RECEIVED
FEB 2 8 2003
Gold Commissioner's Office
VANCOUVER, B.C.

GEOPHYSICAL INTERPRETATION REPORT ON MAGNETIC AND INDUCED POLARIZATION/RESISTIVITY SURVEYS

TURNAGAIN PROJECT
LIARD MINING DIVISION
DEASE LAKE, BC

LATITUDE: 58°28.2'N LONGITUDE: 128°50.7'W
UTM: Zone 9 509,000E 6,481,000N NAD83
NTS: 104I/056

by

Dennis V. Woods, Ph.D., P.Eng.
Consulting Geophysicist

for

CANADIAN METALS EXPLORATION LTD.
1060-1090 W. Georgia Street
Vancouver, B.C., Canada, V6E 3V7

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

DATE OF WORK: 13 August to 28 September 2002

DATE OF REPORT: 31 January 2003

27,119

3 of 3

TABLE OF CONTENTS PAGE

INTRODUCTION 1

SURVEY LOCATION, ACCESS AND PHYSIOGRAPHY 2

SURVEY METHODOLOGY 4

Magnetics 4

Resistivity 6

Induced Polarization 7

SURVEY PROCEDURES 8

Line Refurbishing 9

Line-cutting 10

Claim Stacking 12

Magnetics 13

IP/Resistivity 17

DATA PROCESSING AND PRESENTATION 20

Magnetics 20

IP/Resistivity 21

INTERPRETATION PROCEDURES 24

Magnetics 24

IP/Resistivity 24

DISCUSSION OF RESULTS 25

Magnetics 25

Resistivity 27

Chargeability 28

CONCLUSION AND RECOMMENDATIONS... 30

REFERENCES.. 32

CERTIFICATE OF QUALIFICATIONS... 33

ILLUSTRATIONS

FIGURE 1 – Location Map.. 3

FIGURE 2 – Survey Coverage Map... 11

TABLES

TABLE 1a - Grid Preparation-Refurbishing, re-chaining and re-picketing existing line.. 9

TABLE 1b - Grid Preparation-Cutting, chaining and picketing new lines................ 12

TABLE 2 - Magnetic Survey Coverage... 15

TABLE 3 – IP/Resistivity Coverage.. 16

APPENDICES

APPENDIX A - Instrument Specifications

APPENDIX B - Costs

APPENDIX C - Field Production Notes and Claim Staking Notes

APPENDIX D - Magnetic Map

APPENDIX E - IP/Resistivity Pseudo-Sections

APPENDIX F - IP/Resistivity Inversion Sections

APPENDIX G - Resistivity and Chargeability Section Maps

APPENDIX H - Resistivity and Chargeability Plan Maps

INTRODUCTION

During the period 13 August to 28 September 2002, Discovery Geophysics Inc. carried out a mineral exploration program for Canadian Metals Exploration (CME) Ltd. on the Turnagain Project in northern British Columbia. The main intent of the exploration program was to carry out magnetic and IP/resistivity surveys to explore for disseminated, net textured, semi-massive, and massive sulphides within an ultramafic complex of late Triassic age that covers an area approximately 8 km in length and up to 3 km in width. Additional site preparation involved airstrip restoration, grid-line refurbishing, new line cutting and claim staking.

The IP/resistivity survey was carried out using an Iris ELREC-6 time-domain IP receiver with a Phoenix IPT-1, 3 kW IP transmitter powered by an MG-2 motor generator. The magnetic survey was carried out using two GEM Systems GSM-19 Overhauser magnetometers; a third GSM-19 was employed as a base station magnetometer to monitor diurnal variations. The person in charge and chief geophysical operator on site for the duration of the surveys was Brent Robertson, relocated from Discovery's Newfoundland base of operations because of his extensive experience in this type of project. Additional Discovery personnel on site consisted of a crew of seven persons, one from Newfoundland, four from Manitoba and two from British Columbia.

The project amounted to 27.29 km of grid line refurbishing, 32.64 km of line cutting, chaining and picketing, 64.79 km of magnetic surveying and 46.00 km of pole-dipole IP/resistivity surveying. In addition, three days were spent on the restoration of an old airstrip, a pole-pole IP/resistivity test survey was carried out on one day, and 27 units were staked on the west side of the existing property. Geophysical, GPS and other data were transferred on a nightly basis via satellite e-mail to Discovery's head office where Dennis Woods monitored data quality and results. In addition, with regular data evaluation and through interaction with CME personnel, adjustments were made to the ongoing fieldwork to maximize the effectiveness of the surveys. The entire project took 47 days to complete, 9 days for mobilization and demobilization to and from Dease Lake and 38 days to complete all fieldwork.

This report is a technical description of the survey methodology and procedures, and the data processing and interpretation procedures, followed by a general discussion of the results and their implications for the continued exploration on the property. The total magnetic intensity data are presented in a 1:10,000 scale profile, contour and colour grid map. The IP/resistivity data are presented as 1:5,000 scale sections: pseudo-sections (Hallof, 1957) of the basic field data, and true sections of the 2-D inversion results (Oldenburg and Li, 1994). The resistivity and chargeability inversion results are also plotted as 1:10,000 scale profile, contour and colour grid plan maps in three different depth ranges, and as 1:10,000 scale composites of all of the inversion sections. All map plots are overlain on a digital topographic base, which also shows interpreted faults, geologic contacts and lithologic symbols from an earlier geologic report on the property (Downing, 1998).

SURVEY LOCATION, ACCESS AND PHYSIOGRAPHY

The Turnagain property covers an area of over 50 square kilometres and encompasses the entire Turnagain Ultramafic Complex: a late Triassic ultramafic intrusive composed of dunite, peridotite, clinopyroxenite, hornblendite, feldspathic hornblendite and sepentinite. The property is located in the Liard Mining Division of British Columbia, approximately 1,400 km north of Vancouver and about 68 kilometres east of the town of Dease Lake (Figure 1), which is located on the northern portion of the Stewart-Cassiar highway (Hwy 37).

Access to the property from Dease Lake is achieved most readily by helicopter from Dease Lake (a 30 minute flight) or potentially by fixed-wing aircraft to a 2000 foot airstrip situated adjacent to the Turnagain River in the south-central area of the property. The airstrip is located on a large glacial outwash and had not been used since the 1970's: new tree growth, grass clumps and frost heaves had developed over this time making it unusable. The Discovery crew cleared the new tree growth and root systems, removed large boulders and levelled bumpy areas. The airstrip may now be usable to small bush type aircraft, but since no planes were available during the course of the survey, it remains untested and should be inspected by a pilot before use.

The property is also accessible from Dease Lake by 4WD truck via a rough road for about 70 kilometres. This means of access is ideal for moving supplies or equipment into the property. The road passes by a gold placer mining camp (Boulder City) about 15 km from the property and then follows the southeast side of Turnagain River to the property. The section of the road from Dease

Turnagain River Project

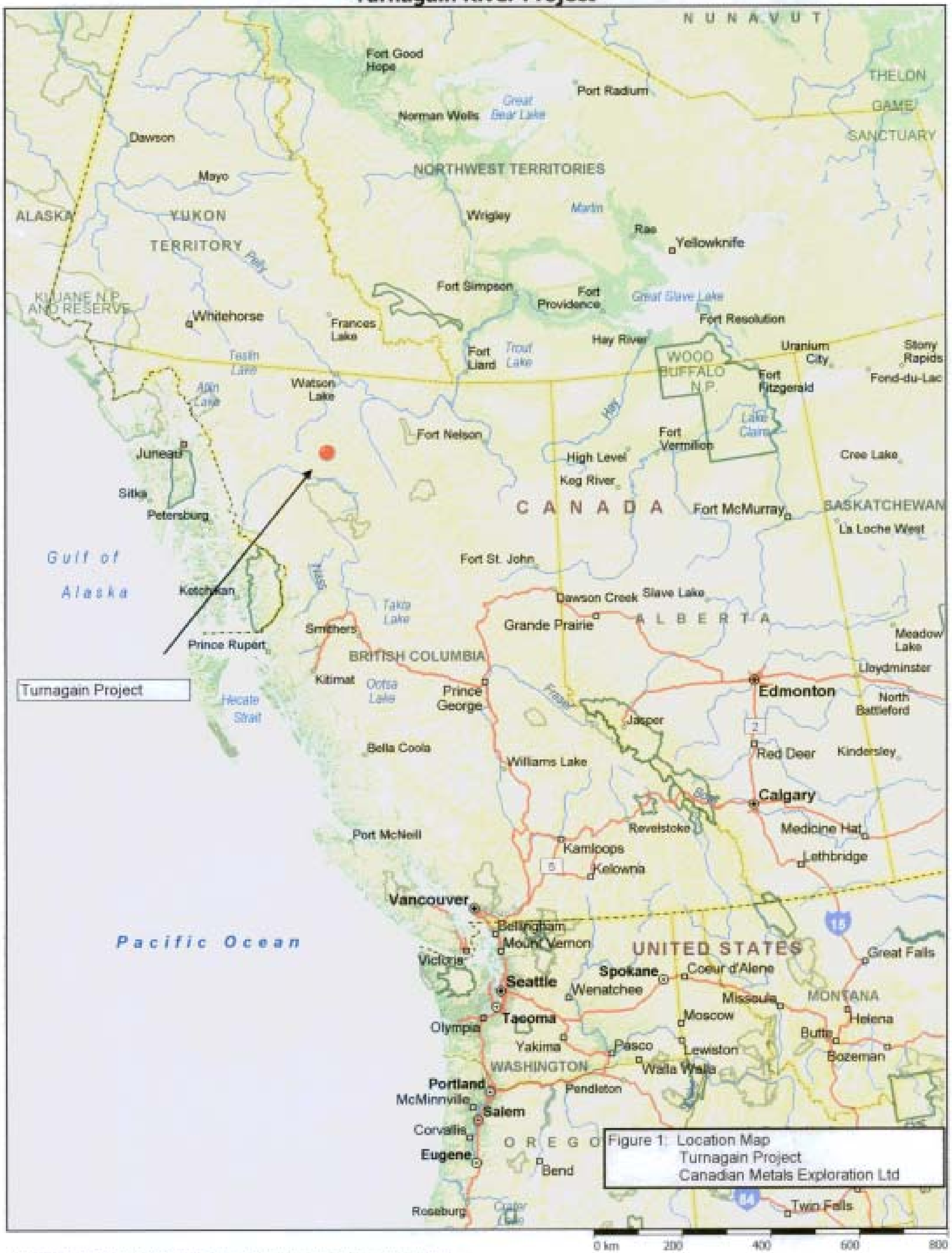


Figure 1: Location Map
Turnagain Project
Canadian Metals Exploration Ltd

Copyright © 1988-1998 Microsoft Corporation and/or its suppliers. All rights reserved. http://www.expediamaps.com.
Copyright © 1998 Geographic Data Technology. All rights reserved. © 1998 Navigation Technologies. All rights reserved.

Lake to Boulder City takes about 2 to 3 hours to travel in a 4x4 vehicle. The section of the road from Boulder City to the property is in poor shape and several hours are required to traverse this section. The road splits near the southwest corner of the property: one fork continues on the southeast side of the river and the other crosses the river and follows along on the northwest side. The road on the northwest side accesses the airstrip and the Horsetrail area of the property. An old drill road is also located a short distance past the airstrip and can be used to gain access up slope to the baseline of the survey grid.

Topographically, the property is characterized by a valley along the Turnagain River and a relatively consistent rise in elevation outwards. Elevations range from about 1000 m in the Turnagain River valley to roughly 1700 m in the northern portion of the property. The grade of the slope increases towards the north to where it peaks at 1763m on a mountaintop. The northern and the extreme eastern ends of the property are primarily above tree line, which roughly follows the 1500 m elevation level. The forest cover below the tree line varies considerably from a dense, sub-alpine, stunted growth of fir and alders at higher elevations; to thick coniferous forest consisting of fir and spruce, interspersed with minor birch, aspen and alders in the mid elevations; to predominantly open pine forest near the lower elevations with light undergrowth.

The Turnagain River flows swiftly in a northeast direction and is about 40 to 50 metres wide. In selected areas, the river may be passable on foot if water levels are low (i.e. during dry summer months), but when water levels are high, a boat is required to safely make a crossing. Exposed outcrop is sparse in the lower elevations because of glacial material and soil cover but is abundant in the higher elevations, especially on the northern and eastern margins of the property.

SURVEY METHODOLOGY

Magnetics

The primary objective of magnetic surveying in mineral exploration is the identification and characterization of spatial changes in the earth's magnetic field. The spatial variations or anomalies of interest are those that span from a few metres to several thousands of metres. They are typically caused by anomalous variation in the distribution of magnetic minerals in the earth or by buried iron objects or cultural features. The anomalies caused by geologic sources are primarily related to the presence of the most common magnetic mineral: magnetite and related minerals, (titanomagnetite, maghemite, ulvospinel, etc.), which can be collectively referred to as magnetite - a heavy, hard and resistant mineral. The common rust-coloured forms of iron oxide (e.g. hematite, limonite, etc.) are orders of magnitude less magnetic and are rarely the cause of magnetic anomalies. Other magnetic minerals that occur to a lesser extent are pyrrhotite (important in some sulphide deposits), and ilmenite (important in some placer deposits). Most rocks contain magnetite from very small fractions of a percent up to several percent, and even several tens of percent in the case of magnetite iron ore deposits. It is the distribution of magnetite, and certain characteristics of its magnetic properties, that form the basis of the magnetic method. Buried iron objects and cultural features are also detected during magnetic surveying due to magnetic materials common to most man-made structures (i.e. steel), or due to magnetic fields associated with electrical current in power lines, transformers or other radiating sources.

Anomalies of the earth's magnetic field are caused by two different kinds of magnetism: remnant and induced magnetization. Remnant or permanent magnetization (the former ascribed to rocks, the latter to metals) can be the predominant magnetization (relative to the induced magnetization) in certain rock types. Remnant magnetization is related to the thermal, chemical or mechanical properties and formational history of a rock, and is independent of the field in which it is measured. Diabase dykes, iron formations, kimberlitic pipes and other geological formations with high concentrations of magnetite often have high values of remnant magnetization.

Induced magnetization refers to the magnetism acquired by a rock by virtue of its presence in an external magnetizing field: i.e. the earth's field. The intensity of magnetization is directly proportional to the strength of the ambient field and to the ability of the material to acquire a magnetic field - a property called magnetic susceptibility. The direction of the induced magnetism in a rock is the same as that of the earth's ambient field. The local variation in magnetic field strength observed by a magnetic survey is due to variation in the susceptibility of the underlying rock, which is mostly due, in turn, to variation in the concentration and habit of magnetic minerals - primarily magnetite. Typically, mafic and ultramafic igneous rocks have higher susceptibilities than felsic igneous rocks, which have higher susceptibilities than sedimentary rocks.

Resistivity

The resistivity method is conceptually one of the most straight forward of all geophysical procedures. Electrical current is applied to the earth, either on surface or in boreholes, using two grounded electrodes, a powerful electrical generator and wire cables. At some location within the generated current field, the electrical potential (i.e. voltage) is measured between two other grounded electrodes using a sensitive voltmeter. Knowing the positions of all electrodes and the intensity of current driven into the ground, it is possible to calculate the apparent resistivity of the earth from the measured potential. The apparent resistivity is the effective resistivity of a uniform earth that would give rise to the same measured potential.

There are a wide variety of arrangements of electrodes (i.e. arrays) for different exploration purposes. To determine how apparent resistivity varies with depth, a spreading type of array is used in which the distance between electrodes is increased in some orderly fashion and measurements are repeated. To determine how apparent resistivity varies with position, and hence map the spatial apparent resistivity variation, the electrode separation remains fixed and the array is moved with repeated measurements. Some arrays can operate in both modes simultaneously, thus forming two- or three-dimensional views of the earth.

The Wenner array is a spreading type array in which all electrodes are equally spaced along a line with the current electrodes outside the potential electrodes. The Schlumberger array has all electrodes along a line with the current electrodes outside the potential electrodes, but the potential electrode separation is fixed while the current electrodes are symmetrically separated. In the dipole-dipole array, the current electrode separation is set to the same separation as the potential electrodes, and the dipoles are moved apart.

The dipole-dipole array is also used in a moving mode, but since all four electrodes must be moved with each station, other less cumbersome arrays have been developed. The gradient array is similar to the Schlumberger array except that the current electrodes are fixed at some large separation and the potential electrode pair is moved about the region between them. The pole-pole array is essentially half a Wenner array: one of the current electrodes and one of the potential electrodes are at "infinity" (i.e. fixed at a very large distance from the survey area so that their relative location has no effect on the measurements), while the other potential and current electrodes are moved about. The pole-dipole array is similar to the dipole-dipole array except that one of the current electrodes is at infinity.

Induced Polarization

The induced polarization (IP) geophysical method utilizes the over-voltage phenomena of electrical reactance between metals or metallic minerals (e.g. most sulphides, graphite, and some oxides) and an electrolyte (i.e. ionic groundwater), referred to as "electrode polarization". Electrical current generated in the earth by applying a high voltage to a pair of grounded electrodes, will cause electro-chemical reactions on the surfaces of metallic mineral grains in contact with groundwater. The net effect is a build up of charges on the mineral grains (i.e. overvoltage), which can be observed by rapidly terminating the current and then measuring the slow over-voltage decay with an integrating voltmeter connected to a pair of measurement electrodes. This is referred to as "time-domain" IP and the integrated voltage measurement is called "chargeability".

IP overvoltage can also be observed by noting its effect on an alternating current generated in the earth. At low frequency (less than 0.1 cps), the ratio of measured voltage to current will be approximately the same as that obtained by DC resistivity. At higher frequencies (greater than 1.0 cps), the measured voltage will be slightly lower due to the opposing effect of overvoltage. This is referred to as the "frequency effect" and the methodology is called "frequency-domain" IP.

In addition to the overvoltage phenomena of metallic mineral grains, some other minerals (most notably clay minerals) can exhibit a weaker induced polarization response referred to as "membrane polarization". This is due to a displacement of the concentration of positive ions in the electrolyte next to mineral grains with net negative surface charge. The effect is much smaller than electrode polarization but can be significant in certain situations such as argillic alteration zones.

The arrangements of electrodes for induced polarization surveys are primarily the moving and combined moving-spreading type arrays. The most commonly used arrays are the dipole-dipole, combined moving-spreading type arrays. The most commonly used arrays are the dipole-dipole, pole-dipole, pole-pole and gradient. Each has specific advantages and disadvantages. The dipole-dipole array has good spatial resolution, good depth information and produces symmetric anomalies; however it has poor penetration depth, low current density, low voltage measurement and is relatively slow and expensive. The pole-dipole array has good spatial resolution and depth information, along with higher current density and voltage measurement, and better penetration depth; but it produces non-symmetric anomalies that are more difficult to interpret. Survey rates and costs are marginally better than the dipole-dipole array.

The pole-pole array has good current density, high voltage measurement and very good penetration depth; however the spatial and depth resolution is poor. The gradient array has good current density, very good spatial resolution and good penetration depth; but it has poor depth information and low voltages (except for large voltage dipoles which have lower resolution). Greater survey rates and lower costs can be obtained with both the pole-pole and gradient arrays.

SURVEY PROCEDURES

The project in its entirety progressed smoothly; the only real difficulty was poor weather. Several minor equipment malfunctions were encountered but these were corrected in short order. Complete details of the daily activities are itemized in Appendix B.

Three camp locations were used over the duration of the project. Camp #1 was set up on the northeast end of the airstrip and about 25 metres from the Turnagain River. Initially a four-person crew flew into this location by helicopter with the intention of clearing the airstrip so the second crew with the bulk of equipment and supplies could mobilize in by fixed wing aircraft. A fixed wing aircraft was not available when the second crew arrived in Dease Lake, so the crew chief made arrangements to have the bulk of the equipment transported in by 4x4 vehicle. A Unimog (German military-style 4x4 truck) and driver along with one crewmember made the trip with about 90% of the equipment. Later in the day, the three remaining crewmembers flew into camp #1 via helicopter. This camp location was used for about 50% of the work carried out from August 18 to September 5.

Camp #2 was set up on the northern end of the grid in an alpine area and situated at grid location 2200E/5000N, about 50m north of a small pond. A helicopter was required to transport all equipment and personnel into and out of this location. The site was used for all work completed on the northern end of the grid from September 6 to September 13 under difficult weather conditions.

Camp #3 was set up on the southeast side of Turnagain River at 5200E/2100N, about 20 metres from the river and next to the access road from Boulder City. The equipment was transported to the site via helicopter from Camp #2, but the Unimog was used to transport almost all of the equipment from this site back to Dease Lake. This site was used from September 14 to September 24.

Line Refurbishing

A total of 27.29 km of old grid line, cut in 1998, was refurbished in a 2½ day period. This involved a small amount of cutting, re-chaining and re-picketing. Some of the old grid lines had not been chained when originally cut. It appears that the previous line-cutting crew used topo-hip chains to measure the distance to the ends of the lines for cutting purposes and placed unmarked lathe pickets at roughly 25 metre intervals for back sighting, but did not return to the baseline to properly pull-chain the lines. On most of the refurbished lines, pickets were erected at 50 metre intervals because of the lack of existing pickets along the lines. This was satisfactory for the IP/resistivity survey as the dipole array was 50 metres but meant that for the magnetic survey pacing was required between the 50 metre pickets at 12.5 metre intervals. A 12-channel GPS receiver was used to record UTM data at the ends of the lines and along the baseline and tie lines. Details of the grid line refurbishing are listed below in Table 1a.

TABLE 1a: Grid Preparation - Re-furbishing, re-chaining and re-picketing existing line

Line	Station		Station	Total
L 800N	3600E	to	4000E	400.0 m
L 2000N	1800E	to	5012E	3212.5 m
L 1800E	1600N	to	2600N	1000.0 m
L 2000E	1600N	to	2600N	1000.0 m
L 2200E	1600N	to	2600N	1000.0 m
L 2400E	1600N	to	2600N	1000.0 m
L 2600E	1600N	to	2600N	1000.0 m

L 2800E	1600N	to	2600N	1000.0 m
L 3000E	1600N	to	2600N	1000.0 m
L 3200E	1600N	to	2600N	1000.0 m
L 3400E	1600N	to	2600N	1000.0 m
L 3600E	800N	to	5600N	4800.0 m
L 3800E	800N	to	2650N	1850.0 m
L 4000E	800N	to	2650N	1850.0 m
L 4200E	1125N	to	2650N	1525.0 m
L 4400E	1450N	to	2650N	1200.0 m
L 4600E	1650N	to	2650N	1000.0 m
L 4800E	1675N	to	3000N	1325.0 m
L 5000E	1875N	to	3000N	1125.0 m
			Total	**27.29 km**

Line-cutting

A total of 32.64 km of new line-cutting was completed on the property over an eleven-day period, although on four of these days the crew only worked partial days. The average line-cutting rate per two-man crew per day averaged out to around 1.5 km. The northern end of the grid was primarily open alpine meadow and very little cutting was required. The area from the tree line to elevations around 1200 metres was difficult cutting due to dense underbrush and tree growth, especially the area within 500 metres of the tree line. The area below 1200 metres on both sides of the river was comparatively easy cutting, as the pine forest in this region of the valley is relatively open. A number of areas at higher elevations on the southeast side of Turnagain River were dominated by a thick growth of alders in topographical depressions and cutting was very slow when these areas were encountered.

Pickets were placed at 25 metre intervals: the 50 metre pickets on even stations were labelled with aluminium tags to increase the lifespan of the grid, and the 25 metre pickets were labelled with either felt marker or lumber crayon. Heavy durable orange flagging was used on the pickets to improve the visibility of the line. On the northern end of the grid, four-foot lathe was transported in by helicopter and used for pickets. On the remainder of the grid, pickets were cut from the surrounding growth, usually young pine or fir. A 12-channel GPS receiver was used to record UTM data at the ends of the lines and along the baseline and tie lines. Details of the new grid line cutting are listed below in Table 1b. The entire survey grid, old lines refurbished and new lines cut, is displayed in Figure 2.

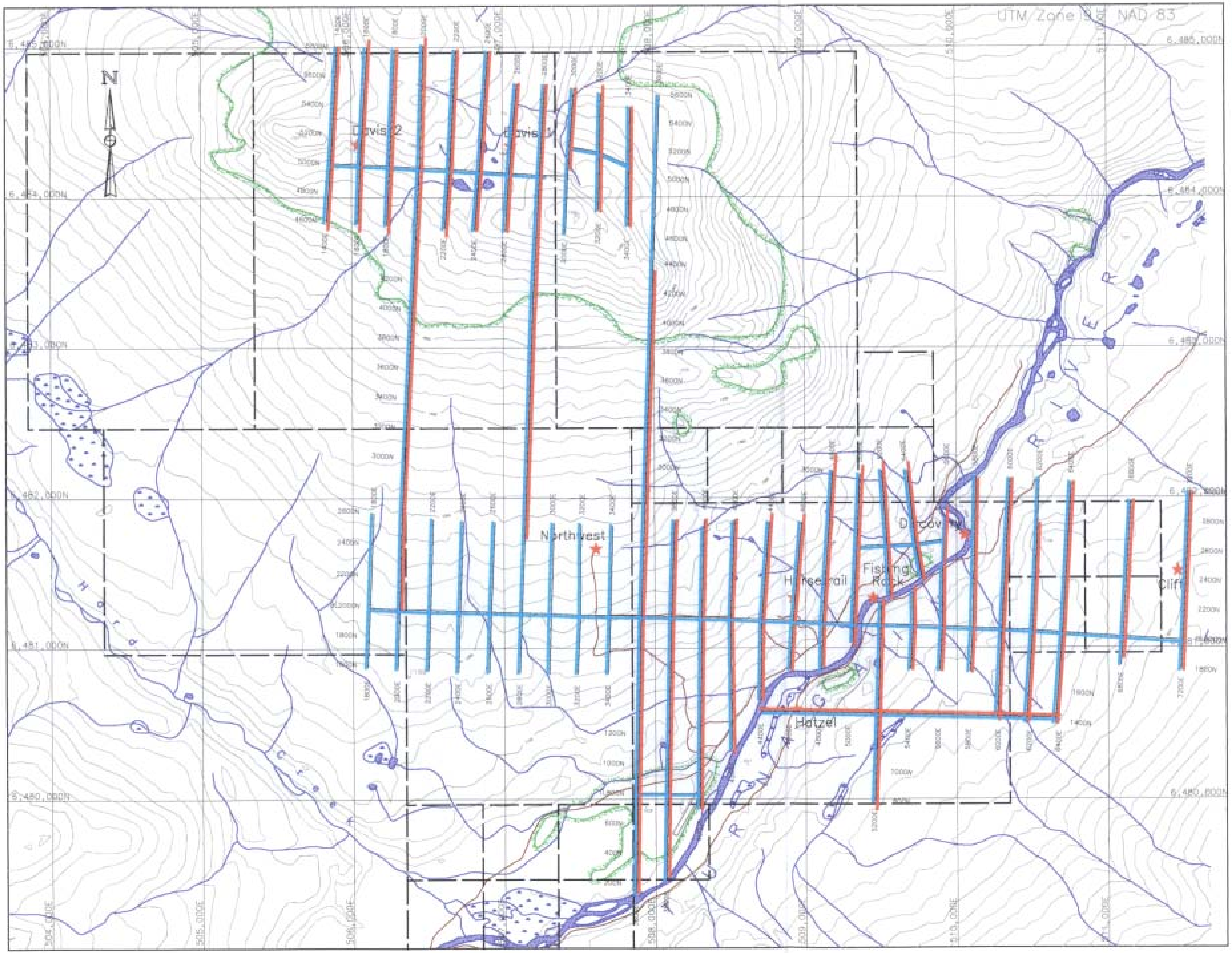


Figure 2 Survey Coverage Map
Turnagain Project
Canadian Metals Exploration Ltd.

Magnetic Coverage
IP/Resistivity Coverage

TABLE 1b: Grid Preparation - Cutting, chaining and picketing new lines

Line	Station		Station	Total
L 1400N	4412E	to	6400E	1987.5 m
L 2000N	5062E	to	7200E	2137.5 m
L 2500N	5000E	to	5600E	600.0 m
L 5000N	1400E	to	3000E	1600.0 m
L 5200N	3000E	to	3400E	400.0 m
L 1400E	4600N	to	5800N	1200.0 m
L 1600E	4600N	to	5800N	1200.0 m
L 1800E	4600N	to	5800N	1200.0 m
L 2000E	4600N	to	5800N	1200.0 m
L 2200E	4600N	to	5800N	1200.0 m
L 2400E	4600N	to	5800N	1200.0 m
L 2600E	4600N	to	5600N	1000.0 m
L 2800E	4600N	to	5600N	1000.0 m
L 3000E	4600N	to	5600N	1000.0 m
L 3200E	4800N	to	5600N	800.0 m
L 3400E	4800N	to	5600N	800.0 m
L 3600E	137N	to	800N	662.5 m
L 3800E	225N	to	800N	575.0 m
L 4000E	700N	to	800N	100.0 m
L 5200E	800N	to	2125N	1325.0 m
L 5200E	2175N	to	3000N	825.0 m
L 5400E	1700N	to	2225N	525.0 m
L 5400E	2275N	to	3000N	725.0 m
L 5600E	1700N	to	2387N	687.5 m
L 5600E	2350N	to	2625N	275.0 m
L 5800E	1700N	to	3012N	1312.5 m
L 6000E	1400N	to	3000N	1600.0 m
L 6200E	1400N	to	3000N	1600.0 m
L 6400E	1400N	to	3000N	1600.0 m
L 6800E	1800N	to	2900N	1100.0 m
L 7200E	1800N	to	3000N	1200.0 m
			Total	**32.64 km**

Claim Staking

A total of 27 claim units were staked on 17 September 2002 in two claim blocks: Cub 17 - license #244539 and Cub 18 - license #244540 (see Appendix C). The claims are located to the west of the existing property and east of Hard Creek. A helicopter was used to transport the crew from Camp #3 to the site in the morning and for pickup at the end of the day. The UTM coordinates for the legal corner posts (LCP), corner posts and ID posts were down-loaded into a 12-channel GPS for accurate location of these positions in the field: estimated accuracy is ±5 metres. The only exception is corner-post 3S, 4W on Cub 17. This post was located about 75 metres east of its true location because of the inability to cross Hard Creek. The boundaries of the claims were blazed where there was forest cover and flagged in open areas so that each mark is visible from the next mark in either direction.

Prior to laying out the new claims, an attempt was made to locate the adjoining corner-posts of Cub 2 and Cub 10, so that the Cub 17 and Cub 18 legal corner posts could be placed at these locations. Neither the posts or the claim lines could be located in the field, consequently Cub 17 and Cub 18 legal corner posts were placed using GPS reference, determined from the plotted location of the Cub 2 and Cub 10 legal corner post on the BC Mineral Titles claim map. In order to determine whether a fraction could have been created with the new staking, the legal corner posts for Cub 2 and Cub 10 should be located and measured with GPS to confirm their location.

Magnetics

The magnetic survey was carried out using two GEM Systems GSM-19 Overhauser magnetometers. The GSM-19 is a portable, high sensitivity *Overhauser effect** magnetometer/gradiometer designed for handheld or base station use for geophysical exploration. Optionally, the addition of a VLF sensor is available for a combined magnetometer/gradiometer–VLF measurement system. The GSM-19 is a microprocessor-based instrument with large memory storage capabilities (up to 2 Mbytes) and has an absolute accuracy over its full temperature range of 0.2 nT. Synchronized operation between hand held and base station units allows corrections for diurnal variations of magnetic field at cycle intervals as short as 3.0 seconds. Diurnal corrections can be carried out

***Overhauser Effect**. *In contrast to a standard proton magnetometer sensor, where only a proton rich liquid is required to produce a precession signal, the Overhauser effect sensor must also have a free radical added to the liquid. This free radical ensures the presence of free, unbound electrons that couple with protons, producing a two-spin system. A strong RF magnetic field is used to disturb the electron-proton coupling. By saturation free electron resonance lines, the polarization of protons in the sensor liquid is greatly increased. The Overhauser effect offers a more powerful method of proton polarization than standard DC polarization, i.e. stronger signals are archived from smaller sensors, and with less power.*

automatically between two instruments, or the data from each instrument can be dumped individually and diurnal corrections performed separately with software provided by GEM Systems. Data transfer is carried out via an RS-232C interface and cable connection to a computer. Additional information on the GEM Systems GSM-19 Overhauser magnetometer is presented in Appendix A.

A separate GSM-19 magnetometer was used as a base station to record diurnal magnetic variations. The internal quartz clocks on the GSM-19 magnetometers were synchronized at the start of each survey day and the base station cycle time set to 10-second intervals. Initially, the magnetic base station (#1) was located at the east end of the airstrip (grid coordinates 4080E / 950N; UTM coordinates 508,376E / 6,480,192N) and was used to record diurnal variations during magnetic surveying in the central area of the grid. A second magnetic base station (#2) was tied into base station #1 and set up near Camp #2 (grid coordinates 2240E / 4975N; UTM coordinates 506,673E / 6,484,158N) and was used to record diurnal variations for the survey of the north end of the grid. A third magnetic base station (#3) was tied into base station #1 and set up on the south side of the Turnagain River near Camp #3 (grid coordinates 5170E / 2090N; UTM coordinates 509,474E / 6,481,249N) and was used to record diurnal variations for the survey on the southeast side of the river. The base value used at the # 1 base station was 57,000 nT and all final magnetic data is referenced to that point and value.

Following each day's survey, the base station unit is connected to the mobile unit by interface cable and the field data are corrected for diurnal variation by internal programming. The diurnal correction is done using the formula: corrected data = mobile – base + datum. Diurnal corrected field data were then dumped via RS-232C interface to a computer hard drive. Final diurnal corrected magnetic data were then transferred to a storage diskette for backup. Data were e-mailed to Discovery's British Columbia office on a regular basis for processing.

The magnetic survey was carried out over the entire grid described in the previous section including baselines and tielines. Line spacing throughout the survey was 200 meters, except for two lines on the extreme eastern end of the grid where line spacing increased to 400 metres. Data acquisition was at 12.5 m intervals and a total of 64.79 km of total field magnetics was collected on the property. Details of the survey coverage are listed below in Table 2 and shown in Figure 2.

TABLE 2: Magnetic Survey Coverage

Line	Station		Station	Total
L 800N	3600E	to	4000E	400.0 m
L 1400N	4412E	to	6400E	1987.5 m
L 2000N	1800E	to	5012E	3212.5 m
L 2000N	5062E	to	7200E	2137.5 m
L 2500N	5000E	to	5600E	600.0 m
L 5000N	1400E	to	2850E	1450.0 m
L 5200N	3000E	to	3400E	400.0 m
L 1400E	4600N	to	5800N	1200.0 m
L 1600E	4600N	to	5800N	1200.0 m
L 1800E	1600N	to	2600N	1000.0 m
L 1800E	4600N	to	5800N	1200.0 m
L 2000E	1600N	to	2650N	1050.0 m
L 2000E	2250N	to	5800N	3550.0 m
L 2200E	1600N	to	2600N	1000.0 m
L 2200E	4600N	to	5800N	1200.0 m
L 2400E	1600N	to	2600N	1000.0 m
L 2400E	4600N	to	5800N	1200.0 m
L 2600E	1600N	to	2600N	1000.0 m
L 2600E	4600N	to	5600N	1000.0 m
L 2800E	1600N	to	5600N	4000.0 m
L 3000E	1600N	to	2600N	1000.0 m
L 3000E	4600N	to	5600N	1000.0 m
L 3200E	1600N	to	2600N	1000.0 m
L 3200E	4800N	to	5600N	800.0 m
L 3400E	1600N	to	2600N	1000.0 m
L 3400E	4800N	to	5600N	800.0 m
L 3600E	137N	to	2700N	2562.5 m
L 3600E	2000N	to	5600N	3600.0 m
L 3800E	225N	to	2650N	2425.0 m
L 4000E	700N	to	2600N	1900.0 m
L 4200E	1125N	to	2637N	1512.5 m
L 4400E	1450N	to	2650N	1200.0 m
L 4600E	1650N	to	2650N	1000.0 m
L 4800E	1675N	to	3000N	1325.0 m
L 5000E	1875N	to	3000N	1125.0 m
L 5200E	800N	to	2125N	1325.0 m
L 5200E	2175N	to	3000N	825.0 m
L 5400E	1700N	to	2225N	525.0 m
L 5400E	2275N	to	3000N	725.0 m
L 5600E	1700N	to	2387N	687.5 m
L 5600E	2350N	to	2625N	275.0 m
L 5800E	1700N	to	3012N	1312.5 m
L 6000E	1425N	to	3000N	1575.0 m
L 6200E	1400N	to	3000N	1600.0 m
L 6400E	1400N	to	3000N	1600.0 m
L 6800E	1800N	to	2900N	1100.0 m
L 7200E	1800N	to	3000N	1200.0 m
			Total	**64.79 km**

TABLE 3: IP/Resistivity Survey Coverage

Line	Station		Station	Total
Survey Parameters (pole-dipole, n = 1 to 6, a = 50 metre)				
L 1400N	4400E	to	6400E	2000 m
L 1400E	4550N	to	5800N	1250 m
L 1600E	4550N	to	5850N	1300 m
L 1800E	4550N	to	5800N	1250 m
L 2000E	2000N	to	5850N	3850 m
L 2200E	4550N	to	5800N	1250 m
L 2400E	4600N	to	5800N	1200 m
L 2600E	4600N	to	5600N	1000 m
L 2800E	2500N	to	5600N	3100 m
L 3000E	5050N	to	5600N	550 m
L 3200E	4800N	to	5650N	850 m
L 3400E	4800N	to	5600N	800 m
L 3600E	150N	to	4350N	4200 m
L 3800E	250N	to	2600N	2350 m
L 4000E	700N	to	2600N	1900 m
L 4200E	1100N	to	2650N	1550 m
L 4400E	1450N	to	2700N	1250 m
L 4600E	1650N	to	2700N	1050 m
L 4800E	1700N	to	3100N	1400 m
L 5000E	1850N	to	3050N	1200 m
L 5200E	750N	to	3050N	2300 m
L 5400E	1700N	to	3050N	1350 m
L 5600E	1700N	to	2700N	1000 m
L 5800E	1700N	to	3000N	1300 m
L 6000E	1400N	to	3000N	1600 m
L 6200E	1400N	to	2700N	1300 m
L 6400E	1400N	to	3000N	1600 m
L 6800E	1850N	to	2900N	1050 m
L 7200E	1800N	to	3000N	1200 m
			Total	**46.00 km**
Survey Parameters (pole-pole, n = 1-3-5-7, a = 50 metre)				
L 4600E	1650N	to	2600N	950 m

The magnetic survey was carried out over an eight-day period out of the thirty-eight days the crew was on site, for an average production rate of about 8 km per day. The magnetic survey progressed smoothly, and no notable problems were encountered other than for poor weather, which was quite frequent.

IP/Resistivity

The IP/resistivity survey was carried out using a 6 channel, Iris ELREC-6 time-domain IP receiver and a Phoenix IPT-1, 3.0 kW transmitter powered by a MG-2 motor generator. A pole-dipole electrode array was used with n = 1 to 6 and a dipole length (and station interval) of 50 m. Additional information on the Iris ELREC-6 IP receiver and the Phoenix IPT-1 transmitter are presented in Appendix A. Details of the survey coverage are listed in Table 3 and the survey line locations are shown in Figure 2.

The receiver was placed in the middle of a spread of seven, stainless steel electrodes and individual 16 gauge wires were run from each electrode to the receiver, for a total of six wires. Non-polarizing porous pots, filled with a saturated solution of copper sulphate were tested during the early stages of the survey on lines 3800E and 4000E, but there was no notable difference in secondary voltages. Consequently, stainless steel electrodes were used for the duration of the survey, since they provide more consistent ground contact resistance, especially in rocky areas where it is much easier to probe between boulders to obtain good contact. A single stainless steel rod, positioned 50 m from the first receiver dipole and hammered about a foot into the ground was used for the moving current electrode. The fixed "infinite" current electrode, consisting of stainless steel rods well soaked with a saturated salt solution, was located about two kilometres from the survey line.

Current electrodes were connected to the stationary transmitter via 16-gauge wire suspended in tree branches, several metres above the ground where possible to avoid animal contact. The moving current electrode wire was pulled from a wire carrier along the survey line as the survey progressed, out to a distance of 1 km. Beyond this point, small spools of current wire were transported down the line and added to the current wire already in place to complete the line. The wire carrier and spools are designed to allow the wire to be pulled off the carrier and still be able to make electrical contact with the transmitter. The receiver operator was in constant communication with the survey crew at all times via VHF radios. Each member of the survey crew was equipped with a hand held 4-watt radio and the transmitter operator utilized a 50-watt mobile radio with a booster antennae. Excellent communication is maintained with this system to a distance of 3 to 5 km depending on the terrain.

The transmitter was set up indoors at each camp location and current wire was spooled out to each line surveyed. The transmitter operated on an 8-second period and a 50% duty cycle: i.e. 2 s on (+'ve), 2 s off, 2 s on (-'ve), 2 s off, etc. Transmitter currents varied considerably depending on soil conditions at each location: from a high of 2.6 amps to a low of 0.1 amps. The average transmitted current was about 1.0 amp. Such a wide variation in transmitted current is a reflection of the various ground conditions over the survey area. The Turnagain River valley bottom is a mixture of sand and gravel and very high contact resistance, above 3000 ohm was common. Farther up slope, soil conditions improved and contact resistance decreased to generally below 1000 ohm. At the extreme north end of the grid, contact resistance varied considerably owing to barren rock in some locations and marsh-like conditions in other areas.

The receiver simultaneously records the primary, secondary and SP voltages from the six potential dipoles. The integrated chargeability is measured in 10 time windows from an initial delay of 80 milliseconds (ms) out to 1840 ms. Chargeability values are normalized for primary voltage and for integration window width. For each receiver dipole, a value of apparent resistivity (in ohm-m) and apparent chargeability (in msec) was calculated. Duplicate readings at overlapping stations were averaged or in some cases dropped in the final data compendium.

The average receiver stacking count was between 10 to 20 cycles of the transmitted current to obtain reliable data in areas of low resistivity and hence low primary and secondary voltage. Generally, a primary voltage of at least 2 to 3 mV is necessary to obtain measurable secondary voltages. Extremely low apparent resistivities were encountered over many areas of the property; commonly less than 10 ohm-m, but sometimes less that 1 ohm-m. This translates to less than 1 mV primary voltage and sometimes as low as 0.01 mV. In such extreme conductive areas, the secondary voltages, which are a factor of 1/10 to 1/1000 of the primary voltages, were inconsistent (e.g. large, randomly fluctuating values over the 10 windows of secondary voltage decay) and therefore had to be deleted from the final processed data.

Unfortunately, there is very little that can be done to obtain reliable secondary voltages and chargeability measurements in such conductive environments. To increase the primary voltage to above 5 mV in areas of less than 1 ohm-m would require a transmitter 100 times more powerful than the portable 3 kW transmitter used in the survey. Even if a 30 kW transmitter was used (the largest available in the world), it could only increase the current and hence the measured voltages by a factor of 4 or 5 (ground contact resistance is also a limiting factor), which would have minimal impact on the amount of un-recordable chargeability data. Such a large transmitter would require a large, truck-mounted, motor generator, which is impractical in the remote Turnagain survey location. It would also significantly increase the safety risk of the survey for electrical shock to personnel and animals, and significantly increase the fire risk from incidental arching to ground.

A test pole-pole array survey was carried out for a day on a portion of line 4600E to investigate alternative field procedures to improve the quality of the chargeability measurements in high conductivity areas, without resorting to the impracticality of a larger transmitter. The resulting data were much improved (compare the pole-pole and pole-dipole, pseudo-section and inversion section plots in Appendices E and F, respectively) since a pole-pole array inherently provides up to 50 times the voltage of a pole-dipole array for large n spacing in a conductive environment. However, the pole-pole array has considerably less spatial resolution than the pole-dipole array, which may explain the minor differences in the final inversion sections from the two different surveys on the same line. Also, the pole-pole array is more cumbersome to carry out in the field because of the additional potential "infinity", and hence is a little more expensive. However, because of it's ability to obtain reliable data even in areas of extremely low resistivity, the pole-pole array should be considered for any future IP/resistivity surveys on the property.

The pole-dipole IP/resistivity survey was carried out on about two-thirds of the grid for a total of 46.00 km of survey coverage over about a seventeen-day period. Some of the survey days were half-days, therefore its difficult to be precise about the number of days required to carry out the survey. However, the average daily productivity is estimated to be in the order of 2.7 kilometres per day. Line spacing throughout the survey was 200 meters, except for two lines on the extreme eastern end of the grid where the line spacing was increased to 400 metres. One east-west line (1400N) was also surveyed perpendicular to all other lines. The crew departed camp each morning at around 7:30 am and depending on the distance to the survey area, commenced surveying between 8:00 am to 9:00 am. Surveying continued uninterrupted until noon for a short lunch break and then continued until about 3:30 to 4:30 pm, depending on logistical factors. Normally, each crewmember moves 2 potential electrodes for each set-up, walking a distance of 100 metres forward and 50 back for a total of 150 metres on each move. This calculates into a total of 7.5 km of walking through the course of an average survey day, not including the walk back and fourth from camp and moves between survey lines, etc.

Aside from occasional poor weather, a few minor equipment malfunctions and the occasional broken current "infinite" wire caused by passing wildlife, the survey progressed smoothly. The most troublesome difficulty was the weak secondary voltages caused by the highly conductive geologic environment. Readings often had to be repeated or excessive stacking was required in an attempt to collect valid data. Sometimes the moving current electrode was relocated in an attempt to improve the transmitted current, but usually this made very little difference to data quality.

DATA PROCESSING AND PRESENTATION

Magnetics

The GSM-19 magnetic data were processed by standard procedures. Following diurnal correction, the magnetic data were reformatted into standard XYZ data format (i.e. line #, station #, data...) and then concatenated into survey data files. The data were then plotted as line profiles for visual inspection and to facilitate the correction of any duplicate readings and any obviously noisy readings, e.g. single-station spikes of greater than 1000 nT.

