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Quantec IP Incorporated

Geophysical Survey Assessment Report

2.17301

Regarding the
GROUND MAGNETIC and GRADIENT TDIP INDUCED POLARIZATION SURVEYS
over the WHISKEYJACK CREEK PROJECT,
Cairo Township, Matachewan Area, ON,
on behalf of
NORCAN RESOURCES LTD.,
Vancouver, BC

RECEIVED
MAY 20 1997
MINING LANDS BRANCH

Qual # 2.16483

GRJ Warne,
N Maukonen,
C Williston,
JM Legault
April, 1997
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1. INTRODUCTION

- **QIP Project No:** P177
- **Project Name:** Whiskeyjack Creek Project
- **General Location:** Matatchewan, Ontario
- **Survey Period:** February 23 rd to March 28 TH, 1997.
- **Survey Type:** Time Domain Induced Polarization.
- **Client:** **Norcan Resources Ltd.**
- **Clients Address:** Suite 1500, 89 West Pender Street
  Vancouver, British Columbia V6C 1H2
- **Representative:** Michael Zuber, Gino Chitaroni
- **Objectives:**

  1. **Exploration objectives**:

     a) To locate and delineate potential gold (± copper) bearing sulphide mineralization, within shear-hosted, subvertical, silicified and carbonate-altered structures, associated with the Matachewan Fault/Larder Lake-Cadillac Break system, similar to the Royal Oak **Young-Davidson/Consolidated Matachewan Deposit**.

     b) To confirm and re-locate anomalies identified in previous geophysical surveys, notably IP\Resistivity targets, as noted in MPH Consulting Ltd. consulting report (July, 1996), and to expand the area of coverage away from the main Newmont workings located in the central portion of the property.

  2. **Geophysical objectives**:

     a) Magnetics: To assist in geologic mapping of possible lithologic, structural and alteration features, potentially significant to mineralization. Furthermore, to differentiate IP\Resistivity anomalies relating to magnetite from other higher priority metallic/sulphide mineralization. The "walking-magnetic" continuous profiling technique was chosen based on its state-of-the-art, high lateral resolution characteristics.

     b) IP\Resistivity: To detect and delineate potentially gold-bearing, structurally-controlled/qtz-silicified, disseminated sulphide mineralization, based on the combination of a favourable high resistivity association and a discordant EW to NE trend orientations of the targeted axes. Furthermore, to assist in geologic mapping and exploration, to depths up to 300 metres. The gradient technique was chosen based on its high resolution, deep penetration and rapid reconnaissance capabilities.

- **Report Type:** Summary interpretative, suitable for assessment filing.

2. GENERAL SURVEY DETAILS

2.1 Location

- **Township or District:** Cairo Township
- **Province or State:** Ontario
- **Country:** Canada
- **Nearest Settlement:** Matachewan, Ontario
- **NTS Map Number:** 41 P/15
- **UTM Coordinates:** grid centered on approx. 532,000mE, 5,311,000mN

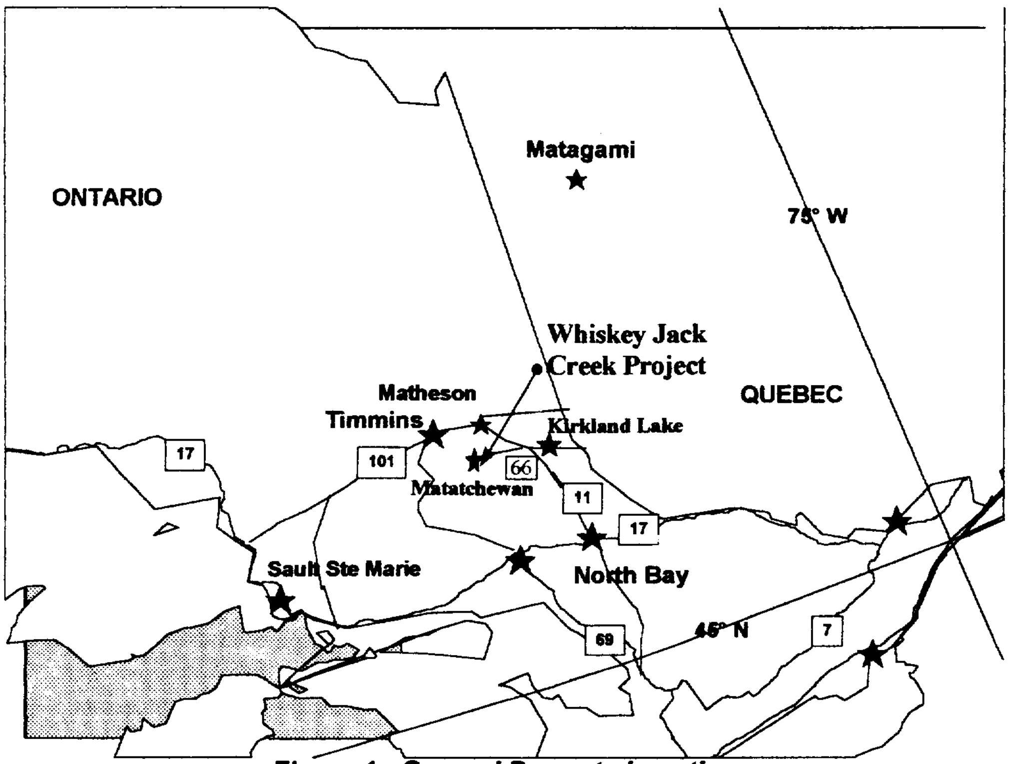

Figure 1: General Property Location

2.2 Access

- **Base of Operations:** Matachewan, northeastern ON
- **Mode of Access:** by truck approximately 2 km east on highway 66; then south to grid by snowmobile on groomed trail and power line cut-over.
- **Nearest Highways:** intersection of HWY 66 and HWY 65

2.3 Survey Grid

- **Coordinate Reference System:** Local cut and picket survey grids (non UTM)
- **Established by:** Prior to survey execution by Norcan Resources Ltd. (see Fig. 2)
- **Method of Chaining:** Linear, Metric
- **Line Direction:** N150°E (Grid N-S)
- **Line Separation:** 100m
- **Station Interval:** 25m
- **Claims Covered by Project Area[1]:**

1202755	1202873	1203523
1205560	1205572	1205573
1223379	1223380	1223381
1223382	1223383	1223384
1223385	1223386	778374
778375	802370	802649
803508	803509	821304
821306	821312	821313
821314	821315	821585
821591	821592	821593
842978	843153	843154
843155	843157	843158
843159	843160	843349
843350	843882	843890

- **Claims Covered by Survey:**

1202755	1202873	1203523
1205560	1205572	1205573
1223380	1223381	1223382
1223383	1223384	778374
778375	802370	802649
803508	803509	821304
821306	821312	821313
821314	821315	821585
821591	821592	821593
843153	843154	843155
843157	843158	843159
843160	843349	843350
843882	843890 (see Appendix E)	

[1] Ref. Mining claim numbers from Norcan Resources Ltd. Base plan map by MPH Consulting Ltd., July 1996.

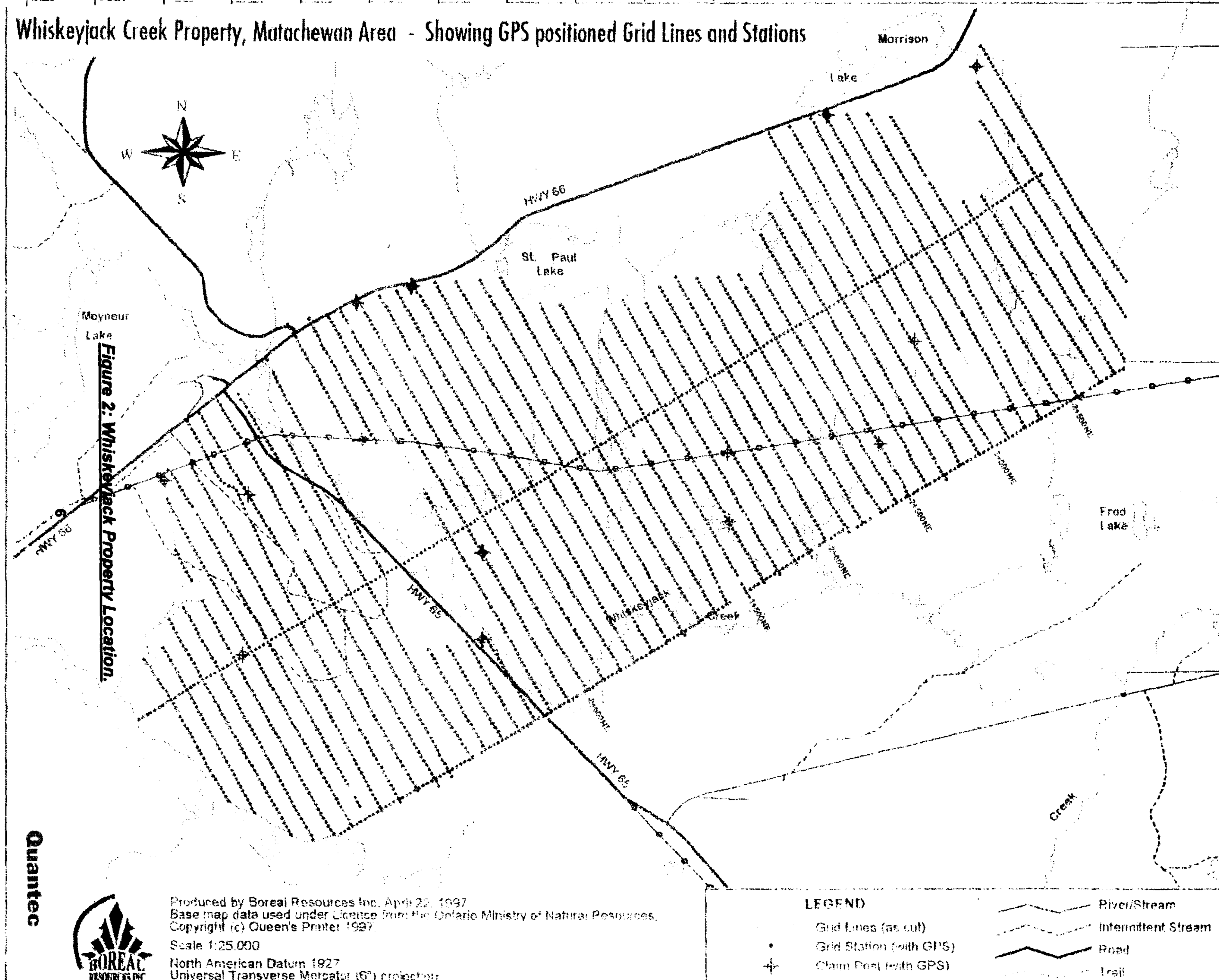

Figure 2: Whiskeyjack Property Location.

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Norcan Resources Ltd.
Whiskeyjack Creek

3. SURVEY WORK UNDERTAKEN

3.1 GENERALITIES

- **Survey Dates:** February 23RD to March 29TH, 1997
- **Survey Period:** TDIP: 35 days
  TFM: 16
- **Survey Days (read time):** TDIP - 31 days (incl. re-survey days)
  TFM - 12 days (incl. re-survey days)
- **Weather Days:** TDIP: 1
  TFM: 0
- **Mob/Demob Days:** TDIP: 2
  TFM: 2
- **Survey Preparation/Test Days:** TDIP: 1
  TFM: 2
- **Total km Surveyed:** TDIP: 122.375 km (incl. reconnaissance, overlap and re-surveys)
  TFM: 123.925 km (incl. base/tie line, overlap and re-surveys)

3.2 PERSONNEL

- **Supervisor:** GR Jeff Warne, South Porcupine, ON
- **Project Manager:** Neil Maukonen, Severn Bridge, ON
- **Field Assistants:** David Guthro, Sydney, NS
  Rob McKeown, Bracebridge, ON
  Jean-Louis Maheux, Kirkland Lake, ON
  Carmen Vucko, Kirkland Lake, ON
  Eric Hotvedt, Ramore, ON
  Ryan O'Hare, North Bay, ON
  Ivan Dalby, Newmarket, ON
- **Data Processing:** N. Maukonen
  Christine Williston, South Porcupine, ON
- **Interpretation:** Jean Legault, Timmins, ON
  C. Williston

3.3 SPECIFICATIONS

3.3.1 TDIP Surveys

- **Array:** Gradient (see Fig. 3)
- **AB (Transmitter Dipole Separation):** 2000m
- **MN:** 25m
- **Sampling Interval:** 25m
- **Total Gradient AB Blocks:** 24 labeled A to X
- **Arial Coverage:** approximately 10 km^2

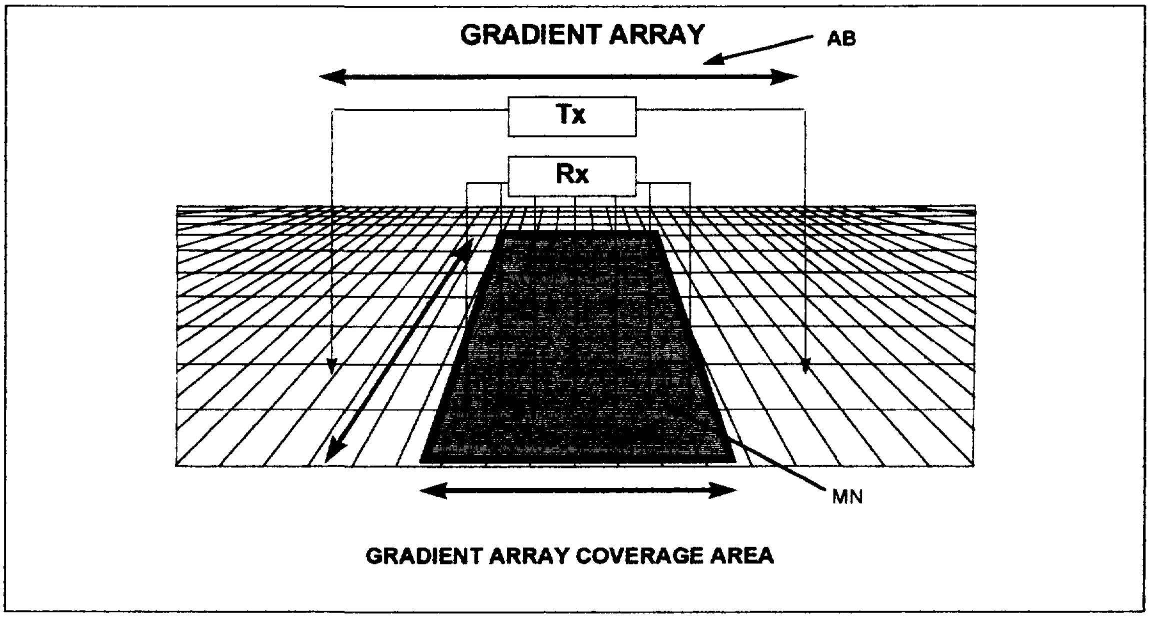


Figure 3: Gradient Array Layout.

3.4 Survey Coverage

3.4.1 TDIP Surveys

- **Reconnaissance:** 92.875 km (not incl. re-surveys)
- **Overlap:** 24.55 km

LINE	Southern Extent	Northern Extent	Length (m)
14+00W	400S	250N	650
13+00W	400S	350N	750
12+00W	450S	375N	825
11+00W	425S	475N	900
10+00W	1025S	600N	1625
9+00W	1050S	900N	1950
8+00W	1050S	1025N	2075
7+00W	1050S	1000N	2050
6+00W	1050S	1100N	2150
5+00W	1050S	1200N	2250
4+00W	1050S	1200N	2250
3+00W	1050S	1125N	2175
2+00W	1000S	1000N	2000
1+00W	1050S	475S	575
"	BL	1250N	1250
0+00E	1050S	500S	550
"	750N	1250N	500
1+00E	1050S	525S	525
"	675N	1275N	600
2+00E	1050S	550S	500
"	600N	1275N	675
3+00E	1050S	BL	1050
"	550N	1275N	725
4+00E	1050S	BL	1050
"	200N	1250N	1050
5+00E	1050S	1250N	2300
6+00E	1050S	1200N	2250
7+00E	1050S	1200N	2250
8+00E	1050S	1200N	2250
9+00E	1050S	1150N	2200
10+00E	1050S	1100N	2150
11+00E	1075S	1050N	2125
12+00E	1050S	1000N	2050
13+00E	1050S	775N	1825
14+00E	1050S	700N	1750
15+00E	1025S	750N	1775
16+00E	1050S	675N	1725
17+00E	1050S	600N	1650
18+00E	1050S	500N	1550
19+00E	1050S	500N	1550
20+00E	975S	525N	1500
21+00E	1025S	475N	1500
22+00E	1025S	425N	1450
23+00E	1050S	375N	1425
24+00E	1050S	325N	1375
25+00E	1050S	500N	1550
26+00E	1050S	575N	1625
27+00E	1050S	600N	1650
28+00E	1050S	850N	1900
29+00E	1050S	900N	1950

Table I: Gradient Survey Coverage.

