500 west are favourable exploration targets.

Note the high resistivity zone trending east-west at about 400 north on lines 300 west to 500 west. It is displaced southward at the location of the proposed north-south fault and increases in amplitude at the south end of line 200 west (Map 4). There is no accompanying IP effects associated with this high resistivity zone and it could be either a more resistive volcanic unit or a felsic intrusive body.

RECOMMENDATIONS

An explanation for the induced polarization anomalies at 650 north and 1000 north on lines 400 west and 500 west is required. Both anomalies could be reflecting alteration processes. The anomaly on line 650 north is considered the most prospective because of its structural position and low resistivity signature. A secondary target objective is the isolated small anomaly on line 500 west at 240 north. It is in proximity to an interpreted contact zone and therefore is of some interest.

Additional IP survey lines are recommended to the west of line 500 west in order to properly delineate the anomalies. Investigation of the source of the responses by prospecting and/or drilling can then proceed.

R. W. Woolham, P. Eng.
November 5, 1996

REGISTERED PROFESSIONAL ENGINEER
R.W. WOOLHAM
PROVINCE OF ONTARIO

APPENDIX I
PERSONNEL AND COST STATEMENT

FIELD

Name	Type of Work	Period in 1996	Days	Cost/Day $	Total Cost $
E. Chief	Linecutting	Oct. 2 to 18	12	202.75	2,433.00
J. Chief	"	"	13	201.30	2,616.90
F. Frank	"	Oct. 2 to 16	15	197.95	2,969.25
K. McMillan	"	"	15	197.95	2,969.25
A. Jackson	Linecutting Geophysics	Oct. 7 to 18	9	166.45	1,498.05
G. Chief	Geophysics	"	9	165.10	1,485.90
R. Chief	"	"	9	165.10	1,485.90
G. Stone	Geophysics Prospecting	Sept. 16 to Oct. 25	36.5	240.00	8,760.00
C. Wilck	Geophysics	"	36.5	210.00	7,665.00

FIELD EXPLORATION WAGES SUBTOTAL $31,883.25

OFFICE

Name	Type of Work	Period in 1996	Days	Cost/Da y $	Total Cost $
G. STone	Data Processing	Oct. 29 to Nov. 1	4	240.00	960.00
C.Wilck	Data Processing	"	4	210.00	840.00
E. Keating	Report Binding and Figures	Nov. 4	1	120.00	120.00
M. Coleman	Secretarial	Nov. 4	1	156.00	156.00
R. Woolham	Report	Nov. 4 to 5	2	450.00	900.00

OFFICE WAGES SUBTOTAL $2,976.00

Food and Accommodation: 155 man days at $28.76 per man day $4,457.80

Instrument and truck rental, field supplies: 27 days at $501.31 per day $13,535.37

Air Travel: two return air fares Toronto to Vancouver $3,682.00

TOTAL EXPENDITURES **$56,534.42**

APPENDIX II

INSTRUMENT SPECIFICATIONS

GEM Systems

ADVANCED MAGNETOMETERS

GSM-19

Magnetometer
VLF System

Slow & Fast Sampling

Magnetometers

Gradiometers

Omnidirectional VLF

Specifications

Performance

	Overhauser	Proton
Resolution:	0.01 nT	0.01 nT
Relative Sensitivity:	0.02 nT	0.2 nT
Absolute Accuracy:	0.2 nT	1 nT
Range:	20,000 to 120,000 nT	20,000 to 120,000 nT
Gradient Tolerance:	Over 10,000 nT/m	Over 7,000 nT/m

Operating Modes

Manual:	Coordinates, time, date and reading stored automatically at min. 3 second interval.
Base Station:	Time, date and reading stored at 3 to 60 second interval (higher speeds available).
"Walking":	Time, date and reading stored at coordinates of fiducial with 1 or 2 sec. cycle time.
Hip Chain:	Equidistant coordinates, time, date and reading stored automatically. Distance interval of readings is programmable.
Remote Control:	Optional remote control using RS-232 interface.
Input/Output:	RS-232 or analog (optional) output using 6 pin weatherproof connector.

Operating Parameters

Power Consumption:	Only 2 Ws per reading for Overhauser, and 12 Ws per reading for Proton magnetometer. Will operate continuously for 45 hours on standby.
Power Source:	12V 1.9 Ah sealed lead acid battery standard, other batteries available.
Operating Temperature:	-40ºC to +60ºC.

Storage Capacity

Manual Operation:	8,000 readings standard, 131,000 optional. With 3 VLF stations 3,100 standard, 58,000 optional.
Base Station:	43,000 readings standard, 700,000 optional (580 hour or 24 day uninterrupted operation with 3 sec. interval).
Gradiometer:	6,800 readings standard, 110,000 optional. With 3 VLF stations 2,900 standard, 46,000 optional.

Omnidirectional VLF

Performance Parameters:	Resolution 0.5% and range to +/- 200% of total field. Frequency 15 to 30 kHz.
Measured Parameters:	Vertical in-phase & out-of-phase, 2 horizontal components, coordinates, date, and time.
Features:	Up to 3 stations measured automatically, in-field data review, displays station field strength continuously, and tilt correction for up to +/- 10º tilts.
Dimensions and Weight:	93 x 143 x 150 mm and weighs only 1.0 kg.

Dimensions and Weights

Dimensions:	• Console 223 x 69 x 240 mm. • Sensor 170 x 71 mm diameter cylinder.
Weight:	• Console 2.1 kg. • Sensor and staff assembly 2.0 kg.
Standard Package:	• Console with batteries, harness, charger, and case. Sensor with cable, connector and staff.

SCINTREX

IPR-12 Time Domain Induced Polarization/Resistivity Receiver

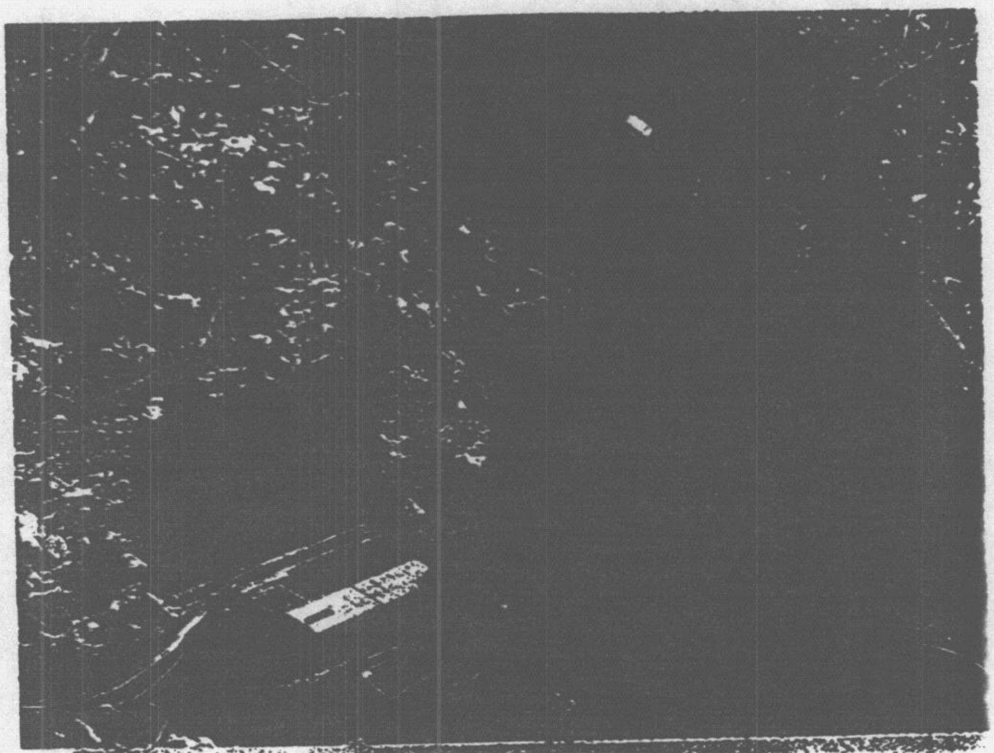
Brief Description

The IPR-12 Time Domain IP/Resistivity Receiver is principally used in exploration for precious and base metal mineral deposits. In addition, it is used in geoelectrical surveying for groundwater or geothermal resources, often to great depths. For these latter targets, the induced polarization measurements may be as useful as the high accuracy resistivity results since it often happens that geological materials have IP contrasts when resistivity differences are absent.

Due to its integrated, lightweight, microprocessor based design and its large, 16 line display screen, the IPR-12 is a remarkably powerful, yet easy to use instrument. A wide variety of alphanumeric and graphical information can be viewed by the operator during and after the taking of readings. Signals from up to eight potential dipoles can be measured simultaneously and recorded in solid-state memory along with automatically calculated parameters. Later, data can be output to a printer or a PC (directly or via modem) for processing into profiles and maps.

