87-546-16216 2188

GEOPHYSICAL REFORT

ON

INDUCED POLARIZATION AND RESISTIVITY SURVEYS

PART 2 OF 2

OVER A PORTION OF THE

AZZA CLAIMS

(DICTATOR PROSPECT)

WINNIFRED CREEK, MONASHEE MOUNTAINS

VERNON M.D., BRITISH COLUMBIA

PROPERTY

WRITTEN FOR

WRITTEN BY

DATED

- : On upper reaches of Dictator Creek and 1900 m due south of its confluence with Winnifred Creek
- : 49° 57' North Latitude 118° 34' West Longitude
- : N.T.S. 82E/15E
- : AMULET RESOURCES CORPORATION #430-475 West Georgia Street Vancouver, B.C., V6B 4M9
- : David G. Mark, Geophysicist CEOTRONICS SURVEYS LTD. 530 - 800 West Pender Street Vancouvei

: December



GEOTR(Engineerii VANCO

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PART 2 OF 2 GEOLOGICAL BRANCH ASSESSMENT REPORT

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LIST OF ILLUSTRATIONS

Map #

1: 8,600,000 1 Location Map 1: 50,000 2 Claim Map 3 Survey Plan (in back pocket) 1: 2,000 Induced Polarization Survey 1: 2,000 4 Apparent Chargeability and Resistivity Pseudosection IPL-1 Induced Polarization Survey 1: 2,000 5 Apparent Chargeability and Resistivity Pseudosection IPL-2 Induced Polarization Survey 1: 2,000 6 Apparent Chargeability and Resistivity Pseudosection IPL-3 Induced Polarization Survey 1: 2,000 7 Apparent Chargeability and Resistivity Pseudosection IPL-4 Induced Polarization Survey 1: 2,000 8 Apparent Chargeability and Resistivity

Pseudosection IPL-5

GEOTRONICS SURVEYS LTD.

SUMMARY

Induced polarization and resistivity surveys were carried out during October and November, 1986 over five lines within the Azza claims located on the upper reaches of Dictator Creek, a tributary of Winnifred Creek within the Monashee Mountains within south central British Columbia.

The purpose of the work was to locate and delineate epithermal gold-silver mineralization such as has been found on the property. In addition, some pyritization and strong kaolin alteration occurs with the epithermal veins. The host rock is a granitic-type of the Nelson intrusives of early Jurassic age.

The property is easily accessible by 4-wheel drive vehicle. The terrain consists of flat to gentle slopes covered with lightly-to moderately-populated coniferous trees with light underbrush.

The IP and resistivity surveys were carried out using a Huntec receiver operating in the time-domain mode. The array used was the dipole-dipole array read at five separations with a dipole length and reading interval of 30 m. A total of five lines were done and the results were plotted in pseudosection form and contoured.

CONCLUSIONS

- 1. The resistivity survey has responded to fault and shear zones as noted directly in the field and as interpreted from air photos by Bayrock. Epithermal veins mineralized with gold and silver occur along the shear zones. The resistivity results show the shear zone to dip predominantly east with some to the west. Where shear zones cross are of special exploration interest since these areas are more amenable to mineralization.
- 2. Pyritization associated with the epithermal veins appear to have responded as low amplitude IP highs. As a result, IP highs correlating with resisitivity lows are of strong exploration interest. Nine of these have been noted on the survey and three of these occur near interesting resistivity lows that are indicative of cross-shearing.
- 3. Two shear zones are of special interest because of significantly high geochemistry results. These have been labelled A and B respectively. Three trenches have cut B intersected gold/silver mineralization. On а the and strongest soil values occur as well as correlating IP anomalies.

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RECOMMENDATIONS

The resisitivity and IP surveys have been very successful in further defining exploration targets on the Azza claims.

Some of these should be trenched and/or drilled. However, it is highly preferable to more accurately delineate these targets through further resistivity and IP work. Lines 1, 2, and 3 are, on average, 200 m apart which is only reconnaissance in nature. The fill-in lines, which should be done at about a 50 m interval, will not only locate the targets more accurately, but also more definitely define the dip.

While carrying out the drilling and trenching, the results should be closely correlated with the resistivity and IP results in order to maximize the benefit from these surveys.

GEOPHYSICAL REPORT

ON

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VERNON M.D.

BRITISH COLUMBIA

INTRODUCTION AND GENERAL REMARKS

This report discusses the instrumentation, theory, field procedure and results of induced polarization (IP) and resistivity surveys carried out over a portion of the Azza claims, covering the old Dictator prospect. The property is located on the upper reaches of Dictator Creek, which is a tributary of Winnifred Creek located in the Monashee Mountains 60 km southeast of Vernon.

The field work was completed from October 26th to November 2nd, 1986 under the supervision of the writer and under the field supervision of Pat Cruickshank, geophysicist, who also formed part of the field crew. A geophysical technician as well as 2 helpers completed the crew of four. The purpose of the IP and resistivity surveys on the Dictator prospect was to extend the known gold mineralization both to depth and along strike as well as to locate new zones. This included the testing of targets produced from soil geochemical testing and photogeological interpretation.

The gold mineralization occurs in epithermal zones which has alteration associated with it. The purpose of the resistivity survey was therefore to map the alteration as resistivity lows and thus the gold vein. In addition, on the Dictator prospect, sulphides, principally pyrite, are associated with the gold mineralization and thus the purpose of the IP was to map the sulphides.

PROPERTY AND OWNERSHIP

The property consists of 2 contiguous claims totalling 32 units as shown on Map 2 and as described below:

Name of Claim	<u>No of Units</u>	Record Number	Anniversary Date
Azza	16	1976	August 23
Azza 2	16	2165	October 20

The 2 Azza claims as shown on Map 2 are wholly owned by Lu Bayrock, Ph.D., P. Geol., and are under option to Amulet Resources Ltd.