The final processed magnetic data are shown as a combined line profile, contour and colour image plot of the total magnetic intensity at 1:10,000 scale on a topographic base map in Appendix D. The profile amplitude scales and base levels are indicated on the plots. The total magnetic intensity colour image is generated by first gridding the corrected data to a regular, even interval. The grid image is linearly biased in a direction parallel to the dominant geologic strike by defining a rectangular, 25 x 50 m grid cell size with the long dimension rotated to the average strike direction. If there are different geologic trends in different parts of the survey area, the rectangular gridding procedure is carried out in separate zones, each with different trend directions. The final grids are generated by combining the separate grids and re-gridding everything to a 25 x 25 m cell size. The grids are is then contoured and coloured using equal-area colour zoning (i.e. equal amounts of red, yellow, green and blue).

IP/Resistivity

The ELREC-6 automatically records the following information with each reading: current electrode locations, first potential dipole location, six primary voltages in millivolts, six SP voltages in millivolts, six sets of 10 secondary voltages normalized by the primary voltage in millivolts per volt (mV/V), six integrated normalized secondary voltages (i.e. chargeabilities) in milliseconds (ms), the transmitter current keyed in by the operator, the number of stacks, the standard deviation error of the stacks, and the time of the reading.

Successive primary, secondary and spontaneous potential readings are averaged during the stacking process. The receiver operator determines the number of stacks based on the quality of the data as exemplified by the consistency of individual readings and the indicated stacking error. Depending on the telluric noise and the amplitude of the receiver voltages (which depends on the apparent resistivity of the ground and the amount of current generated by the transmitter), typical stack counts are in the range 10 to 20

The 10 normalized secondary voltages are the mean values in 10 user specified, time-delay sample intervals: #1 - 80 to 100 ms, #2–100 to 120 ms, #3 - 120 to 160 ms, #4 - 160 to 220 ms, #5 - 220 to 320 ms, #6 - 320 to 460 ms, #7 - 460 to 640 ms, #8- 640 to 900 ms, #9 - 900 to 1280 ms, and #10 - 1280 to 1840 ms. The total integrated chargeability is the sum of each normalized secondary voltage multiplied by the length of its sample interval, and then normalized to one-second integration by dividing by the total sample interval (i.e. 1.76 sec).

The data from each of six channels are automatically stored with all associated header information with every reading. The positions of all electrodes for any given dipole at any reading location can be derived from this header information. The data are concatenated into a single data file as the survey progresses. Normally new data files are started each day and for each individual line. The data files are dumped to a portable computer at the end of every survey day.

The data processing procedure in the field is to simply reformat the dump files into standard "XYZ" data files, calculating the apparent resistivity in ohm-m from the primary voltage, the current, and the electrode locations using standard formulation, and then plot these data as pseudo-sections. More robust processing is carried out post-survey to reduce noise and improve the reliability of the data, by evaluating how well the 10-window, secondary voltages fit a standard Cole-Cole model decay curve (Johnson, 1984). An error value is given to every chargeability reading based on the stacking error and the Cole-Cole decay misfit error. The 10 window data are smoothed to reduce the decay error, but if the total error value is excessive, the data are dropped from the final display.

Final processed data are written to plot data files together with their corresponding measurement location defined as the midpoint between the current and potential dipoles, and a pseudo-depth defined as half the distance between the near current and potential electrodes. The pseudo-depth values are used to form standard Hallof pseudo-sections of the data (Hallof, 1957). The pseudo-section plots are shown at 1:5,000 scale in Appendix E.

Hallof pseudo-sections cannot be considered true geometric sections of the IP/resistivity response of the earth along the survey line since the data are derived by measurement in a "half-space" rather than in a two-dimensional section (i.e. the data can be affected by anomalous zones to the side as well as at depth). In addition, Hallof pseudo-section data displays are complicated by the geometry of the electrode array. For instance, when either the current or potential dipoles are in proximity to an anomalous conductive or chargeable zone near surface, anomalous readings will result. When plotted in a Hallof pseudo-section, the anomalous readings appear to extend to depth on 45° slopes, forming the characteristic "pant-leg" type anomaly.

Pseudo-section geometric distortions can be overcome, and a truer section of the earth can be formed, by inverting the IP/resistivity data using formulation developed by Oldenburg and Li (1994). The two-dimensional earth is divided into a rectilinear mesh of infinite horizontal prisms, each of which having an assigned resistivity and chargeability. The mesh is fine enough to adequately represent the geologic section beneath the survey line, but can be no better than the resolution set by the dipole size and station interval. The mesh also extends beyond the survey line and to greater than the penetration depth in order to completely model the anomalous response.

In the inversion routine, the resistivities and chargeabilities of the individual mesh prisms are varied in a systematic way to find a better fit between the theoretically calculated response from the model and the actual measured response: i.e. the measured primary and secondary voltages. The mesh values can assume any value during this fitting procedure, except that the algorithm forces a smoothly varying distribution in preference to an irregular model, even though an irregular model may produce a more exact fit to the measured voltages. The procedure is iterative: it terminates (i.e. finds the best fitting model) once the misfit is below some predefined level.

The result is a geometrically "true" cross section that better represents the distribution of resistivities and chargeabilities beneath the survey line. But it may not be the actual distribution. Its accuracy is dependent of the density of measured data (the more data, the higher the resolution), and three-dimensional effects can produce spurious results. The inversion results are shown in Appendix F as individual resistivity and chargeability sections for each line at 1:5,000 scale. The inversion sections have also been plotted on two 1:10,000 topographic maps in Appendix G: i.e. compilation maps of all resistivity inversion sections and all chargeability inversion sections. These maps display the three-dimensional distribution of inverted resistivity and chargeability over the entire survey area.

The inversion results are also plotted in plan map form by separating the inversion mesh data into three different depth ranges. Mesh values in the depth range 0 to 20 m of each 2-D inversion sections are averaged into single values as a function of line and station location. Likewise, average values are determined for the 40 m to 80 m, and the 100 m to 160 m depth ranges. The averaged values in the three different depth ranges are then plotted as combined line profile and colour grid and contour plots on a digital topographic base map as shown in Appendix H. Six separate plots are generated: three resistivity plots and three chargeability plots in the three different depth ranges. These maps spatially depict the variation of resistivity and chargeability over the survey grid, and are useful adjuncts to the inversion sections for three-dimensional visualization.

INTERPRETATION PROCEDURES

Magnetics

Areas of anomalous magnetic intensity, displaying both positive and negative anomalies relative to the ambient field strength, are composed of geologic formations with above average magnetite or pyrrhotite content (e.g. ultramafics, iron formations, etc.). Strong negative anomalies may be caused by reversely polarized or rotated magnetic formations with strong remnant magnetization. Alternatively, large negative anomalies can be associated with positive anomalies due to the dipolar characteristics of anomalous magnetic fields. Narrow, high-amplitude anomalies are due to magnetic features very close to surface - broad magnetic anomalies indicate deeper burial or more uniform magnetization. Areas of lower magnetic intensity than the ambient field, characterized by broad, low-amplitude, negative total intensity anomalies, could be related to hydrothermal alteration of magnetite to hematite. Geologic contacts or possible faulting can also be inferred from the magnetic colour image along pronounced linear gradients and other discontinuities.

IP/Resistivity

Resistivity and chargeability are bulk or whole-rock properties: they depend on physical properties that are common to the entire rock mass over the sample volume, which is a function of the resolution limit of the electrode array. Hence, a small zone of highly conductive or chargeable material may not produce as large an anomalous response as a more subtle variation in the average concentration of conductive or chargeable minerals in the entire rock mass. However, if the electrode array is small enough, the smaller anomalous zones will be detectable, but only at shallow depth since small electrode arrays do not have as great a penetrate depth as large arrays.

Variations in resistivity are due to variations in the content and habit of the major rock-forming minerals, especially the porosity and permeability of the rock, since resistivity is primarily a function of the amount and conductivity (a direct function of the amount of dissolved salts) of interstitial groundwater. Hence, highly porous formations such as overburden, or rock types with high concentrations of conductive mineralogy such as graphitic argillites tend to have anomalously low resistivity, whereas massive rock types with little conductive mineral content and low porosity (e.g.

granitic intrusives), have anomalously high resistivity. Alteration has a pronounced effect on resistivity: clay alteration tends to reduce overall resistivity while quartz replacement will increase resistivity in confined regions.

Chargeability is a function of the minor constituents of the rock mass: e.g. sulphide mineralization, graphite content, and to a lesser extent, magnetite and other oxides, and clay mineralogy. The habit of these minerals is critically important to the amplitude of the chargeability response. Since chargeability is a surface area phenomenon, smaller grain size and more anhedral texture (e.g. finely disseminated, clastic sedimentary graphite or pyrite) will produce greater chargeability than coarse-grained mineralogy such as primary or secondary sulphides in volcanics or intrusives.

DISCUSSION OF RESULTS

Magnetics

Although the results from the earlier airborne magnetic (and HEM) surveys over the Turnagain ultramafic complex (Scintrex, 1969; Questor, 1996) showed a relatively uniform magnetic high over the intrusive body, suggesting a rather uniform composition, the ground magnetic survey data are indicating quite a different result. Beyond the limits of the intrusive body (which appear from the magnetic data to be slightly different from the mapped contact especially along the south-eastern boundary of the intrusive), the magnetic field is uniformly non-anomalous with background ambient field strength of about 57,000 nT. Over the intrusive, the magnetic field is highly irregular. There are areas of intense anomalous magnetic intensity, 10,000 nT above background, but there are many other areas of non-anomalous, background magnetic intensity. With 200 m line spacing, which in some areas was increased to reconnaissance mode 400 m and 800 m line spacing, it is difficult to make definitive lithologic or structural inferences from the magnetic survey results, and hence none are marked on the magnetic map, other than the original geologic interpretations by Downing (1998). However, it is possible to make some general observations.

The most magnetic lithologies appear to be peridotite, serpentinite, serpentinized dunite, and possibly clinopyroxenite. Unaltered dunite, feldspathic hornblendite, and granodiorite appear to be much less magnetic. The northern portion of the grid is composed primarily of peridotite, serpentinite, and serpentinized dunite and is highly magnetic. The magnetic signature in this area is extremely complex and difficult to correlate to mapped units, however a geologist might be able to utilize the data to help map structures in the area. The granodiorite unit in the centre of the intrusive appears to form a distinct magnetic low, which should be easily mapable with the addition of more data on 200 m spaced lines rather than the present 800 m spacing.

In the southern portion of the survey grid, the magnetic survey results appear to be approximately reflecting the distribution of peridotite and dunite: the peridotite being highly magnetic, and the dunite apparently non-magnetic, although this probably depends on the degree of alteration of dunite to serpentine+magnetite. The distribution pattern is highly irregular, and can only be used in a general way to help map lithology; although similar to the northern area, there is perhaps more justification for interpreting fault structures. There appears to be little correlation between the magnetic trends and the known mineralized showings and previous drilling on the property. Some prospects are on magnetic highs (e.g. Northwest), some on magnetic lows (e.g. Discovery) and others are in areas of mixed magnetic response (e.g. Horsetrail and Fishing Rock).

The boundaries of the Turnagain intrusive complex are very well defined by the ground magnetic survey results. The long northern and north-eastern boundary is very abrupt and could indeed be due to a thrust fault as previous mapping suggests. The southern and south-western boundaries appear more gradual and might be caused by sedimentary rocks of the surrounding Harper Ranch Group lapping over the intrusive rocks (i.e. the Turnagain ultramafics have intruded into the Harper Ranch Group as a low angle sill?). As mentioned above, the boundaries of the Turnagain have been fairly well defined by the magnetics and could be used to modify the geological map. This is especially true in the south-eastern section of the intrusive, immediately southeast of the Turnagain River. The boundary between Turnagain ultramafics and Harper Ranch Group is quite irregular in this area and not well defined (in part because of a deficiency in survey coverage in the area), however the magnetics could be used to significantly redefine the distribution of ultramafics and possibly define alternative structural controls in this complex area.

The portion of the Turnagain intrusive complex extending about a kilometre and a half to the east of the Turnagain River is especially interesting, as now revealed by the high-resolution ground magnetic data. This section of ultramafic rocks appears to be almost completely detached from the main body of the intrusive by a north-south fault or a series of north-south and northeast-southwest faults immediately west of the Discovery Zone. More data is required on 100 m spaced lines to precisely define the structural relationships in this area, however one possibility is that the eastern extension zone is actually a small nappe of ultramafics overthrust from the main body. The main evidence for this interpretation is the apparent limited depth extent of the ultramafics in the extension zone indicated from the IP/resistivity survey data.

Resistivity

Like to the magnetic results, the resistivities of the Turnagain ultramafic rocks are highly variable, ranging over five orders of magnitude from less than 1 ohm-m to more than 100,000 ohm-m. Overall, the intrusive is dominantly and uniformly resistive, however anomalously low resistivities are observed in many places where the rocks are mapped as peridotite or dunite. Some zones of anomalous low resistivity, such as in the northern portion of the grid, may be due to conductive fault structures in the ultramafics. Other conductive zones, particularly along the south-western and southern boundaries of the intrusive, are too broad and too conductive to be caused by structure. These areas are well within the mapped and magnetically defined ultramafic intrusive, but in some cases, such as between lines 3800N to 4600E from 1700N to about 2000N, the resistivities at depth are less than 10 ohm-m and even less than 1 ohm-m. Such extremely low resistivity is not consistent with a massive ultramafic intrusive and suggests that the rocks have been altered or mineralized by processes that have given rise to an abundance or either serpentine, graphite, or possibly sulphides.

Complicating the resistivity picture even more is the fact that the Harper Ranch metasedimentary formations outside the limits of the Turnagain ultramafics are also highly conductive (except for the extreme southern end of the grid near the airstrip where moderately resistive Harper Ranch is observed). Hence, the resistivity contrast between highly resistive areas and high conductive areas cannot be reliably used to map the contact between ultramafics and metasediments. This is especially relevant along the south-western and southern boundaries of the Turnagain intrusive complex, where all rocks appear to be highly conductive. The thrust fault contact along the northern and north-eastern boundary of the intrusive does produce a sharp contrast between resistive ultramafics and conductive metasediments, but the south-western and southern boundary is more complex, as was suggested by the magnetic data. Perhaps the conductive zone along south-western and southern boundary of the intrusive is caused by an interlacing of Turnagain ultramafic sills and Harper Ranch metasedimentary formations, which produce a magnetic high due to the presence of ultramafics, particularly near surface, and a resistivity low due to the coincident presence of graphitic metasediments at deeper levels.

The portion of the Turnagain intrusive complex extending east of the Turnagain River is also worth special mention. The resistivities in this area are anomalously low, similar to other areas in the southern portion of the intrusive. However, the low resistivities are generally at the bottom of the sections and there is often a higher resistivity formation near surface. As mentioned in the magnetic discussion, this relationship may be indicating that the resistive ultramafics in the eastern extension are confined to a relatively thin overthrust nappe overlying the conductive Harper Ranch graphitic metasediments. Alternatively, the complex conductive and resistive pattern in this area may be due to variably altered or mineralized ultramafic rocks. Whatever the cause, the resistivities in this area are extremely complex and have not been adequately resolved by the present survey. Tighter line spacing and a full three-dimensional inversion are required to be more definitive.

Chargeability

The chargeability response of the Turnagain ultramafics is just as intense and just as variable as the magnetics and resistivity. Values range from less than 10 msec to over 100 msec (over a one-second integration window); about as large a response as is possible to obtain. This suggests that, in places, the various ultramafic rocks making up the intrusive complex contain a significant percentage (i.e. over 10%) of chargeable minerals such as sulphides, graphite, or possibly serpentine. (Although serpentine is much less chargeable than the metallic minerals, it's planar habit may cause an increase in chargeable response from the metallic minerals).

Zones of intense chargeability are observed in all areas of the Turnagain intrusive: sometimes near surface and sometimes at depth. There does not appear to be a definitive correlation between the high chargeabilities and mapped ultramafic units; the chargeability anomalies cross various lithologies even on surface where exposure is relatively good (e.g. in the northern portion of the grid). The most pronounced areas of high chargeability in the ultramafics occur:

1) in the northern portion of the survey grid on lines 1400E to 2200E from about 4500N to 5000N (and also near-surface only from about 5100N to 5400N),
2) along the north boundary of the intrusive on lines 3200E and 3400E at about 4900N to 5200N,
3) on line 2000N from 2700N to 3100N,
4) near-surface on lines 4400E to 4800E at about 2100N (i.e. the Horsetrail zone)
5) at mid-depth on line 4000E between 2100N and 2200N,
6) at mid-depth between lines 4400E to 5000E from 2300N to 2600N,
7) near-surface from line 5800E to 7200E trending from about 2400N-2900N to 1800N-2500N (i.e. the eastern extension of the ultramafics from the Discovery zone to the Cliff zone) with deeper portions only beneath line 6800E.

The above listed zones are only the most obvious chargeability anomalies and are primarily of interest in an overall assessment of the results of the IP/resistivity survey. There are many other smaller or less intense chargeability anomalies at a variety of other locations within the mapped ultramafic rocks, any one of which could potentially be caused by sulphides of sufficient concentration to be economic, if carrying nickel, copper, gold or platinum group elements. There are really too many to list here. However, they should all be considered potential targets and should be assessed on an individual basis as other information is made available.

In addition to high chargeabilities over the ultramafics, the Harper Ranch Group also produces significant chargeability response of up to 50 msec. However, an additional complication over the Harper Ranch metasediments, which is also a factor over the highly conductive Turnagain rocks discussed in the previous section, is that where resistivity is less than 10 ohm-m, the secondary voltages are too weak to obtain reliable chargeability measurement. Hence, large areas of the survey over the metasediments to the north and south of the Turnagain intrusive, and over the conductive Turnagain ultramafics in the south-western, southern and eastern portions of the intrusive, are missing the chargeability measurement, particularly in the deeper levels of the sections. (The problem of low secondary voltage in areas of high conductivity can be partially mitigated by the use of a pole-pole electrode array rather than the pole-dipole array used in the present survey, as was demonstrated by the test pole-pole survey carried out on line 4600E).

CONCLUSION AND RECOMMENDATIONS

The magnetic and IP/resistivity survey over the Turnagain ultramafic complex has resulted in a wealth of high-quality magnetic, resistivity and chargeability information, which can be used to:

1) map out the extent of the ultramafic rocks,
2) detail the location, and define the nature, of the contract between the ultramafics and the surrounding Harper Ranch Group metasediments,
3) help map structure and lithologic variation within the intrusive,
4) identify interesting targets within the ultramafics, primarily by their chargeability response, but also by their magnetic and resistivity expression, for follow-up investigation.

As an example of how the survey results can be used to aid the exploration program, let's examine the area immediately west of the Horsetrail zone where recent drilling has been carried out. Although the Horsetrail zone itself has a coincident high chargeability anomaly near surface, the deeper levels below 50 m have low chargeability response. A low resistivity anomaly also occurs coincident with the Horsetrail zone, near surface and at depth, and appears to extend to the west. In fact, the resistivity map shows a major contact between low resistivities to the south and high resistivities to the north, extending westward from the Horsetrail in a wide arc to the northwest. This contact also appears to have magnetic expression as well. A significant chargeability anomaly is observed on line 4000E immediately to the north of this contract and appears to extend more weakly to the west to lines 3800E and 3600E. This structural alignment to the west of the Horsetrail may continue all the way to the Northwest zone and beyond, and is considered a prime candidate for additional follow-up work and drilling.

It cannot be determined whether the root cause of the intense chargeabilities in the Turnagain ultramafics is from sulphides or graphite, or from a combination of sulphides or graphite plus serpentine. One would not normally expect that graphite would be a dominant factor in intrusive rocks, however initial drilling of one of the most significant chargeability anomalies at about 2400N to 2500N on lines 4400E to 5000E found minimal sulphide mineralization but abundant serpentine and minor graphite. It is possible that small amounts of graphite have formed by an alteration process that has also produced abundant serpentine, and the combination of minor graphite plus abundant serpentine has produced at least some of the intense chargeability response over the Turnagain ultramafic complex. It is also possible, and even likely, that a combination of minor sulphides plus abundant serpentine produces at least some of the intense chargeability response of the Turnagain ultramafics. Indeed, this same conclusion was reached from the results of a borehole transient EM survey carried out in previous drill holes in the Horsetrail area (Woods, 1999). The conclusion reached from this survey was: "From a examination of the drill core, it is apparent that the intersected conductors are due to a combination of talc-serpentine and sulphides rather than sulphides alone." Given this situation, it is important to remember that although the magnetic and IP/resistivity results may not provide a short cut to discovery, they can still be used with great effect as the exploration program continues.

Respectfully submitted,

Dennis V. Woods, Ph.D., P.Eng.
Consulting Geophysicist

REFERENCES:

Downing, B.W.: Report on the Turnagain Project; for Bren-Mar Resources Ltd.: Gamah International Ltd., 1998.

Hallof, P.G.: On the Interpretation of Resistivity and Induced Polarization Results, unpublished. Ph.D. thesis, Mass. Inst. Tech., 1957.

Johnson, I.M.: Spectral induced-polarization parameters as determined through time-domain measurements, Geophysics, vol.49, no.11, pp.1993-2003, 1984.

Kanasewich, E.R.: Time Sequence Analysis in Geophysics, 3rd Edition, The University of Alberta Press, Edmonton, 1981.

Oldenburg, D.W. and Li, Y.: Inversion of induced polarization data, Geophysics, vol.59, no.9, pp.1327-1341, 1994.

Questor Surveys Ltd.: High-Resolution Aeromagnetic Survey over the Turnagain Ultramafic Intrusive Complex, for Bren-Mar Resources Ltd., 1996.

Scintrex Ltd.: Helicopter EM and Magnetic Survey, Turnagain Project, Liard Mining Division, British Columbia, for Falconbridge Ltd., 1969.

Woods, D.V.: Geophysical Report on a Borehole Transient EM Survey, Turnagain Project; for Bren-Mar Resources Ltd.: Woods Geophysical Consulting Inc., June 1999.

CERTIFICATE OF QUALIFICATIONS:

I, Dennis V. Woods of the city of Surrey, in the province of British Columbia, hereby certify as follows:

1. I am a consulting geophysicist with an office at 14342 Greencrest Dr, Surrey, BC, V4P 1M1.
2. I hold the following university degrees: Bachelor of Science, Applied Geology, Queen's University, 1973; Master of Science, Applied Geophysics, Queen's University, 1975; Doctor of Philosophy, Geophysics, Australian National University, 1979.
3. I am a registered professional engineer with The Association of Professional Engineers and Geoscientists of the Province of British Columbia (registration number 15,745), and of the Province of Newfoundland (registration number 03551).
4. I am an active member of the Society of Exploration Geophysicists, the Canadian Society of Exploration Geophysicists and the Australian Society of Exploration Geophysicists.
5. I have practised my profession as a field geologist (1971-1975), a research geoscientist (1974-1986), and a geophysical consultant (1979 to the present).
6. I have no direct interest in Canadian Metals Exploration Ltd. or the above described properties and projects which are the subject of this report, nor do I intend to have any direct interest.

Dated at Surrey, in the Province of British Columbia, this 30th day of January, 2003.

PROFESSIONAL ENGINEER D. V. WOODS

Dennis V. Woods, Ph.D., P.Eng.
Consulting Geophysicist

APPENDIX A

Instrument Specifications

IRIS ELREC-6 RECEIVER

TECHNICAL SPECIFICATIONS

MEASURED PARAMETERS

*Time Domain

-Measurement and display of the voltage, the self-potential, the IP chargeability (10 fully programmable or preset windows), the standard deviation. Display of intensity of current if previously keyed in.

-Continuous staking of measurements (for noise reduction), display of the number of stacks.

*Frequency Domain

-Measurement and display of the voltage, the self potential, the amplitude of fundamental and of the third harmonic, the frequency effect and phase of the third harmonic with respect to the fundamental, the standard deviations. Display of intensity of current, if previously keyed in.

-Continuous stacking of measurements (for noise reduction), display of the number of cycles (full period).

- Computation and display of the apparent resistivities and chargeabilities for main electrode arrays : dipole-dipole, pole-dipole, pole-pole, gradient, Schlumberger, Wenner… for 6 dipoles simultaneously.

- Test of dry cells (internal power supply), test of ground resistance of electrodes 1,3,4,5,6,7 with respect to 2 (value given between 0.1 kohm and 467 kohm). This can be manual : RS CHECK function, and this test is also automatic at the beginning of each measurement.

- Test of noise level before measurements (MONITOR function)

- Storage data in the internal memory (up to 2505 readings). The data which are stored for each reading are:

  . In case of TIME DOMAIN:
  Station and line numbers, type of electrode array, lengths of lines, voltage, intensity, Self Potential, time parameters, 10 chargeability values, standard deviation, the date and time of measurement.

. Incase of FREQUENCY DOMAIN:
Station and line numbers, type of electrode array, lengths of lines, voltage, intensity, self potential, the amplitude of fundamental and third harmonic, the frequency effect and phase of the third harmonics with respect to the fundamental, the standard deviations, the date and time of the measurement.

SPECIFICATIONS

- 6 input channel
- Input impedance: 10 Mohm.
- Input overvoltage protection up to 1000 Volts.
- Input voltage range – each dipole : 10V maximum
  sum of voltages dipoles 2 to 6: 15 V maximum
- Automatic stacking, automatic SP bucking (-10 V to +10V)
- 50 to 60 Hz power line rejection
- Common mode rejection : 100 dB (for RS = 0)
- Primary voltage – resolution : 1 uV after stacking
  - accuracy typ. 0.3 % ; max 1 over the temperature range.
- Battery test: manual and automatic before each measurement.
- Grounding resistance measurement from 0.1 to 467 kohm.
- Memory capacity: 2505 measurements
- Transfer rates: 300 to 19200 bauds.
- Serial link for data transfer to a printer or a micro computer.
- Remote control of the unit through the serial link (speed: 19200 bauds)

TIME DOMAIN SPECIFICATIONS

- up to 10 chargeability windows
- signal waveform: symmetrical time domain) ON +, OFF, ON -, OFF) with a pulse duration (ON TIME) of 0.5, 1, 2, 4 and 8 s.
- four available I.P. curve sampling choices, three of them are preset times and the fourth one has 10 fully programmable windows.
- automatic stacking, automatic SP bucking (-10 V to + 10V) with linear drift correction up to 1 mV/s.
- Sampling rate: 10ms.
- accuracy in synchronization: 10ms
- minimum voltage for synchronization windows: 40 uV
- chargeability – resolution: 0.1 mV/V
  accuracy typical: 0.6 %, max 2% of reading
- each dipole measurement is stored individually in one memory location.

FREQUENCY DOMAIN SPECIFICATIONS

- waveform: time domain: ON+, OFF, ON-, OFF
  frequency domain: ON+, ON-
- pulse duration (ON TIME): 1s, 2s
- resolution: about 0.01 degrees for unnoisy signals and after stacking.
- storage in the internal memory: each dipole measurement is stored individually in one memory location.

ON TIME (s)	WAVEFORM	NUMBER OF SAMPLES (FFT)	FUNDAMENTAL AND THIRD HARMONIC 1	3
0.5	FD	64	1	3
	TD	128	0.5	1.5
1	FD	128	0.5	1.5
	TD	256	0.25	0.75
2	FD	256	0.25	0.75
	TD	512	0.125	0.375
4	FD	512	0.125	0.375
	TD	1024	0.0625	0.1875
8	FD	1024	0.0.25	0.1875
	TD	2048	0.03125	0.09375

(FD = ON+, ON- ; TD= ON +, OFF, ON-, OFF)

Table of available frequencies (Fundamental and Harmonic).

GENERAL SPECIFICATIONS

- Weather proof case
- Dimensions : length 310 mm, width 210 mm, height 210 mm (12.2 x 8.3 x 8.3 in)
- Weight: 5.2 kg (11.5 pounds) without drycells
  6 kg (13.2 pounds) with drycells
  7.8 kg (17.6 pounds) with the 6V internal rechargeable batteries
- Operating temperature: -20 C to + 70 C
  -40 C to + 70 C with an optional screen heater.
- Optional screen heater specifications
  - Power supply: - either six 1.5 V D size alkaline dry cells or one 12 V external battery
  - Or two 6 V internal rechargeable batteries connected in series (-12V) or one 12 V external battery

(The autonomy is 100 hours of operation at 20 C with a set of new alkaline dry cells and 50 hours of operation at 20 C with the two charged internal 6 V batteries)

PHOENIX IPT-1 TRANSMITTER

Variable Frequency Transmitter for Time Domain
and Phase IP, TDEM, FDEM, CSAMT

***Reliable**: Backed by thirty years experience in the design and worldwide operation of induced polarization and resistivity equipment.

***Versatile**: Can be used for resistivity, variable frequency IP, time domain IP, phase angle IP measurements; with AC3004 module for TDEM, FDEM, CSAMT.

***Stable**: Excellent current regulation

***Lightweight, portable**.

***Wide selection of power sources**

TECHNICAL SPECIFICATIONS

Output Voltage: 75V, 150V, 300V, 600V and 1200V

Output Current: 3 mA to 10 amp (max)

Output Power: Maximum continuous output power is:
-3 kW with MG-2 motor generator
-1.5 kW with MG-1 motor generator

Input Power: -Three phase 400 Hz (350 to 1000 Hz) 60V (50V to 80V) is standard.
-Three phase 400 Hz (350 to 1000 Hz) 120V (100V to 160V) is optional.

Current Regulation: Achieved by feedback to the alternator of the motor generator unit.

Operating Temperature: -40° C to + 60° C

Thermal protection: Thermostat turns off at 65° C and turns back on at 55° C internal temperature.

Dimensions: 20 x 40 x 55 cm (9 x 16 x 22 inches)

Weight: 17 kg (37 lbs)

Standard Accessories: Pack frame, and power cable (5ft or 25 ft)

IPT-1 Motor Generators:

MG-1: 1.5 KVA motor generator. This lightweight unit is designed for easy portability in areas of moderately high resistivity. It is well suited for massive sulphide exploration in Northern Canada, Europe and Asia, as well as mountainous areas around the world. The motor is a 4-cycle Honda which produces 4 HP at 3600 rpm. The dimensions of the unit including packframe are, 40 x 45 x 60 cm (16 x 18 x 24 in) Total weight with empty fuel tank is 28 kg (60 lb)

MG-2: 3.0 KVA motor generator. This versatile unit is designed for surveys in areas which require additional power. It is light enough to be carried by one man, yet powerful enough for most survey requirements. The motor is a 4-cycle Honda, which produces 6.5 HP at 3600 rpm. The dimensions of the unit including packframe are, 40 x 45 x 60 cm (16 x 18 x 24 in) Total weight with empty fuel tank is 36 kg (67 lb)

GEM SYSTEMS INC

GSM-19 OVERHAUSER MAGNETOMETER

I. INSTRUMENT SPECIFICATIONS

MAGNETOMETER / GRADIOMETER

Resolution:	0.01nT (gamma), magnetic field and gradient.
Accuracy:	0.2nT over operating range.
Range:	20,000 to 120,000nT.
Gradient Tolerance:	Over 10, 000nT/m
Operating Interval:	3 seconds minimum, faster optional. Readings initiated from keyboard, external trigger, or carriage return via RS-232C.
Input / Output:	6 pin weatherproof connector, RS-232C, and (optional) analog output.
Power Requirements:	12V, 200mA peak (during polarization), 30mA standby. 300mA peak in gradiometer mode.
Power Source:	Internal 12V, 2.6Ah sealed lead-acid battery standard, others optional. An External 12V power source can also be used.
Battery Charger:	**Input:** 110 VAC, 60Hz. Optional 110 / 220 VAC, 50 / 60Hz. **Output:** dual level charging.
Operating Ranges:	Temperature: - 40°C to +60°C. Battery Voltage: **10.0V minimum to 15V maximum.** Humidity: **up to 90% relative, non condensing.**
Storage Temperature:	-50°C to +65°C.
Display:	LCD: 240 X 64 pixels, OR 8 X 30 characters. Built in heater for operation below -20°C.
Dimensions:	**Console:** 223 x 69 x 240mm. **Sensor Staff:** 4 x 450mm sections. **Sensor:** 170 x 71mm dia. **Weight:** console 2.1kg, Staff 0.9kg, Sensors 1.1kg each.

VLF

Frequency Range:	15 - 30.0 kHz plus 57.9 kHz (Alaskan station)
Parameters Measured:	Vertical in-phase and out-of-phase components as percentage of total field. 2 relative components of horizontal field. Absolute amplitude of total field.
Resolution:	0.1%.
Number of Stations:	Up to 3 at a time.
Storage:	Automatic with: time, coordinates, magnetic field / gradient, slope, EM field, frequency, in- and out-of-phase vertical, and both horizontal components for each selected station.
Terrain Slope Range:	0° - 90° (entered manually).
Sensor Dimensions:	140 x 150 x 90 mm. (5.5 x 6 x 3 inches).
Sensor Weight:	1.0 kg (2.2 lb).

APPENDIX B

Costs

Program Costs Turnagain

Survey days:	40
Duration:	August 18, 2002 to September 26, 2002
Grid creation:	Refurbishment old lines 27.29 km @$100/km
	New lines 32.64 km @ $350/km
Mob/demob:	$5500
Mob/demob:	9 days
Number of personnel:	8
Magnetic survey length:	64.79 km @ $150/km
IP/Resistivity survey:	46.00 km @ 1000/km
Fieldwork:	38 days
Airstrip restoration:	10.5 man days @200/man day
Report (4 copies):	$2500
Total cost	$89,632.91
Less staking:	$3,004.17
Cost to date:	$83,628.74

APPENDIX C

Field Production Notes and Claim Staking Notes

Discovery Geophysics Inc.
Field Production Notes
CME / Turnagain River Project

Tue Aug 13 2002, Four person crew departed Lac Du Bonnet, Manitoba.

Wed Aug 14 2002, Travel four person Manitoba crew.

Thu Aug 15 2002, Travel and logistics in Edmonton, Manitoba crew

Fri Aug 16 2002, Travel four person Manitoba crew.

Sat Aug 17 2002, Travel four person Manitoba crew.

Sun Aug 18 2002, Four person Manitoba crew traveled to Dease Lake and into Turnagain camp # 1 in the late afternoon and set up camp.

Mon Aug 19 2002, Manitoba crew worked on clear-cutting airstrip. Two man crew departed Gander Nfld, arrived in Vancouver in the evening.

Tue Aug 20 2002, Manitoba crew worked on airstrip cutting trees, digging roots and leveling. Two men in Vancouver worked on logistics, i.e. groceries, supplies.

Wed Aug 21 2002, Manitoba crew worked on a portion of TL 2500N and lines 5200E and 5400E. Two men in Vancouver finalized logistics, tested all instrumentation, motor generators and other equipment.

Thu Aug 22 2002, Manitoba crew continued work on the airstrip. Four man crew departed Langley, B.C. and traveled to Quesnel,.

Fri Aug 23 2002, Manitoba crew completed cutting lines 52E, 54E, 56E and TL 25N. Four man crew departed Quesnel at 8am arrived into Dease Lake at 1:30am with a 1 hour stopover in Prince George to buy additional supplies and a 1 hour stopover in Smithers to buy additional groceries.

Sat Aug 24 2002, Manitoba crew spent part of the day on the airstrip and remainder of the day on logistics waiting for Vancouver crew to arrive into camp. Vancouver crew contacted BC and Yukon Air Services they could not fly into Turnagain, contacted fellow with Unimog (off-road 4x4), he was able to transport most of the equipment into site, but two additional trips in helicopter were required to complete the mobe into camp. A cash deposit of $ 600.00 was made to Rick Maroch, owner operator of the Unimog, he arrived into camp at 7:30 pm, partial setup of tents.

Sun Aug 25 2002, Eight man crew now in camp, setup Pole-dipole IP/resistivity array configuration and surveyed about half of line 4000N completed setting up camp in the afternoon.

Mon Aug 26 2002, Completed IP/res on line 4000N, two people on transmitter as one person in training. Several minor equipment problems developed through the day and productivity was minimal.

Tue Aug 27 2002, Surveyed IP/resistivity on lines 38E and 42E.

Wed Aug 28 2002, Surveyed IP/resistivity on lines 44E, 46E and 48E.

Thu Aug 29 2002, Surveyed IP/resistivity on lines 50E, 52E, 54E, 56E, packed up current wire back to camp.

Fri Aug 30 2002, Surveyed IP/resistivity on line 3600E from 800N to 4350N. Long hard day, phoned CME office in the afternoon talked with D Woods.

Sat Aug 31 2002, Line-cutting, lines 5200E and 1400N on the southeast side of river. Crossed with inflatable boat. Heavy rainfall most of the day.

Sun Sept 1 2002, Pole-Pole IP/resistivity, surveyed line 4600N, test survey to investigate if this array would improve data quality in extremely low resistivity areas. Heavy rain all morning.

Mon Sept 2 2002, Surveyed Pole-dipole on lines 5200E and 1400N on southeast side of river. Weather fair except in the late afternoon when it rained.

Tue Sept 3 2002, Mag on the east end of the grid lines 56E to 36E inclusive along with BL 20N and TL 25N. The remainder of the crew cut most of lines 2000E and 2800E from 2600N to the upper sub-alpine area or approximately 4000N.

Wed Sept 4 2002, Mag on the western end of grid, lines 3600E to 1800E inclusive. The remainder of the crew cut lines 36E and 38E from 8N to the river and surveyed IP/resistivity on these line extensions in the afternoon.

Thu Sept 5 2002, Logistics, Two people traveled to Dease Lake in the morning to buy supplies, the rest of the crew worked around camp, packed up wire, demobed camp, etc. Helicopter brought in lathe and propane and dropped it off at the camp 2 area prior to it's return to Dease with two personnel. Mag on grid lines 36E to 40E near river.

Fri Sept 6 2002, Helicopter arrived at 7 am moved camp 1 and setup camp 2 at the North end of property or Davis 1 and 2 area. Finished cutting line 28E to TL 50N, chained lines 16E, 18E, 22E and TL 50N from 28E to 16E, finished camp in the evening, weather sunny and calm.

Sat Sept 7 2002, Surveyed IP/resistivity on lines 16E, 18E and 22E, weather cloudy but no precipitation.

Sun Sept 8 2002, Finished cutting line 20E from 38N to about 44N and chained to 58N, chained in lines 34E, 32E, 30E, the north end of 28E, 26E, 24E and 14E and TL 50N to 30E and TL 52N to 34E. A second tieline, TL 52N was offset as the terrain was very rugged off this area of TL 50N.

Surveyed mag on lines 14E, 16E, 18E and the north side of 20E and TL 50N from 14E to 22E. Long day, weather good.

Mon Sept 9 2002, Surveyed IP/resistivity on line 20E from 5850N to BL 2000N, also surveyed mag on line 20E from 2250N to 4950N, overlapped 350m on the south with the previous survey and 50m on the north from Sept 8. Weather windy and cold.

Tue Sept 10 2002, Surveyed IP/resistivity on line 1400E and ¾ of line 2400E, very cold wet day with poor visibility due to snowfall and low cloud, quit early as crew cold and wet.

Wed Sept 11 2002, Surveyed IP/resistivity on 3400E, 3200E, 3000E, 2600E and finished 2400E,

Thu Sept 12 2002, Surveyed IP/resistivity on line 2800E, problems developed with IP transmitter in the morning, voltage regulator was replaced, 2.5 hrs lost, surveyed mag on line 28E and 22E to camp.

Fri Sept 13 2002, Camp pack-up in the morning in anticipation of the helicopter arriving late afternoon, checked in with base in Dease Lake at 3pm, helicopter will not arrive until following morning, 7am. Brent and Dean surveyed roughly 9 km of mag, Brent spent night at camp 1 to prepare a sling load for morning and to clean site.

Sat Sept 14 2002, Helicopter arrived at 7am, moved from camp 2 to camp 3, setup camp 3 at Fishing Rock location on the southeast side of river. Two men flew out to Dease Lake to return to Vancouver, drove to Prince George arriving at 1am.

Sun Sept 15 2002, Line cutting on lines 54E to 60E and BL 20N. Two men arrived in Vancouver in the evening.

Mon Sept 16 2002, Line cutting on lines 60E and 62E and BL 20N.

Tue Sept 17 2002, Staked claims Cub 17 and Cub 18, left camp at 9am arrived back at 6:20 pm. Snow fall at higher elevation and rain lower down all day, Helicopter dropped off and picked up crew as it was to late in the day to walk back to camp at the end of the day. The distance was greater then 7 km to walk and 1 member of the crew would have had to swim across the river and prepare the inflatable boat to pick up the remainder of the crew.

Wed Sept 18, 2002, Surveyed IP/resistivity on lines 54E and 56E.

Thu Sept 19 2002, Surveyed IP/resistivity on lines 58E and 60E. One member of the crew hurt his back when he slipped on some rocks and twisted the wrong way.

Fri Sept 20 2002, Line cutting on line 64E. One person on Mag, surveyed lines 52E, TL 14N, 64E, 62E, 60E, and half of 58E. One person off with sore back.

Sat Sept 21 2002, Line cutting on lines 72E, 68E and BL from 66E to 72E. One person off with bad back. Snow fall most of the day, made for very difficult cutting along with very dense alders on east end of BL and south ends of both lines.

Sun Sept 22 2002, Surveyed IP/resistivity on lines 64E and 62E. Mag on line 58E and resurveyed a portion of 64E.

Mon Sept 23 2002, Surveyed IP/resistivity on lines 72E and 68E, Mag on 72E, 68E, BL 20N, 56E, 54E.

Tue Sept 24 2002, Packed camp in the morning, Unimog arrived at 2 pm, loaded the majority of camp equipment into Unimog. Two internal helicopter loads required to demobe the remainder of equipment and personnel back to Dease Lake. Helicopter arrived at 6:30 pm everything back to Dease by 8pm.

Wed Sept 25 2002, Loaded vehicles, paid accounts departed Dease Lake at 11am, drove until 1am arriving in Quesnal at 1:30am.

Thu Sept 26 2002, Three man crew arrived in Langley at 5:30 pm and three person crew driving back to Manitoba.

Fri Sept 27 2002, Unloaded vehicle and trailer cleaned, organized and stored away all equipment. Three person crew continuing drive back to Manitoba

Sat Sept 28 2002, Three person crew arrived in Manitoba, 1 man back to Newfoundland.

Discovery Geophysics Inc.
Claim Staking Notes
CME / Turnagain River Project

Claim Name: CUB 17
Mineral Tag No: 244539
Locator: Dennis Woods
FMC No: 129382
Agent For: Canadian Metals Exploration Ltd.
FMC No: 103195
Date Commenced: Sept 17 2002
Time: 09:30
Date Completed: Sept 17 2002
Time: 13:15
Number of Claim Units: 12 (3 South, 4 West)

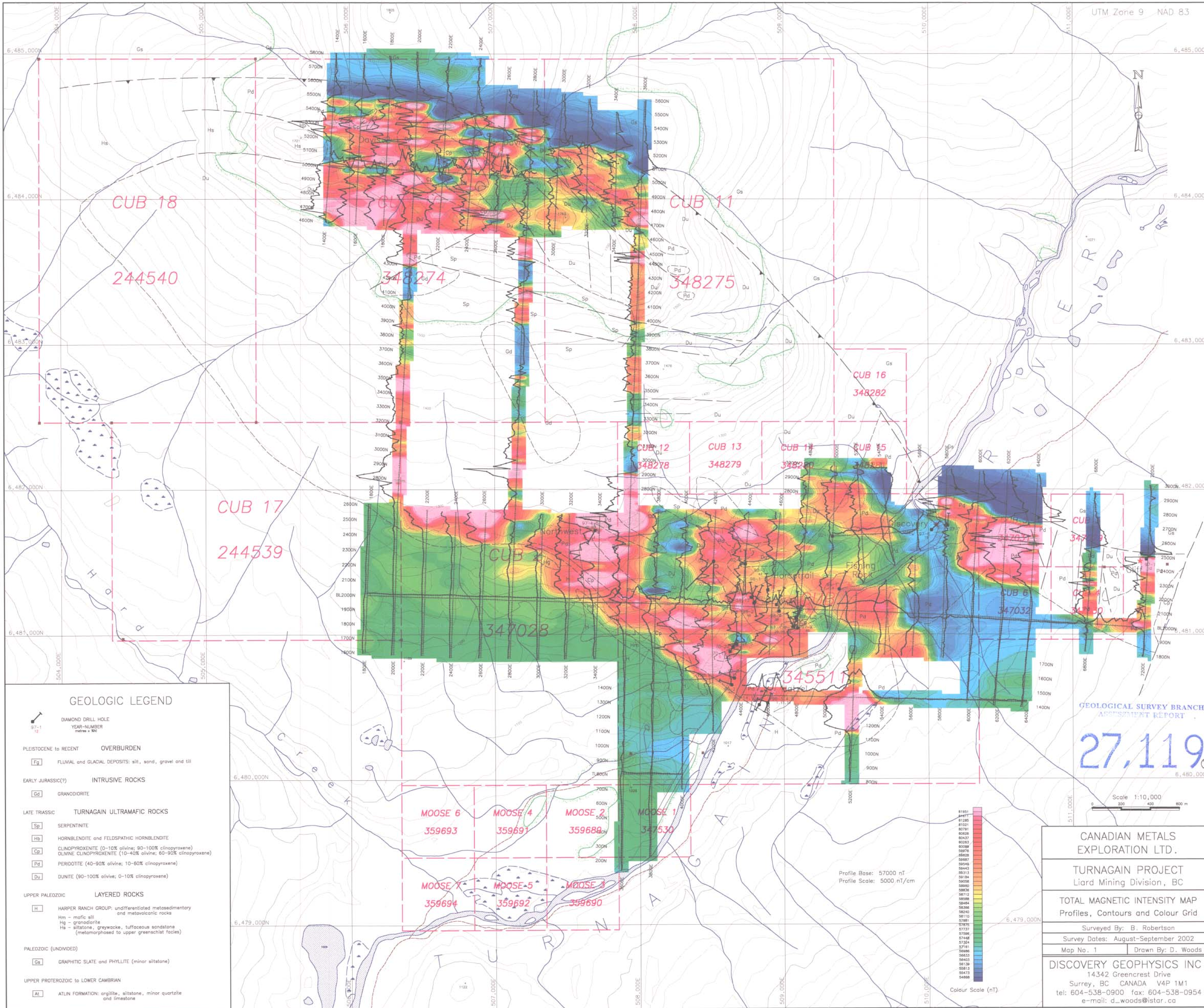
LCP located within 10m of UTM 506350E, 6482465N (NAD 83), all subsequent ID Posts and Corner Posts located within 20m of their respective UTM location in a south and west direction with the exception of Corner Post 3S, 4W, which was placed about 50 to 60m due east of it's correct location because of the inability to cross Hard Creek.