The IPR-12 is compatible with Scintrex [illegible] TSQ Transmitters, or others, which output square waves with equal [illegible] periods and polarity changes [illegible] cycle. The IPR-12 measures primary voltage (Vp), self potential (SP) and time domain induced polarization (Mi) characteristics of the received waveform. Resistivity, statistical and Cole-Cole parameters are calculated and recorded in memory with the measured data and time.

Scintrex has been active in induced polarization research, development, manufacturing, consulting and surveying for over thirty years. We offer a full range of instrumentation, accessories and training.



The IPR-12 Receiver measures spectral IP signals from eight dipoles simultaneously then records measured and calculated parameters in memory.

B E N E F I T S

Speed Up Surveys

The IPR-12 saves you time and money in carrying out field surveys. Its capacity to measure up to eight dipoles simultaneously is far more efficient then older receivers measuring a single dipole. This advantage is particularly valuable in drillhole logging where electrode movement time is minimal.

The built-in, solid-state memory records all information associated with a reading, dispensing with the need for any hand written notes. PC compatibility means rapid electronic transfer of data from the receiver to a computer for rapid data processing.

Taking a reading is simple and fast. Only a few keystrokes are virtually needed since the IPR-12 features automatic circuit resistance checks, SP buckout and gain setting.

High Quality Data

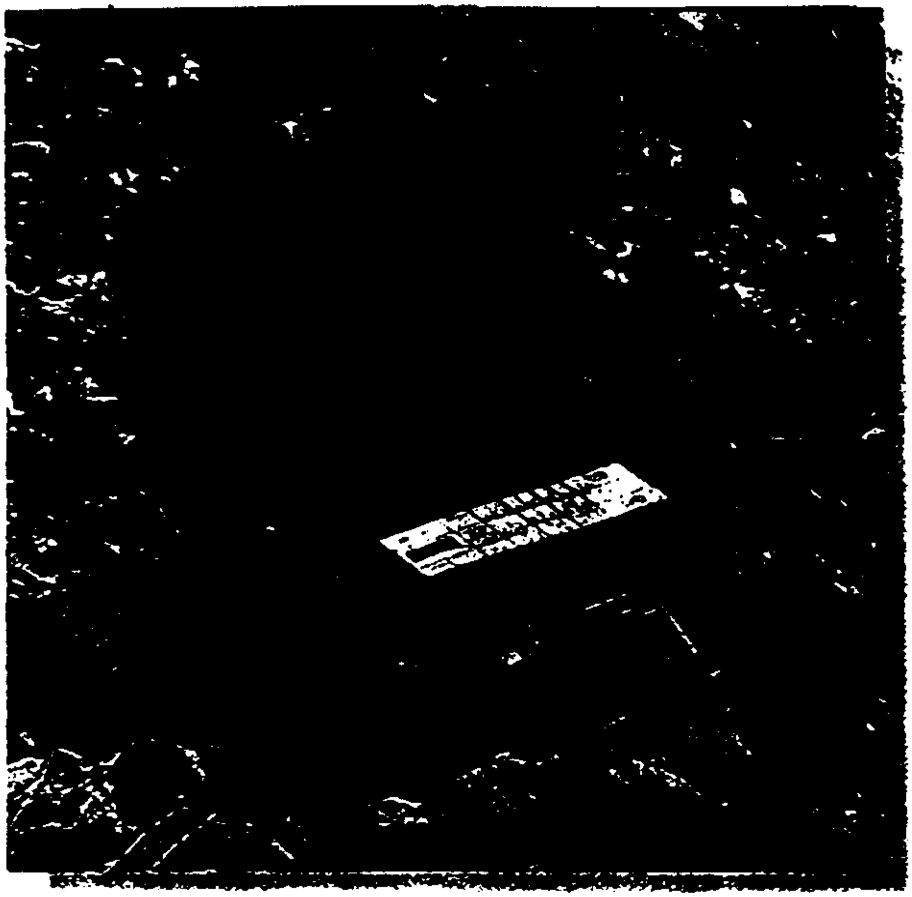
One of the most important features of the IPR-12 in permitting high quality data to be acquired, is the large display screen which allows the operator easy real time access to graphic and alphanumeric displays of instrument status and measured data. The IPR-12 ensures that the operator obtains accurate data from field work.

The number and relative widths of the IP decay curve windows have been carefully chosen to yield the transient information required for proper interpretation of spectral IP data. Timings are selectable to permit a very wide range of responses to be measured.

The IPR-12 stacks the information for each cycle and calculates a running average for Vp, SP and each transient window. This enhancement is equivalent to a noise decrease of $\sqrt{N}$ or a transmitter power increase of N where N is the number of values averaged. Since values are measured each few seconds, it does not take long for this signal enhancement technique to have great effect.

The automatic SP program bucks out and corrects completely for linear SP drift. Data are also kept noise free by: radio-frequency (RF) filters, low pass filters and statistical spheric noise spike rejection.

To prevent mistriggering, the IPR-12 does not accept trigger-line signals at inappropriate times.



The IPR-12 is fully portable and easy to use.

FEATURES

Eight Dipoles Simultaneously
The analog input section of the IPR-12 contains eight identical differential inputs to accept signals from up to eight individual potential dipoles. Any dipole can be disabled. The amplified analog signals are converted to digital form by a high resolution A/D converter and recorded with other pertinent information identifying each group of dipoles.

Large Backlit Display
The 16 line by 40 character backlit SuperTwist Liquid Crystal Display (LCD) enhances the operator's understanding of the status and the accuracy of the measured data. Any one of thirteen different display screens are used for entering information, monitoring the progress of a reading and checking data before and after recording. An LCD heater is provided for low temperature operations.

Keyboard
Seventeen large keys control the instrument and permit input of alphanumeric information.

Solid State Memory
All instrument parameters as well as entered notes, measured and calculated quantities are stored in the large capacity, fail-safe memory.

Memory Recall
Any observation recorded in memory can be recalled, by simple keypad entry, for inspection on the display.

Printed Data Listings
A simple digital printer can be connected to the IPR-12 to print out listings of data recorded in memory.

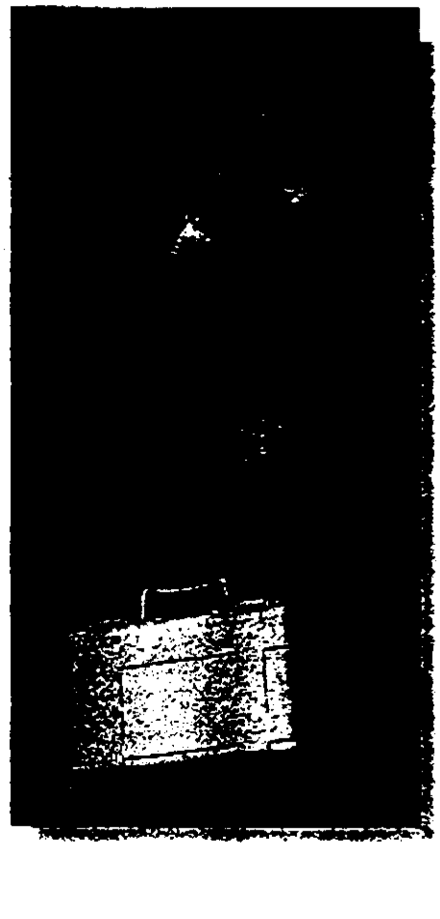
PC Compatibility
The IPR-12 uses an RS-232C, 7 or 8 bit ASCII high baud rate interface, compatible with most lap-tops or PC's. This permits data to be dumped on a line by line basis or all at once from the receiver's memory for archiving or processing.

Spectral Quality IP
Depending on receive time, 10 to 14 windows are measured simultaneously for each dipole. Selectable total receive times are 1, 2, 4, 8, 16 and 32 seconds. After the current is shut off, there is a delay of t milliseconds. Then, the width of each window in the seven following pairs of windows is, respectively: t, 2t, 4t, 8t, 14t, 23t and 36t. This format provides a high density of information at early times where the decay of the curve is steepest.

Variable Chargeability Summing
By keyboard selection, you can choose an additional, summed transient window. This value, Mx, is recorded in memory along with the value for each of the measured transient windows. Summing can be done for the purpose of obtaining a parameter close to that measured with earlier receivers. The width of the Mx window ranges upwards from 10 milliseconds in 10 millisecond steps.

Signal Enhancement
Primary voltage, self potential and individual transient windows are continuously averaged and the display is updated every cycle so the operator is fully aware of signal improvement.

Calculates Cole-Cole Parameters
The IPR-12 calculates the Cole-Cole parameters; true chargeability (M) and time constant (Tau) for a fixed C of 0.25. These parameters, which are recorded in memory may be used to assist interpretation by distinguishing between different chargeable sources, based mainly on textural differences.



FEATURES

Noise Rejection
Individual samples contaminated by noise can be automatically rejected.

Statistical Parameters
The IPR-12 calculates statistical error parameters for Mx. The RMS error of the deviation between the measured data and best fit of the Cole-Cole calculation is also derived.

Selectable Reading Termination
By keyboard selection the receiver can be set up to terminate readings by either a manual key press or when a preset number of cycles have been measured.