LOCATION AND ACCESS

The property is located about 60 km southeast of Vernon, B.C. on the upper reaches of Dictator Creek 1,900 m south of its confluence with Winnifred Creek located within the Monashee Mountains. The south-flowing Kettle River occurs about 7 km to the west.

The geographical coordinates for the center of the property are 49° 57' north latitude and 118° 34' west longitude.

Access to the property is gained by travelling about 76 km along Highway #6 to the gravelled Kettle River valley road which runs southerly. One then travels for 10 km to the K50 logging access road which turns off to the east. The property is located about 30 km from the Kettle river road through a series of logging roads as shown on map 2. Four-wheel drive is highly recommended and is a necessity if the roads are wet.

PHYSIOGRAPHY

The property occurs on the western side of the Monashee Mountains, a physiographic division of the Interior Plateau System. The terrain is gentle over most of the property except for the northern part which occurs on the north-facing steep-sided Winnifred Creek valley. The elevations vary from 1370 m along the northern boundary to 1800 m within parts of the Azza 2 claim to give an elevation difference of 430 m.

The northern part of the property is mainly drained by the northerly-flowing Dictator Creek as well as 2 other tributaries of Winnifred Creek. The southern part is drained by a southflowing tributary of Rendell Creek.

The vegetation consists mainly of lightly- to moderately-dense stands of spruce and fir with some underbrush. In places, swampy and meadow areas occur.

HISTORY OF PREVIOUS WORK

The Dictator dates back to possibly as early as the turn of the century. The writer is unaware of what work has earlier been done. However, since Lu Bayrock has acquired the property, he has carried out photo-geological interpretation, geological mapping and soil/silt sampling. In addition, just before the IP and resistivity surveys were started, five trenches were dug by bulldozer.

GEOLOGY

The following is taken from the G.S.C. map of the area by Okulitch.

The property occurs wthin the Nelson intrusives of early Jurasic age which consist of quartz diorite, grandiorite, granite, amphibolite, gabbro and ultramafic rocks.

The only other rock group in the area is a rock pendant of the Thompson assemblage of Permian age which occurs 1600 m to the south of the main propsect. On the previous G.S.C. map of the area (Little) this group was referred to as the Anarchist. The Thompson assemblage consists of siliceous argillite, volcaniclastic sandstone, quartzite, siltstone, different limestones, different conglomerates, chert, breccia, greenstone, and tuff.

The mineralization consists of gold and silver with associated pyrite within siliceous epithermal veins. Intense kaolin alteration is associated with the veins.

INSTRUMENTATION

The transmitter used for the induced polarization-resistivity survey was a Model IPT-1, manufactured by Phoenix Geophysics Ltd. of Markham, Ontario. It was powered by a 2.0 kw motor-generator, Model MG-2, also manufactured by Phoenix.

The receiver used was a model Mark IV manufactured by Huntec ('70) Limited of Scarborough, Ontario. This is state-of-the-art equipment, with software-controlled functions, programmable through the front panel.

The Mark IV system is capable of time domain, frequency domain, and complex resistivity measurements.

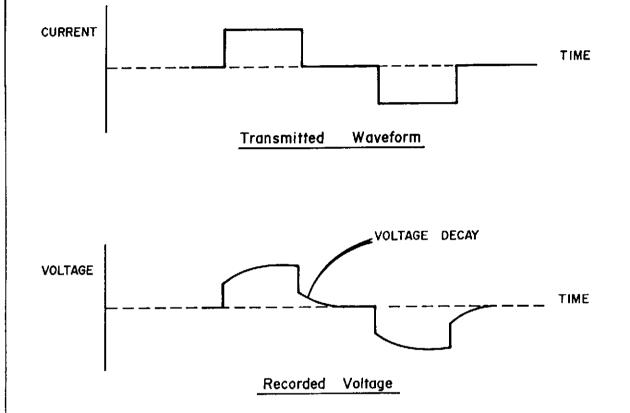
THEORY

When a voltage is applied to the ground, electrical current flows, mainly in the electrolyte-filled capillaries within the rock. If the capillaries also contain certain mineral particles that transport current by electrons (most sulphides, some oxides and graphite), then the ionic charges build up at the particleelectrolyte interface, positive ones where the current enters the particle and negative ones where it leaves. This accumulation of charge creates a voltage that tends to oppose the current flow across the interface. When the current is switched off, the created voltage slowly decreases as the accumulated ions diffuse back into the electrolyte. This type of induced polarization phenomena is known as electrode polarization.

A similar effect occurs if clay particles are present in the conducting medium. Charged clay particles attract oppositelycharged ions from the surrounding electrolyte; when the current

stops, the ions slowly diffuse back to their equilibrium state. This process is known as membrane polarization and gives rise to induced polarization effects even in the absence of metallic-type conductors.

Most IP surveys are carried out by taking measurements in the "time-domain" or the "frequency-domain".



Time-domain measurements involve sampling the waveform at intervals after the current is switched off, to derive a dimensionless paramater, the chargeability, "M" which is a measure of the strength of the induced polarization effect. Measurements in the frequency-domain are based on the fact that the resistance produced at the electrolyte-charged particle interface decreases with increasing frequency. The difference between apparent resistivity readings at a high and low frequency is expressed as the percentage frequency effect, "PFE".

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The quantity, apparent resistivity, ρ_a , computed from electrical survey results is only the true earth resistivity in a homogenous sub-surface. When vertical (and lateral) variations in electrical properties occur, as they always will in the real world, the apparent resistivity will be influenced by the various layers, depending on their depth relative to the electrode spacing. A single reading cannot therefore be attributed to a particular depth.

