REPORT ON GEOPHYSICAL WORK

2.31395

Little Mikwan River Property
Blakelock Twp.
Larder Lake Mining Division

NTS: 32E/05 PROJ #602

FALCONBRIDGE LIMITED
(formerly Noranda Inc.)
February 6th, 2006

SUMMARY AND RECOMMENDATIONS

Electromagnetic and magnetic geophysical surveys were completed on three grids over Falconbridge Limited's (formerly Noranda Inc.) Little Mikwan River Property in eastern Blakelock Twp., Larder Lake Mining Division. The work was aimed at defining the location and quality of geophysical conductors previously identified on the property by a regional airborne survey. Two grids (BLA-03 and BLA-06) were surveyed using the VersaTEM (VTEM) airborne system by Geotech Ltd. on Nov 14, 2004. The other grid (BLA-09) was surveyed by Quantec Geoscience Inc. (transient EM) on March 13 to March 14, 2005 and by G.L. Geoservice Inc. (magnetic) between Jan. 25 to 28, 2005. A total of 71.4 line km were surveyed on the property during this time.

Two anomalies identified by the three geophysical surveys are of significance to base metal mineralization and it is recommended that both warrant follow-up by diamond drilling. The best of the two occurs on grid BLA-03 (**EM 'B'**); a four line (200m) conductor coincides with a magnetic high has been outlined and should be drilled north east. On grid BLA-06, **EM 'D'** is of lower conductivity thickness than EM B, but its short strike length and relative isolation may reflect focused sulphide mineralization. This conductor should be drilled south (190º along the trace of the VTEM flight lines). Anomalies on grid BLA-09 are not recommended for follow-up.

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5) BLA-09 TDEM Survey (ch. 10, ch. 15, ch. 20)
6) BLA-09 Mag Survey (nT)

INTRODUCTION, LOCATION & ACCESS

Electromagnetic and magnetic geophysical surveys were completed on three grids over Falconbridge Limited's (formerly Noranda Inc.) Little Mikwan River Property in eastern Blakelock Twp., Larder Lake Mining Division. The work was aimed at defining the location and quality of geophysical conductors previously identified on the property by a regional airborne survey.

The Little Mikwan River Property consists of a single block of four claims totalling 63 units (table below). The claims are all registered to Falconbridge Ltd. (formerly Noranda Inc.The Property is located approximately 85km due northeast of the town of Cochrane in eastern Blakelock Twp., Larder Lake Mining Division (Fig. 1). The property is relatively isolated, with access typically gained by air. Ground access can be gained in winter months by a series of logging roads and trails which extend westward from the all-weather Tomlinson logging road. Access via this route requires permitting for stream crossing and road use from the Ministry of Natural Resources.

Claim	Township	Due Date	Units
3013115	BLAKELOCK	2006-FEB-06	16
3013116	BLAKELOCK	2006-FEB-06	16
3013117	BLAKELOCK	2006-FEB-06	16
3019524	BLAKELOCK	2006-SEP-22	15

Table 1. Property Description

Two grids (BLA-03 and BLA-06) were surveyed using the VersaTEM (VTEM) airborne system by Geotech Ltd. on Nov 14, 2004. The other grid (BLA-09) was surveyed by Quantec Geoscience Inc. (transient EM) on March 13 to March 14, 2005 and by G.L. Geoservice Inc. (magnetic) between Jan. 25 to 28, 2005. A total of 71.4 line km were surveyed on the property during this time. Interpretation and reporting of the geophysical results were performed by Falconbridge staff.

