GEOPHYSICAL REPORT
on the
MAGNETIC, ELECTROMAGNETIC and
INDUCED POLARIZATION SURVEYS
for
TARZAN GOLD INC
and
GLEN AUDEN RESOURCES LIMITED
on the Joint Venture Property
in
Hurtubise and Singer Townships
Larder Lake Mining Division, Ontario
by
Richard Lachapelle, B.Sc.Ing.Jr.
April, 1989

Dual
2.11658

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ABSTRACT

During the months of February and March, 1989, a combined magnetic, electromagnetic and induced polarization survey was conducted for Tarzan Gold Inc. and Glen Auden Resources Limited on their Joint Venture Property. The induced polarization done on grid #2 revealed two anomalous zones associated with structural lineaments worthy of further investigation by diamond drilling. A 3 hole diamond drill program totalling 2800 feet at an estimated cost of $100,500.00 is recommended.

INTRODUCTION

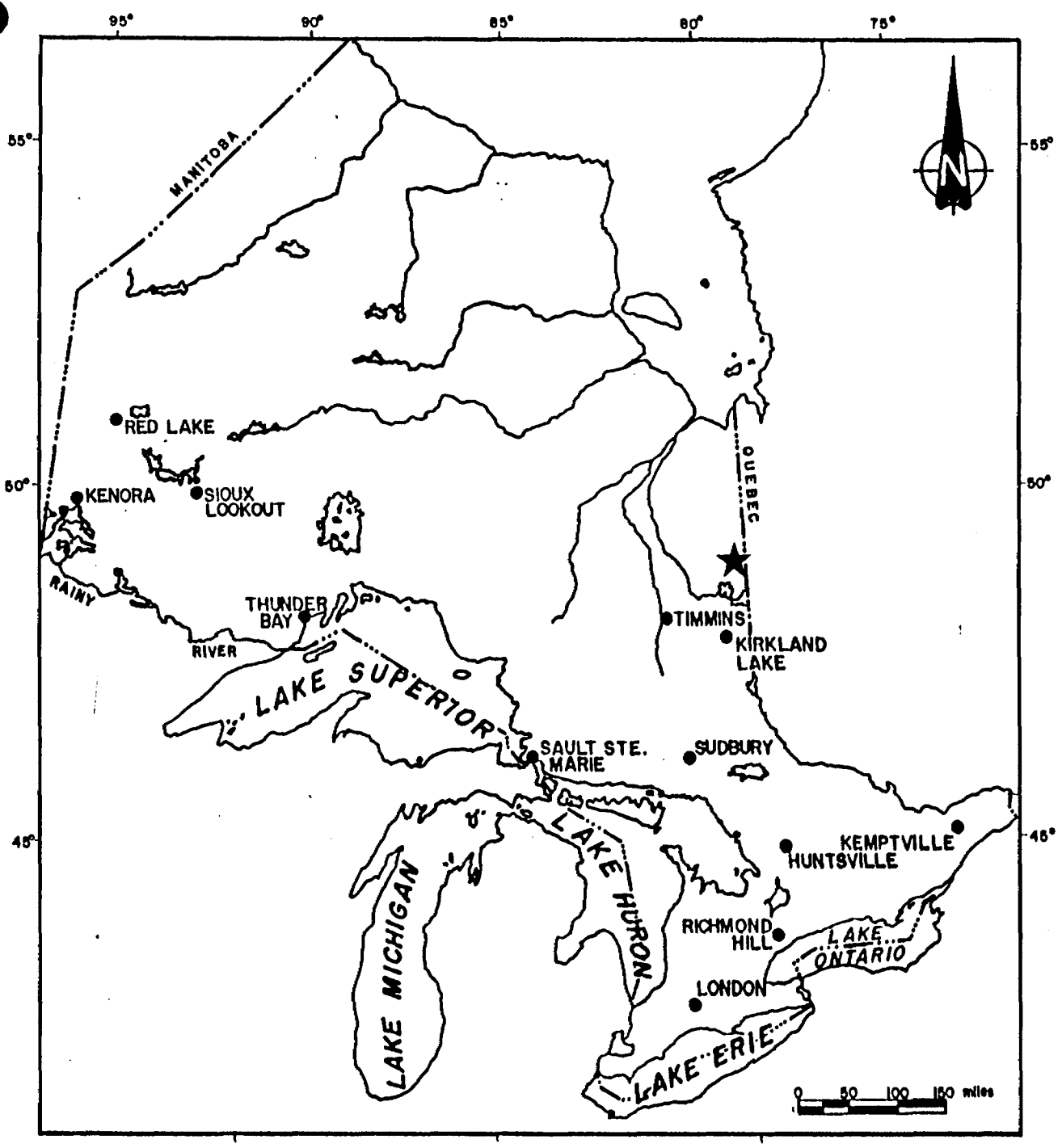
During the months of February and March, 1989, a combined magnetic, electromagnetic and induced polarization survey was conducted for Tarzan Gold Inc. and Glen Auden Resources Limited of Toronto, Ontario on their Joint Venture Property in Hurtubise and Singer Townships, Larder Lake Mining Division, Ontario.

The geophysical surveying was conducted by Robert S. Middleton Exploration Services Inc. of Timmins, Ontario.

The surveys were intended as a follow-up and complimentary to previous airborne INPUT MKVI and magnetic surveys completed for Glen Auden by Questor (1986) which delineated several interesting weak EM conductors as well as magnetically interpreted structural settings that merited further investigation.

LOCATION AND ACCESS

The property is located in the south portion of Hurtubise Township and northern portion of Singer Township approximately 75 km northeast of Cochrane, Ontario. The property was easily accessed via the Tomlinson all-seasons gravel road and the Singer all-seasons gravel road to a point approximately 5 km from the property from whence a winter bush road was constructed.



PROVINCE OF ONTARIO

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for TARZAN/GARL		
	Title PROPERTY LOCATION MAP-REGIONAL		
			Fig. 1
	Date: APR 89	Scale: 1"=160mi.	N.T.S.:
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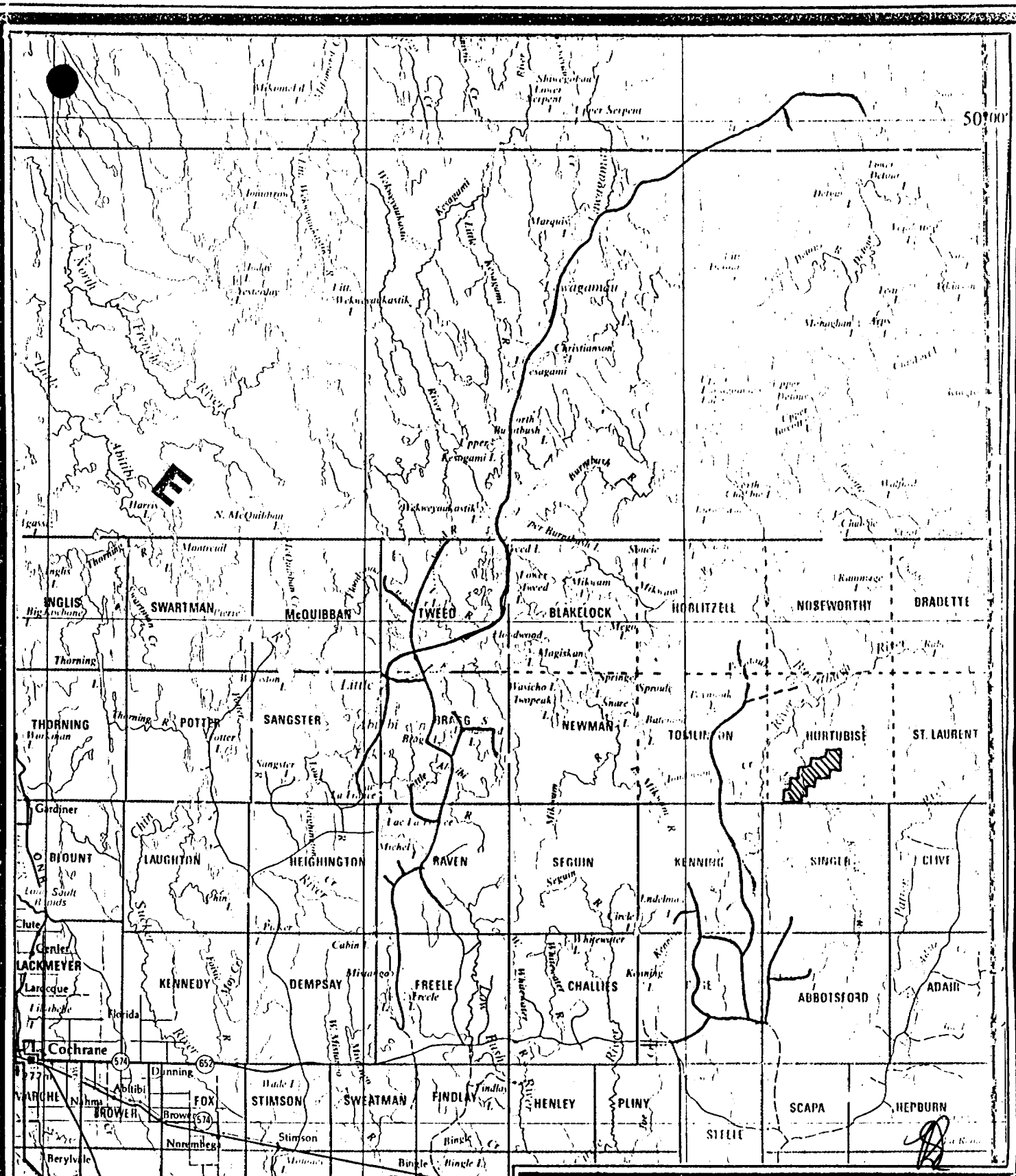

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for TARZAN/GARL		
	Title PROPERTY LOCATION MAP-LOCAL		
		Fig. 2	
	Date: APR.89	Scale: 1:600000	N.T.S.:
	Drawn:	Approved: R.L.	File: M181/265

CLAIM GROUP

The property consists of 191 unpatented contiguous mining claims in Hurtubise and Singer Townships, Larder Lake Mining Division, Ontario. The surveys were conducted over two grids denoted #1 and #2 in Hurtubise Township on 17 of the 191 claims as listed below.

CLAIM NO.	NO.	GRID#	RECORDING DATE
877641-649 incl	9	2	December 27, 1985
877698-699 incl.	2	2	December 27, 1985
877782-783 incl.	2	1	December 27, 1985
877787-788 incl.	2	1	December 27, 1985
878019-020 incl.	2	2	December 27, 1985
TOTAL	19 claims		

All the claims are held by Glen Auden Resources Limited. The claims are shown in Figure 3.

REGIONAL GEOLOGY

The following is quoted from Bowen, 1987:

"The area is part of the Casa Berardi Burntbush portion of the Abitibi Greenstone Belt. The rocks are of Early to Middle Archean Age and comprised of a series of mafic metavolcanic flows and intermediate to felsic pyroclastic tuffs and breccias. Interflow clastic metasedimentary rock units were deposited during hiatuses in volcanic activity as well as due to erosion when the supracrustal volcanics were uplifted during the period

of late stage felsic plutonic activity.

Sulphide and oxide affinity iron-rich rocks (iron formations) form as the result of exhalative activity and possible inhalative action along broken or rubbly submerged metavolcanic flow interfaces.

The "iron formations" are closely related to the gold mineralization as shown by the new Casa Berardi discovery by Inco, see Northern Miner (1984a,b), but upon detailed examination gold occurs within several rock types including oxide and sulphide iron formation, argillites, greywackes, conglomerate and felsic tuffs. Carbonate and silica alteration - veining with pyritization is directly associated with the gold values within the various rock types at the Inco discovery. Bedded stratabound pyrite zones within the oxide iron formation also contain important gold values. Assays released by Inco give gold grades and widths in widely spaced holes of 0.13/6.7 feet, 0.26/24.9 feet, 0.73/15/7 feet, 0.23/81.5 feet, Northern Miner (1984b).

Intersections announced by Teck Exploration Ltd. with partners Golden Hope Resources and Golden Group Explorations from the Casa Berardi area are 35.1 feet grading 0.2 oz/ton Au and 9.15 oz/ton Ag with 2.9% Cu and 15.37% Zn in the discovery hole which is 390 feet south of their boundary with Argentex Resources Exploration Corp., Northern Miner (1985b).

Other holes announced by Teck were: a hole underneath the discovery hole that yielded 0.35 oz/ton Au, 13.25 oz/ton Ag, 2.77% Cu and 25.53% Zn over 36/7 feet; stepout holes H-11 with 0.625 (cut) oz/ton Au and 0.82 oz/ton Ag over 25.1 feet; hole H-14 with 0.145 oz/ton Au and 4.29 oz/ton Ag over 17.3 feet; hole H-10 with 0.365 oz/ton Au and 7.80 oz/ton Ag over 19.4 feet; and hole H-13 with 0.321 oz/ton Au and 7.34 oz/ton Ag over 12.7 feet, Northern Miner (1985b).

The aeromagnetic data can be utilized to trace the iron formation markers, and zones where the magnetic gradient becomes less, indicate areas of change from oxide (high magnetic gradient) to sulfide and/or carbonate facies. In Noseworthy Township, one township to the north of Hurtubise Township, a gold showing is reported to occur near the Burntbush River (Cyril Knight showing) Thomson (1936) which is situated along the same magnetic horizon that links the iron formation markers in the Casa Berardi Area.

Approximately 3 miles east of the Cyril Knight discovery, Noseworthy Township, in Ontario, a discovery made in March, 1985 has been announced by Newmont Exploration of Canada Ltd. This zone occurs, associated with a sulfide-oxide-carbonate iron formation, on the south side of Noseworthy Lake and assays 0.116 oz/ton Au over 25 feet with a section grading 0.27 oz/ton Au over

8 feet, Northern Miner (1985b). This discovery was the result of overburden drilling giving high gold values (up to 1.5 oz in heavy media concentrates in till samples) coupled with EM magnetic and I.P. surveys. The geophysical work pin-pointed the diamond drill targets "up ice" from the overburden holes.

Thick overburden cover and general lack of outcrop in the region has prevented conventional gold prospecting and the principle exploration effort in the past 25 years has been base metal exploration using electromagnetic methods for outlining conductors. Gold analysis was not routinely done during these base metal programs, and as a result the gold potential for the area was not assessed nor was the geological setting appreciated until recent gold discoveries were made elsewhere along the belt.

Jensen and Langford (1985) has worked out a stratigraphic sequence for the Kirkland Lake-Larder Lake and Harker-Holloway Areas of Ontario which they have been able to link up with the stratigraphic sequences of Timmins worked out by Pyke (1982) and for the Noranda, Quebec Area worked out by Gelinas et al (1977).

Examination of the regional geological compilations by Bennett et al (1968), Pyke et al (1972) and Avramtcher and Lebel-Drolet (1979) that the stratigraphic sequence described and documented above is intruded by the Lake Abitibi and Mistawak Batholiths which squeeze a portion

of this stratigraphic sequence north and underlying the present Tarzan property. Previous work done in the area of the Tarzan claims by the author and colleagues while with another company confirmed a tholeiitic, metavolcanic oxide or sulfide iron formation horizon and calc-alkaline metavolcanic sequence underlying the Tarzan property. Aeromagnetic data suggests that considerable structural deformation has taken place and the INPUT data has delineated numerous conductors worthy of follow-up work. Clastic metasedimentary units are not known to underlie the property.

The underlying rock in the area is a series of tholeiitic and calc-alkaline metavolcanic units with intercalated clastic metasedimentary rocks all locally intruded by felsic plutonic and hypabyssal stocks and plugs. Chemical metasedimentary units usually represent hiatuses in volcanic activity or periods of hydrothermal activity and particular attention should be paid to these units, especially where structural deformation has been intense. These rocks form the western extremity of the Chibougamau-Matagami metavolcanic-metasedimentary belt and have been described in detail by Remick (1969)."

PREVIOUS WORK

The following is also quoted from Bowen, 1987:

"Previous work by the Ontario, Quebec and Canadian Governments has been in the form of geological surveys, regional geological/geophysical compilation maps and airborne magnetic and electromagnetic maps in Quebec and a joint Ontario, Quebec and Canada one inch to one mile aeromagnetic series. These publications may be purchased through the relevant government agencies.

Beginning on the west and going east, previous government work has been the regional aeromagnetic series published between 1960 and 1964. On the Quebec side INPUT surveys have been flown and the results may be purchased, as is, or those results may be purchased superimposed on the aeromagnetic maps. Geological reports by Thomson (1936) and Johns (1982) for Hurtubise and St. Laurent Townships, Ontario and Davies (1964) for Dieppe and Collet Townships, Quebec form most of the basis for the geological data. Regional geology compilations by Bennett et al (1968) for Ontario and Avramtchev and Lebel-Drolet (1979) for Quebec present the regional picture.

Work performed by companies and filed for assessment work credit with the provincial governments comprises the bulk of the information on the property. Work will be

summarized by company and the locations of survey blocks may be noted on the claim maps.

Newmont Exploration of Canada Ltd.

In 1982 an airborne geophysical survey was contract to Huntec Ltd. A Scintrex Tridem EM system and a Gulf fluxgate magnetometer unit was used and the survey covered a large area across the central parts of Hurtubise and St. Laurent Townships. Magnetic data provided a detailed lithological and structural picture of the area while the electromagnetic survey detected one important bedrock conductor associated with a magnetic anomaly. This survey and an interpretation by Arthur Brant was submitted for assessment credit.

Asarco Exploration Co. of Canada Ltd.

In 1965, Asarco Exploration completed a number of surveys on a block of 12 claims located in the east central part of St. Laurent Township, part of which is now the Tarzan Group. These consisted of a geological survey, electromagnetic Vertical Loop (Sharpe SE 300) and horizontal loop (McPhar), magnetic (Askania Tarsire Balance), and Induced Polarization surveys. Seven diamond drill holes were recommended to test magnetic anomalies. These intersected zones of disseminated pyrite and pyrrhotite.

In 1970 Asarco Exploration again undertook a geological survey, ground magnetometer (Sharpe MF-1

fluxgate) and horizontal loop electromagnetic (Ronka Mark IV) surveys on 143 claims surrounding earlier property and centered on Patten River.

Geophysical surveys located one significant conductor and a number of weak irregular responses requiring further investigation by drilling.

Four diamond drill holes were completed to test these anomalies and showed very little mineralization with assay results on surface samples being very low grade.

Johns (1982) reports that company geologists reported that mineralization approaches economic values but the tonnage is too small.

Falconbridge, Rio Tinto, Noranda, Asarco, Hudson Bay Exploration, Dome and Canadian Superior all have conducted exploration programs in the northern part of Hurtubise and St. Laurent and southern Noseworthy and Bradette. Most of these claim blocks were underlain by felsic to intermediate metavolcanics with some metasedimentary horizons. Numerous conductors were delineated by these surveys and some were drilled that had magnetic-electromagnetic correlation. Intersections ranged from chert-graphitic tuffs to disseminated pyrite. Assays were run for Au, Ag, Cu, Pb, Zn and in some cases, Ni all with disappointing results. These exploration programs focused on base metals even though gold was

assayed for. The approach should now be to look at this area as a possible gold camp and more relevance should be put on induced polarization/resistivity surveys to define drill targets. While this work was not conducted on the Tarzan claims important geological trends were delineated, the trends of which extend onto the Tarzan Quebec claims."

SURVEY PROCEDURE

MAGNETICS

Theory

The magnetic method is based on measuring alteration in the shape and magnitude of the earth's naturally occurring magnetic field caused by changes in the magnetization of the rocks in the earth.

These changes in magnetization are due mainly to the presence of the magnetic minerals, of which the most common is magnetite, and to a lesser extent ilmenite, pyrrhotite, and some less common minerals.

Magnetic anomalies in the earth's field are caused by changes in two types of magnetization: induced and remanent (permanent). Induced magnetization is caused by the magnetic field being altered and enhanced by increases in the magnetic susceptibility of the rocks, which is a function of the concentration of the magnetic minerals.

Remanent magnetism is independent of the earth's magnetic field, and is the permanent magnetization of the magnetic particles (magnetite, etc.) in the rocks. This is created when these particles orient themselves parallel to the ambient field when cooling. This magnetization may not be in the same direction as the present earth's field, due to changes in the orientation of the rock or the field.

The most common method of measuring the total magnetic field in ground exploration is with a proton precession magnetometer. This device measures the effect of the magnetic field on the magnetic dipole of hydrogen protons. This dipole is caused by the "spin" of the proton, and in a magnetometer these dipoles in a sample of hydrogen-rich fluid are oriented parallel to a magnetic field applied by an electric coil surrounding the sample. After this magnetic field is removed, the dipoles begin to precess (wobble) around their orientation under the influence of the ambient earth's magnetic field. The frequency of this precession is proportional to the earth's magnetic field intensity.