The ability of the ground to transmit electricity is, in the absence of metallic-type conductors, almost completely depending on the volume, nature and content of the pore space. Empirical relationships can be derived linking the formation resistivity to the pore water resistivity, as a function of porosity. Such a formula is Archie's Law, which states (assuming complete saturation) in clean formations:

0-2 Ro Rw

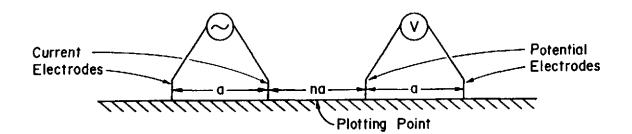
Where: Ro is formation resistivity Rw is pore water resistivity 0 is porosity

SURVEY PROCEDURE

The IP and resistivity measurements were taken in the time-domain mode using an 8-second square wave charge cycle (2-seconds positive charge, 2-seconds off, 2-seconds negative charge, 2-seconds off). The delay time used after the charge shuts off was 200 milliseconds and the integration time used was 1,500 milliseconds divided into 10 windows.

The array chosen was the dipole-dipole array shown as follows:

DIPOLE-DIPOLE ARRAY



The dipole length ('a') was chosen to be 30 m. It was read to five separations ('na') which was therefore 150 m which gives a theoretical depth penetration of 75 to 100 m.

The dipole-dipole array was chosen because of its symmetry resulting in a greater reliability in interpretation. Furthermore, narrow, vein-like targets which occur within the area, can be missed by the pole-dipole array.

Stainless steel stakes were used for current electrodes and the potential electrodes were comprised of metallic copper in copper sulphate solution, in non-polarizing, unglazed, porcelain pots.

Readings were taken over 5 different lines as shown on the survey plan (map 3) to give a total survey length of 1750 m.

COMPILATION OF DATA

The chargeability (IP) values are read directly from the instrument and no data processing is therefore required prior to

plotting. The resistivity values are derived from current and voltage readings taken in the field. These values are combined with the geometrical factor appropriate for the dipole-dipole array to compute the apparent resistivities.

The results are shown in pseudosection form for the five lines on Maps 4 to 8, respectively, at a scale of 1:2,000. Each value is plotted at a point formed from the intersection of a line drawn from the mid-point of each of the two dipoles.

The survey plan of both grids is drawn on Map #3 at a scale of 1:2,000 with some interpretational results.

DISCUSSION OF RESULTS

The resistivity results correlate remarkably well with the photogeological interpretation done by Bayrock. His interpretation consists of lineations that are strongly indicative of fault and shear zones. Geological structure such as this responds as resistivity lows and these on the Azza claims are correlating directly with the photo-interpreted lineations. As a result, the lineations are verified to be fault and shear zones.

The resistivity data also shows the dip of the structure as seen on the pseudosections. The predominant dip is to the east though there are some dips to the west. On IPL-1, the dips are more difficult to determine because of the extensive resistivity low probably caused by a greater amount of alteration in this area. The 2 north-south pseudosections on either side of Azza lake (IPL-1 and -2) have picked up a photo-interpreted northeasterlytrending shear zone and show its dip to be to the southeast.

Where the resistivity pseudosections show that east and west dipping shear zones cross, prime targets for gold and silver mineralization are often found. This also holds true, of course, for shear zones that cross on the horizontal plane.

The resistivity values over the whole survey area, considering the surveys were done over a granitic rock-type, are unusually low. The values, for the most part, range from 200 to 800 ohmmeters whereas intrusive rock-types usually have resistivity values much higher. The lower values are, in the writer's opinion, likely caused by the shearing and associated epithermal vein alteration. In other words, the resistivity targets are resistivity lows within a broad resistivity low. The higher surficial values on IPL-3 at 1+80W are probably due to the intrusive being relatively free of alteration.

Surficial resistivity lows are shown on the survey plan. These indicate broad areas of alteration and are probably at a depth shallow enough for back-hoe trenching.

The induced polarization (chargeability) data is relatively flat showing a background of about 3 to 5, or perhaps 6, milliseconds. As a result, the only anomalous results are low-amplitude highs with values ranging from 6 to 10 milliseconds. One of these appears to correlate with the pyrite noted in trench #1 on IPL-1 at about 0+60W.

The low response of the IP is in agreement with the writer's experience on surveys over epithermal zones in other areas. Most of the sulphides produced in an epithermal system are destroyed by the acidic environment.

However, the low-amplitude highs are considered to be of interest, more so if they correlate with resistivity lows and even more so if they correlate with intersecting resistivity lows (which indicate cross-shearing). These highs, prime targets for further exploration, are located as follows:

1. IPL-1, 0+60W at depth

- 2. IPL-1, 2+70W at depth near intersecting resistivity lows
- 3. IPL-2, 2+10W to 2+70W at depth
- 4. IPL-2, 2+25W at depth
- 5. IPL-2, 0+70W near intersecting resistivity lows
- 6. IPL-3, 3+30W highest IP anomaly, near intersecting resistivity lows
- 7. IPL-3, 1+80W, at depth
- 8. IPL-3, 0+25W
- 9. IPL-5, 2+40S, very low-amplitude anomaly but it occurs close to trench 1 where pyritization has been noted

It must be noted that a shear zone without a correlating IP anomaly does not mean it is of no exploration interest. It may simply be that all the sulphides are destroyed and therefore there is no IP response.

Bayrock did soil sampling along the photo-interpreted shear zones. The two along which the best results were obtained have been labelled A and B, respectivelu. Trenching has been done on B and some encouraging gold and silver mineralization was encountered. However, A is of particular interest since it contains stronger soil geochemistry results and since it correlates with IP highs. A particular interesting soil anomaly occurs between IPL-1 and IPL-2 and reaches a high of 370 ppb.