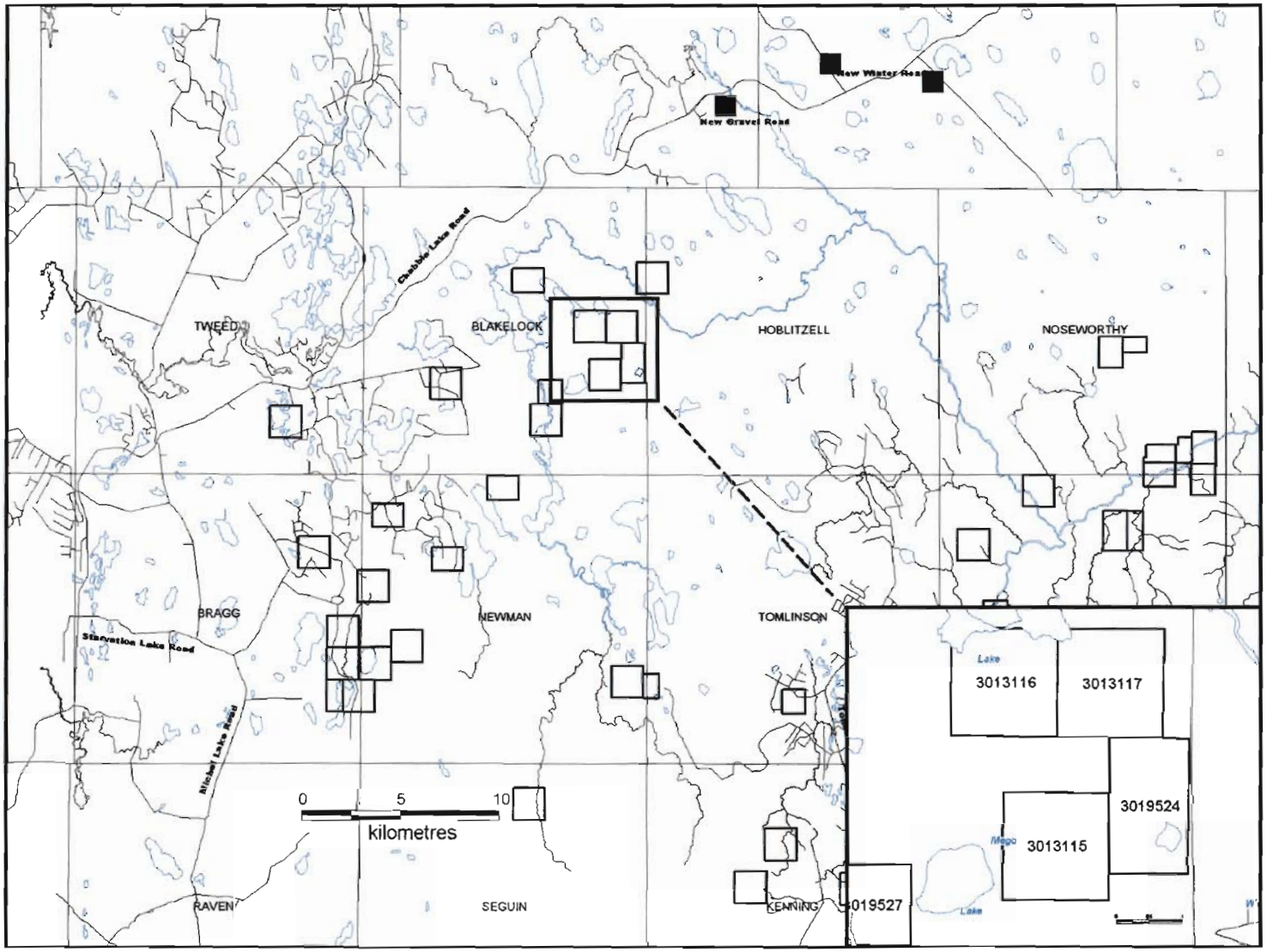

Fig. 1 – Property Location and Access

GENERAL GEOLOGY

The most thorough and recent examination of the regional geology of the area was completed by G.W. Johns (1982). This portion of the Abitibi Greenstone Belt consists of east-west trending arcuate belts of mafic to felsic volcanic rocks which are intruded by several late granitc plutons. Thick sedimentary belts occur on the margins of the volcanic terraines and the volcanics themselves are intercalated with volumetrically minor amounts of detrital sedimentary rocks and iron formations (Fig. 2). Outcrops are absent from the immediate property area, but volcanic rocks are well exposed approximately 5km west of the property. These exposed volcanic rocks in the area are andesite and basalt. A review of drill logs from holes south of the property indicates that felsic volcanic pyroclastics are also interbedded within the clastic sedimentary rocks.