LINE	Southern Extent	Northern Extent	Length (m)
30+00E	1050S	850N	1900
31+00E	1050S	850N	1900
32+00E	1050S	800N	1850
33+00E	1050S	700N	1750
34+00E	1050S	675N	1725
35+00E	1050S	100N	1150
36+00E	1050S	75N	1125
37+00E	1050S	150N	1200
38+00E	1025S	400N	1425
39+00E	850S	550N	1400
40+00E	700S	725N	1425
TOTAL			92875

Table I: Gradient Survey Coverage. (cont.)

3.4.2 TFM Surveys

- **Line Coverage:** 95.325 km
- **Base/Tie Line Coverage:** 10.4 km

LINE	Southern Extent	Northern Extent	Length (m)
BL0+00N	1600W	4025E	5625
TL10+50S	975W	3800E	4775
14+00W	600S	250N	650
13+00W	725S	350N	1075
12+00W	900S	375N	1275
11+00W	950S	475N	1425
10+00W	1000S	650N	1650
9+00W	1050S	900N	1950
8+00W	1000S	1000N	2000
7+00W	1050S	1000N	2050
6+00W	1050S	1200N	2250
5+00W	1050S	1200N	2250
4+00W	1075S	1175N	2250
3+00W	1050S	1125N	2175
2+00W	975S	1000N	1975
1+00W	BL0N	1350N	1350
"	1050S	475S	575
0+00E	775N	1250N	475
"	1050S	500S	550
1+00E	700N	1275N	525
"	1050S	525S	600
2+00E	1050S	550S	500
"	650N	1275N	625
3+00E	1050S	275N	1325
"	600N	1275N	675
4+00E	1050S	1275N	2325
5+00E	1050S	1275N	2325
6+00E	1050S	1250N	2300
7+00E	1050S	1200N	2250
8+00E	1050S	1200N	2250
9+00E	1050S	1150N	2200
10+00E	1050S	1100N	2150
11+00E	1075S	1050N	2125
12+00E	1050S	1000N	2050
13+00E	1050S	775N	1825
14+00E	1050S	725N	1775

Table II: Magnetic Survey Coverage.

LINE	Southern Extent	Northern Extent	Length (m)
15+00E	1050S	700N	1750
16+00E	1050S	675N	1725
17+00E	1050S	625N	1675
18+00E	1050S	500N	1550
19+00E	1050S	525N	1575
20+00E	1000S	525N	1525
21+00E	1000S	475N	1475
22+00E	1025S	425N	1450
23+00E	1050S	375N	1425
24+00E	1050S	675N	1725
25+00E	1050S	500N	1550
26+00E	1050S	575N	1625
27+00E	1050S	625N	1675
28+00E	1050S	925N	1975
29+00E	1050S	900N	1950
30+00E	1050S	875N	1925
31+00E	1050S	850N	1900
32+00E	1050S	800N	1850
33+00E	1050S	725N	1775
34+00E	1050S	675N	1725
35+00E	1050S	100N	1150
36+00E	1050S	75N	1125
37+00E	1050S	150N	1200
38+00E	1025S	400N	1425
39+00E	850S	575N	1425
40+00E	700S	725N	1425
TOTAL			105725

Table II: Magnetic Survey Coverage. (cont.)

3.5 INSTRUMENTATION

3.5.1 TDIP Surveys

- **Receiver**: BRGM/IRIS ELREC IP-6 (6 channel / Time Domain)
- **Transmitter:** Huntec Mk4 (7.5 kWatt / 100-3200V)
- **Power Supply:** Honda 20 HP / Bendix 18 kVA (400Hz @ 120V) motor generator system.

3.5.2 TFM Surveys

- **Magnetometers**: Two (1 base-station 1 mobile transceiver) GEM Instruments Ltd., GSM-19 model (Overhauser-type proton precession)

3.6 TDIP PARAMETERS

- **Input Waveform:** Square wave @ 0.0625 Hz, 50% duty cycle.
- **Receiver Sampling Parameters:** QIP custom windows (see Table II)
- **Measured Parameters:**

1. Chargeability in mV/V across max. 10 time-gates, plus area under decay curve.
2. Primary Voltage in millivolts and Input Current in milli-amperes for Resistivity in Ω-m calculated according to Gradient Array geometry factor[2].

Slice	Duration (msec)	Start (msec)	End (msec)	Mid-Point (msec)
Td	60	0	60	
T_1	60	60	120	80
T_2	60	120	180	150
T_3	60	180	240	210
T_4	60	240	300	270
T_5	360	300	660	480
T_6	360	660	1020	840
T_7	360	1020	1380	1200
T_8	720	1380	2100	1740
T_9	720	2100	2820	2460
T_{10}	720	2820	3540	3180
Total T_p	**3540**			

Table III: Decay Curve Sampling

3.7 MEASUREMENT ACCURACY AND REPEATABILITY

- **Chargeability**: generally less than ± 0.5 mV/V but acceptable to ±1.0 mV/V.
- **Resistivity:** less than 5%cummulative error from Primary voltage and Input current measurements.
- **Magnetics:** instrument accuracy = ± 0.1nT
  survey accuracy = ± 5%
  base/tie line repeatability = <10 nT in areas of low magnetic gradient

[2] Ref. BRGM ELREC-6 Operating Manual.

3.8 Data Presentation

3.8.1 TDIP Surveys

- **Maps:**

Geophysical Survey Plan Maps: Posted and contoured (unleveled) Total Chargeability and Apparent Resistivity compiled from all gradient AB blocks, plotted at 1:5000 scale.

Geophysical Compilation Plan Map: Interpreted chargeability axes, according to strength (strong, moderate, weak) and resistivity association (high, nil, low), and magnetic lineaments (major, minor) with claim/line locations identified, plotted at 1:5000 scale.

- **Digital:**

Raw data: IP-6 digital dump file (See also Appendix D).

Processed data: ASCII Geosoft .XYZ format.

using the following format:

Column 1 =	EW (X) line position (m)
Column 2 =	NS (Y) station position (m)
Column 3 =	Apparent Resistivity (Ω-m)
Column 4 =	Total Chargeability (mV/V)
Column >5 =	TDIP Spectral Estimates, derived using IPREDC™

3.8.2 TFM Surveys

- **Maps:**

Total Field Magnetics: Posted and contoured plan map of Total Magnetic Field (diurnally corrected), plotted at 1:5000 scale.

- **Digital:** Daily raw files and processed data (Geosoft .XYZ format) on 3.5" HD (1.44 Mbytes) diskette(s)

a) raw data files, according to acquisition date (DDMMYYk.dmp), where DDMMYY are the day, month and year and k represents either B (base station), or C (diurnal corrected), in GSM-19 format (refer to manual)

b) processed XYZ ASCII data file, according to grid (whiskey.xyz) using the following format:

Column 1:	EW line or base/tie station position (m)
Column 2:	NS station or base/tie line position (m)
Column 3:	Station position (m)
Column 4:	Time
Column 5:	Total magnetic field - uncorrected (nanoTeslas)
Column 6:	Total magnetic field - diurnal-corrected (nanoTeslas)

4. SUMMARY INTERPRETATION

4.1 OVERVIEW

The gradient IP\Resistivity and ground magnetic surveys over the **Whiskeyjack Creek Property** were designed to help detect potential gold mineralization associated with disseminated sulphides, from surface to 300m depths. The target mineralization is the **Cadillac-Larder Lake Break**-type, where <5% disseminated Au-bearing pyrite (± chalcopyrite) occurs in silicified to carbonate altered mafic intrusives and volcanics, along discordant, subvertical structurally-controlled shears, associated with the Matachewan Fault, a splay of the CLLB[3]. The Gradient IP and "walking " ground magnetic surveys were chosen based on their rapid reconnaissance, high resolution and deep penetration characteristics.

The property is underlain through its center by EW to ENE trending (grid ESE to EW) near-subvertically dipping Archean mafic volcanics, and lesser komatiites, felsites and interflow metasediments, which are intruded by nearly concordant/confomable syenites and qtz-diorites to the east and mafic to ultramafic intrusives to the west. The Archean rocks in the far-eastern portion of the property are overlain by flat-lying Huronian Cobalt Group metasedimentary cover rocks. Numerous NS oriented Matachewan diabase dykes are also present throughout the property, Round Lake Batholith gneisses border to the south, and Cairo Stock syenites occur to the north.. Structurally, the property is crosscut by ENE to NE (grid EW to ENE) shear/fault zones, which are most significant to mineralization, as they relate to the Matachewan Fault, interpreted to be the south branch of the Cadillac-Larder Lake Break, which parallels hwy. 66, just north of the property, and hosts the Royal Oak **Young-Davidson/Consolidated Matachewan Deposit**, further west in Powell Twp. The NW-SE trending (grid NS) Montreal River Fault is a later/post mineral structure which follows Hwy. 65 in the central portion of the property. Gold mineralization is present in a number of lithologic settings, including mafic to altered volcanics, iron formation, sediments, and mafic to ultramafic intrusives.

Previous exploration work on the property, dating from the 1950's, is considerable but not comprehensive - with limited DDH-drilling, and concentrating in the central and north-central portions of the property near St. Paul Lake, where numerous rich gold showing occur. Geophysical surveys include:

I) VLF-EM and HLEM/Maxmin surveys by Sylva Explorations, in 1979, identified a 300m strike length EW conductive zone near L13E/BL0 (ref. MPH Compilation Map # 1731-001, 07/96).

II) Dipole-dipole induced polarization survey by Newmont Exploration, in 1979-80, over a limited area (<0.5 km ^{2}) which defined five (5) targets, i.e. "A" = L23E-25E/050S, "B" = L21E-22E/100S, "C" = L23E/450S, "D" = 25.5E/450S, and "E" = L22E-L25E/50N (IBID).

III) Airborne magnetics, EM and VLF-EM surveys by Falconbridge Ltd., in 1985-86, which respectively identified the dominant ENE lithologic trends and major NW structural trends, bedrock topographic/lake bottom features, and a bedrock conductive zone, of 300m length, extending from L25E/200S to L28E/150S (IBID).

Apparently, none of these geophysical anomalies have been DDH-tested or trenched.

[3] Background information drawn from MPH Consulting Ltd. "Report on the Whiskeyjack Creek Property, Matachewan Area, Ontario, for Norcan Resources Ltd.", by W. Brereton and B. Schmid, July, 1996.

4.2 GEOPHYSICAL RESULTS

The present Gradient IP\Resistivity and ground Magnetic coverage at **Whiskeyjack Creek** have systematically explored a large portion of the property, extending the geophysical area of investigation beyond the immediate zone of interest which is limited to the central portion of the property. The results successfully define signatures associated with a wide variety of geologic features, potentially representing lithologies, structures and contacts, chemical alteration and, more importantly, indications of disseminated sulphide mineralization, likely to represent significant drill-targets. The following is a brief description of the salient results of the surveys.

• **Ground Magnetics:** The ground total field magnetics results display an unusually high range in values, spanning 50k-74k nT (59k nT avg.), which is consistent with large variations in magnetic susceptibility, principally related to important concentrations of magnetite. Major and minor magnetic lineaments have been interpreted in the present study and are shown in Appendix G. The diurnally corrected magnetic contour map is dominated are a major band of highly magnetic material, largely situated in the north-center of the property, which coincides with the mafic to ultramafic rocks (MPH geologic compilation map) - although it appears to also encompass adjacent volcano-sedimentary units, suggesting possible mixed lithologic(ultramafic flows, banded magnetite ± pyrrhotite) and intrusive (concordant mafic-ultramafic dykes) sources. This unit trends grid ESE-WNW, and extends more than 3.5 km in strike-length, from beyond the northwest corner of the property and pinching south of BL0 near L34E. It is formed by separate multiple, discontinuous, mainly paralleling but occasionally discordant horizons (likely faulted), and numbering as many as six across its 500-600m width. The main band also contains numerous short discordant (grid EW to NE) magnetic lineaments, representing either Matachewan dykes, other syn-volcanic mafic dykes, block faulting / displacement and/or magnetite/pyrrhotite mineralization. The band also contains several distinct areas of magnetic low, relating either to remanent magnetism or alteration/magnetite depletion which may be significant to mineralization and which may be better clarified following more extensive geologic mapping. In contrast, a deep ESE-WNW linear band of magnetic low bordering the main magnetic horizon is a source-effect, due to the N-55°N magnetic field inclination, and is unrelated to geology.

Several other strike extensive but thinner and more isolated concordant magnetic lineaments also occur south of the BL and NE of the main magnetic zone, and likely represent closely lithologic/intrusive units similar to those within the main banded zone. Numerous, more weakly magnetic and discordant NNE-SSW trending lineaments occur throughout the property, and likely represent Matachewan dykes, but are generally poorly resolved/defined due to the shallow angle to the profiles - however at least six can be roughly followed across the north to south extents of the survey area. The post volcanic/tectonic granitoid and syenitic intrusive contacts along the northern and southern perimeters of the survey areas are not readily defined - pointing to a lack of mafic material and/or contact-metamorphism in either the surrounding volcanics and intrusives. Of note, the mafic/ultramafic units mapped south of the baseline and west of Hwy. 65 also appear to contain only weak amounts of magnetite - in marked contrast to the main zone.

Evidence of fault-fracture structures is indicated by well-defined offsets and disruptions of the main band and the other lineaments, along discordant, NE trends which coincides with the key LLCB fault orientation. The most significant break in the main band is a distinctive grid NE trending disruption and zone of magnetic low centred along L7E/750N, which is an unmapped structure. The Montreal River Fault or its splay which parallels Hwy. 65 also appears to coincide with a grid NNW magnetic contact or break. Other structural features of interest will likely become apparent when comparing more detailed geologic evidence against the ground magnetics data. As a final note, while both powerlines present on the property (grid NNW-trending and paralleling Hwy. 65 ; the other cross-cutting the property and grid ESE-WSW trending) disrupted/precluded magnetic measurements across >50m intervals along each profile surveyed (see operator comments in Appendix E), neither appears to have had an obvious, anomalous influence on the magnetic results.

• **Gradient IP\Resistivity:** The IP survey results are marked by a large number of anomalous axes, having a broad range in resistivity association (high, nil, low), trend-orientation (discordant, concordant) and strength (weak to very strong) - the largest concentration and strongest of which generally coincide with the main, multi-horizon magnetic zone, previously described. Like the magnetics data, display an unusually broad range in values, with apparent resistivities varying between 60 to 80,000 ohm-metres (4k Ω-m avg.), and chargeabilities ranging up to 65 mV/V (8.5 mV/V avg.). These extreme variations in resistivity (>3 decades) are consistent with the presence of strong, contrasting chemical alteration/porosity (high ρ = silicification ± carbonitization / mod-low ρ = clay/chlorite) associated with fault-fracture structures, and also the contrasting lithologic types (mod-high ρ = felsites / mod ρ = mafites / low ρ = ultramafites). More significantly, the unusually high ranges in chargeability are consistent with sulphide mineralization ranging from disseminated (<10-20 mV/V) to stringer/semi massive (>25 mV/V) and likely also graphite and/or pyrrhotite, in the more strike extensive, highly polarizeable, concordant low resistivity horizons. Finally, as in the magnetic survey results, both the IP and resistivity plan maps display two distinctive, cross-cutting anomaly trends: 1) grid WNW-ESE being the dominant trend, relating to stratigraphic/lithologic mineralization, and 2) grid EW to ENE-WSW trend, interpreted to represent discordant, structurally-controlled mineralization, according to the target model.