Claim Name: CUB 18
Mineral Tag No: 244540
Locator: Dennis Woods
FMC No: 129382
Agent For: Canadian Metals Exploration Ltd.
FMC No: 103195
Date Commenced: Sept 17 2002
Time: 14:00
Date Completed: Sept 17 2002
Time: 18:30
Number of Claim Units: 15 (5 South, 3 West)

LCP located within 15m of UTM 505350E, 6484965N (NAD 83), all subsequent ID Posts and Corner Posts were located within 20m of their respective UTM location in a south and west direction with the exception of ID Post 1S which was not placed in it's position due to the fact a very steep hazardous slope with loose talus prevented the person from climbing to this location

APPENDIX D

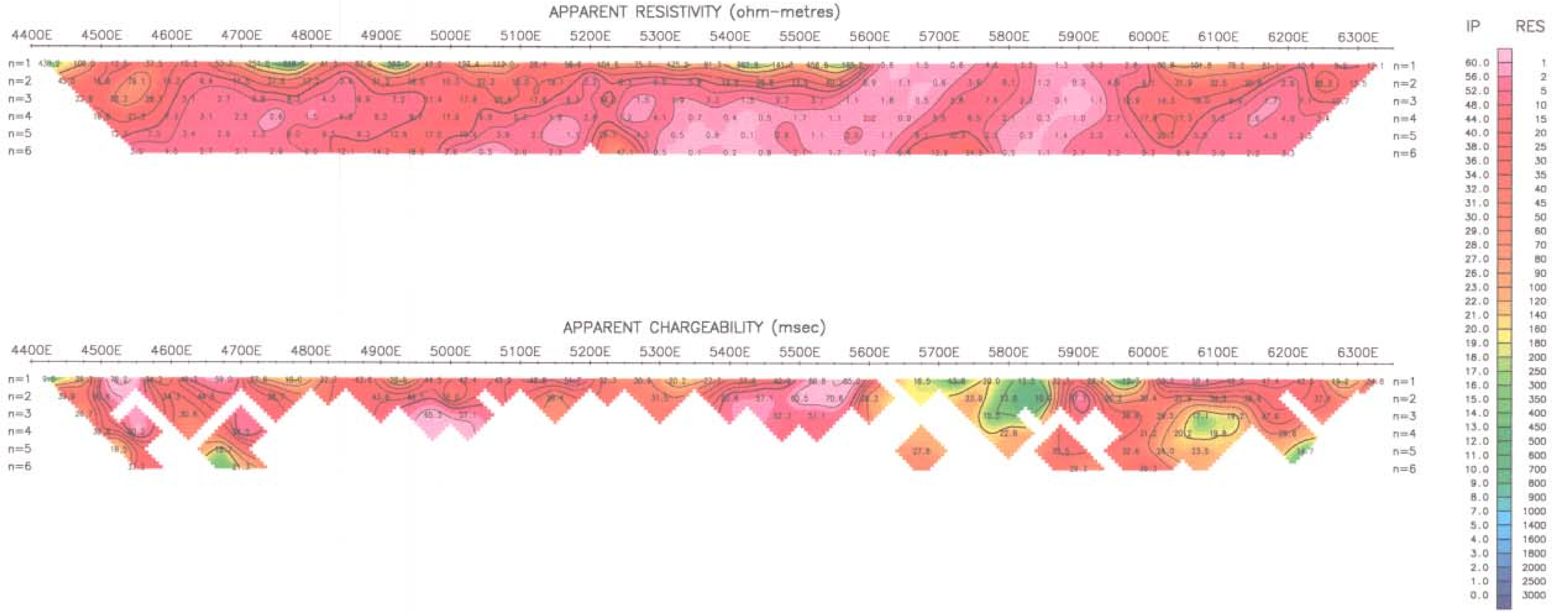
Magnetic Map



UTM Zone 9 NAD 83
GEOLOGIC LEGEND
DIAMOND DRILL HOLE
YEAR-NUMBER
PLEISTOCENE to RECENT OVERBURDEN
Fg FLUVIAL and GLACIAL DEPOSITS: silt, sand, gravel and till
EARLY JURASSIC(?) INTRUSIVE ROCKS
Gd GRANODIORITE
LATE TRIASSIC TURNAGAIN ULTRAMAFIC ROCKS
Sp SERPENTINITE
Hb HORNBLENDITE and FELDSPATHIC HORNBLENDITE
Cp CLINOPYROXENITE (0-10% olivine; 90-100% clinopyroxene) OLIVINE CLINOPYROXENITE (10-40% olivine; 60-90% clinopyroxene)
Pd PERIDOTITE (40-90% olivine; 10-60% clinopyroxene)
Du DUNITE (90-100% olivine; 0-10% clinopyroxene)
UPPER PALEOZOIC LAYERED ROCKS
H HARPER RANCH GROUP: undifferentiated metasedimentary and metavolcanic rocks
Hm - mafic sill
Hg - granodiorite
Hs - siltstone, greywacke, tuffaceous sandstone (metamorphosed to upper greenschist facies)
PALEOZOIC (UNDIVIDED)
Gs GRAPHITIC SLATE and PHYLLITE (minor siltstone)
UPPER PROTEROZOIC to LOWER CAMBRIAN
At ATLIN FORMATION: argillite, siltstone, minor quartzite and limestone
CUB 18
244540
CUB 11
348275
348274
CUB 16
348282
CUB 12
348278
CUB 13
348279
CUB 14
348280
CUB 15
CUB 17
244539
CUB 6
347032
347028
345511
MOOSE 6
359693
MOOSE 4
359691
MOOSE 2
359689
MOOSE 1
347530
MOOSE 7
359694
MOOSE 5
359692
MOOSE 3
359690
Northwest
Horsetrail
Fishing Rock
Discovery
Cliff
Profile Base: 57000 nT
Profile Scale: 5000 nT/cm
Colour Scale (nT)
Scale 1:10,000
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
27,119
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division, BC
TOTAL MAGNETIC INTENSITY MAP
Profiles, Contours and Colour Grid
Surveyed By: B. Robertson
Survey Dates: August-September 2002
Map No. 1
Drawn By: D. Woods
DISCOVERY GEOPHYSICS INC.
14342 Greencrest Drive
Surrey, BC CANADA V4P 1M1
tel: 604-538-0900 fax: 604-538-0954
e-mail: d_woods@istar.ca

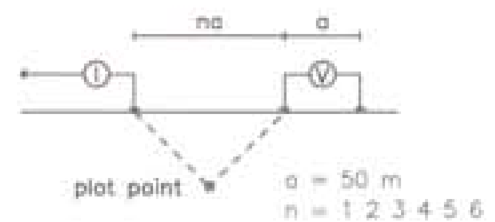
APPENDIX E

IP/Resistivity Pseudo-Sections



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20, 20, 40, 60, 100, 140, 180, 260, 380, 560 ms

Scale 1:5000

100 0 100 200 300
(meters)

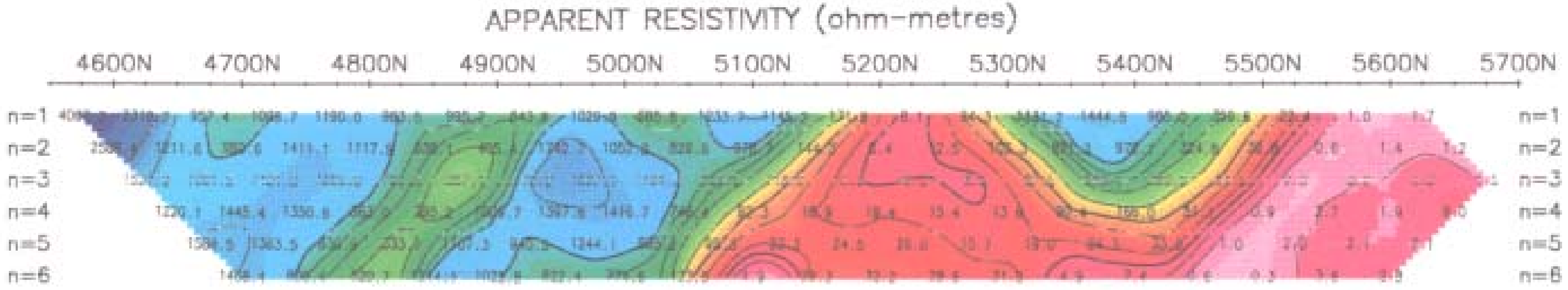
CANADIAN METALS EXPLORATION LTD.

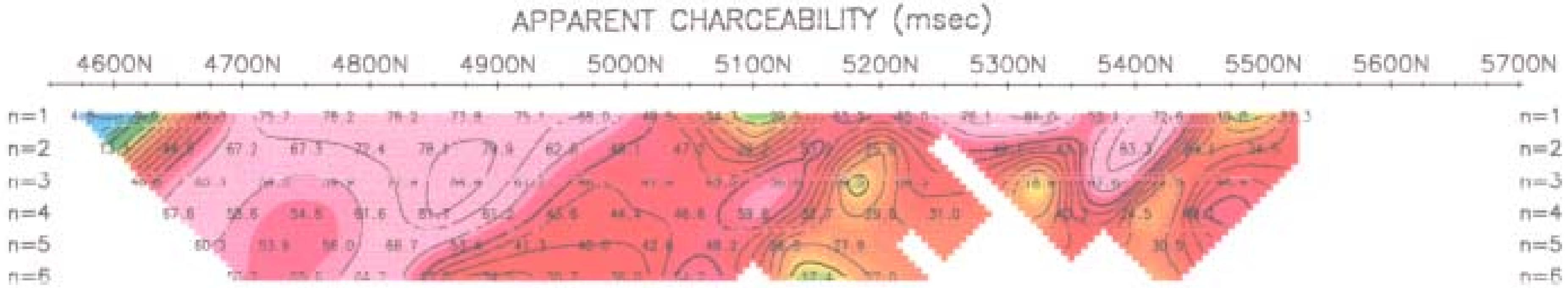
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

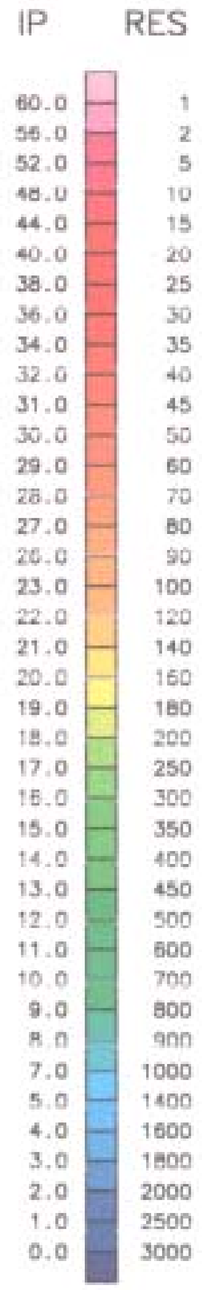
27119 3/3
(2)

Line 1400N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

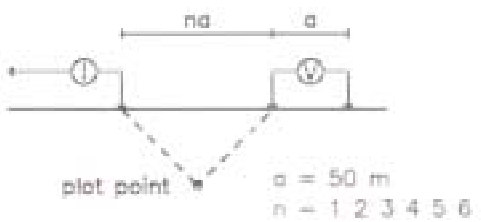






INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

50 0 50 100 150 200 250 300 350
(meters)

CANADIAN METALS EXPLORATION LTD.

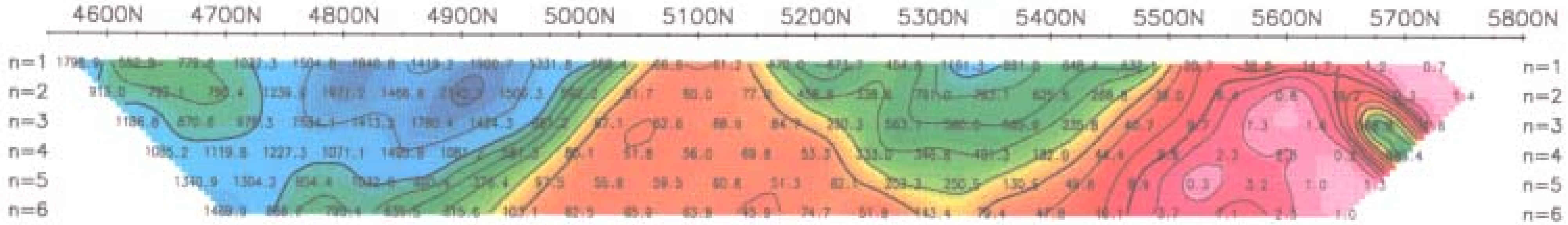
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

27119 3/3
(3)

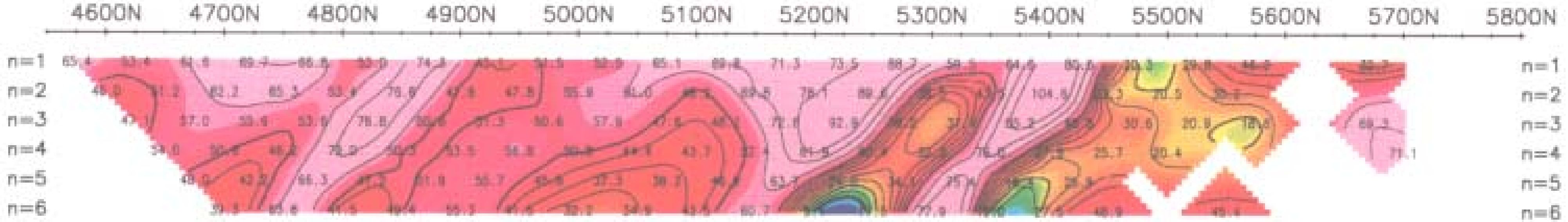
Line 1400E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

APPARENT RESISTIVITY (ohm-metres)



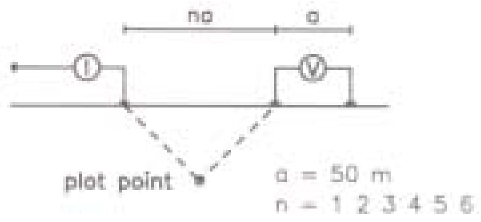
APPARENT CHARGEABILITY (msec)



IP	RES
60.0	1
56.0	2
52.0	5
48.0	10
44.0	15
40.0	20
38.0	25
36.0	30
34.0	35
32.0	40
31.0	45
30.0	50
29.0	60
28.0	70
27.0	80
26.0	90
23.0	100
22.0	120
21.0	140
20.0	160
19.0	180
18.0	200
17.0	250
16.0	300
15.0	350
14.0	400
13.0	450
12.0	500
11.0	600
10.0	700
9.0	800
8.0	900
7.0	1000
5.0	1400
4.0	1600
3.0	1800
2.0	2000
1.0	2500
0.0	3000

INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

50 0 50 100 150 200 250 300 350
(meters)

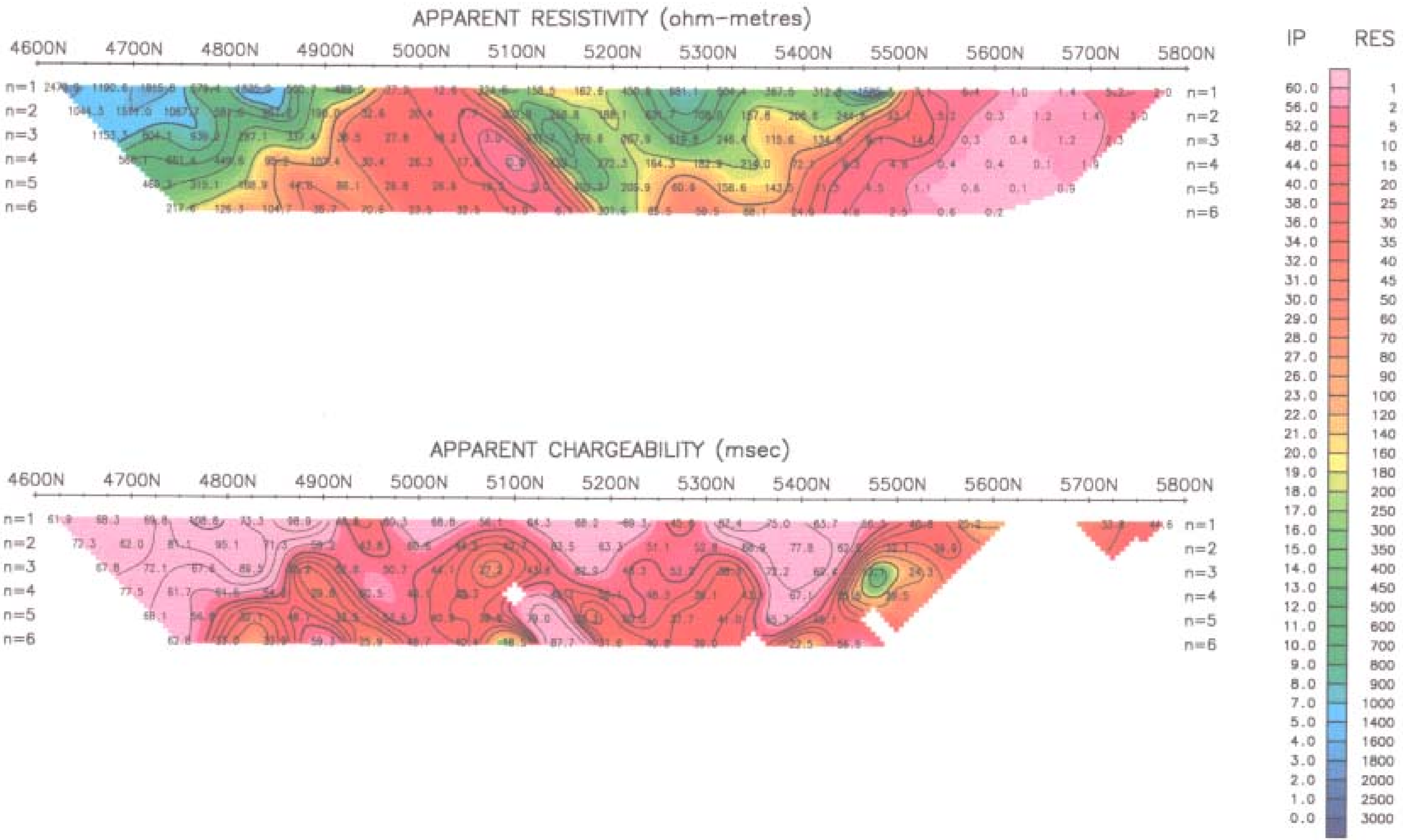
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

27119 3/3 (4)

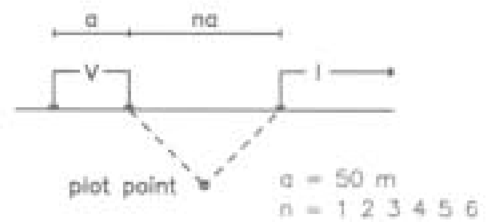
Line 1600E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000
50 0 50 100 150 200 250 300 350
(meters)

CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

27119 3/3 (5)

Line 1800E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY

a = 50 m
n = 1 2 3 4 5 6

TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

100 0 100 200 300
(meters)

CANADIAN METALS EXPLORATION LTD.

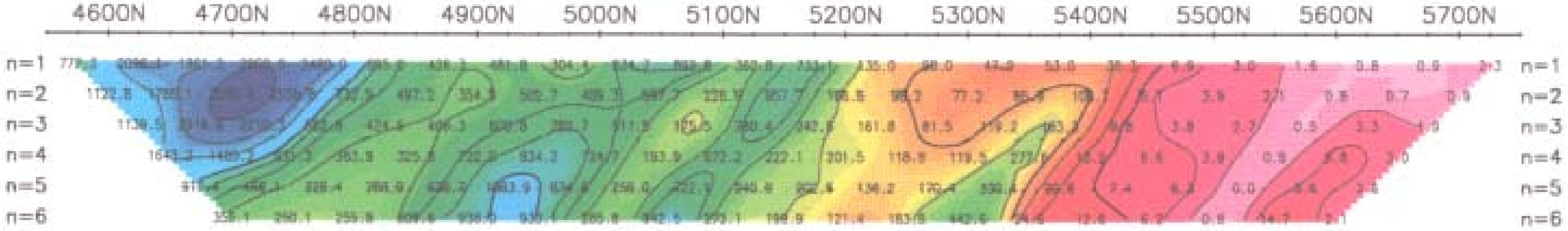
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

27119 3/3 (6)

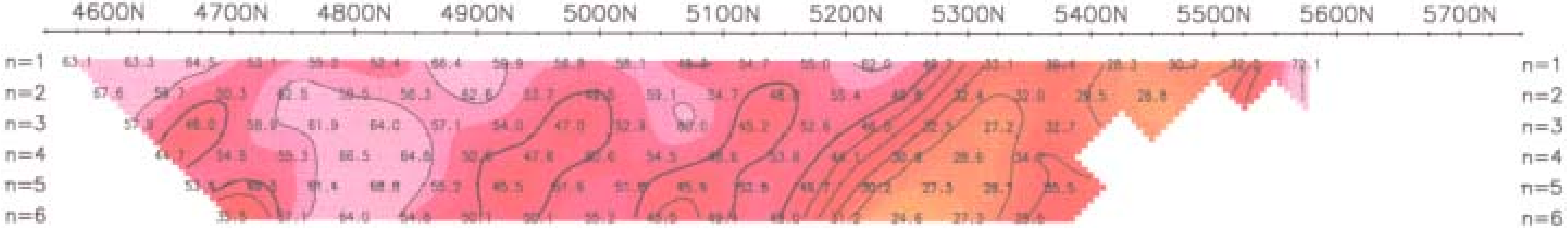
Line 2000E

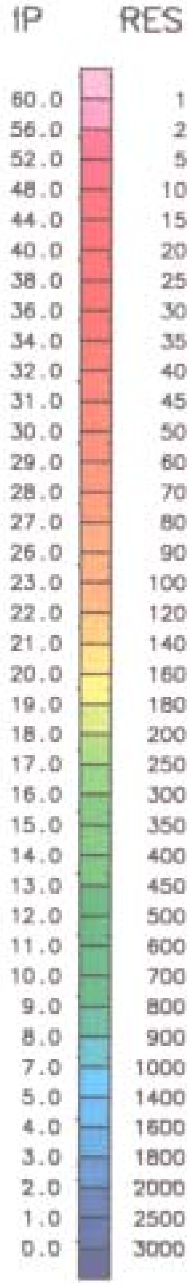
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

APPARENT RESISTIVITY (ohm-metres)



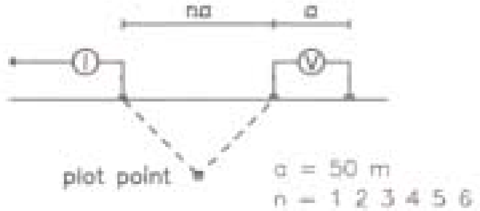
APPARENT CHARGEABILITY (msec)





INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

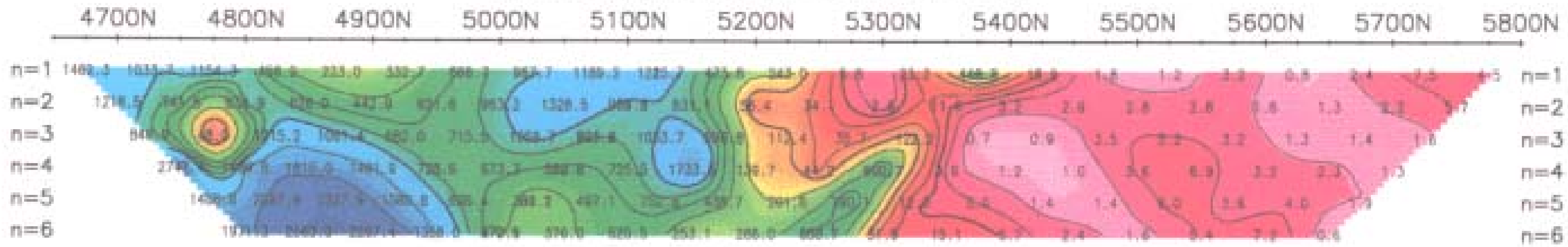
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division 27119 3/3
Dease Lake, BC
(7)

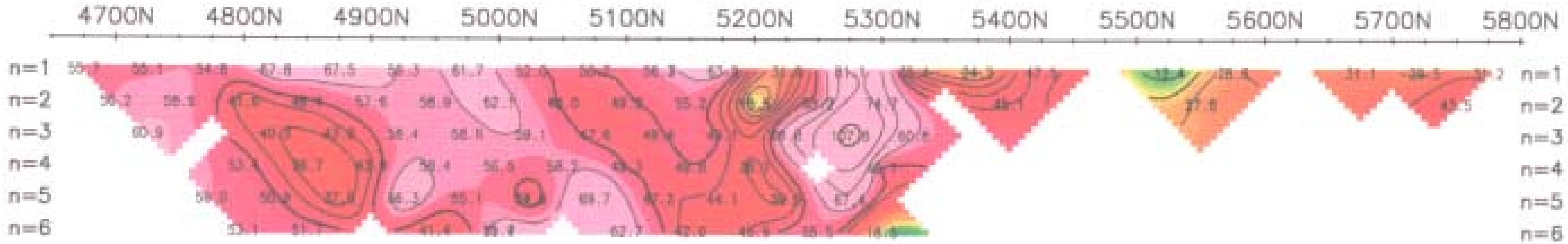
Line 2200E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

APPARENT RESISTIVITY (ohm-metres)



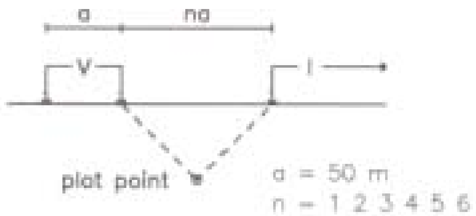
APPARENT CHARGEABILITY (msec)



IP	RES
60.0	1
56.0	2
52.0	5
48.0	10
44.0	15
40.0	20
38.0	25
36.0	30
34.0	35
32.0	40
31.0	45
30.0	50
29.0	60
28.0	70
27.0	80
26.0	90
23.0	100
22.0	120
21.0	140
20.0	160
19.0	180
18.0	200
17.0	250
16.0	300
15.0	350
14.0	400
13.0	450
12.0	500
11.0	600
10.0	700
9.0	800
8.0	900
7.0	1000
5.0	1400
4.0	1600
3.0	1800
2.0	2000
1.0	2500
0.0	3000

INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000
50 0 50 100 150 200 250 300 350
(meters)

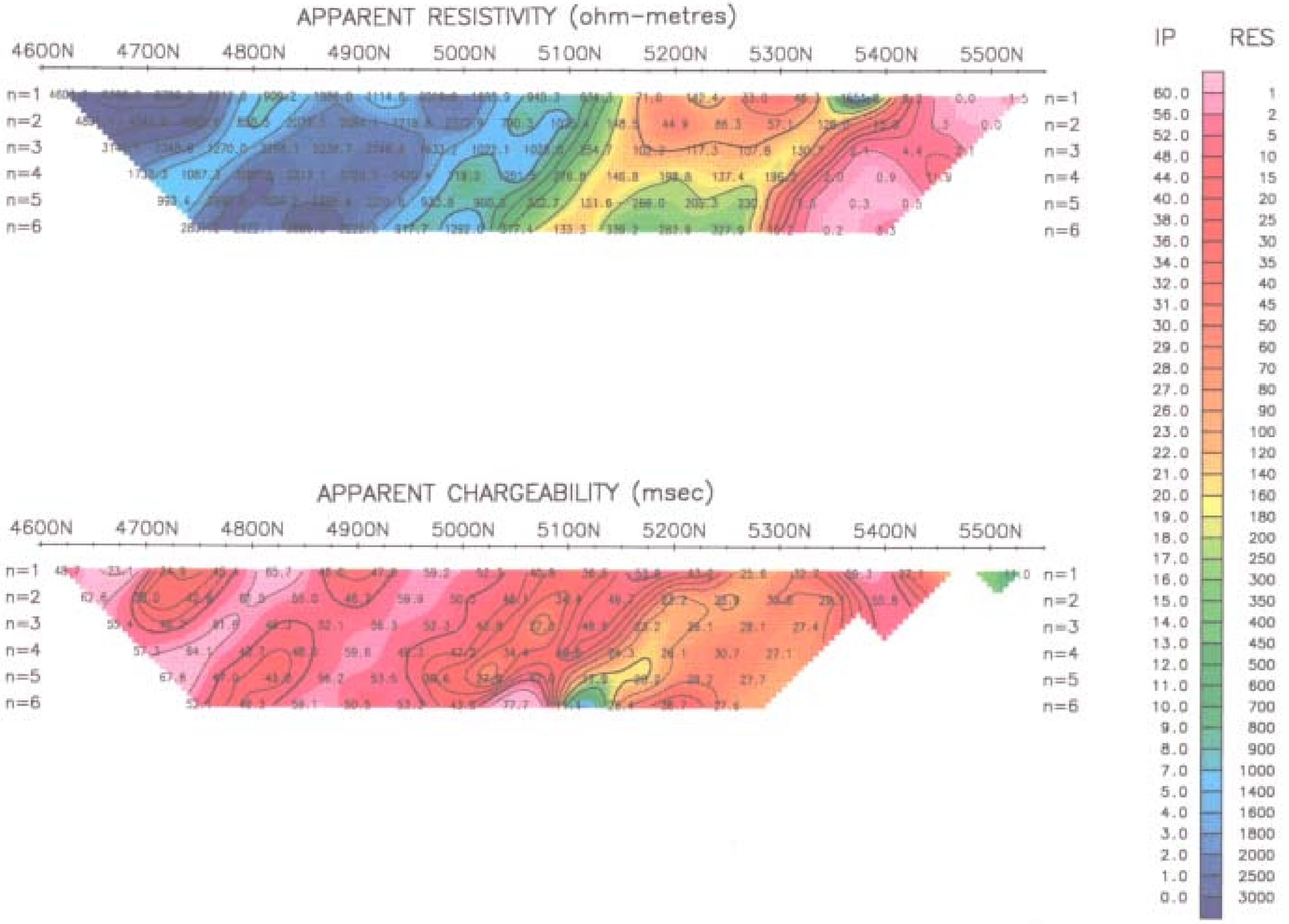
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

27119 3/3 (8)

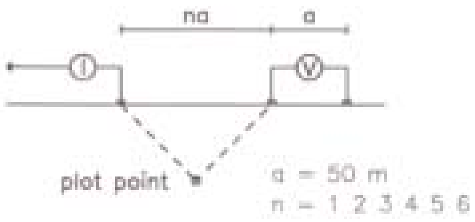
Line 2400E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division 27119 3/3
Dease Lake, BC (9)

Line 2600E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY

a = 50 m
n = 1 2 3 4 5 6

plot point

TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

100 0 100 200 300
(meters)

CANADIAN METALS EXPLORATION LTD.

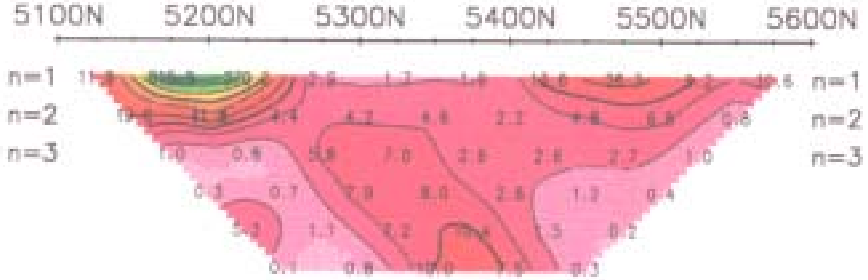
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

27119 3/3
10

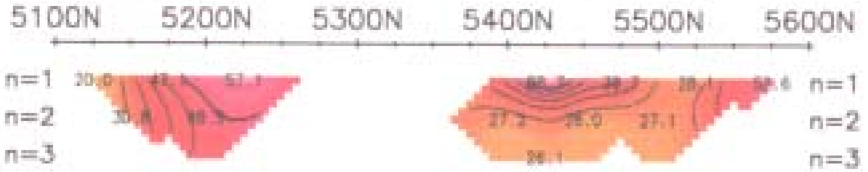
Line 2800E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

APPARENT RESISTIVITY (ohm-metres)



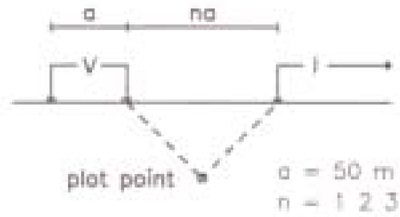
APPARENT CHARGEABILITY (msec)



IP	RES
60.0	1
56.0	2
52.0	5
48.0	10
44.0	15
40.0	20
38.0	25
36.0	30
34.0	35
32.0	40
31.0	45
30.0	50
29.0	60
28.0	70
27.0	80
26.0	90
23.0	100
22.0	120
21.0	140
20.0	160
19.0	180
18.0	200
17.0	250
16.0	300
15.0	350
14.0	400
13.0	450
12.0	500
11.0	600
10.0	700
9.0	800
8.0	900
7.0	1000
5.0	1400
4.0	1600
3.0	1800
2.0	2000
1.0	2500
0.0	3000

INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

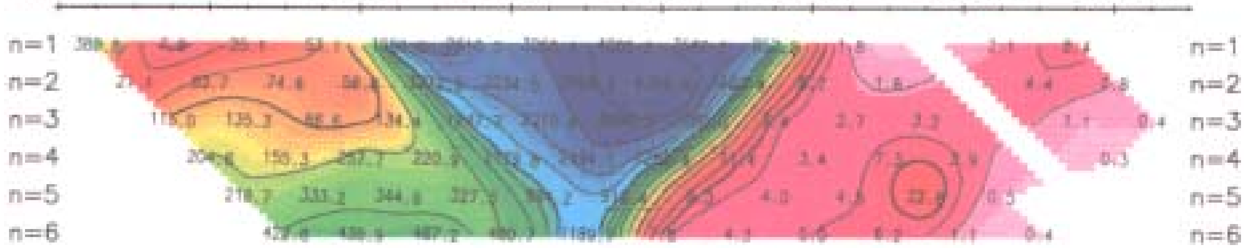
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

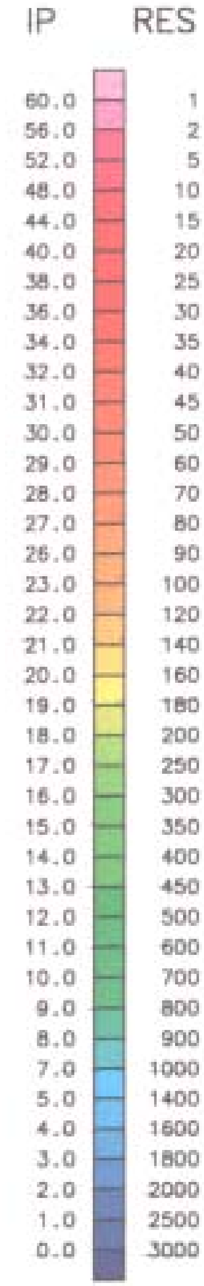
Line 3000E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

APPARENT RESISTIVITY (ohm-metres)

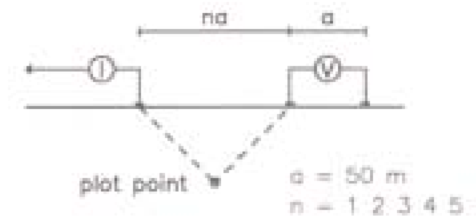


APPARENT CHARGEABILITY (msec)



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

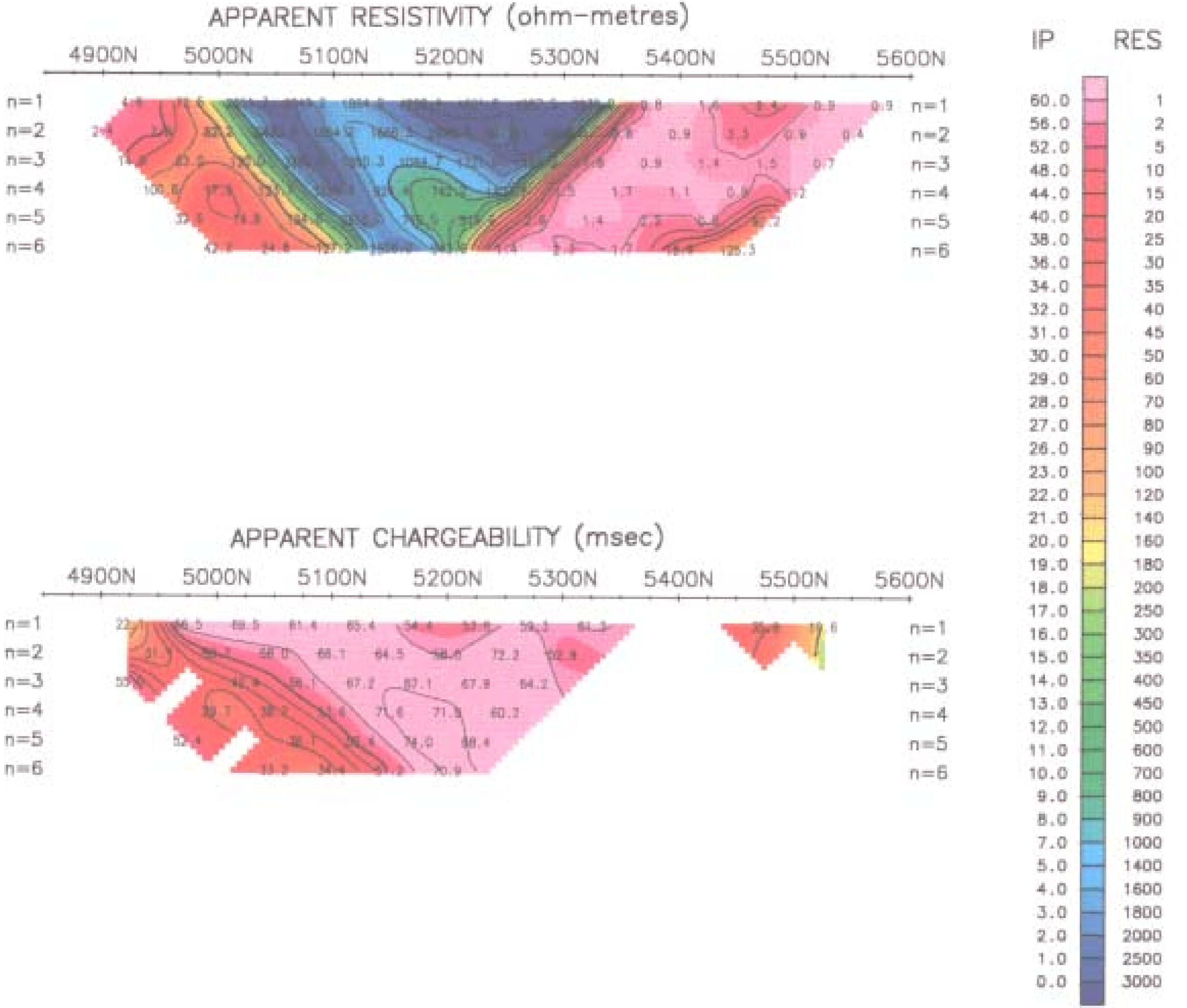
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

(12)

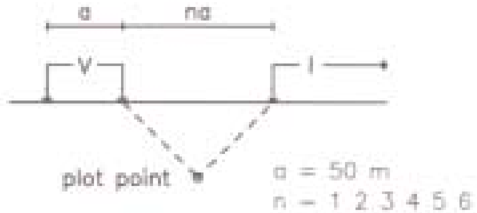
Line 3200E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s −on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows − 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

50 0 50 100 150 200 250
(meters)

CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

(13)

Line 3400E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY

a = 50 m
n = 1 2 3 4 5 6

TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows – 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

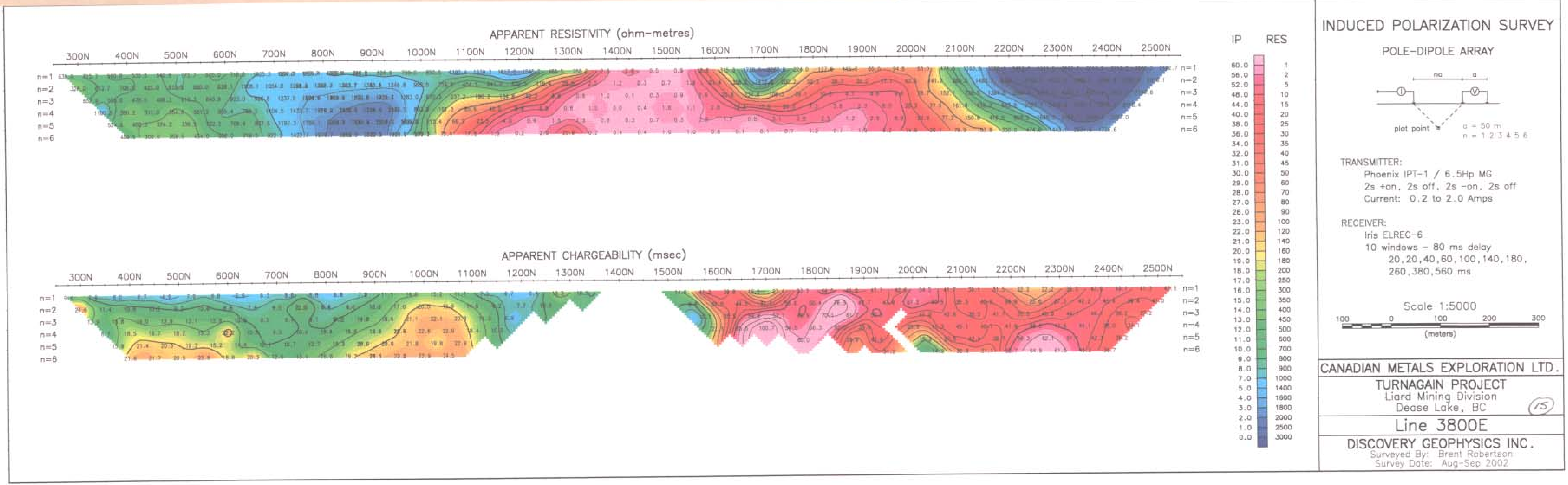
100 0 100 200 300
(meters)

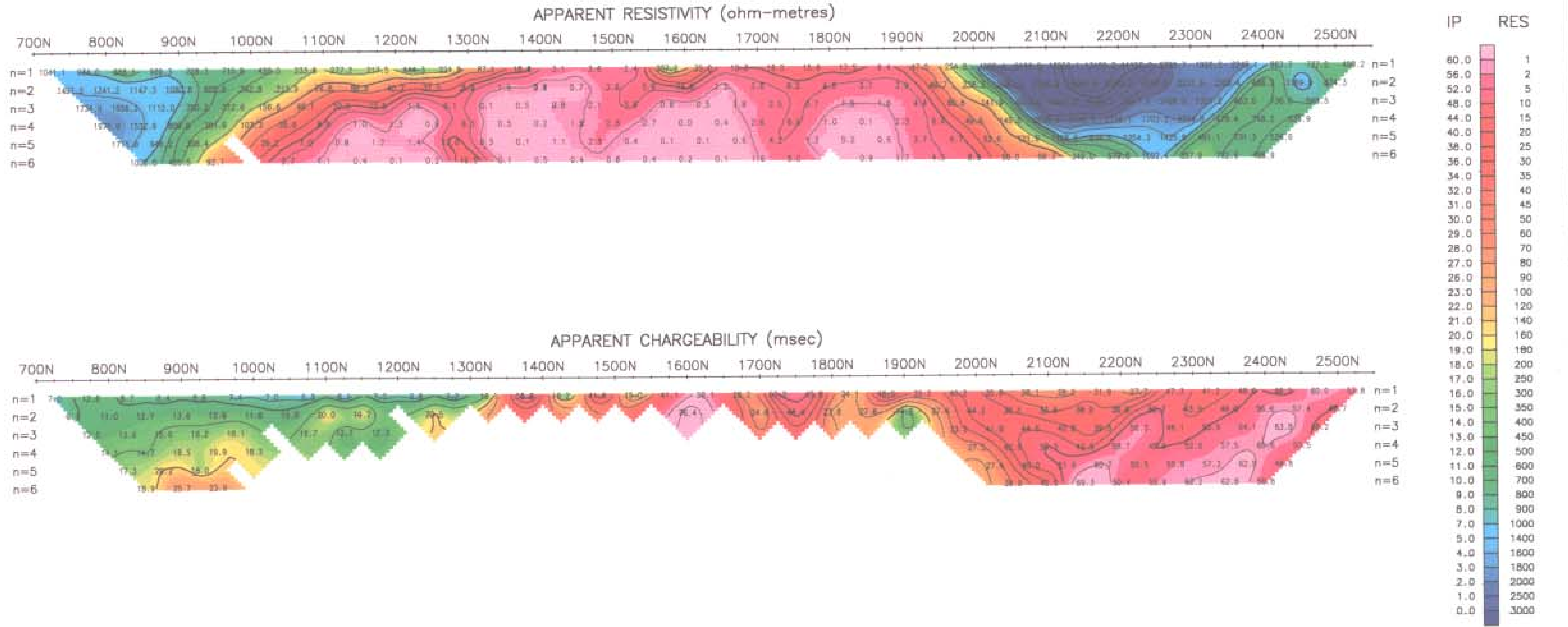
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

Line 3600E

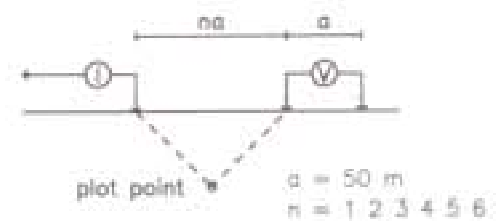
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002


APPARENT RESISTIVITY (ohm-metres)
300N 400N 500N 600N 700N 800N 900N 1000N 1100N 1200N 1300N 1400N 1500N 1600N 1700N 1800N 1900N 2000N 2100N 2200N 2300N 2400N 2500N
n=1 n=2 n=3 n=4 n=5 n=6
APPARENT CHARGEABILITY (msec)
300N 400N 500N 600N 700N 800N 900N 1000N 1100N 1200N 1300N 1400N 1500N 1600N 1700N 1800N 1900N 2000N 2100N 2200N 2300N 2400N 2500N
n=1 n=2 n=3 n=4 n=5 n=6
IP RES
INDUCED POLARIZATION SURVEY
POLE-DIPOLE ARRAY
plot point
a = 50 m
n = 1 2 3 4 5 6
TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps
RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms
Scale 1:5000
100 0 100 200 300
(meters)
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC
15
Line 3800E
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

100 0 100 200 300
(meters)

CANADIAN METALS EXPLORATION LTD.