Field Method

The magnetics data were collected with a proton precession magnetometer, which measures the absolute value of the total magnetic field of the earth to an accuracy of $\pm$ 1n Tesla. The magnetometer is carried down the survey line by a single operator, with the sensor mounted on a short pole to remove it from the surface geologic noise. Readings are normally taken at 25m

intervals, and at 12.5m intervals where the operator observes a high gradient (anomaly).

The readings are corrected for changes in the earth's total field (diurnal drift) by repeating readings at base stations and "tie points" several times each day. This recorded drift is then applied to the data as a correction.

SURVEY PROCEDURE

MAX-MIN II

Theory

The Max-Min II is a frequency domain, horizontal loop electromagnetic (HLEM) system, based on measuring the response of conductors to a transmitted, time varying electromagnetic field.

The transmitted, or primary EM field is a sinusoidally varying field at any of five different frequencies. This field induces an electromotive force, (emf), or voltage, in any conductor through which the field passes. This is defined by:

$$\oint E.dl = \frac{-\partial \phi}{\partial t} \quad \text{(the Faraday Induction Principle)}$$

where E is the electric field strength in volts/metre (and so $\oint E.dl$ is the emf around a closed loop) and ϕ is the magnetic flux through the conductor loop. This emf causes a "secondary" current to flow in the conductor in turn generating a secondary electromagnetic field.

This changing secondary field induces an emf in the receiver coil (by the Faraday law) at the same frequency, but which differs from the primary field in magnitude and phase. The difference in phase (the phase angle) is a function of the conductance of the conductor(s), both the target and the overburden and host rock. The magnitude of the secondary is also dependant on the conductance, and also on the dimensions, depth, and geometry of the target, as well as on the interference from overburden and the host rock.

These two parameters (phase angle and magnitude) are measured by measuring the strength of the secondary field in two components: the real field or that part "in-phase" with the primary field; and the imaginary field, or that part in "quadrature" or 90 degrees out of phase from the primary field.

The magnitude and phase angle of the response is also a function of the frequency of the primary field. A higher frequency field generates a stronger response to weaker conductors, but a lower frequency tends to pass through weak conductors and penetrate to a greater depth. The lower frequency also tends to energise the full thickness of a conductor, and gives a better measure of its true conductivity-thickness product (conductance).

For these reasons two or more frequencies are usually used; the lower for penetration and accurate measure of good conductors, and the higher frequency for strong response to weak conductors.

Distinction between conductive targets, overburden, and host rock responses are made by studying the shape of the secondary field, and the difference in the frequency responses.

The transmitted primary field also creates an emf in the receiver coil, which is much stronger than the secondary, and which must be corrected for by the receiver. This is done by electronically creating an emf in the receiver, whose magnitude is determined by the distance from receiver to transmitter as set on the receiver, and whose phase is derived from the receiver via an interconnecting wire.

Field Method

The Max-Min II survey was carried out in the "maximum coupled" mode (horizontal co-planar). The transmitter and receiver are carried in-line down the survey line separated by a constant distance (in this case 150m) with the receiver leading. Three transmitter frequencies were used: 444 Hz, 1777 Hz and 3555 Hz and readings were taken every 25m. The transmitter and receiver are connected by a cable, for phase reference and operator communication.

SURVEY PROCEDURE

INDUCED POLARIZATION/RESISTIVITY

Theory

The induced polarization (IP) and resistivity exploration methods are electrical methods based on measuring the response of the earth to an applied direct current.

The principle is to apply a known electric current to the earth, and measure the electric potential created by it at the survey location. The resistivity, a bulk property of the rock itself, is calculated from the difference between the applied current and the measured potential, corrected for the geometry of the current and potential electrode configuration.

The induced polarization measurement is based on the "over-voltage" effect. Most of the electric current carried by the earth is conducted by the flow of ions in the solutions filling the pore spaces in the rock. At the surface of any metallic particle in the path of current low, the ionic flow in the solution is changed to an electronic flow in the metal. In the process of the change, an electric charge of trapped ions is built up at the surface of the metal, storing a small voltage. If the voltage increases, the apparent resistance of the rock also increases. If the applied current flow is decreased or stopped, the voltage will create a potential in the opposite direction to the original applied current, and start a current flowing in the opposite direction.

In time domain induced polarization the applied current is abruptly stopped, and the reverse potential created by the over-voltage effect is measured over time as it quickly decays. The definition of chargeability is:

$$M = \frac{V\ (t = \infty) - V\ (t = 0)}{V(t = \infty)}$$

where V(t = 0) is the voltage at turnoff, and V(t = ∞) is the late-time voltage. This is usually measured over a certain time period after turn-off as an integral of voltage over time, corrected for the length of the time period, and normalised to the voltage at time 0. It is usually expressed in millivolts per volt (mV/V).

The over-voltage charge taken time to build-up or decay, so that if the applied current is caused to oscillate more and more frequently, the apparent resistance will decrease, as the over-voltage does not have time to build at higher frequencies. This effect is used to measure the IP effect in frequency domain IP surveys, wherein the current is applied at two or more frequencies, and the "percent frequency effect" (PFE) is calculated from the change in resistivities (P) between the different frequencies.

$$PFE = \frac{P\ (\text{low freq}) - P\ (\text{high freq})}{P\ (\text{high freq})} \times 100\%$$

Although not identical, for most purposes the PFE is approximately equal to the chargeability.

Because the IP effect responds to effects on small metallic particles, it is particularly useful for detecting disseminated

metallic minerals. Also because of this, it will respond strongly to the "membrane polarization" created by the electric charges resident on clay particles or layered or fibrous minerals.

Field Method

The survey was conducted using a dipole-dipole array with a dipole length of 25m and array spacings of n = 3,4,5,6 dipoles. This array configuration involves having two dipoles separated in turn by each 'n' interval moving in-line down each survey line. One dipole is the receiver measuring Vp, the potential, and the other dipole is the transmitter.

For this survey the measurements were taken in the time domain, so the transmitted current was a bipolar on-off square wave with each on or off lasting two seconds. Measurements of resistivity and chargeability were taken.

PERSONNEL AND EQUIPMENT

The short magnetic survey was performed by a one-man crew, the electromagnetic survey was performed by a two-man crew and the induced polarization survey was performed by a four-man crew all supplied by Robert S. Middleton Exploration Services Inc. The systems used consisted of:

-for the magnetic survey: a Barringer Research GM-122 proton precession magnetometer;

-for the electromagnetic survey: an APEX Parametrics MaxMin II transmitter and receiver;

-for the induced polarization survey: a Scintrex IPR-11 time domain receiver and a Huntec 7.5 KW transmitter.

Specifications for these instruments are included in Appendix A.

SURVEY STATISTICS

The magnetic survey comprised a total of 28.8 line km of total field readings, it was performed on grid #2 only. The electromagnetic survey comprised a total of 33.0 line km of three frequency electromagnetics, 24.0 km were read on grid #2 and 9.0 km were read on grid #1. The induced polarization survey comprised a total of 5.2 line km of time domain chargeability and resistivity measurements, 4.5 km were read on grid #2 and 0.7 km were read on grid #1.

INTERPRETATION

Grid #1

Max-Min II HLEM survey (see Figures 6,7,8 and 12):

The EM survey failed to reveal any significant bedrock conductors worthy of further work.

Induced polarization survey:

The IP survey conducted on line 3+00W failed to reveal any significant bedrock conductor worthy of further work.

Grid #2

Total field magnetic survey (see Figures 4,5 and 13):

The magnetic survey delineated two sub-parallel northeasterly trending axes of high magnetic signature within a broad area of low

magnetic signature. These axes are denoted A-A and B-B respectively and are illustrated on the compilation map, Figure 13.

Profiles taken across strike on these axes (see Table 1) indicate by the half-width method an average depth of 40 meters. Overburden drilling results by Guoth (1989) indicate an average depth of 30m.

These axes are interpreted to probably represent oxide facies iron formations with possible sulfide facies in intervening magnetically low areas which are further interpreted to represent structural lineaments or faults. The broad area of low magnetic signature is interpreted to represent mafic volcanic rocks.

Minor cross-cutting faults are also noted (see Figure 13). These faults were also delineated by the previous airborne INPUT and total field magnetometer survey (Konning and Caira, 1986).

TABLE 1

Line: 4+00E

Magnetic Value (gammas)	Station	Interpreted Depth
1058	3+75S	
1116	3+62.5S	
1200	3+50S	
1291	3+37.5S	
1386	3+25S	
1456	3+12.5S	
1496	3+00S	
1502	2+87.5S	
1466	2+75S	
1418	2+62.5S	
1343	2+50S	
1276	2+37.5S	
1216	2+25S	
1164	2+12.5S	
1126	2+00S	
1100	1+87.5S	
1086	1+75S	40m

Max-Min II HLEM survey (see Figures 9, 10, 11 and 13):

The EM survey delineated two sub-parallel northeasterly trending weak conductor axes. These axes are denoted A'-A' and B'-B' respectively and are illustrated on the geophysical compilation map, Figure 13.

Values of depth, dip and conductivity-thickness for selected points along the conductor axes as well as average values for each conductor axis are given in Table 2.

These conductor axes are spatially associated with the axes of high magnetic signature: ie. they are located on the northern flank of the magnetic axes.

The conductor axes are interpreted to possibly represent stratabound graphitic horizons parallel and adjacent to the sulfide/oxide facies iron formation or possibly sulfide horizons within sulfide/oxide facies iron formations.

TABLE 2

Line	Station	Conductance (mhos)	Dip (approx)	Depth (m)
2+00E	6+50S	1.6	-45	20
1+00E	5+50S	0.9	-35	26
1+00E	1+00N	2.4	-40	41
2+00E	1+25N	1.4	-45	26
3+00E	1+25N	1.4	-40	30
15+00E	0+75S	2.4	-45	41
average		1.5	-40	35

Induced polarization survey (see Figure 13):

The limited IP survey delineated two weak to moderate chargeability anomalies. The first anomaly is a weak chargeability anomaly denoted D1 located between stations 1+25S and 0+50N on line 2+00E. This anomaly is associated with an interpreted fault cross-cutting the iron formation, and crosses the axes of the interpreted fault. The second anomaly is a moderate chargeability anomaly denoted D2 located near station 0+25N on line 9+00E. This anomaly is also associated with a large interpreted dextral fault that breaks the iron formation. The anomaly is also located on the eastern edge of the northern portion of the iron formation, denoted A-A at the intersection of another easterly to northeasterly trending fault.

CONCLUSIONS AND RECOMMENDATIONS

The magnetic survey delineated several structural lineaments on grid #2 that could be possibly associated with previous metals. The EM anomalies delineated on grid #2 are too weak to be of any consequence and should not be considered as viable drill targets. However, the follow-up induced polarization done on grid #2 revealed two anomalous zones associated with structural lineaments worthy of further investigation by diamond drilling. A 3 hole diamond drill program totalling 2800 feet at an estimated cost of $100,550.00 is recommended.

The proposed collar locations are as follows:

Line	Station	Dip	Length(ft)	Azimuth	Comments
2+00E	1+50S	-50	800	0	Investigation of D1
2+00E	0+75S	-50	800	0	Investigation of cross-faulted zone
9+00E	0+50S	-50	1200	0	Investigation of faulted zone

The proposed budget for the follow-up exploration program is as follows:

BUDGET

Diamond drilling: 2800 feet @ $35./foot (includes core splitting and assaying, supervision, logging and subsistence)	$ 98,000.00
Reports and filing	2,500.00
SUB TOTAL	$100,500.00
10% Contingency	10,050.00
TOTAL	$110,550.00

Respectfully submitted

Richard Lachapelle ing. jr.

Richard Lachapelle, B.Sc.Ing.Jr.

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CERTIFICATION

I, Richard Lachapelle, of 136 Cedar Street South, in the City of Timmins, Province of Ontario, certify as follows concerning my report on the Tarzan Gold Inc. and Glen Auden Resources Limited joint venture property in Hurtubise and Singer Townships, Larder Lake Mining Division, Ontario and dated April 28, 1989:

1. I am a junior member in good standing of l'Ordre des Ingenieurs du Quebec.

2. I am a graduate of l'Universite de Sherbrooke, Sherbrooke, Quebec with a B.Sc. degree in Physics, obtained in 1984.

3. I am a graduate of l'Ecole Polytechnique de Montreal, Montreal, Quebec with a B.Ing degree in Geological Engineering obtained in 1987.

4. I have been practising in Canada for the past year.

5. I have no direct interest in the properties, leases or securities of Tarzan Gold Inc. or Glen Auden Resources Limited, nor do I expect to receive any.

6. The attached report is a product of:
   a) Examination of data included in the report which was collected on the property concerned.

Dated this 28th day of April, 1989
TIMMINS, Ontario

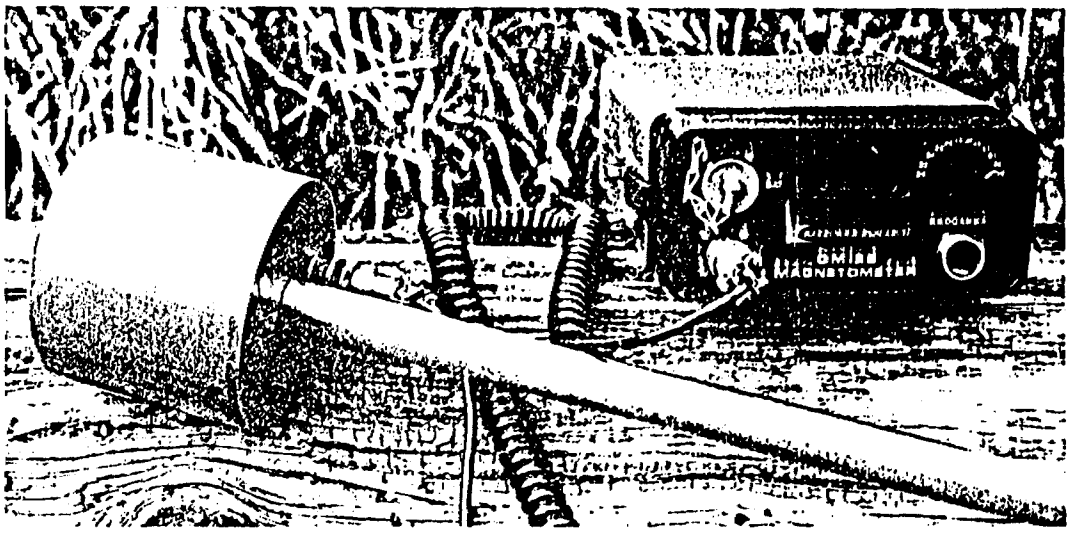
Richard Lachapelle ing. jr.

Richard Lachapelle, B.Sc.Ing.Jr.
Geophysicist

APPENDIX A

BARRINGER RESEARCH

MINI PROTON MAGNETOMETER
Model GM-122



DESCRIPTION

The Barringer GM-122 mini proton magnetometer provides an absolute measurement of the earth's total magnetic field intensity. The rugged design is combined with lightweight, small size and simple operation.

FEATURES

• High Sensitivity	± 1 gamma
• Toroidal Sensor	No alignment or calibration required
• Automatic Lock-out	Last three digits blanked if gradient exceeds 600 gammas per meter
• Rugged Design	Withstands extreme shock. Operates at −40 °C to 55 °C, 0 to 100% relative humidity
• Lightweight	Weight of total system 5.1 kg.
• Easy Operation	Single button initiates digital display

APPLICATIONS

- Geo-magnetic surveying
- Mineral and petroleum exploration
- Search for buried objects
- Archaeological prospecting

SYSTEM COMPONENTS

- Lightweight console and harness
- Toroidal sensor and cable
- Five foot extendable aluminum shaft
- Impact resistant shipping case

SPECIFICATIONS:

Sensitivity/Resolution	1 gamma
Absolute Accuracy	±10 ppm — better than ±1 gamma
Range	20,000 — 100,000 gammas in 12 ranges with 100% overlap
Gradient Tolerance	600 gammas/meter
Operating Range	−40°F to + 131°F −40°C to + 55°C 0 to 100% relative humidity (splash proof)
Size	console 3.5" x 7" x 11" (9 cm x 18 cm x 28 cm) sensor 4⅞" diameter (12 cm) 4⅜" height (11 cm)
Weight	console 5.5 lbs (2.4 kg) sensor 4.0 lbs (1.8 kg) staff 2.0 lbs (0.9 kg)
Output	5 digit incandescent filament display with a 3 or 6 second sampling rate
Sensor	toroidal, omni-directional and noise cancelling
Logic Function	early low battery indicator in the form of a L.E.D. notifies the operator when 250 readings remain in the power supply lock indicator — last 3 digits of the display are blanked off when the gradient is exceeded or when the instrument is operated incorrectly digital readout test — all display readouts light up to permit visual inspection
Construction	high impact low temperature plastic: polyurethane and lexan case, shock and vibration proof mountings
Power Supply	12 alkaline "D" cells provide up to 10,000 readings
Option Accessories	external battery belt staff extender sensor backsack for one-hand operation

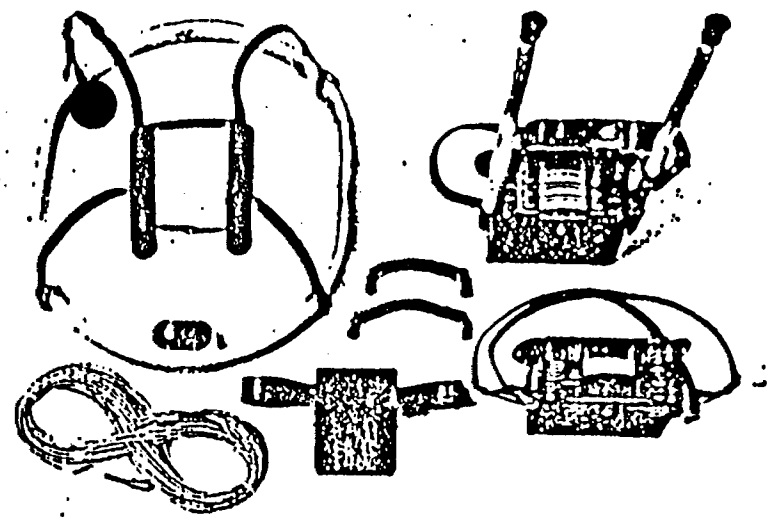
Barringer Research Limited
304 Carlingview Dr.
Metropolitan Toronto
Rexdale, Ontario, Canada M9W 5G2
Phone: 416-675-3870
Telex: 06-989183

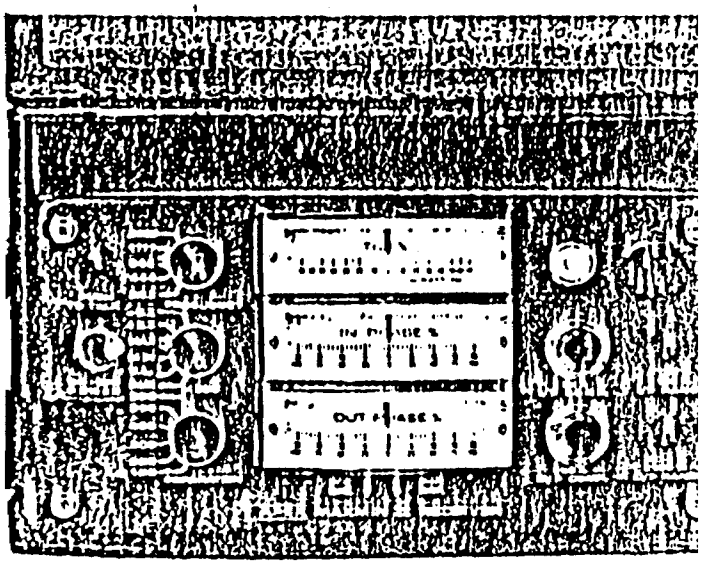
Representative:

APEX MAXMIN II PORTABLE EM

- Five frequencies: 222, 444, 888, 1777 and 3555 Hz.
- Maximum coupled (horizontal-loop) operation with reference cable.
- Minimum coupled operation with reference cable.
- Vertical-loop operation without reference cable.
- Coil separations: 25, 50, 100, 150, 200 and 250 m (with cable) or 100, 200, 300, 400, 600 and 800 ft.
- Reliable data from depths of up to 180 m (600 ft).
- Built-in voice communication circuitry with cable.
- Tilt meters to control coil orientation.

NOW ALSO ±4% QUADRATURE FULL SCALE.