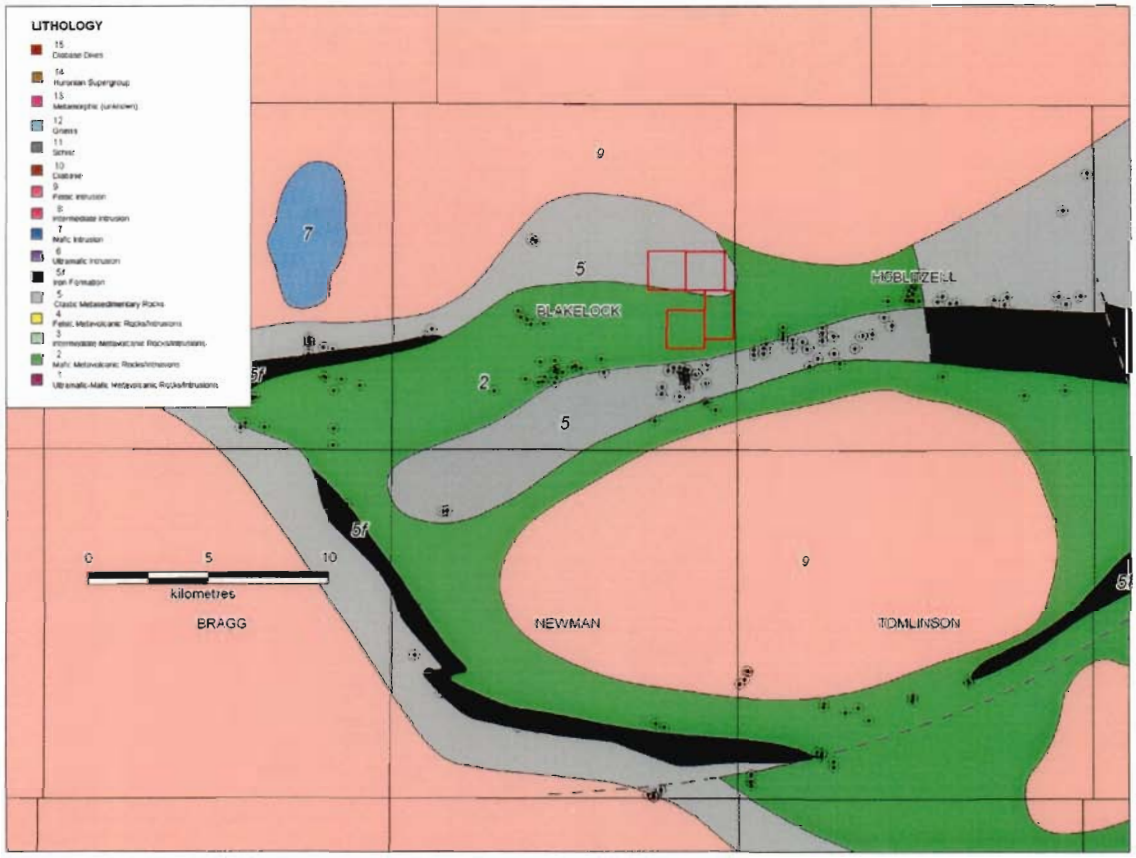

Fig. 2 – Regional geology of the Property (in red) and Diamond drill holes (black dots).

PREVIOUS WORK

Limited historical work has been completed over the immediate property (Table 2). Mapping programs have described outcrop exposures to the west on the Mikwan River consisting of mafic volcanic and intrusive (diorite) rocks.

Afri File #	Company	Work Type	Work Report	Year
42H09SE0305	R. Middleton Expl.	Geology	W8808-00500	1988
42H12SW0035	Cogema	Geology	W8908-00005	1988

Table 2. Historic Work (Earth Resources and Mineral Exploration database)

Exploration work has concentrated on the sedimentary belt south of the Little Mikwan Property. Diamond drilling primarily focused on gold exploration; inferred by the lack of base metal assays in most logs. The majority of diamond drilling was carried out by Placer Dome Inc and by Esso Ltd. between 1987 and 1990. Several anomalous gold values (> 1 g/t) were indicated; most notable being 13.85 g/t Au over 1.25m in a single Esso Ltd. hole.

GEOPHYSICAL SURVEY DESCRIPTIONS

Three separate geophysical grids were surveyed on the Little Mikwan Property:

Grid Name	Date	Survey Type	Contractor	Size (line km)	Line Spacing (m)
BLA-03	Nov. 14 /04	VTEM-Mag	Geotech Ltd.	33.4	50
BLA-06	Nov. 14 /04	VTEM-Mag	Geotech Ltd.	32.8	50
BLA-09	Mar. 13-14 /05	TDEM	Quantec Geoscience Inc.	5.2	100
BLA-09	Jan. 25-29 /05	Mag	G.L. Geoservice Ltd.	5.2	100

Both airborne (VTEM) and ground (TDEM) geophysical methods were utilized on the property according to access restrictions, ground conditions, and for technical considerations. Details

pertaining to the technical specifications (instruments used, performance of survey, and accuracy/precision of data) are given in Appendix A.

MAG RESULTS

The magnetic results for all three grids are contoured and presented on the maps in the back pocket of this report and summarized on Fig. 3. Several magnetic high anomalies were defined by the survey, the most significant of which is **Mag 'B'** (Fig. 3) on grid BLA-03 which directly coincides with a strong EM response (EM 'B' – discussed below). Similarly on grid BLA-06, a 'bulls-eye' type anomaly, **Mag 'D'**, is weaker than 'B', but is also associated with an elevated EM response. Mag anomalies **'A'** and **'C'** occur within a regionally defined high likely related to a dioritic, mafic intrusive body. Anomalies '**E**', '**F**', and '**G**' are smaller and more discrete and are also likely associated with mafic intrusive rocks or possible high Fe-basalt flows. Proterozoic-aged diabase dykes which are known throughout the Abitibi Greenstone Belt occur as well defined, near-linear magnetic features similar to Mag **'H'**.