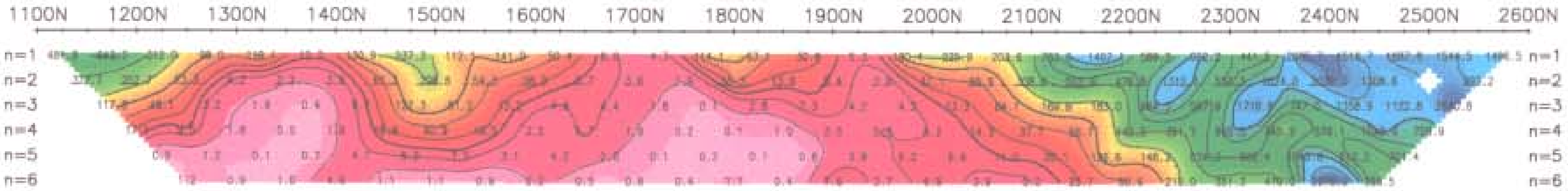
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

16

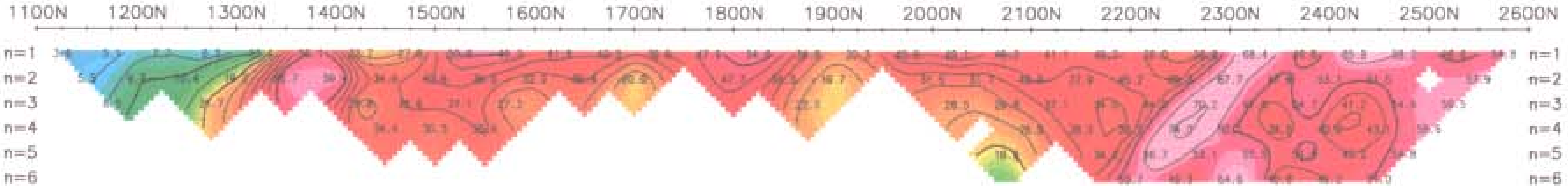
Line 4000E

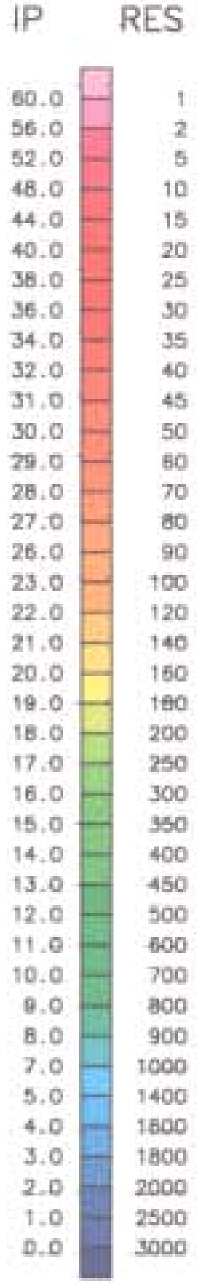
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

APPARENT RESISTIVITY (ohm-metres)



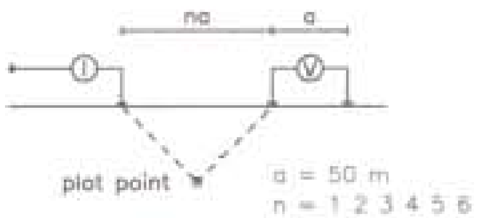
APPARENT CHARGEABILITY (msec)





INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

100 0 100 200 300
(meters)

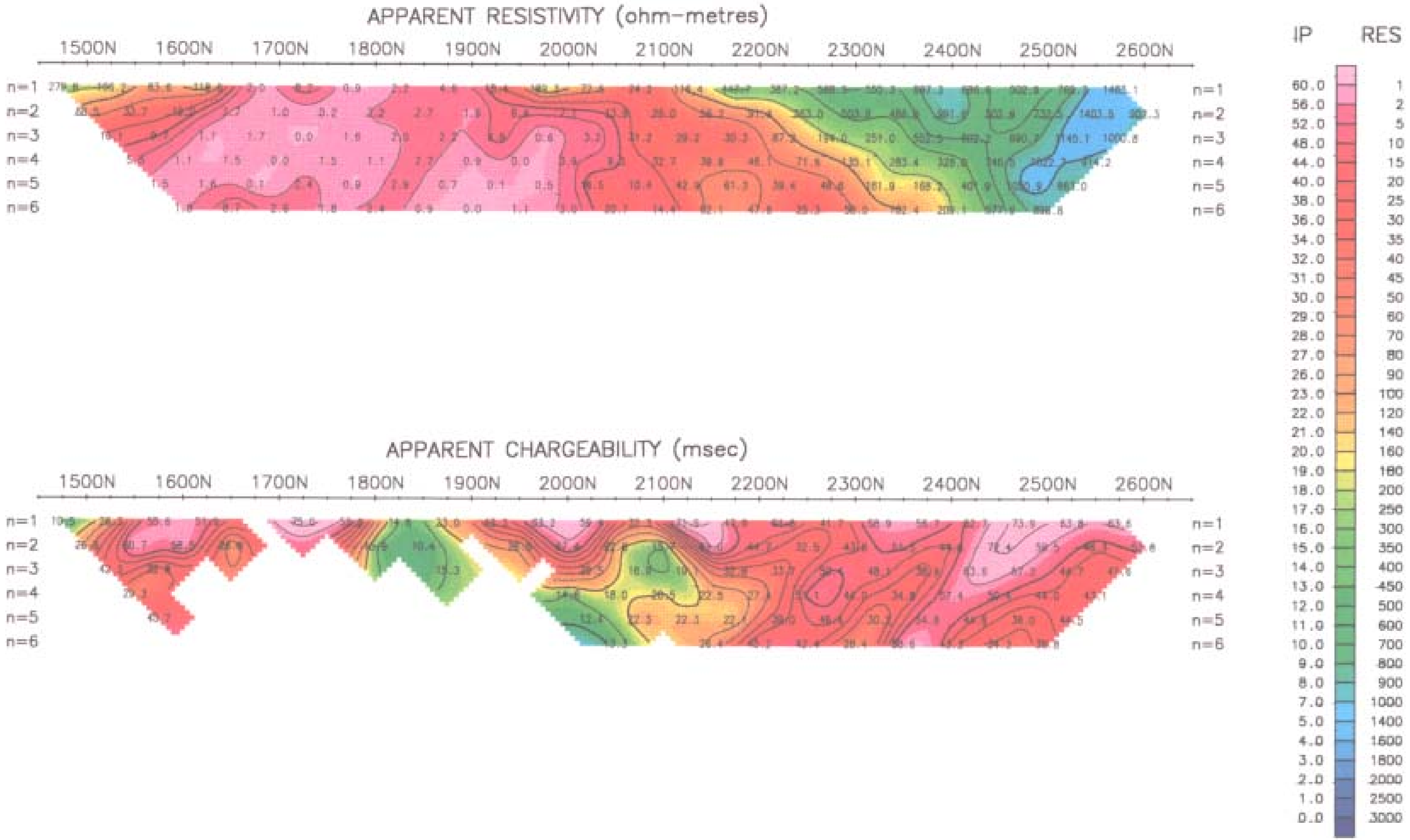
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

17

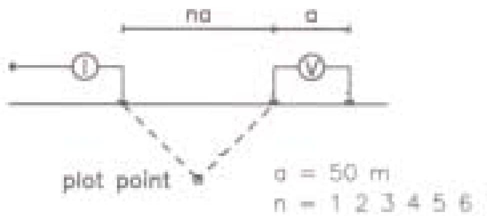
Line 4200E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000
50 0 50 100 150 200 250 300 350
(meters)

CANADIAN METALS EXPLORATION LTD.

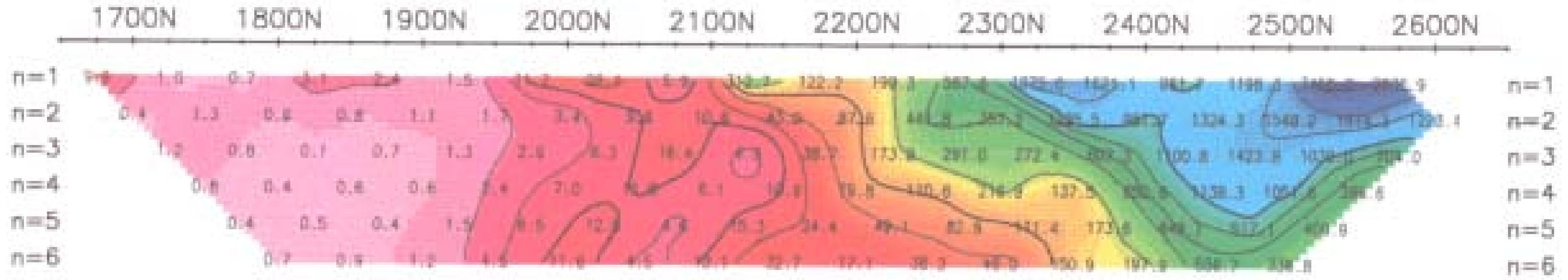
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

(13)

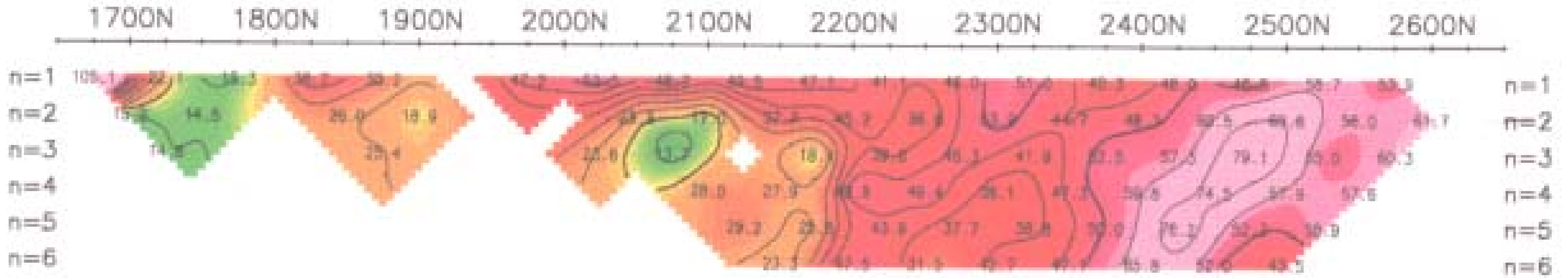
Line 4400E

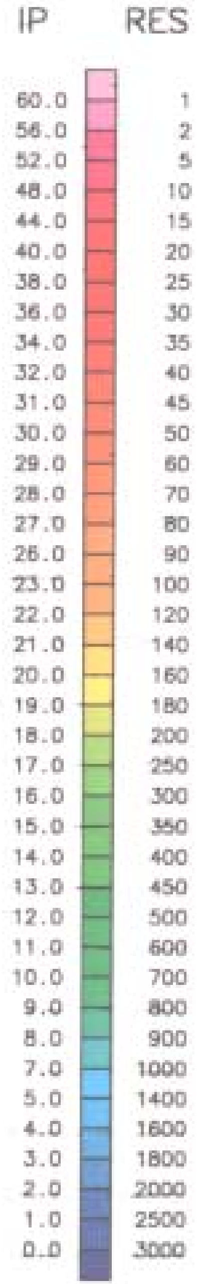
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

APPARENT RESISTIVITY (ohm-metres)



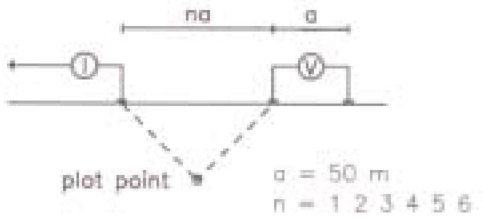
APPARENT CHARGEABILITY (msec)





INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

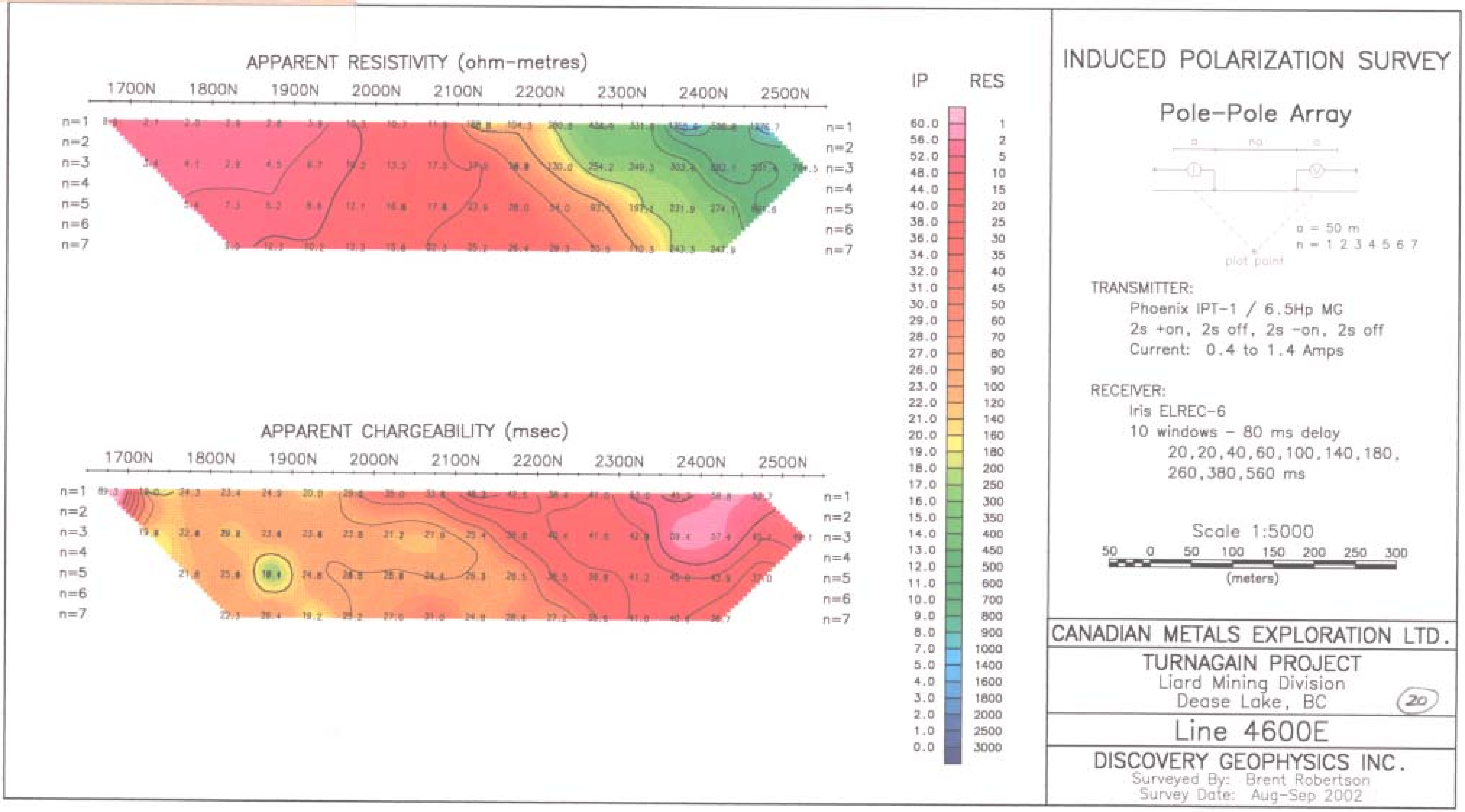
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

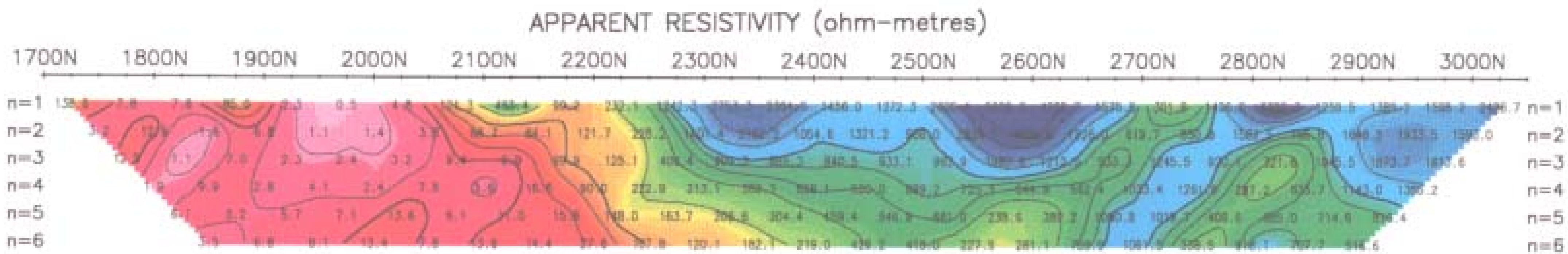
(19)

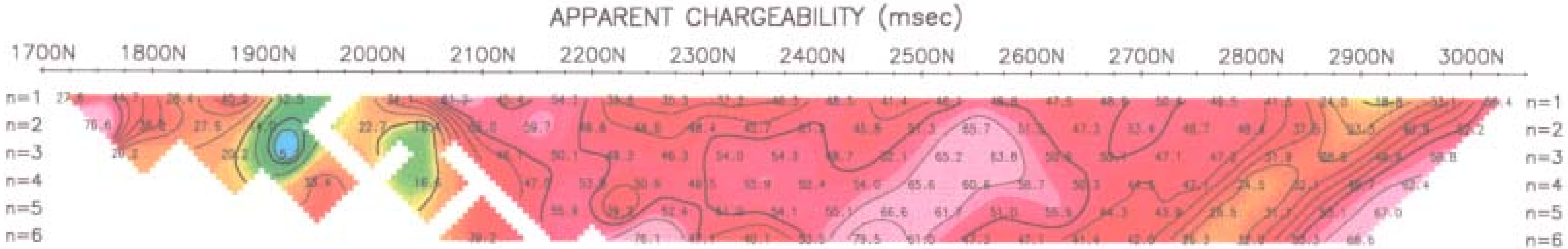
Line 4600E

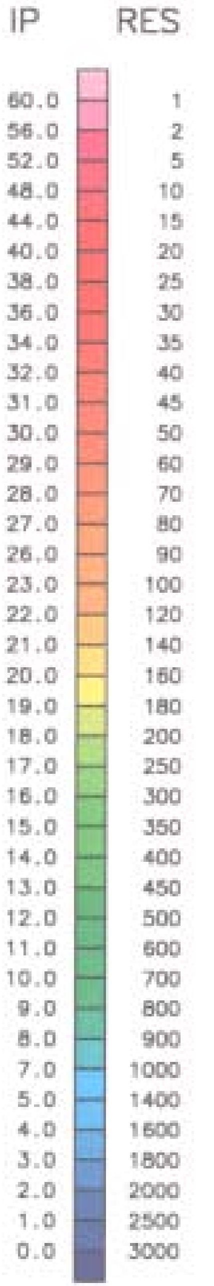
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



APPARENT RESISTIVITY (ohm-metres)
1700N 1800N 1900N 2000N 2100N 2200N 2300N 2400N 2500N
n=1 n=2 n=3 n=4 n=5 n=6 n=7
APPARENT CHARGEABILITY (msec)
1700N 1800N 1900N 2000N 2100N 2200N 2300N 2400N 2500N
n=1 n=2 n=3 n=4 n=5 n=6 n=7
IP RES
60.0 1
56.0 2
52.0 5
48.0 10
44.0 15
40.0 20
38.0 25
36.0 30
34.0 35
32.0 40
31.0 45
30.0 50
29.0 60
28.0 70
27.0 80
26.0 90
23.0 100
22.0 120
21.0 140
20.0 160
19.0 180
18.0 200
17.0 250
16.0 300
15.0 350
14.0 400
13.0 450
12.0 500
11.0 600
10.0 700
9.0 800
8.0 900
7.0 1000
5.0 1400
4.0 1600
3.0 1800
2.0 2000
1.0 2500
0.0 3000
INDUCED POLARIZATION SURVEY
Pole-Pole Array
a = 50 m
n = 1 2 3 4 5 6 7
plot point
TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.4 to 1.4 Amps
RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms
Scale 1:5000
50 0 50 100 150 200 250 300
(meters)
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC
20
Line 4600E
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

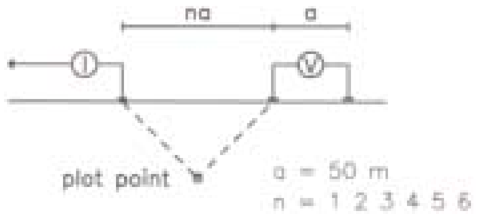






INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

50 0 50 100 150 200 250 300 350
(meters)

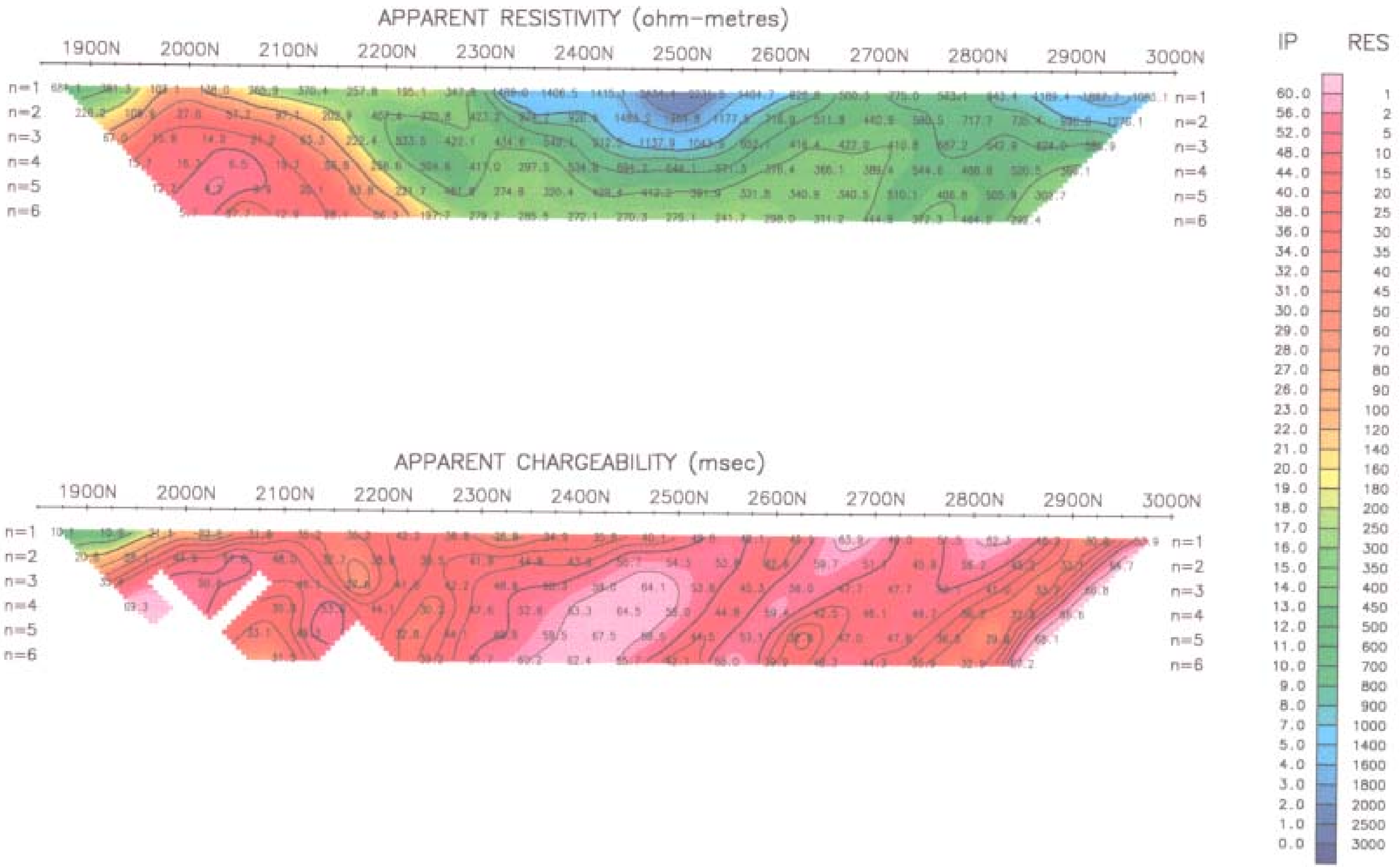
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

21

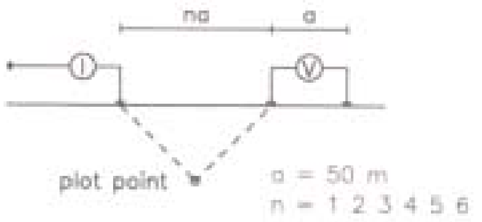
Line 4800E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

50 0 50 100 150 200 250 300 350
(meters)

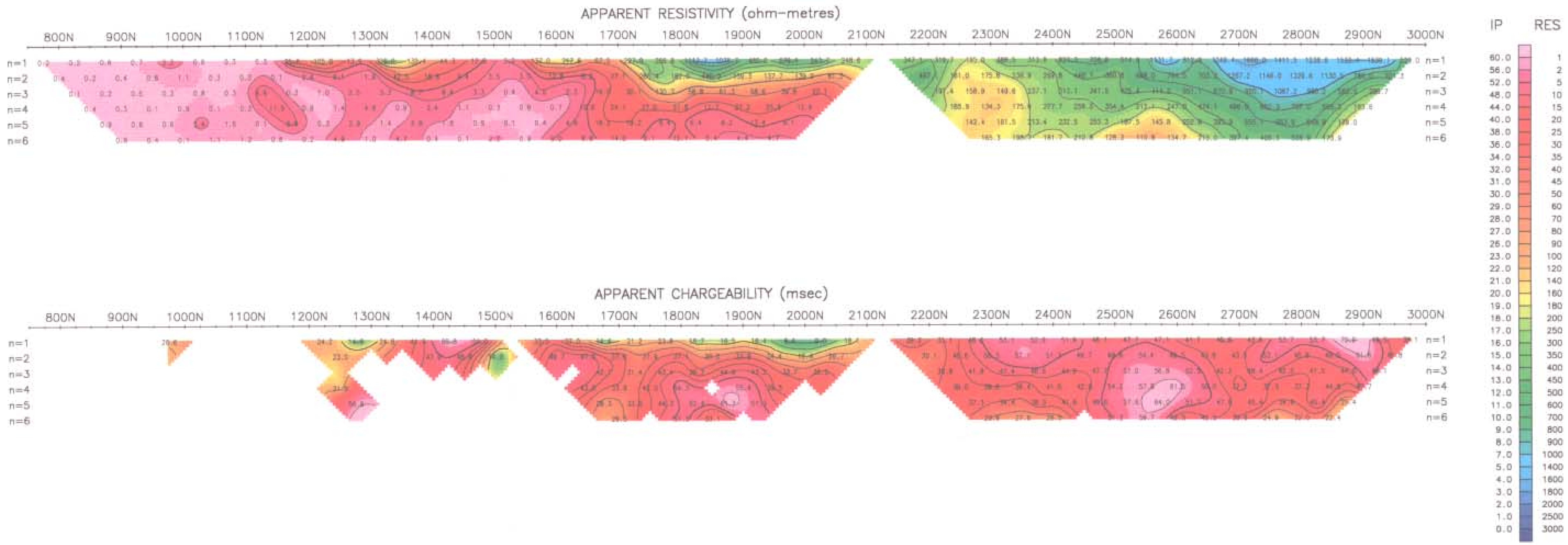
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

22

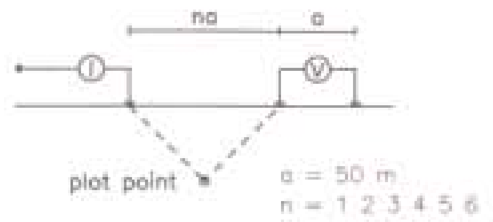
Line 5000E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

100 0 100 200 300
(meters)

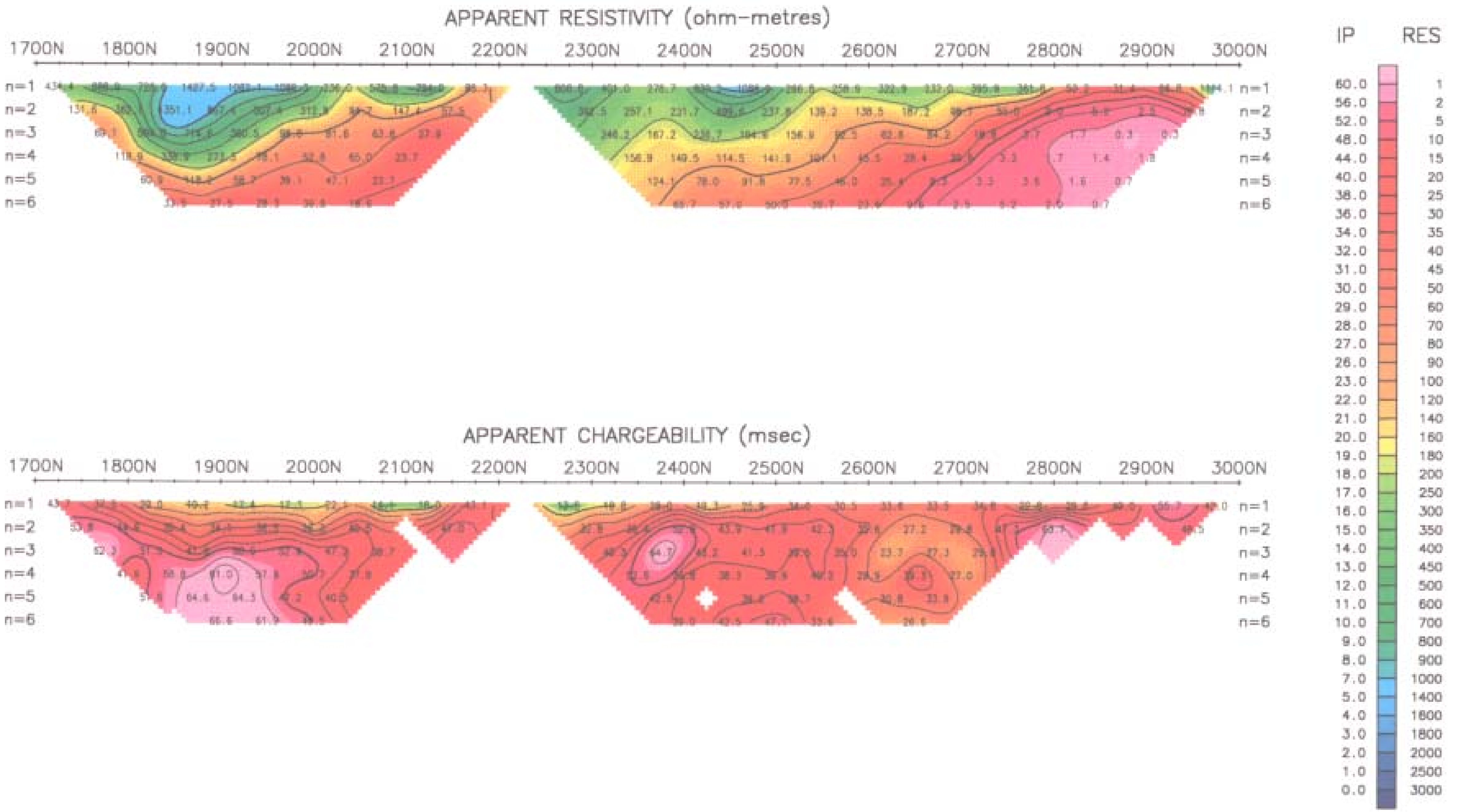
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

(23)

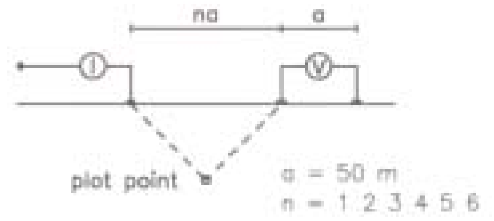
Line 5200E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

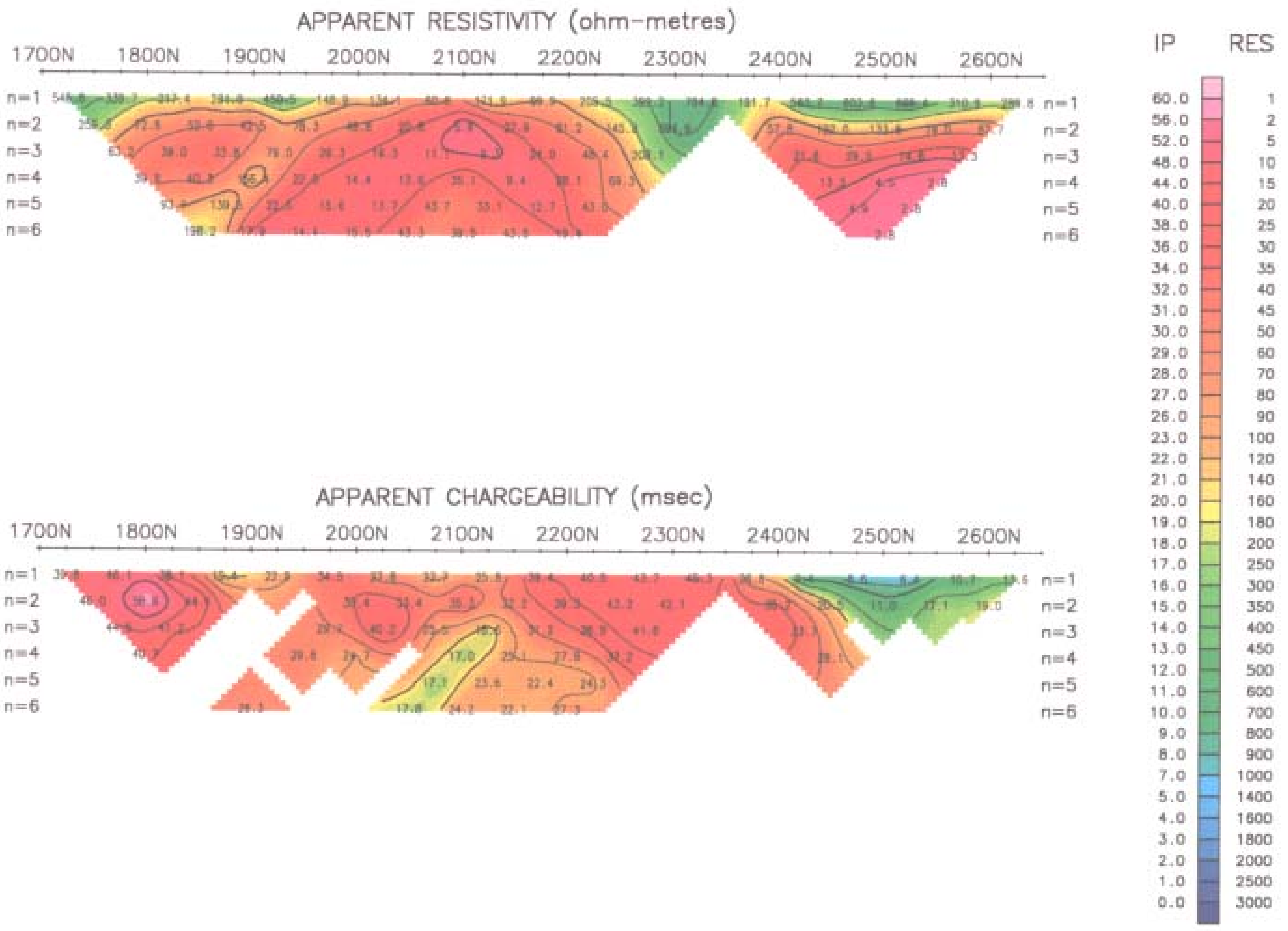
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

24

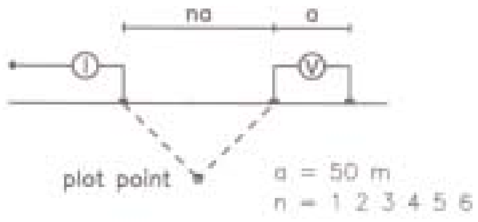
Line 5400E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:

Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:

Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

50 0 50 100 150 200 250 300
(meters)

25

CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT

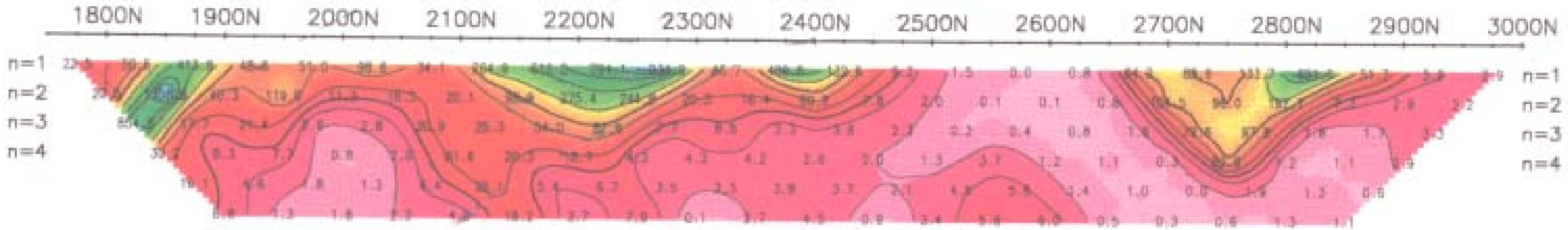
Liard Mining Division
Dease Lake, BC

Line 5600E

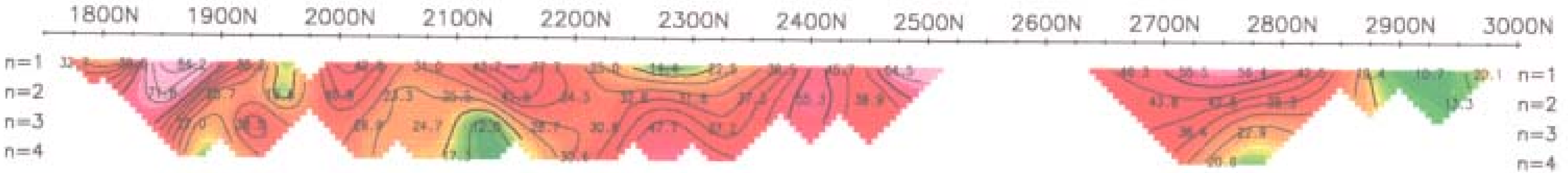
DISCOVERY GEOPHYSICS INC.

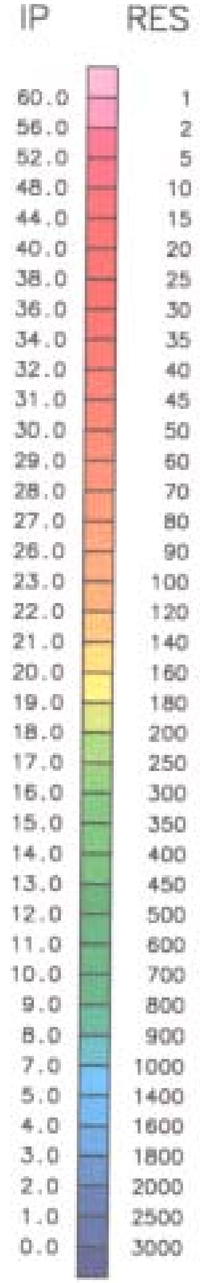
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

APPARENT RESISTIVITY (ohm-metres)



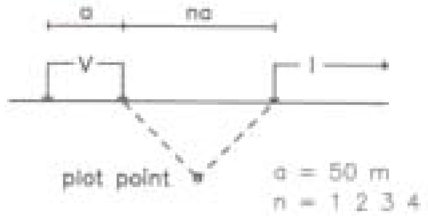
APPARENT CHARGEABILITY (msec)





INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows – 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

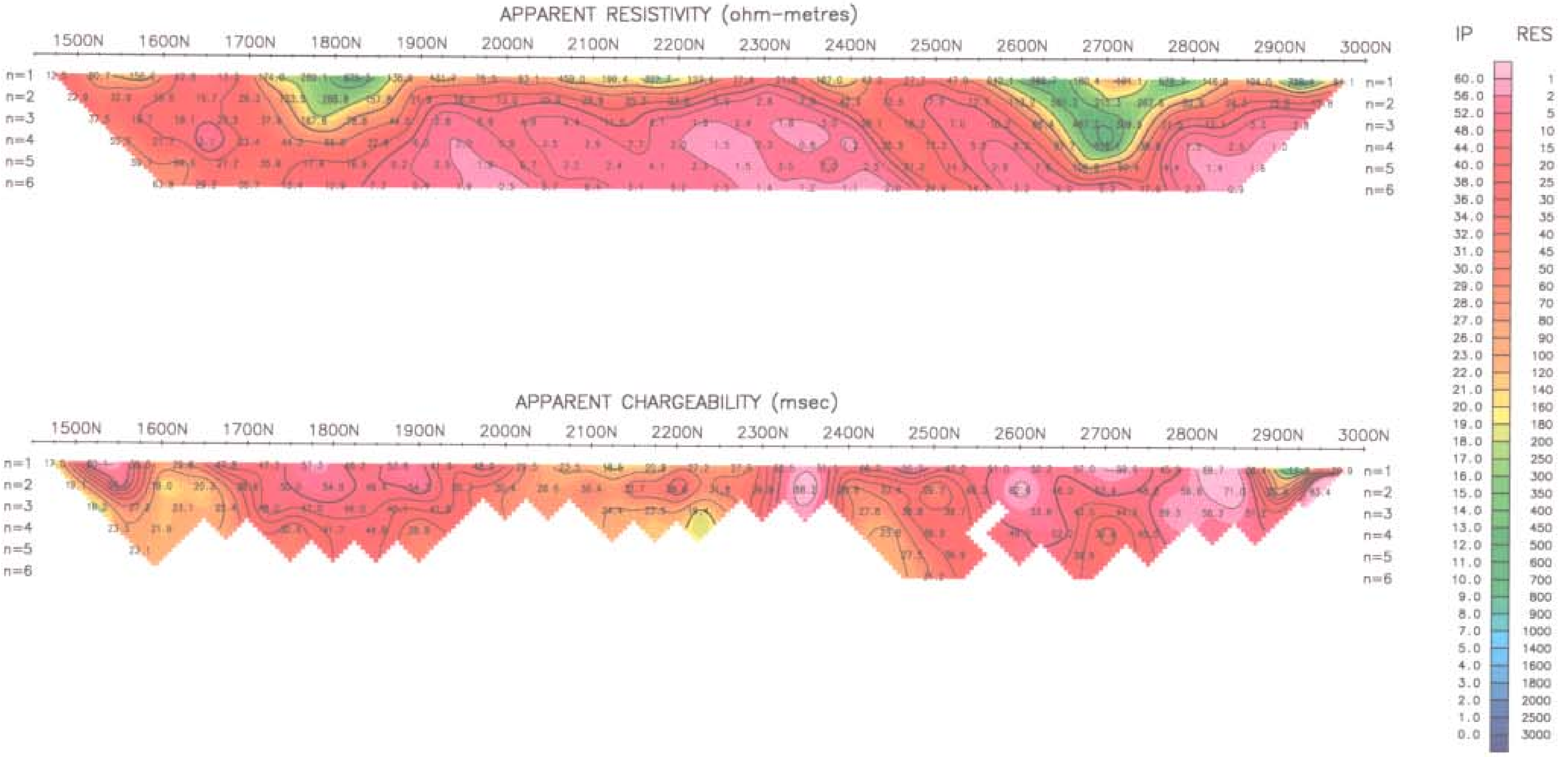
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

(26)

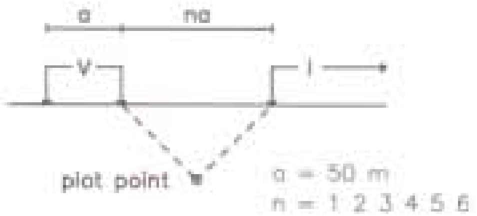
Line 5800E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

100 0 100 200 300
(meters)

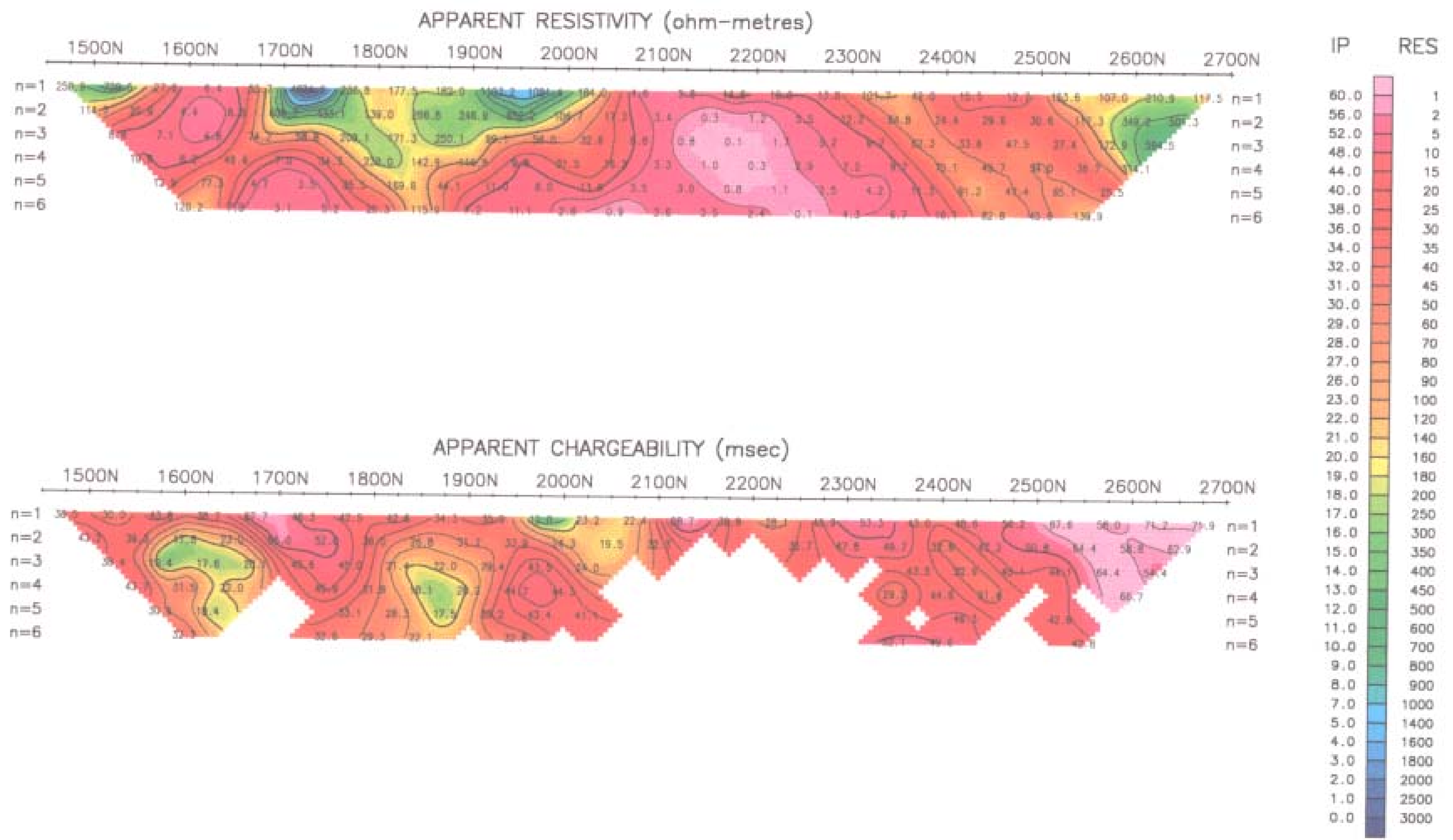
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

27

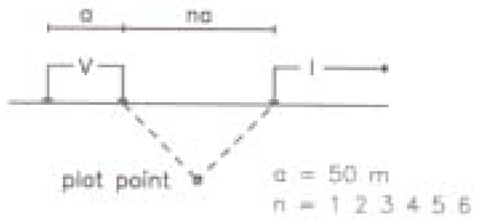
Line 6000E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000
50 0 50 100 150 200 250 300 350
(meters)

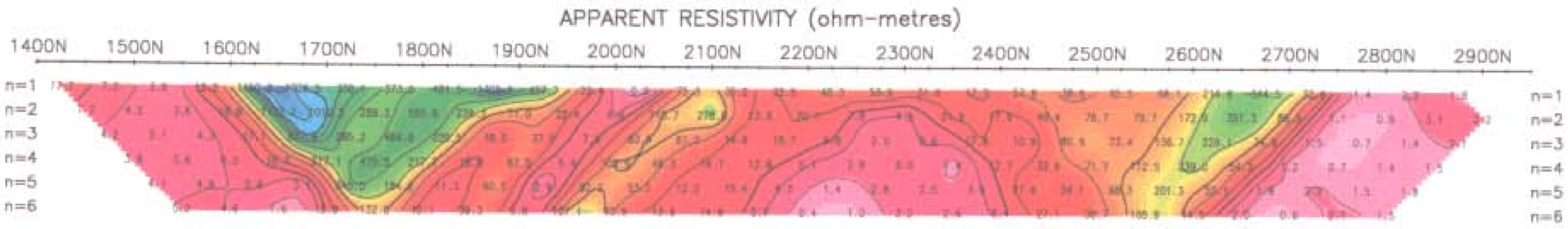
CANADIAN METALS EXPLORATION LTD.