SPECIFICATIONS :

Frequencies: 222, 444, 888, 1777 and 3555 Hz.

Modes of Operation:
- MAX: Transmitter coil plane and receiver coil plane horizontal (Max-coupled; Horizontal-loop mode). Used with reference cable.
- MIN: Transmitter coil plane horizontal and receiver coil plane vertical (Min-coupled mode). Used with reference cable.
- V.L. : Transmitter coil plane vertical and receiver coil plane horizontal (Vertical-loop mode). Used without reference cable, in parallel lines.

Coil Separations: 25, 50, 100, 150, 200 & 250 m (MMII) or 100, 200, 300, 400, 600 and 800 ft. (MMIIF).
Coil separations in V.L. mode not restricted to fixed values.

Parameters Read:
- In-Phase and Quadrature components of the secondary field in MAX and MIN modes.
- Tilt-angle of the total field in V.L. mode.

Readouts:
- Automatic, direct readout on 90 mm (3.5") edgewise meters in MAX and MIN modes. No nulling or compensation necessary.
- Tilt angle and null in 90 mm edgewise meters in V.L. mode.

Scale Ranges:
In-Phase: ±20%, ±100% by push-button switch.
Quadrature: ±20%, ±100% by push-button switch.
Tilt: ±75% slope.
Null (V.L.): Sensitivity adjustable by separation switch.

NOW ALSO ±4% QUADRATURE FULL SCALE.

Readability: In-Phase and Quadrature: 0.25 % to 0.5 % ; Tilt: 1 % .

Repeatability: ±0.25% to ±1% normally, depe on conditions, frequencies a separation used.

Transmitter Output:
- 222 Hz : 220 Atm²
- 444 Hz : 200 Atm²
- 888 Hz : 120 Atm²
- 1777 Hz : 60 Atm²
- 3555 Hz : 30 Atm²

Receiver Batteries: 9V trans. radio type batteri Life: approx. 35 hrs. continu ty (alkaline, 0.5 Ah), less i weather.

Transmitter Batteries: 12V 8 Ah Gel-type rechar battery. (Charger sup

Reference Cable: Light weight 2-conductor cable for minimum friction. U ed. All reference cables o at extra cost. Please s

Voice Link: Built-in intercom syste voice communication betwe ceiver and transmitter ope In MAX and MIN modes, v ference cable.

Indicator Lights: Built-in signal and referenc ing lights to indicate erro readings.

Temperature Range: -40°C to +60°C (-40°F to +

Receiver Weight: 8kg (13 lbs.)

Transmitter Weight: 13kg (29 lbs.)

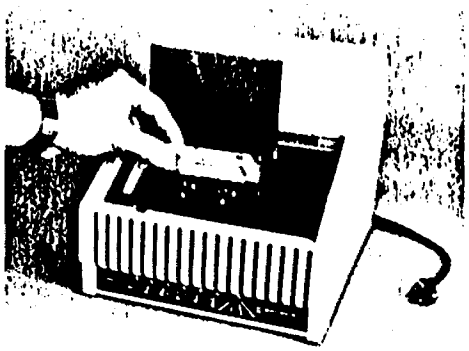
Shipping Weight: Typically 60kg (135 lbs.), d ing on quantities of refe cable and batteries in Shipped in two field/shipping

Specifications subject to change without notif

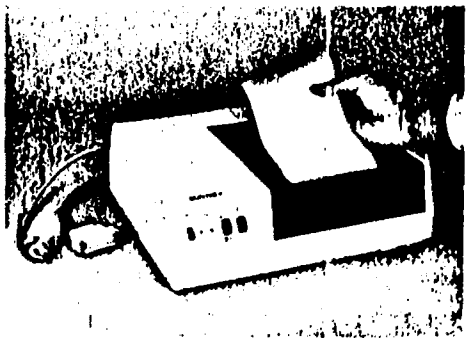
APEX PARAMETRICS LIMITED
200 STEELCASE RD. E., MARKHAM, ONT., CANADA, L3R 1G2

Technical Description of the IPR-11 Broadband Time Domain IP Receiver

Input Potential Dipoles	1 to 6 simultaneously
Input Impedance	4 megohms
Input Voltage (Vp) Range	100 microvolts to 6 volts for measurement. Zener diode protection up to 50 V
Automatic SP Bucking Range	±1.5 V
Chargeability (M) Range	0 to 300 mV/V (mils or 0/00)
Absolute Accuracy of Vp, SP and M	Vp; ±3% of reading for Vp > 100 microvolts SP; ±3% of SP bucking range M; ±3% of reading or minimum ±0.5m V/V
Resolution of Vp, SP and M	Vp; 1 m V above 100 m V approaching 1 microvolt at 100 microvolt SP; 1 m V M; 0.1 m V/V except for M_0 to M_3 in 0.2 second receive time where resolution is 0.4 m V/V.
IP Transient Program	Ten transient windows per input dipole. After a delay from current off of t, first four windows each have a width of t, next three windows each have a width of 6t and last three windows each have a width of 12t. The total measuring time is therefore 58t. t can be set at 3, 15, 30 or 60 milliseconds for nominal total receive times of 0.2, 1, 2 and 4 seconds.
Vp Integration Time	In 0.2 and 1 second receive time modes; 0.51 sec In 2 second mode; 1.02 sec In 4 second mode; 2.04 sec
Transmitter Timing	Equal on and off times with polarity change each half cycle. On/off times of 1, 2, 4 or 8 seconds with ±2.5% accuracy are required.
Header Capacity	Up to 17 four digit headers can be stored with each observation.
Data Memory Capacity	Depends on how many dipoles are recorded with each header. If four header items are used with 6 dipoles of SP, Vp and 10 M windows each, then about 200 dipole measurements can be stored. Up to three Optional Data Memory Expansion Blocks are available, each with a capacity of about 200 dipoles.
External Circuit Check	Checks up to six dipoles simultaneously using a 31 Hz square wave and readout on front panel meters, in range of 0 to 200 k ohms.
Filtering	RF filter, spheric spike removal; switchable 50 or 60 Hz notch filters, low pass filters which are automatically removed from the circuit in the 0.2 sec receive time.
Internal Calibrator	1000 mV of SP, 200 mV of Vp and 24.3 mV/V of M provided in 2 sec pulses.
Digital Display	Two, 4 digit LCD displays. One presents data, either measured or manually entered by the operator. The second display; 1) indicates codes identifying the data shown on the first display, and 2) shows alarm codes indicating errors.
Analog Meters	Six meters for; 1) checking external circuit resistance, and 2) monitoring input signals.
Digital Data Output	RS-232C compatible, 7 bit ASCII, no parity, serial data output for communication with a digital printer, tape recorder or modem.



Industry standard cassette recorders such as this MFE-2500 can be connected directly to the IPR-11.



DP-4 Digital Printer

Technical Description of the IPR-11 Broadband Time Domain IP Receiver

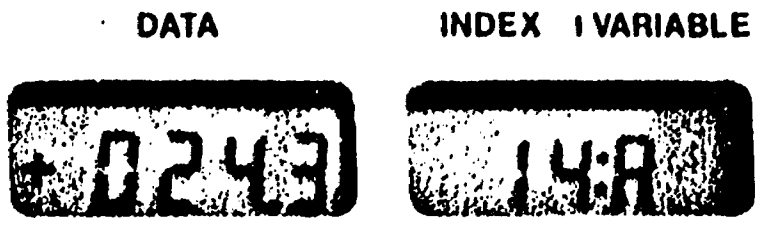
Standard Rechargeable Power Supply	Eight Eveready CH4 rechargeable NiCad D cells provide approximately 15 hours of continuous operation at 25°C. Supplied with a battery charger, suitable for 110/230 V, 50 to 400 Hz, 10 W.
Disposable Battery Power Supply	At 25°C, about 40 hours of continuous operation are obtained from 8 Eveready E95 or equivalent alkaline D cells. At 25°C, about 16 hours of continuous operation are obtained from 8 Eveready 1150 or equivalent carbon-zinc D cells.
Dimensions	345 mm x 250 mm x 300 mm, including lid.
Weight	10.5 kg, including batteries.
Operating Temperature Range	-20 to +55°C, limited by display.
Storage Temperature Range	-40 to +60°C.
Standard Items	Console with lid and set of rechargeable batteries, 2 copies of manual, battery charger.
Optional Items	Multidipole Potential Cables, Data Memory Expansion Blocks, Statistical Analysis Program, Crystal Clock, SPECTRUM Program, Digital Printer, Cassette Tape Recorder, Modem.
Shipping Weight	25 kg includes reusable wooden shipping case.

SCINTREX

222 Snidercroft Road
Concord Ontario Canada
L4K 1B5

Telephone: (416) 669-2280
Cable: Geoscint Toronto
Telex: 06-964570

Geophysical and Geochemical
Instrumentation and Services



IPR-11 LCD displays, actual size

HUNTEC

M4 7.5 KW IP TRANSMITTER

SPECIFICATIONS

a)	Power:	96-144 V line to neutral, 3 phase, 400 Hz (from Huntec generator set), 7500W
b)	Output:	Voltage: 100-3200V dc in 10 steps Current: 16A maximum on low ranges
c)	Current regulator:	<.1% current change for 10% change in load resistance Settling time to 1% approx. 15 msec.
d)	Output frequency (selectable on front panel):	1/16 Hz to 1 Hz (time domain and complex resistivity) 1/16 Hz to 4 Hz (frequency domain)
e)	Frequency accuracy:	± 50 ppm, -30°C to 60°C
f)	Output duty cycle-defined as $t_{ON}/(t_{ON} + t_{OFF})$:	½ to 15/16 in increments of 1/16 (time domain) 15/16 (complex resistivity) 3/4 (frequency domain)
g)	Output current meter:	Two ranges - 0-10A, 0-20A
h)	Ground resistance meter:	Two ranges - 0-10K ohms, 0-100K ohms
i)	Input voltage meter:	0-150V
j)	Dummy load:	Two levels: 2000W, 6000W
k)	Temperature range:	-34°C to 50°C
l)	Size:	53 x 43 x 43cm (21 x 17 x 17 ins)
m)	Weight:	50 kg (110 lbs.)

8+50 S 7+50 S 7+00 S 6+50 S 6+00 S 5+50 S 5+00 S 4+50 S

filter

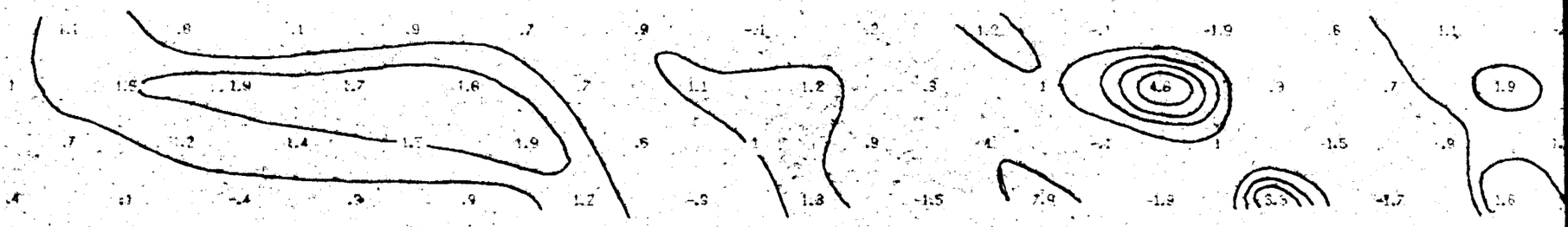
n=1

n=2

n=3

n=4

n=5



8+00 S 7+50 S 7+00 S 6+50 S 6+00 S 5+50 S 5+00 S 4+50 S

filter

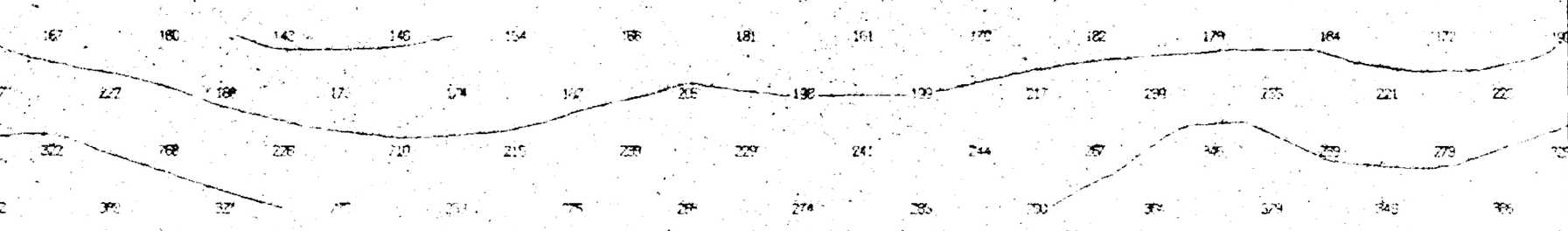
n=1

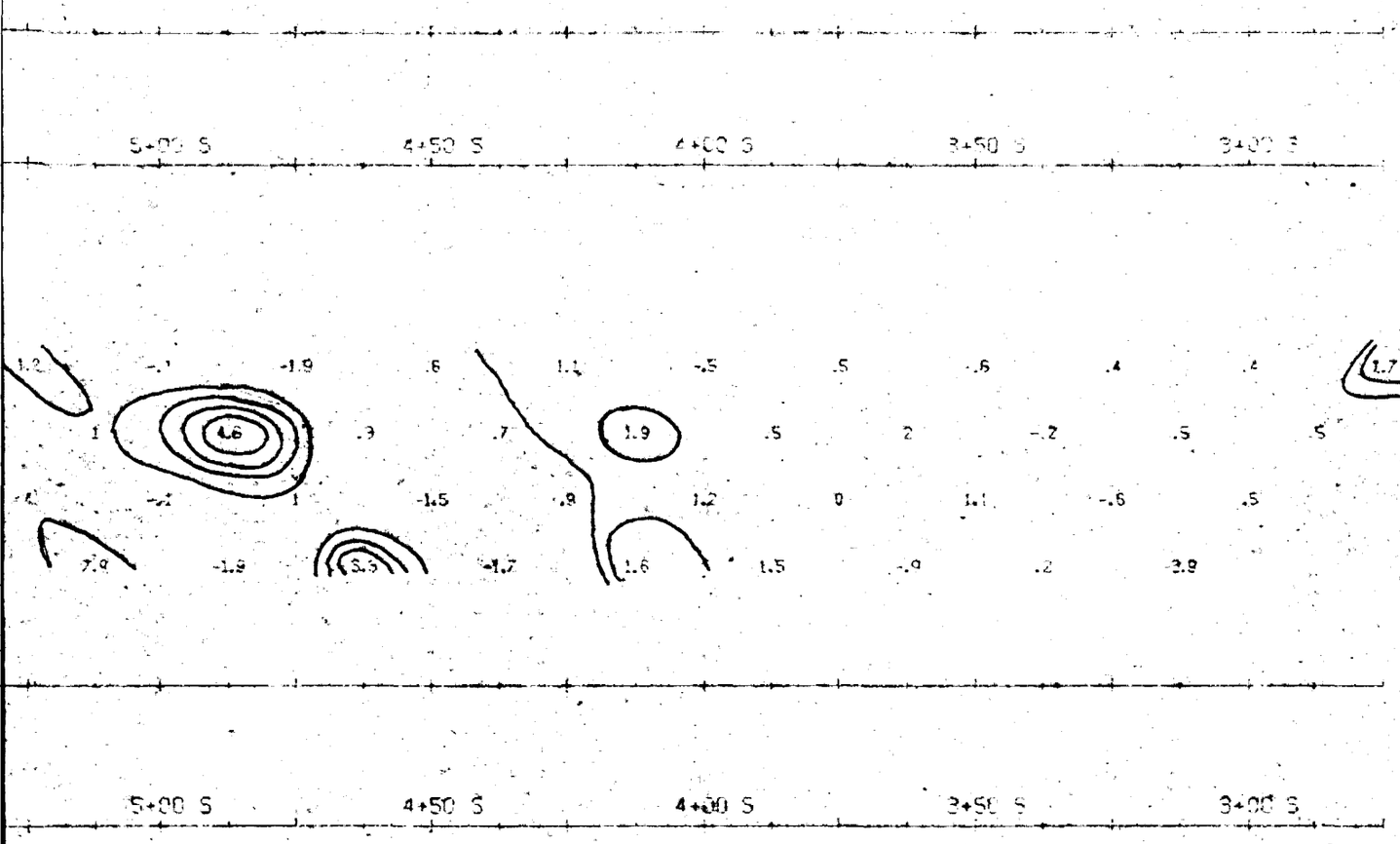
n=2

n=3

n=4

n=5





INTERPRETATION

Filter

CHARGEABILITY (MSEC)

n=1

n=2

n=3

n=4

n=5

TOPOGRAPHY

Filter

RESISTIVITY (ohm_m)

n=1

n=2

n=3

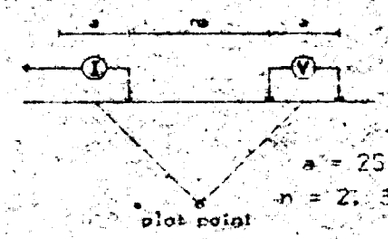
n=4

n=5

2.12475

3+00W

Pole-Dipole Array



Filtered Profiles

	filter
Resistivity	
Chargeability	
Metal Factor	

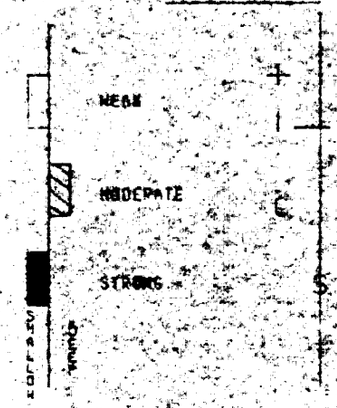
Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10, ...

Instrument: IPR-11

Transmitter: Huntex 7.5 KW

Operator: M. Wilson

I.P. ANOMALIES

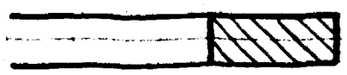


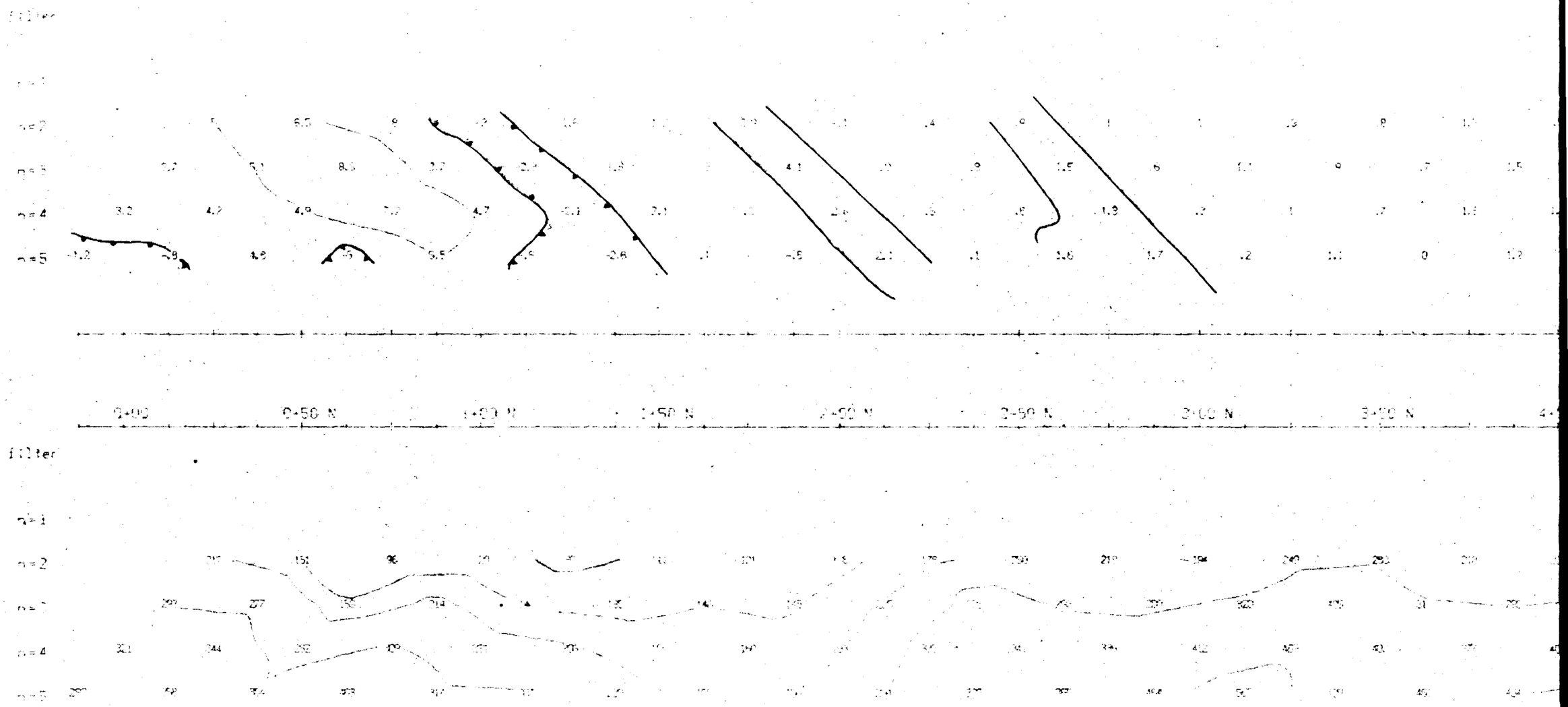
ROBERT S. MIDDLETON EXPLORATION SERVICES INC.