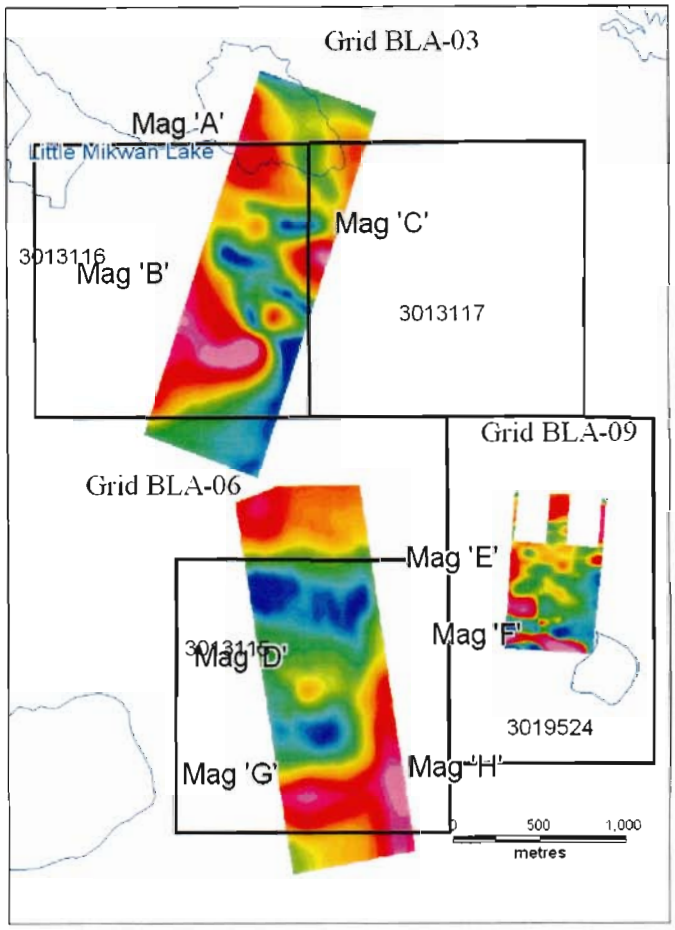

Fig. 3 –Mag Anomaly Summary

EM RESULTS

Electromagnetic anomalies are picked along line profiles of the data collected using either the VTEM or TDEM system. For the VTEM system, anomalies defined from mid (3.180 millisecond) to high (>7.540 msec) time gates are typically associated with bedrock conductors as opposed to overburden responses. All anomalies shown in Figure 4 on grids BLA-03 and BLA-06 are interpreted as bedrock conductors (black triangles). For the TDEM system, positive responses on late channels (15-20) are typically bedrock-related as seen on grid BLA-09 (Figure 4). Line profiles for the ground TDEM data are shown in Appendix B. The most significant EM responses for all three grids are **EM 'B' and EM 'D'.** Both are directly associated with a discrete magnetic highs suggesting a sulphide mineralization source. Calculated conductivity-thickness for each reflect significant accumulations (> 1 m) to warrant further attention. The best response for **EM B** occurs across four survey lines in the centre of the Mag B and is interpreted to dip SW. **EM D**

shows a lower conductivity-thickness than **B**, but its short strike length (<100m) may reflect focused mineralization. The contoured EM response for **B** suggests a moderately dipping (< 60º) structure dipping to the north. Other anomalies identified by the EM survey are less indicative of appreciable sulphide mineralization. Anomalies EM '**A**' and '**C**' are a lower energy response than B or D and extend across several survey lines and are interpreted as formational-type conductors (graphitic). Anomalies '**E**' and '**F**' on grid BLA-09 are broad, moderate energy responses detected over several stations (100m width). Both are not apparent at later channels suggesting the source is a weakly conductive body such as an ultramafic sill or clastic sediments with minor disseminated sulphides as opposed to VMS-type mineralization.

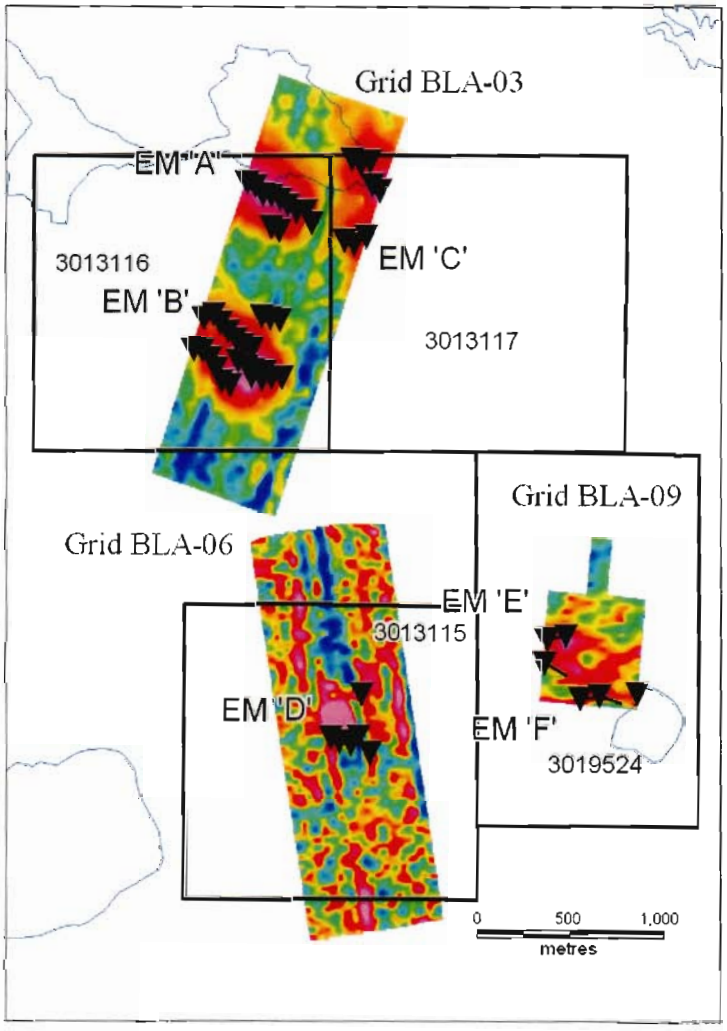

Fig. 4 –EM Anomaly Summary (anomalies picked in triangles). Contouring on the VTEM grids (BLA-03 and BLA-06) is at 3.180 msec. time gate and on the TDEM grid (BLA-09) is at Channel 15.

RECOMMENDATIONS

Two anomalies identified by the three geophysical surveys are of significance to base metal mineralization and it is recommended that both warrant follow-up by diamond drilling. The best of the two occurs on grid BLA-03 (**EM 'B'**); a four line (200m) conductor coincides with a magnetic high has been outlined and should be drilled north east. On grid BLA-06, **EM 'D'** is of lower conductivity thickness that EM B, but its short strike length and relative isolation may reflect focused sulphide mineralization. This conductor should be drilled south (190º along the trace of the VTEM flight lines). Anomalies on grid BLA-09 are not recommended for follow-up.