Normalizes for Time and Vp
The value recorded for each M window is in millivolt/volt, that is to say that normalization is automatically done for the width of each window and for the primary voltage, Vp is also normalized for time of integration.

Automatic Resistivity Calculations
The IPR-12 calculates the geometrical (K) factors for standard arrays shown in the Info display based on electrode positions given in the Locations display. This feature is particularly helpful for arrays like the Gradient of Schlumberger in which the K-Factors change for every station. Then, using measured primary voltages with operator entered current values, the receiver calculates and records apparent resistivity values.

Automatic Vp Self Ranging
There is no manual adjustment for different primary voltages since the IPR-12 automatically adjusts the gain of its signal conditioning amplifiers for any Vp signal in the range of 50 microvolts to 14 volts full scale.

Automatic SP Correction
Self potential buckout is entirely automatic, both initially and throughout the measurement.

Synchronization
In normal operation, the IPR-12 synchronizes itself on the received waveform, and triggering is disabled until to within about 60 milliseconds before a signal transition. This reduces to a negligible level the possibility of false triggering. A built-in AC ohmmeter avoids electrode polarization, while checking the ground resistance of electrodes and the continuity of field cables. The circuit resistance values are displayed and are automatically recorded in memory.

Self-Check Program
Each time the instrument is turned on, a verification of the program memory is automatically performed.

Out of Limit Checks
Messages appear on the display if any of the following errors occur: out of calibration or failed memory test, incorrect signal amplitude or excessive noise, signal input with respect to the reference electrode in excess of the permitted range, synchronization failure, previous station's data not filed and data memory full.

Analog Meter
When signals on up to eight dipoles are presented simultaneously on the digital display, one analog meter, easily switchable from dipole to dipole, has been provided for monitoring particularly noisy conditions.

Internal Test Generator
An internal signal generator is used to test the instrument periodically, to ensure that it is functioning properly.

Overload Detection
All analog signal levels are monitored to prevent measurements on individual dipoles for which limits are exceeded and appropriate messages are displayed. The affected samples are not added to the previous average.

Noise Filters
Radio frequency and 10Hz. 6 pole low pass filters enhance signal quality. The low cut off frequency and steep roll-off of the latter filters provide better powerline noise rejection then notch filters.

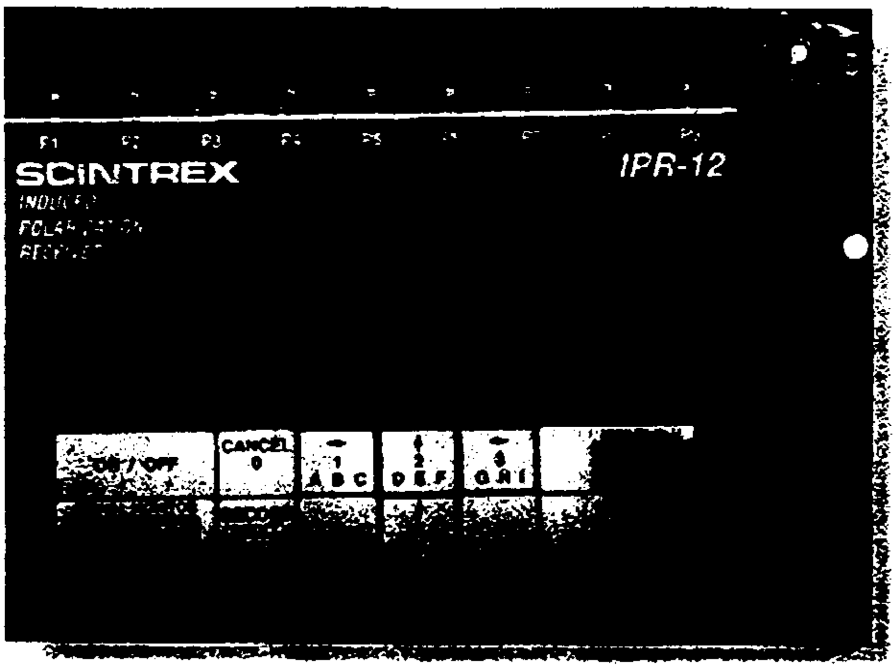
Noise Monitor
This monitor allows the display of noise and/or the received signal for any selected dipole in a similar manner to that of a digital oscilloscope.

Input Protection
If signals in excess of 14V and up to 60V are accidentally applied at the input, zener diode protection ensures that no damage will occur. For higher voltages fuse protection is used.

Binding Posts
To avoid inter-electrode leakage which may occur in humid conditions with small, multipin connectors, the IPR-12 has been designed with widely spaced binding posts.

Mueller Cable
The "Mueller IP/Resistivity Snake" is a potential cable set that has been designed by a geophysical field operator with several years of practical experience in conducting surveys in all types of terrain. Designed to be easily and quickly moved along the survey line to increase your survey efficiency results in significant cost savings made possible by the "Snake".

Software
A complete range of data processing, plotting and interpretation software is available to meet all requirements.



The IPR-12 features a new, improved large highly visible Liquid Crystal Display.

SPECIFICATIONS

Inputs
1 to 8 dipoles are measured simultaneously.

Input Impedance
16 Megohms

SP Bucking
± 10 volt range. Automatic linear correction operating on a cycle by cycle basis.

Input Voltage (Vp) Range
50 μvolt to 14 volt

Chargeability (M) Range
0 to 300 millivolt

Tau Range
1 millisecond to 1000 seconds

Reading Resolution of Vp, SP and M
Vp, 10 microvolt; SP, 1 millivolt; M, 0.01 millivolt/volt

Absolute Accuracy of Vp, SP and M
Better than 1%

Common Mode Rejection
At input more than 100db

Vp Integration Time
10% to 80% of the current on time.

IP Transient Program
Total measuring time keyboard selectable at 1, 2, 4, 8, 16 or 32 seconds. Normally 14 windows except that the first four are not measured on the 1 second timing, the first three are not measured on the 2 second timing and the first is not measured on the 4 second timing. (See diagram on page 2).
An additional transient slice of minimum 10 ms width, and 10ms steps, with delay of at least 40 ms is keyboard selectable.

Transmitter Timing
Equal on and off times with polarity change each half cycle. On/off times of 1, 2, 4, 8, 16 or 32 seconds. Timing accuracy of ±100 ppm or better is required.

External Circuit Test
All dipoles are measured individually in sequence, using a 10 Hz square wave. The range is 0 to 2 Mohm with 0.1 kohm resolution. Circuit resistances are displayed and recorded.

Synchronization
Self synchronization on the signal received at a keyboard selectable dipole. Limited to avoid mistriggering.

Filtering
RF filter, 10 Hz 6 pole low pass filter, statistical noise spike removal.

Internal Test Generator
1200 mV of SP; 807 mV of Vp and 30.28 mV/V of M.

Analog Meter
For monitoring input signals; switchable to any dipole via keyboard.

Keyboard
17 key keypad with direct one key access to the most frequently used functions.

Display
16 lines by 40 characters, 128 x 240 dots. Backlit SuperTwist Liquid Crystal Display. Displays instrument status and data during and after reading. Alphanumeric and graphic displays.

Display Heater
Available for below -15°C operation.

Memory Capacity
Stores approximately 400 dipoles of information when 8 dipoles are measured simultaneously.

Real Time Clock
Data is recorded with year, month, day, hour, minute and second.

Digital Data Output
Formatted serial data output for printer and PC etc. Data output in 7 or 8 bit ASCII, one start, one stop bit, no parity format. Baud rate is keyboard selectable for standard rates between 300 baud and 57.6 kBaud. Selectable carriage return delay to accommodate slow peripherals. Hand-shaking is done by X-on/X-off.

Standard Rechargeable Batteries
Eight rechargeable Ni-Cad D cells. Supplied wi a charger, suitable for 110/230V, 50 to 60 Hz, 10W. More than 20 hours service at +25°C, more than 8 hours at -30°C.

Ancillary Rechargeable Batteries
An additional eight rechargeable Ni-Cad D cells may be installed in the console along with the Standard Rechargeable Batteries. Used to power the Display Heater or as backup power. Supplied with a second charger. More than 6 hours service at -30°C.

Use of Non-Rechargeable Batteries
Can be powered by D size Alkaline batteries, but rechargeable batteries are recommended for longer life and lower cost over time.