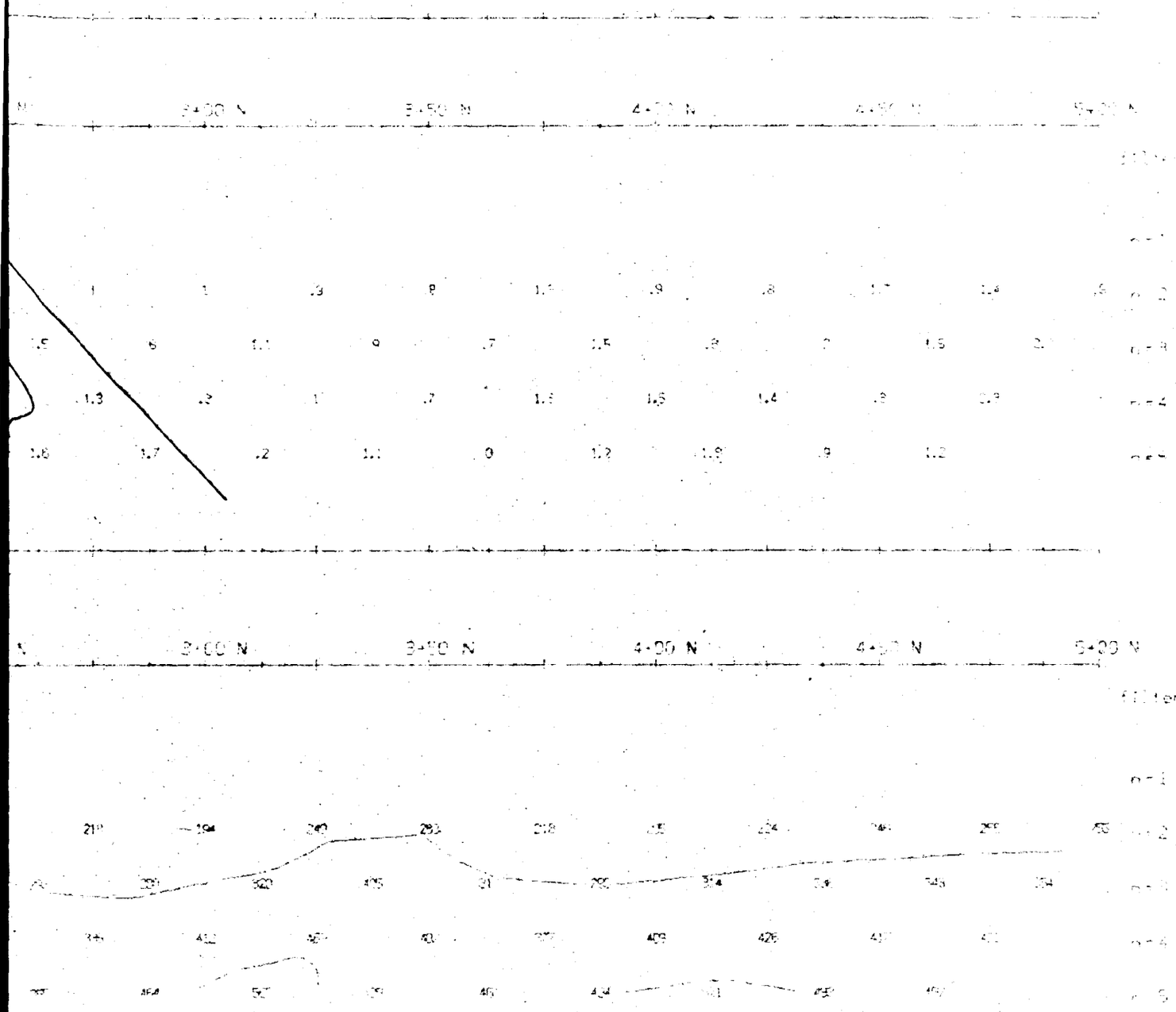
for TARZAN GOLD INC.

Title: Time Domain
INDUCED POLARIZATION SURVEY
HURTUBISE TWP. PROJECT - GRID 1
Hurtubise Twp. Ont.

Date: Feb. 28, 1989	Scale: 1 : 1250
Interp. by: R.S.L.	Job # M-181

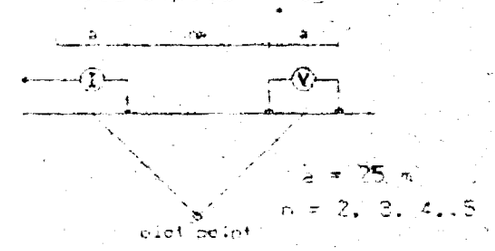



0+00
0+50 N
1+00 N
1+50 N
2+00 N
2+50 N
3+00 N
3+50 N
filter
n=1
n=2
n=3
n=4
n=5



2+00E

Pole-Dipole Array

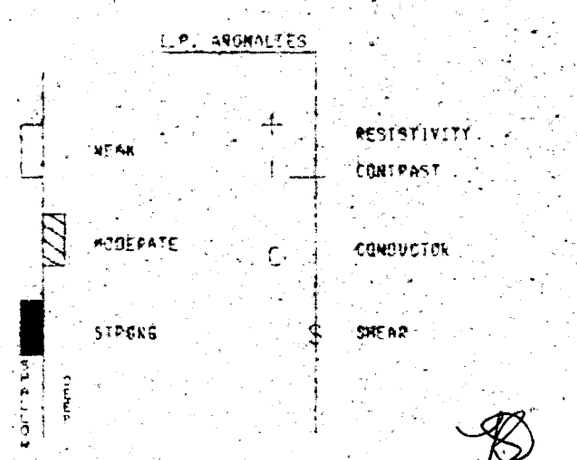


Filtered Profiles

	filter
Resistivity	*
Chargeability	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10....

Instrument: IPR-11
Transmitter: Huntex 7.5 KW
Operator: M. Wilson



ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

TARZAN GOLD INC.

Time Domain
INDUCED POLARIZATION SURVEY
HURTUBISE TWP. PROJECT - GRID 2
Hurtubise Twp. Ont.

Date: Mar. 1, 1989	Scale: 1 : 1250
Drawn by: R. L.	Job # M-181

6+00 S | 5+50 S | 5+00 S | 4+50 S | 4+00 S | 3+50 S | 3+00 S | 2+50 S | 2+00 S | 1+50 S

Filter

n=1

n=2

n=3 .4 -.2 1 -3.9 -1.5 -.1 .7 0 -3.4 1.7 -1.9 .3 -.1 1.7 -.4 -.1 1.6 .9

n=4 0 .4 -.9 4.2 2.9 .1 1.6 1.4 3.9 -3 2.1 .5 2 .1 2.5 .3 1.5 2.6

n=5 -1.4 -.2 .3 -.8 .5 4 -1.2 2.1 -.5 2.6 .8 1 .2 1.5 .3 4.7 1.8 4.5 3

n=6 -2.8 -3.8 -3.4 -1.6 -1.8 -4.3 -3 -3.1 3.2 -.8 -.8 -4 -2 .9 2.4 -2.4 -.7 2.8 1.8

6+00 S | 5+50 S | 5+00 S | 4+50 S | 4+00 S | 3+50 S | 3+00 S | 2+50 S | 2+00 S | 1+50 S

Filter

n=1

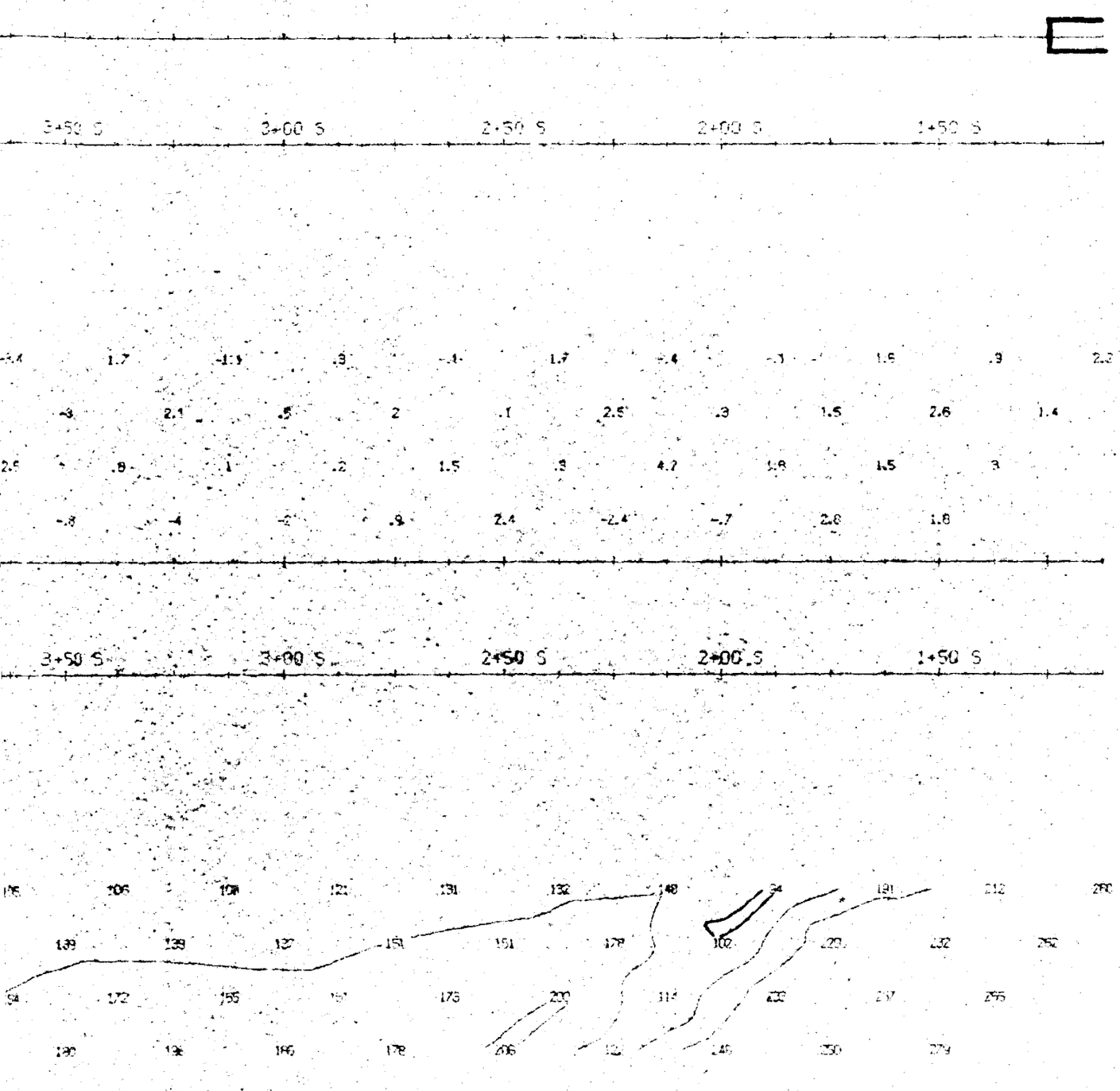
n=2

n=3 270 149 100 73 78 86 96 94 105 106 108 121 131 132 148 94 101 112

n=4 282 229 152 128 93 94 104 115 127 139 139 127 150 151 179 102 229 232

n=5 173 282 399 227 152 106 107 130 140 154 172 155 167 176 200 114 232 237 296

n=6 256 196 307 456 264 198 117 127 152 165 180 198 186 178 206 112 245 250 274



INTERPRETATION

filter | CHARGEABILITY (msec)

n = 1
n = 2
n = 3
n = 4
n = 5
n = 6

TOPOGRAPHY

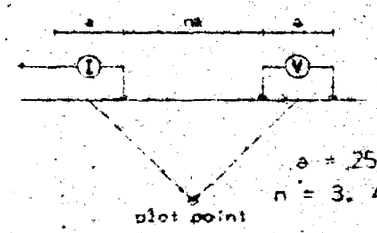
filter | RESISTIVITY (ohm-m)

n = 1
n = 2
n = 3
n = 4
n = 5
n = 6

2.12475

2+00E

Pole-Dipole Array



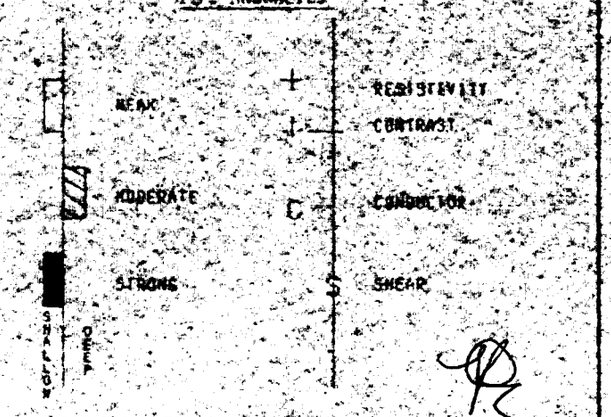
Filtered Profiles

	filter
Resistivity	*
Chargeability	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10...

Instrument: IPR-11
Transmitter: Hunfex 7.5 KW
Operator: M. Wilson

I.P. ANOMALIES



ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

for TARZAN GOLD INC.

Title: Time Domain
INDUCED POLARIZATION SURVEY
HURTUBISE TWP. PROJECT - GRID 2
Hurtubise Twp. Ont.

Date: Mar. 2, 1989	Scale: 1 : 1250
Interp. by: R. L.	Job # M-181

8+00 S | 7+50 S | 7+00 S | 6+50 S | 6+00 S | 5+50 S | 5+00 S | 4+50 S | 4+00 S

filter

n=1

n=2

n=3 0 -1.6 -.2 .2 -.4 -1.2 -.4 -.4 -1 -.4 .1 .1 1.8 -.3 -1.6 -.2 .7

n=4 -.5 1 .7 .3 .5 2 .8 .1 .8 .2 -.4 .5 3.4 1.4 2.4 .9 .2

n=5 .6 -.8 -1.1 .2 .6 .7 -.7 .5 -.5 -1.3 0 -.8 -.1 -.2 .4 .3 -.2 .4

n=6 0 -1.9 -6.3 -5 -1.7 1 -1.3 -6.8 6.8 -4.7 -7.7 -1.3 -2 -.5 -1.3 -1.2 -.8 -1.9

8+00 S | 7+50 S | 7+00 S | 6+50 S | 6+00 S | 5+50 S | 5+00 S | 4+50 S | 4+00 S

filter

n=1

n=2

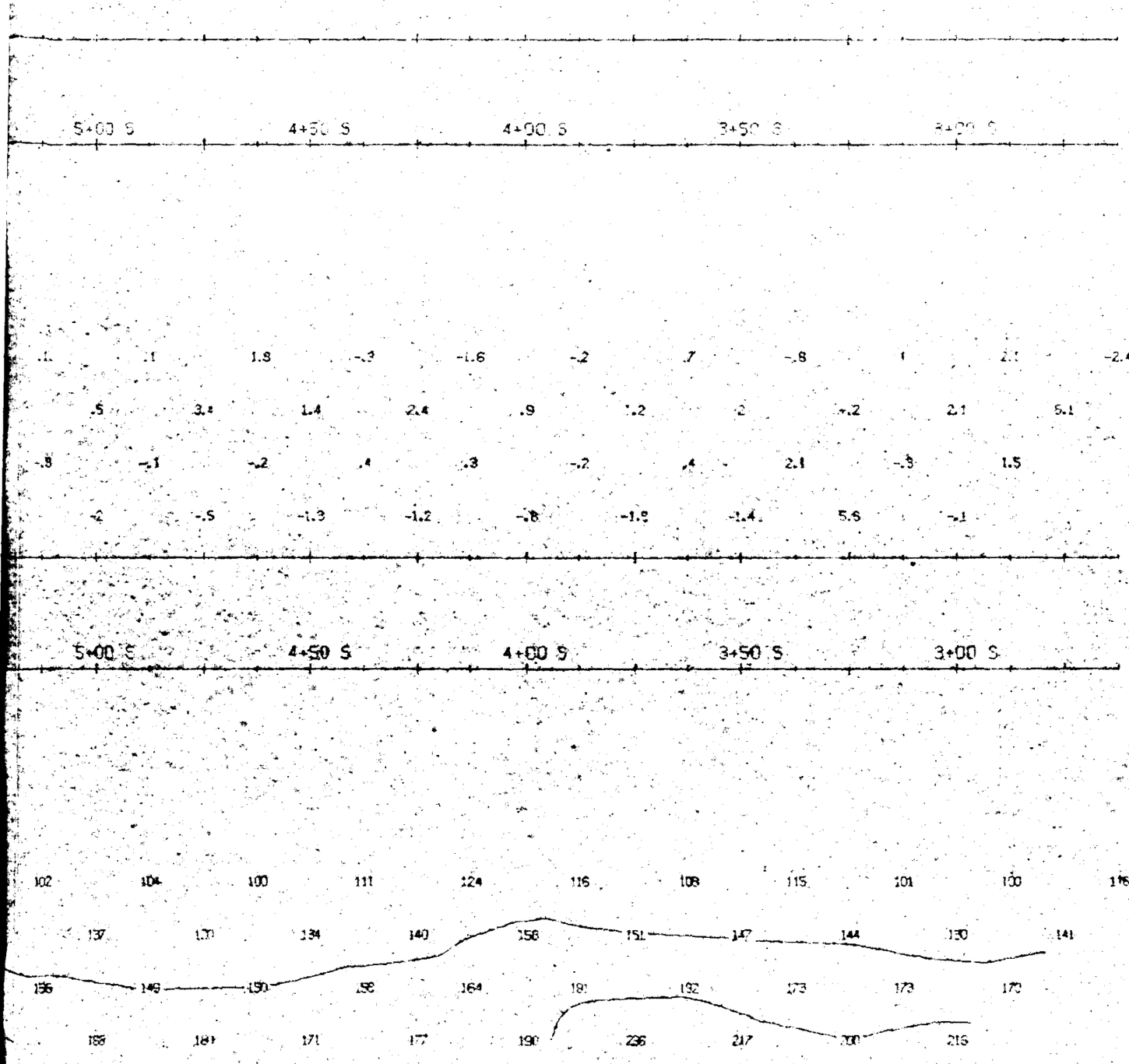
n=3 136 115 192 118 119 113 229 230 97 102 104 100 111 124 116 108

n=4 238 191 150 184 185 144 142 368 312 147 126 137 130 134 140 156 151

n=5 866 368 239 199 192 190 170 426 378 177 177 156 146 150 158 164 [illegible] 132

n=6 686 1058 445 295 222 212 [illegible] 435 420 [illegible] 291 209 169 181 171 177 190 236

GEOSOFT (tm) Software for the Earth Sciences, Toronto, Canada



INTERPRETATION

CHARGEABILITY (MSEC)

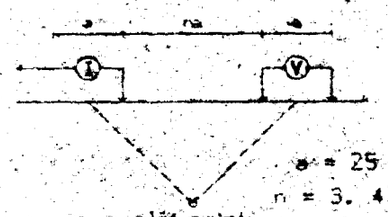
TOPOGRAPHY

RESISTIVITY (ohm-ft)

2.12475

3+00E

Pole-Dipole Array

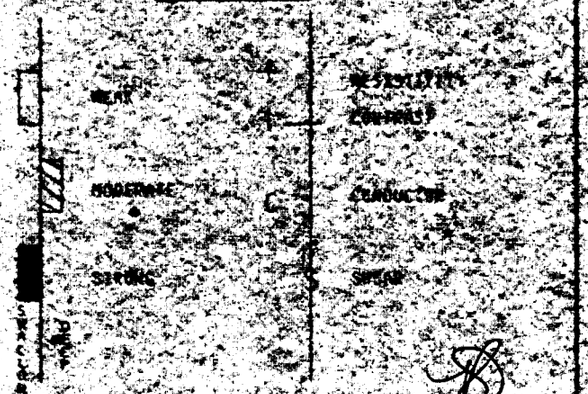


Filtered Profiles

	filter
Resistivity	*
Chargeability	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10...