Frank Santaguida, P.Geo.
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Falconbridge Limited (formerly Noranda Inc.)

REFERENCES

Johns, G.W.
1982: Geology of the Burntbush-Detour Lakes Area, District of Cochrane; Ontario Geological Survey Report 199, 82p. Accompanied by Map 2453, scale 1:100,000

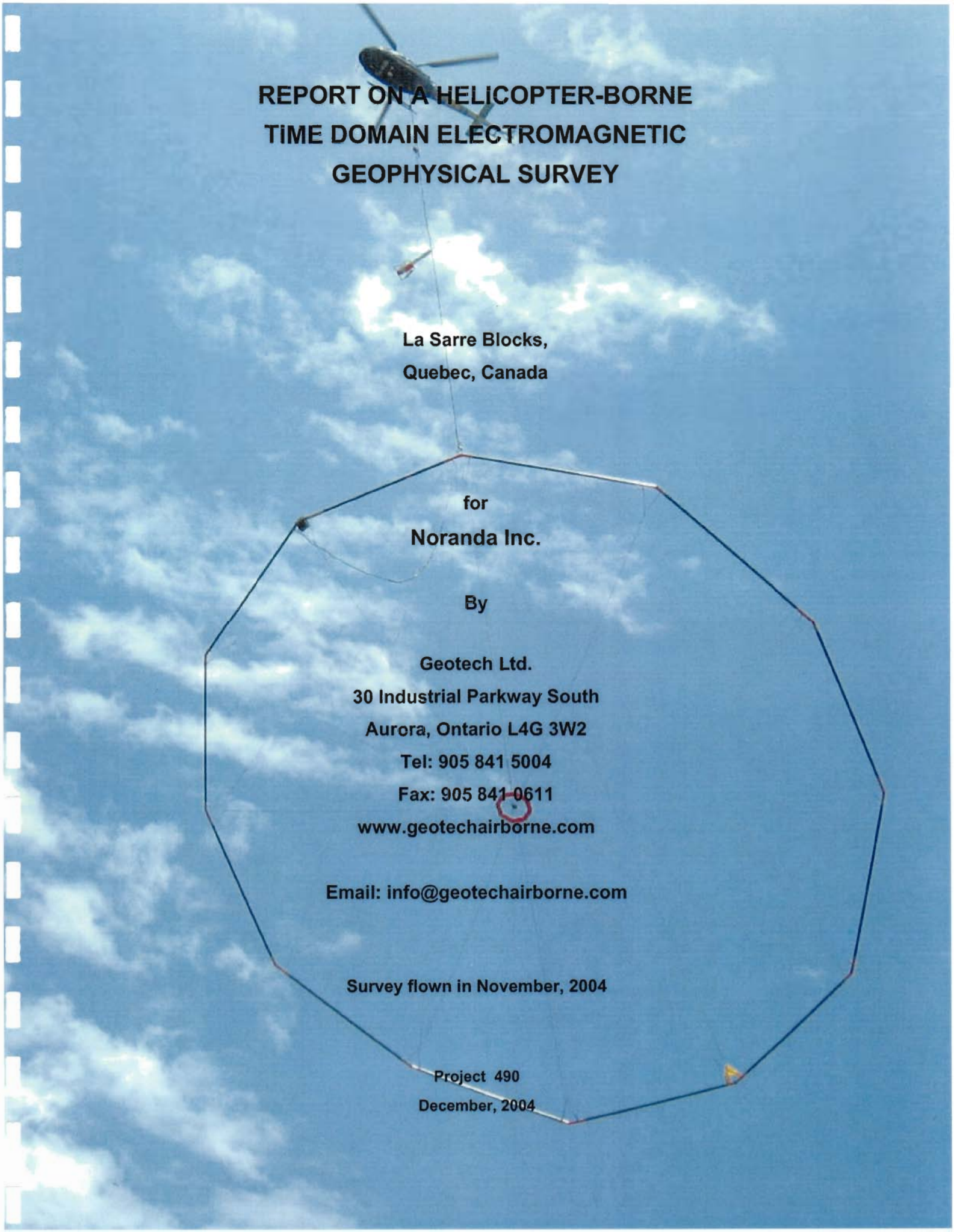
Ontario Geological Survey
2003: Geological Compilation of the Abitibi Greenstone Belt – Digital Data, Ontario Geological Survey MRD 143, scale 1:250,000

ERMES MNDM Website
Various assessment files

Appendix A

GEOPHYSICAL SURVEY SPECIFICATIONS & LOGISTICAL REPORTS

Quantec Geoscience Inc and Geotech Limited



REPORT ON A HELICOPTER-BORNE TIME DOMAIN ELECTROMAGNETIC GEOPHYSICAL SURVEY

La Sarre Blocks,
Quebec, Canada

for

Noranda Inc.

By

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Survey flown in November, 2004

Project 490
December, 2004

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REPORT ON A HELICOPTER-BORNE
TIME DOMAIN ELECTROMAGNETIC SURVEY

La Sarre Blocks, Quebec, Canada

Executive Summary

During the period of November 8th to 20th, 2004, Geotech Limited carried out a helicopter-borne geophysical survey for Noranda Inc. over twenty one (21) blocks near La Sarre, Quebec.

Principal geophysical sensors included a time domain electromagnetic system (VTEM) and a cesium magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 790.4 line-km were flown.