The chargeability anomalies identified in the **Whiskeyjack Creek** IP\Resistivity results have been categorized according to their relative strength (questionable, weak, moderate, strong, very strong), classified according to their resistivity association (high ρ, low ρ, nil/contact). The anomalies have also been correlated from line-to-line into major, moderate and minor axes on the basis of a) their resistivity association, b) the regional geologic/geoelectric strike-trends, and c) similarities in anomaly character. In order to better visualize the relationships between the IP and Resistivity parameters, contrasting zones of high/low resistivity have also been identified. Based on these results, interpreted zones of discordant high resistivity are also identified, as they potentially relate to key structurally-controlled/hosted quartz/carbonate altered shears - some of which also host coincident IP anomalies. IP anomalies retaining the greatest interest, on the basis of the geophysics alone (strength, strike-length) and the target model (high ρ, EW to ENE strike) are described below:

No.	LINE	STATION	MAGNETIC ASSOCIATION	PRIORITY	COMMENTS
1.	1400W 1300W 1200W	125S 112S 088S	Edge Weak None	2	Grid ENE trending, moderate to mod-strong IP axis, coincides with discordant ENE high res. zone, cross-cuts weak concordant magnetic lineament, lies in volcanics, open to SW.
2.	900W 800W	088N 112N	Edge Strong	2	Grid ENE trending, moderate IP axis, coincides with center of longer, discordant ENE high res. zone, partly coincident with near concordant EW magnetic lineament, lies in mafic-ultramafics.
3.	800W 700W	738N 788N	None Edge	2	Grid NE trending, mod-strong but short IP axis, coincides with similar short, NE high res. zone, strike extension of magnetic lineament, lies in mafic-ultramafic intrusive.
4.	700W 600W 500W	988N 1025N 1038N	None Strong Strong	2	Grid ENE trending, moderate IP axis, coincides with shorter discordant ENE high res. zone, partly coincident with major near-concordant EW mag. lineament, lies in volcanics, NE ends at powerline
5.	700W 600W 500W	388N 388N 388N	None Strong Edge	2	Grid EW trending, moderate IP axis, lies in near-concordant EW high res. rocks, on strike between two ENE high ρ zones, cross-cuts SE concordant magnetic lineament, in volcanics but extends from ultramafic-mafic unit.

Table IV: Recommended Targets at Whiskeyjack Creek.

No.	LINE	STATION	MAGNETIC ASSOCIATION	PRIORITY	COMMENTS
6.	500W 400W 300W 200W	438N 450N 488N 525N	Strong None Strong Edge	1	Grid ENE trending, strike-extensive, moderate to very strong IP axis, coincides with discordant ENE high res. zone, cross-cuts major near-concordant NW-SE magnetic lineaments and strongest IP occurs in nil-res. and highly magnetic portion (possible carbonate-altered ultramafic ?), lies in volcanics but extends between two mapped ultramafic-mafic intrusives.
7.	100E 200E 300E	1188N 1212N 1238N	Strong Low Edge	2	Grid ENE trending, moderate to strong IP axis (or possibly three separate/unrelated anomalies) partly coincides with discordant ENE high res. zone, cross-cuts concordant ESE magnetic lineaments and lies within magnetic low (alteration/depletion?), lies in volcanics.
8.	100E 200E 300E	1062N 1088N 1100N	Strong Edge Edge	1	Grid ENE trending, strike extensive and strong IP axis, coincides with discordant ENE high res. zone, cross-cuts/extends between 2 concordant WNW trending magnetic lineaments, lies along volcanic/silicic intrusive contact.
9.	300E 400E	862S 825S	Edge None	2	Grid NE trending, short, moderate IP axis, lies at NE edge of longer, discordant NE high res. zone and on-strike with weaker, discordant IP axis, cross-cuts weak, concordant ESE magnetic lineament, lies in thin volcanic, north of contact.
10.	500E 600E 700E	362S 338S 312S	Edge Weak Edge	2	Grid ENE trending, moderate IP axis, coincides with discordant high res. zone, cross-cuts weakly discordant magnetic lineament, lies in mafic-ultramafic, just south of volcanic contact.
11.	600E 700E 800E 900E	188S 175S 175S 175S	Major Low None None	1	Grid EW trending, strong to very strong and strike extensive IP axis, extends discordantly across a magnetic, high res. unit into a discordant ENE high res. zone, lies in volcanics.
12.	600E 700E 800E 600E 700E	438N 450N 488N 500N 512N	None Edge Major Edge Edge	1	Two paralleling, grid ENE trending, strong IP axes, occur within a longer discordant ENE high res. zone, extend SW from major, concordant magnetic lineaments, lies in silicic intrusive (?), 300m NW of Newmont gold showings.
13.	500E 600E	912N 912N	Edge Major	2	Grid EW trending, strong but short strike length IP axis, extends along south contact of weakly discordant high res. unit, cross-cuts concordant magnetic lineament, lies in silicic intrusive rocks.
14.	500E 600E	988N 1012N	Edge Edge	1	Grid ENE trending, strong IP axis, occurs between two discordant ENE high res. zones, also forms center of longer nil to high res. axis occuring at contacts. Partly coincident but cross-cutting a major near discordant magnetic axis, lies in silicic intrusive, centred on ENE fault.
15.	500E 600E 700E	1088N 1112N 1112N	Edge Edge Edge	1	Grid ENE trending, strong IP axis, coincides with discordant ENE high res. zone, on strike with similar high priority structure 100m west, cross-cuts two discordant magnetic lineaments, occurs in silicic intrusive, just south of volcanic contact.
16.	800E 900E 1000E	888N 912N 912N	Edge Minor Edge	1	Grid ENE to EW trending, mod to strong IP axis, coincides with similar discordant ENE high res. zone, cross-cuts concordant magnetic linear, lies in silicic intrusive rocks, west of volcanic contact.

Table II (continued): Recommended Targets at Whiskeyjack Creek

No.	LINE	STATION	MAGNETIC ASSOCIATION	PRIORITY	COMMENTS
17.	1000E 1100E	462N 462N	Major Edge	2	Grid EW trending, strong IP axis, crosscuts narrow, longer and strike extensive discordant, ENE high res. lineament, cross-cuts a major concordant ESE magnetic lineament, on strike with other high priority linear 100m west, in volcanics
18.	1000E 1100E 1200E 1200E 1300E	262S 250S 212S 262S 262S	Major Edge Edge Major Edge	1 2	Two near-paralleling, grid ENE-EW trending, moderate IP axes, coincide with discordant ENE high res. zone, occur on edges of a near concordant EW to ESE magnetic lineament, lies on contact between silicic and ultramafic intrusives.
19.	800E 900E 1000E 1100E	700S 688S 638S 638S	Minor None None Edge	2	Grid ENE to EW trending, moderate IP axis, lies along south edge of longer, broad, discordant high res. zone, non magnetic, lies along volcanic and mafic-ultramafic intrusive contact.
20.	1200E 1300E 1400E 1500E 1600E	762S 750S 712S 688S 625S	Edge None Edge None None	2	Grid ENE to NE trending, weak to moderate IP axis, coincides with discordant ENE trending high res. zone, non-magnetic, lies in volcanic rocks north of silicic intrusive contact.
21.	1900E 2000E	338S 325S	None Edge	1	Grid ENE to EW trending, short but strong IP axis, coincides with NE end of longer discordant ENE high res. zone, non magnetic, lies in silicic intrusive sill (?).
22.	1700E 1800E 1900E	088S 088S 062S	Edge Edge Edge	1	Grid EW to ENE trending, strong IP axis, coincides with longer, discordant ENE high res. zone, south of major concordant magnetic lineament/stratigraphy, in volcanic rocks, on strike with previous IP anomalies, 100m east.
23.	1500E 1600E 1700E	312N 338N 362N	Edge Edge Low	2	Grid ENE trending, moderate to strong IP axis, partly coincides with longer, narrow, strike extensive discordant ENE high res. zone, crosscuts concordant ESE magnetic lineament and extends into possible alteration/depletion zone, lies in volcanics.
24.	1700E 1800E 1900E 2000E	362N 362N 362N 362N	Low Low Edge Edge	2	Grid EW trending, strike-extensive strong to moderate IP axis, occurs within near-discordant high res. rocks, east of discordant zone, crosscuts concordant magnetic lineaments, and extends from possible alteration/depletion zone, lies in volcanics, investigated by trench at L18E.
25.	1800E 1900E 2000E 2100E	425N 450N 450N 488N	Edge Edge None Edge	2	Grid ENE trending, moderate IP axis, partly coincides with longer, strike extensive, narrow high res. zone, and on strike with other high priority axis, 100m SW, non-magnetic, in volcanic rocks.
26.	2100E 2200E 2300E	238N 250N 262N	Edge Low None	2	Grid ENE trending, strong to moderate IP axis, coincides with near-discordant EW band of high res. rocks, just west of discordant ENE high res. zone, non magnetic, lies in volcanics, 100m north of previous IP anomalies.
27.	2100E 2200E 2300E 2400E 2400E 2500E	250S 188S 162S 138S 138S 062S	Low None Edge Major Major Major	1 1.5	One or two separate, grid ENE to NE trending, strong, strike-extensive IP axis, coincide with longer, well-defined, discordant ENE high res. zone, converges with major NE discordant 250m long, magnetic axis (too short for Matachewan ?), lies in volcanic rocks, coincides with previous IP axes "B" and "A", trenching along strike to NE.

Table II (continued): Recommended Targets at Whiskeyjack Creek

No.	LINE	STATION	MAGNETIC ASSOCIATION	PRIORITY	COMMENTS
28.	2100E 2200E 2300E 2400E	538S 488S 462S 462S	Edge Minor None None	2	Grid EW to ENE trending, weak to moderate IP axis, lies along south edge of discordant, ENE trending high res. zone, non-magnetic (cross-cuts discordant NE trending magnetic lineament, lies in volcanics, coincides with previous axis "C"
29.	2600E 2700E 2800E	712S 688S 675S	Edge Edge None	2.5	Grid ENE trending, mixed resistivity, moderate IP axis, lies along SW extent of longer, narrow ENE high res. zone, and on-strike with other high priority axes 100m to NE, non magnetic, extends from volcanics to silicic intrusive to NE.
30.	2800E 2900E 2900E 3000E 3100E	612S 588S 638S 612S 562S	None None Edge None Edge	2 1	Two paralleling, grid ENE trending, moderate and strong IP axes, lying on north and south (respectively) edge of longer, strike-extensive, broad high res. zone, and on-strike with other high priority axes 100m SW, non magnetic and cross-cuts major NE trending lineament, north zone lies along volcano-intrusive contact and tested by DDH and gold-bearing; south zone extends from silicic intrusive plug to volcanics.
31.	3000E 3100E	138S 112S	None None	2	Grid ENE trending, moderate IP axis, lies along north edge of short discordant ENE high res. zone, non-magnetic, on-strike with airborne EM anomaly (?), lies in volcanic rocks.
32.	3000E 3100E 3200E 3000E 3100E 3200E	112N 112N 112N 162N 162N 162N	Edge Edge Edge Edge Edge None	2 2	Two paralleling, grid EW trending, moderate IP axes, lies in EW band of high res. rocks, and cross-cuts longer ENE trending high res. zone, lies on strike with other high priority axis to NE, lies in weakly magnetic rocks but non-magnetic, lies in mapped volcanic rocks
33.	3200E 3300E 3400E	212N 212N 238N	Edge Edge Major	2	Grid EW to ENE trending, moderate IP axis, coincides with NE extension of a longer ENE discordant high res. zone, and on-strike or continuous with other high priority target to SW, closely parallels or coincident with near concordant ESE major magnetic lineament, in mapped volcanics, open to NE.
34.	3400E 3500E	025S 012N	None None	2	Grid ENE trending, short strike-length, moderate IP axis, extends NE from short, discordant ENE high res. zone, non-magnetic, lies in volcanics.
35.	3200E 3300E 3400E 3500E	162S 125S 088S 088S	None None None None	1.5	Grid ENE trending, strike-extensive but moderate, diffuse IP axis, coincides with discordant, NE trending high res. zone, non magnetic, lies in volcanics and coincides with mapped fault.
36.	3100E 3200E 3300E 3400E	288S 238S 188S 162S	None Edge Major None	1.5	Grid ENE trending, strike-extensive, but weak to moderate, diffuse IP axis, coincides with discordant NE trending high res. zone, cross-cuts major NE trending magnetic axis, lies in volcanics.
37.	3300E 3400E	612S 588S	Weak Weak	2	Grid ENE trending, short strike-length, moderate IP axis, occurs at SE extent of longer, narrow, discordant ENE high res. zone, cross-cuts but possibly related to cross-cutting NE & NS magnetic linears (buried), on strike with other high priority IP axes to west, likely in volcanics but buried below Huronian cover rocks.

Table II (continued): Recommended Targets at Whiskeyjack Creek

No.	LINE	STATION	MAGNETIC ASSOCIATION	PRIORITY	COMMENTS
38.	3500E 3600E 3700E 3800E 3900E 3900E 4000E	175S 162S 088S 038S 012N 050S 000	None Weak None Weak None None None	2 2	Two paralleling, grid ENE trending, moderate, short to strike extensive IP axes, lying on borders of a prominent, broad, discordant high res. zone, non magnetic but cross-cuts major concordant ESE magnetic lineament, lies in volcanic rocks, north of Huronian contact, open to NE.
39.	3800E 3900E 4000E	138N 100N 150N	None None None	2.5	Possibly multiple, grid EW to ENE trending, moderate, mixed resistivity IP axes, occurring within discordant, EW to ENE high res. zone, non-magnetic, lying in volcanic rocks, buried below Huronian cover rocks, open to NE.
40.	3700E 3800E 3900E 4000E	562S 538S 512S 462S	Edge None None None	2	Grid ENE trending, moderate but strike extensive IP axis, lies on south border of discordant ENE high res. zone, non magnetic, coincides with mapped Huronian cover rocks, but likely buried at depth within volcanic basement.

Table II (continued): Recommended Targets at Whiskeyjack Creek

5. CONCLUSION AND RECOMMENDATIONS

The Gradient IP/Resistivity and ground magnetic results at **Whiskeyjack Creek** identify potential chargeability and resistivity signatures relating to the subsurface geology, including possible lithologic discrimination, fault-fracture structures, geochemical alteration and, most importantly, concentrations of disseminated sulphide potentially associated with gold-mineralized, quartz/carbonate alteration in discordant fault-fracture and shear zones. In response to the geologic objectives, fifteen (**15**) high priority targets have been identified, which host significant chargeability, strike-length and geoelectric characteristics relating to the target model. In addition to these highest priority targets, twenty-five (**25**) other 2^ND^ priority axes have also been identified which share similar characteristics, but are either shorter strike length or weaker, resulting in a lower priority. Nevertheless, due to the large number of anomalies present at **Whiskeyjack**, the present study has restricted itself to the specific to the target model, and is by no means exhaustive. However, it is worthwhile noting that the Newmont gold showings (ref. MPH 1996 report) in fact coincide with a short length, moderate to strong, high to nil resistivity, non-magnetic, discordant grid-ENE IP axis, and occurs within a well-defined grid ENE high resistivity zone - which is consistent with our prioritization.

In addition to those targets listed, many other chargeability anomalies of interest occur throughout the property, and could still represent economic targets - including structurally-controlled, discordant mineralization along either weakly altered shears, alteration contacts, and clay-altered faults &/or stringer sulphides. Concordant targets of interest could include possibly gold-bearing stringer to semi-massive stratiform mineralization, or structurally controlled concordant fault-shears and contact-type mineralization associated with ultramafic units. We also note that, all anomalies previous geophysical surveys have been identified, including the five Newmont IP axes - although the gradient suggests a re-alignment of the grid EW axes to either concordant ESE or discordant ENE. The Sylva VLF/Maxmin conductor coincides with a concordant ESE trending, non-magnetic, highly polarizeable, low resistivity lineament. The Falconbridge airborne EM anomaly is a strike-extension of the HLEM/VLF conductor, but lies 100m further south than indicated on the MPH compilation map (#1731-001 @ 1996). These likely represent either graphitic metasediments, massive sulphides within a BIF, strongly altered/magnetite-depleted ultramafics, or a major mineralized concordant fault.