Instrument: IPR-11
Transmitter: Huntex 7.5 KW
Operator: A. Nelson
I.P. RESISTIVITY

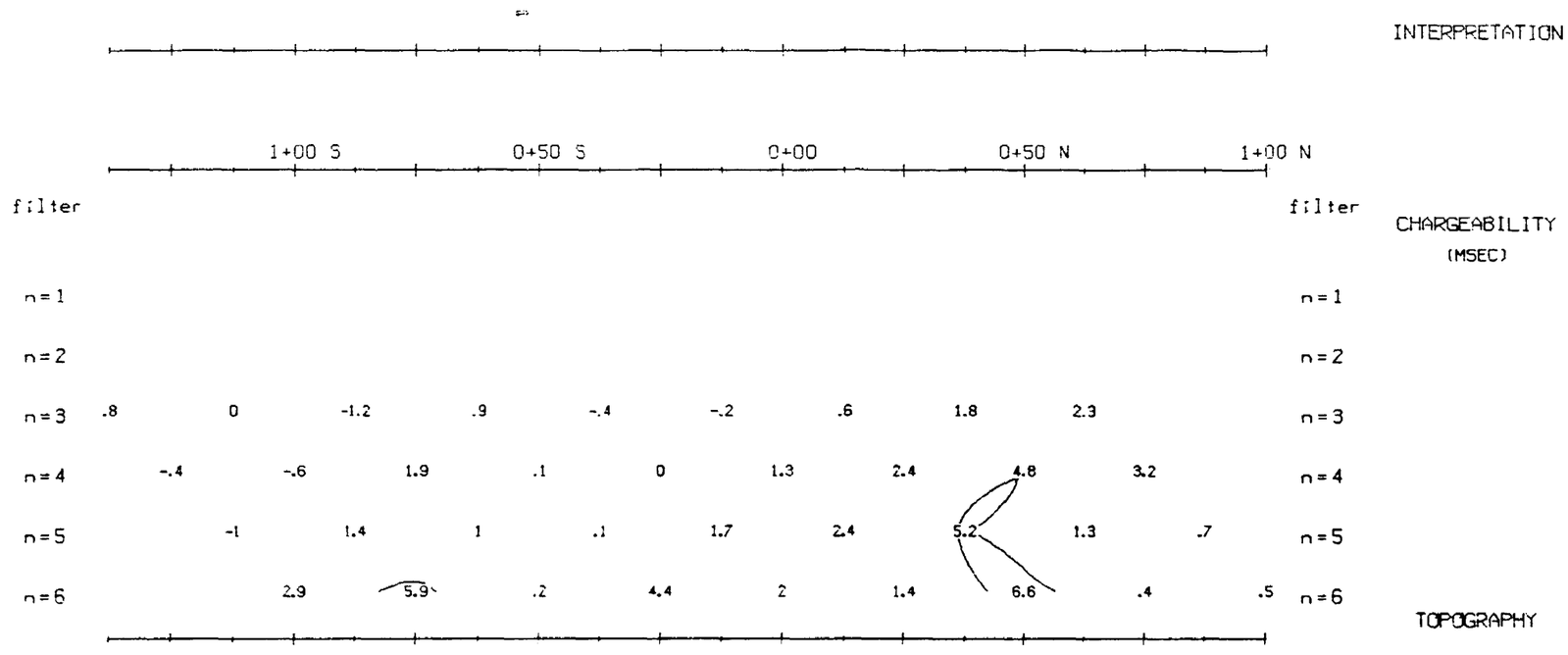


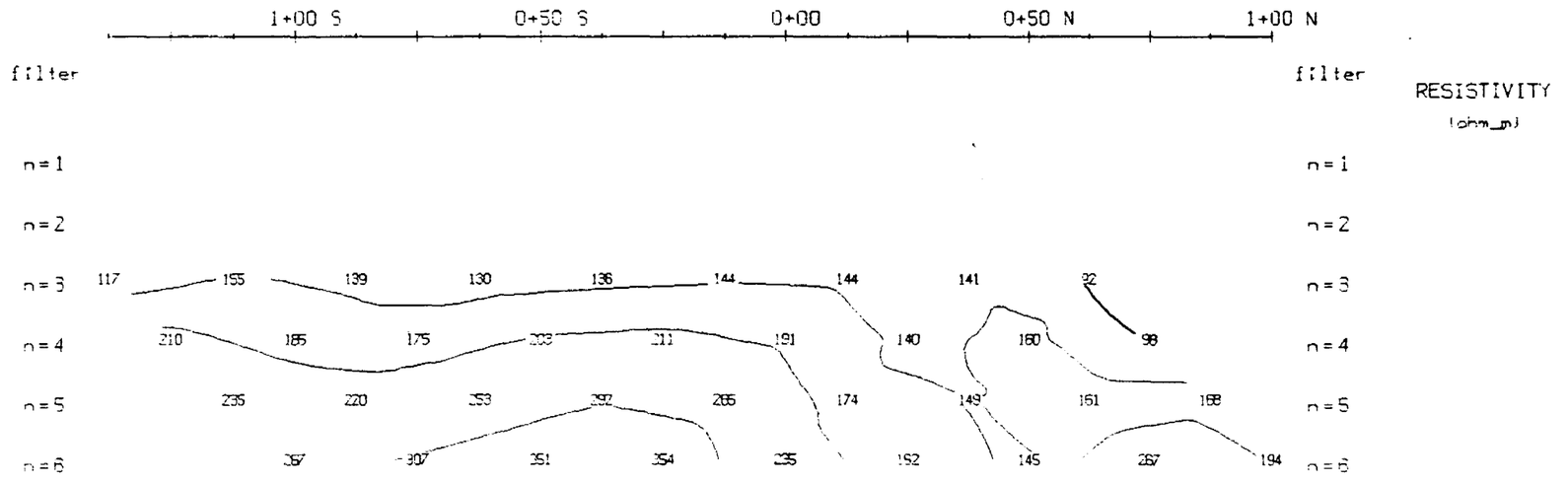
ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

for TARZAN GOLD INC.

Title: Time Domain
INDUCED POLARIZATION SURVEY
HURTUBISE TWP. PROJECT - GRID 2
Hurtubise Twp. Ont.

Date: Mar. 2, 1989 | Scale: 1" = 125'
Interp. by: R. L. | Job # M-181

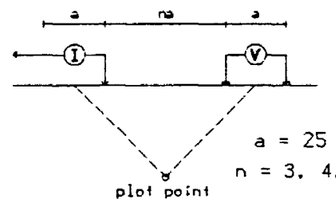




2.12475

6+00E

Pole-Dipole Array



Filtered Profiles

	filter
Resistivity ————	*
Chargeability ————	* *
Metal Factor - - - - - - - -	* * *
	* * * *

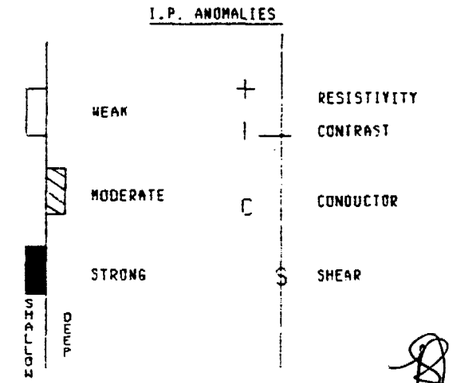
Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10....

Instrument: IPR-11

Transmitter: Huntex 7.5 KW

Operator: M. Wilson

I.P. ANOMALIES

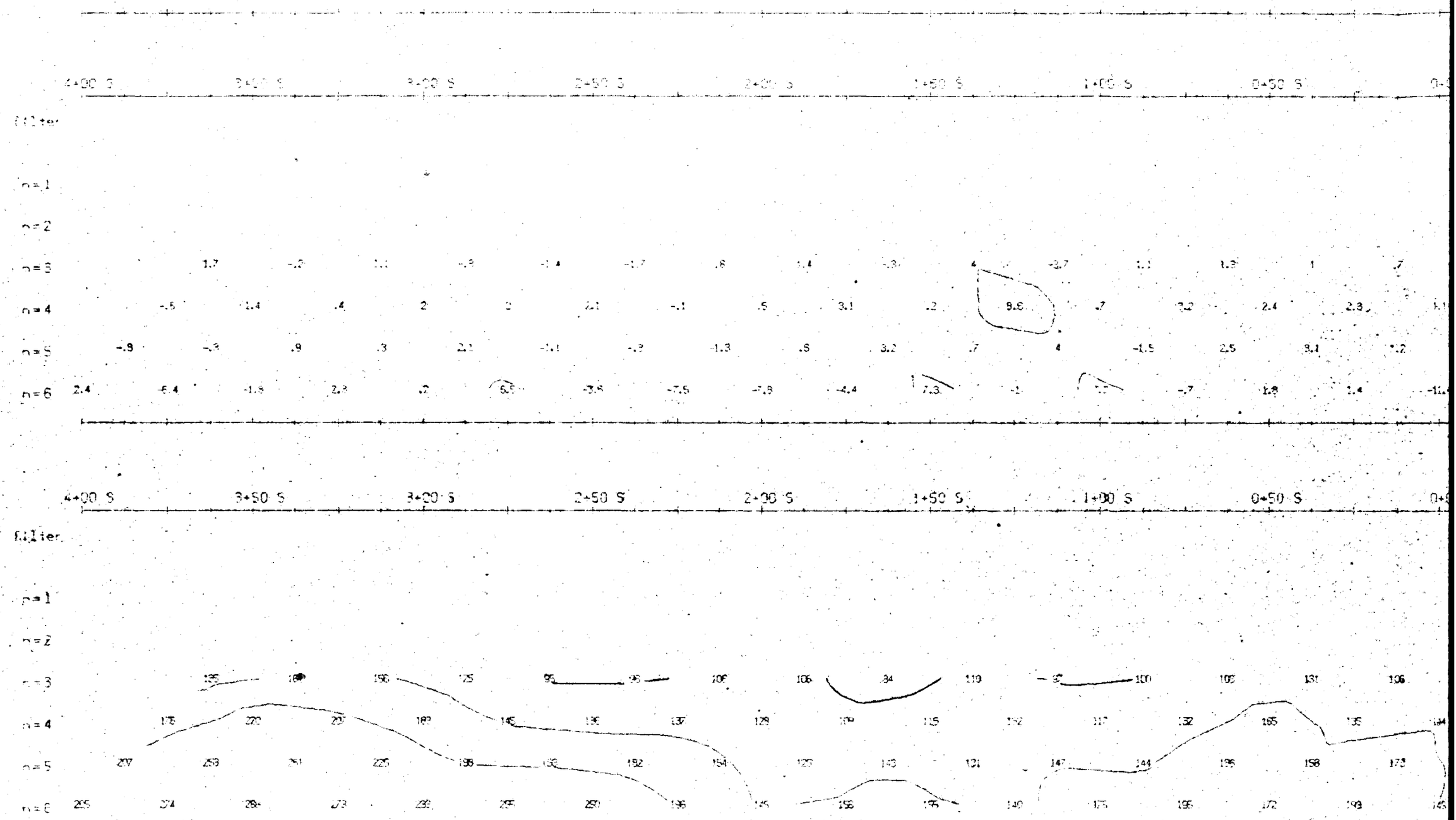


ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

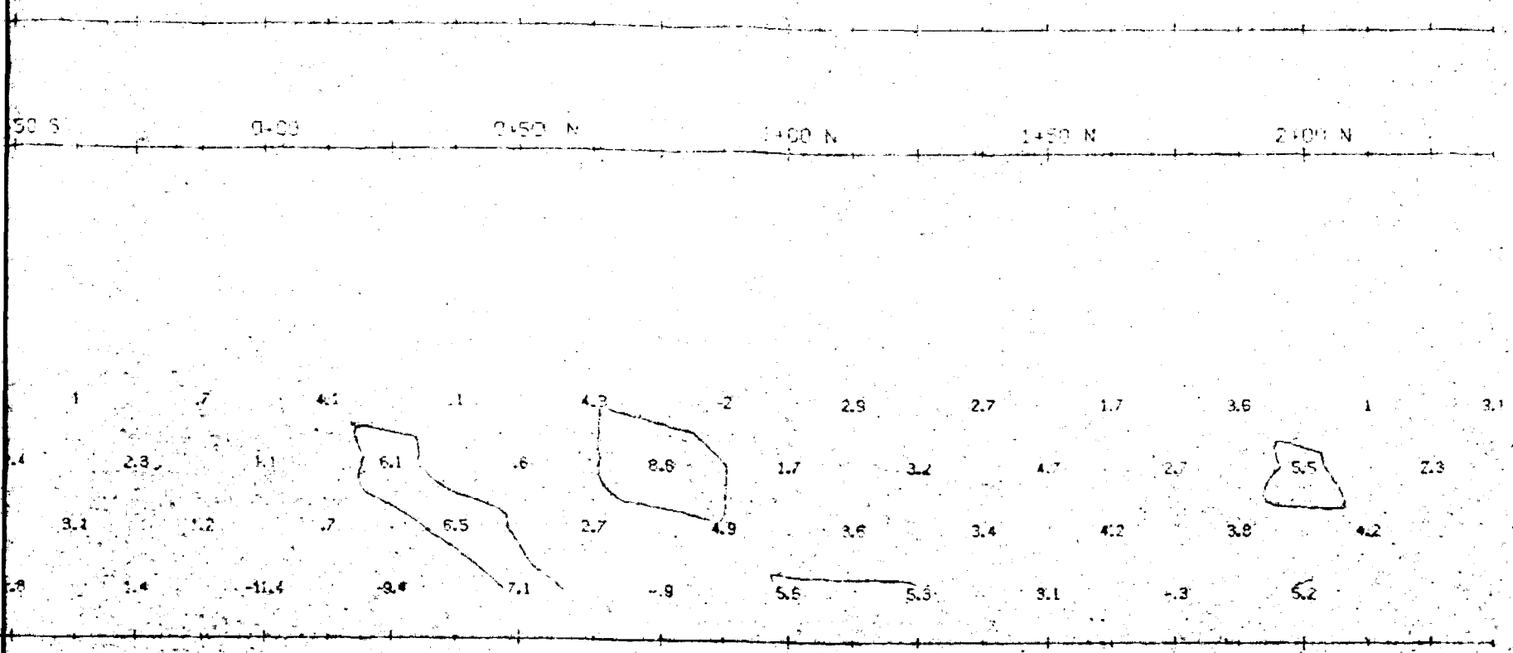
for
TARZAN GOLD INC.

Title
Time Domain
INDUCED POLARIZATION SURVEY
HURTUBISE TWP. PROJECT - GRID 2
Hurtubise Two. Ont.

Date: Mar. 4, 1989	Scale: 1 : 1250
Interp. by: R. L.	Job # M-181

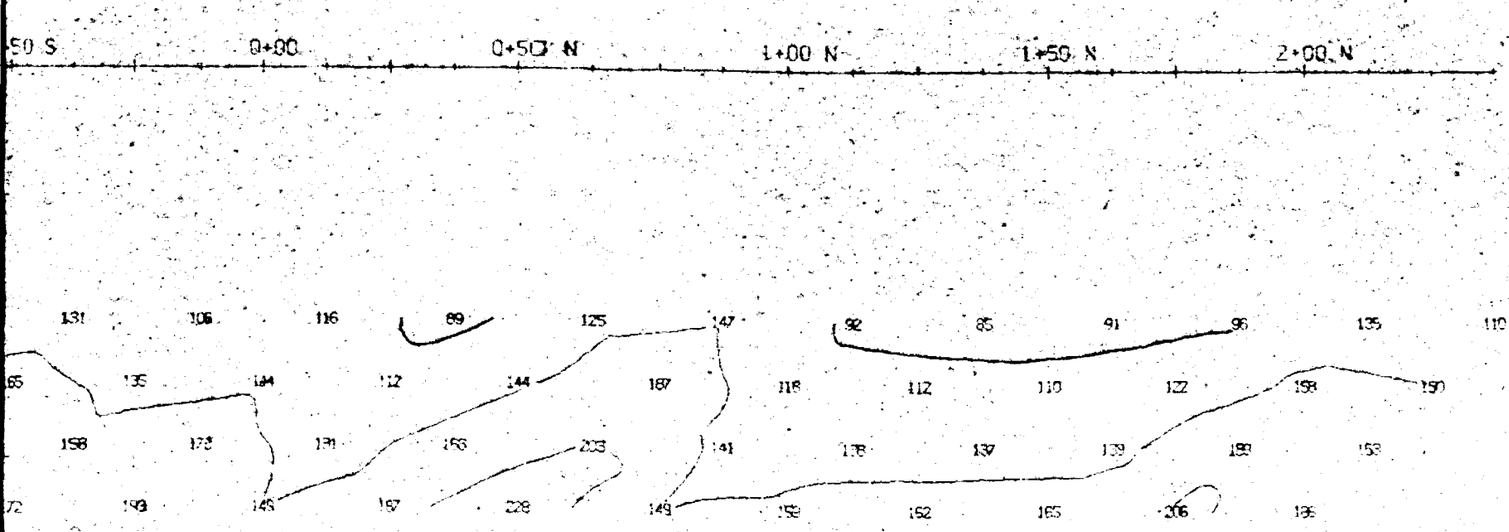


GEOSOFT (tm) Software for the Earth Sciences, Toronto, Canada



CHARGEABILITY (MSEC)

TOPOGRAPHY



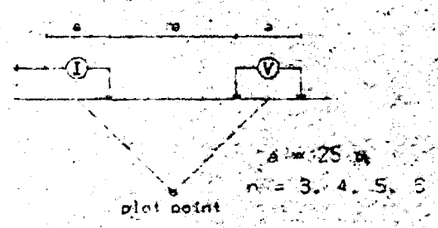
RESISTIVITY (ohm-m)

INTERPRETATION

2.12475

7+00E

Pole-Dipole Array



Filtered Profiles

	filter
Resistivity	*
Chargeability	* *
Metal Factor	* * *
	* * * *

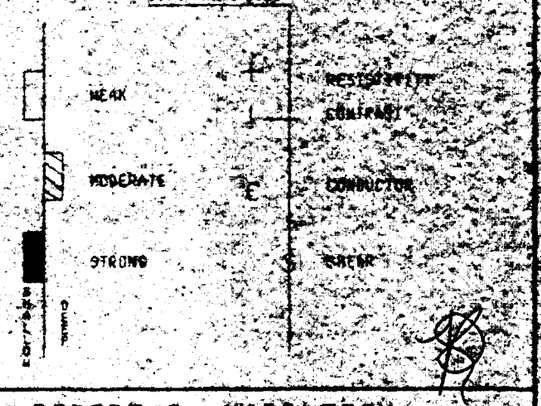
Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10...