Respectfully submitted, GEOTRONICS SURVEYS LTD.

David G. Mark, Geophysicist

December 15, 1986

REFERENCES

- Bayrock, L., Ph.D. P.Geol., Verbal communication and hand drawn maps of photo-geological interpretation and soil geochemistry results on Azza claim.
- Okulitch, A.V., <u>Geological Map of Thompson-Shuswap-Okanagan</u>, <u>B.C.</u>, Geological Survey of Canada, Open File 637, 1979(?).
- Little, H.W., <u>Geology Map of Kettle River (East Half)</u>, B.C., Geological Survey of Canada, Map 6-1957, 1957.

GEOPHYSICIST'S CERTIFICATE

I, DAVID G. MARK, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

That I am a Consulting Geophysicist of Geotronics Surveys Ltd., with offices located at #530-800 West Pender Street, Vancouver, British Columbia.

I further certify:

- I am a graduate of the University of British Columbia (1968) and hold a B.Sc. degree in Geophysics.
- 2. I have been practising my profession for the past 18 years and have been active in the mining industry for the past 21 years.
- 3. I am an active member of the Society of Exploration Geophysicists and a member of the European Association for Exploration Geophysicists.
- 4. This report is compiled from data obtained from induced polarization and resistivity surveys carried out by a crew of Geotronics Surveys Ltd., under my supervision and under the field supervision of Pat Cruickshank, geophysicist, from October 26th to November 2nd, 1986.
- 5. I do not hold any interest in Amulet Resources Corporation, nor in the property discussed in this report, nor will I receive any interest as a result of writing this report.
 - I consent to the use of this report by Amulet Resources Corporation in any prospectus or statement of material facts.

Dav G. Mark Geophysicist

December 15, 1986

1.

6.

GEOTRONICS SURVEYS LTD. --

AFFIDAVIT

This is to certify that I have caused induced polariz tion and resistivity surveys to be done over a portion of the Azza claims located on Dictator Creek, 1,900 m south of its confluence with Winnifred Creek, within the Vernon Mining Division to the value of the following:

FIELD:

Share of mob-demob	\$ 1 , 000
4-man crew, 6.5 days at \$1,500/day	9,750
Interpretive report	2,500
	13,250