We recommend that these results be combined with existing geoscientific information prior to follow-up. We also recommend that the current priority targets be carefully evaluated prior to and during the DDH-testing stage. Particular attention should be given to the probable type of mineralization indicated by the resistivity and magnetic association. Finally, because of the poor vertical depth-control inherent with the gradient technique, we recommend that the high priority axes warranting additional follow-up be detailed using Realsection IP prior to drill-targeting, to provide some measure of depth/dip control. Additional processing in the form of gradient block-leveling and optimal parameter filtering could also be used to improve the interpretability of the results.

RESPECTFULLY SUBMITTED

G.R. Jeff Warne
Senior Geophysicist

Jean M. Legault
Senior Geophysicist

per N.M.

Neil Maukonen
Geophysical Operator

Christine Williston
Junior Geophysicist

Porcupine, ON
April, 1997

APPENDIX A

STATEMENT OF QUALIFICATIONS:

I, G.R. Jeffrey Warne, hereby declare that:

1. I am a geophysicist with residence in South Porcupine, Ontario and am presently employed in this capacity with Quantec IP Inc. of Waterdown, Ontario.

2. I studied Engineering Geophysics in the Faculty of Applied Science at Queen's University in Kingston, Ontario, completing all but two of the course requirements for a B.Sc.(Eng.) in 1981.

3. I have practiced my profession continuously since May, 1981 in Canada, the United States and Chile.

4. I have no interest, nor do I expect to receive any interest in the properties or securities of **Norcan Resources Ltd.**

5. The statements made in this report represent my professional opinion based on my consideration of the information available to me at the time of writing this report.

Porcupine, Canada
April, 1997

G.R. Jeffrey Warne
Senior Geophysicist
General Manager - QIP

APPENDIX A

STATEMENT OF QUALIFICATIONS:

I, Jean M. Legault, declare that:

1. I am a consulting geophysicist with residence in South Porcupine, Ontario and am presently employed in this capacity with Quantec IP Inc. of Waterdown, Ontario.

2. I obtained a Bachelor's Degree, with Honours, in Applied Science (B.A.Sc.), Geological Engineering (Geophysics Option), from Queen's University at Kingston, Ontario, in Spring 1982.

3. I am a registered professional engineer (# 047032), with license to practice in the Province of Quebec, since 1985.

4. I have practiced my profession continuously since May, 1982, in North-America, South-America and North-Africa.

5. I am a member of the Society of Engineers of Quebec, the Quebec Prospectors Association, the Prospectors and Developers Association of Canada, and the Society of Exploration Geophysicists.

6. I have no interest, nor do I expect to receive any interest in the properties or securities of **Norcan Resources Ltd.**

7. The statements made in this report represent my professional opinion based on my consideration of the information available to me at the time of writing this report.

Porcupine, Ontario
April, 1997

Jean M. Legault, P.Eng. (QC)
Chief Geophysicist
Dir. Quantec Technical Services

APPENDIX A

STATEMENT OF QUALIFICATIONS:

I, Christine Williston, hereby declare that:

1. am a processing geophysicist with residence in South Porcupine, Ontario and am presently employed in this capacity with Quantec Consulting Inc. of Porcupine, Ontario.
2. I am a graduate of York University, North York, ON, in 1994, with an Honours Bachelor of Science Degree in Earth and Atmospheric Science.
3. I have practiced my profession in Canada since graduation.
4. I have no interest nor do I expect to receive any interest, direct or indirect, in the properties or securities of **Norcan Resources Ltd.**
5. The maps created in this report accurately represent the information given to me at the time of the preparation of this report.

Porcupine, Ontario
April, 1997

C. Williston

Christine Williston, B.Sc.
Processing Geophysicist
Quantec Technical Services

APPENDIX B

THEORETICAL BASIS AND SURVEY PROCEDURES

TDIP SURVEYS

The "RealSection" survey design uses multiple gradient arrays - with variable depths of investigation controlled by successive changes in array size/geometry. The method of data acquisition and the "RealSection" presentation are based on the specifications developed by Dr. Perparim Alikaj, of the Polytechnic University of Tirana, Albania, over the course of 10 years of application. This technique has been further developed for application in Canada during the past four years, in association with Mr. Dennis Morrison, president of Quantec IP Inc.

The Gradient Array measurements are unique in that they best represent a bulk average of the surrounding physical properties within a relatively focused sphere of influence, roughly equal to the width of the receiver dipole, penetrating vertically downward from surface to great depths. These depth of penetration and lateral resolution characteristics are showcased when presented in plan, however through the use of multiple-spaced and focused arrays, the advantages of the gradient array are further highlighted when the IP/Resistivity data are fully developed in cross-section, using RealSections.

The resistivity is among the most variable of all geophysical parameters, with a range exceeding 10^6. Because most minerals are fundamentally insulators, with the exception of massive accumulations of metallic and submetallic ores (electronic conductors) which are rare occurrences, the resistivity of rocks depends primarily on their porosity , permeability and particularly the salinity of fluids contained (ionic conduction), according to Archie's Law. In contrast, the chargeability responds to the presence of polarizeable minerals (metals, submetallic sulphides and oxides, and graphite), in amounts as minute as parts per hundred. Both the quantity of individual chargeable grains present, and their distribution with in subsurface current flow paths are significant in controlling the level of response. The relationship of chargeability to metallic content is straightforward, and the influence of mineral distribution can be understood in geologic terms by considering two similar, hypothetical volumes of rock in which fractures constitute the primary current flow paths. In one, sulphides occur predominantly along fracture surfaces. In the second , the same volume percent of sulphides are disseminated throughout the rock. The second example will, in general, have significantly lower intrinsic chargeability.

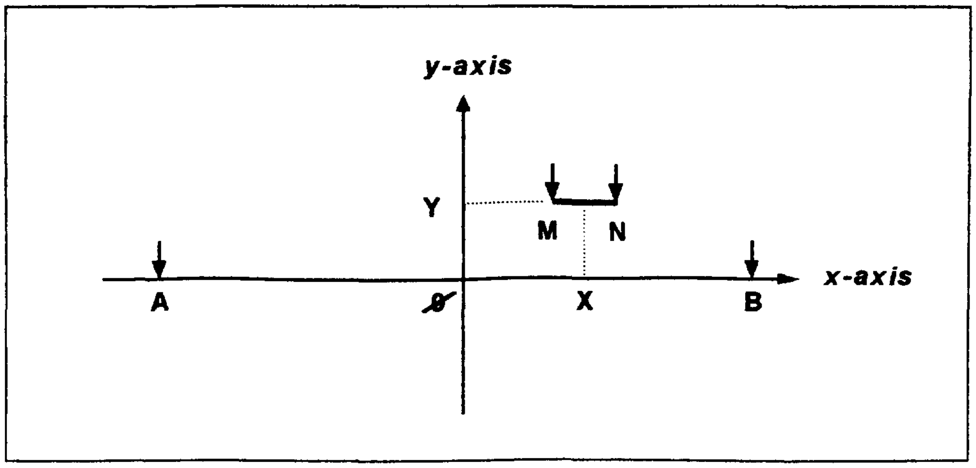


Figure C1:: Gradient array configuration

Using the diagram in Figure C1 for the gradient array electrode configuration and nomenclature:[4], the gradient array apparent resistivity is calculated:

where: the origin **0** is selected at the center of **AB**
the geometric parameters are in addition to **a** = **AB/2** and **b** = **MN/2**
X is the abscissa of the mid-point of **MN** (positive or negative)
Y is the ordinate of the mid-point of **MN** (positive or negative)

Gradient Array Apparent Resistivity:

$$\rho a = K \frac{VP}{I} \quad ohm\text{-}metres$$

$$where: \quad K = \frac{2\pi}{(AM^{-1} - AN^{-1} - BM^{-1} + BN^{-1})}$$

$$AM = \sqrt{(a+x-b)^2 + y^2}$$

$$AN = \sqrt{(a+x+b)^2 + y^2}$$

$$BM = \sqrt{(x-b-a)^2 + y^2}$$

$$BN = \sqrt{(x+b-a)^2 + y^2}$$

Using the diagram in Figure C2 for the Total Chargeability:

[4] From Terraplus\BRGM, <u>IP-6 Operating Manual</u>, Toronto, 1987.

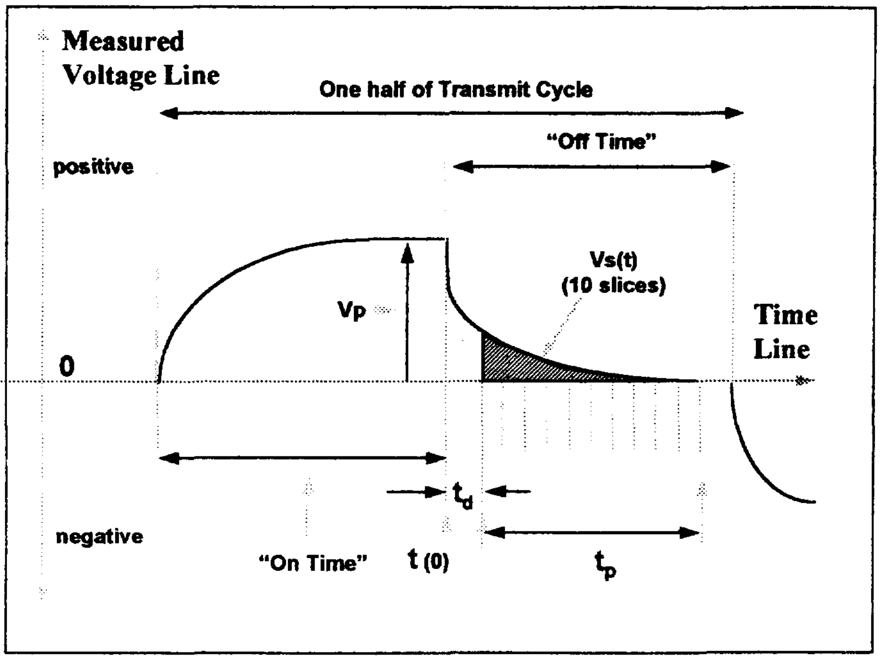


Figure C2 The measurement of the time-domain IP effect.

the total apparent chargeability is given by:

Total Apparent Chargeability:[5]

$$M_T = \frac{1}{t_p V_p} \sum_{i=1 \text{ to } 10} \int_{t_i}^{t_{i+1}} Vs\ (t)\, dt \qquad \text{millivolts per volt}$$

where t_i, t_{i+1} are the beginning and ending times for each of the chargeability slices,

More detailed descriptions on the theory and application of the IP/Resistivity method can be found in the following reference papers:

Cogan, H., 1973, Comparison of IP electrode arrays, Geophysics, 38, p 737 - 761.

Langore, L., Alikaj, P., Gjovreku, D., 1989, Achievements in copper sulphide exploration in Albania with IP and EM methods, Geophysical Prospecting, 37, p 925 - 941.

[5] From Telford, et al., Applied Geophysics, Cambridge U Press, New York, 1983..

APPENDIX B

THEORETICAL BASIS AND SURVEY PROCEDURES

MAGNETICS

Base station corrected Total Field Magnetic surveying is conducted using at least two synchronized magnetometers of identical type. One magnetometer unit is set in a fixed position in a region of stable geomagnetic gradient, and away from possible cultural effects (i.e. moving vehicles) to monitor and correct for daily diurnal drift. This magnetometer, given the term 'base station', stores the time, date and total field measurement at fixed time intervals over the survey day. The second, remote mobile unit stores the coordinates, time, date, and the total field measurements simultaneously. The procedure consists of taking total magnetic measurements of the Earth's field at stations, along individual profiles, including Tie and Base lines. A 2 meter staff is used to mount the sensor, in order to optimally minimize localized near-surface geologic noise. At the end of a survey day, the mobile and base-station units are linked, via RS-232 ports, for diurnal drift and other magnetic activity (ionospheric and spheric) corrections using internal software.

APPENDIX C

PRODUCTION LOGS

	TIME DOMAIN INDUCED POLARIZATION SURVEY				
DATE	**DESCRIPTION**	**LINE**	**START**	**END**	**TOTAL (m)**
23-Feb	Mob to Matachewan				
24-Feb	Established Tx dipole AB 2000 at 1400N, 600S on line 2800E				
	Current low, moved north end of AB 2000 to 1250S **Block A**				
25-Feb	Survey	2600E	575N	175S	750
	Results poor on south end of lines. Decay curves bad and data noisy in spots.	2700E	275S	600N	875
		2800E	850N	550N	300
				Total	**1925**
	Block B				
26-Feb	Established Tx dipole AB 2000 at 1250N, 750S on line 3300E				
	Survey	3000E	850N	200S	1050
		3100E	200S	850N	1050
		3200E	800N	250S	1050
		3300E	200S	700N	900
				Total	**4050**
27-Feb	Survey	3400E	675N	225S	900
		3500E	200S	100N	300
	Block A				
	Established Tx dipole AB 2000 at 1400N, 600S on line 2800E	3000E	50S	850N	900
		2900E	900N	150S	1050
	300m re-survey on L28E	2800E	200S	850N	1050
	re-survey L27E	2700E	575N	275N	300
				Total	**3900**
				Re-survey	**600**
28-Feb	Survey	2700E	275N	175S	450
	re-survey L26E, L27E	2600E	175S	575N	750
		2500E	500N	100S	600
	Block C				
	Established Tx dipole AB 2000 at 1000N, 1000S on line 2200E	2500E	100S	500N	600
		2400E	325N	425S	750
		2300E	500S	375N	875
		2200E	425N	275N	150
				Total	**2975**
				Re-survey	**1200**
1-Mar	Survey	2200E	275N	475S	750
		2100E	400S	475N	875
		2000E	525N	375S	900
	Block D				
	Established Tx dipole AB 2000 at 500N, 1500S on line 2200E	2000E	225S	975S	750
		2100E	1025S	450S	575
				Total	**3850**
2-Mar	Survey	2100E	450S	150S	300
		2200E	150S	1025S	875
		2300E	1050S	150S	900
		2400E	150S	1050S	900
		2500E	1050S	BL	1050
				Total	**4025**
3-Mar	**Block E**				
	Established Tx dipole AB 2000 at 375N, 1625S on line 2800E				
	Move TX site to power line; Survey	2500E	BL	600S	
	Decays poor; move north end of AB to 500N on line 2800E				
	Survey	2500E	BL	1050S	1050
		2600E	1050S	BL	1050
		2700E	BL	1050S	1050
				Total	**3150**

DATE	DESCRIPTION	LINE	START	END	TOTAL (m)
4-Mar	Survey	2800E	1050S	BL	1050
		2900E	BL	1050S	1050
		3000E	1050S	BL	1050
	Block F				
	Established Tx dipole AB 2250 at 575N, 1675S on line 3300E				
	Survey	3000E	BL	750S	750
		3100E	1050S	BL	1050
		3200E	BL	1050S	1050
				Total	**6000**
5-Mar	Survey	3300E	1050S	BL	1050
		3400E	BL	1050S	1050
		3500E	1050S	BL	1050
	Block G				
	Established Tx dipole AB 2000 at 400N, 1600S on line 3800E				
	Current very low, added electrodes to north and south ends	3500E	BL	900S	900
	Decays poor on north end.			**Total**	**4050**
6-Mar	Survey	3500E	900S	1050S	150
	Decays poor on north end; moved North AB to 500N.	3600E	1050S	BL	1050
	Re-survey L35E, L36E	3500E	BL	1050S	1050
		3600E	1050S	BL	1050
	Alternator shaft down, went to Timmins for Huntec system.			**Total**	**1200**
				Re-Survey	**2100**
7-Mar	Returned to Timmins in morning for cable for Huntec, crew worked on AB setup				
	Survey	3700E	BL	1050S	1050
	Shift in data due to change between Huntec and Phoenix. Resurveyed L35E to measure effect	3500E	1050S	BL	1050
				Total	**1050**
				Re-Survey	**1050**
8-Mar	Survey	3800E	BL	1025S	1025
		3900E	850S	50N	900
		4000E	BL	700S	700
	Block H				
	Established Tx dipole AB 2075 at 550N, 1525S on line 1200E				
	Survey	1000E	BL	1050S	1050
		1100E	1075S	325S	750
				Total	**4425**
9-Mar	Survey	1100E	325S	25S	300
		1200E	BL	1050S	1050
		1300E	1050S	BL	1050
		1400E	BL	1050S	1050
	Block I				
	Established Tx dipole AB 2025 at 525N, 1500S on line 1700E				
	Survey	1400E	1050S	450S	600
		1500E	1025S	25N	1050
				Total	**5100**
10-Mar	Survey	1600E	BL	1050S	1050
		1700E	1050S	BL	1050
		1800E	BL	1050S	1050
		1900E	1050S	BL	1050
		2000E	BL	900S	900
				Total	**5100**
11-Mar	**Block J**				
	Established Tx dipole AB 2025 at 525N, 1500S on line 700E				
	Survey	1000E	150S	875S	725
		900E	1050s	150S	900
		800E	150S	1050s	900
		700E	1050S	150S	900
		600E	150S	1050S	900
		500E	1050S	900S	150
				Total	**4475**