Instrument: IRIS-IP

Transmitter: Huntec 7.5 KW

Operator: Mr. Nelson

I.P. ANOMALIES



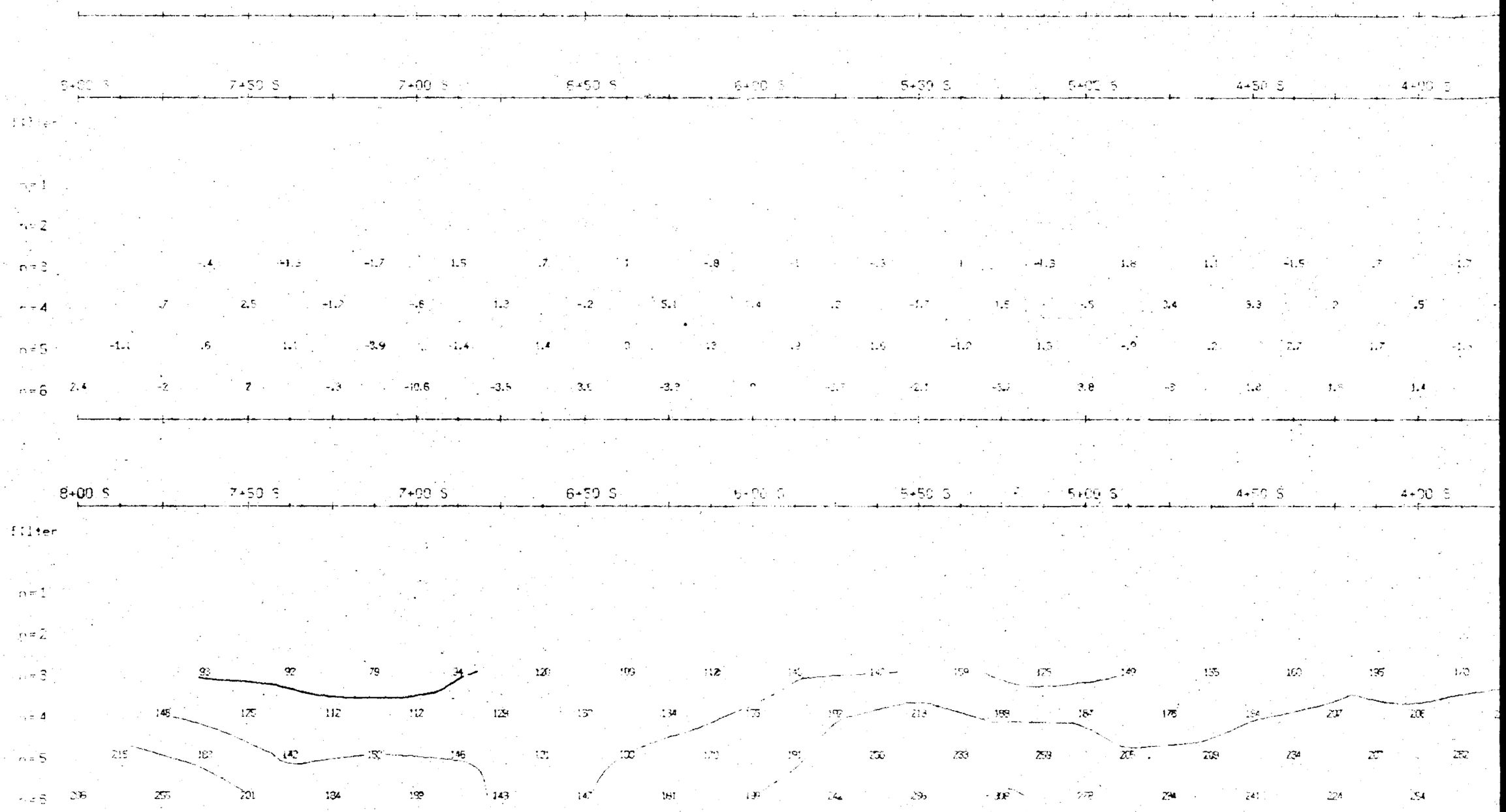
ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

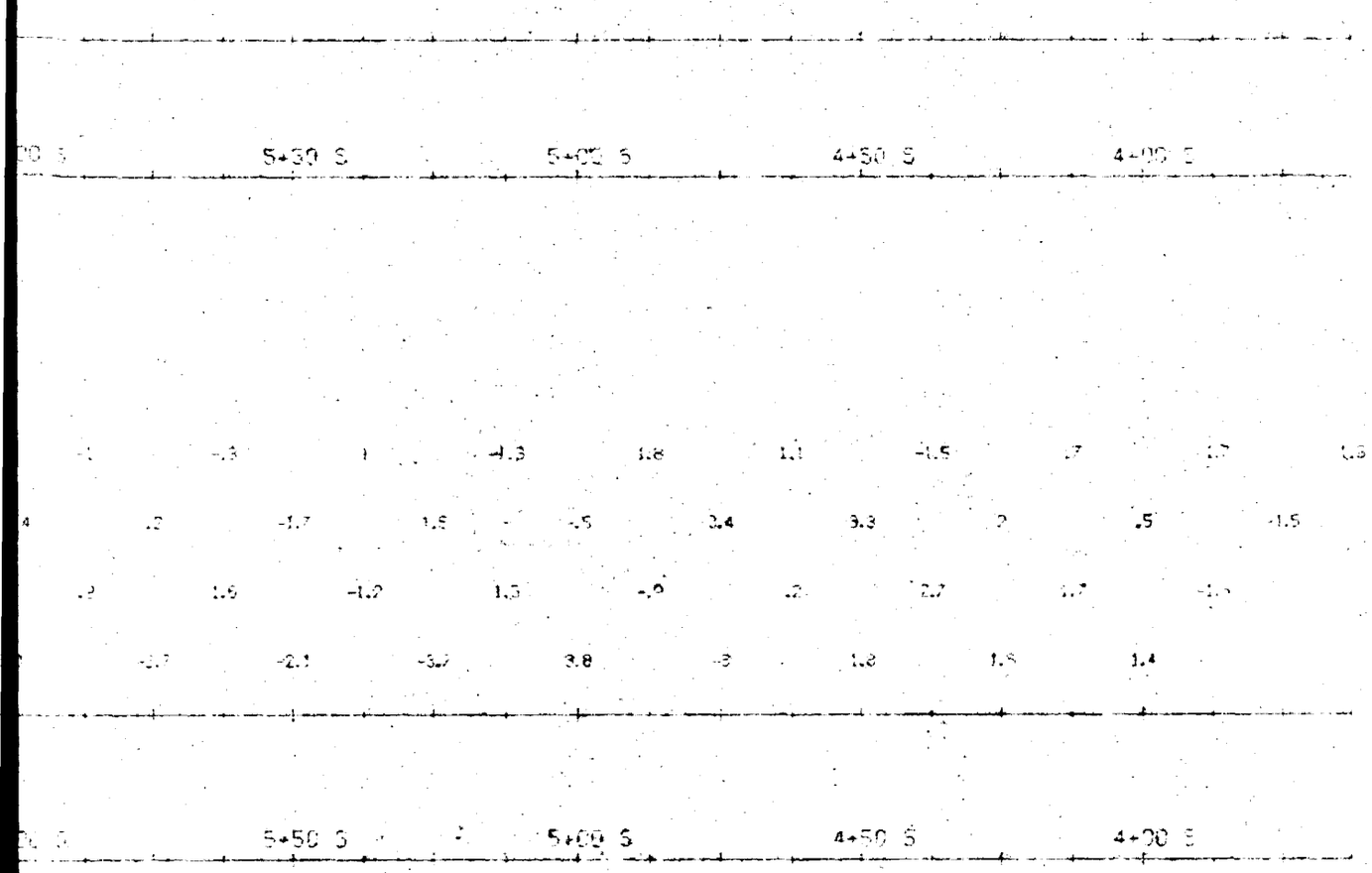
for TARZAN GOLD INC.

Title Time Domain
INDUCED POLARIZATION SURVEY
HURTUBISE TWP. PROJECT - GRID 2
Hurtubise Twp. Ont.

Date: Mar. 4, 1989 | Scale: 1 : 1250

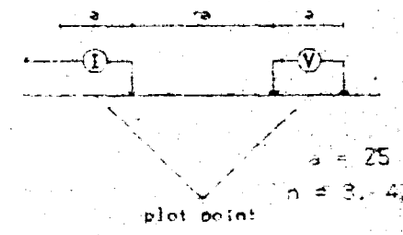
Interp. by: R. L. | Job # M-181





7+00E

Pole-Dipole Array



Filtered Profiles

	filter
Resistivity	*
Chargeability	* *
Metal Factor	* * *
	* * * *

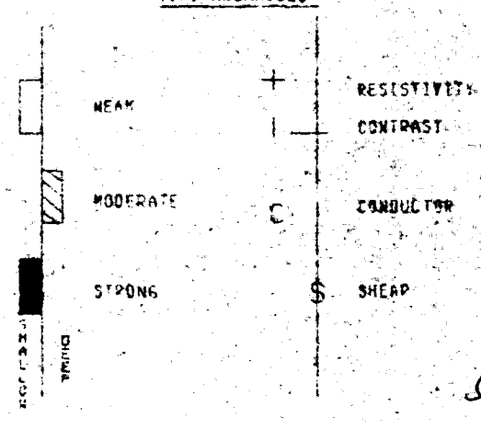
Logarithmic Contours: 1, 1.5, 2, 3, 5, 7.5, 10....

Instrument: IPR-11.

Transmitter: Huntex 7.5 KW.

Operator: M. Wilson

I.P. ANOMALIES



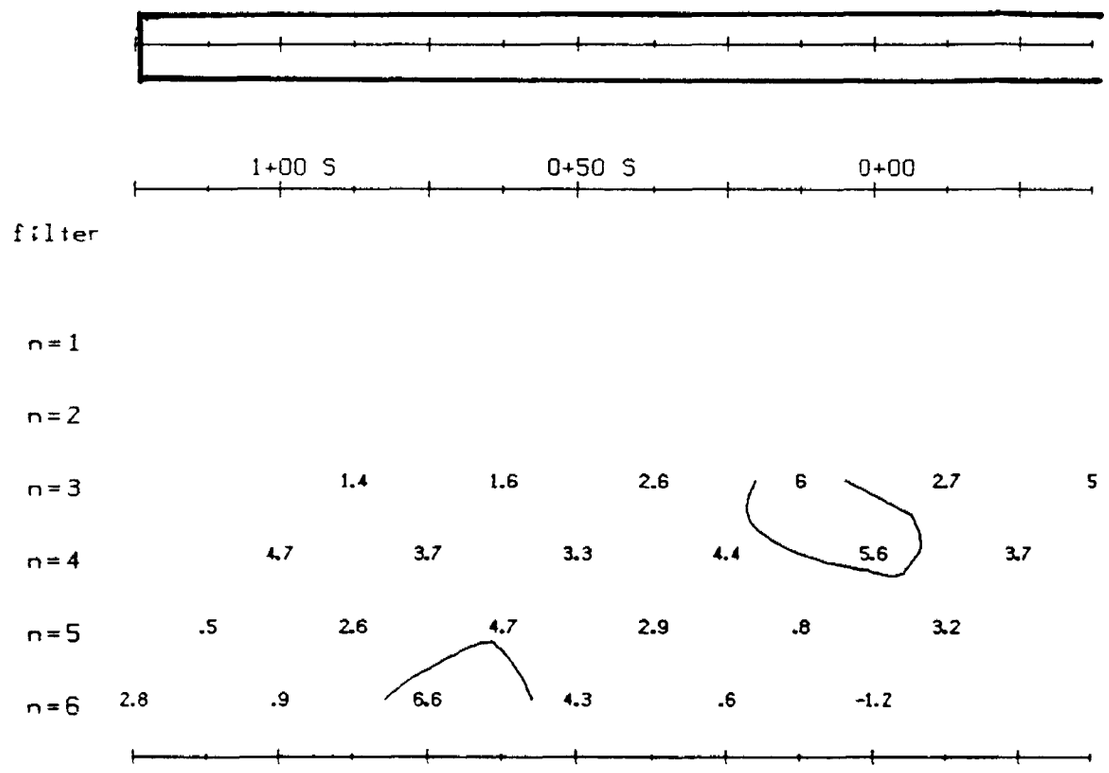
ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

for TARZAN GOLD INC.

Title: Time Domain
INDUCED POLARIZATION SURVEY
HURTUBISE TWP. PROJECT - GRID 2
Hurtubise Twp., Ont.

Date: Mar. 5, 1989	Scale: 1:1250
Interp. by: M. L.	Job # M-181

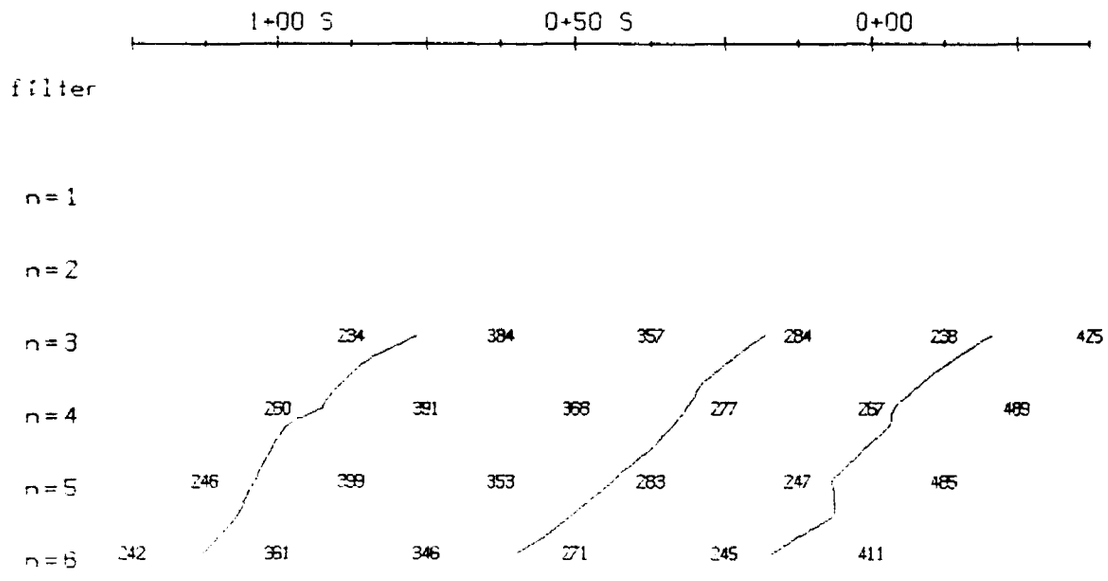
2.12475



INTEPPRETATION

CHARGEABILITY
(MSEC)

TOPOGRAPHY

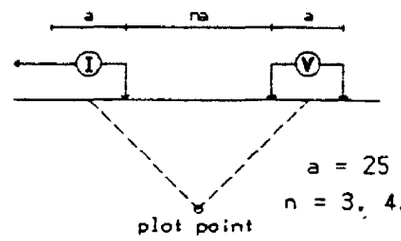


RESISTIVITY
(ohm_m)

2.12475

2+00E

Pole-Dipole Array



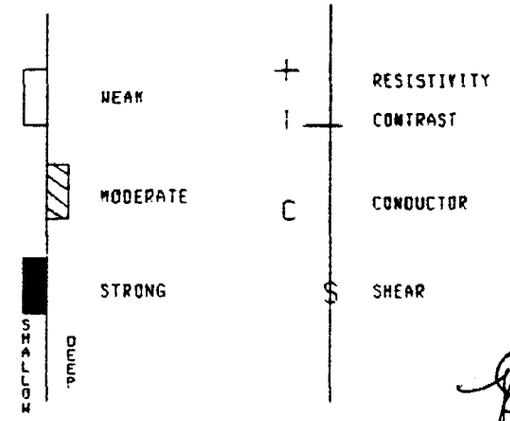
Filtered Profiles

	filter
Resistivity ————	*
Chargeability ————	* *
Metal Factor - - - - - - - -	* * *
	* * * *

Logarithmic Contours 1. 1.5. 2. 3. 5. 7.5. 10....

Instrument: IPR-11
Transmitter: Huntex 7.5 KW
Operator: M. Wilson

I.P. ANOMALIES

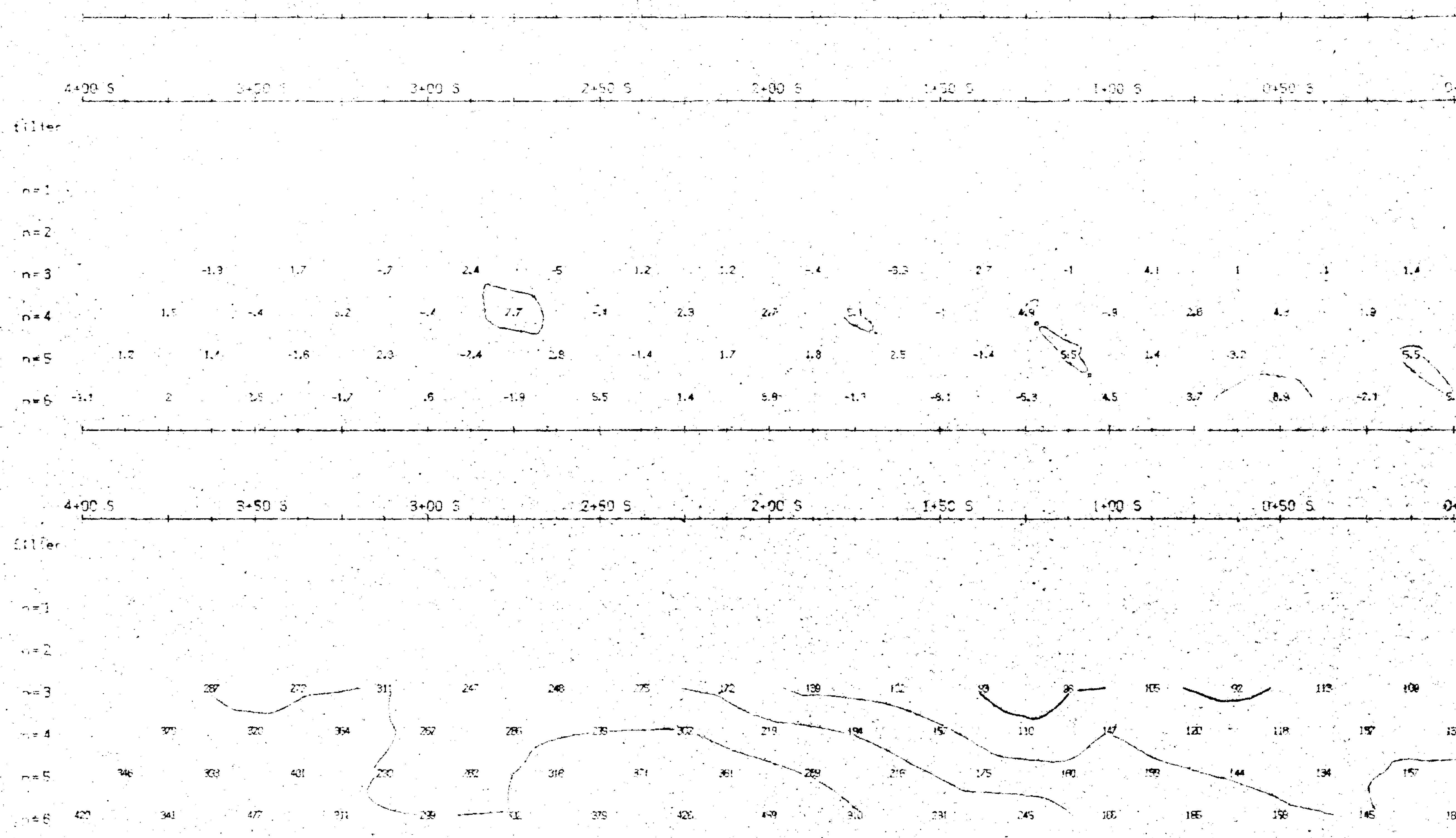


ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

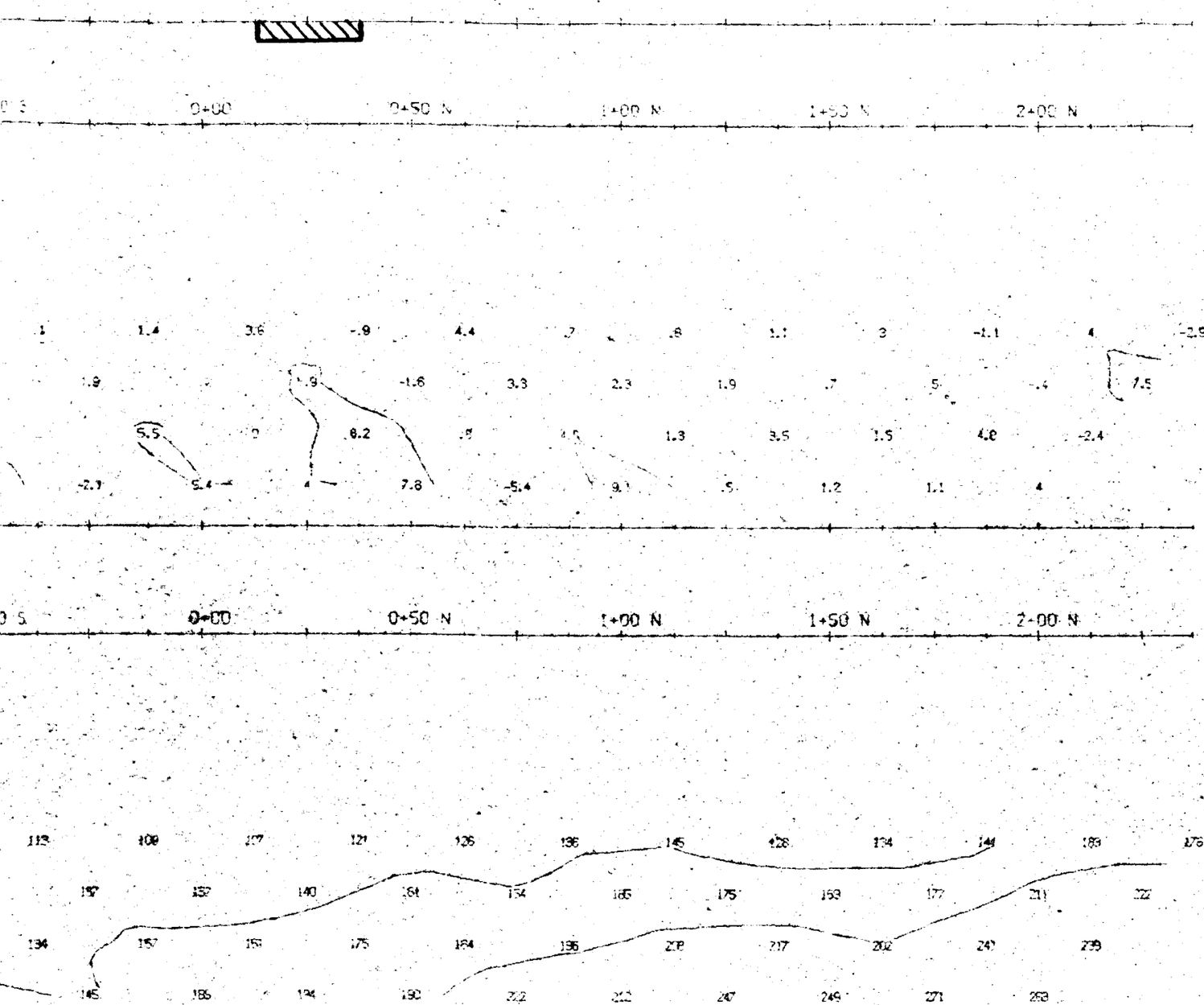
for
TARZAN GOLD INC.