Grand Total \$ 13

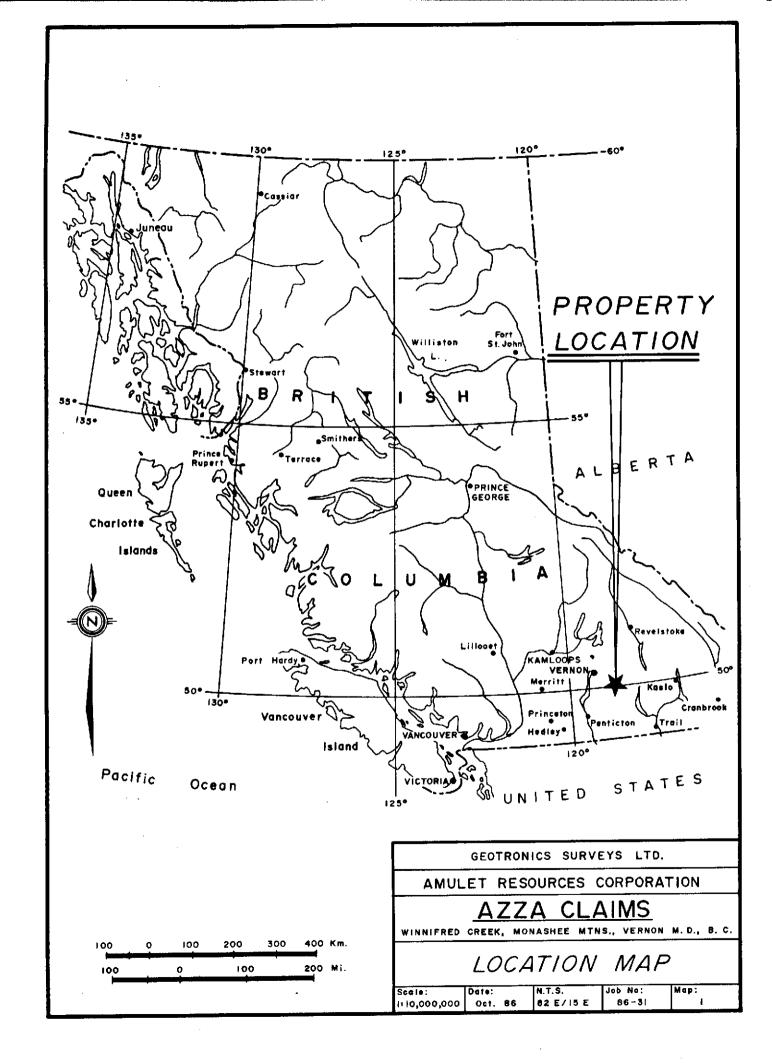
\$ 13,250

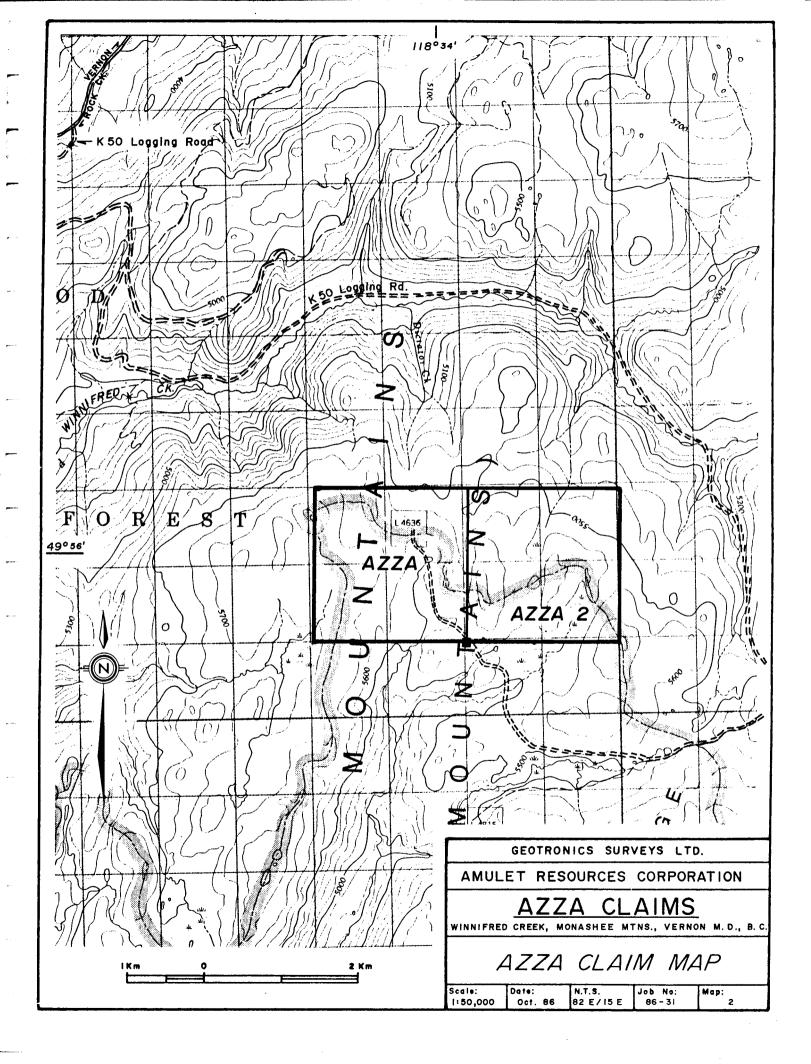
Respectfully submitted, GEOTRONICS SURVEYS LTD.