DATE	DESCRIPTION	LINE	START	END	TOTAL (m)
12-Mar	Survey	500E	900S	150S	750
	Block K				
	Established Tx dipole AB 1975 at 1025N, 950S on line 700E				
	Survey	500E	300S	450N	750
		600E	450N	300S	750
		700E	300S	450N	750
		800E	450N	300S	750
		900E	300S	450N	750
				Total	**4500**
13-Mar	**Block L**				
	Established Tx dipole AB 2050 at 500N, 1550S on line 200E				
	Survey	500E	BL	1050S	1050
		400E	1050S	BL	1050
		300E	BL	1050S	1050
		200E	1050S	550S	500
		100E	525S	1050S	525
		0E	1050S	500S	550
				Total	**4725**
14-Mar	Weather day; Blizzard with whiteout conditions on Elk Lake hwy. Called day due to hazard to transmitter site from passing vehicles.				
15-Mar	**Block M**				
	Established Tx dipole AB 2050 at 500N, 1550S on line 300W				
	Survey	0E	500S	1050S	550
		100W	1050S	475S	575
		200W	150S	1000S	850
		300W	1050S	150S	900
		400W	150S	1050S	900
				Total	**3775**
16-Mar	Survey	500W	1050S	150S	900
	Block N				
	Established Tx dipole AB 2000 at 500N, 1500S on line 800W				
	Survey	500W	125S	1025S	900
		600W	1050S	150S	900
		700W	150S	1050S	900
		800W	1050S	150S	900
				Total	**4500**
17-Mar	Dummy load down in morning. Went to KL for replacement parts.				
	Survey	900W	150S	1050S	900
		1000W	1050S	150S	900
				Total	**1800**
18-Mar	**Block O**				
	Established Tx dipole AB 2075 at 1075N, 1000S on line 300W				
	Survey	100W	450N	BL	450
		200W	300S	450N	750
		300W	450N	300S	750
		400W	300S	450N	750
		500W	450N	300S	750
	Block P				
	Established Tx dipole AB 2000 at 1000N, 1000S on line 800W				
	Current very low, added rods and salt to both ends of AB.			**Total**	**3450**
19-Mar	Survey	500W	300S	450N	750
		600W	450N	300S	750
		700W	300S	450N	750
		800W	450N	300S	750
		900W	300S	450N	750
		1000W	450N	300S	750
				Total	**4500**

DATE	DESCRIPTION	LINE	START	END	TOTAL (m)
20-Mar	**Block Q**				
	Established Tx dipole AB 1975 at 1000N, 975S on line 1100W				
	Survey	1000W	225S	600N	825
		1100W	475N	425S	900
		1200W	450S	375N	825
		1300W	350N	400S	750
		1400W	400S	250N	650
	Block R				
	Established Tx dipole AB 1900 at 1500N, 400S on line 800W				
	Survey	1000W	600N	300N	300
		900W	300N	600N	300
				Total	**4550**
21-Mar	Survey	900W	600N	900N	300
		800W	1025N	275N	750
		700W	300N	1000N	700
		600W	1050N	250N	800
	Block S				
	Established Tx dipole AB 2000 at 1800N, 200S on line 300W				
	Current very low, added rods and salt to north end of AB, moved south end to 300S.			**Total**	**2550**
22-Mar	Current still to low, moved north end of AB to 350W				
	Survey	600W	250N	1100N	850
		500W	1200N	300N	900
		400W	300N	1200N	900
		300W	1125N	375N	750
		200W	300N	1000N	700
				Total	**4100**
23-Mar	Survey	100W	1250N	350N	900
		0E	750N	1250N	500
	Block T				
	Established Tx dipole AB 1950 at 1550N, 400S on line 700E				
	Survey	900E	1150N	350N	800
		800E	300N	1200N	900
		700E	1200N	300N	900
		600E	300N	1200N	900
				Total	**4900**
24-Mar	Survey	500E	1250N	200N	1050
		400E	200N	1100N	900
	Block U				
	Established Tx dipole AB 2000 at 1800N, 200S on line 200E				
	Survey	400E	1250N	500N	750
		300E	550N	1275N	725
		200E	1275N	600N	675
		100E	675N	1275N	600
		0E	1250N	800N	450
				Total	**5150**
25-Mar	**Block V**				
	Established Tx dipole AB 2025 at 1425N, 600S on line 1200E				
	Survey	900E	1150N	400N	750
	Snowstorm all day. Stopped work at noon due to unsafe road conditions on highway (transmitter site).	1000E	100S	1100N	1200
				Total	**1950**
26-Mar	Survey	1100E	1050N	150S	1200
		1200E	150S	1000N	1150
		1300E	775N	125S	900
		1400E	150S	700N	850
	Block W				
	Established Tx dipole AB 2100 at 1200N, 900S on line 1700E				
	Survey	1400E	700N	150S	850
				Total	**4950**

DATE	DESCRIPTION	LINE	START	END	TOTAL (m)
27-Mar	Survey	1500E	150S	750N	900
		1600E	675N	75S	750
		1700E	150S	600N	750
		1800E	500N	100S	600
		1900E	100S	500N	600
		2000E	500N	100S	600
				Total	**4200**
28-Mar	**Block X**				
	Established Tx dipole AB 2000 at 1250N, 750S on line 3800E				
	Survey	4000E	725N	175S	900
		3900E	200S	550N	750
		3800E	400N	50S	450
		3700E	150S	150N	300
		3600E	75N	75S	150
	Wrap up wire and pack equipment.			**Total**	**2550**
29-Mar	Demob				
				GRAND TOTAL	**122.375km**

	TOTAL FIELD MAGNETICS SURVEY				
DATE	DESCRIPTION	LINE	START	END	TOTAL (m)
18-Feb	Mob to KL. Picked up supplies for house				
19-Feb	Mob to Matachewan				
20-Feb	Survey	4000E	725N	700S	1425
	"Weak signal" display showing throughout most of day	3900E	575N	850S	1425
		3800E	400N	1025S	1425
		3700E	150N	1050S	1200
		3600E	75N	1050S	1125
		3500E	100N	1050S	1150
				Total	**7750**
21-Feb	Survey	3400E	675N	1050S	1725
	Weak signal display showing almost all day.	3300E	725N	1050S	1775
	Lost tune at power line on 3300E. Would not retune till 600 meters from power line.	3200E	800N	1050S	1850
	Stopped early and profiled data to check data quality. Data very spiky. Returned to Timmins to check equipment	3100E	850N	1050S	1900
				Total	**7250**
22-Feb	Tested walking magnetics with new sensor cables.				
23-Feb	Mob back to Matachewan				
24-Feb	Resurveyed	3300E	725N	1050S	1775
	Data smooth with no spikes.	3400E	675N	1050S	1725
				Total	**3500**
1-Mar	Survey	1000W	650N	1000S	1650
		1100W	475N	950S	1425
		1200W	375N	900S	175
		1300W	350N	725S	1275
		1400W	250N	600S	850
	Low signal from 1050S to 900S.	900W	900N	1050S	1950
				Total	**8225**
2-Mar	Survey	800W	1000N	1000S	2000
		700W	1000N	1050S	2050
	Low signal from 1200N to 300S. Unit loosing tune.	600W	1200N	1050S	2250
	Low signal coming on intermittently.	500W	1200N	1050S	2250
		400W	1175N	1075S	2250
		300W	1125N	1050S	2175
				Total	**12975**
4-Mar	Picked up rental walking magnetic unit from Timmins.				
5-Mar	Overlap on 600W. Survey.	600W	1250N	1050S	2300
		200W	1000N	975S	1975
		100W	1350N	BL	1350
			475S	1050S	575
		0	500S	1050S	550
			1250N	775N	475
		100E	525S	1050S	525
			1275N	700N	575
		200E	550S	1050S	500
			1275N	650N	625
		300E	275N	1050S	1325
			1275N	600N	675
		400E	1275N	1050S	2325
				Total	**13775**
6-Mar	Survey	500E	1275N	1050S	2325
		600E	1250N	1050S	2300
		700E	1200N	1050S	2250
		800E	1200N	1050S	2250
		900E	1150N	1050S	2200
		1000E	1100N	1050S	2150
				Total	**13475**

DATE	DESCRIPTION	LINE	START	END	TOTAL (m)
7-Mar	Survey	1100E	1050N	1075S	2125
		1200E	1000N	1050S	2050
		1300E	775N	1050S	1825
		1400E	725N	1050S	1775
		1500E	700N	1050S	1750
		1600E	675N	1050S	1725
				Total	**11250**
8-Mar	Survey	1700E	625N	1050S	1675
		1800E	500N	1050S	1550
		1900E	525N	1050S	1575
		2000E	525N	1000S	1525
		2100E	475N	1000S	1475
		2200E	425N	1025S	1450
		2300E	375N	1050S	1425
		2400E	675N	1050S	1725
				Total	**12400**
9-Mar	Survey	2500E	500N	1050S	1550
		2600E	575N	1050S	1625
		2700E	625N	1050S	1675
		2800E	925N	1050S	1975
		2900E	900N	1050S	1950
		3000E	875N	1050S	1925
		3100E	850N	1050S	1900
		3200E	800N	1050S	1850
				Total	**14450**
12-Mar	Survey	3300E	725N	BL	725
		3500E	100N	1050S	1150
		3600E	75N	1050S	1125
		3700E	150N	1050S	1200
		3800E	400N	1025S	1425
		3900E	575N	850S	1425
		4000E	725N	700S	1425
		BL	4025E	1600W	5625
				Total	**14100**
13-Mar	Survey	TL1050S	975W	3800E	4775
				Total	**4775**
				Total	**123.925 km**

APPENDIX D

INSTRUMENT SPECIFICATIONS:

(from IRIS Instruments IP 6 Operating Manual)

Weather proof case

Dimensions:	31 cm x 21 cm x 21 cm
Weight:	6 kg with dry cells 7.8 kg with rechargeable bat.
Operating temperature:	-20°C to 70°C (-40°C to 70°C with optional screen heater)
Storage:	(-40°C to 70°C)
Power supply:	6 x 1.5 V dry cells (100 hr. @ 20°C) or 2 x 6 V NiCad rechargeable (in series) (50hrs @ 20°C) or 1 x 12 V external
Input channels:	6
Input impedance:	10 Mohm
Input overvoltage protection:	up to 1000 volts
Input voltage range:	10 V maximum on each dipole 15 V maximum sum over ch 2 to 6
SP compensation:	automatic ± 10 V with linear drift correction up to 1 mV/s
Noise rejection:	50 to 60 Hz powerline rejection 100 dB common mode rejection (for Rs=0) automatic stacking
Primary voltage resolution:	1 µV after stacking
accuracy:	0.3% typically; maximum 1 over whole temperature range
Secondary voltage windows:	up to 10 windows; 3 preset window specs. plus fully programmable sampling.
Sampling rate:	10 ms
Synchronization accuracy:	10 ms, minimum 40 µV
Chargeability resolution:	0.1 mV/V
accuracy:	typically 0.6%. maximum 2% of reading ± 1 mV/V for V_p > 10 mV
Battery test:	manual and automatic before each measurement
Grounding resistance:	0.1 to 467 kohm
Memory capacity:	2505 records, 1 dipole/record
Data transfer:	serial link @ 300 to 19200 baud remote control capability through serial link @ 19200 baud

ELREC 6

IP Receiver

ELREC 6

IP Receiver

Features:

- 6 input channels.
- Up to 10 chargeability windows.
- Symmetrical time domain with a pulse duration of 1, 2, 4 or 8s.
- Input overvoltage protection up to 1,000 Volts.
- Analyzes IP decay curves.
- Fully automatic measuring processes.
- Internal memory can store eighteen hundred measurements.

General

The Elrec 6 is a six-channel multi-window time domain induced polarization receiver that measures six receiver dipoles. The unit is extremely efficient in the field, especially when used with the multi-dipole cable.

IP decay curves are analyzed by various types of sampling: Up to 10 windows are available, with preset or programmable arithmetic or logarithmic widths. Multi-window analysis provides a high degree of accuracy when defining decay curves.

Measurements are made through a fully automatic measuring process: Self test and calibration, auto-synchronization and resynchronization at each cycle, plus continuous tracking of SP including linear drift correction. Also provided is automatic gain selection, digital stacking for noise reduction, and fully documented displays controlled by the microprocessor to ensure the highest degree of accuracy and reliability.

The operator can select various reading options regarding the parameters that are displayed: A. Display of running or cumulative average values for monitoring the noise. B. Display of normalized or true chargeability values for referral or nonreferral to a standard decay curve. C. During the measurement possibility of simultaneously displaying the average chargeabilities of the six dipoles, or their standard deviations, or the primary voltage, average chargeability and standard deviation of each dipole.

Frequency Mode Option

An analysis of the measurements in the frequency domain is provided as an option through Fourier transform computations of either frequency domain waveform (ON+, ON-), or a time domain waveform (ON+, OFF, ON-, OFF), and a pulse duration of 1, 2, 4 or 8 sec. The parameters measured are the amplitudes of the fundamental and of the first six odd harmonics (3RD to 13th), the frequency effects and relative phases of the harmonics with respect to the fundamental, and the standard deviations of these parameters. Due to the large amount of data gathered, the capacity of the internal memory is reduced by fifty percent in this mode.

Specifications

Input Voltage Range: Each Dipole 8V maximum, Sum of voltage dipoles 2 to 6, 12V maximum

Primary voltage: Resolution: 10μV, Accuracy: 0.3%; max 1%

Chargeability Resolution: 1 mV/V for Vp10 mV, 0.1 mV/V for Vp100 mV, Accuracy: 0.6%; max 2% for Vp10 mV

Up to 10 Chargeability Windows: Mode 1: 10 preset arithmetic Windows, Mode 2: 10 programmable arithmetic windows (delay time and window width), Mode 3: 10 preset logarithmic windows, and Mode 4: 3 to 6 preset logarithmic Windows.

6 Input Channels.

Signal Waveform: Symmetrical time domain (ON+, OFF, ON-, OFF) with a pulse duration of 1, 2, 4 or 8s. Input impedance: 10 Mohm.

Input overvoltage protection up to 1,000 Volts.

Overload Indication

Automatic Gain Ranging

Automatic stacking, automatic SP bucking (-1V to +1V) with linear drift correction up to 1 mV/s.

Sampling Rate: 10ms

50 and 60Hz power line rejection greater than 100dB

Accuracy in Synchronization: 10ms

Common Mode Rejection: 86dB (for Rs = 0)

Display of primary voltage, partial and average chargeabilities, standard deviation of primary voltage and of average chargeability, and computation of apparent resistivity (dipole to dipole, pole to dipole, gradient, VES, etc).

Grounding resistance measurement from 0.1 to 128kohm

Memory Capacity: 1,800 measurements

Dimensions: 30 x 20 x 20cm

Weight: 7.5kg

Operating Temperature Range: -40°C to +70°. The specifications listed above are given over the entire temperature range.

Power Supply: Six 1.5V D size alkaline dry cells (20 hours of operation at 20°C)

Standard Components

Elrec 6 console and instruction manuals.

Ordering Information

Description	Order Number
Elrec 6	500-190-0024

GSM-19

Proton Magnetometer/VLF System

Specifications

Performance

Resolution: 0.01nT

Relative Sensitivity: 0.2nT

Absolute Accuracy: 1nT

Range: 20,000 to 120,000nT

Gradient Tolerance: Over 7,000nT/m

Operating Temperature: -40°C to +60°C

Operating Modes

Manual: Coordinates, time, date and reading stored automatically at min. 3 second interval.

Base Station: Time, date and reading stored at 3 to 60 second intervals.

Mobile: Time, date and reading stored at coordinates of fiducial.

Remote Control: Optional remote control using RS-232 interface.