Title
Time Domain
INDUCED POLARIZATION SURVEY
HURTUBISE TWP. PROJECT - GRID 2
Hurtubise Twp. Ont.

Date: Mar. 1, 1989	Scale: 1 : 1250
Interp. by: R. L.	Job # M-181



GEOSOFT (tm) Software for the Earth Sciences, Toronto, Canada



INTERPRETATION

CHARGEABILITY (MSEC)

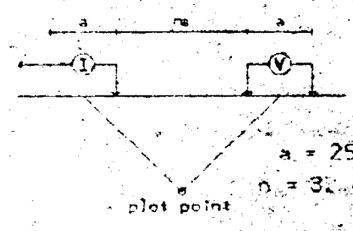
TOPOGRAPHY

RESISTIVITY (ohm_m)

2.12475

9+00E

Pole-Dipole Array



a = 25 m
n = 3, 4, 5, 6

Filtered Profiles

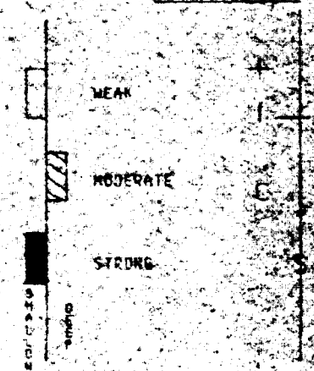
filter

Resistivity
Chargeability
Metal Factor

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10...

Instrument: IPR-11
Transmitter: Huntex 7.5 KW
Operator: M. Wilson

I.P. ANOMALIES



ROBERT S. MIDDLETON EXPLORATION SERVICES INC.

for TARZAN GOLD INC.

Title: Time Domain
INDUCED POLARIZATION SURVEY
HURTUBISE TWP. PROJECT - GRID 2
Hurtubise Twp. Ont.

Date: Mar. 5, 1989	Scale: 1 : 1250
Interp. by: R. L.	Job # M-181

Ministry of Northern Development and Mines
Ontario

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)
Mining Act

DOCUMENT No. M8908: 169

32E05SE0011 2.12475 HURTUBISE

900

your file 2.12475
m... q Lands Section 169

Type of Survey(s)
Electromagnetic Survey

Township or Area
Hurtubise Twp\St.Laurent Twp.

Claim Holder(s)
Glen Auden Resources Ltd.

Prospector's Licence No.
T-1915

Address
P.O. Box 1637 Timmins Ontario

Survey Company
R.S. Middleton Exploration Services Inc.

Date of Survey (from & to)
20 02 89 (Day Mo. Yr.) 08 03 89 (Day Mo. Yr.)

Total Miles of line Cut

Name and Address of Author (of Geo Technical report)
R. Lachapelle, P.O. Box 1637 Timmins Ontario P4N-7W8

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical - Electromagnetic	20
	Geophysical - Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	Geophysical - Radiometric	
	Geophysical - Other	
	Geological	
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical - Electromagnetic	
	Geophysical - Magnetometer	
	Geophysical - Radiometric	
	Geophysical - Other	
	Geological	
	Geochemical	

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys	Electromagnetic	
	Magnetometer	
	Radiometric	

Mining Claims Traversed (List in numerical sequence)

Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
L	877782				
	877783				
	877787				
	877788				
	878019				
	878020				
	877642				
	877643				
	877644				
	877649				
	877641				
	877645				
	877648				
	877699				
	877698				
	877647				
	877646.				

RECEIVED
JUN 8 1989
MINING LANDS SECTION

LANDS & MINING DIVISION
RECEIVED
MAY 15 1989
9:55 a.m.

Total number of mining claims covered by this report of work: 17

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures: $ ÷ 15 = Total Days Credits

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
340	May 15/89.	M.C. Weiman
	Date Approved as Recorded	Branch Director
	See revised work statement	

Date	Recorded Holder or Agent (Signature)
May 14/89	Clifford L. David

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying
Cliff David – RS Middleton Exploration Services In
P.O. Box 1637 Timmins Ontario P4N 7W8

Date Certified	Certified by (Signature)
May 14/89	Clifford L. David

1362 (85/12)

Ontario

Ministry of
Northern Development
and Mines

Ministère du
Développement du Nord
et des Mines

Mining Lands Section
880 Bay Street, 3rd Floor
Toronto, Ontario
M5S 1Z8

Telephone: (416) 965-4888

August 7, 1989

Your File: W8908-169
Our File: 2.12475

Mining Recorder
Ministry of Northern Development and Mines
4 Government Road East
Kirkland Lake, Ontario
P2N 1A2

Dear Sir:

Re: Notice of Intent dated July 7, 1989 Geophysical (Electromagnetic) Survey submitted on Mining Claims L 877641 et al in Hurtabise and St. Laurent Townships.

The assessment work credits, as listed with the above-mentioned Notice of Intent, have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours sincerely,

W.R. Cowan
Provincial Manager, Mining Lands
Mines & Minerals Division
RM
RM:eb
Enclosure

cc: Mr. G.H. Ferguson
Mining and Lands Commissioner
Toronto, Ontario

Resident Geologist
Kirkland Lake, Ontario

Glen Auden Resources Ltd.
P.O. Box 1637
Timmins, Ontario
P4N 7W8

Ministry of Northern Development and Mines

Ontario

Technical Assessment Work Credits

File: 2.12475

Date: July 7, 1989

Mining Recorder's Report of Work No.: W8908-169

Recorded Holder: GLEN AUDEN RESOURCES LIMITED

Township or Area: HURTABISE / ST. LAURENT

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	
Electromagnetic 17 days	L 877641 to 649 incl. 877698-699 877782-783 877787-788 878019-020
Magnetometer ____ days	
Radiometric ____ days	
Induced polarization ____ days	
Other ____ days	
Section 77 (19) See "Mining Claims Assessed" column	
Geological ____ days	
Geochemical ____ days	
Man days ☐ Airborne ☐	
Special provision ☒ Ground ☒	
☐ Credits have been reduced because of partial coverage of claims.	
☐ Credits have been reduced because of corrections to work dates and figures of applicant.	

Special credits under section 77 (16) for the following mining claims

No credits have been allowed for the following mining claims

☐ not sufficiently covered by the survey ☐ insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geological - 40; Geochemical - 40; Section 77(19) - 60.

TABIKA RIVER

GRID 1.

GRID 2

TARZAN GOLD INC.

GLEN AUDEN RESOURCES LTD.
TARZAN GOLD INC. J.V.

HURTUBISE TWP.

SINGER TWP.

ST. LAURENT TWP.

2.12475

○ R.C. DRILL HOLES (ALL VERTICAL)

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
A.M.	for GLEN AUDEN RESOURCES LTD. / TARZAN GOLD INC.		
	Title CLAIM MAP WITH R.C. DRILL HOLE LOCATIONS FIG 3.		
	Date: April 1989	Scale: 1: 20,000	N.T.S.:
	Drawn: M.Z.	Approved:	File: M181

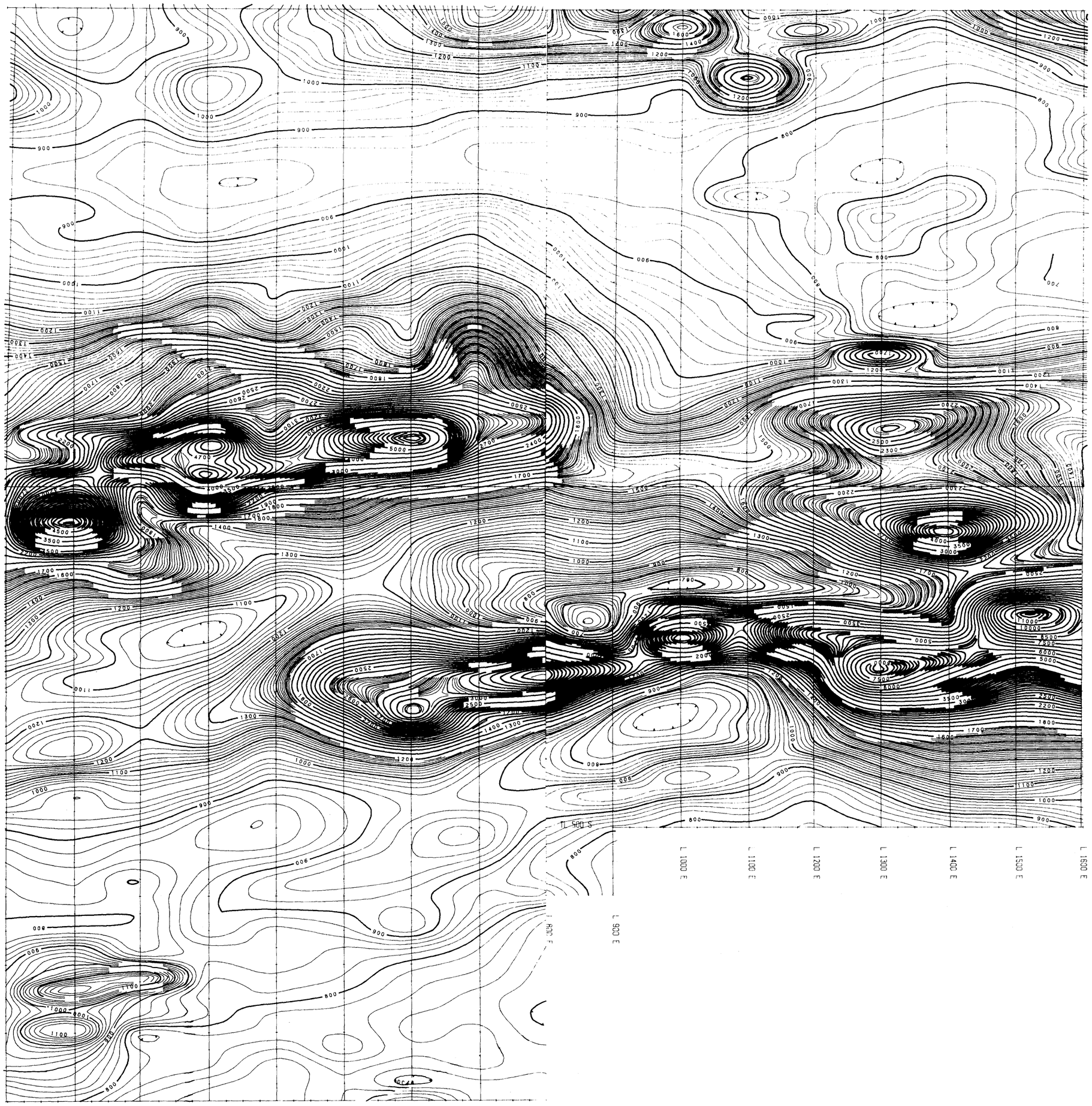
L 0 | L 100 E | L 200 E | L 300 E | L 400 E | L 500 E | L 600 E | L 700 E | L 800 E | L 900 E | L 1000 E | L 1100 E | L 1200 E | L 1300 E | L 1400 E | L 1500 E | L 1600 E

TL 700 N

BASELINE

TL 500 S

TL 900 S



CONTOUR INTERVALS

20
100
500
1000

FIELD INSTRUMENT : Barringer GM-122
DATUM 58000 GAMMAS

NARROW MAGNETIC MODELS
WIDE MAGNETIC MODELS
INTERPRETED CONTACT
INTERPRETED FAULT

TOPOGRAPHY

CLAIM POST
LAKE
STREAM
SWAMP
ACCESS ROAD
BUSH ROAD

2.12475

SCALE 1 : 2 500

50 0 50 (metres) 100 150 200

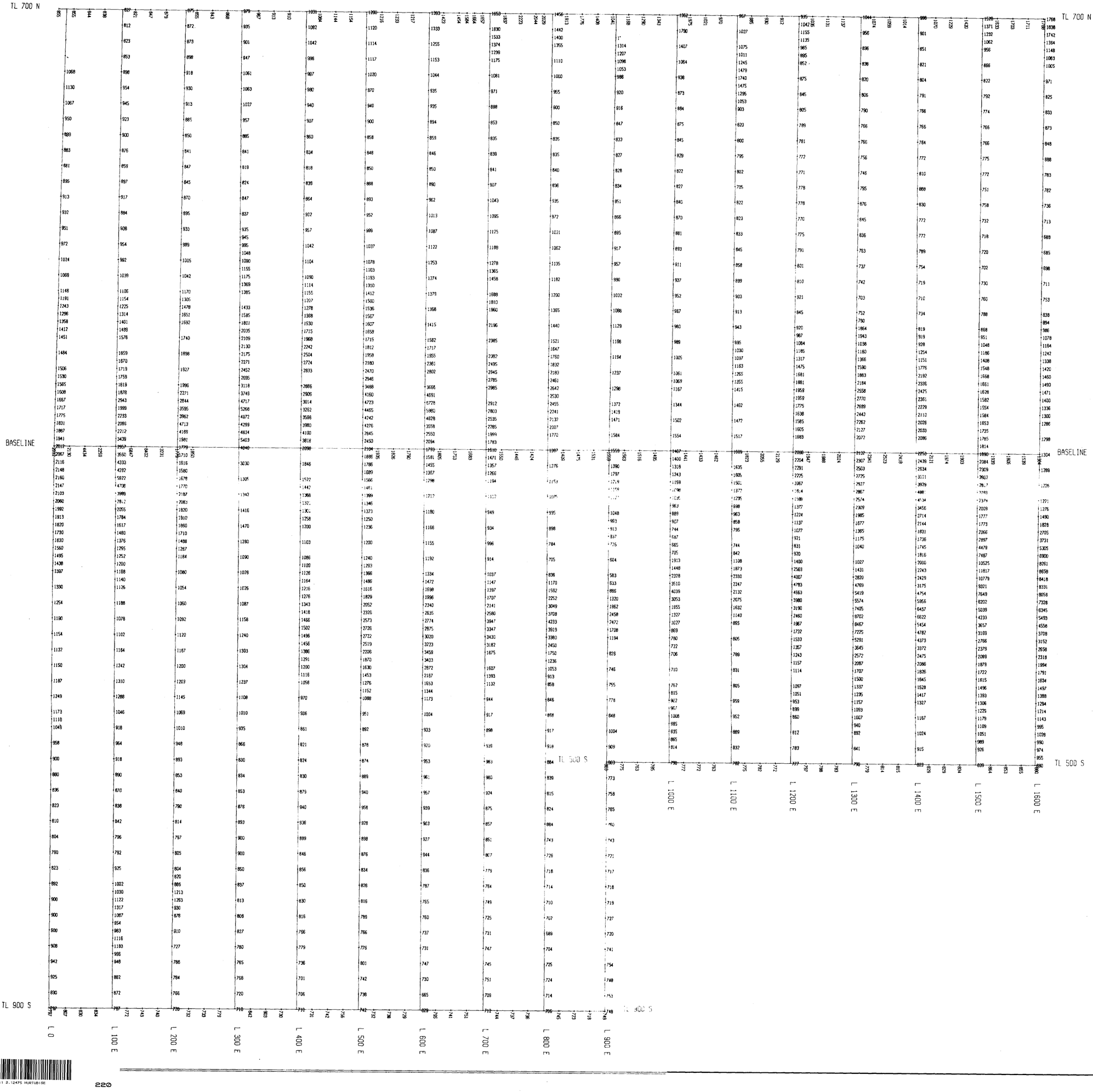
ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

For
TARZAN/GARL

Title
Joint Venture Property
Magnetic Survey Grid 2
Hurtubise Twp., Ont.

FIG 4

Date: February 89	N.T.S.: 32 E/5
Operator: T.Cardinal	Job #: M-181/265



2.12475

SCALE 1 : 2 500

50 0 50 (metres) 100 150 200

ROBERT S. MIDDLETON EXPLORATION SERVICES INC.	
For TARZAN/GARL	
Title Joint Venture Property Posted Mag values Grid 2 Hurtubise Twp., Ont. FIG 5.	
Date: February 89	N.T.S.: 32 E/5
Operator: T.Cardinal	MIBI/265

L 800 W
L 700 W
L 600 W
L 500 W
L 400 W
L 300 W
L 200 W
L 100 W
L 0

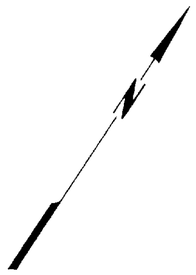
BASELINE

BASELINE

TL 1000 S

TL 1000 S

L 800 W
L 700 W
L 600 W
L 500 W
L 400 W
L 300 W
L 200 W
L 100 W
L 0



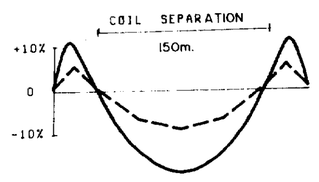
MAX-MIN II HLEM LEGEND

Profile Scale: 1 cm. = 10 %

FREQUENCY : 444Hz

IN PHASE

QUADRATURE



CONDUCTOR AXIS - WEAK

CONDUCTOR AXIS - STRONG

2.12475

SCALE 1 : 2500

50 0 50 (metres) 100 150 200

ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

For TARZAN/GARL

Title
Joint Venture Property
Max Min Survey Grid 1
Hurtubise Twp., Ont. FIG.6

Date: February 89	N.T.S.: 32 E/5
Operator: H.B/R.A	Job #: M-181/265

L 800 W
L 700 W
L 600 W
L 500 W
L 400 W
L 300 W
L 200 W
L 100 W
L 0

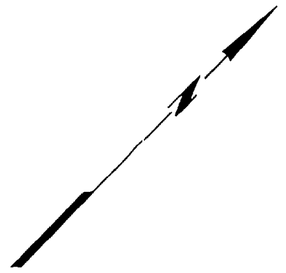
BASELINE

BASELINE

TL 1000 S

TL 1000 S

L 800
L 700
L 600
L 500 W
L 400 W
L 300 W
L 200 W
L 100 W
L 0



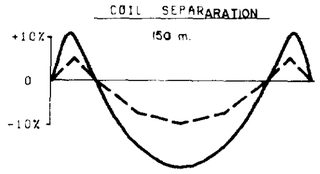
MAX-MIN II HLEM LEGEND

Profile Scale: 1 cm. = 10 %
FREQUENCY : 1777Hz

IN PHASE ——————

QUADRATURE – – – – – –

COIL SEPARARATION

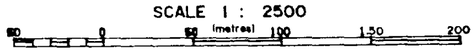


CONDUCTOR AXIS - WEAK

CONDUCTOR AXIS - STRONG

2.12475

SCALE 1 : 2500



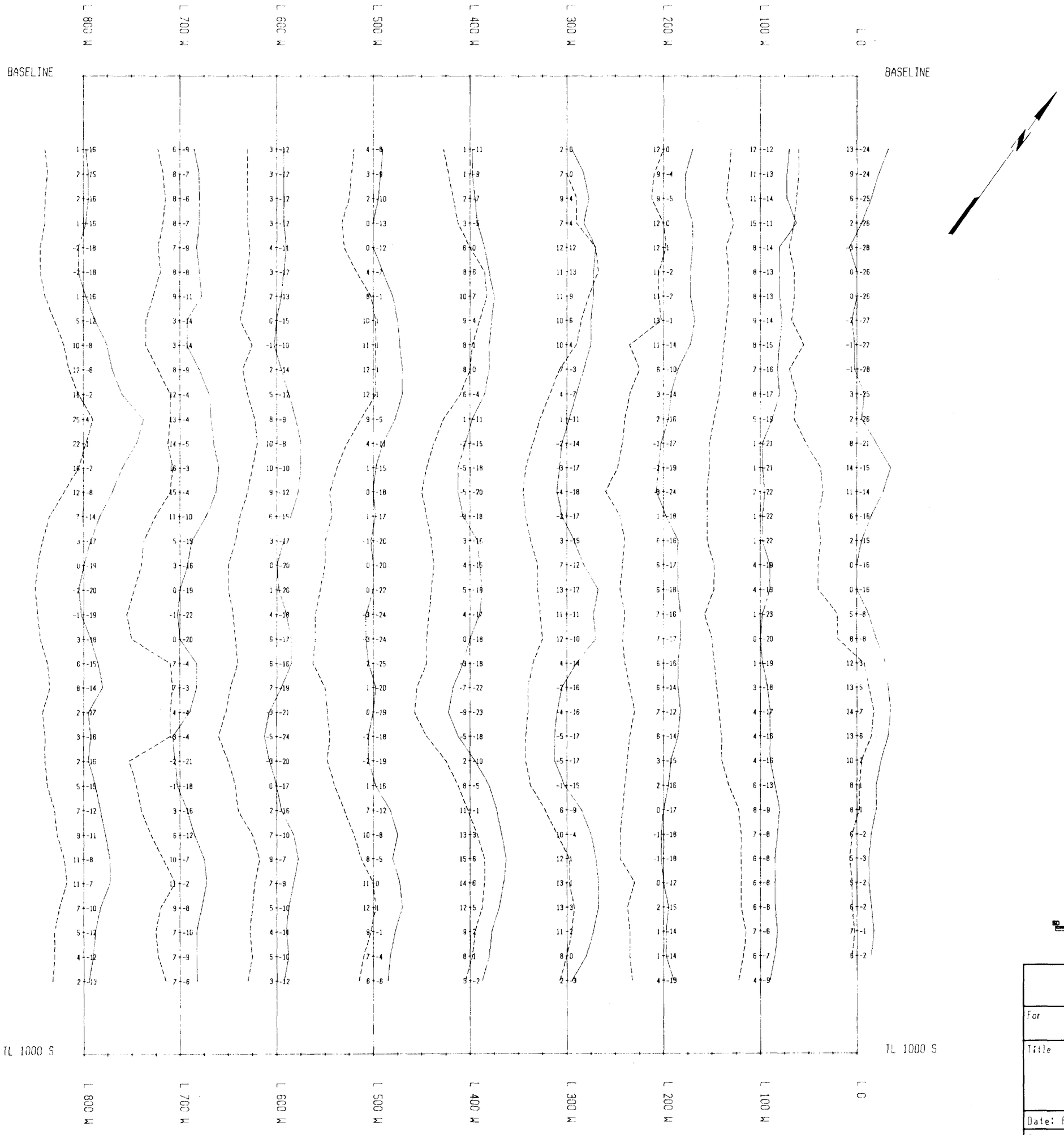
ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