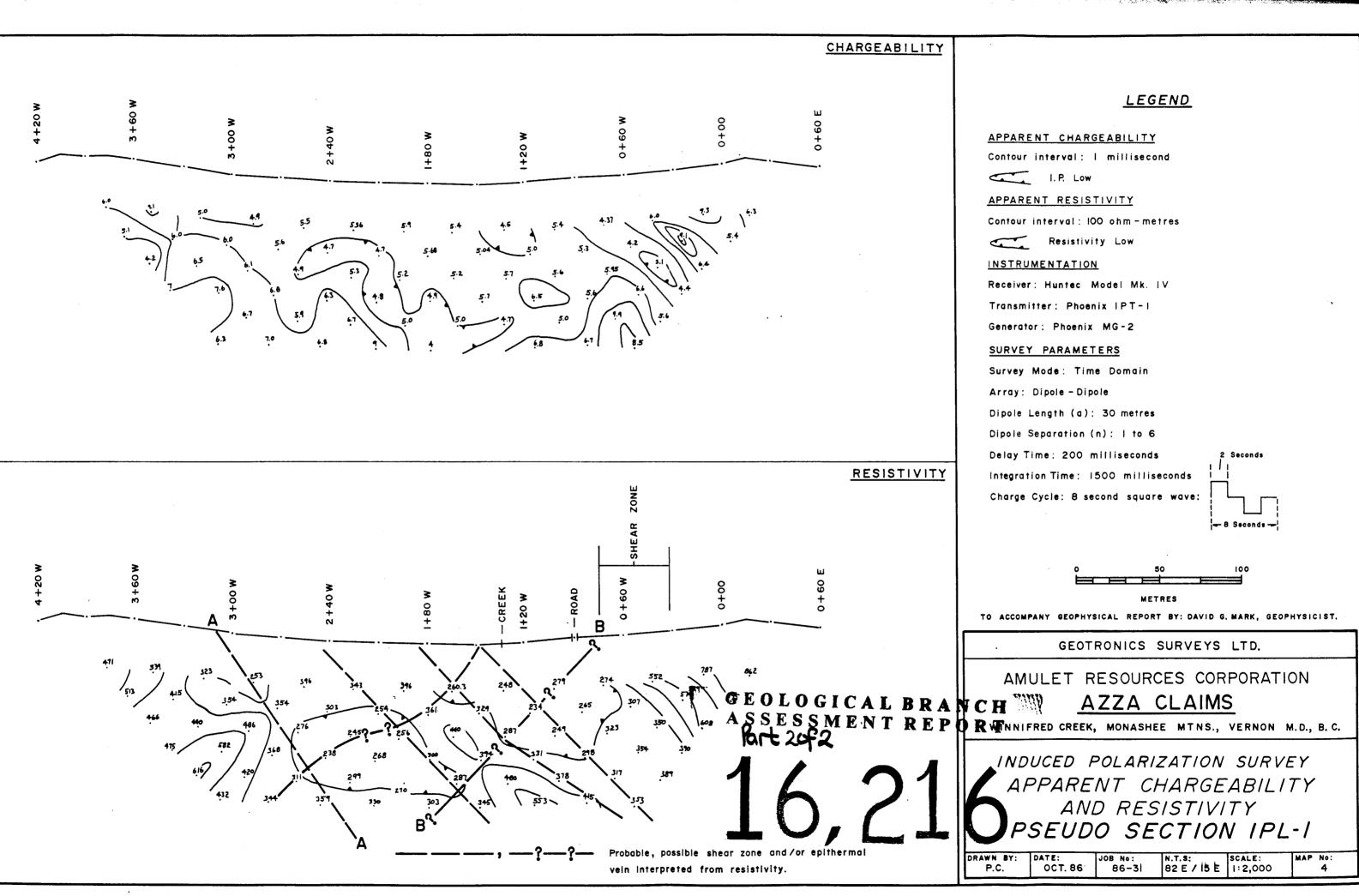
David G. Mark, Geophysicist Manager

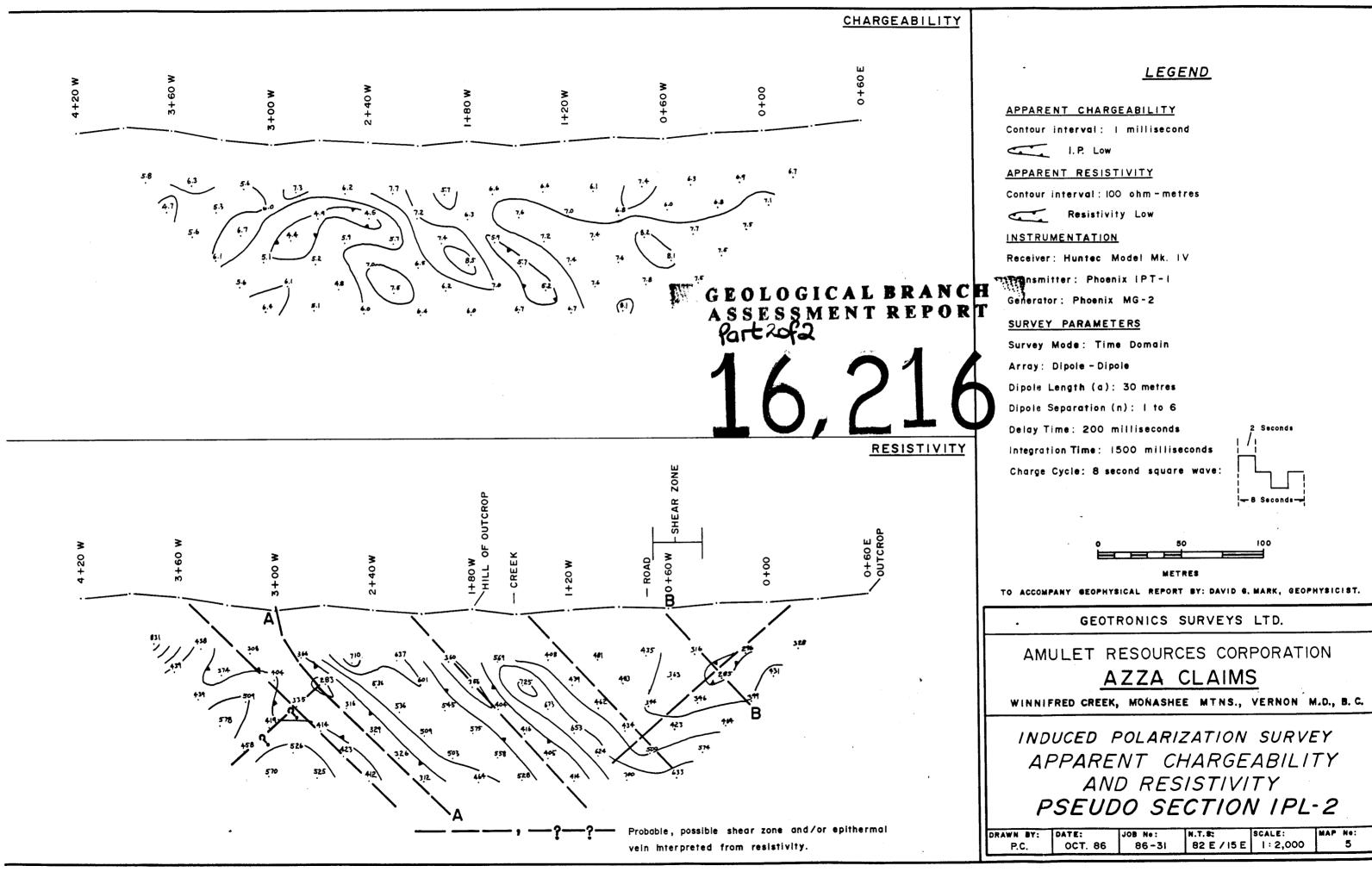