Input/Output: RS-232 or analog (optional) output using 6-pin weatherproof connector.

Storage Capacity

Manual Operation: 8,000 readings standard. 131,000 optional.

Base Station: 43,000 readings standard, 700,000 optional.

Gradiometer: 6,800 readings standard, 110,000 optional.

Dimensions and Weights

Dimensions: **Console:** 223 x 69 x 240mm. **Sensor:** 170 x 71mm diameter cylinder.

Weight: **Console:** 2.1kg. **Sensor** and Staff Assembly: 2.2kg

Standard Components

GSM-19 console, batteries, harness, charger, case, sensor with cable, connector, staff, and instruction manual.

Ordering Information

Description	Order Number
GSM-19 Proton Mag	350-170-0039
Gradiometer Option	350-170-0042
VLF Option	350-170-0069
Memory Upgrade, 128kb	350-170-0063
Analog Output	350-170-0040
Remote Option	350-170-0043

GSM-19 Proton Magnetometer/VLF

Proton Magnetometer/VLF System

Features:

- Omnidirectional Magnetometer with VLF.
- Remote control for observatory and airborne base station applications.
- Streamlined grid coordinate system with "end of line" quick change capability.
- 128kb basic memory, expandable to 2MB.
- Programmable RS-232 high-speed data transfer to 19.2kb.
- 50 and 60Hz filter, user selectable.
- Automatic tuning and base station synchronization.

General

The GSM-19 is a state-of-the-art magnetometer/VLF system that delivers quality data and the extensive capabilities required to perform a broad spectrum of applications. Whether the application calls for detailed ground surveys, or remotely controlled magnetic observatory measurements, you can count on the GSM-19 system to meet your goals.

The proton magnetometer can be equipped with gradiometer or VLF options, and is upgradable to an Overhauser Magnetometer.

Simultaneous Gradiometer

Many mining, environmental, and archaeological applications call for high-sensitivity gradiometer surveys. The GSM-19 meets these needs in several ways. For example, simultaneous measurement of the magnetic field at both sensors eliminates diurnal magnetic effects.

"Walking" Magnetometer/Gradiometer

The "Walking" option enables acquisition of nearly continuous data on survey lines. Data is recorded at discrete time intervals (up to 2 readings-per-second) as the instrument travels along the line.

Omnidirectional VLF

With the omnidirectional VLF option, up to three stations of VLF data can be acquired without orienting. Moreover, the operator can record both magnetic and VLF data with a single stroke on the keypad.

Remote Control Operation

When used during observatory, marine, and airborne base station applications, this option allows users to set parameters and initiate measurements from a computer terminal using standard RS-232 commands. A real-time transmission capability is provided to allow data quality monitoring while marine or vehicle borne surveys are in progress.

Automatic Tuning

Tuning is automatic in all modes of operation with initial preset. An override option is also provided for manual and remote modes. Tuning steps are 1,000 gammas wide.

Adaptability to High Gradients

In standard instruments, a gradient in the magnetic field across the sensor volume can shorten the decay time of the proton precession signal. However, the GSM-19 monitors the signal decay, and calculates the optimal time interval for measurement. Warning messages appear on the display when the measuring interval becomes too short.

APPENDIX E

OPERATOR COMMENTS

Whiskeyjack Creek Project P-177 Walking Magnetic Survey March 1997

March 1, 1997

- "Low signal" indicated at south end of line 900W for 150m (1050S-900S)

March 2, 1997

- Line 800W chaining error somewhere in south 500m, had to pace off approximately 150m to get to 1000S.
- Hydro line at north end of grid, approx. 900N - 1000N on lines 800W, 700W, 600W, 500W & 400W
- Line 600W, @ 1225N is next to highway 66
- Line 600W, severe "low signal" indicated for every other reading from 1200N to 300S. "Jumps" occur in readings from 22 000 nT to 63 000 nT. Bad readings. Unit appears to lose tune. Gradient too high? Recommend re-do with staff in mobile mode. Southern 700m readings OK.
- Line 400W "low signal" on north 300m-400m
- Line 300W "low signal" south 200m of line. no culture or power lines present to make instrument lose tune.
- Line 300W large high up to 63000 nT (increase of approx. 5 000 nT) real anomaly, around 400N to 500N.
- Line 300W crosses Hwy. 65 at 725N.
- Line 300W "low signal" intermittent from 725N to 1125N. line now (north of Hwy. 65) runs parallel to and approx. 50m to 100m west of major power line

March 5, 1997

- 200W two chaining errors south of baseline Add 100 m to all readings south of baseline (i.e.100S should be BL 0+00)
- Hwy. 65 located on L200W @ 600N to 625N
- Major power intersection from approx. 700N to 900N on L200W. (data no good) east-west running powerline (medium size) and north-south powerline (major) intersect
- Major powerline runs south on east side of Hwy. 65, between L300W and L200W from 700N to end of line.
- L100W Hwy. 66 at 1250N to 1275N, EW powerline at 800N to 825N.
- No line cut on excluded area between 100W and 300E (MNR experimental poplar forest)

March 6, 1997

- 600E chaining error north of baseline, 25m off (does not effect magnetics)
- 800E highly magnetically active area around 900N-950N. Signal high (60000 nT), lost signal at one point (approx. 950N) so redid from 900N. edited out bad data, magnetic repeatable but did not loose signal (no "low signal" indicated)
- L700E and eastward, stopped reading directly under powerline (readings garbage) (i.e. collected no data for approx. 50m under powerline on each line)
- EW running powerline located approx. at: 500E @ 425N-375N #data "REMed" out of XYZ files
600E @ 300N-350N
700E @ 225N-275N (no data collected)
800E @ 175N-225N

900E @ 50N-100N
1000E @ 000N-50N

March 7, 1997

- No data on L1600E 575N to 600N, due to open water.
- Fell in creek on L100E 925S to 950S - no data collected.
- Cold, wet, miserable weather: called it an early day.
- Hydro line intersections (no data in between):
  1100E @ 50S-112.5S
  1200E @ 150S-100S
  1300E @ 162.5S 225S
  1400E @ 250S-200S
  1500E @ 250S-200S
  1600E @ 325S-275S

March 8, 1997

- Hydro line intersections (no data between):
  2400E @ 612.5S-662.5S
  2300E @ 600S-550S
  2200E @ 500S-550S
  2100E @ 525S-475S
  2000E @ 400S-450S
  1900E @ 425S-375S
  1800E @ 375S-425S
  1700E @ 362.5S-300S

March 9, 1997

- Chaining error on L3000E, 25m subtracted from all magnetic stations north of 625N
- L2800E - IP AB wire laid out overhead (not in use), possible source of noise?
- Hydro line intersections (no data between):
  2500E @ 637.5S-700S
  2600E @ 725S-675S
  2700E @ 725S-775S
  2800E @ 800S-750S
  2900E @ 812.5S-850S
  3000E @ 875S-825S
  3100E @ 875S-925S
  3200E @ 950S-900S

Rob L McKeown
Magnetic Operator
pers. comm., 03/97

APPENDIX F

LIST OF MAPS

- **Plan Maps**: (1:5000 scale)

1.	Total Chargeability (AB=2000m)	DWG# P177-PLAN-CHG-1
2.	Apparent Resistivity (AB=2000m)	DWG# P177-PLAN-RES-1
3.	Posted Contoured Total Magnetic Field	DWG# P177-MAGCONT-1
4.	Geophysical Compilation Map	DWG# P177-INT-1

APPENDIX G

PLAN MAPS

2.3 SURVEY GRID

- **Coordinate Reference System:** Local cut and picket survey grids (non UTM)
- **Established by:** Prior to survey execution by Norcan Resources Ltd. (see Fig. 2)
- **Method of Chaining:** Linear, Metric
- **Line Direction:** N150°E (Grid N-S)
- **Line Separation:** 100m
- **Station Interval:** 25m
- **Claims Covered by Project Area[1]:**

1202755	1202873	1203523
1205560	1205572	1205573
1223379	1223380	1223381
1223382	1223383	1223384
1223385	1223386	778374
778375	802370	802649
803508	803509	821304
821306	821312	821313
821314	821315	821585
821591	821592	821593
842978	843153	843154
843155	843157	843158
843159	843160	843349
843350	843882	843890

- **Claims Covered by Survey:**

1202755	1202873	1203523
1205560	1205572	1205573
1223380	1223381	1223382
1223383	1223384	778374
778375	802370	802649
803508	803509	821304
821306	821312	821313
821314	821315	821585
821591	821592	821593
843153	843154	843155
843157	843158	843159
843160	843349	843350
843882	843890 (see Appendix E)	

[1] Ref. Mining claim numbers from Norcan Resources Ltd. Base plan map by MPH Consulting Ltd., July 1996.

BLACKSTONE
Development Inc.
P.O. Box 699, 50 Silver Street
Cobalt, Ontario, Canada P0J 1C0
Tel. (705) 679-5500
Fax. (705) 679-5519
email: blackstn@nt.net

May 13, 1997

Addendum

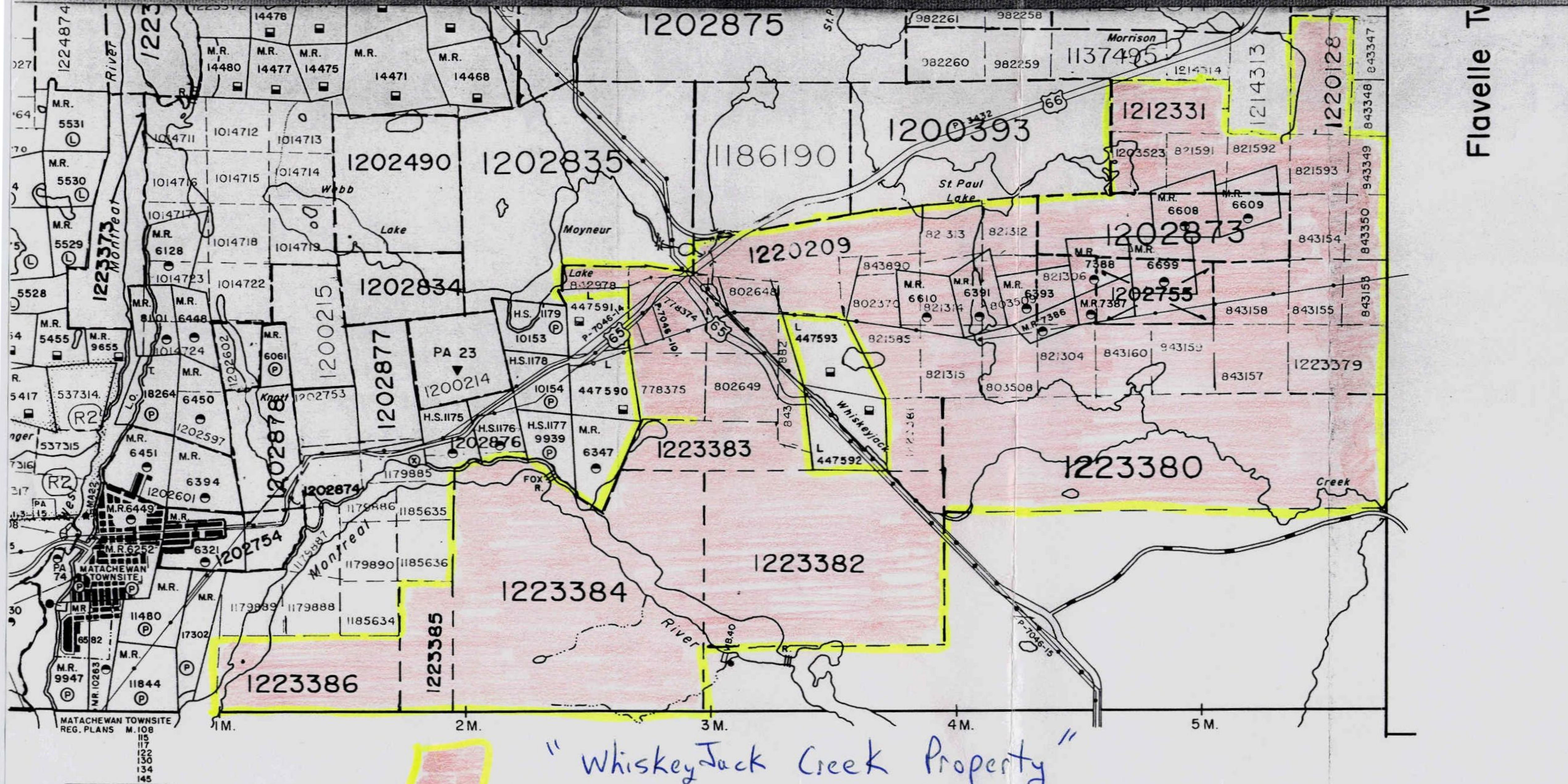
				Due Date
Note:	1205560	now	1220209	Nov. 19, 1998
	1205572	now	1212331	Dec. 20, 1998
	1205573	now	1220128	Dec. 20, 1998

Note:

All claims recorded after actual line-cutting and geophysics (IP, Mag GPS) employed on the Whiskeyjack Creek Claim Group

Signed: [signature]

GINO CHITARONI
for Norcan Resources Ltd



"WhiskeyJack Creek Property"

Kimberley Twp.

NORCAN Res Ltd

ARCHIVED JAN 2/97

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MA 1913, VESTED IN ORIGINAL PATENTEE BY THE PU LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSE

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000 80

METRES 0 200 1000 2000 (2 KM)

DATE OF ISSUE

JAN 6 1997

LARDER LAKE MINING RECORDER'S OFFICE

TOWNSHIP

CAIRO

M.N.R. ADMINISTRATIVE DISTRICT

KIRKLAND LAKE

MINING DIVISION

LARDER LAKE

LAND TITLES / REGISTRY DIVISION

TIMISKAMING

Ontario — Ministry of Natural Resources — Ministry of Northern Development and Mines

Date JULY 1986

Number G-320

CIRCULATED JANUARY 17, 1995 ML

TRIM LINE

Ontario | Ministry of Northern Development and Mines

Declaration of Assessment Work Performed on Mining Land

Mining Act, Subsection 65(2) and 66(3), R.S.O. 1990

Transaction Number (office use): W9780.00473

Assessment Files Research Imaging

GAO

Personal Information ... 6(3) of the Mining Act. Under section 8 of the Mining Act, the informat... rk and correspond with the mining land holder. Questions about this ... orthern Development and Mines, 6th Floor, 933 Ramsey Lake Roa...

41P15NE0025 2.17301 CAIRO

900

2.17301

Instructions: - For work performed on Crown Lands before recording a claim, use form 0240.
- Please type or print in ink.

"Whiskey Jack Creek Property" Matachewan Ontario

1. Recorded holder(s) (Attach a list if necessary)

Name: NORCAN Resources Ltd.	Client Number: 301193
Address: #1500-789 West Pender St. Vancouver, B.C. V6C 1H2	Telephone Number: (604) 681-3343 Fax Number: (604) 681-3347
Name:	Client Number:
Address:	Telephone Number:
	Fax Number:

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2. Type of work performed: Check (✓) and report on only ONE of the following groups for this declaration.

[X] Geotechnical: prospecting, surveys, assays and work under section 18 (regs)
[ ] Physical: drilling, stripping, trenching and associated assays
[ ] Rehabilitation

Work Type	Office Use	
Line-Cutting for Grid IP geophysics Magnetometer geophysics GPS surveying and Proj	Commodity	Gold
	Total $ Value of Work Claimed	~~136,761.39~~ $127,761.00
Dates Work Performed From 15 / 12 / 96 (Day / Month / Year) To 01 / 05 / 97 (Day / Month / Year)	NTS Reference	41 P/15
Global Positioning System Data (if available): See work herein / Township/Area: Cairo Twp.	Mining Division	Larder Lake
M or G-Plan Number: G-3209	Resident Geologist District	Kirkland Lake

Please remember to: - obtain a work permit from the Ministry of Natural Resources as required;
- provide proper notice to surface rights holders before starting work;
- complete and attach a Statement of Costs, form 0212;
- provide a map showing contiguous mining lands that are linked for assigning work;
- include two copies of your technical report.