For TARZAN/GARL

Title
Joint Venture Property
Max Min Survey Grid 1
Hurtubise Twp., Ont.

FIG 7.

Date: February 89	N.T.S.: 32 E/5
Operator: H.B/R.A	Job #: M-181/265



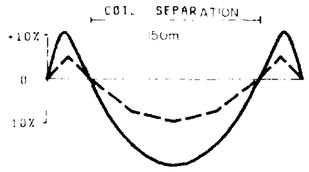
MAX-MIN II HLEM LEGEND

Profile Scale: 1 cm. = 10 %

FREQUENCY : 3555Hz

IN PHASE ——————

QUADRATURE – – – – – –



CONDUCTOR AXIS - WEAK

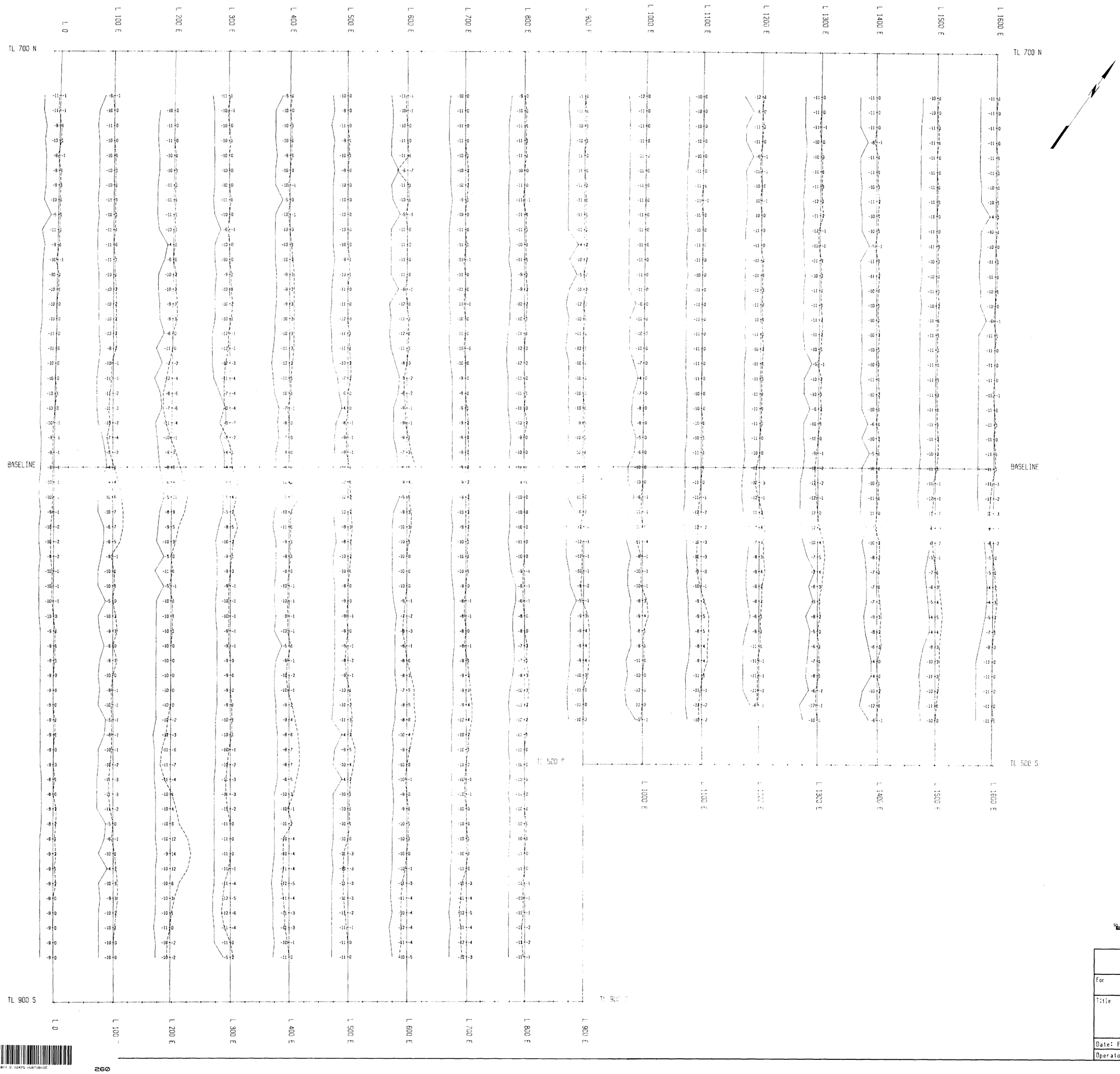
CONDUCTOR AXIS - STRONG

2.12475

SCALE 1 : 2500

50 0 50 (metres) 100 150 200

ROBERT S. MIDDLETON EXPLORATION SERVICES INC.	
For TARZAN/GARL	
Title Joint Venture Property Max Min Survey Grid 1 Hurtubise Twp., Ont. FIG 8	
Date: February 89	N.T.S.: 32 E/5
Operator: H.B/R.A	Job #: M-181/265



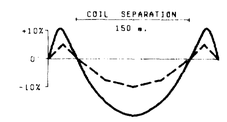
MAX-MIN II HLEM LEGEND

Profile Scale: 1 cm. = 10 %

FREQUENCY : 444Hz

IN PHASE

QUADRATURE



CONDUCTOR AXIS - WEAK

CONDUCTOR AXIS - STRONG

2.12475

SCALE 1 : 2 500

50 0 50 100 150 200

ROBERT S. MIDDLETON EXPLORATION SERVICES INC.	
For **TARZAN/GARL**	
Title **Joint Venture Property** **Max Min Survey Grid 2** Hurtubise Twp., Ont. FIG.9	
Date: February 89	N.T.S.: 32 E/5
Operator: H.B/R.A	Job #: M-181/265

L 0 | L 100 E | L 200 E | L 300 E | L 400 E | L 500 E | L 600 E | L 700 E | L 800 E | L 900 E | L 1000 E | L 1100 E | L 1200 E | L 1300 E | L 1400 E | L 1500 E | L 1600 E

TL 700 N

BASE LINE

TL 500 S

TL 900 S

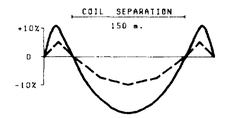
MAX-MIN II HLEM LEGEND

Profile Scale: 1 cm. = 10 %

FREQUENCY : 1777Hz

IN PHASE ——————

QUADRATURE - - - - - - -



CONDUCTOR AXIS - WEAK

CONDUCTOR AXIS - STRONG

2.12475

SCALE 1 : 2 500

50 0 50 (metres) 100 150 200

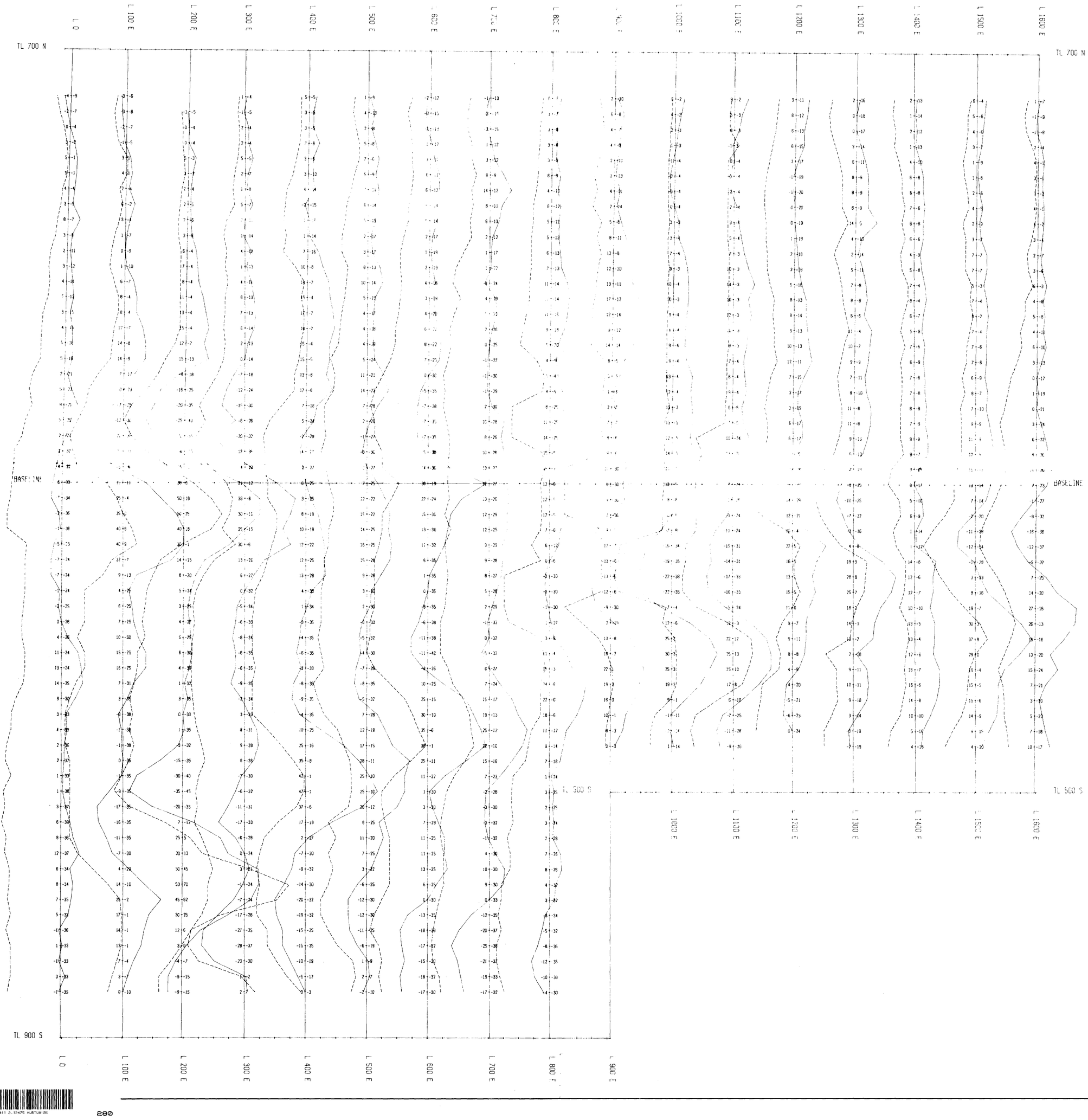
ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

For TARZAN/GARL

Title
Joint Venture Property
Max Min Survey Grid 2
Hurtubise Twp., Ont.

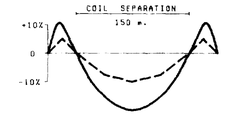
FIG10

Date: February 89	N.T.S.: 32 E/5
Operator: H.B/R.A	Job #: M-181/265



MAX-MIN II HLEM LEGEND

Profile Scale: 1 cm. = 10 %
FREQUENCY : 3555Hz
IN PHASE
QUADRATURE

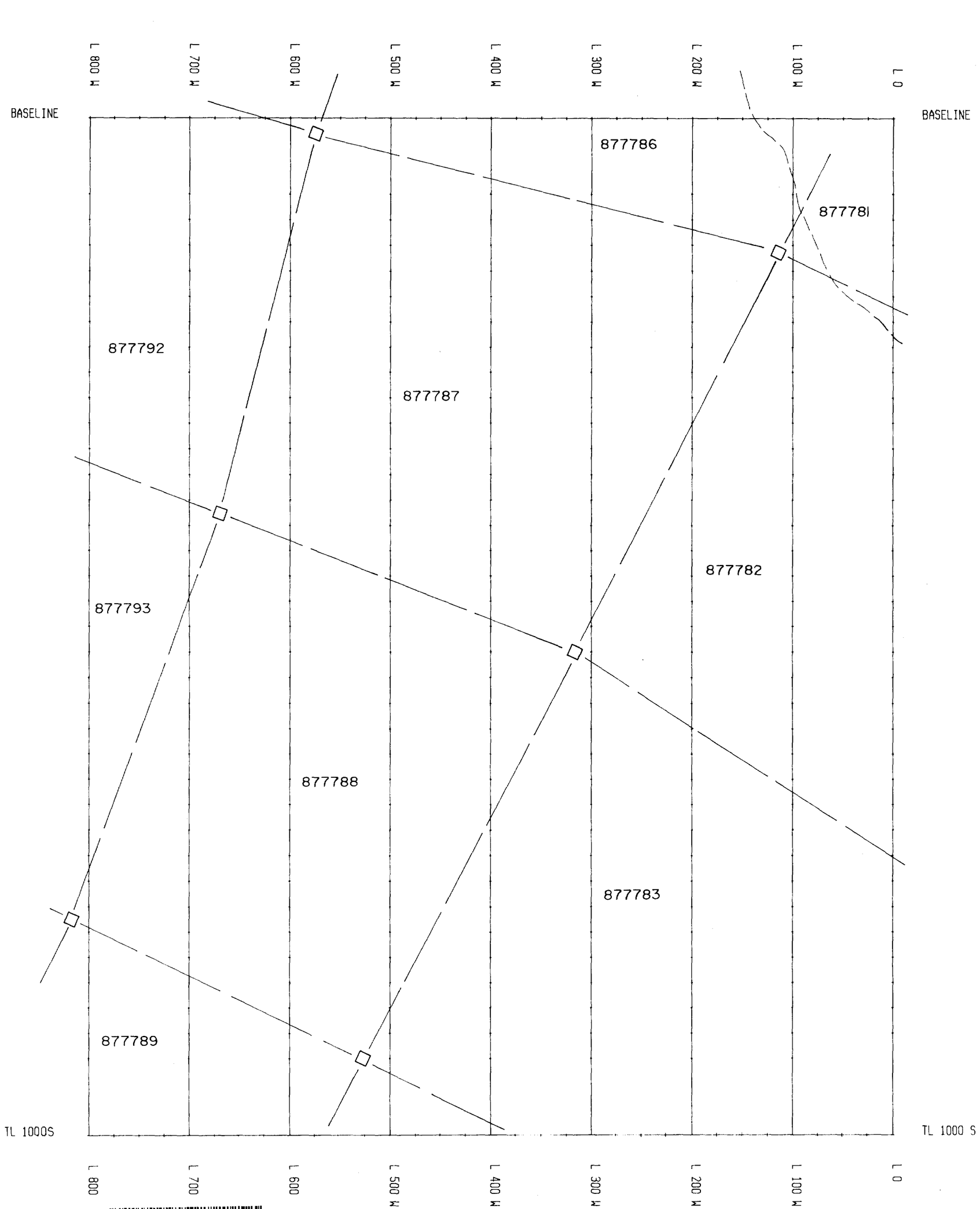


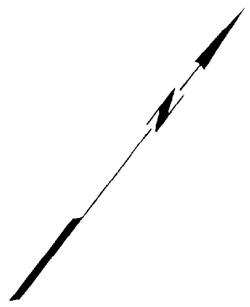
CONDUCTOR AXIS - WEAK
CONDUCTOR AXIS - STRONG

2.12475

SCALE 1 : 2 500

ROBERT S. MIDDLETON EXPLORATION SERVICES INC.	
For: TARZAN/GARL	
Title: Joint Venture Property Max Min Survey Grid 2 Hurtubise Twp., Ont. FIG.II	
Date: February 89	N.T.S.: 32 E/5
Operator: H.B/R.A	Job #: M-181/265





2.12475

TOPOGRAPHY

CLAIM POST

LAKE

STREAM

SWAMP

ACCESS ROAD

BUSH ROAD

SCALE 1 : 2500

50 0 50 (metres) 100 150 200

ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

For TARZAN/GARL

Title
Joint Venture Property
Interpretation Map Grid 1
Hurtubise Twp., Ont. FIG. 12

Date: February 89	N.T.S.: 32 E/5
Interp: R.L.	Job #: M-181/265

32E05SE0011 2.12475 HURTUBISE

L 0 | L 100 E | L 200 E | L 300 E | L 400 E | L 500 E | L 600 E | L 700 E | L 800 E | L 900 E | L 1000 E | L 1100 E | L 1200 E | L 1300 E | L 1400 E | L 1500 E | L 1600 E

TL 700 N

878019 | 877650 | 877699 | 877698 | 877649 | 878020 | 877648 | 877647 | 877644 | 877645 | 878021 | 877646 | 877643 | 877641 | 878022 | 877642

A — A'

B — B'

BASELINE

D1 | D2

TL 500 S

TL 900 S

L 0 | L 100 E | L 200 E ★ | L 300 E ★ | L 400 E | L 500 E | L 600 E ★ | L 700 E ★ | L 800 E ★ | L 900 E ★

I.P. ANOMALIES

WEAK	+ / −	RESISTIVITY CONTRAST
MODERATE	C	CONDUCTOR
STRONG	S	SHEAR

DIP

Key E.M.

Symbol	Grade	Description
●	1	Very Good Conductor
◕	2	Good Conductor
◑	3	Fair Conductor
◔	4	Weak Conductor
○	5	Very Weak Conductor

Magnetic Axis

Dn — Chargeability Anomaly

Interpreted Fault

★ Lines read by I.P. survey

TOPOGRAPHY

CLAIM POST

LAKE

STREAM

SWAMP

ACCESS ROAD

BUSH ROAD

2.12475

SCALE 1 : 2500

50 0 50 (metres) 100 150 200

ROBERT S. MIDDLETON
EXPLORATION SERVICES INC.

For TARZAN/GARL

Title

INTERPRETATION MAP GRID 2

Hurtubise Twp., Ont. FIG. 13

Date: February 89	N.T.S.: 32 E/5
Interp: R.L.	Job #: M-181/265