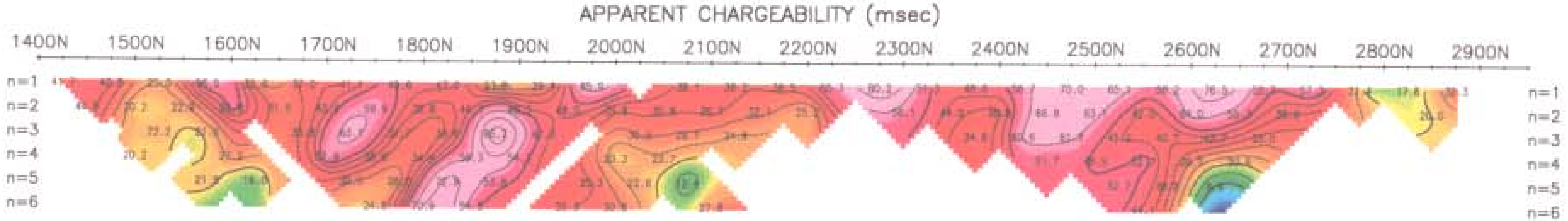
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

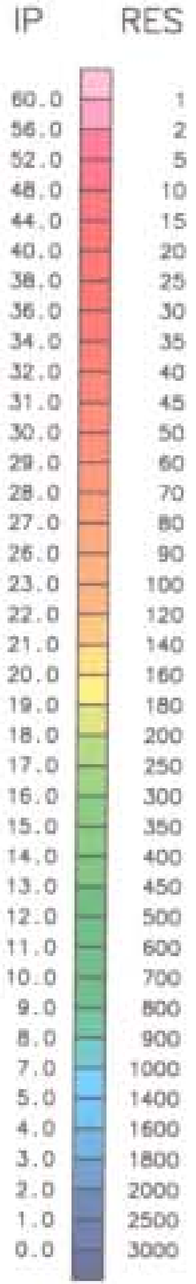
28

Line 6200E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



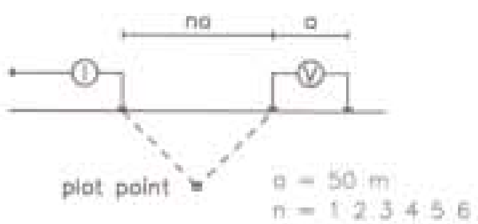




IP	RES
60.0	1
56.0	2
52.0	5
48.0	10
44.0	15
40.0	20
38.0	25
36.0	30
34.0	35
32.0	40
31.0	45
30.0	50
29.0	60
28.0	70
27.0	80
26.0	90
23.0	100
22.0	120
21.0	140
20.0	160
19.0	180
18.0	200
17.0	250
16.0	300
15.0	350
14.0	400
13.0	450
12.0	500
11.0	600
10.0	700
9.0	800
8.0	900
7.0	1000
5.0	1400
4.0	1600
3.0	1800
2.0	2000
1.0	2500
0.0	3000

INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

CANADIAN METALS EXPLORATION LTD.

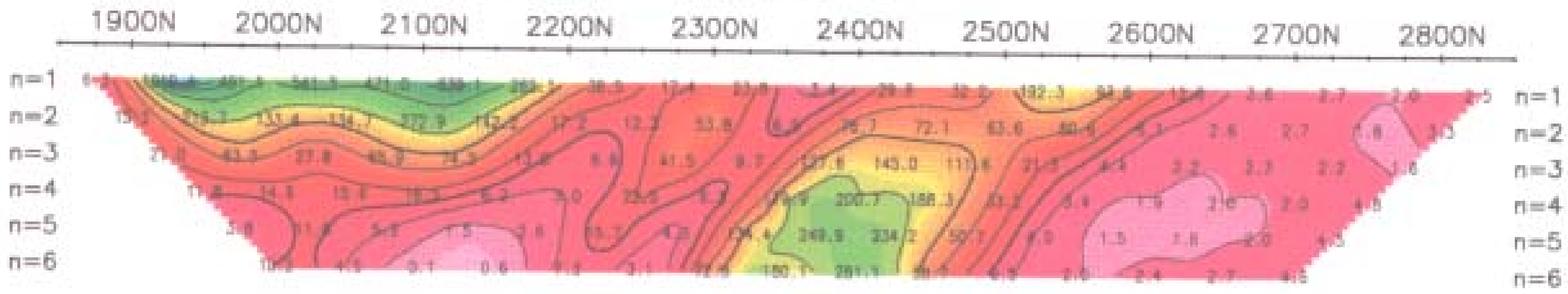
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

29

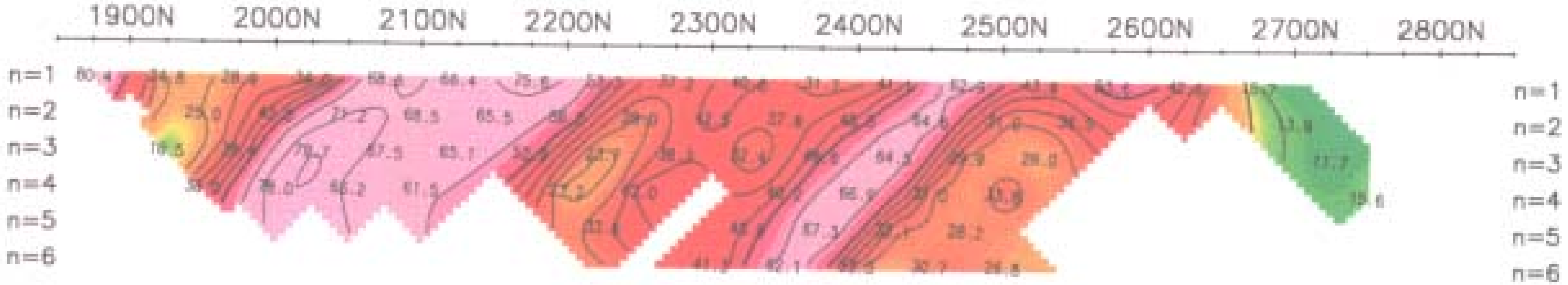
Line 6400E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

APPARENT RESISTIVITY (ohm-metres)



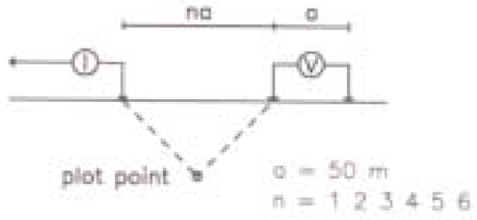
APPARENT CHARGEABILITY (msec)



IP	RES
60.0	1
56.0	2
52.0	5
48.0	10
44.0	15
40.0	20
38.0	25
36.0	30
34.0	35
32.0	40
31.0	45
30.0	50
29.0	60
28.0	70
27.0	80
26.0	90
23.0	100
22.0	120
21.0	140
20.0	160
19.0	180
18.0	200
17.0	250
16.0	300
15.0	350
14.0	400
13.0	450
12.0	500
11.0	600
10.0	700
9.0	800
8.0	900
7.0	1000
5.0	1400
4.0	1600
3.0	1800
2.0	2000
1.0	2500
0.0	3000

INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

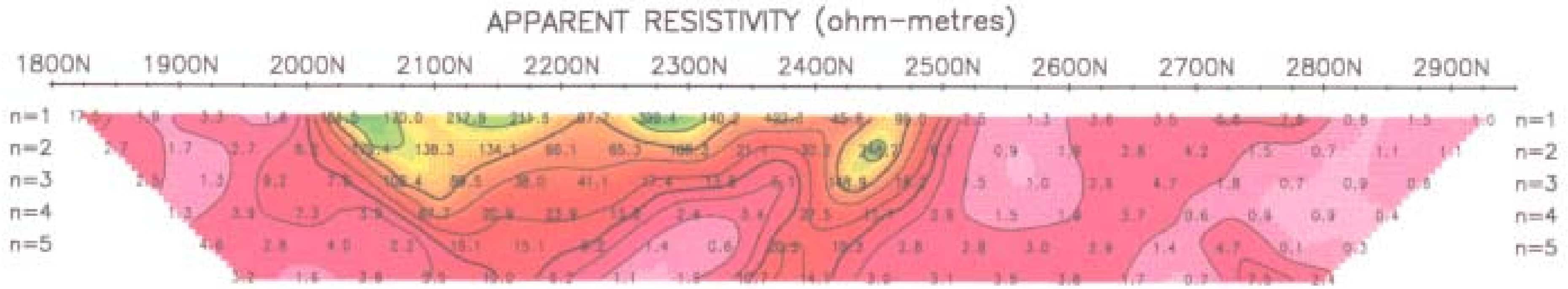
CANADIAN METALS EXPLORATION LTD.

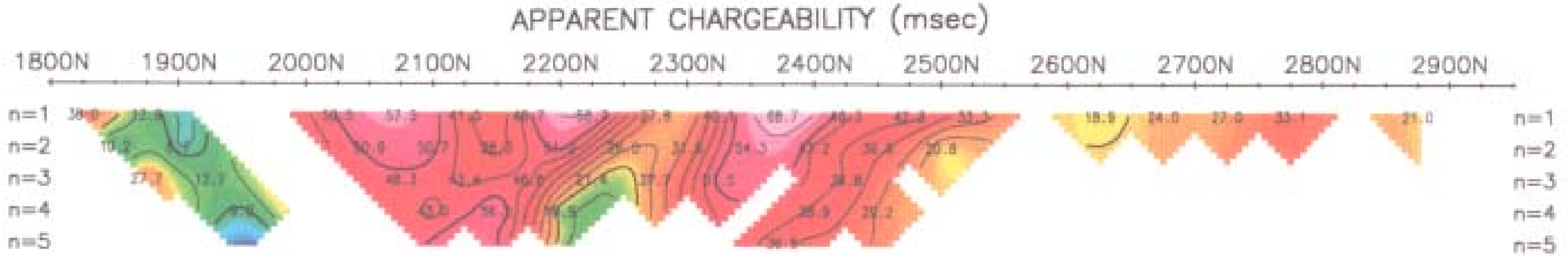
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

30

Line 6800E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

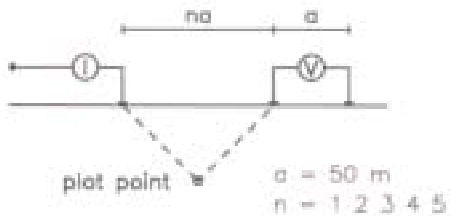




IP	RES
60.0	1
56.0	2
52.0	5
48.0	10
44.0	15
40.0	20
38.0	25
36.0	30
34.0	35
32.0	40
31.0	45
30.0	50
29.0	60
28.0	70
27.0	80
26.0	90
23.0	100
22.0	120
21.0	140
20.0	160
19.0	180
18.0	200
17.0	250
16.0	300
15.0	350
14.0	400
13.0	450
12.0	500
11.0	600
10.0	700
9.0	800
8.0	900
7.0	1000
5.0	1400
4.0	1600
3.0	1800
2.0	2000
1.0	2500
0.0	3000

INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000
50 0 50 100 150 200 250 300 350
(meters)

CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

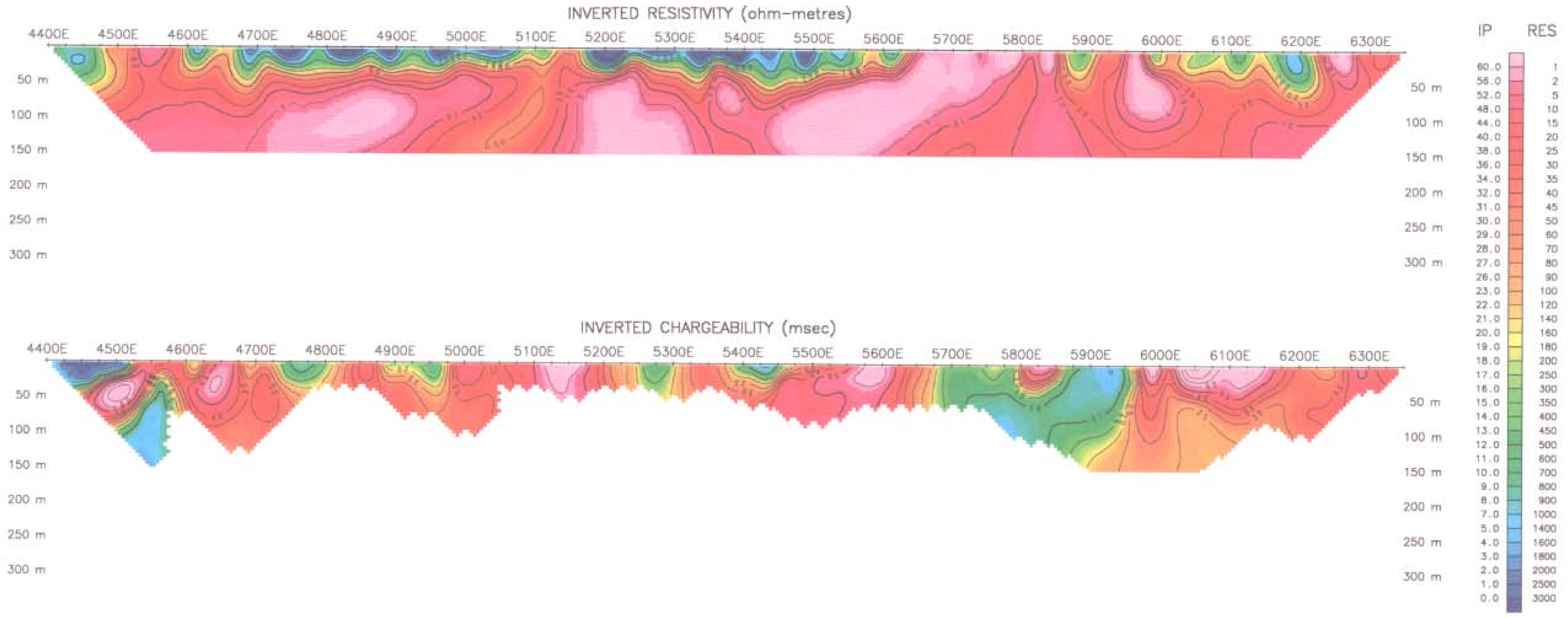
(31)

Line 7200E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

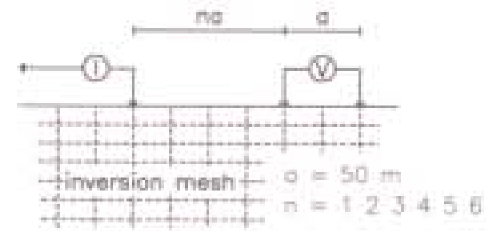
APPENDIX F

IP/Resistivity Inversion Sections



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20, 20, 40, 60, 100, 140, 180, 260, 380, 560 ms

Scale 1:5000

100 0 100 200 300
(meters)

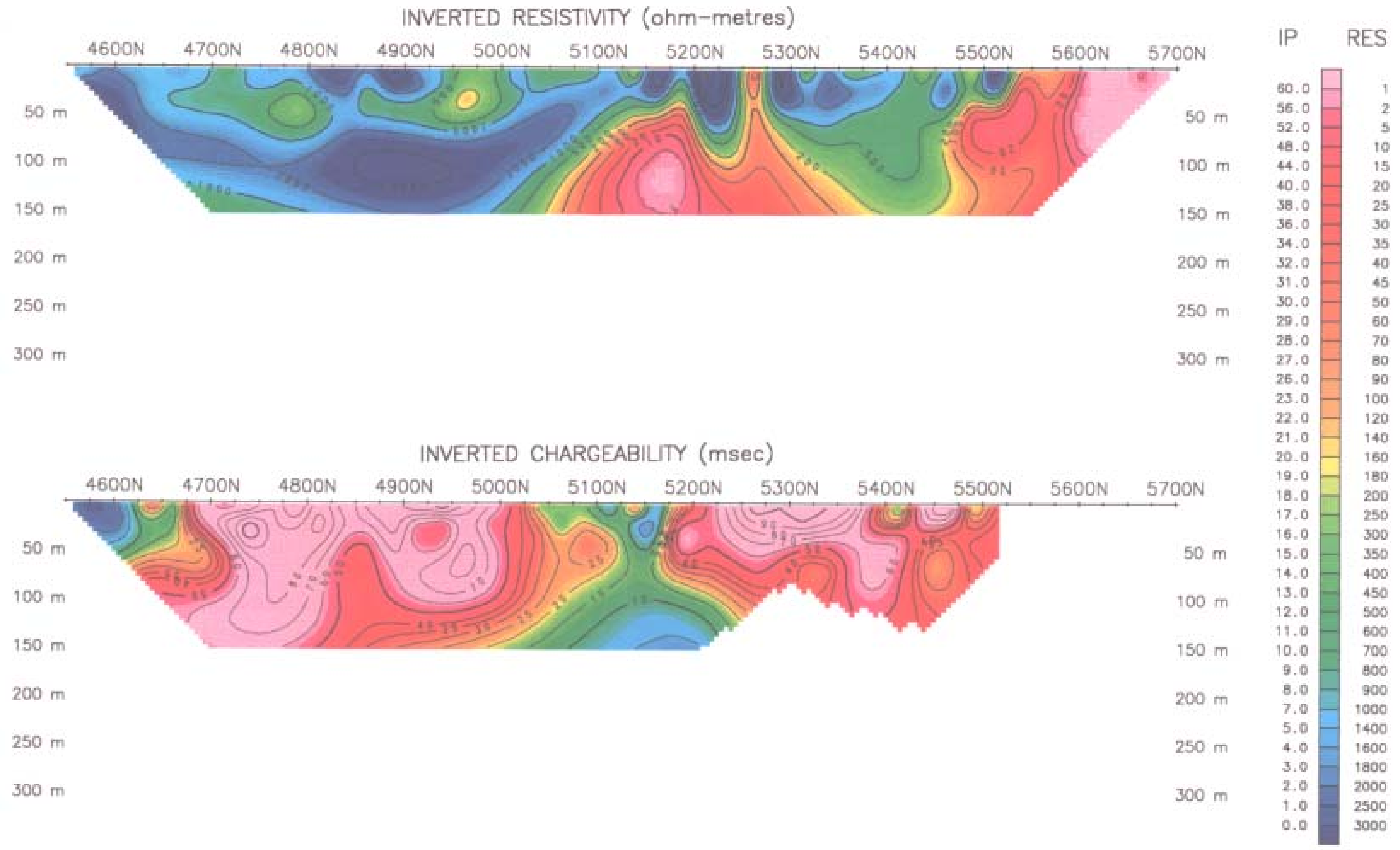
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

32

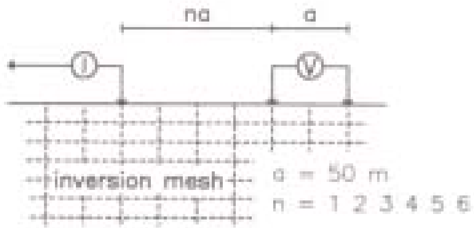
Line 1400N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE–DIPOLE ARRAY



TRANSMITTER:

Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:

Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

50 0 50 100 150 200 250 300 350
(meters)

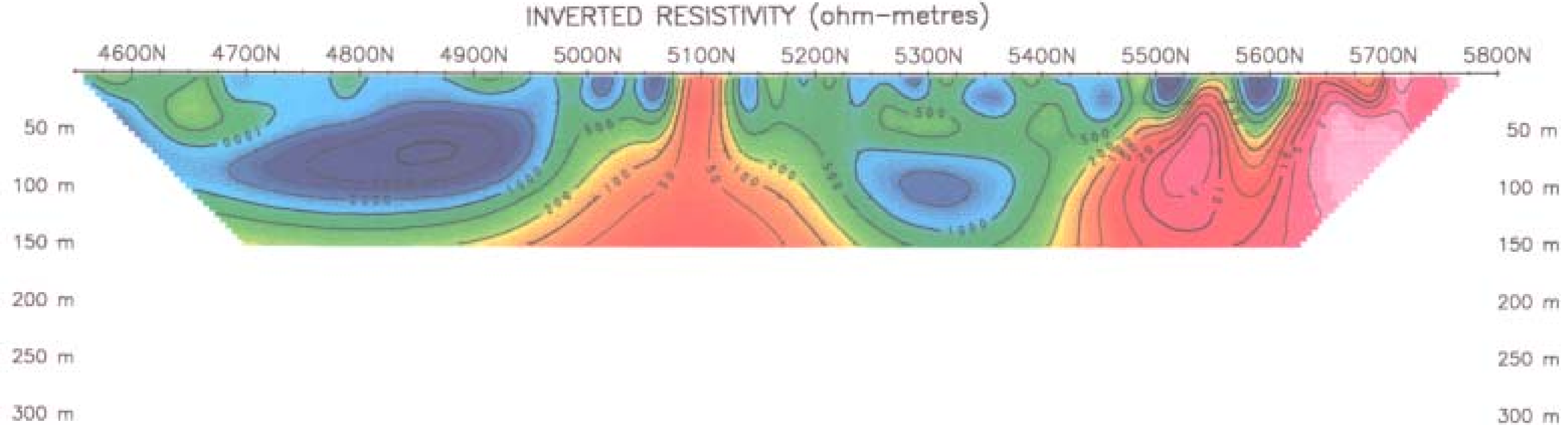
CANADIAN METALS EXPLORATION LTD.

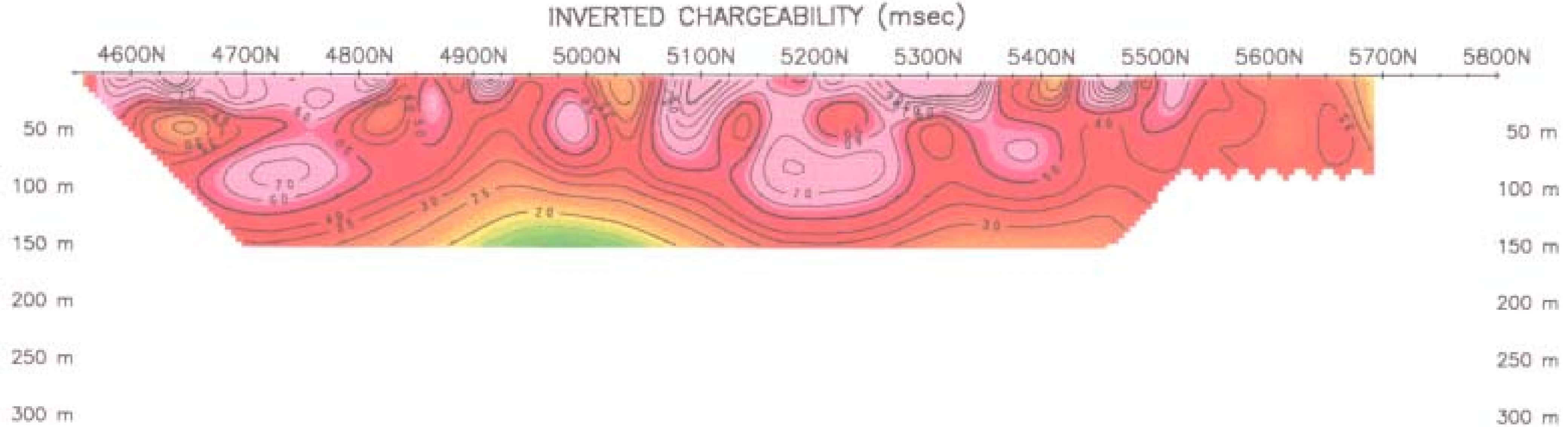
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

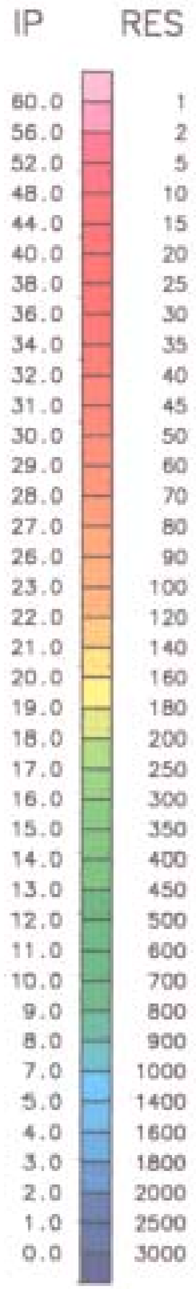
33

Line 1400E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

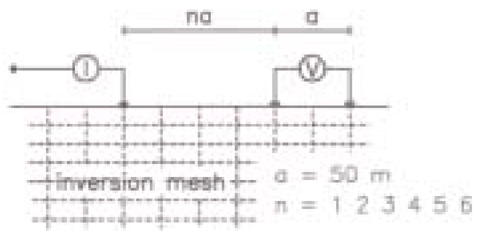






INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows – 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000
50 0 50 100 150 200 250 300 350
(meters)

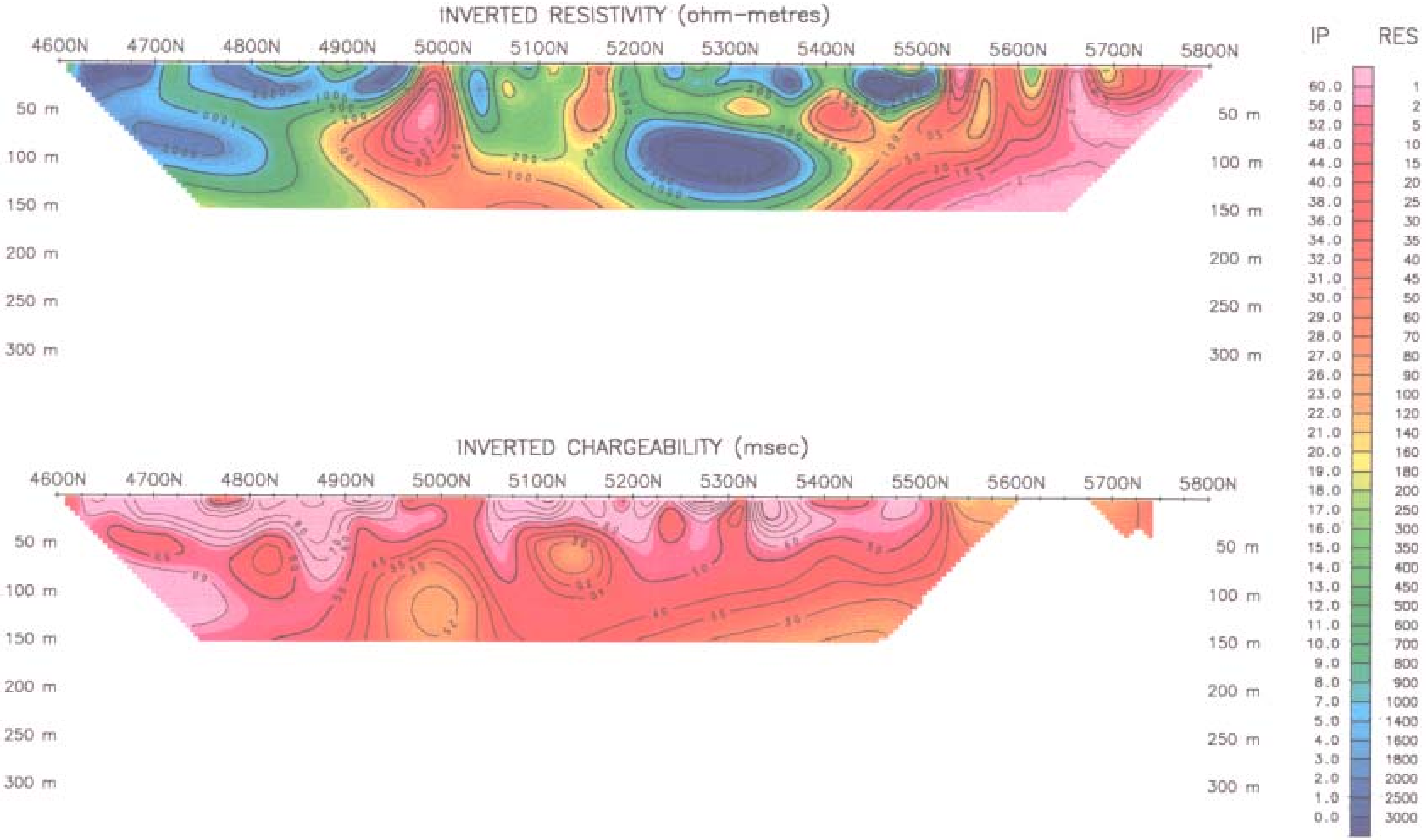
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

(34)

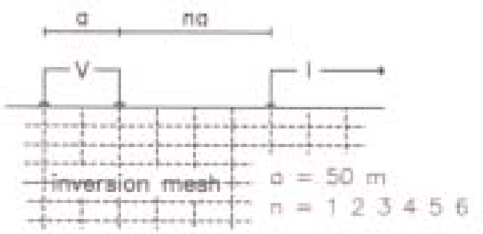
Line 1600E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000
50 0 50 100 150 200 250 300 350
(meters)

CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

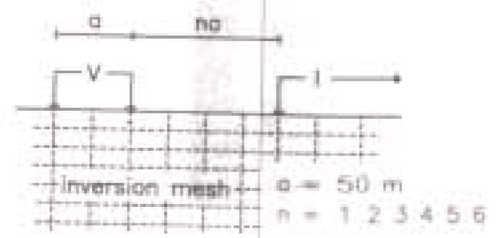
35

Line 1800E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

100 0 100 200 300
(meters)

CANADIAN METALS EXPLORATION LTD.

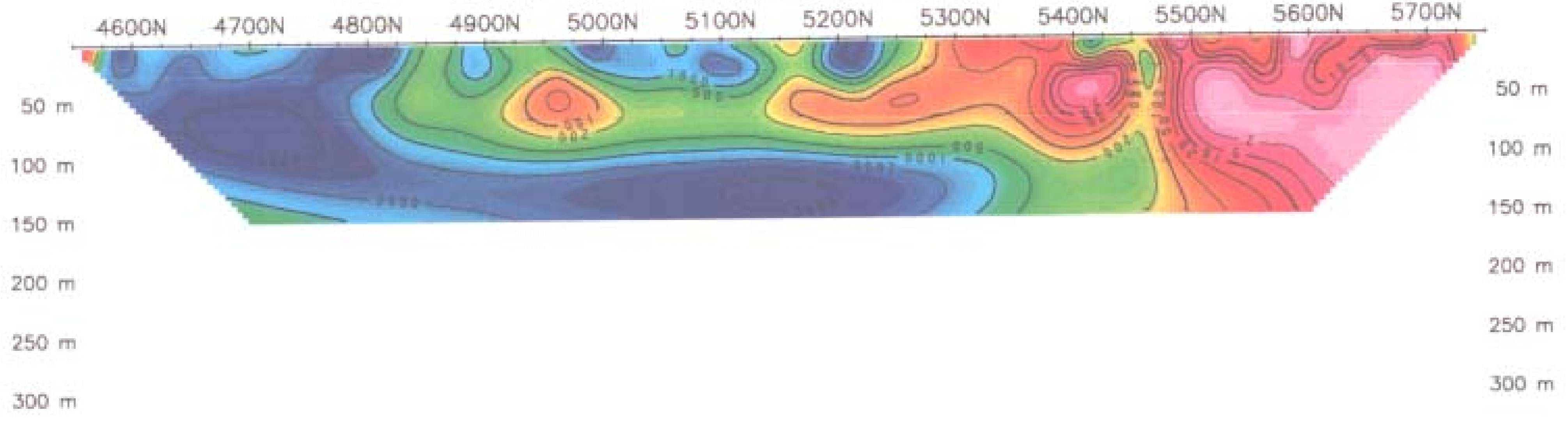
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

36

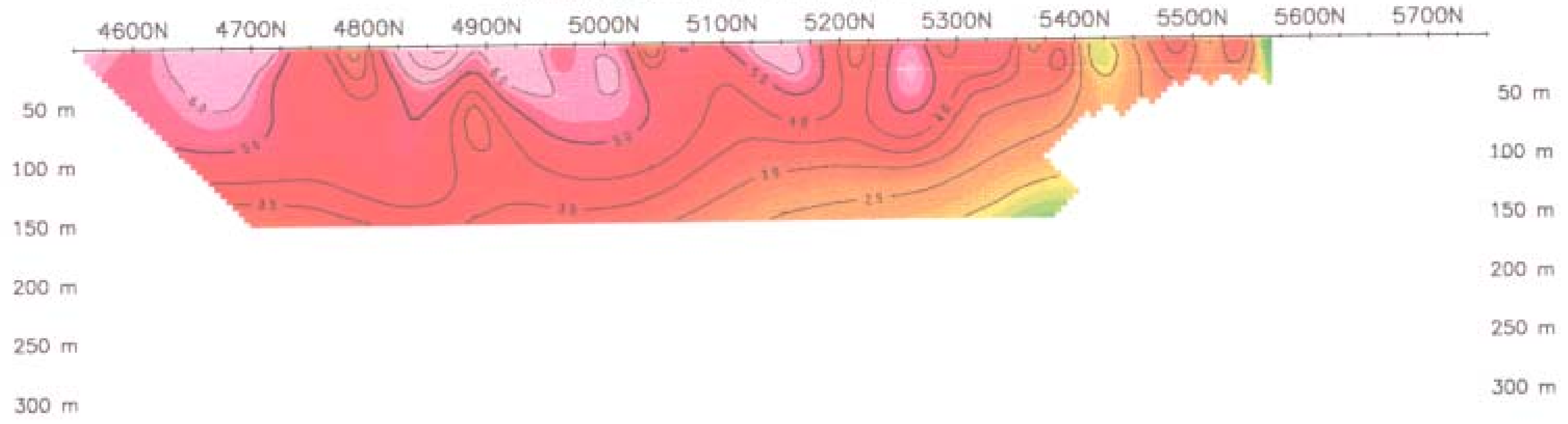
Line 2000E

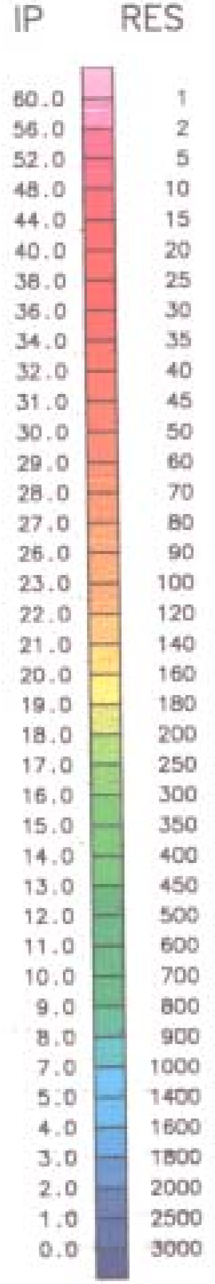
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

INVERTED RESISTIVITY (ohm-metres)



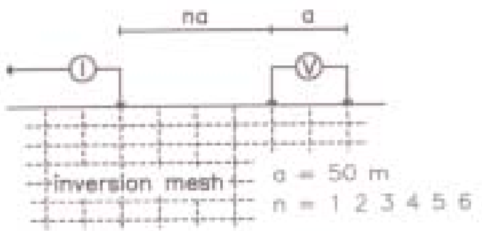
INVERTED CHARGEABILITY (msec)





INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

CANADIAN METALS EXPLORATION LTD.

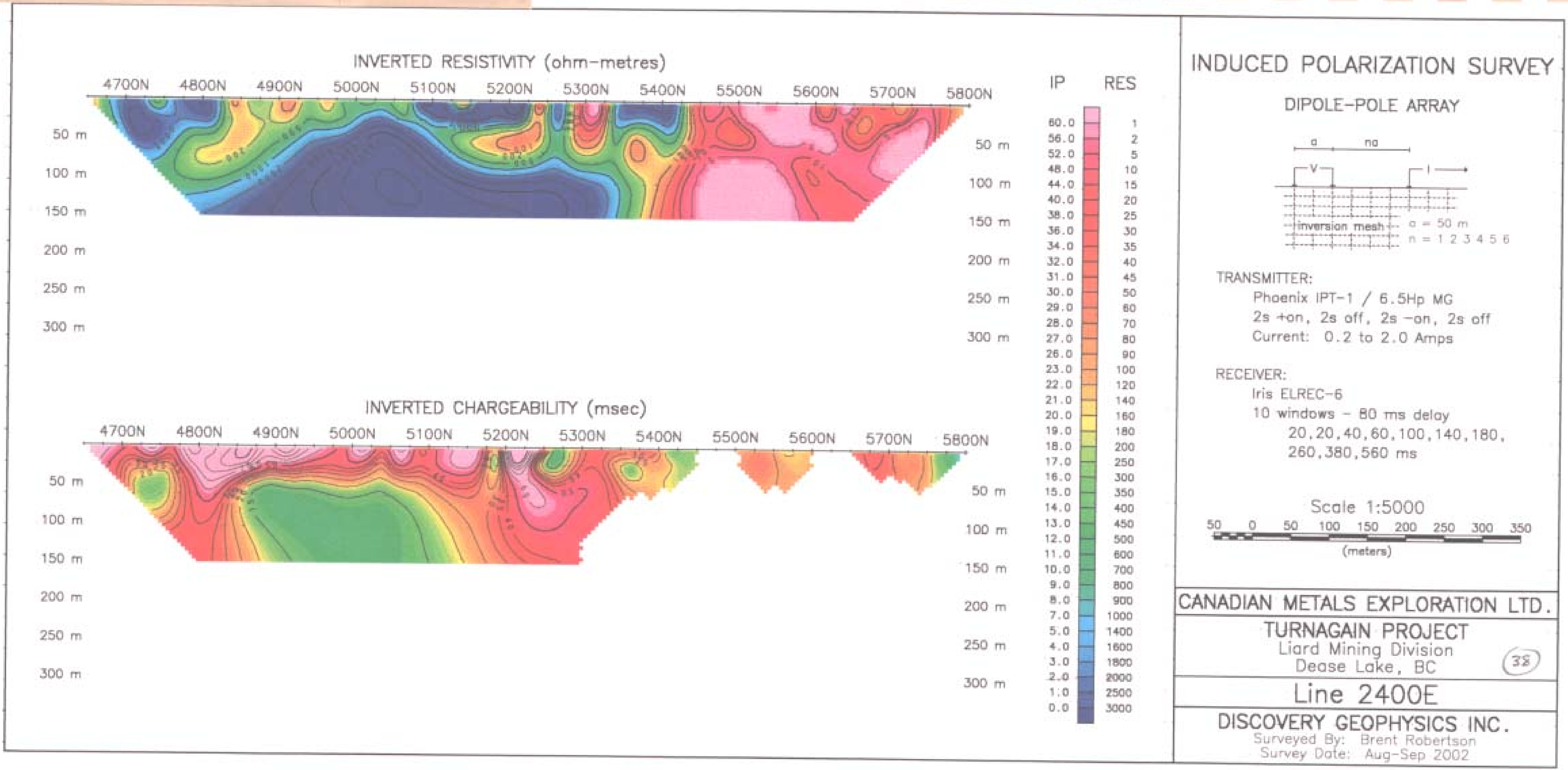
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

(37)

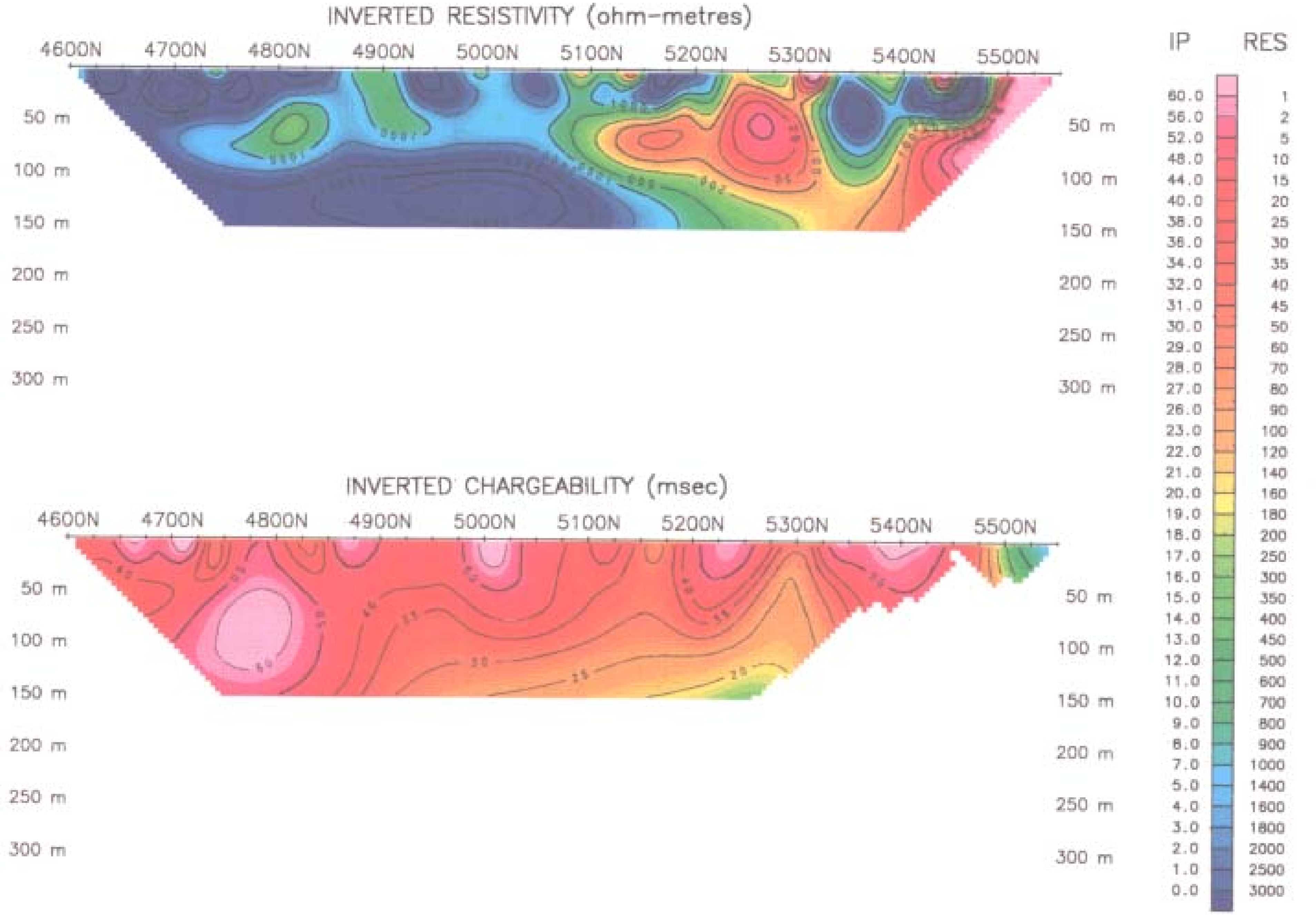
Line 2200E

DISCOVERY GEOPHYSICS INC.

Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

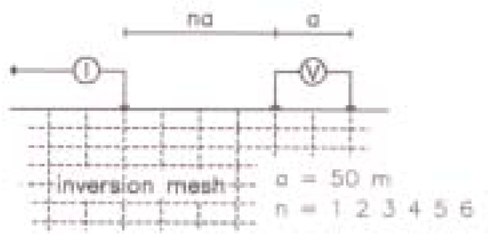


INVERTED RESISTIVITY (ohm-metres)
4700N 4800N 4900N 5000N 5100N 5200N 5300N 5400N 5500N 5600N 5700N 5800N
50 m
100 m
150 m
200 m
250 m
300 m
INVERTED CHARGEABILITY (msec)
4700N 4800N 4900N 5000N 5100N 5200N 5300N 5400N 5500N 5600N 5700N 5800N
50 m
100 m
150 m
200 m
250 m
300 m
IP RES
60.0 1
56.0 2
52.0 5
48.0 10
44.0 15
40.0 20
38.0 25
36.0 30
34.0 35
32.0 40
31.0 45
30.0 50
29.0 60
28.0 70
27.0 80
26.0 90
23.0 100
22.0 120
21.0 140
20.0 160
19.0 180
18.0 200
17.0 250
16.0 300
15.0 350
14.0 400
13.0 450
12.0 500
11.0 600
10.0 700
9.0 800
8.0 900
7.0 1000
5.0 1400
4.0 1600
3.0 1800
2.0 2000
1.0 2500
0.0 3000
INDUCED POLARIZATION SURVEY
DIPOLE-POLE ARRAY
a na
V I
inversion mesh
a = 50 m
n = 1 2 3 4 5 6
TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps
RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms
Scale 1:5000
50 0 50 100 150 200 250 300 350
(meters)
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC
38
Line 2400E
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows – 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000
50 0 50 100 150 200 250 300
(meters)

CANADIAN METALS EXPLORATION LTD.

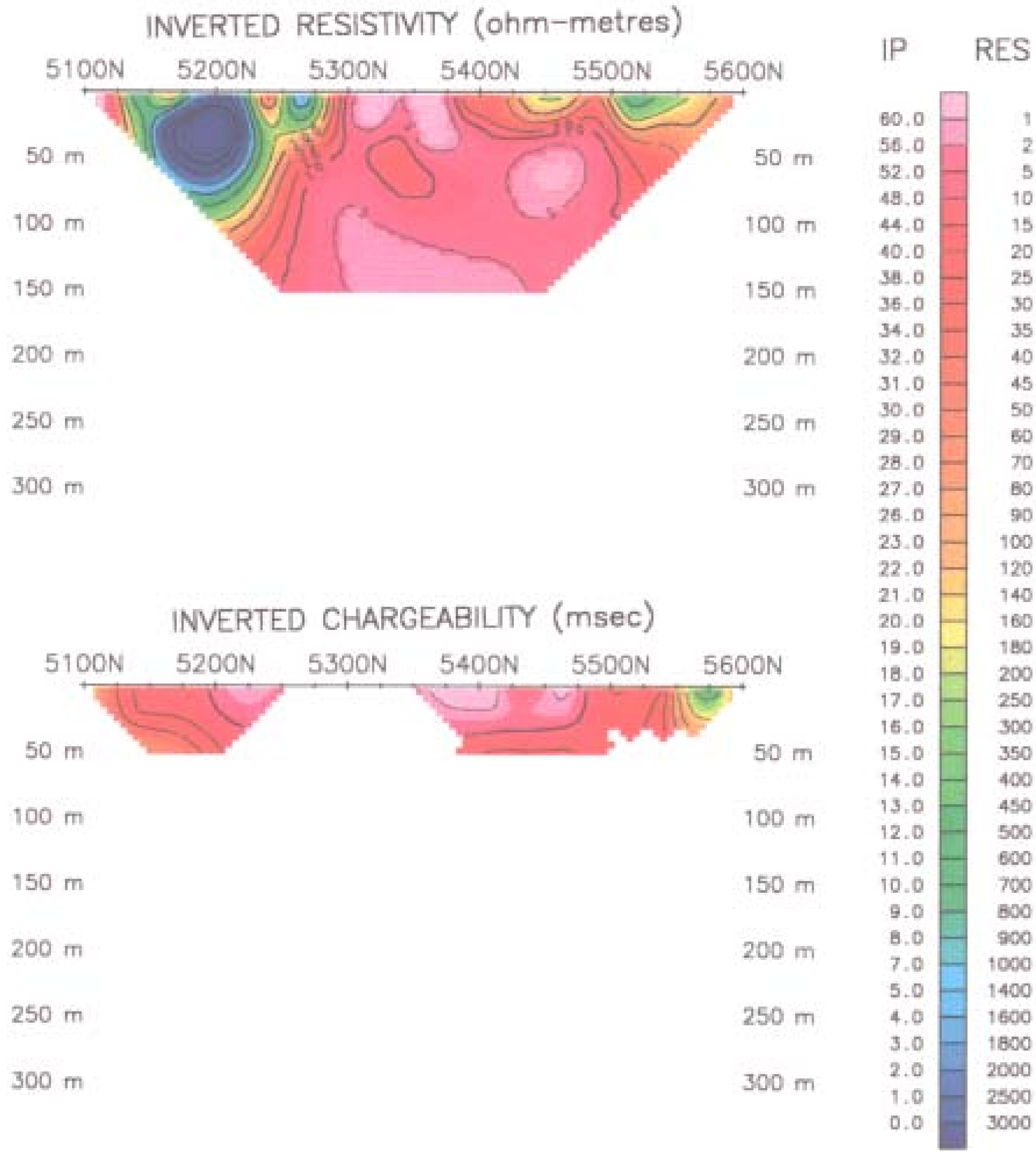
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

39

Line 2600E

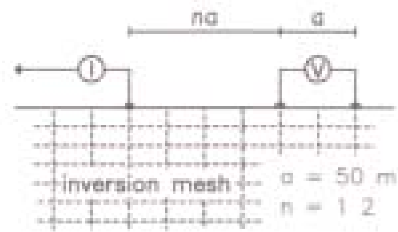
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002


INVERTED RESISTIVITY (ohm-metres)
INVERTED CHARGEABILITY (msec)
2600N 2700N 2800N 2900N 3000N 3100N 3200N 3300N 3400N 3500N 3600N 3700N 3800N 3900N 4000N 4100N 4200N 4300N 4400N 4500N 4600N 4700N 4800N 4900N 5000N 5100N 5200N 5300N 5400N 5500N 5600N
50 m
100 m
150 m
200 m
250 m
300 m
IP
RES
INDUCED POLARIZATION SURVEY
POLE-DIPOLE ARRAY
inversion mesh
a = 50 m
n = 1 2 3 4 5 6
TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps
RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms
Scale 1:5000
100 0 100 200 300
(meters)
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC
Line 2800E
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

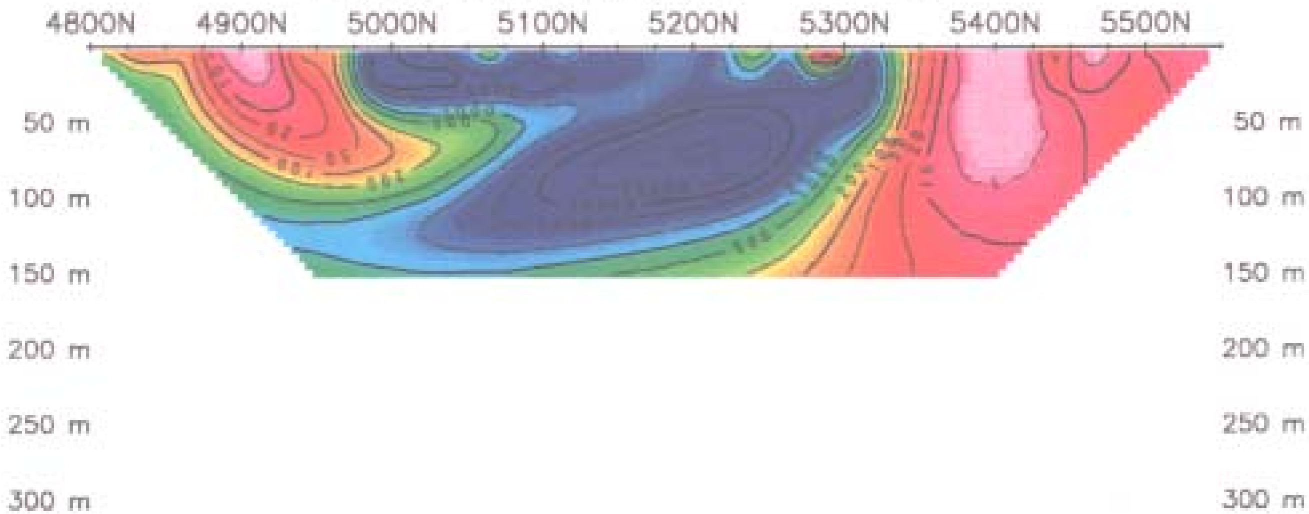
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

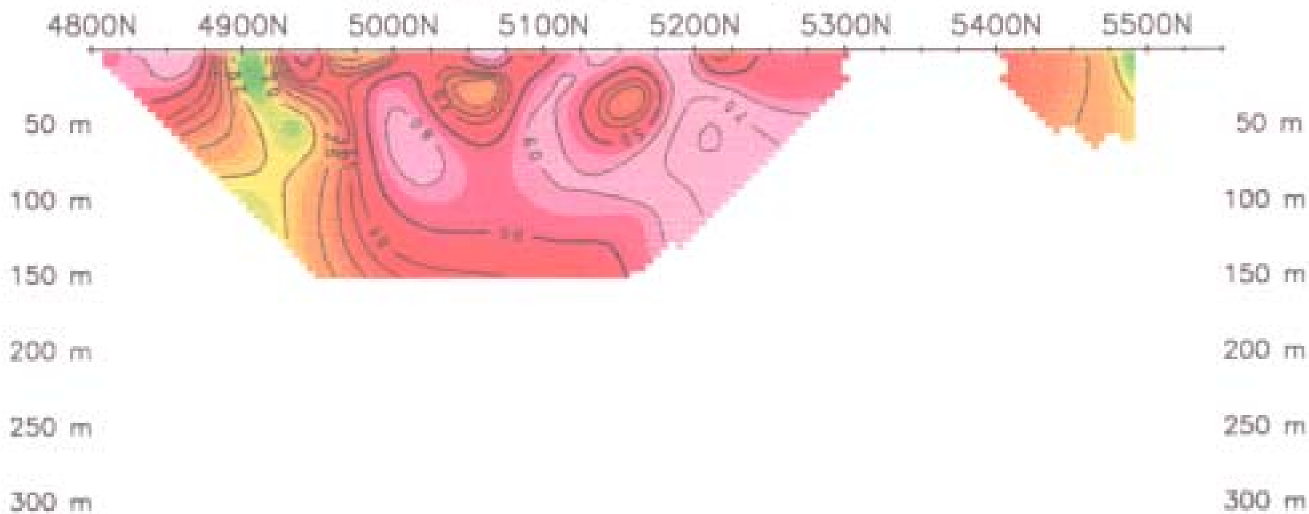
Line 3000E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

INVERTED RESISTIVITY (ohm-metres)



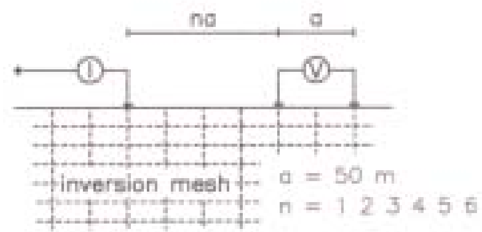
INVERTED CHARGEABILITY (msec)



IP	RES
60.0	1
56.0	2
52.0	5
48.0	10
44.0	15
40.0	20
38.0	25
36.0	30
34.0	35
32.0	40
31.0	45
30.0	50
29.0	60
28.0	70
27.0	80
26.0	90
23.0	100
22.0	120
21.0	140
20.0	160
19.0	180
18.0	200
17.0	250
16.0	300
15.0	350
14.0	400
13.0	450
12.0	500
11.0	600
10.0	700
9.0	800
8.0	900
7.0	1000
5.0	1400
4.0	1600
3.0	1800
2.0	2000
1.0	2500
0.0	3000

INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

50 0 50 100 150 200 250
(meters)

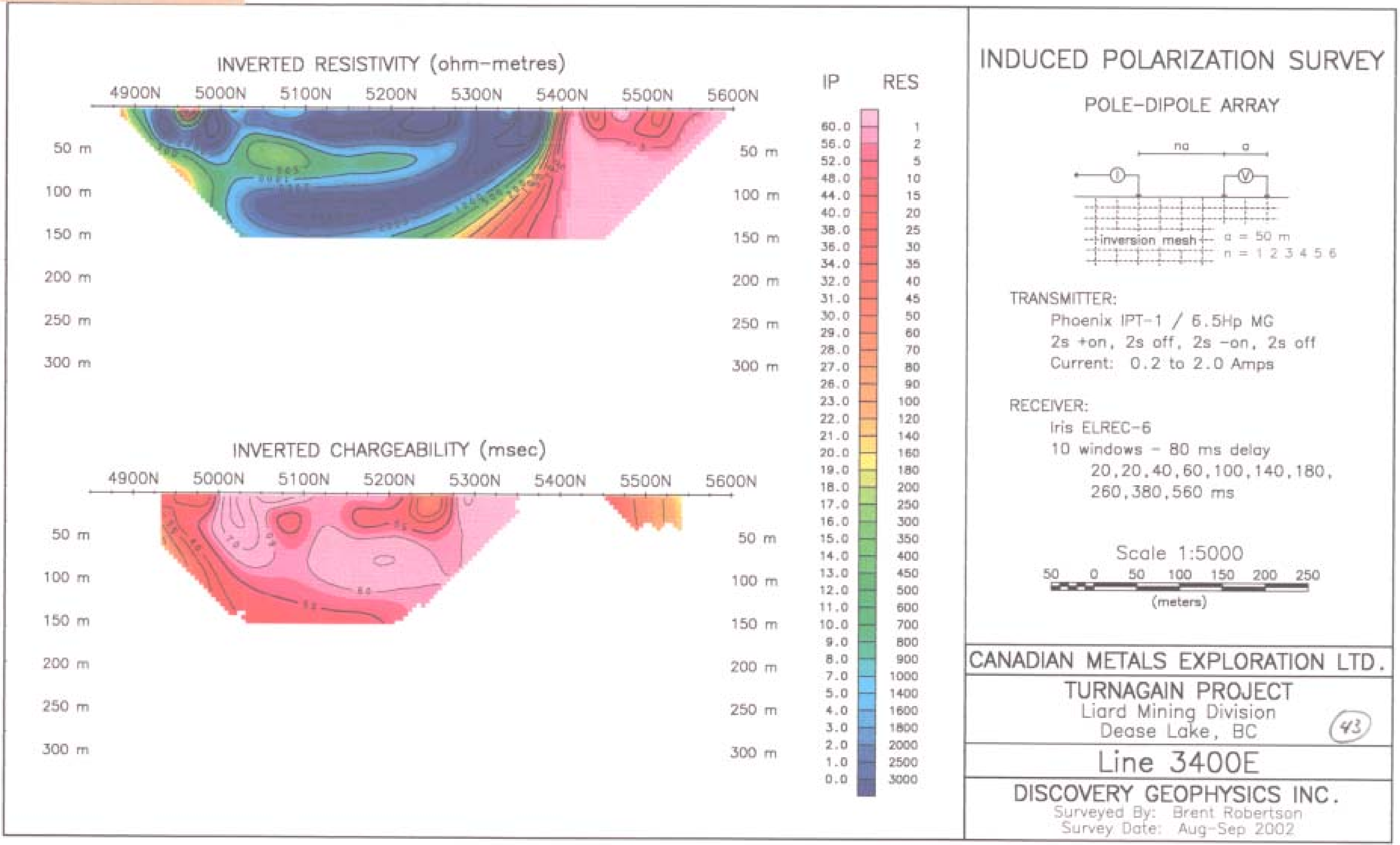
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

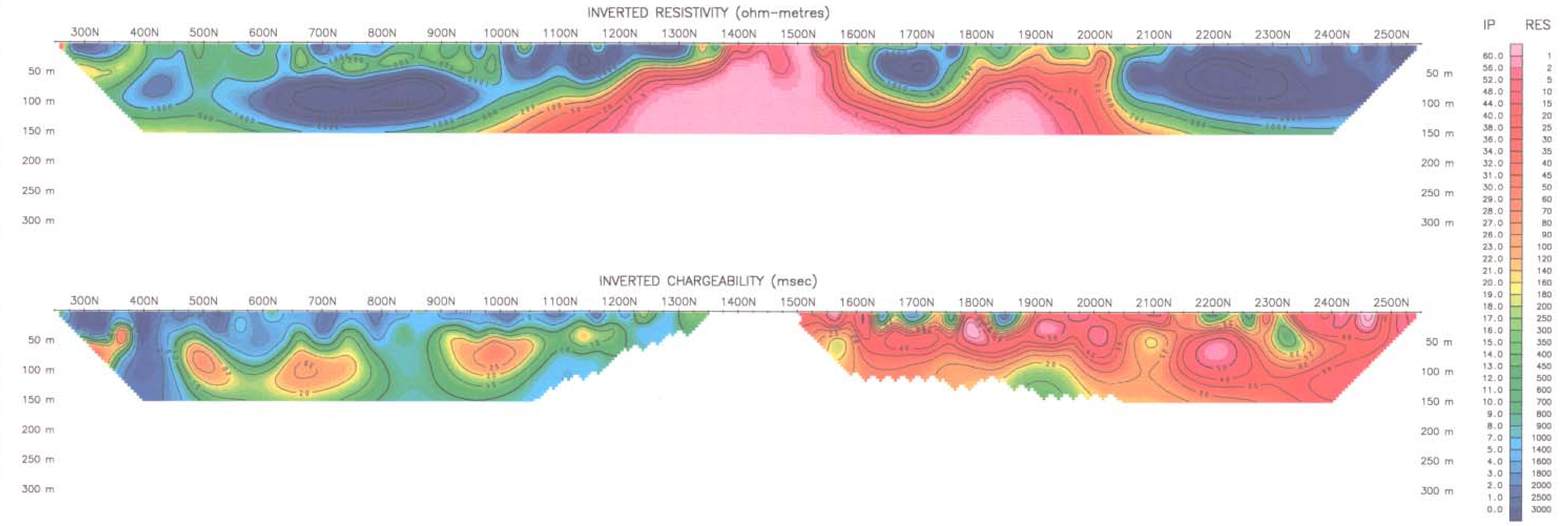
42

Line 3200E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002


INVERTED RESISTIVITY (ohm-metres)
4900N 5000N 5100N 5200N 5300N 5400N 5500N 5600N
50 m
100 m
150 m
200 m
250 m
300 m
INVERTED CHARGEABILITY (msec)
4900N 5000N 5100N 5200N 5300N 5400N 5500N 5600N
50 m
100 m
150 m
200 m
250 m
300 m
IP RES
60.0 1
56.0 2
52.0 5
48.0 10
44.0 15
40.0 20
38.0 25
36.0 30
34.0 35
32.0 40
31.0 45
30.0 50
29.0 60
28.0 70
27.0 80
26.0 90
23.0 100
22.0 120
21.0 140
20.0 160
19.0 180
18.0 200
17.0 250
16.0 300
15.0 350
14.0 400
13.0 450
12.0 500
11.0 600
10.0 700
9.0 800
8.0 900
7.0 1000
5.0 1400
4.0 1600
3.0 1800
2.0 2000
1.0 2500
0.0 3000
INDUCED POLARIZATION SURVEY
POLE-DIPOLE ARRAY
na a
I V
inversion mesh
a = 50 m
n = 1 2 3 4 5 6
TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps
RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms
Scale 1:5000
50 0 50 100 150 200 250
(meters)
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC
43
Line 3400E
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

INVERTED RESISTIVITY (ohm-metres)
INVERTED CHARGEABILITY (msec)
200N
300N
400N
500N
600N
700N
800N
900N
1000N
1100N
1200N
1300N
1400N
1500N
1600N
1700N
1800N
1900N
2000N
2100N
2200N
2300N
2400N
2500N
2600N
2700N
2800N
2900N
3000N
3100N
3200N
3300N
3400N
3500N
3600N
3700N
3800N
3900N
4000N
4100N
4200N
4300N
50 m
100 m
150 m
200 m
250 m
300 m
IP
RES
INDUCED POLARIZATION SURVEY
POLE-DIPOLE ARRAY
na
a
inversion mesh
a = 50 m
n = 1 2 3 4 5 6
TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps
RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms
Scale 1:5000
100
0
100
200
300
(meters)
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC
Line 3600E
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY

na a

inversion mesh a = 50 m n = 1 2 3 4 5 6

TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

100 0 100 200 300 (meters)

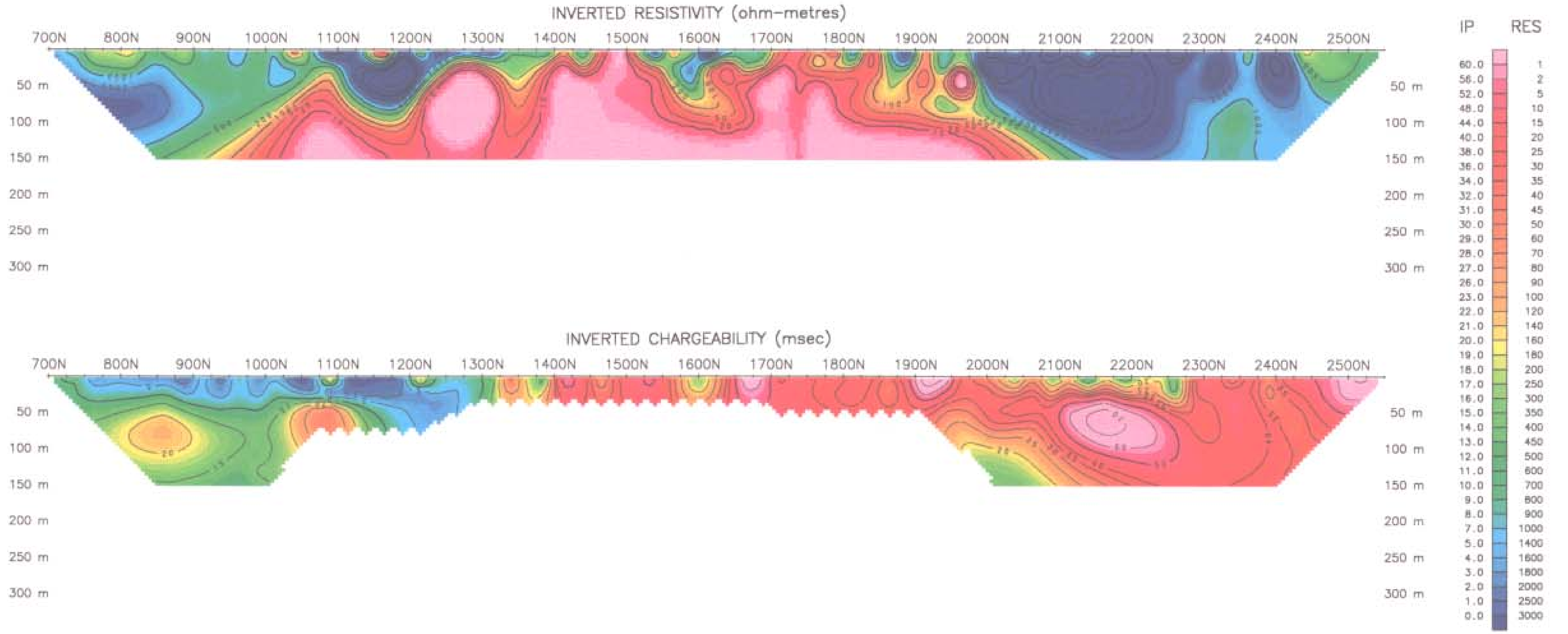
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

45

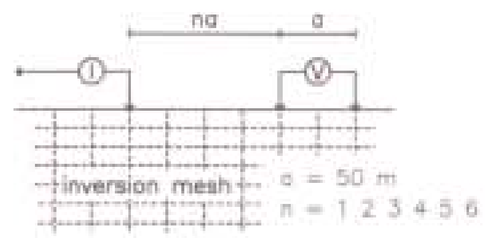
Line 3800E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

100 0 100 200 300
(meters)

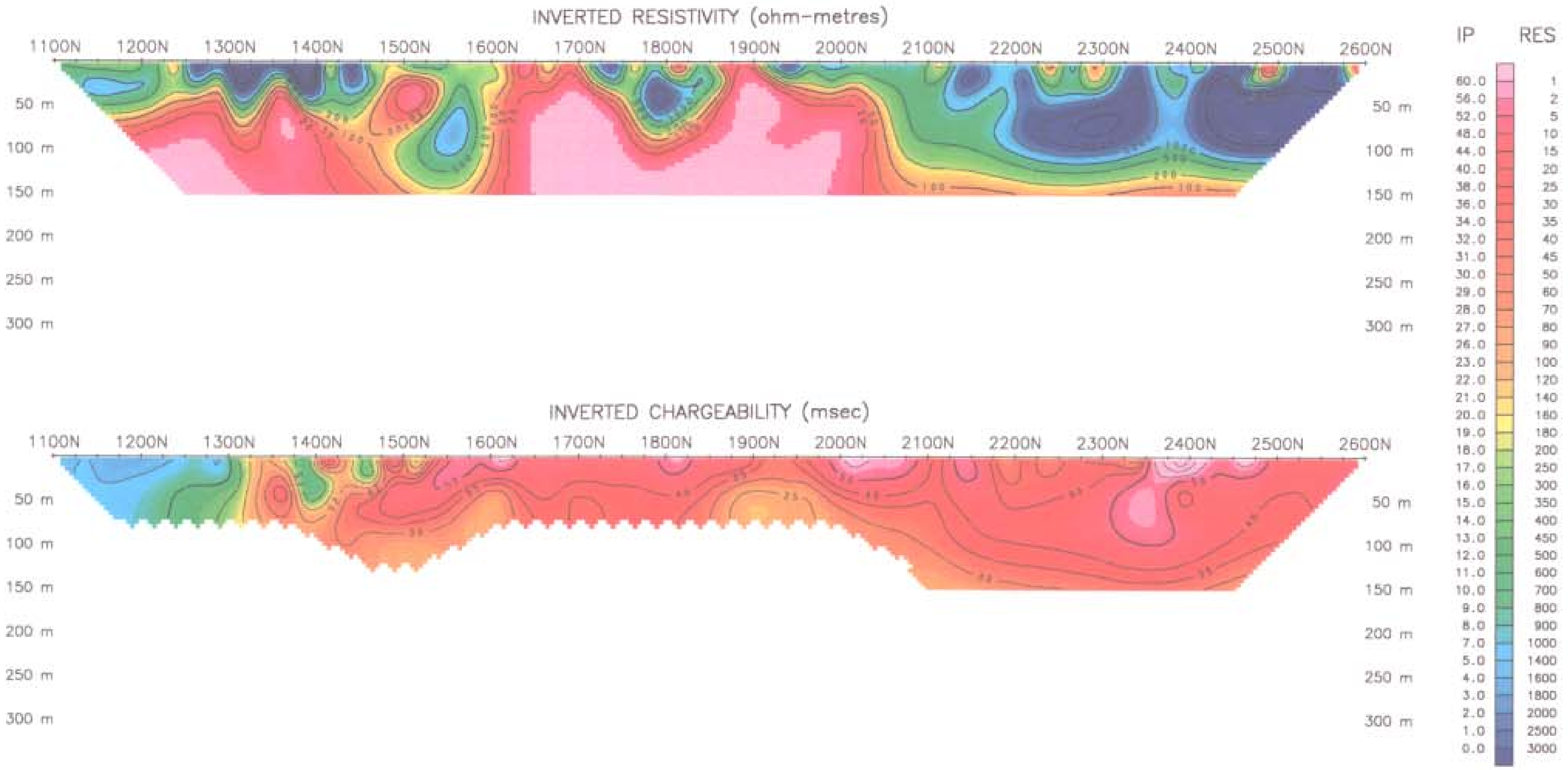
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

46

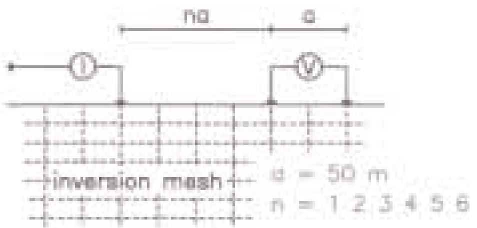
Line 4000E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000
100 0 100 200 300
(meters)

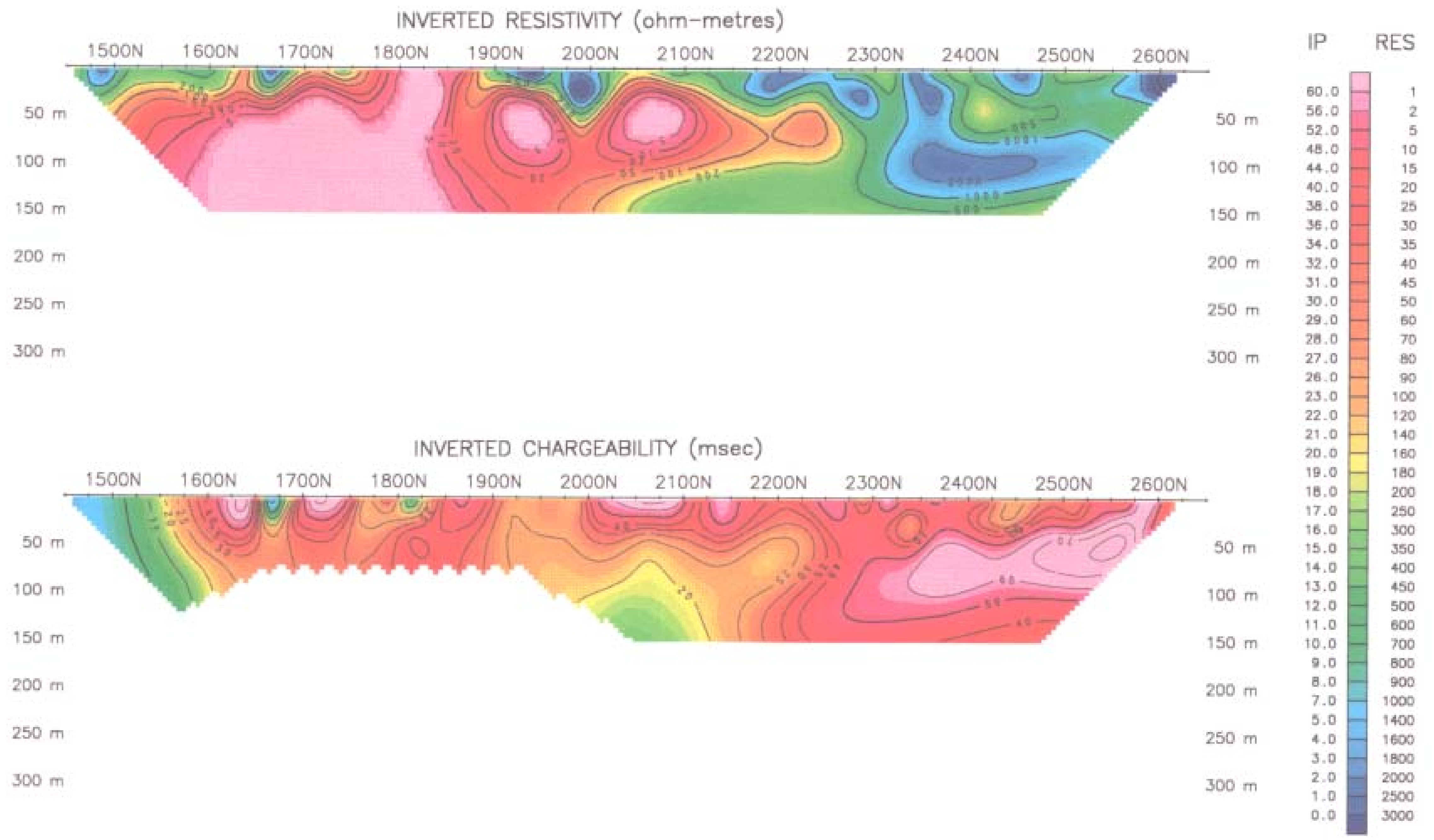
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

(47)

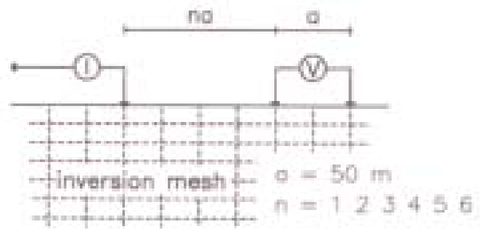
Line 4200E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

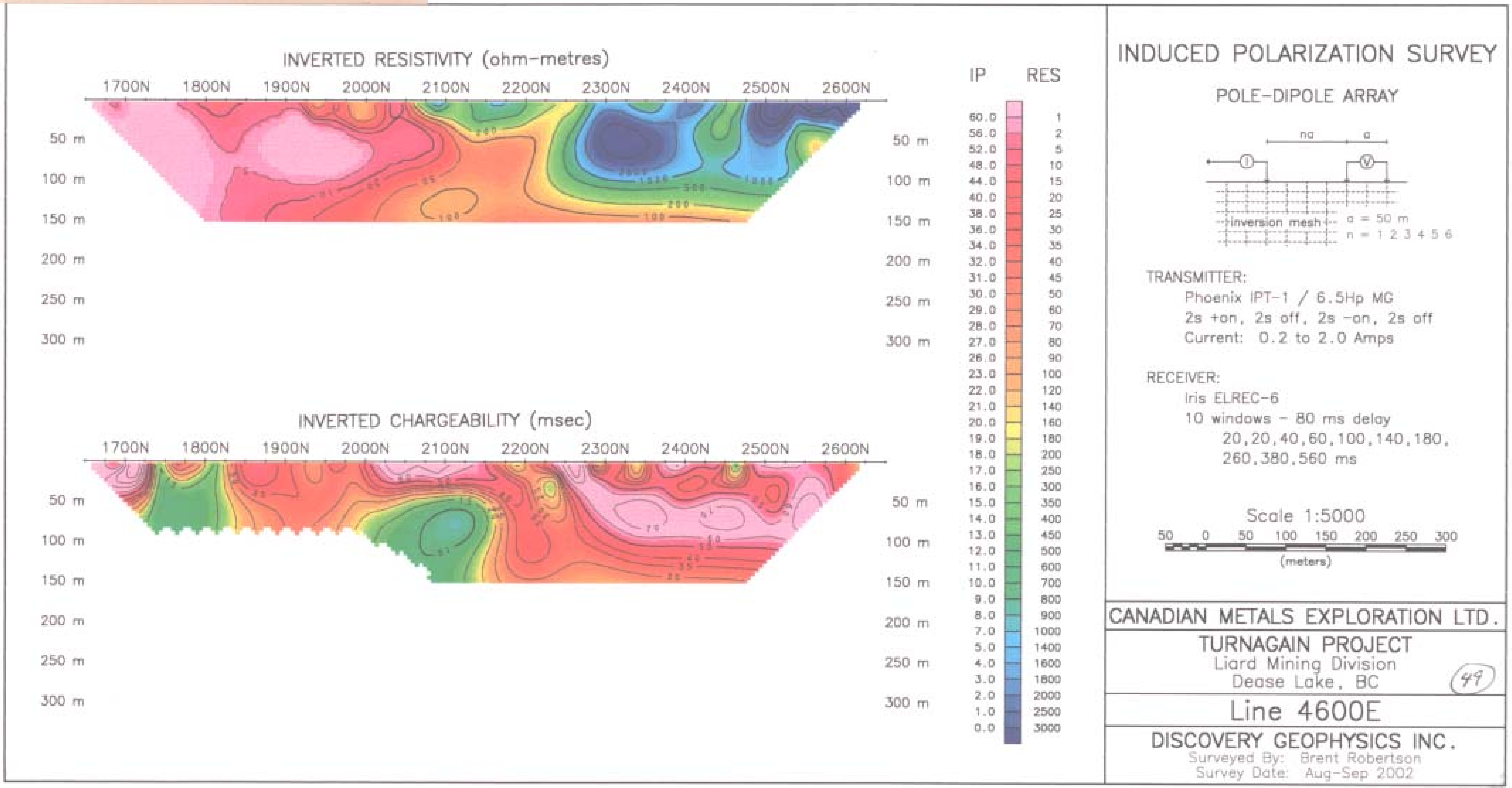
CANADIAN METALS EXPLORATION LTD.

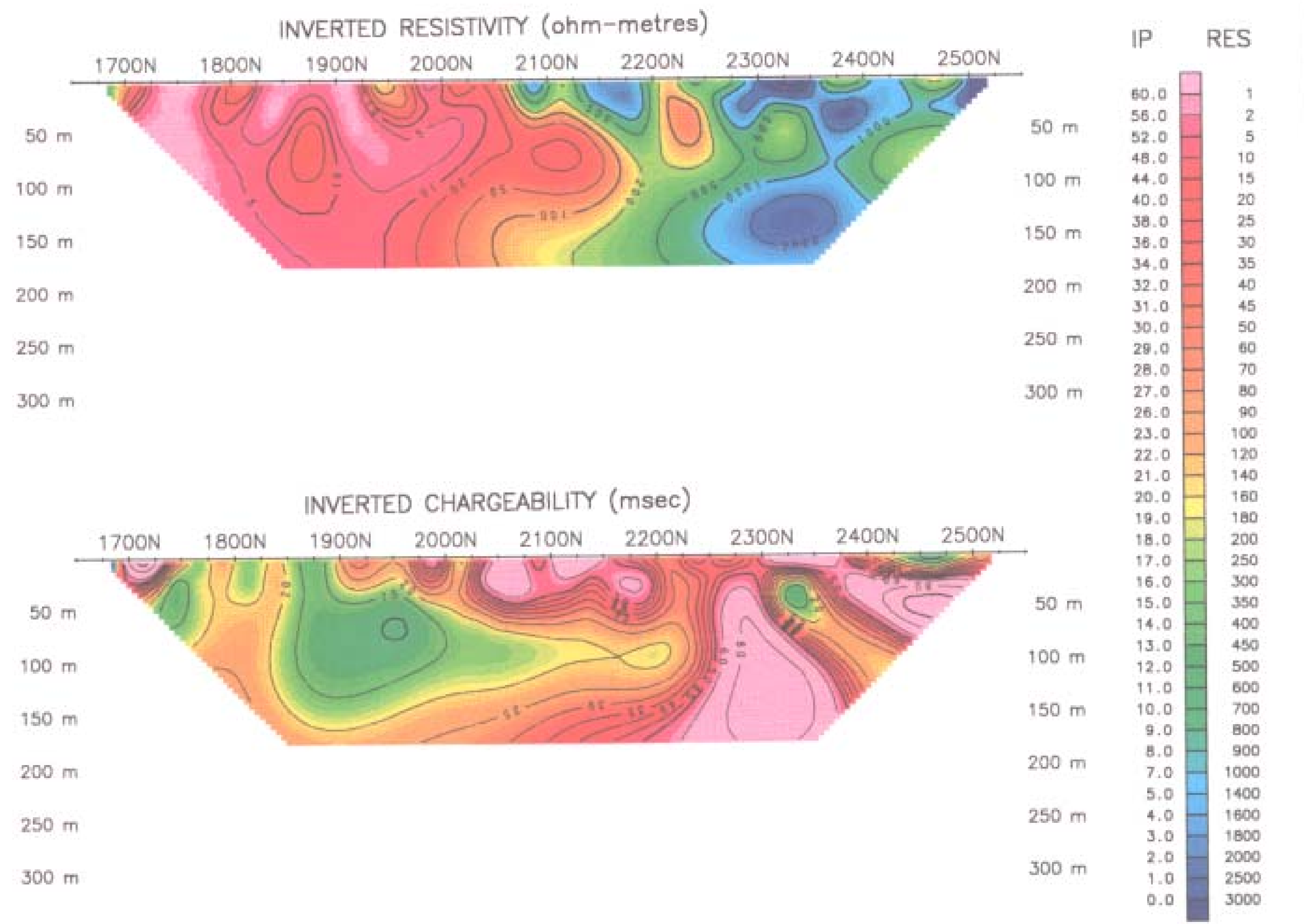
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

48

Line 4400E

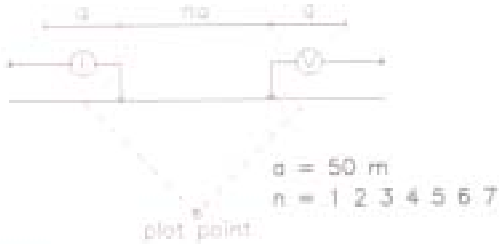
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002


INVERTED RESISTIVITY (ohm-metres)
1700N 1800N 1900N 2000N 2100N 2200N 2300N 2400N 2500N 2600N
50 m
100 m
150 m
200 m
250 m
300 m
INVERTED CHARGEABILITY (msec)
1700N 1800N 1900N 2000N 2100N 2200N 2300N 2400N 2500N 2600N
IP RES
60.0 1
56.0 2
52.0 5
48.0 10
44.0 15
40.0 20
38.0 25
36.0 30
34.0 35
32.0 40
31.0 45
30.0 50
29.0 60
28.0 70
27.0 80
26.0 90
23.0 100
22.0 120
21.0 140
20.0 160
19.0 180
18.0 200
17.0 250
16.0 300
15.0 350
14.0 400
13.0 450
12.0 500
11.0 600
10.0 700
9.0 800
8.0 900
7.0 1000
5.0 1400
4.0 1600
3.0 1800
2.0 2000
1.0 2500
0.0 3000
INDUCED POLARIZATION SURVEY
POLE-DIPOLE ARRAY
na a
inversion mesh
a = 50 m
n = 1 2 3 4 5 6
TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps
RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms
Scale 1:5000
50 0 50 100 150 200 250 300
(meters)
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC
49
Line 4600E
DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

Pole-Pole Array



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.4 to 1.4 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

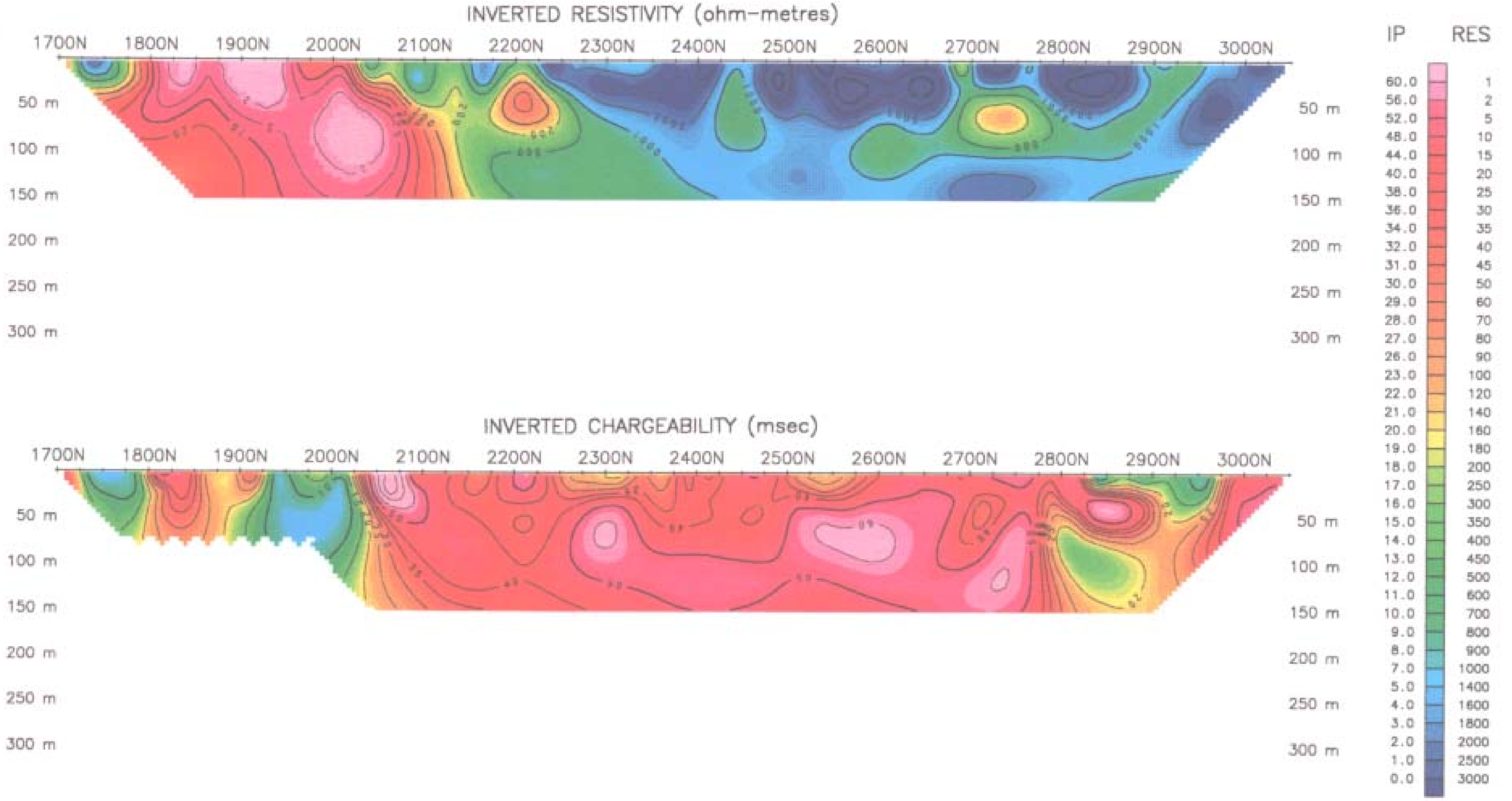
Scale 1:5000
50 0 50 100 150 200 250 300
(meters)

CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

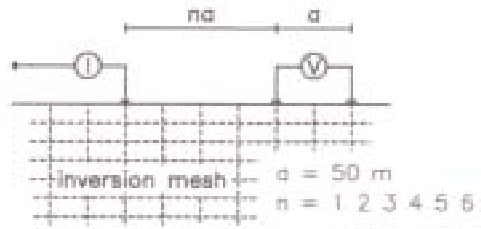
Line 4600E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

50 0 50 100 150 200 250 300 350
(meters)

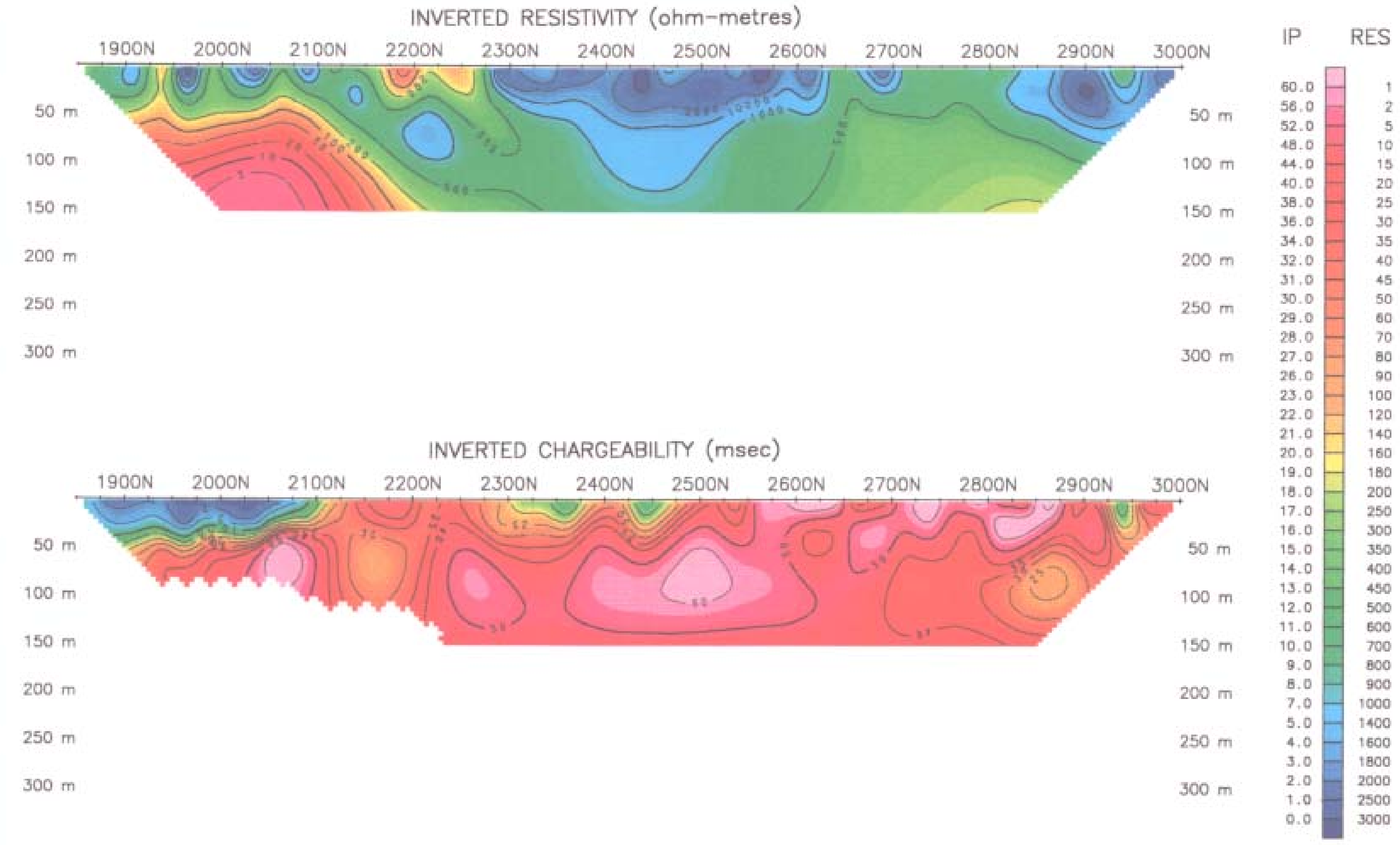
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

51

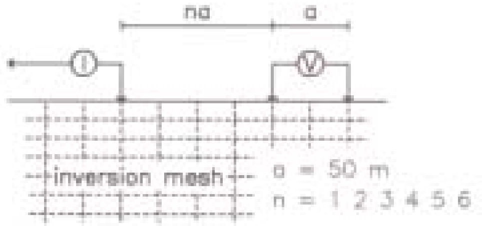
Line 4800E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

50 0 50 100 150 200 250 300 350
(meters)

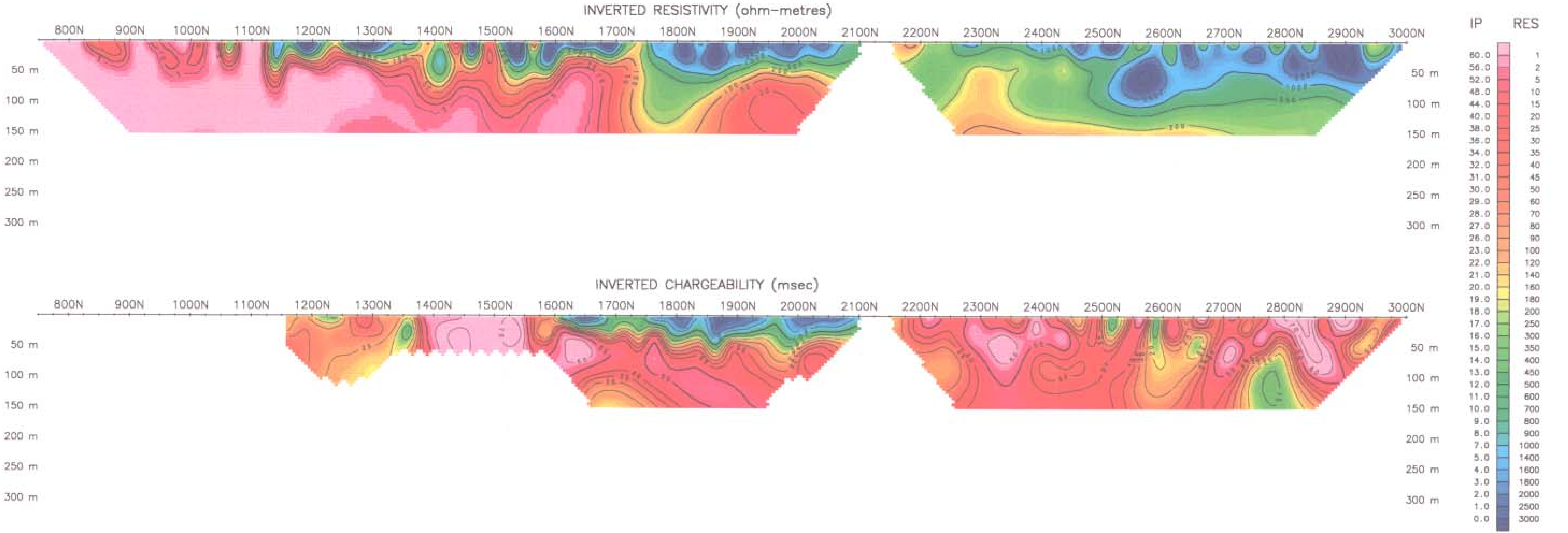
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

52

Line 5000E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY

na a

inversion mesh

a = 50 m

n = 1 2 3 4 5 6

TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

100 0 100 200 300

(meters)

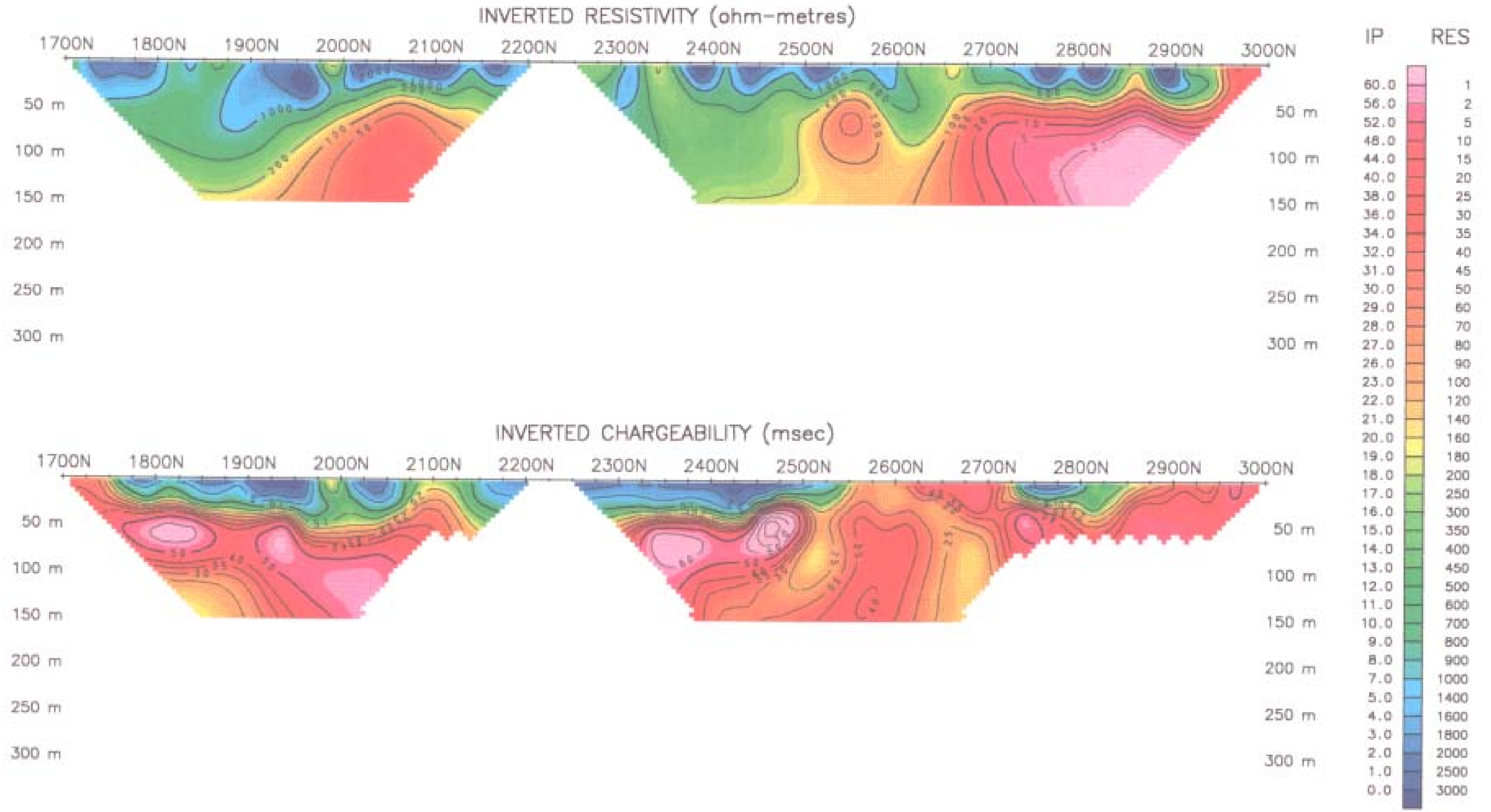
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

(53)

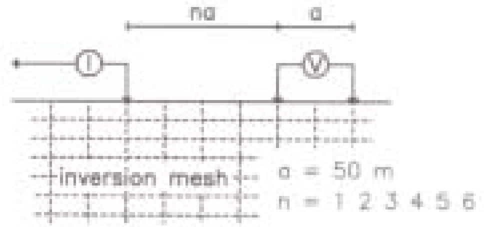
Line 5200E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

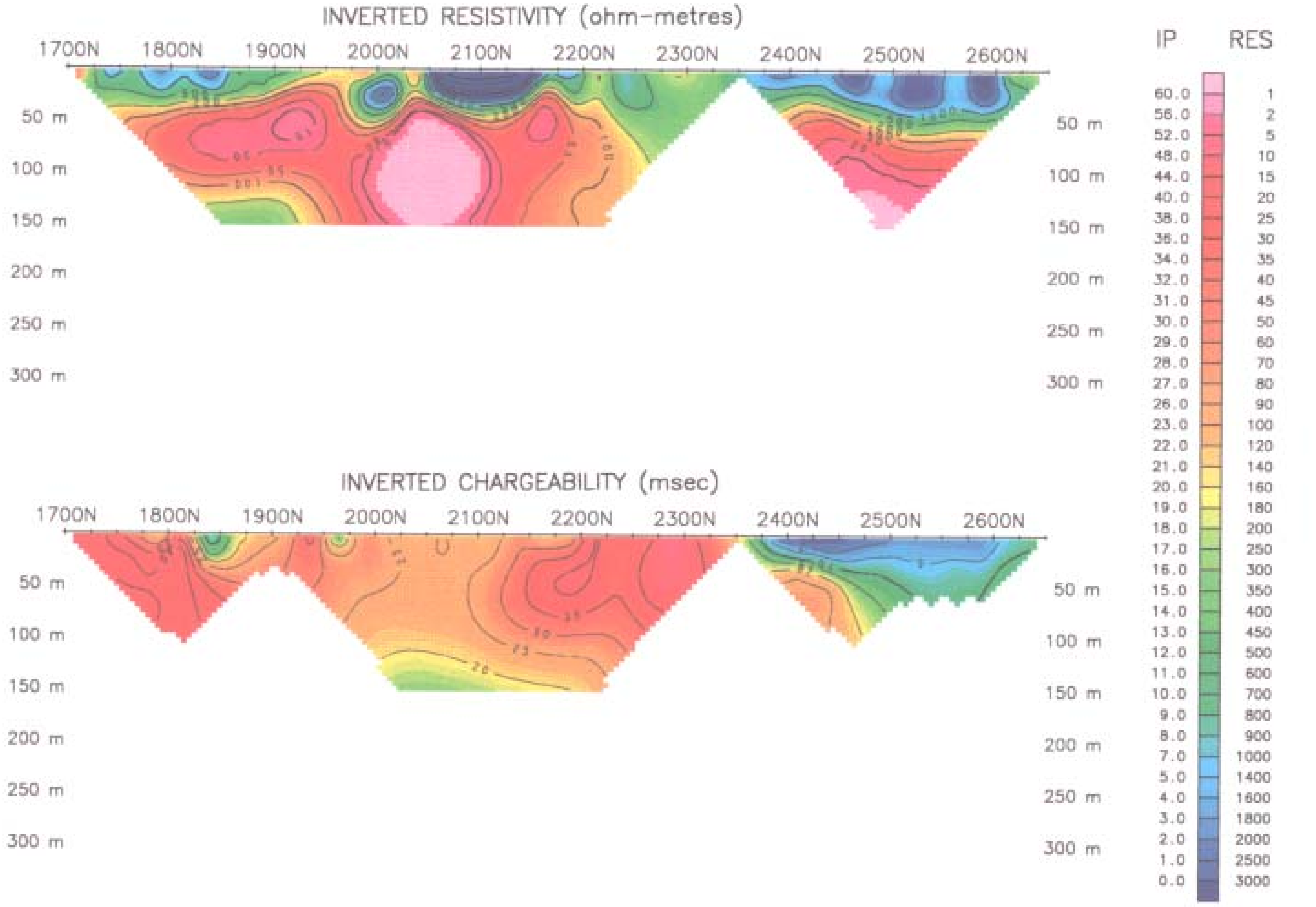
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

54

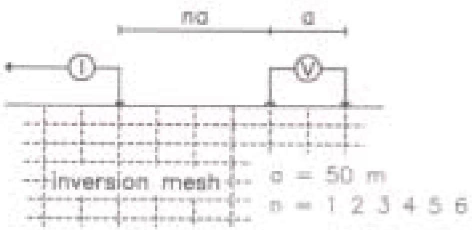
Line 5400E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000
50 0 50 100 150 200 250 300
(meters)

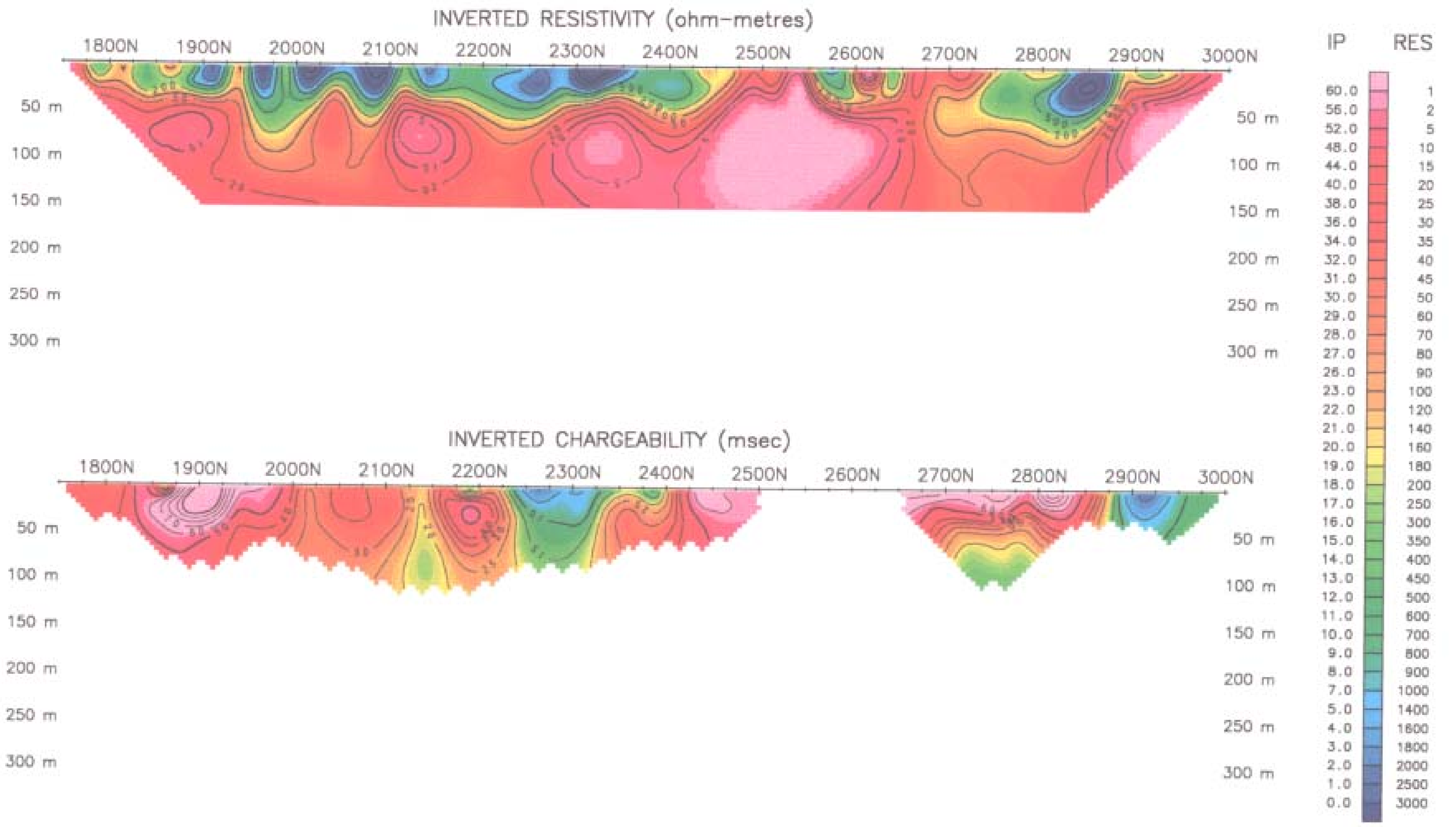
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

55

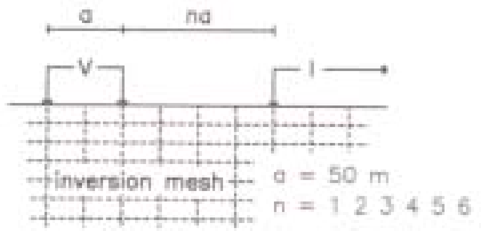
Line 5600E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

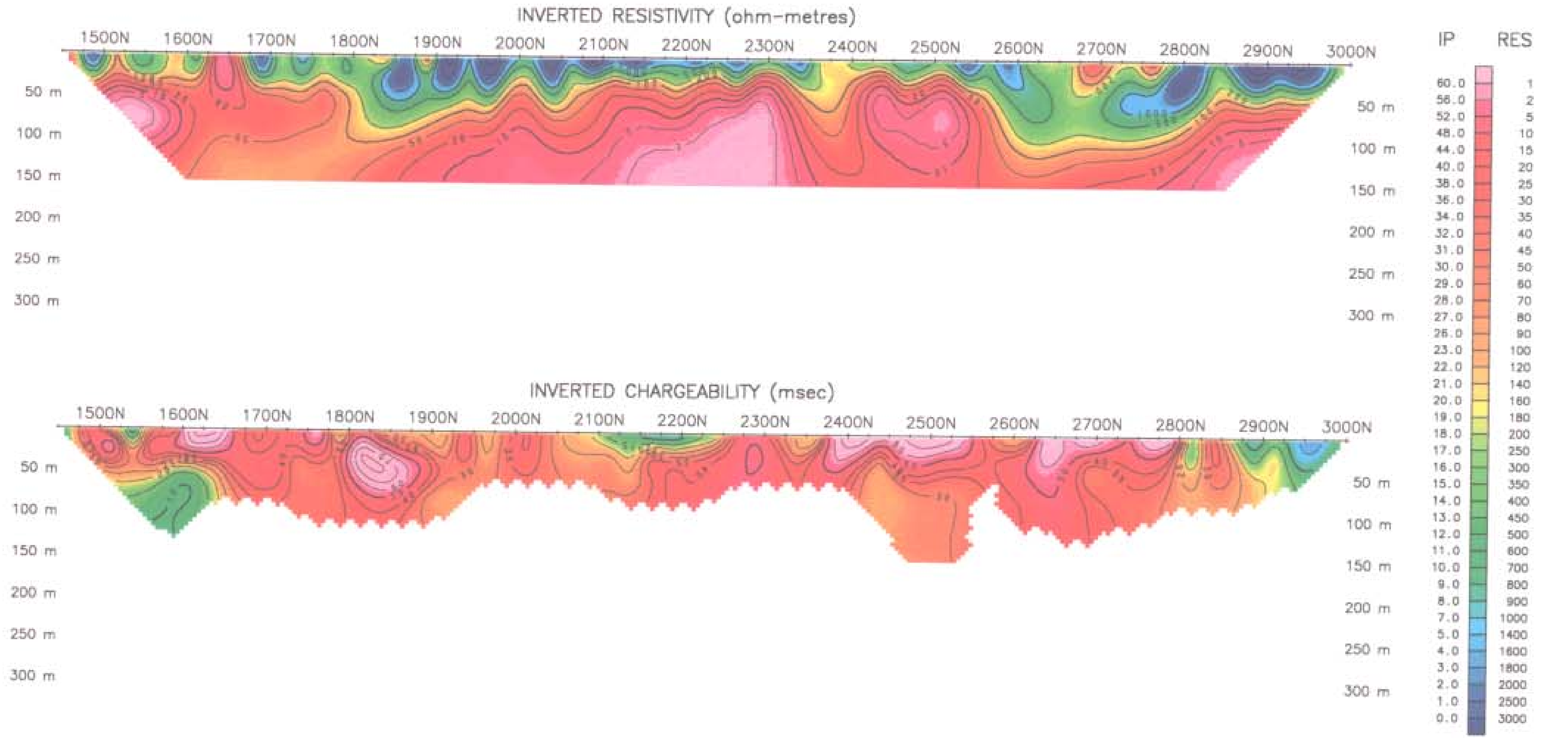
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

56

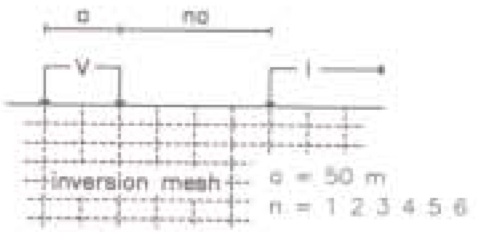
Line 5800E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

100 0 100 200 300
(meters)

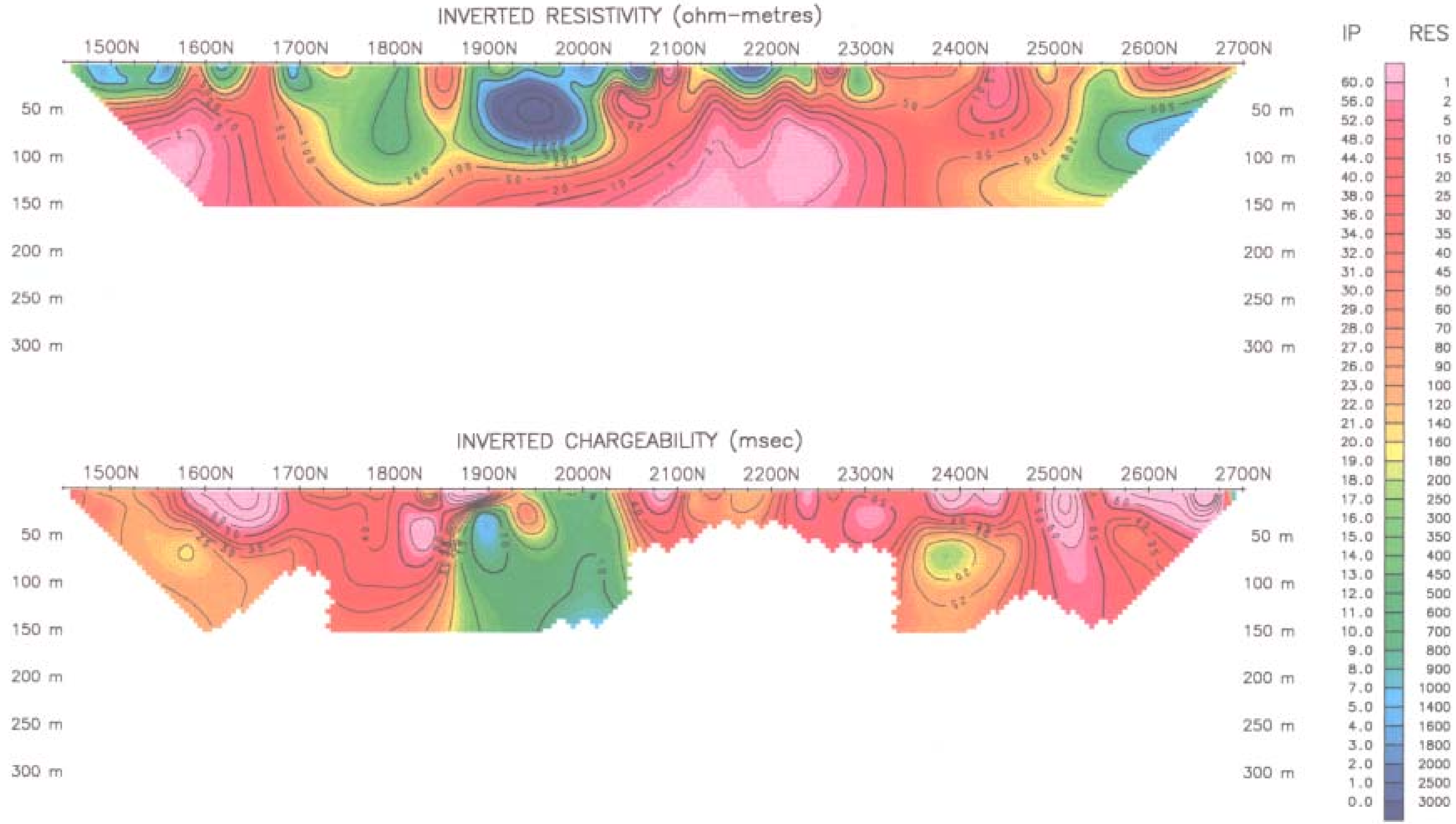
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

57

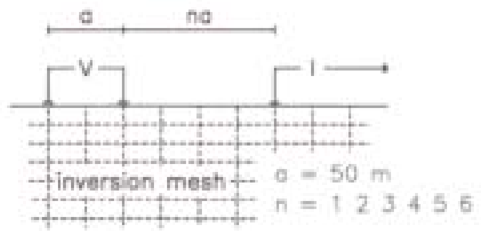
Line 6000E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000
50 0 50 100 150 200 250 300 350
(meters)

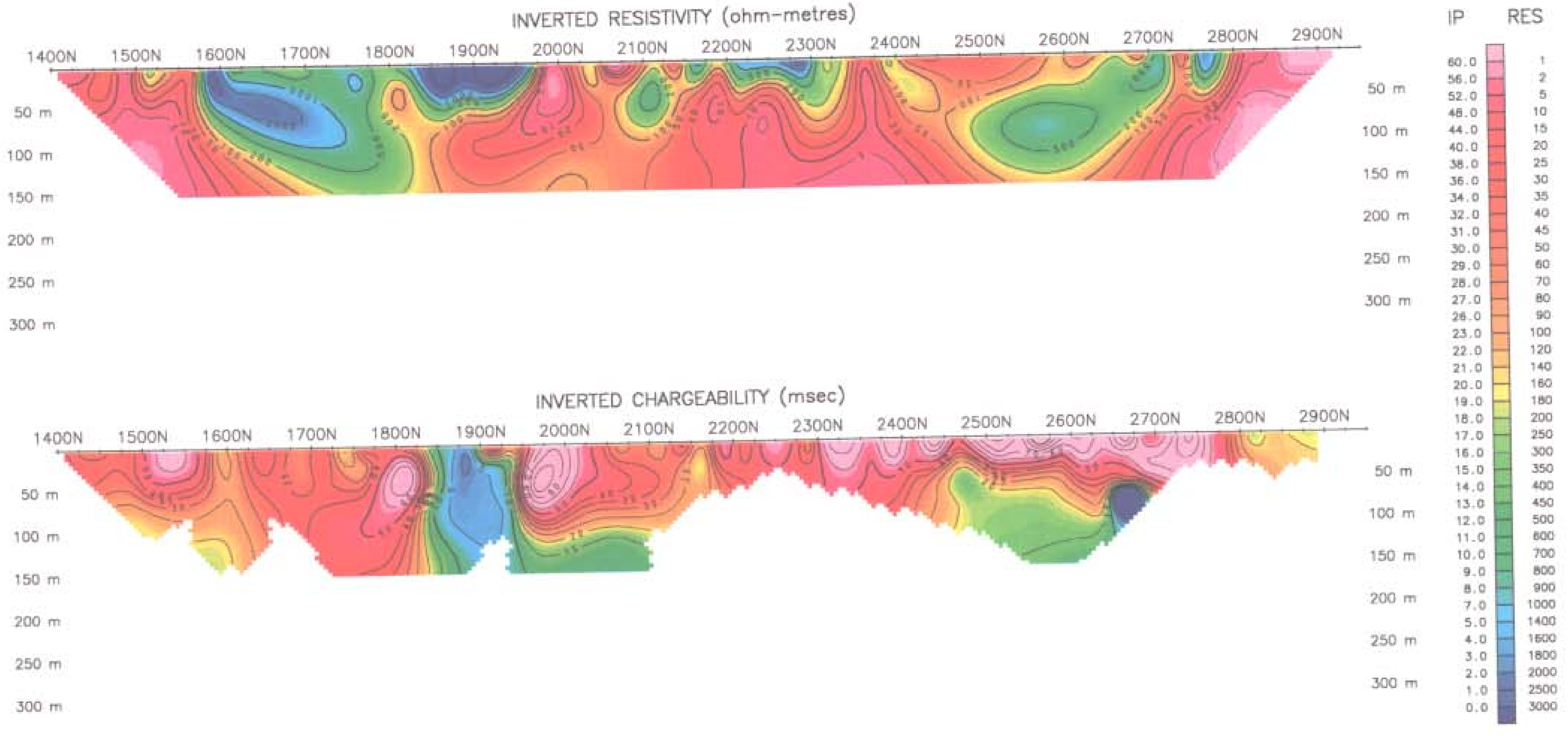
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

58

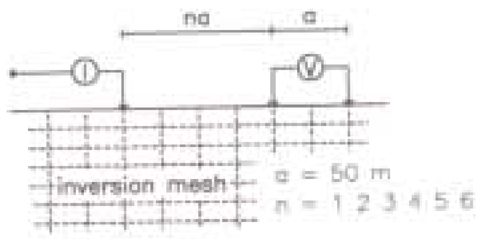
Line 6200E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

100 0 100 200 300
(meters)

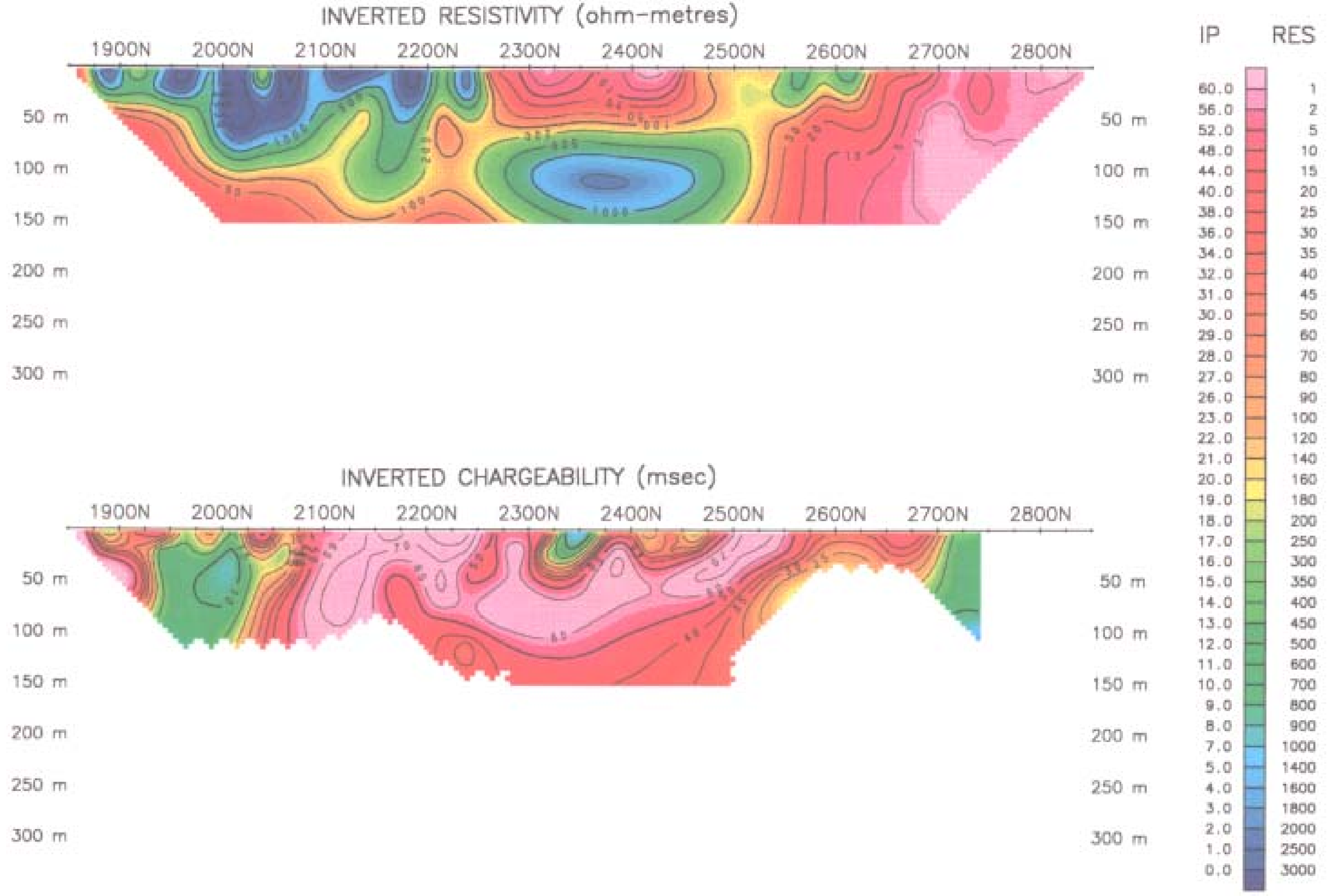
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

59

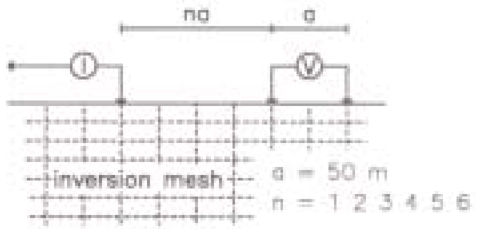
Line 6400E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows - 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000

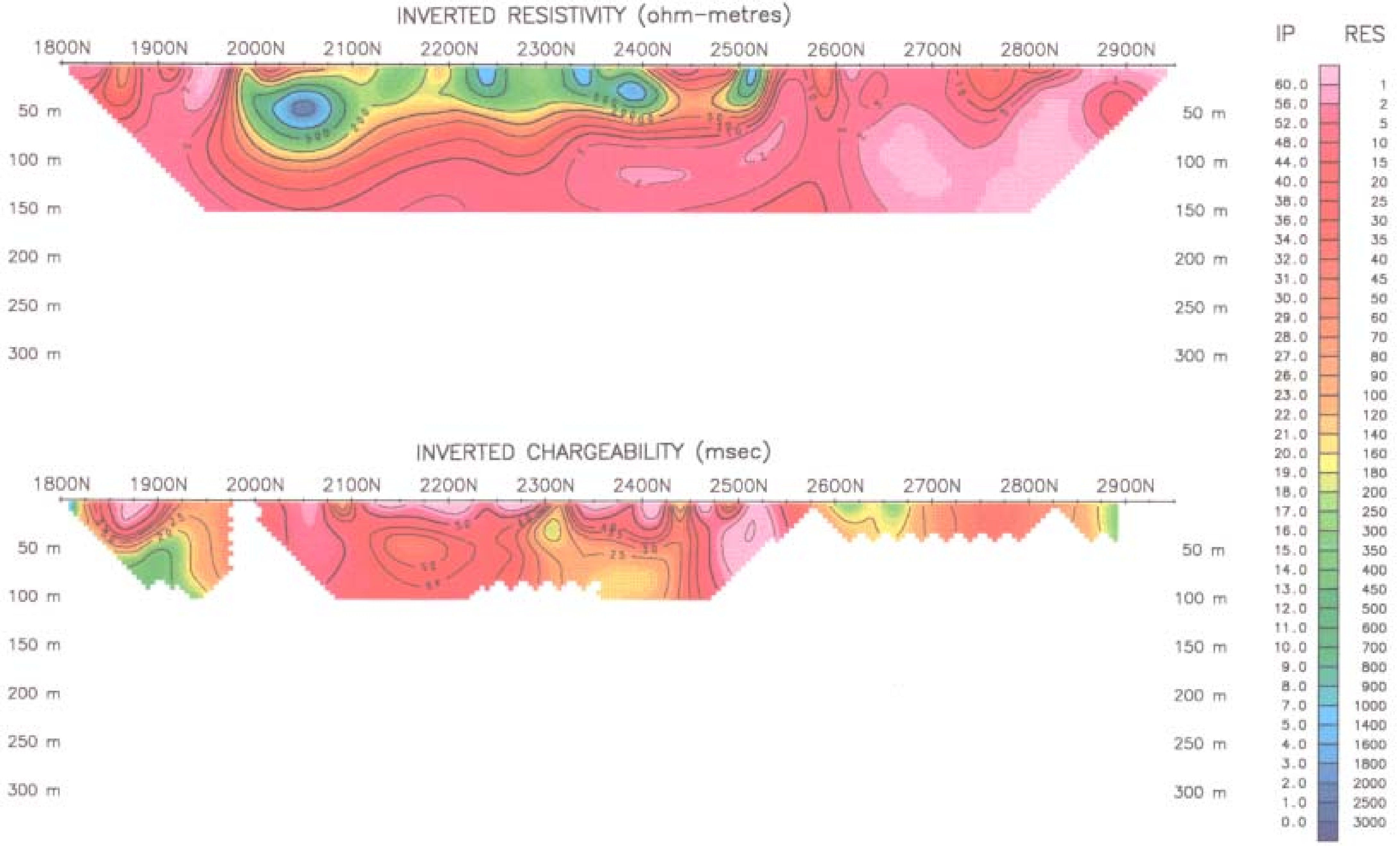
CANADIAN METALS EXPLORATION LTD.

TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

60

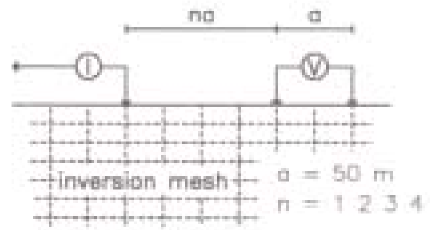
Line 6800E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002



INDUCED POLARIZATION SURVEY

POLE-DIPOLE ARRAY



TRANSMITTER:
Phoenix IPT-1 / 6.5Hp MG
2s +on, 2s off, 2s -on, 2s off
Current: 0.2 to 2.0 Amps

RECEIVER:
Iris ELREC-6
10 windows – 80 ms delay
20,20,40,60,100,140,180,
260,380,560 ms

Scale 1:5000
50 0 50 100 150 200 250 300 350
(meters)

(61)

CANADIAN METALS EXPLORATION LTD.