3. Person or companies who prepared the technical report (Attach a list if necessary)

Name: Quantec I.P. Inc. PONICO	Telephone Number: (705) 235-2166
Address: 101 King St., P.O. Box 580, Porcupine Ontario	Fax Number: (705) 235-2255
Name: Blackstone Dev. Inc. POJICO	Telephone Number: (705) ~~235~~ 679-5500
Address: 50 Silver St., P.O Box 699, Cobalt Ontario	Fax Number: (705) 679-5519
Name: Norm McBride Staking & Line Cutting	Telephone Number: (819) 723-2424
Address: P.O. Box 112, Notre Dame Du Nord Quebec J0Z 3B0	Fax Number: (819) 723-2860

→ Continued...

4. Certification by Recorded Holder or Agent

I, Gino Chitaroni (Print Name), do hereby certify that I have personal knowledge of the facts set forth in this Declaration of Assessment Work having caused the work to be performed or witnessed the same during or after its completion and, to the best of my knowledge, the annexed report is true.

Signature of Recorded Holder or Agent: Gino Chitaroni		Date: May 13 1997
Agent's Address: c/o Blackstone	Telephone Number: (705) 679-5500	Fax Number: (705) 679-5519

0241 (02/96)

Deemed - August 12 /97

Ontario | Ministry of Northern Development and Mines

Declaration of Assessment Work Performed on Mining Land

Mining Act, Subsection 65(2) and 66(3), R.S.O. 1990

Transaction Number (office use): W9780.00473

Assessment Files Research Imaging

Personal information collected on this form is obtained under the authority of subsections 65(2) and 66(3) of the Mining Act. Under section 8 of the Mining Act, the information is a public record. This information will be used to review the assessment work and correspond with the mining land holder. Questions about this collection should be directed to the Chief Mining Recorder, Ministry of Northern Development and Mines, 6th Floor, 933 Ramsey Lake Road, Sudbury, Ontario, P3E 6B5.

Instructions: - For work performed on Crown Lands before **recording** a claim, use form 0240.
- Please type or print in ink.

2.17830 1

1. Recorded holder(s) (Attach a list if necessary)

Name	Client Number
Address	Telephone Number
	Fax Number
Name	Client Number
Address	Telephone Number
	Fax Number

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MINING LANDS BRANCH

2. Type of work performed: Check (✓) and report on only ONE of the following groups for this declaration.

☐ Geotechnical: prospecting, surveys, assays and work under section 18 (regs)
☐ Physical: drilling, stripping, trenching and associated assays
☐ Rehabilitation

Work Type	Office Use
	Commodity
	Total $ Value of Work Claimed
Dates Work Performed From (Day Month Year) To (Day Month Year)	NTS Reference
Global Positioning System Data (if available) / Township/Area	Mining Division
M or G-Plan Number	Resident Geologist District

Please remember to: - obtain a work permit from the Ministry of Natural Resources as required;
- provide proper notice to surface rights holders before starting work;
- complete and attach a Statement of Costs, form 0212;
- provide a map showing contiguous mining lands that are linked for assigning work;
- include two copies of your technical report.

3. Person or companies who prepared the technical report (Attach a list if necessary)

Name	Telephone Number
Elk Lake Community Forest	(705) 678-2244
Address: * Name Changed to Boreal Res Ltd.	Fax Number: (705) 678-2495
~~Name~~ P.O. Box 10, Elk Lake, Ontario P0J 1G0	~~Telephone Number~~
Address	~~Fax Number~~
Name	~~Telephone Number~~
Address	~~Fax Number~~

4. Certification by Recorded Holder or Agent

I, Gino Chitaroni (Print Name), do hereby certify that I have personal knowledge of the facts set forth in this Declaration of Assessment Work having caused the work to be performed or witnessed the same during or after its completion and, to the best of my knowledge, the annexed report is true.

Signature of Recorded Holder or Agent		Date
[signature] Gino Chitaroni		May 13, 1997
Agent's Address	Telephone Number	Fax Number
c/o Blackstone Dev Inc. 505 Lucy St. Cobalt Ont P0J 1C0	(705) 679-5500	(705) 679-5519

5. Work to be recorded and distributed. Work can only be assigned to claims that are contiguous (adjoining) to the mining land where work was performed, at the time work was performed. A map showing the contiguous link must accompany this form.

W9780.00473

2.17361

	Mining Claim Number. Or if work was done on other eligible mining land, show in this column the location number indicated on the claim map.	**Number of Claim Units.** For other mining land, list hectares.	**Value of work performed** on this claim or other mining land.	**Value of work applied** to this claim.	**Value of work assigned** to other mining claims.	**Bank.** Value of work to be distributed at a future date.
eg	TB 7827	16 ha	$26, 825	N/A	$24,000	$2,825
eg	1234567	12	0	$24,000	0	0
eg	1234568	2	$ 8, 892	$ 4,000	0	$4,892
1	1202755	2	$ 4,932	$ 2,400	$ 2,532	$ 0
2	1220209	4	9,044	4,800	4,244	0
3	1223379	2	0	2,400	0	0
4	1223382	12	37,003	14,400	22,603	0
5	1223385	2	0	2,400	0	0
6	778375	1	2,466	1,200	1,266	0
7	803508	1	2,466	1,200	1,266	0
8	821306	1	2,466	1,200	1,266	0
9	821314	1	2,466	1,200	1,266	0
10	821591	1	2,466	1,200	1,266	0
11	842978	1	0	1,200	0	0
12	1202873	4	2,466	4,800	0	0
13	1212331	2	4,932	2,400	2,532	0
14	1223380	15	4,200	18,000	0	0
15	1223383	2	4,932	2,400	2,532	0
		Column Totals	—	—	—	—

see additional sheet

I, Gino Chitaroni (Print Full Name), do hereby certify that the above work credits are eligible under subsection 7 (1) of the Assessment Work Regulation 6/96 for assignment to contiguous claims or for application to the claim where the work was done.

Signature of Recorded Holder or Agent Authorized in Writing — [signature]

Date: May 13 1997

6. Instructions for cutting back credits that are not approved.

Some of the credits claimed in this declaration may be cut back. Please check (✓) in the boxes below to show how you wish to prioritize the deletion of credits:

- ☐ 1. Credits are to be cut back from the Bank first, followed by option 2 or 3 or 4 as indicated.
- ☐ 2. Credits are to be cut back starting with the claims listed last, working backwards; or
- ☒ 3. Credits are to be cut back equally over all claims listed in this declaration; or
- ☐ 4. Credits are to be cut back as prioritized on the attached appendix or as follows (describe):

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MAY 26 1997
MINING LANDS BRANCH

Note: If you have not indicated how your credits are to be deleted, credits will be cut back from the Bank first, followed by option number 2 if necessary.

For Office Use Only

Received Stamp	Deemed Approved Date	Date Notification Sent
RECEIVED '97 MAY 14 PM 1 26 LARDER LAKE MINING DIVISION	Date Approved	Total Value of Credit Approved
	Approved for Recording by Mining Recorder (Signature): Acting [signature]	

0241 (02/96)

Mining Claim Number. Or if work was done on other eligible mining land, show in this column the location number indicated on the claim map.		Number of Claim Units. For other mining land, list hectares.	Value of work performed on this claim or other mining land	Value of work applied to this claim	Value of work assigned to other mining claims	Bank. Value of work to be distributed at a future date
			$	$	$	$
16	1223386	4	0	4,800	0	0
17	802370	1	2,466	1,200	0	1,266
18	803509	1	2,466	1,200	0	1,266
19	821312	1	2,466	1,200	0	1,266
20	821315	1	2,466	1,200	0	1,266
21	821592	1	2,466	1,200	0	1,266
22	843882	1	2,466	1,200	0	1,266
23	1203523	2	4,932	2,400	1,761	771
24	1220128	2	0	2,400	0	0
25	1223381	1	2,466	1,200	0	1,266
26	1223384	16	6,000	19,200	0	0
27	778374	1	2,466	1,200	0	1,266
28	802649	1	2,466	1,200	0	1,266
29	821304	1	2,466	1,200	0	1,266
30	821313	1	2,466	1,200	0	1,266
31	821585	1	2,466	1,200	0	1,266
32	821593	1	2,466	1,200	0	1,266
33	843890	1	2,466	1,200	0	1,266
34	802648	1	2,466	1,200	0	1,266
	34 claims	90 units				
	Column Totals		$ 127,761	$ 108,000	$ 42,534	$ 19,761

29 claims
79 units

RECEIVED
MAY 28 1997
MINING LANDS BRANCH

0290 (02/96)

Ontario | Ministry of Northern Development and Mines

Statement of Costs for Assessment Credit

Transaction Number (office use)

Personal information collected on this form is obtained under the authority of subsection 6(1) of the Assessment Work Regulation 6/96. Under section 8 of the Mining Act, the information is a public record. This information will be used to review the assessment work and correspond with the mining land holder. Questions about this collection should be directed to the Chief Mining Recorder, Ministry of Northern Development and Mines, 6th Floor, 933 Ramsey Lake Road, Sudbury, Ontario, P3E 6B5.

Work Type	Units of Work Depending on the type of work, list the number of hours/days worked, metres of drilling, kilometres of grid line, number of samples, etc.	Cost Per Unit of work	Total Cost
Induced Polarization and Magnetometer Survey	Please Refer to Reports and Receipts Enclosed!		$103,005.32
Global Positioning Survey			6,387.86
Line-Cutting			25,191.00
Associated Costs (e.g. supplies, mobilization and demobilization).			—
see contractor receipts			
Transportation Costs			—
Included in Contractors' Costs			
Food and Lodging Costs			2,177.21
House Rental, Cook Supplies - in Matachewan			

Note: $9,000 lost to claims forfeited!

Total Value of Assessment Work $136,761.39

− 9,000.00

Actual Assessment = $127,761.00

Calculations of Filing Discounts:

1. Work filed within two years of performance is claimed at 100% of the above Total Value of Assessment Work.
2. If work is filed after two years and up to five years after performance, it can only be claimed at 50% of the Total Value of Assessment Work. If this situation applies to your claims, use the calculation below:

TOTAL VALUE OF ASSESSMENT WORK × 0.50 = Total $ value of worked claimed.

Note:
- Work older than 5 years is not eligible for credit.
- A recorded holder may be required to verify expenditures claimed in this statement of costs within 45 days of a request for verification and/or correction/clarification. If verification and/or correction/clarification is not made, the Minister may reject all or part of the assessment work submitted.

RECEIVED
MAY 20 1997
MINING LANDS BRANCH

Certification verifying costs:

I, Gino Chitaroni (please print full name), do hereby certify, that the amounts shown are as accurate as may reasonably be determined and the costs were incurred while conducting assessment work on the lands indicated on the accompanying Declaration of Work form as an Agent for NORCAN (recorded holder, agent, or state company position with signing authority) I am authorized to make this certification.

Signature: [signature] | Date: May 13, 1997

Ministry of
Northern Development
and Mines

Ministère du
Développement du Nord
et des Mines

Ontario

Geoscience Assessment Office
933 Ramsey Lake Road
6th Floor
Sudbury, Ontario
P3E 6B5

Telephone: (888) 415-9846
Fax: (705) 670-5863

August 11, 1997

NORCAN RESOURCES LTD.
SUITE 1500
789 WEST PENDER STREET
VANCOUVER, B.C.
V6C-1H2

Dear Sir or Madam:

Submission Number: 2.17301

		Status
Subject: Transaction Number(s):	W9780.00473	Approval

We have reviewed your Assessment Work submission with the above noted Transaction Number(s). The attached summary page(s) indicate the results of the review. WE RECOMMEND YOU READ THIS SUMMARY FOR THE DETAILS PERTAINING TO YOUR ASSESSMENT WORK.

If the status for a transaction is a 45 Day Notice, the summary will outline the reasons for the notice, and any steps you can take to remedy deficiencies. The 90-day deemed approval provision, subsection 6(7) of the Assessment Work Regulation, will no longer be in effect for assessment work which has received a 45 Day Notice.

Please note any revisions must be submitted in DUPLICATE to the Geoscience Assessment Office, by the response date on the summary.

If you have any questions regarding this correspondence, please contact Bruce Gates by e-mail at gates_b@torv05.ndm.gov.on.ca or by telephone at (705) 670-5856.

Yours sincerely,

ORIGINAL SIGNED BY
Blair Kite
Supervisor, Geoscience Assessment Office
Mining Lands Section

Correspondence ID: 11192
Copy for: Assessment Library

Work Report Assessment Results

Submission Number: 2.17301

Date Correspondence Sent: August 11, 1997 **Assessor:** Bruce Gates

Transaction Number	First Claim Number	Township(s) / Area(s)	Status	Approval Date
W9780.00473	1202755	CAIRO	Approval	August 11, 1997

Section:
14 Geophysical IP
14 Geophysical MAG

Correspondence to:
Resident Geologist
Kirkland Lake, ON

Assessment Files Library
Sudbury, ON

Recorded Holder(s) and/or Agent(s):
Gino Chitaroni
COBALT, ONTARIO

NORCAN RESOURCES LTD.
VANCOUVER, B.C.

Correspondence ID: 11192

TRIM LINE

REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. – MINING RIGHTS ONLY
S.R.O. – SURFACE RIGHTS ONLY
M.+ S. – MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File
~~(R) SEC. 36, RSO 1980~~	~~NRW 65/83~~	~~NOV. 18, 1983~~	~~M.S.~~	

(R1) MINING & SURFACE RIGHTS REOPENED TO PROSPECTING, SALE OR LEASE. ORDER O-L-10/95, PREVIOUSLY WITHDRAWN UNDER ORDER W 65/83.

(R2) Mining and Surface Rights Withdrawn Order No. W-L-17/95 Dated March30, 1995. Previously withdrawn under Order NWR 65/83.

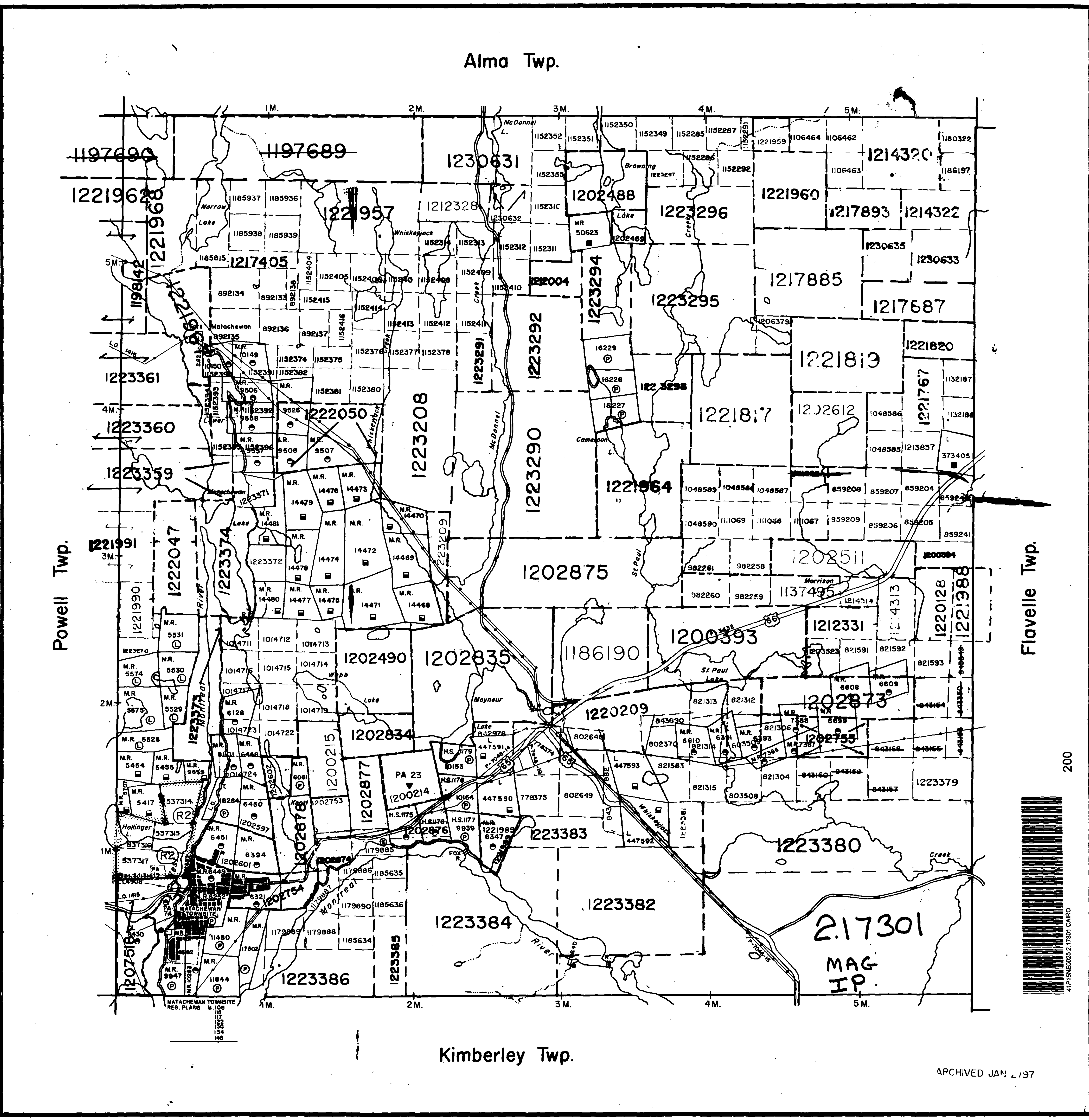
THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES, AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.