In-field data processing involved quality control and compilation of data collected during the acquisition stage, using the in-field processing centre established at La Sarre. Preliminary and final data processing, including generation of final digital data products were done at the office of Geotech Limited in Aurora, Ontario.

The processed survey results are presented as two (2) grids and digital profile data for each block. The grids are:

- Total Field Magnetics.
- Time Gate 3.18 miliseconds.

Profile data includes all electromagnetic and magnetic products plus positional, altitude and raw data.

1. INTRODUCTION

1.1 General Considerations

These services are the result of the Agreement made between Noranda Inc. and Geotech Limited, to perform a helicopter-borne geophysical survey over twenty one (21) blocks near La Sarre, Quebec. 790.4 line-km of geophysical data were acquired during the survey.

Mr. Michel Allard acted on behalf of Noranda Inc. during data acquisition and processing phases of this project.

The survey blocks are as shown in the Location map in Appendix A.

The crew was based in Mot Villa Repos Motel at La Sarre for the acquisition phase of the survey, as shown in Section 2 of this report.

The helicopter was based at the Abitibi Helicopters base located in La Sarre. Survey flying was completed on November 20th, 2004. Preliminary data processing was carried out daily during the acquisition phase of the project. Final data presentation and data archiving was completed in the Aurora office of Geotech Limited by December, 2004.

1.2. Survey and System Specifications

The survey blocks were flown with a nominal traverse line spacing of 50 metres.

Where possible, the helicopter maintained a mean terrain clearance of 75 metres, which translated into an average height of 30 meters above ground for the bird-mounted VTEM system and 60 meters above ground for the magnetic sensor.

The survey was flown using an Astar BA+ helicopter, registration C-GHSM, operated by Abitibi Helicopters Ltd. Details of the survey specifications may be found in Section 2 of this report.

1.3. Data Processing and Final Products

Data compilation and processing were carried out by the application of Geosoft OASIS Montaj and programs proprietary to Geotech Limited. Maps, profile data and fourty two (42) grids of final products were presented to Noranda Inc.

The survey report describes the procedures for data acquisition, processing, final image presentation and the specifications for the digital data set.

1.4. Topographic Relief

The twenty one (21) blocks are located approximately 32 - 110 kilometers NW of La Sarre.

Topographically, elevation range from 250 metres to 350 metres above sea level.

The blocks intersect lakes and rivers.

Some blocks have road access.

2. DATA ACQUISITION

2.1. Survey Areas

The survey blocks (see location map, Appendix A) and general flight specifications are as follows:

Block	Line spacing (m)	Area (Km^2)	Line-km	Flight direction	Line number
ADR-08	50	1.6	32.3	N0°E	L1000 - 1070
ABB-09a	50	1.7	32.3	N33.3°E	L1100 - 1170
BRA-09	50	5.4	105.0	N40.28°E	L1200 - 1315
Block 14	50	1.7	32.8	N1.97°E	L1400 - 1470
BLA-13	50	1.7	32.5	N13.36°W	L1500 - 1570
BLA-10	50	1.7	33.1	N13.35°W	L1600 - 1670
BLA-06	50	1.7	32.8	N8.4°W	L1700 - 1770
BLA-03	50	1.7	33.4	N17.83°E	L1800 - 1870
HOB-0304	50	2.2	44.4	N10.64°E	L1900 - 1995
BLA-18	50	1.5	30.8	N17.76°E	L2105 - 2170
HUR-02	50	1.7	32.3	N26.1°W	L3000 - 3070
HUR-03a	50	2.3	43.8	N26.12°E	L3100 - 3195
NOS-09	50	2.1	41.5	N0°E	L3300 - 3390
HUR-10	50	1.9	37.0	N1.46°W	L3500 - 3580
NOS-02	50	1.7	32.3	N9.42°W	L3700 - 3770
ENJ-03	50	1.7	32.5	N19.75°E	L3900 - 3970
ATK-22	50	1.7	32.2	N25.94°E	L4100 - 4170
ATK-21	50	1.7	32.3	N55.81°E	L4300 - 4370
MSS-04	50	1.7	32.1	N0°E	L4500 - 4570
LDL-01	50	1.7	32.4	N11.76°E	L4700 - 4770
LDL-13	50	1.7	32.4	N28.7°W	L4900 - 4970

Table 1 – Survey blocks

2.2. Survey Operations

Survey operations were based in Mot Villa Repos Motel, in La Sarre from November 8 to 20, 2004 for the acquisition phase of the survey.

The following table shows the timing of the flying.

Date	Crew Location	Flight #	Km flown	Comments
8-Nov	Mot Villa Repos Motel, La Sarre			Crew mobilization.
9-Nov	Mot Villa Repos Motel, La Sarre			System installation.
10-Nov	Mot Villa Repos Motel, La Sarre			System installation.
11-Nov	Mot Villa Repos Motel, La Sarre			Test flights.
12-Nov	Mot Villa Repos Motel, La Sarre	1, 2	118.4	
13-Nov	Mot Villa Repos Motel, La Sarre	3, 4	120.2	
14-Nov	Mot Villa Repos Motel, La Sarre	6, 7	194.3	
15-Nov	Mot Villa Repos Motel, La Sarre	8	83.7	
16-Nov	Mot Villa Repos Motel, La Sarre	9, 10, 11	78.1	
17-Nov	Mot Villa Repos Motel, La Sarre			Rain, low ceiling. Stand by.
18-Nov	Mot Villa Repos Motel, La Sarre			Rain, low ceiling. Stand by
19-Nov	Mot Villa Repos Motel, La Sarre	12	4.4	
20-Nov	Mot Villa Repos Motel, La Sarre	13, 14, 15	191.4	
Total			**790.4**	