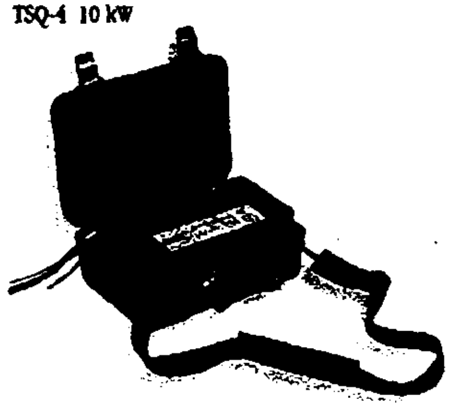
Operating Temperature Range
-30°C to +50°C

Storage Temperature Range
-30°C to +50°C

Dimensions
Console: 355 x 270 x 165 mm
Charger: 120 x 95 x 55 mm

Weights
Console: 5.8 kg
Batteries: 1.3 kg
Charger: 1.1 kg

Transmitters Available
IPC-9 200 W
TSQ-2E 750 W
TSQ-3 3 kW
TSQ-4 10 kW



Head Office, 222 Snidercroft Road, Concord, Ontario, Canada, L4K 1B5, Telephone (905) 669-2280, Fax (905) 669-6403
In the U.S.A., 10816 East Newton Street, Suite 110, Tulsa, Oklahoma, 74116, Telephone (918) 438-0255, Fax (918) 438-3276
In Australia, 1031 Wellington Street, West Perth, West Australia, 6005, Telephone 61(9) 321-6934, Fax 61(9) 481-1201

APPENDIX III

INDUCED POLARIZATION PSEUDOSECTIONS

APPENDIX IV

CERTIFICATE OF QUALIFICATION

I, Roderick W. Woolham of the town of Pickering, Province of Ontario, do hereby certify that:-

1. I am a geophysicist and reside at 1463 Fieldlight Blvd., Pickering, Ontario, L1V 2S3

2. I graduated from the University of Toronto in 1961 with a degree of Bachelor of Applied Science, Engineering Physics, Geophysics Option. I have been practising my profession since graduation.

3. I am a member in good standing of the following organizations: Professional Engineers Ontario (Mining Branch); Society of Exploration Geophysicists; South African Geophysical Association; Prospectors and Developers Association of Canada.

4. I have not received, nor do I expect to receive, any interest, directly or indirectly, in the properties or securities of Cartaway Resources Corporation or any affiliate.

5. The statements contained in this report and the conclusions reached are based upon evaluation and review of published and private reports and maps.

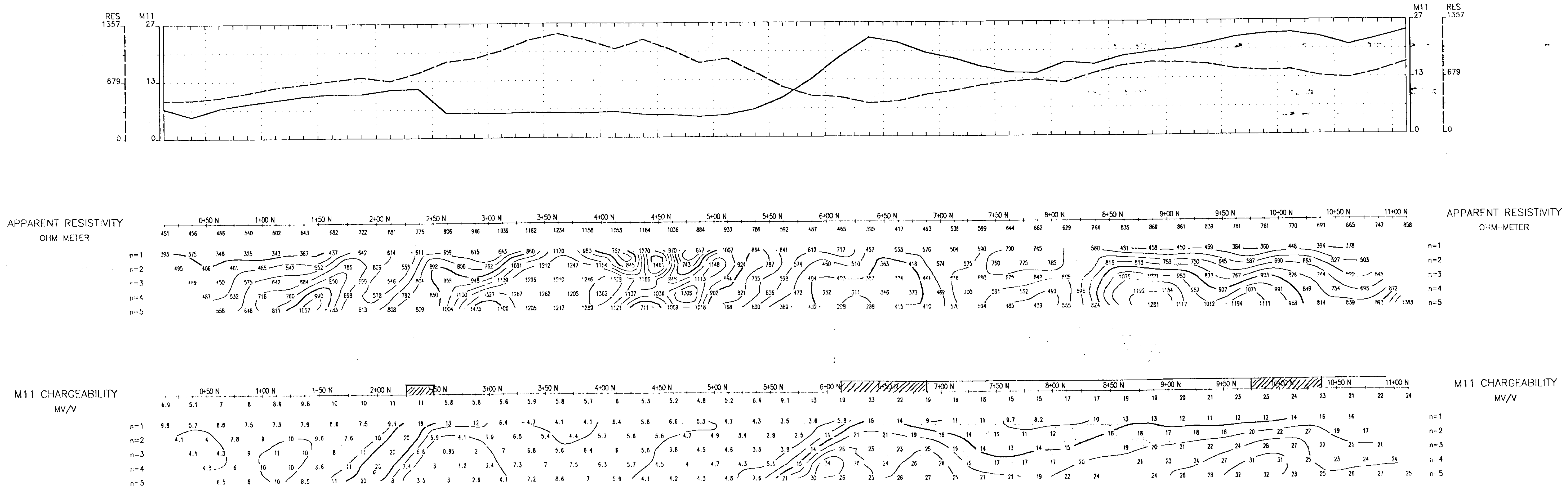
6. I consent to the use of this report in submissions for assessment credits or similar regulatory requirements.

R. W. Woolham, P.Eng.

REGISTERED PROFESSIONAL ENGINEER
R. W. WOOLHAM
PROVINCE OF ONTARIO

Pickering, Ontario

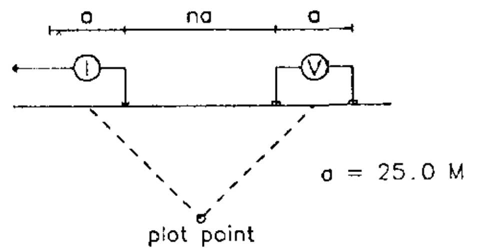
November 5, 1996



Geosoft Software for the Earth Sciences

Line 5 W

Pole-Dipole Array



Filter

(M1)

Scale 1:2500

25 0 25 50 75 100 125 150
(metres)

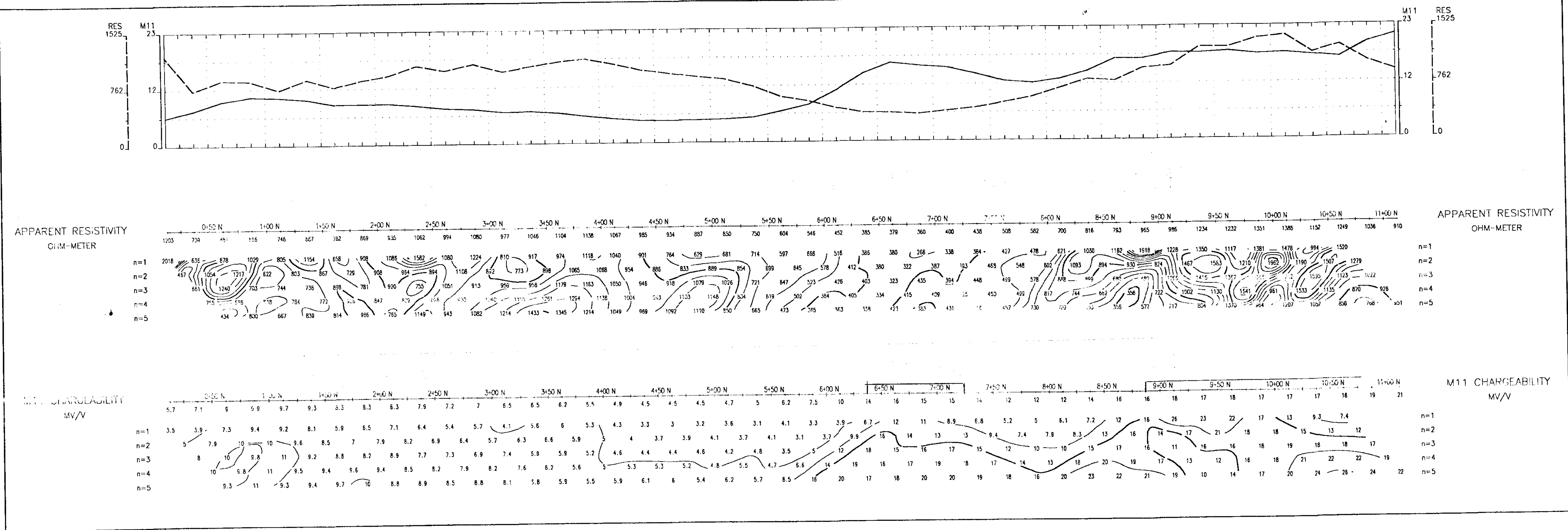
CARTAWAY RESOURCES CORPORATION

INDUCED POLARIZATION SURVEY
HOT 1 CLAIMS NTS 104 P/5
CASSIAR DISTRICT BC

LIC # 226397
Interpretation: R W WOOLHAM, P ENG

OCTOBER 1996

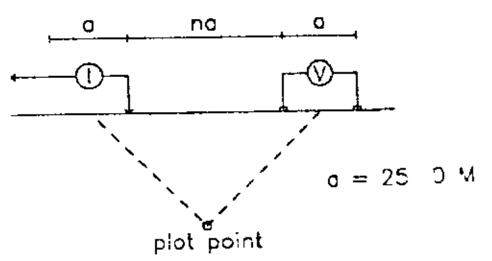
25021



Geosoft Software for the Earth Sciences

Line 4 W

Pole-Dipole Array



Filter

Scale 1:2500

25 0 25 50 75 100 125 150

(metres)