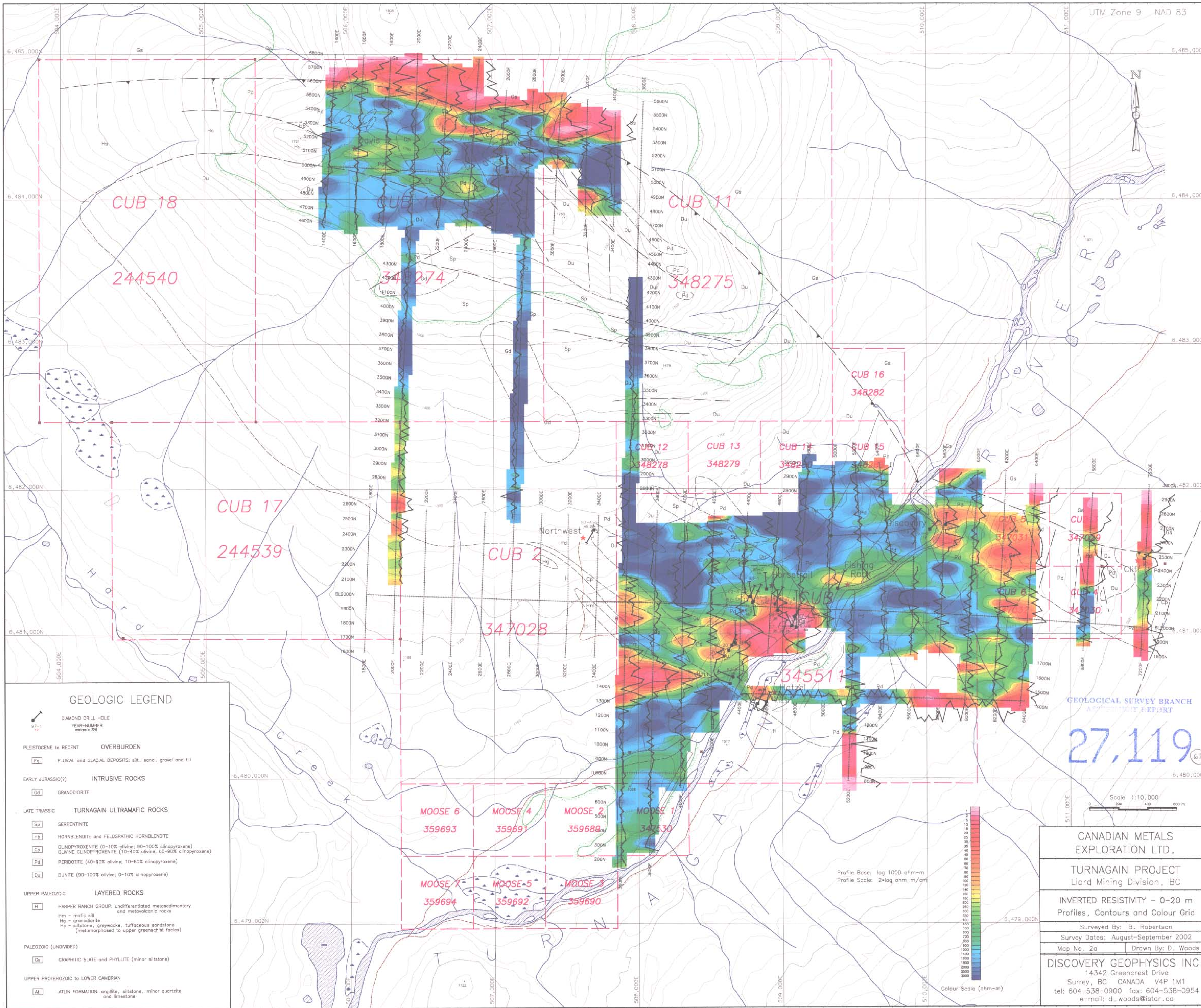
TURNAGAIN PROJECT
Liard Mining Division
Dease Lake, BC

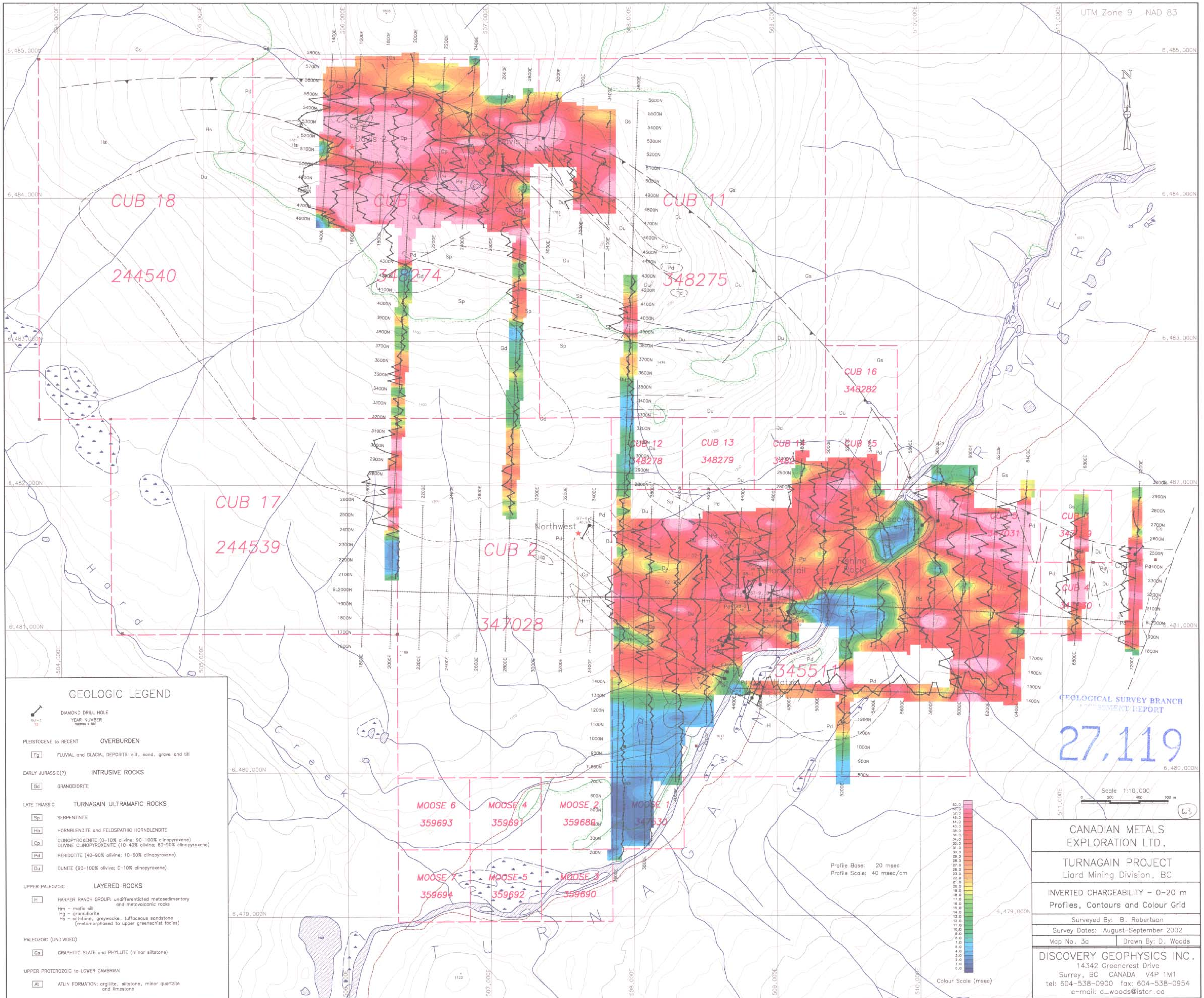
Line 7200E

DISCOVERY GEOPHYSICS INC.
Surveyed By: Brent Robertson
Survey Date: Aug-Sep 2002

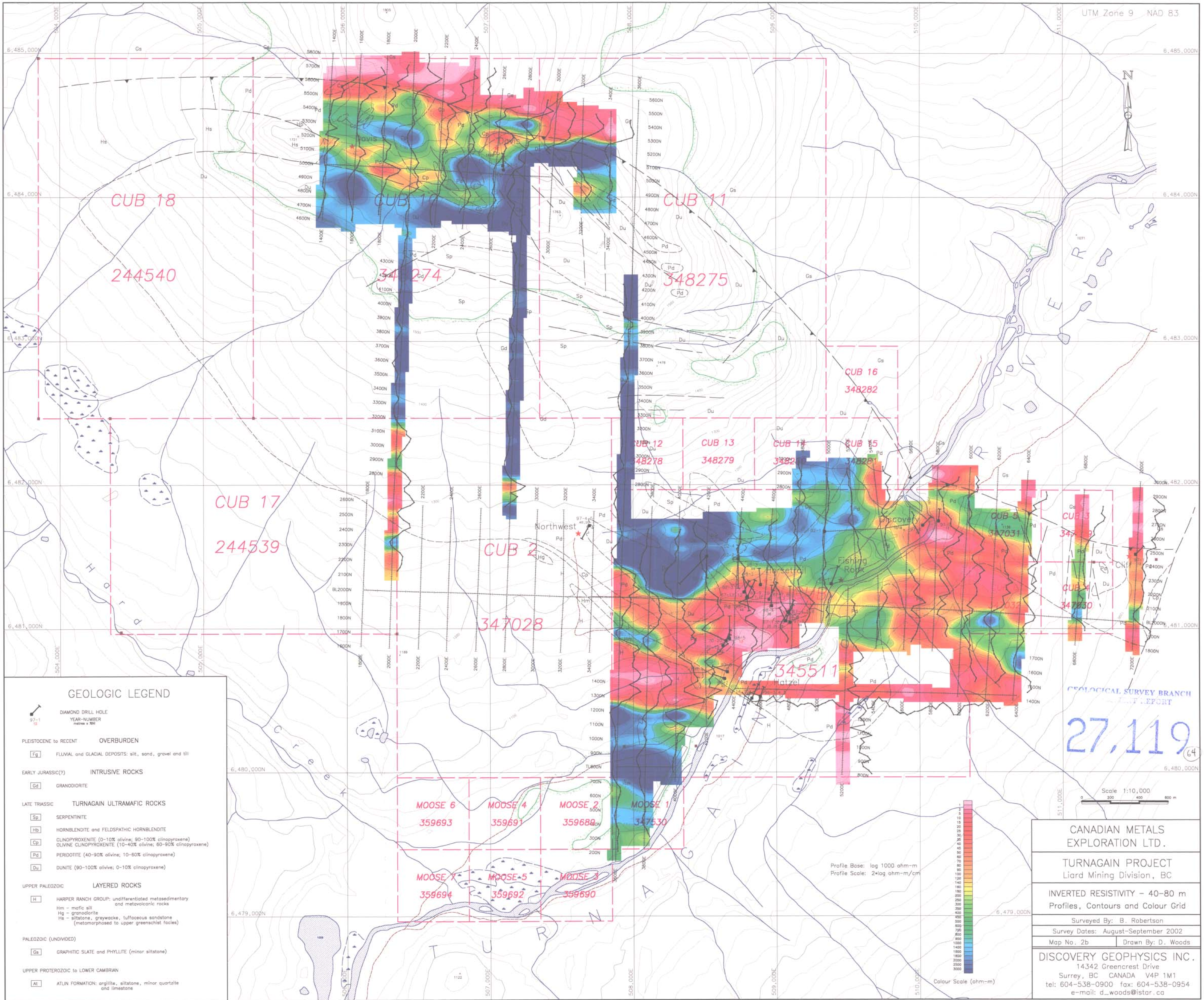
APPENDIX G

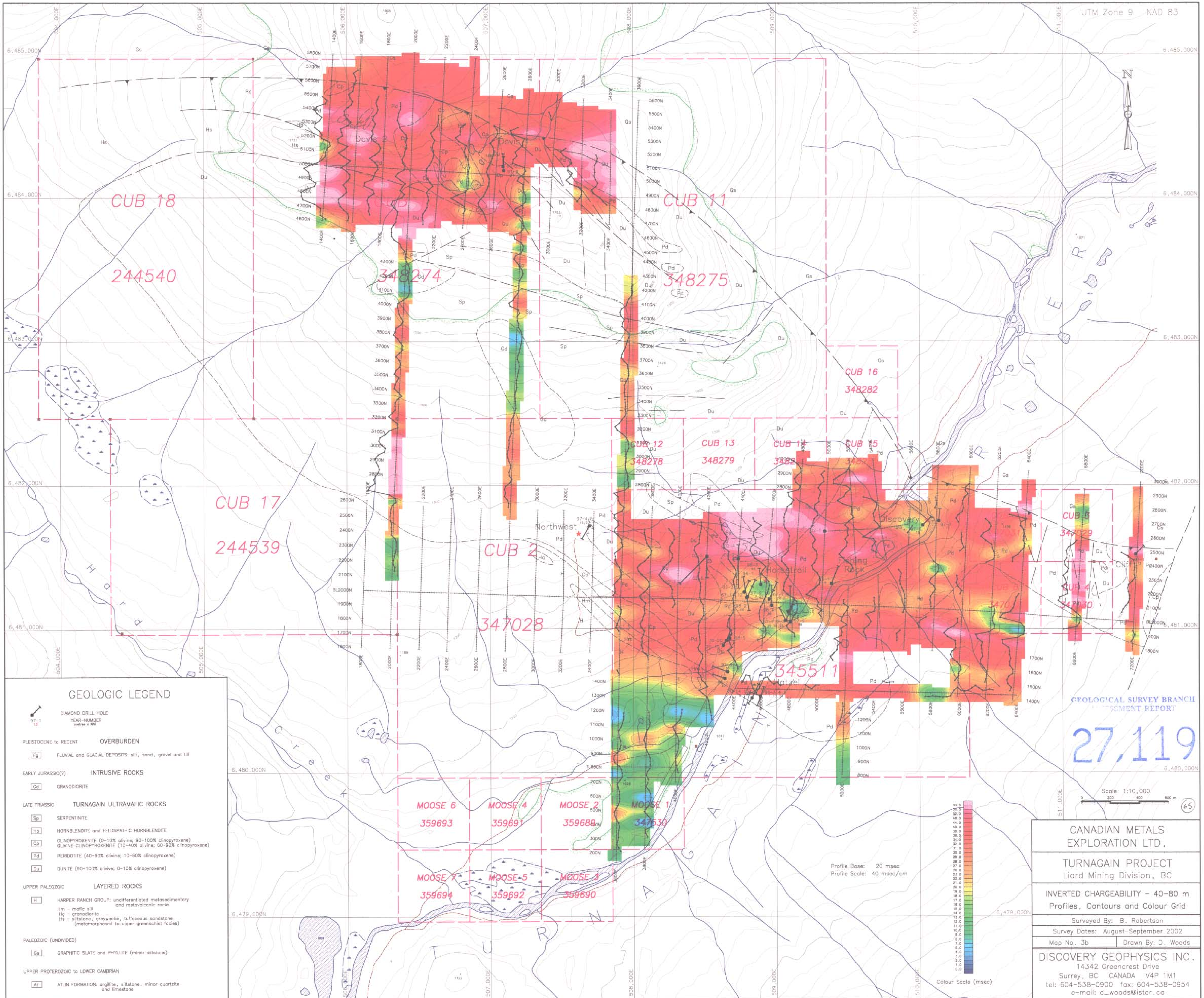
Resistivity and Chargeability Plan Maps

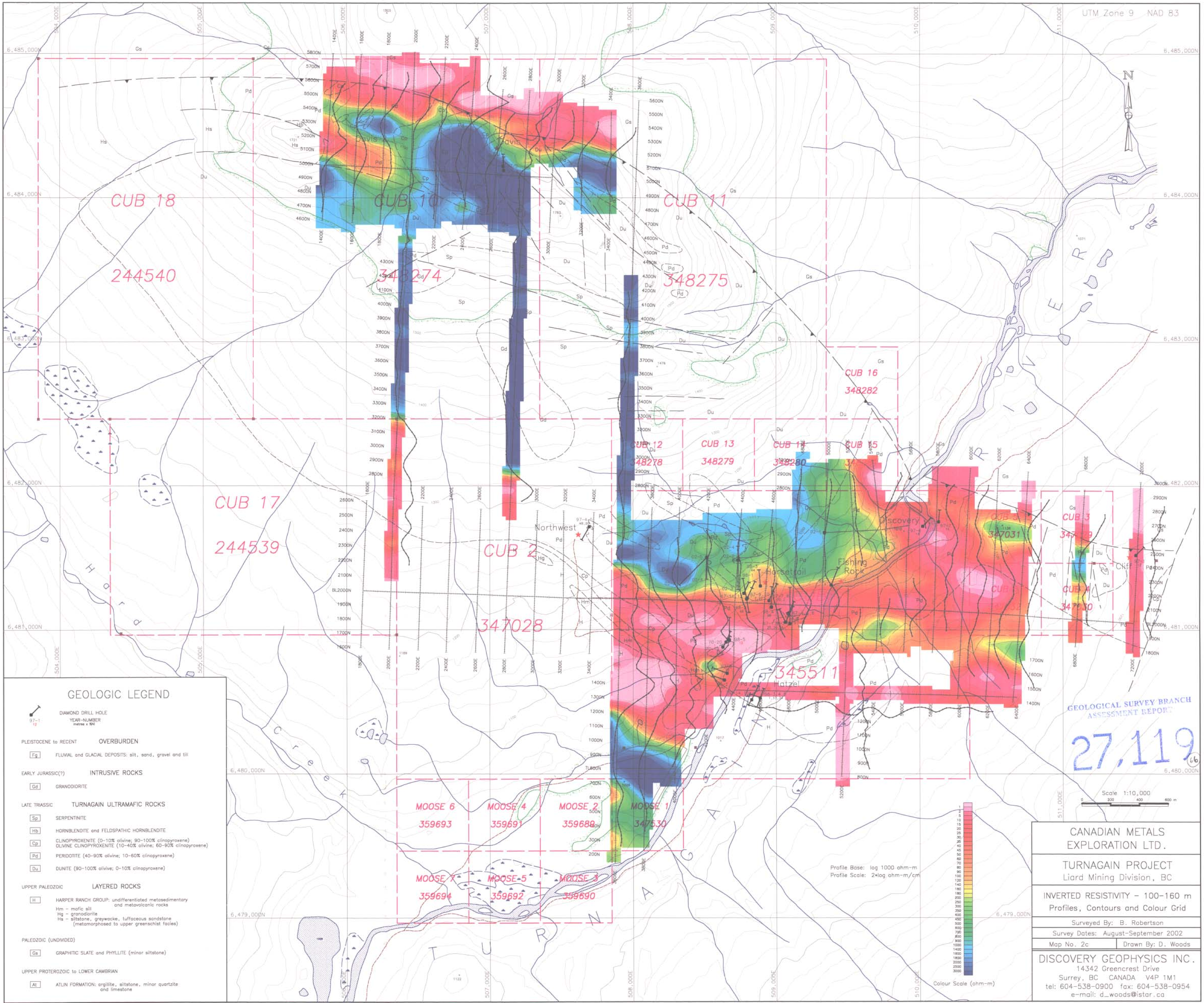

UTM Zone 9 NAD 83
N
CUB 18
244540
CUB 17
244539
CUB 11
348275
348274
CUB 16
348282
CUB 12
348278
CUB 13
348279
CUB 2
347028
345511
MOOSE 6
359693
MOOSE 4
359691
MOOSE 2
359689
MOOSE 1
347530
MOOSE 7
359694
MOOSE 5
359692
MOOSE 3
359690
Northwest
Discovery
Horsetrail
Fishing Rock
Hatzel
Profile Base: log 1000 ohm-m
Profile Scale: 2*log ohm-m/cm
Colour Scale (ohm-m)
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
27,119
Scale 1:10,000
0 200 400 600 m
GEOLOGIC LEGEND
DIAMOND DRILL HOLE
97-1
12
YEAR-NUMBER
metres x 100
PLEISTOCENE to RECENT
OVERBURDEN
Fg FLUVIAL and GLACIAL DEPOSITS: silt, sand, gravel and till
EARLY JURASSIC(?)
INTRUSIVE ROCKS
Gd GRANODIORITE
LATE TRIASSIC
TURNAGAIN ULTRAMAFIC ROCKS
Sp SERPENTINITE
Hb HORNBLENDITE and FELDSPATHIC HORNBLENDITE
Cp CLINOPYROXENITE (0-10% olivine; 90-100% clinopyroxene)
OLIVINE CLINOPYROXENITE (10-40% olivine; 60-90% clinopyroxene)
Pd PERIDOTITE (40-90% olivine; 10-60% clinopyroxene)
Du DUNITE (90-100% olivive; 0-10% clinopyroxene)
UPPER PALEOZOIC
LAYERED ROCKS
H HARPER RANCH GROUP: undifferentiated metasedimentary and metavolcanic rocks
Hm - mafic sill
Hg - granodiorite
Hs - siltstone, greywacke, tuffaceous sandstone (metamorphosed to upper greenschist facies)
PALEOZOIC (UNDIVIDED)
Gs GRAPHITIC SLATE and PHYLLITE (minor siltstone)
UPPER PROTEROZOIC to LOWER CAMBRIAN
At ATLIN FORMATION: argillite, siltstone, minor quartzite and limestone
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division, BC
INVERTED RESISTIVITY - 0-20 m
Profiles, Contours and Colour Grid
Surveyed By: B. Robertson
Survey Dates: August-September 2002
Map No. 2a
Drawn By: D. Woods
DISCOVERY GEOPHYSICS INC.
14342 Greencrest Drive
Surrey, BC CANADA V4P 1M1
tel: 604-538-0900 fax: 604-538-0954
e-mail: d_woods@istar.ca

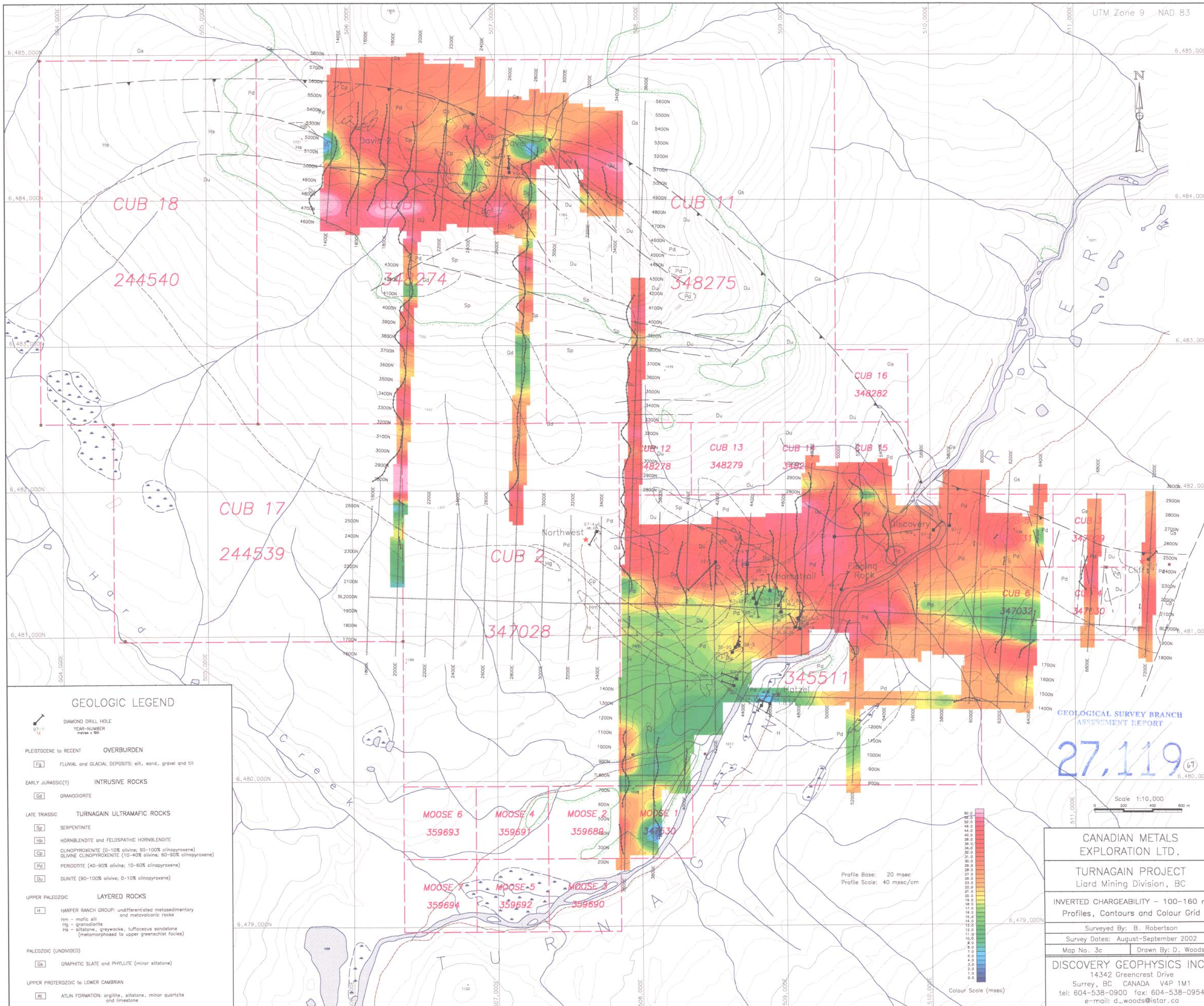


UTM Zone 9 NAD 83
CUB 18
244540
CUB 11
348275
348274
CUB 17
244539
CUB 2
347028
CUB 16
348282
CUB 12
348278
CUB 13
348279
CUB 15
345511
Northwest
Discovery
Horsetrail
Fishing Rock
MOOSE 6
359693
MOOSE 4
359691
MOOSE 2
359689
MOOSE 1
347530
MOOSE 7
359694
MOOSE 5
359692
MOOSE 3
359690
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
27,119
Profile Base: 20 msec
Profile Scale: 40 msec/cm
Colour Scale (msec)
Scale 1:10,000
GEOLOGIC LEGEND
DIAMOND DRILL HOLE
YEAR-NUMBER
PLEISTOCENE to RECENT
OVERBURDEN
Fg FLUVIAL and GLACIAL DEPOSITS: silt, sand, gravel and till
EARLY JURASSIC(?)
INTRUSIVE ROCKS
Gd GRANODIORITE
LATE TRIASSIC
TURNAGAIN ULTRAMAFIC ROCKS
Sp SERPENTINITE
Hb HORNBLENDITE and FELDSPATHIC HORNBLENDITE
Cp CLINOPYROXENITE (0-10% olivine; 90-100% clinopyroxene)
OLIVINE CLINOPYROXENITE (10-40% olivine; 60-90% clinopyroxene)
Pd PERIDOTITE (40-90% olivine; 10-60% clinopyroxene)
Du DUNITE (90-100% olivive; 0-10% clinopyroxene)
UPPER PALEOZOIC
LAYERED ROCKS
H HARPER RANCH GROUP: undifferentiated metasedimentary and metavolcanic rocks
Hm - mafic sill
Hg - granodiorite
Hs - siltstone, greywacke, tuffaceous sandstone (metamorphosed to upper greenschist facies)
PALEOZOIC (UNDIVIDED)
Gs GRAPHITIC SLATE and PHYLLITE (minor siltstone)
UPPER PROTEROZOIC to LOWER CAMBRIAN
At ATLIN FORMATION: argillite, siltstone, minor quartzite and limestone
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division, BC
INVERTED CHARGEABILITY - 0-20 m
Profiles, Contours and Colour Grid
Surveyed By: B. Robertson
Survey Dates: August-September 2002
Map No. 3a
Drawn By: D. Woods
DISCOVERY GEOPHYSICS INC.
14342 Greencrest Drive
Surrey, BC CANADA V4P 1M1
tel: 604-538-0900 fax: 604-538-0954
e-mail: d_woods@istar.ca
63


UTM Zone 9 NAD 83
N
CUB 18
244540
CUB 10
347274
CUB 11
348275
CUB 16
348282
CUB 12
348278
CUB 13
348279
CUB 15
CUB 5
347031
CUB 3
CUB 4
347030
CUB 17
244539
CUB 2
347028
345511
MOOSE 6
359693
MOOSE 4
359691
MOOSE 2
359689
MOOSE 1
347530
MOOSE 7
359694
MOOSE 5
359692
MOOSE 3
359690
Northwest
Discovery
Fishing Rock
Horsetrail
Hatzel
Cliff
Davis
Creek
TURNAGAIN
Profile Base: log 1000 ohm-m
Profile Scale: 2*log ohm-m/cm
Colour Scale (ohm-m)
GEOLOGICAL SURVEY BRANCH
27,119
Scale 1:10,000
0 200 400 600 m
GEOLOGIC LEGEND
DIAMOND DRILL HOLE
YEAR-NUMBER
97-1
PLEISTOCENE to RECENT
OVERBURDEN
Fg FLUVIAL and GLACIAL DEPOSITS: silt, sand, gravel and till
EARLY JURASSIC(?)
INTRUSIVE ROCKS
Gd GRANODIORITE
LATE TRIASSIC
TURNAGAIN ULTRAMAFIC ROCKS
Sp SERPENTINITE
Hb HORNBLENDITE and FELDSPATHIC HORNBLENDITE
Cp CLINOPYROXENITE (0-10% olivine; 90-100% clinopyroxene)
OLIVINE CLINOPYROXENITE (10-40% olivine; 60-90% clinopyroxene)
Pd PERIDOTITE (40-90% olivine; 10-60% clinopyroxene)
Du DUNITE (90-100% olivive; 0-10% clinopyroxene)
UPPER PALEOZOIC
LAYERED ROCKS
H HARPER RANCH GROUP: undifferentiated metasedimentary and metavolcanic rocks
Hm - mafic sill
Hg - granodiorite
Hs - siltstone, greywacke, tuffaceous sandstone (metamorphosed to upper greenschist facies)
PALEOZOIC (UNDIVIDED)
Gs GRAPHITIC SLATE and PHYLLITE (minor siltstone)
UPPER PROTEROZOIC to LOWER CAMBRIAN
At ATLIN FORMATION: argillite, siltstone, minor quartzite and limestone
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division, BC
INVERTED RESISTIVITY - 40-80 m
Profiles, Contours and Colour Grid
Surveyed By: B. Robertson
Survey Dates: August-September 2002
Map No. 2b
Drawn By: D. Woods
DISCOVERY GEOPHYSICS INC.
14342 Greencrest Drive
Surrey, BC CANADA V4P 1M1
tel: 604-538-0900 fax: 604-538-0954
e-mail: d_woods@istar.ca

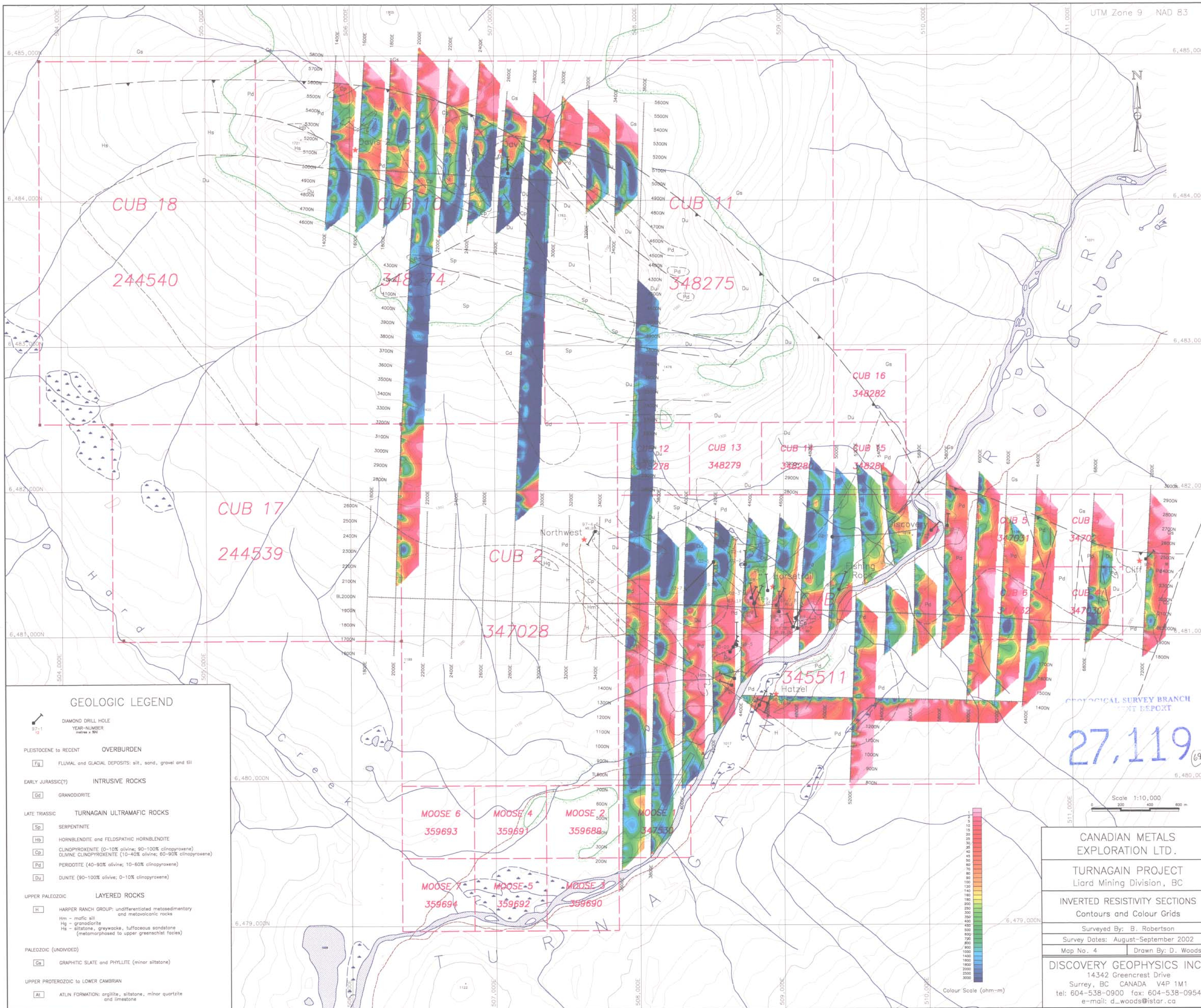

UTM Zone 9 NAD 83
CUB 18
244540
CUB 11
348274
348275
CUB 16
348282
CUB 12
348278
CUB 13
348279
CUB 17
244539
CUB 2
347028
345511
MOOSE 6
359693
MOOSE 4
359691
MOOSE 2
359688
MOOSE 1
347530
MOOSE 7
359694
MOOSE 5
359692
MOOSE 3
359690
Davis
Northwest
Discovery
Horsetrail
Fishing Rock
Hatzel
Profile Base: 20 msec
Profile Scale: 40 msec/cm
Colour Scale (msec)
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
27,119
Scale 1:10,000
0 200 400 600 m
65
GEOLOGIC LEGEND
DIAMOND DRILL HOLE
97-1 YEAR-NUMBER
metres x %Ni
PLEISTOCENE to RECENT
OVERBURDEN
Fg FLUVIAL and GLACIAL DEPOSITS: silt, sand, gravel and till
EARLY JURASSIC(?)
INTRUSIVE ROCKS
Gd GRANODIORITE
LATE TRIASSIC
TURNAGAIN ULTRAMAFIC ROCKS
Sp SERPENTINITE
Hb HORNBLENDITE and FELDSPATHIC HORNBLENDITE
Cp CLINOPYROXENITE (0-10% olivine; 90-100% clinopyroxene)
OLIVINE CLINOPYROXENITE (10-40% olivine; 60-90% clinopyroxene)
Pd PERIDOTITE (40-90% olivine; 10-60% clinopyroxene)
Du DUNITE (90-100% olivive; 0-10% clinopyroxene)
UPPER PALEOZOIC
LAYERED ROCKS
H HARPER RANCH GROUP: undifferentiated metasedimentary and metavolcanic rocks
Hm - mafic sill
Hg - granodiorite
Hs - siltstone, greywacke, tuffaceous sandstone (metamorphosed to upper greenschist facies)
PALEOZOIC (UNDIVIDED)
Gs GRAPHITIC SLATE and PHYLLITE (minor siltstone)
UPPER PROTEROZOIC to LOWER CAMBRIAN
At ATLIN FORMATION: argillite, siltstone, minor quartzite and limestone
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division, BC
INVERTED CHARGEABILITY - 40-80 m
Profiles, Contours and Colour Grid
Surveyed By: B. Robertson
Survey Dates: August-September 2002
Map No. 3b
Drawn By: D, Woods
DISCOVERY GEOPHYSICS INC.
14342 Greencrest Drive
Surrey, BC CANADA V4P 1M1
tel: 604-538-0900 fax: 604-538-0954
e-mail: d_woods@istar.ca

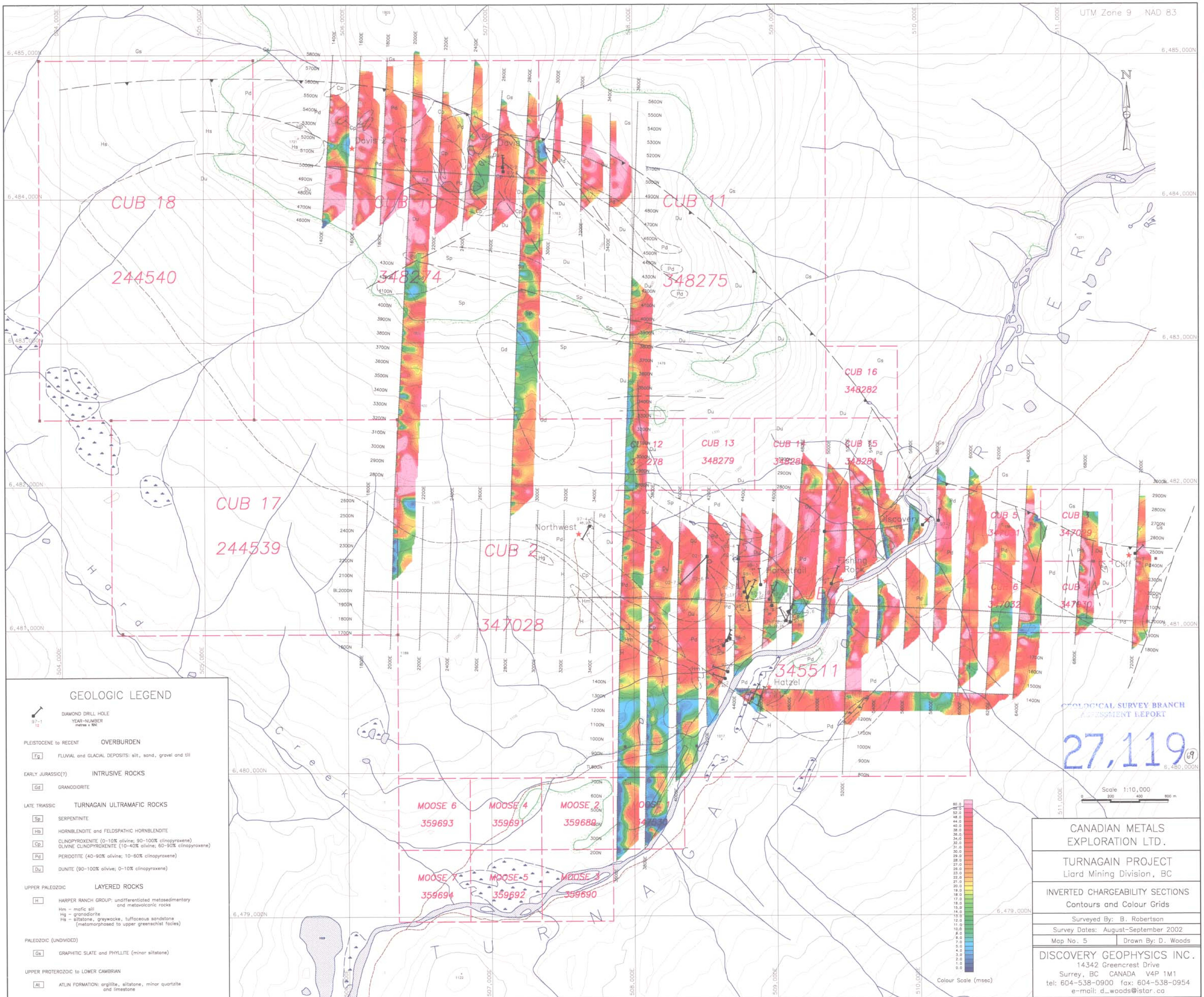

UTM Zone 9 NAD 83
N
CUB 18
244540
CUB 10
348274
CUB 11
348275
CUB 16
348282
CUB 12
348278
CUB 13
348279
CUB 17
244539
CUB 2
347028
345511
CUB 3
CUB 4
MOOSE 6
359693
MOOSE 4
359691
MOOSE 2
359689
MOOSE 1
347530
MOOSE 7
359694
MOOSE 5
359692
MOOSE 3
359690
Davis
Northwest
Discovery
Horsetail
Fishing Rock
Hatzel
Cliff
GEOLOGIC LEGEND
DIAMOND DRILL HOLE
97-1
YEAR-NUMBER
metres x 10
PLEISTOCENE to RECENT
OVERBURDEN
Fg FLUVIAL and GLACIAL DEPOSITS: silt, sand, gravel and till
EARLY JURASSIC(?)
INTRUSIVE ROCKS
Gd GRANODIORITE
LATE TRIASSIC
TURNAGAIN ULTRAMAFIC ROCKS
Sp SERPENTINITE
Hb HORNBLENDITE and FELDSPATHIC HORNBLENDITE
Cp CLINOPYROXENITE (0-10% olivine; 90-100% clinopyroxene)
OLIVINE CLINOPYROXENITE (10-40% olivine; 60-90% clinopyroxene)
Pd PERIDOTITE (40-90% olivine; 10-60% clinopyroxene)
Du DUNITE (90-100% olivive; 0-10% clinopyroxene)
UPPER PALEOZOIC
LAYERED ROCKS
H HARPER RANCH GROUP: undifferentiated metasedimentary and metavolcanic rocks
Hm - mafic sill
Hg - granodiorite
Hs - siltstone, greywacke, tuffaceous sandstone (metamorphosed to upper greenschist facies)
PALEOZOIC (UNDIVIDED)
Gs GRAPHITIC SLATE and PHYLLITE (minor siltstone)
UPPER PROTEROZOIC to LOWER CAMBRIAN
At ATLIN FORMATION: argillite, siltstone, minor quartzite and limestone
Profile Base: log 1000 ohm-m
Profile Scale: 2*log ohm-m/cm
Colour Scale (ohm-m)
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
27,119
Scale 1:10,000
0 200 400 600 m
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division, BC
INVERTED RESISTIVITY - 100-160 m
Profiles, Contours and Colour Grid
Surveyed By: B. Robertson
Survey Dates: August-September 2002
Map No. 2c
Drawn By: D. Woods
DISCOVERY GEOPHYSICS INC.
14342 Greencrest Drive
Surrey, BC CANADA V4P 1M1
tel: 604-538-0900 fax: 604-538-0954
e-mail: d_woods@istar.ca


UTM Zone 9 NAD 83
N
CUB 18
244540
CUB 11
348274
348275
CUB 16
348282
CUB 12
348278
CUB 13
348279
CUB 17
244539
CUB 2
347028
CUB 6
347032
345511
MOOSE 6
359693
MOOSE 4
359691
MOOSE 2
359689
MOOSE 1
347630
MOOSE 7
359694
MOOSE 5
359692
MOOSE 3
359690
Davis
Northwest
Discovery
Horsetrail
Fishing Rock
Hatzel
Creek
GEOLOGIC LEGEND
DIAMOND DRILL HOLE
97-1
12
YEAR-NUMBER
metres x 100
PLEISTOCENE to RECENT
OVERBURDEN
Fg
FLUVIAL and GLACIAL DEPOSITS: silt, sand, gravel and till
EARLY JURASSIC(?)
INTRUSIVE ROCKS
Gd
GRANODIORITE
LATE TRIASSIC
TURNAGAIN ULTRAMAFIC ROCKS
Sp
SERPENTINITE
Hb
HORNBLENDITE and FELDSPATHIC HORNBLENDITE
Cp
CLINOPYROXENITE (0-10% olivine; 90-100% clinopyroxene)
OLIVINE CLINOPYROXENITE (10-40% olivine; 60-90% clinopyroxene)
Pd
PERIDOTITE (40-90% olivine; 10-60% clinopyroxene)
Du
DUNITE (90-100% olivive; 0-10% clinopyroxene)
UPPER PALEOZOIC
LAYERED ROCKS
H
HARPER RANCH GROUP: undifferentiated metasedimentary and metavolcanic rocks
Hm - mafic sill
Hg - granodiorite
Hs - siltstone, greywacke, tuffaceous sandstone (metamorphosed to upper greenschist facies)
PALEOZOIC (UNDIVIDED)
Gs
GRAPHITIC SLATE and PHYLLITE (minor siltstone)
UPPER PROTEROZOIC to LOWER CAMBRIAN
At
ATLIN FORMATION: argillite, siltstone, minor quartzite and limestone
Profile Base: 20 msec
Profile Scale: 40 msec/cm
Colour Scale (msec)
Scale 1:10,000
0 200 400 600 m
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
27,119
67
CANADIAN METALS
EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division, BC
INVERTED CHARGEABILITY - 100-160 m
Profiles, Contours and Colour Grid
Surveyed By: B. Robertson
Survey Dates: August-September 2002
Map No. 3c
Drawn By: D. Woods
DISCOVERY GEOPHYSICS INC.
14342 Greencrest Drive
Surrey, BC CANADA V4P 1M1
tel: 604-538-0900 fax: 604-538-0954
e-mail: d_woods@istar.ca

APPENDIX H

Resistivity and Chargeability Section Maps


UTM Zone 9 NAD 83
CUB 18
244540
CUB 10
348274
CUB 11
348275
CUB 16
348282
CUB 17
244539
CUB 2
347028
CUB 12
348278
CUB 13
348279
CUB 14
348280
CUB 15
348281
CUB 5
347031
CUB 3
CUB 6
CUB 4
345511
Davis
Northwest
Discovery
Horsetrail
Fishing Rock
Cliff
Hatzel
MOOSE 6
359693
MOOSE 4
359691
MOOSE 2
359688
MOOSE 1
347530
MOOSE 7
359694
MOOSE 5
359692
MOOSE 3
359690
GEOLOGIC LEGEND
DIAMOND DRILL HOLE
YEAR-NUMBER
97-1
PLEISTOCENE to RECENT
OVERBURDEN
Fg FLUVIAL and GLACIAL DEPOSITS: silt, sand, gravel and till
EARLY JURASSIC(?)
INTRUSIVE ROCKS
Gd GRANODIORITE
LATE TRIASSIC
TURNAGAIN ULTRAMAFIC ROCKS
Sp SERPENTINITE
Hb HORNBLENDITE and FELDSPATHIC HORNBLENDITE
Cp CLINOPYROXENITE (0-10% olivine; 90-100% clinopyroxene)
OLIVINE CLINOPYROXENITE (10-40% olivine; 60-90% clinopyroxene)
Pd PERIDOTITE (40-90% olivine; 10-60% clinopyroxene)
Du DUNITE (90-100% olivive; 0-10% clinopyroxene)
UPPER PALEOZOIC
LAYERED ROCKS
H HARPER RANCH GROUP: undifferentiated metasedimentary and metavolcanic rocks
Hm - mafic sill
Hg - granodiorite
Hs - siltstone, greywacke, tuffaceous sandstone (metamorphosed to upper greenschist facies)
PALEOZOIC (UNDIVIDED)
Gs GRAPHITIC SLATE and PHYLLITE (minor siltstone)
UPPER PROTEROZOIC to LOWER CAMBRIAN
At ATLIN FORMATION: argillite, siltstone, minor quartzite and limestone
Colour Scale (ohm-m)
Scale 1:10,000
0 200 400 600 m
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division, BC
INVERTED RESISTIVITY SECTIONS
Contours and Colour Grids
Surveyed By: B. Robertson
Survey Dates: August-September 2002
Map No. 4
Drawn By: D. Woods
DISCOVERY GEOPHYSICS INC.
14342 Greencrest Drive
Surrey, BC CANADA V4P 1M1
tel: 604-538-0900 fax: 604-538-0954
e-mail: d_woods@istar.ca
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
27,119


UTM Zone 9 NAD 83
CUB 18
244540
CUB 10
348274
CUB 11
348275
CUB 16
348282
CUB 12
348278
CUB 13
348279
CUB 14
348280
CUB 15
348281
CUB 17
244539
CUB 2
347028
CUB 5
347031
CUB 3
347029
CUB 6
347032
CUB 4
347030
345511
MOOSE 6
359693
MOOSE 4
359691
MOOSE 2
359689
MOOSE 1
347530
MOOSE 7
359694
MOOSE 5
359692
MOOSE 3
359690
Davis 2
Davis
Northwest
Discovery
Horsetrail
Fishing Rock
Cliff
Hatzel
Hard Creek
TURNAGAIN RIVER
N
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
27,119
Scale 1:10,000
0 200 400 800 m
Colour Scale (msec)
GEOLOGIC LEGEND
DIAMOND DRILL HOLE
97-1
YEAR-NUMBER
PLEISTOCENE to RECENT
OVERBURDEN
Fg FLUVIAL and GLACIAL DEPOSITS: silt, sand, gravel and till
EARLY JURASSIC(?)
INTRUSIVE ROCKS
Gd GRANODIORITE
LATE TRIASSIC
TURNAGAIN ULTRAMAFIC ROCKS
Sp SERPENTINITE
Hb HORNBLENDITE and FELDSPATHIC HORNBLENDITE
Cp CLINOPYROXENITE (0-10% olivine; 90-100% clinopyroxene)
OLIVINE CLINOPYROXENITE (10-40% olivine; 60-90% clinopyroxene)
Pd PERIDOTITE (40-90% olivine; 10-60% clinopyroxene)
Du DUNITE (90-100% olivive; 0-10% clinopyroxene)
UPPER PALEOZOIC
LAYERED ROCKS
H HARPER RANCH GROUP: undifferentiated metasedimentary and metavolcanic rocks
Hm - mafic sill
Hg - granodiorite
Hs - siltstone, greywacke, tuffaceous sandstone (metamorphosed to upper greenschist facies)
PALEOZOIC (UNDIVIDED)
Gs GRAPHITIC SLATE and PHYLLITE (minor siltstone)
UPPER PROTEROZOIC to LOWER CAMBRIAN
At ATLIN FORMATION: argillite, siltstone, minor quartzite and limestone
CANADIAN METALS EXPLORATION LTD.
TURNAGAIN PROJECT
Liard Mining Division, BC
INVERTED CHARGEABILITY SECTIONS
Contours and Colour Grids
Surveyed By: B. Robertson
Survey Dates: August-September 2002
Map No. 5
Drawn By: D. Woods
DISCOVERY GEOPHYSICS INC.
14342 Greencrest Drive
Surrey, BC CANADA V4P 1M1
tel: 604-538-0900 fax: 604-538-0954
e-mail: d_woods@istar.ca