Table 2 – Survey schedule

2.3. *Flight Specifications*

The nominal EM sensor terrain clearance was 30 m (EM bird height above ground, i.e. helicopter is maintained 75 m above ground). Nominal survey speed was 80 km/hour. The data recording rates of the data acquisition was 0.1 second for electromagnetics and magnetometer, 0.2 second for altimeter and GPS. This translates to a geophysical reading about every 2 metres along flight track. Navigation was assisted by a GPS receiver and data acquisition system, which reports GPS co-ordinates as latitude/longitude and directs the pilot over a pre-programmed survey grid.

The operator was responsible for monitoring of the system integrity. He also maintained a detailed flight log during the survey, tracking the times of the flight as well as any unusual geophysical or topographic feature.

On return of the aircrew to the base camp the survey data was transferred from a compact flash card (PCMCIA) to the data processing computer.

2.4. *Aircraft and Equipment*

2.4.1. Survey Aircraft

An Astar BA+ helicopter, registration C-GHSM - owned and operated by Abitibi Helicopters Ltd. was used for the survey. Installation of the geophysical and ancillary equipment was carried out by Geotech Ltd.

2.4.2. Electromagnetic System

The electromagnetic system was a Geotech Time Domain EM (VTEM) system. The layout is as indicated in Figures 1 below.

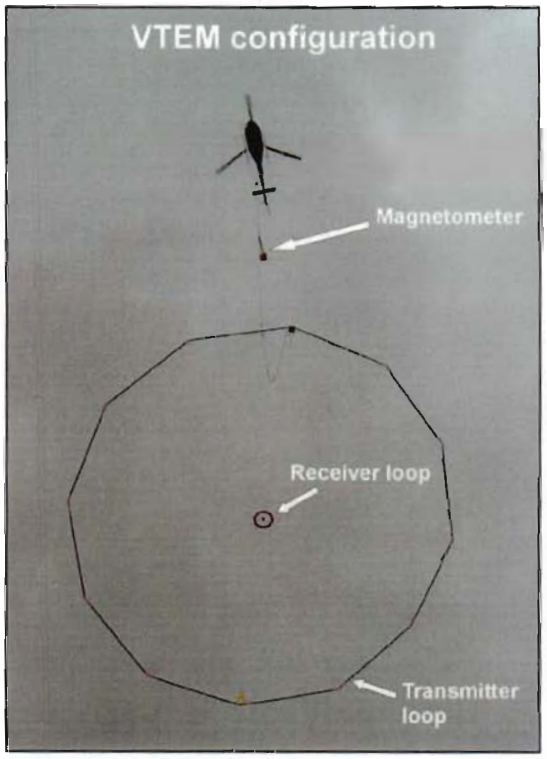

Figure 2

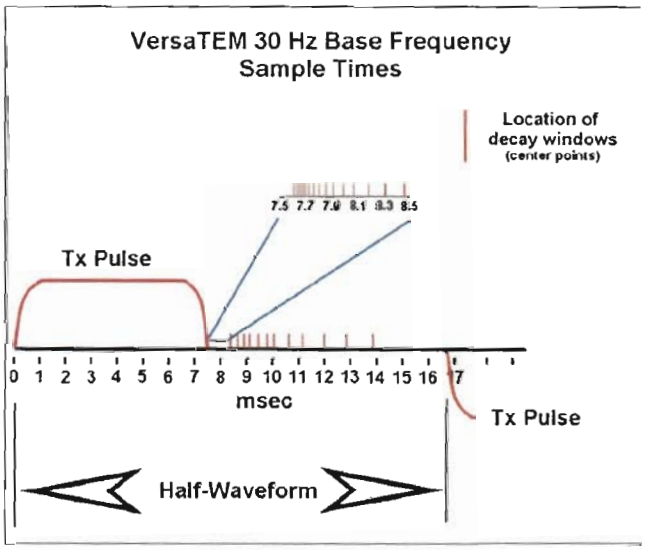

Figure 1

Receiver and transmitter coils were concentric and Z-direction oriented.
Transmitter coil diameter was 26 metres, the number of turns was 4.
Receiver coil diameter was 1.1 metre, the number of turns was 60.
Transmitter pulse repetition rate was 30 Hz.
Peak current was 200 A.
Duty cycle was 40%.
Peak dipole moment was 425000 NIA.
Wave form – trapezoid.
Twenty-five measurement gates were used in the range from 130 μs to 6340 μs.
The transmitter waveform and the receiver decay recording scheme is shown diagrammatically in Figure 2.
Recording sampling rate was 10 samples per second.
The EM bird was towed 45 m below the helicopter.

2.4.3. Airborne magnetometer

The magnetic sensor utilized for the survey was a Geometrics optically pumped cesium vapor magnetic field sensor, mounted in a separate bird towed 15 m below the helicopter. The sensitivity of the magnetic sensor is 0.02 nanoTesla (nT) at a sampling interval of 0.1 seconds. The magnetometer sends the measured magnetic field strength as nanoTeslas to the data acquisition system via the RS-232 port.