CARTAWAY RESOURCES CORPORATION

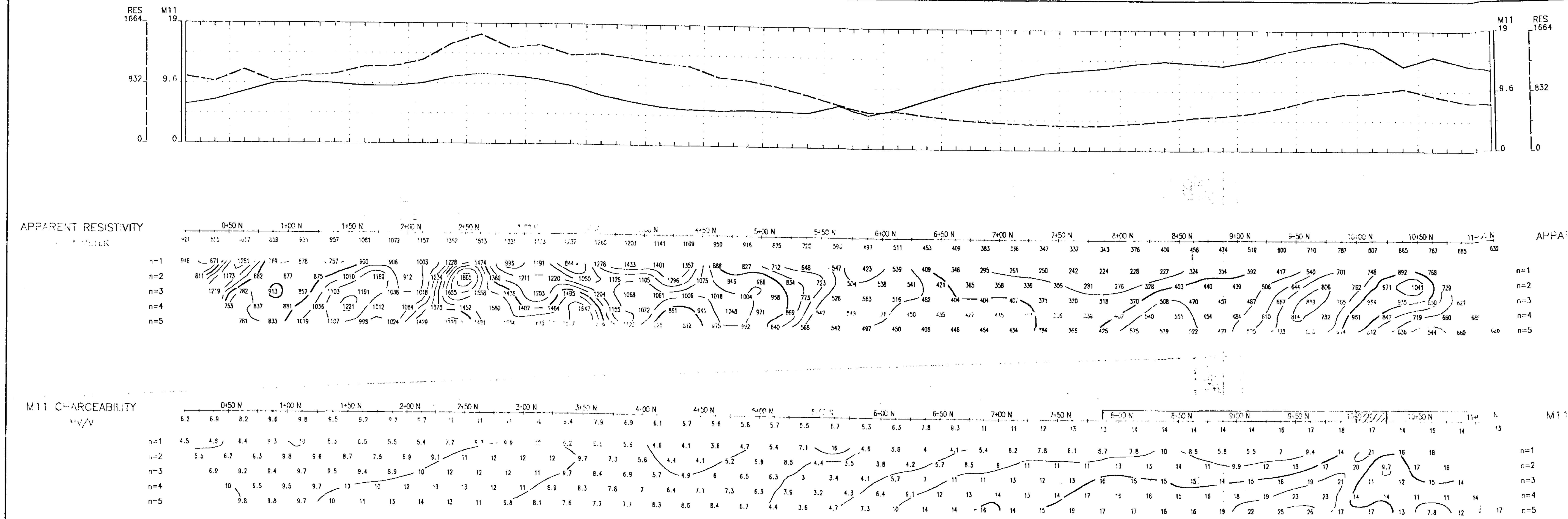
INDUCED POLARIZATION SURVEY
HOT 1 CLAIMS NTS 104 P/5
CASSIAR DISTRICT BC

LIC # 226397

Interpretation: R W WOOLHAM, P ENG

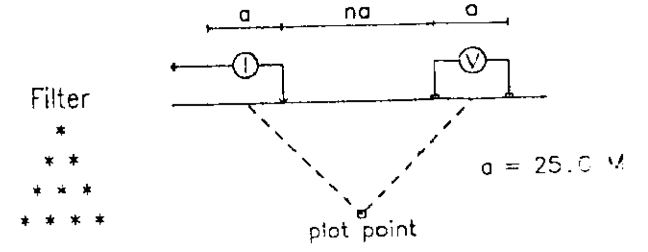
OCTOBER 1996

M3



Line 3 W

Pole-Dipole Array



Scale 1:2500

(metres)

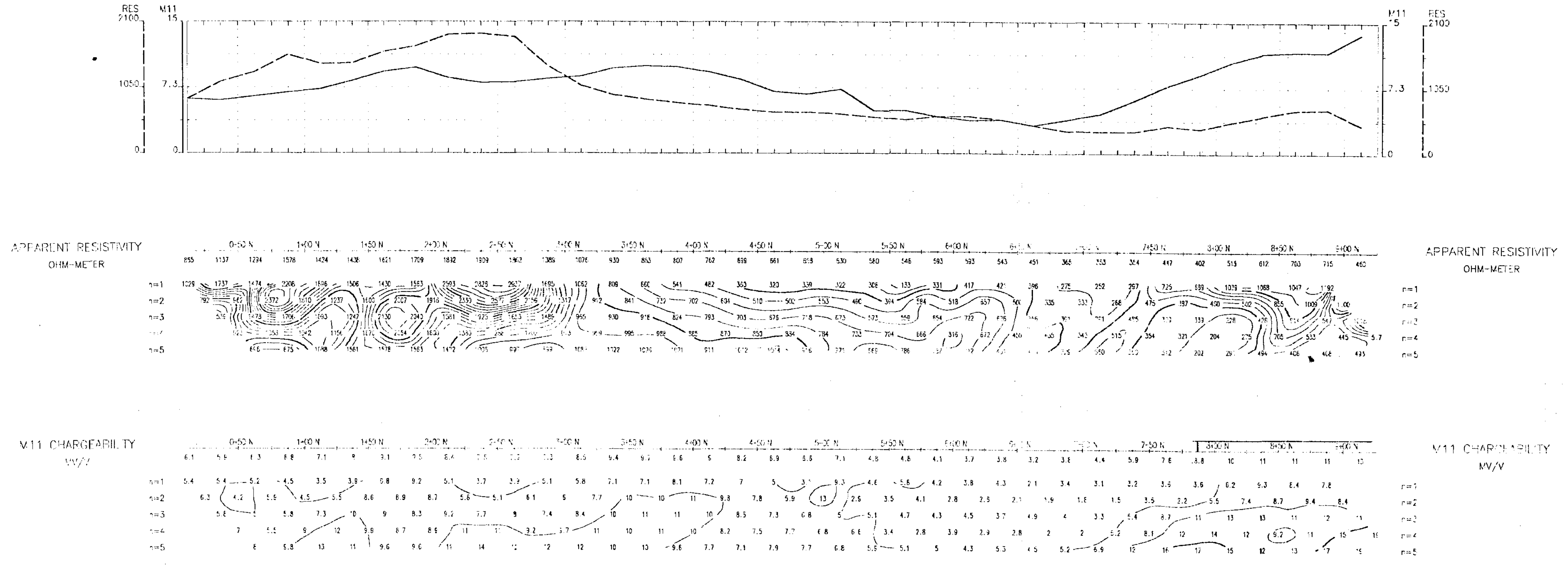
CARTAWAY RESOURCES CORPORATION

INDUCED POLARIZATION SURVEY
HOT 1 CLAIMS NTS 104 P/5
CASSIAR DISTRICT BC

LIC # 226397
Interpretation: R W WOOLHAM, P ENG

OCTOBER 1996

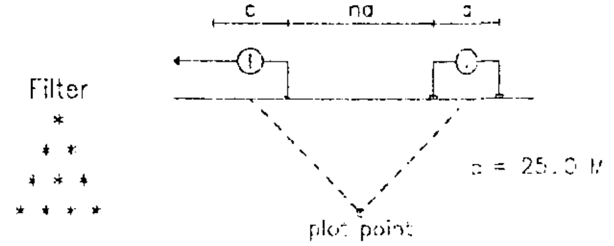
Geosoft Software for the Earth Sciences



Geosoft Software for the Earth Sciences

Line 2 W

Pole-Dipole Array



Scale 1:2500

25 0 25 50 75 100 125 150

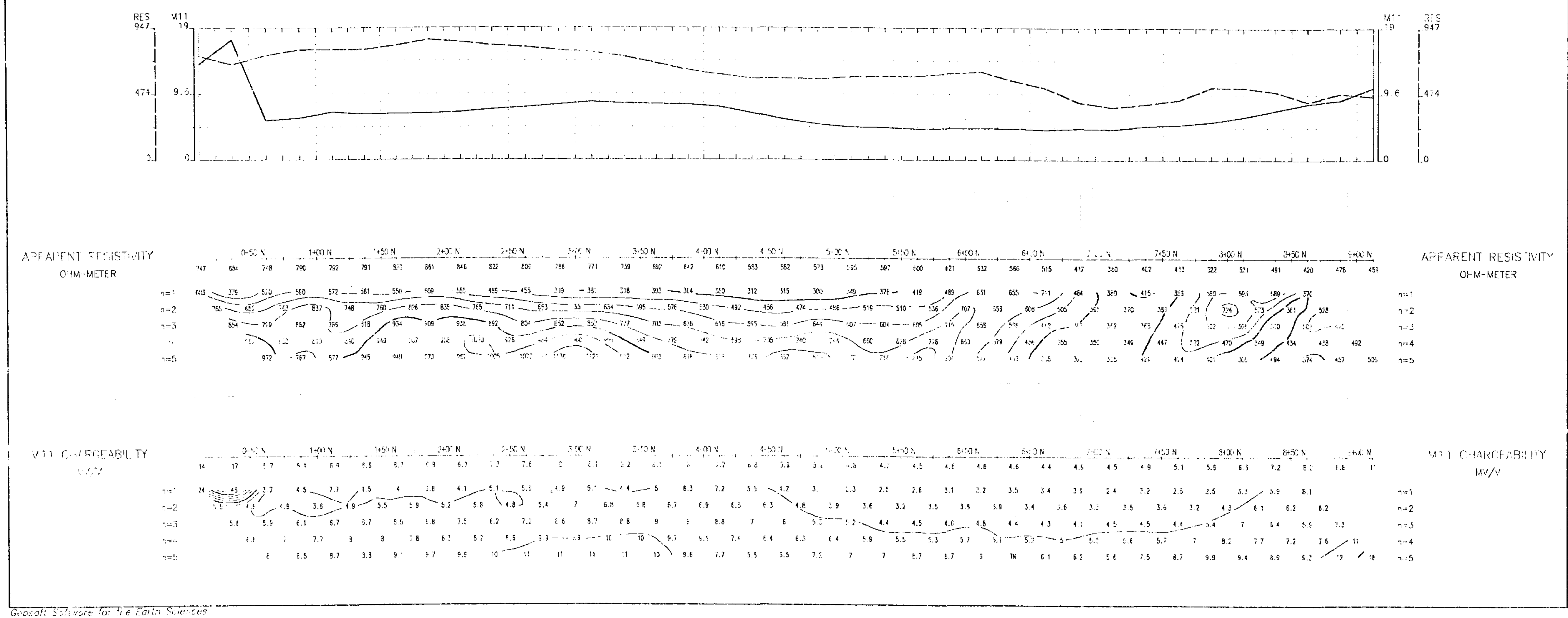
(metres)