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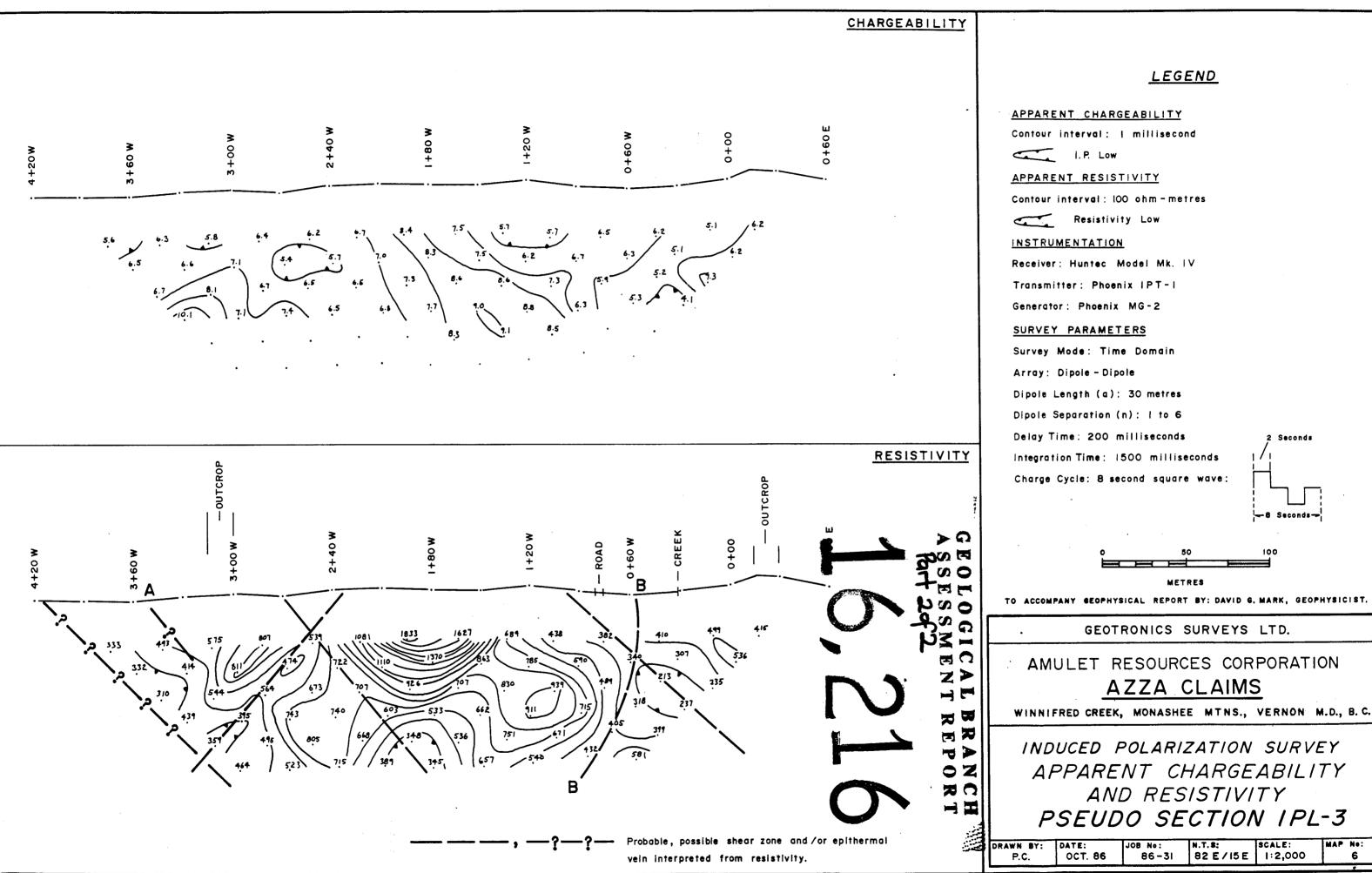