NOTES

LUP - LAND USE PERMIT

NOTICE OF FORESTRY ACTIVITY

THIS TOWNSHIP / AREA FALLS WITHIN THE PLONSKI FOREST MANAGEMENT UNIT AND MAY BE SUBJECT TO FORESTRY OPERATIONS. THE MNR UNIT FORESTER FOR THIS AREA CAN BE CONTACTED AT: P.O. BOX 129 SWASTIKA, ONT. P0K 1T0 705-642-3222



ARCHIVED JAN 2/97

LEGEND

HIGHWAY AND ROUTE No
OTHER ROADS
TRAILS
SURVEYED LINES
TOWNSHIPS, BASE LINES, ETC
LOTS, MINING CLAIMS, PARCELS, ETC.
UNSURVEYED LINES
LOT LINES
PARCEL BOUNDARY
MINING CLAIMS ETC.
RAILWAY AND RIGHT OF WAY
UTILITY LINES
NON-PERENNIAL STREAM
FLOODING OR FLOODING RIGHTS
SUBDIVISION OR COMPOSITE PLAN
RESERVATIONS
ORIGINAL SHORELINE
MARSH OR MUSKEG
MINES
TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	Ⓟ or ●
" , SURFACE RIGHTS ONLY	
" , MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	Ⓛ or ■
" , SURFACE RIGHTS ONLY	
" , MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	L.O. or ▼
ORDER-IN-COUNCIL	OC
RESERVATION	Ⓡ
CANCELLED	⊗
SAND & GRAVEL	Ⓢ

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.

2.17301

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000 8000

METRES 0 200 1000 (1 KM) 2000 (2 KM)

200

TOWNSHIP

CAIRO

M.N.R. ADMINISTRATIVE DISTRICT

KIRKLAND LAKE

MINING DIVISION

LARDER LAKE

LAND TITLES / REGISTRY DIVISION

TIMISKAMING

Ontario — Ministry of Natural Resources — Ministry of Northern Development and Mines

Date	Number
JULY 1986	G-3209

41P15NE0025 2.17301 CAIRO

CIRCULATED JANUARY 17, 1995 ML

Whiskeyjack Grid

Scale 1:5000

50 0 50 100 150 200

(meters)

210

41P15NE0025 2.17301 CAIRO

NORCAN RESOURCES LTD.

WHISKEYJACK CREEK PROPERTY

Cairo Twp, Matachewan Area, ON

WALKING GROUND MAGNETIC SURVEY

TOTAL FIELD CONTOUR PLAN MAP

(Diurnal Corrected)

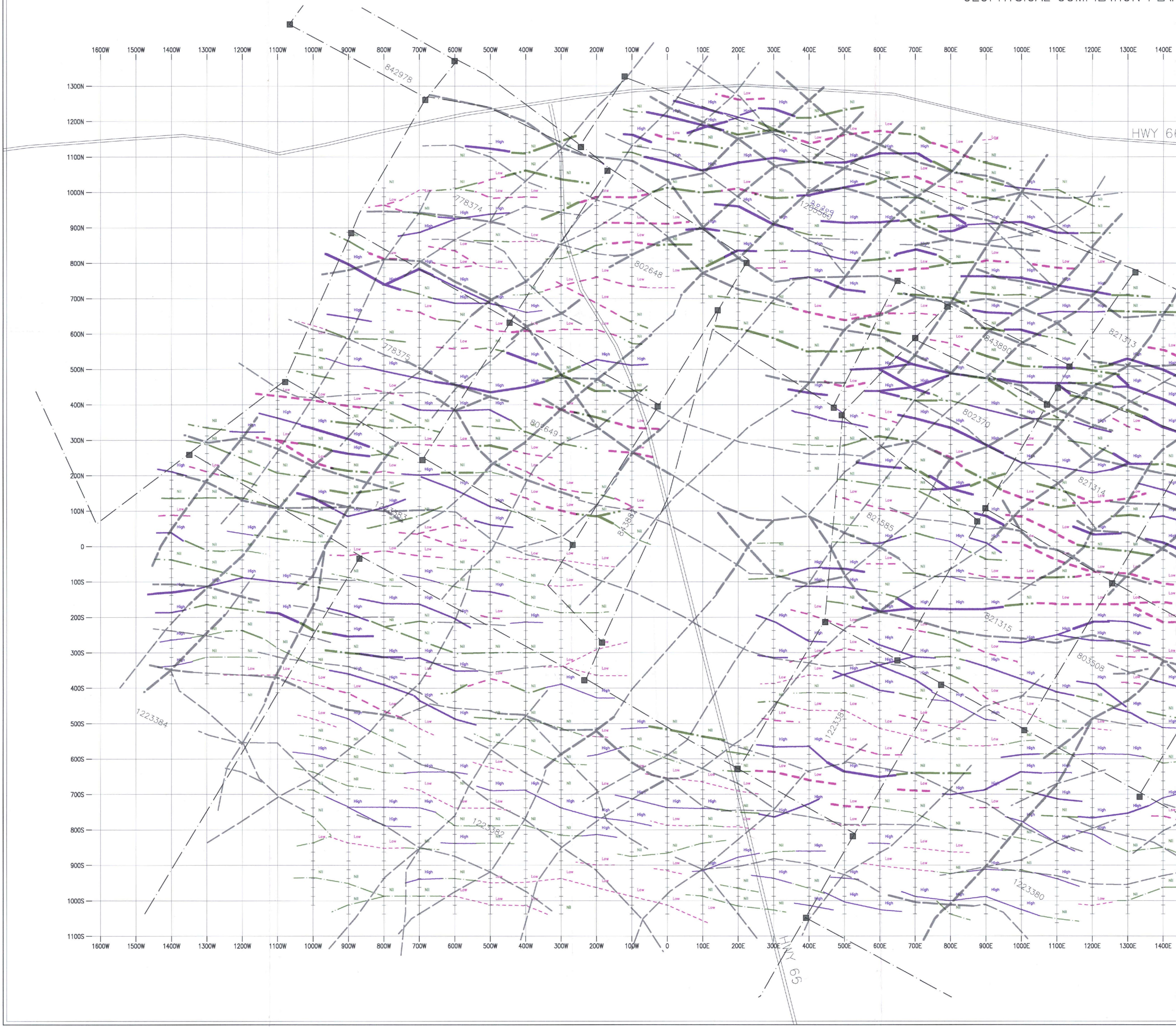
Magnetic Datum:	59,000 nT
Magnetic Inclination	76degN
Magnetic Declination	11degW
Diurnal Correction:	Base Station (3 sec/cyc)
Sampling Interval:	every 2 sec (approx. every 2.5m)
Posting:	splined at even multiples of 25m
Gridding Method:	Random
Grid Cell Size:	17m
Contour Interval:	100, 500, 2000 nT
Post Processing:	1x Hanning Filter Applied
Colour Zoning:	Equal Area / Colour.tbl
Survey Date:	March, 1997
Instrumentation:	Gem GSM-19
Operator:	RL McKEOWN

Surveyed & Processed by,

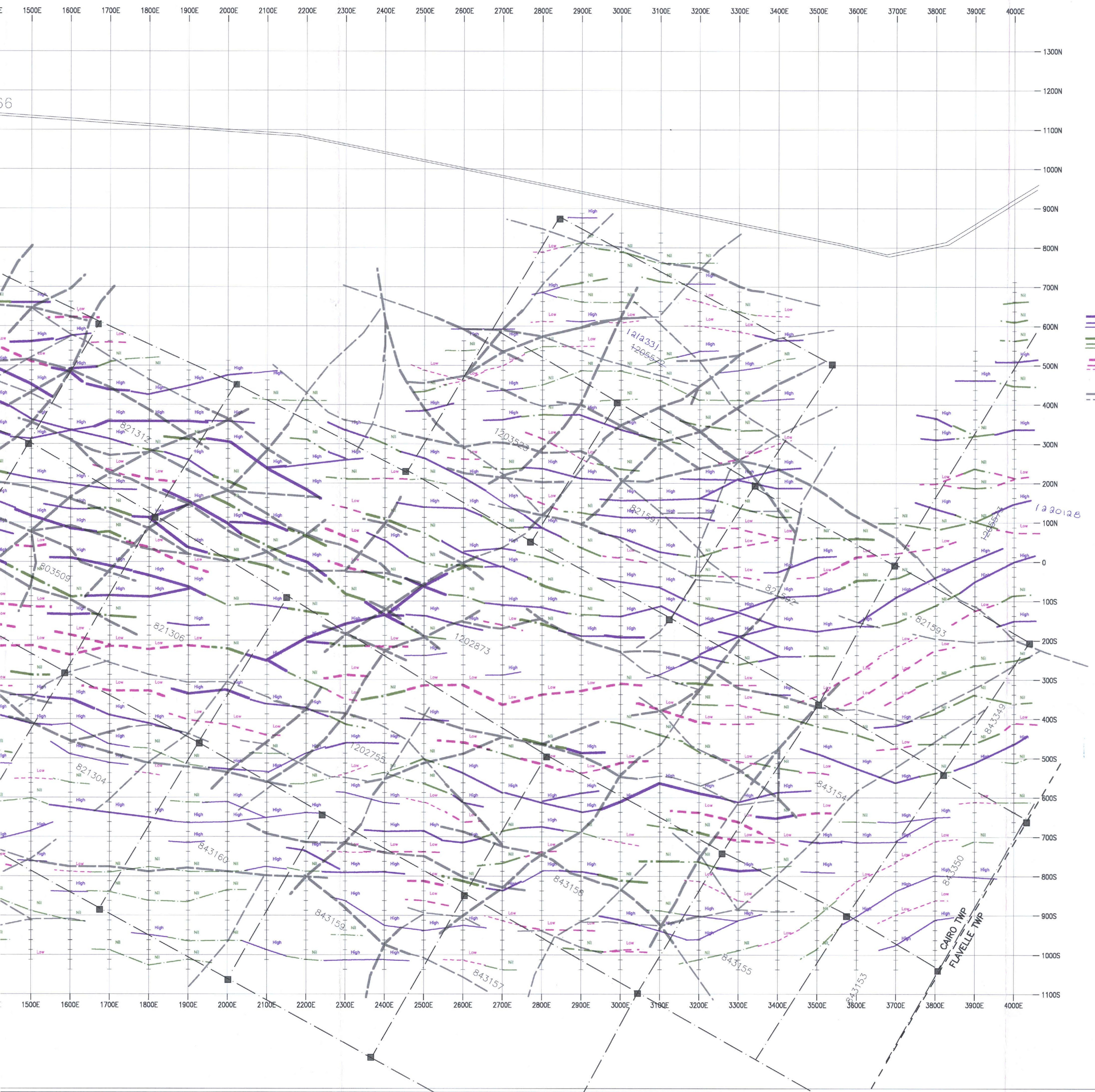
QUANTEC CONSULTING INC.

DWG. NO. P177-MAGCONT-1

GEOPHYSICAL COMPILATION PLAN



AN MAP



LEGEND

CHARGEABILITY AXES

high — High Resistivity Association, major, moderate, minor

nil — Nil Resistivity Association, major, moderate, minor

low — Low Resistivity Association, major, moderate, minor

MAGNETIC AXES

Magnetic Lineament, major, minor

Highway

Claim Boundary

Township Boundary

220

2.17301

RECEIVED
MAY 20 1997
MINING LANDS BRANCH

Gradient Array

Scale 1:5000

50 0 50 100 150 200 250 300 (meters)

NORCAN RESOURCES LTD.
WHISKEYJACK CREEK PROPERTY
CAIRO TOWNSHIP, MATACHEWAN AREA, ON

TIME DOMAIN IP and MAGNETIC SURVEYS
Gradient Array
GEOPHYSICAL COMPILATION PLAN MAP
AB= 2000 meters

Transmitter Frequency: 0.0625 Hz (50% duty cycle)
Transmitter Current: .4 - 5.8 Amps
Decay Curve: QIP IP-6 Custom Semilogarithmic Windows 10 Gates (60ms to 3540ms)
Station Interval: 25 meters

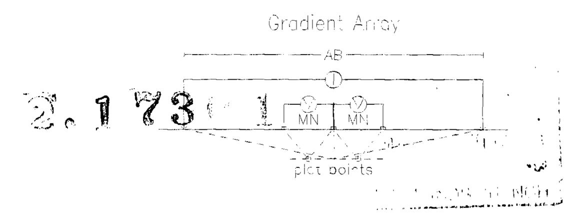
Interpretation by: JM Legault, C Williston

Date: February-March, 1997
Instrumentation: Rx = IRIS IP-6 (6 channels)
Tx = HUNTEC MK-4 (7.5 kW) + MG-10(10 kVA)

Surveyed & Processed by:
QUANTEC IP INC.
DWG. #: P177-INT-1

APPARENT RESISTIVITY (ohm-metres)

POSTING LEGEND
Overlapping data points
at edges of gradient blocks



Scale 1:5000

50 0 50 100 150 200 250 300 (meters)

NORCAN RESOURCES LTD.
WHISKEYJACK CREEK PROPERTY
Cairo Twp, Matachewan Area, ON

TIME DOMAIN IP SURVEY
Gradient Array
APPARENT RESISTIVITY (unleveled)
AB= 2000 meters

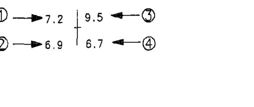
Transmitter Frequency	0.0625 Hz (50% duty cycle)
Transmitter Current	.4 - 5.8 Amps
Decay Curve:	QIP IP-6 Custom Semilogarithmic Windows 10 Gates (60ms to 3540ms)
Station Interval:	25 meters
Resistivity Contour Interval:	5 levels/log decade
Colour Scale:	Equal Area Zoning
Date:	February-March, 1997
Instrumentation:	Rx = IRIS IP-6 (6 channels) Tx = HUNTEC MK-4 (7.5 kW) + MG-10(10 kVA)

Surveyed & Processed by:
QUANTEC IP INC.
DWG. #: P177-PLAN-RES-1

TOTAL CHARGEABILITY (mV/V)

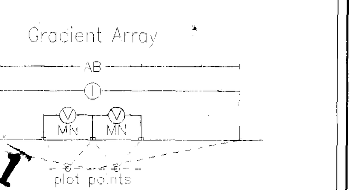
POSTING LEGEND

Overlapping data points at edges of gradient blocks



240

2.17301



Scale 1:5000

50 0 50 100 150 200 250 300

(meters)

NORCAN RESOURCES LTD.
WHISKEYJACK CREEK PROPERTY
Cairo Twp, Matachewan Area, ON

TIME DOMAIN IP SURVEY
Gradient Array
TOTAL CHARGEABILITY (unleveled)
AB= 2000 meters

Transmitter Frequency	0.0625 Hz (50% duty cycle)
Transmitter Current	.4 - 5.8 Amps
Decay Curve:	QIP IP-6 Custom Semilogarithmic Windows 10 Gates (60ms to 3540ms)
Station Interval:	25 meters
Chargeability Contour Interval:	1, 5 mV/V
Colour Scale:	Equal Area Zoning
Date:	February-March, 1997
Instrumentation:	Rx = IRIS IP-6 (6 channels) Tx = HUNTEC MK-4 (7.5 kW) + MG-10(10 kVA)

Surveyed & Processed by:
QUANTEC IP INC.
DWG. #: P177-PLAN-CHG-1