CARTAWAY RESOURCES CORPORATION

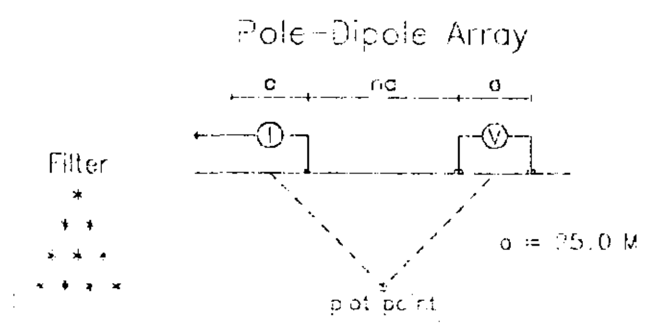
INDUCED POLARIZATION SURVEY
HOT 1 CLAIMS NTS 104 P/5
CASSIAR DISTRICT BC

LIC # 226397
Interpretation: R W WOOLHAM, P ENG

OCTOBER 1996



Line 1 W



CARTAWAY RESOURCES CORPORATION

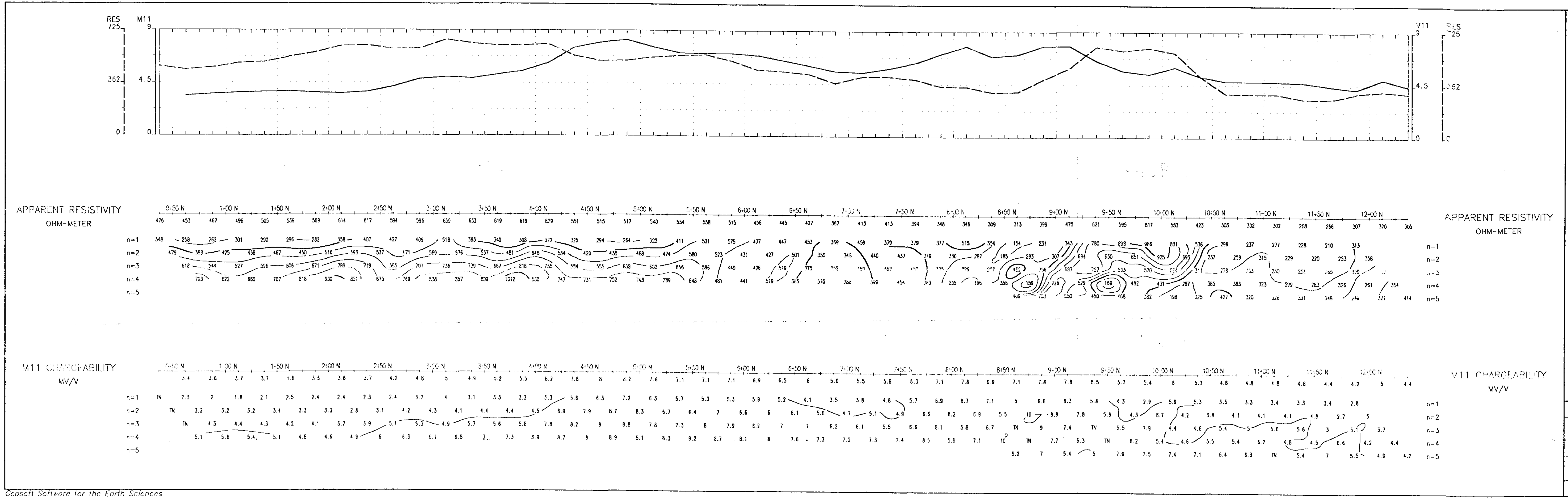
INDUCED POLARIZATION SURVEY
HOT 1 CLAIMS NTS 104 P/5
CASSIAR DISTRICT BC