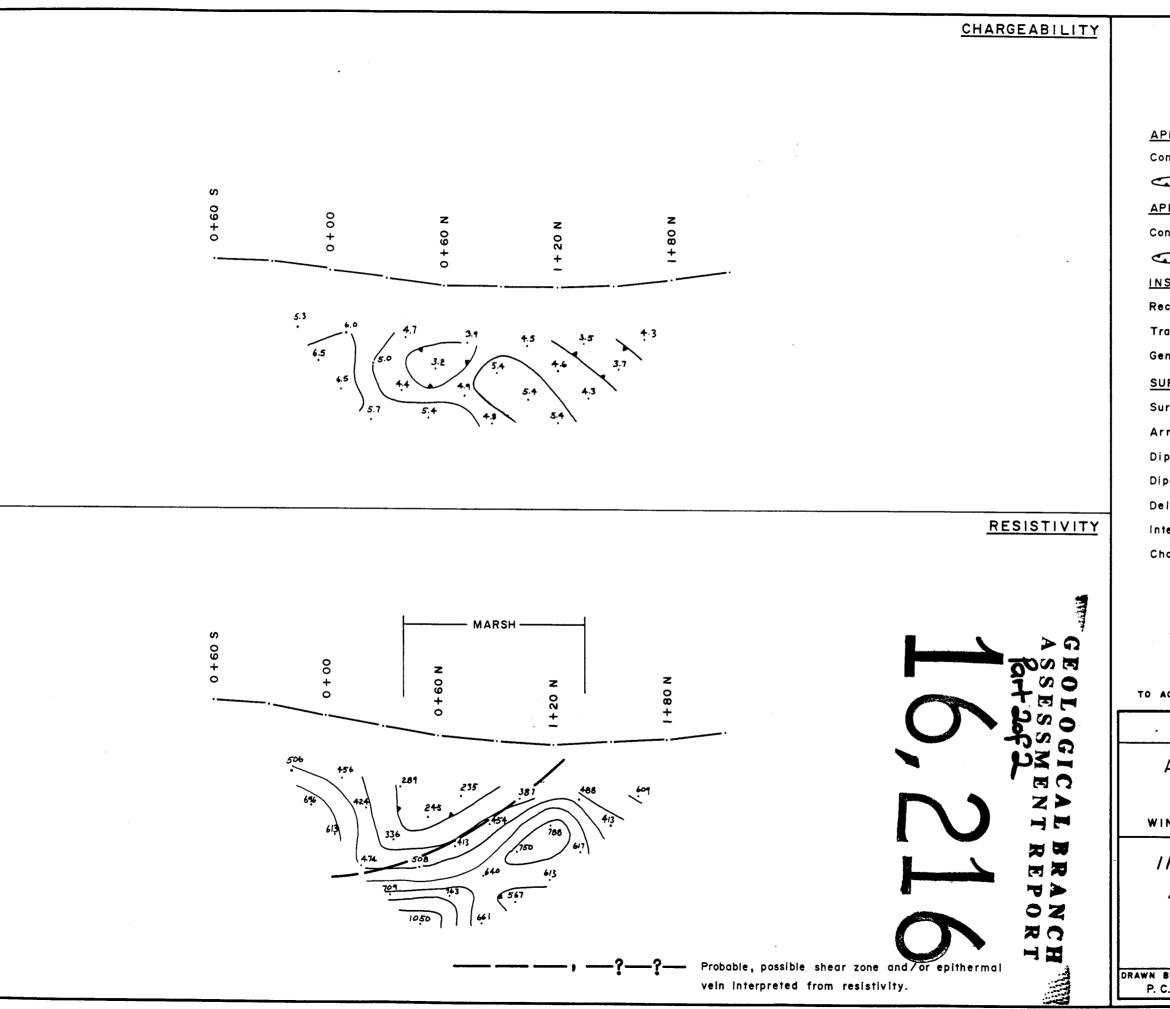




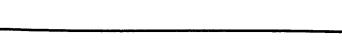
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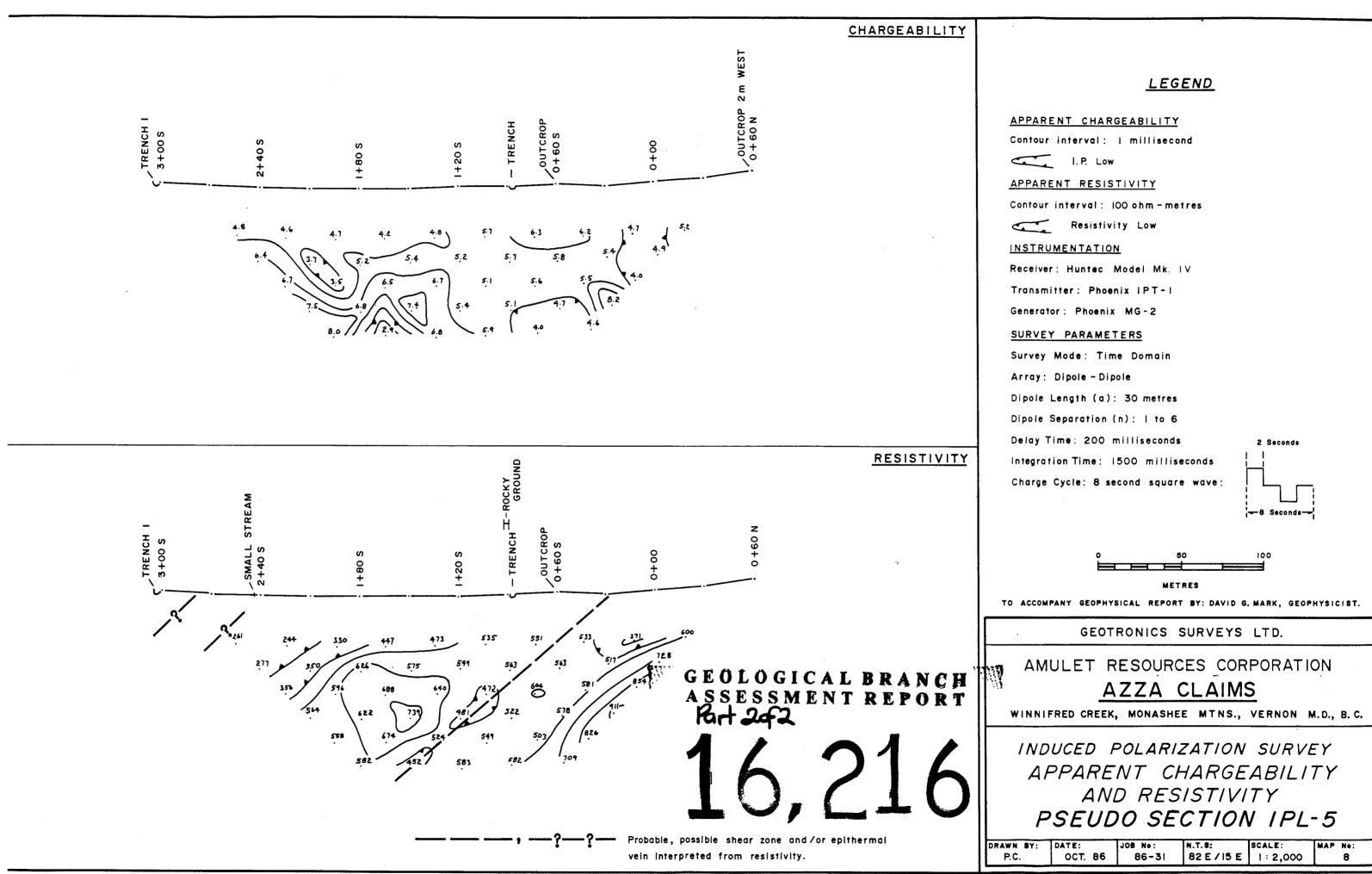


I



LEGEND

PPARENT CHARGEABILITY
ontour interval: millisecond
J. P. Low
PPARENT RESISTIVITY
ontour interval : 100 ohm - metres
Resistivity Low
STRUMENTATION
sceiver: Huntec Model Mk. IV
ransmitter: Phoenix IPT-1
enerator: Phoenix MG-2
JRVEY PARAMETERS
urvey Mode: Time Domain
rray: Dipole – Dipole
pole Length (a): 30 metres
pole Separation (n): 1 to 6
alay Time: 200 milliseconds
tegration Time : 1500 milliseconds
narge Cycle: 8 second square wave:
- 8 Seconds
0 50 100
METRES
ACCOMPANY GEOPHYSICAL REPORT BY: DAVID G. MARK, GEOPHYSICIST.
GEOTRONICS SURVEYS LTD.
AMULET RESOURCES CORPORATION
AZZA CLAIMS
INNIFRED CREEK, MONASHEE MTNS., VERNON M.D., B.C.
NDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY
AND RESISTIVITY
PSEUDO SECTION IPL-4
BY: DATE: JOB No: N.T.S: SCALE: MAP No: C. OCT. 86 86-31 82 E/15 E 1+2,000 7



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