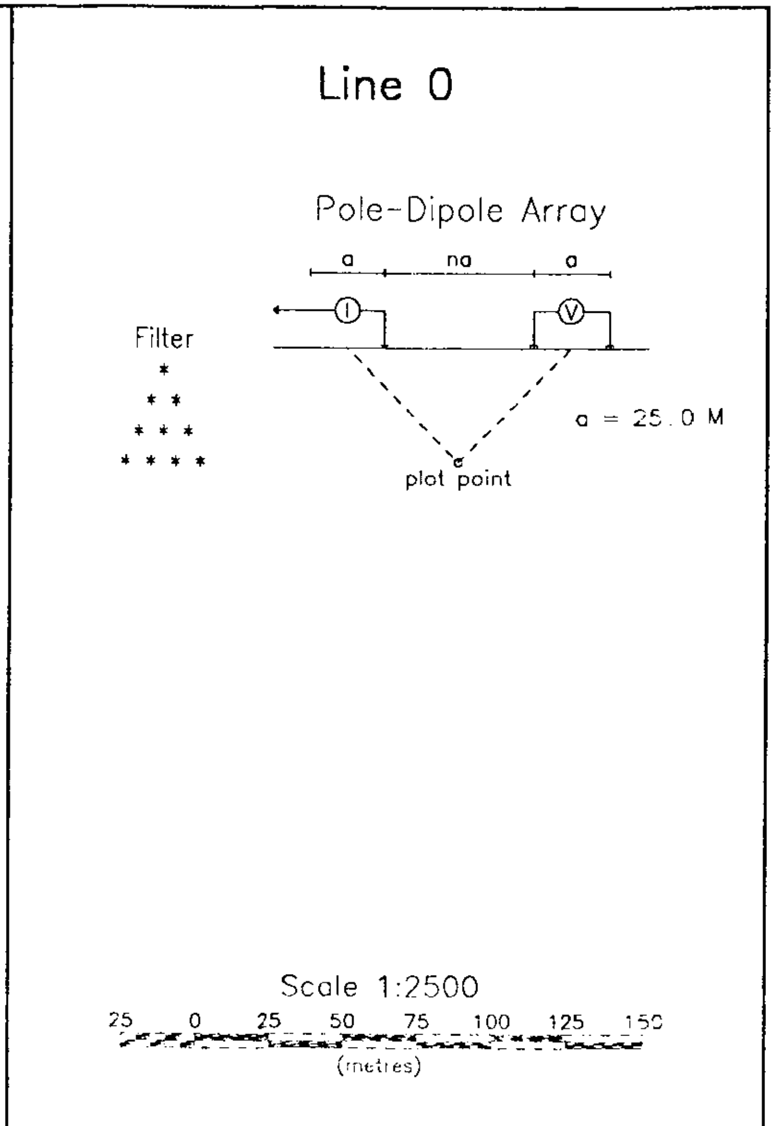
JIC # 226397

Interpretation: R W WOOLHAM, P ENG

OCTOBER 1996

M6





CARTAWAY RESOURCES CORPORATION

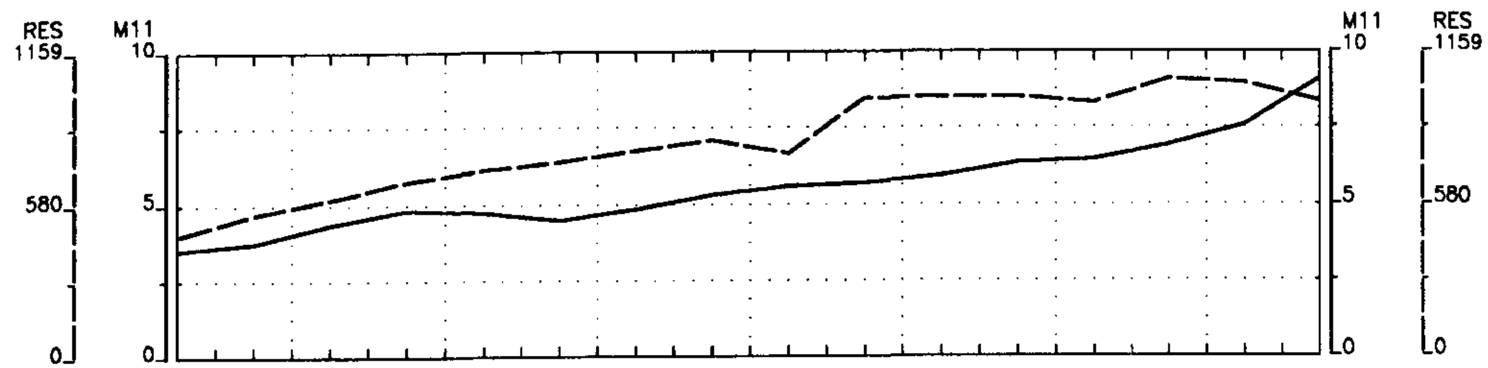
INDUCED POLARIZATION SURVEY
HOT 1 CLAIMS NTS 104 P/5
CASSIAR DISTRICT BC

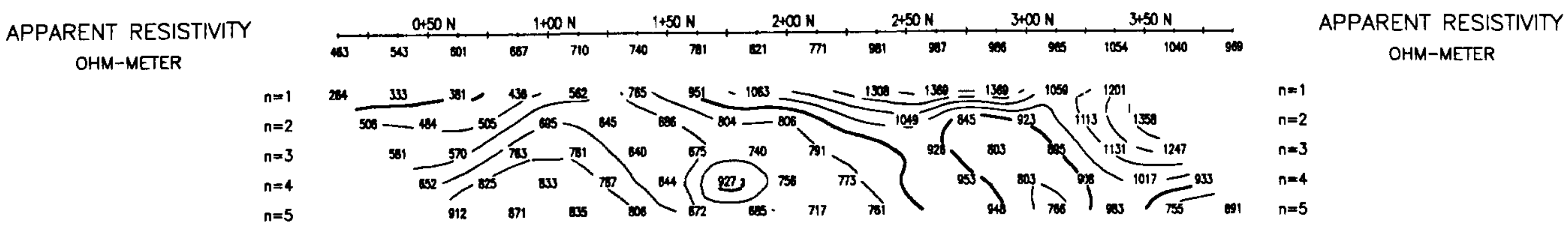
LIC # 226397
Interpretation: R W WOOLHAM, P ENG

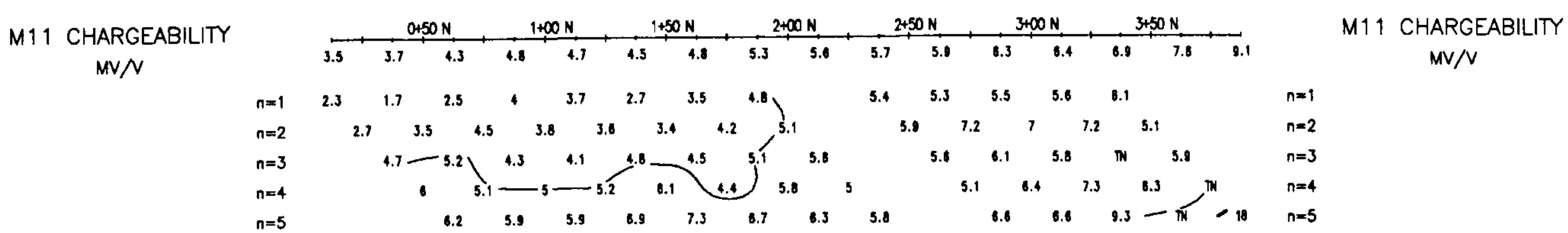
OCTOBER 1996

Geosoft Software for the Earth Sciences

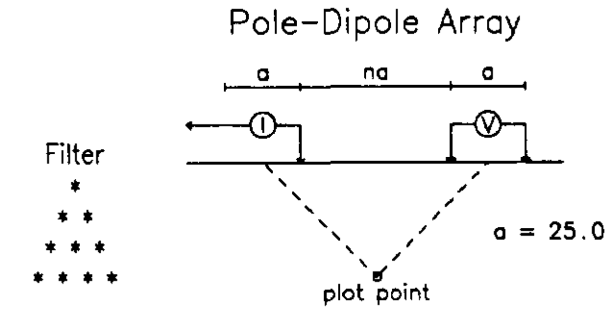
M7

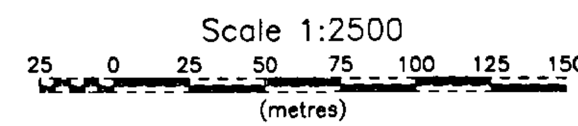






Line 1 E





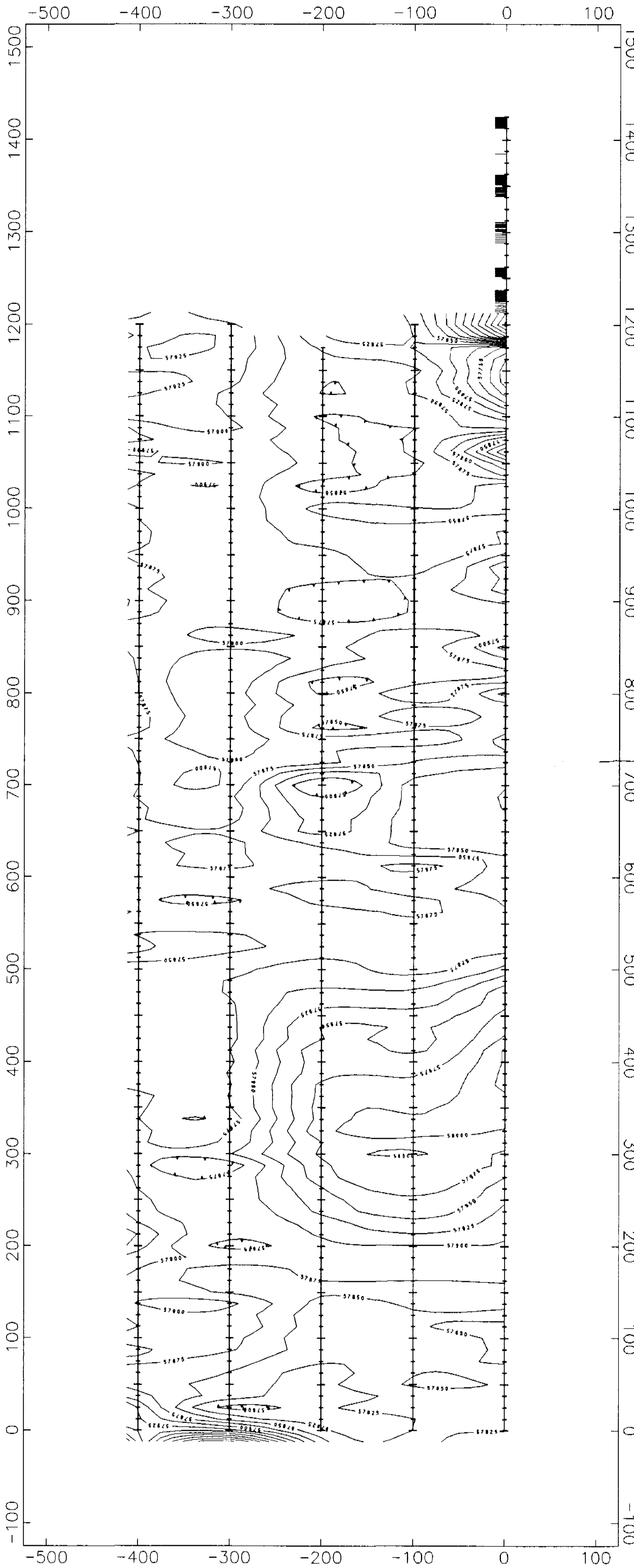
CARTAWAY RESOURCES CORPORATION

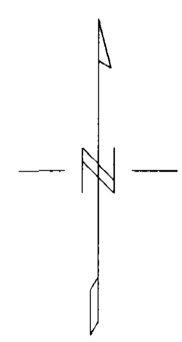
INDUCED POLARIZATION SURVEY
HOT 1 CLAIMS NTS 104 P/5
CASSIAR DISTRICT BC

LIC # 226397
Interpretation: R W WOOLHAM, P ENG

OCTOBER 1996

Geosoft Software for the Earth Sciences





Scale 1:5000

50 0 50 100 150 200

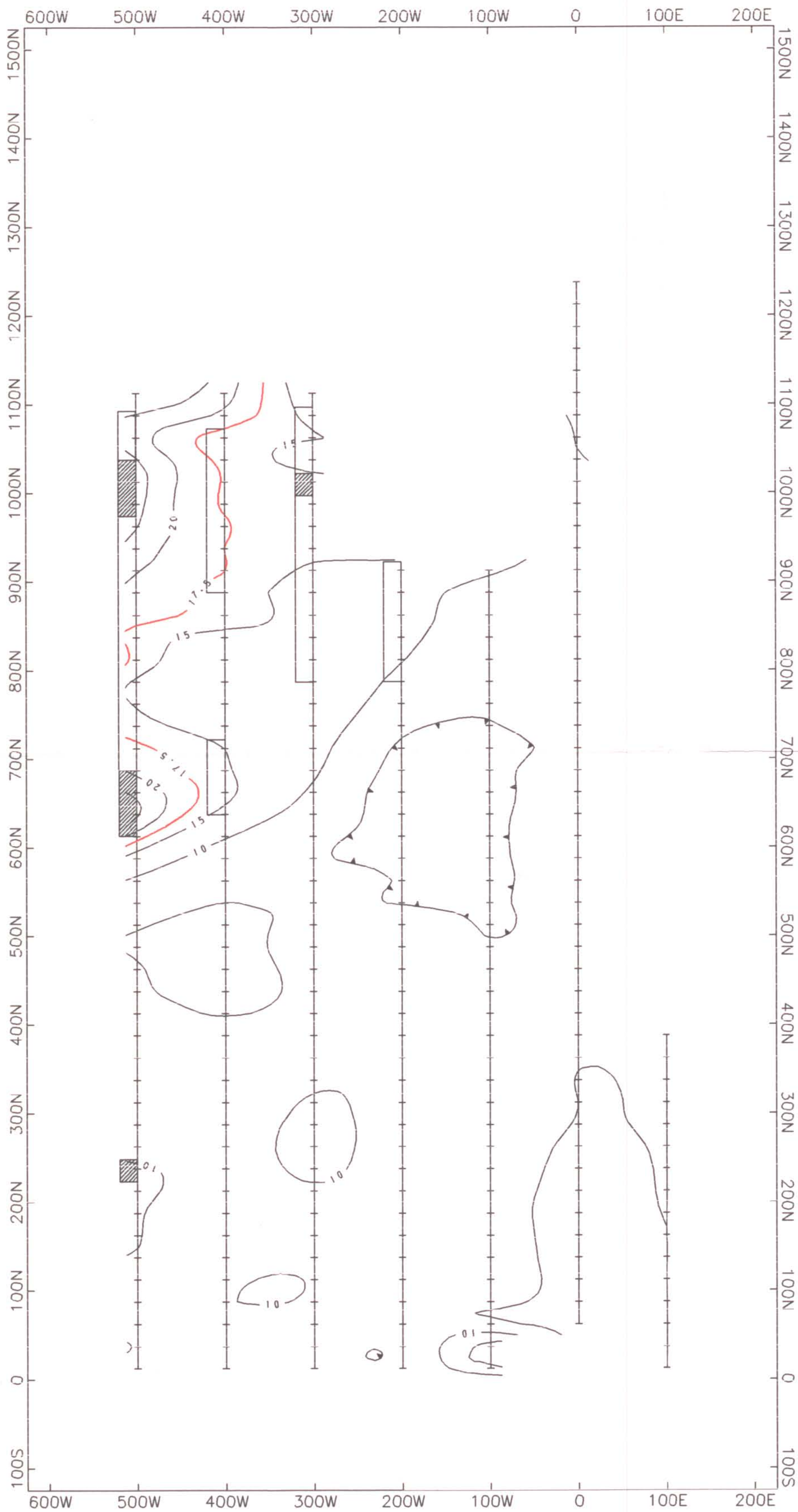
(metres)

CARTAWAY RESOURCES CORPORATION

HOT 1 CLAIMS Lic# 226397
NTS 104P/5 DISTRICT OF CASSIAR, BC
MAP 1 TOTAL FIELD MAG CONTOURS

Contour Interval 25nt
Instrument GSM-19

Surveyed October 1996



Anomalous IP zones from IP pseudosections

Possible

Probable

Scale 1:5000

50 0 50 100 150 200 250

(metres)

MAP 3

CARTAWAY RESOURCES CORPORATION

HOT 1 CLAIMS Lic# 226397
NTS 104P/5 DISTRICT OF CASSIAR, BC
AVERAGED CHARGEABILITY CONTOURS

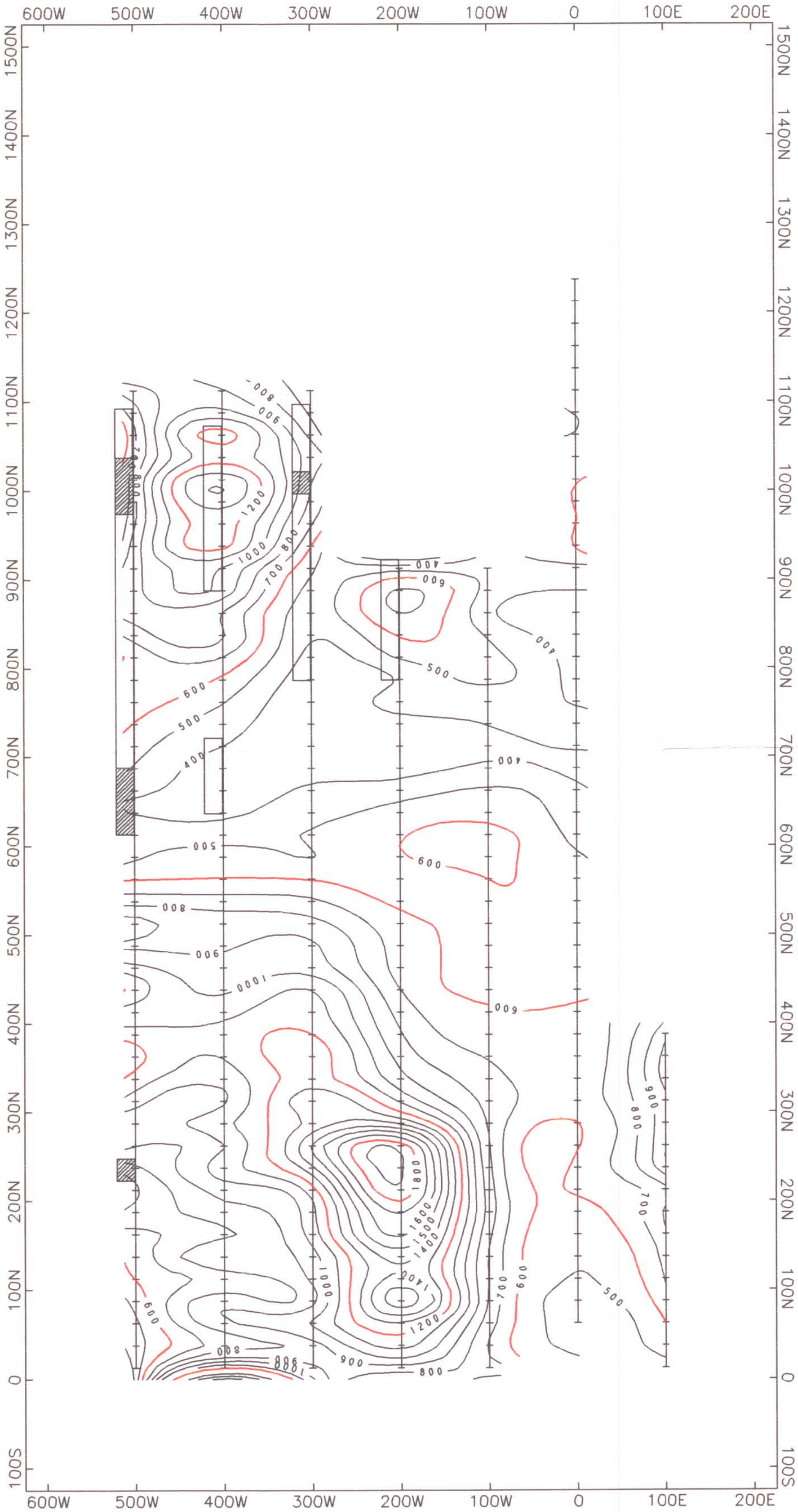
Contour Interval 5 MV/V
Instrument Scintrex IPR-12

Surveyed October 1996

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

25,021

M10



Anomalous IP zones from
IP pseudosections

Possible

Probable

Scale 1:5000

50 0 50 100 150 200 250

(metres)

MAP 4

CARTAWAY RESOURCES CORPORATION

HOT 1 CLAIMS Lic# 226397
NTS 104P/5 DISTRICT OF CASSIAR, BC
AVERAGED RESISTIVITY CONTOURS

Contour Interval 100 ohm-meter
Instrument Scintrex IPR-12

Surveyed October 1996


M11
-500
-400
-300
-200
-100
0
100
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
-100
Scale 1:2500
25 0 25 50 75 100 125 150
(metres)
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
25,021
CARTAWAY RESOURCES CORPORATION
HOT 1 CLAIMS Lic# 226397
NTS 104P/5 DISTRICT OF CASSIAR, BC
MAP 2 TOTAL FIELD MAG VALUES
Base Field Value 57800
Instrument GSM-19
Surveyed October 1996