2.4.4. Ancillary Systems

2.4.4.1. Radar Altimeter

A Terra TRA 3000/TRI 30 radar altimeter was used to record terrain clearance. The antenna was mounted beneath the bubble of the helicopter cockpit.

2.4.4.2. GPS Navigation System

The navigation system used was a Geotech PC based navigation system utilizing a NovAtel's WAAS enable OEM4-G2-3151W GPS receiver, Geotech navigate software, a full screen display with controls in front of the pilot to direct the flight and an NovAtel GPS antenna mounted on the helicopter tail.
The co-ordinates of the block were set-up prior to the survey and the information was fed into the airborne navigation system.

2.4.4.3. Digital Acquisition System

A Geotech data acquisition system recorded the digital survey data on an internal compact flash card. Data is displayed on an LCD screen as traces to allow the operator to monitor the integrity of the system. Contents and update rates were as follows:

DATA TYPE	SAMPLING
TDEM	0.1 sec
Magnetometer	0.1 sec
GPS Position	0.2 sec
RadarAltimeter	0.2 sec

Table 3 - Sampling Rates

2.4.5. Base Station

A combine magnetometer/GPS base station was utilized on this project. A Geometrics Cesium vapour magnetometer was used as a magnetic sensor with a sensitivity of 0.001 nT. The base station was recording the magnetic field together with the GPS time at 1 Hz on a base station computer. The base station magnetometer sensor was installed near the Abitibi Helicopters base, away from electric transmission lines and moving ferrous objects such as motor vehicles. The magnetometer base station's data was backed-up to the data processing computer at the end of each survey day.

3. PERSONNEL

The following Geotech Ltd. personnel were involved in the project.

Field

Geophysicist/Crew Chief:	Shawn Grant
Operator:	Claude Berthelot

The survey pilot and the mechanic were employed directly by the helicopter operator – Abitibi Helicopters Ltd.

Pilot:	Joel Breton

Office

Data Processing:	Andrei Bagrianski
Data Processing/Reporting:	Marta Orta

Final data processing at the office of Geotech Limited in Aurora, Ontario was carried out under the supervision of Andrei Bagrianski, Data Processing Manager.

Overall management of the survey was carried out from the Aurora offices of Geotech Ltd. by Edward Morrison, President.

4. DATA PROCESSING AND PRESENTATION

4.1. Flight Path

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the UTM co-ordinate system in Oasis Montaj.

The flight path was drawn using linear interpolation between x,y positions from the navigation system. Positions are updated every second and expressed as UTM eastings (x) and UTM northings (y).

4.2. Electromagnetic Data

A three stage digital filtering process was used to reject major sferic events and to reduce system noise. Local sferic activity can produce sharp, large amplitude events that cannot be removed by conventional filtering procedures. Smoothing or stacking will reduce their amplitude but leave a broader residual response that can be confused with geological phenomena. To avoid this possibility, a computer algorithm searches out and rejects the major sferic events. The filter used was a 16 point non-linear filter.

The signal to noise ratio was further improved by the application of a low pass linear digital filter. This filter has zero phase shift which prevents any lag or peak displacement from occurring, and it suppresses only variations with a wavelength less than about 1 second or 20 metres. This filter is a symmetrical 1 sec linear filter.

The results are presented as EM Time Gate 3.18 milisecond grid, from the channel located 3 miliseconds after the termination of the impulse.

4.3. Magnetic Data

The processing of the magnetic data involved the correction for diurnal variations by using the digitally recorded ground base station magnetic values. The base station magnetometer data was edited and merged into the Geosoft GDB database on a daily basis. The aero magnetic data was corrected for diurnal variations by subtracting the observed magnetic base station deviations. The corrected magnetic line data from the survey was interpolated between survey lines using a random point gridding method to yield x-y grid values for a standard grid cell size of approximately 0.2 cm at the mapping scale. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.

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Porcupine, ON P0N 1C0
Phone (705) 235-2166
Fax (705) 235-2255

Quantec Geoscience Inc.

Geophysical Survey Logistics Report

Regarding the SURFACE TRANSIENT ELECTROMAGNETIC SURVEYS over the EAST COCHRANE AREA GRIDS, near Cochrane, ON, on behalf of NORANDA INC. Laval, QC

QGI QGI QGI QGI QGI QGI QGI

S.T. Coulson
May 2005
Project QG-336

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- **QGI Project No:** QG-332/336
- **Project Name:** Cochrane Area Project
- **Survey Period:** December 3rd to 19th, 2004
  January 11th to 23rd, 2005
  March 4th to 14th, 2005
- **Survey Type**: Fixed Loop Transient EM Surface
- **Client:** **NORANDA INC.**
- **Client Address** 3296 Ave. Francis Hughes
  Laval, QC H7L 5A7
- **Representatives:** Michel Allard, Alan Huard
- **Objectives:**

  The objective of the surface TEM survey was to ground truth conductive targets, outlined by airborne EM surveys.
- **Survey Type:** Logistics

2. GENERAL SURVEY DETAILS

2.1 LOCATION

- **Townships:** Abbotsford, Adair, Blakelock, Hurtubise, Kenning, Newman, Noseworthy, Tomlinson,
- **Province:** Ontario
- **Country:** Canada
- **Nearest Settlement:** Cochrane
- **NTS Map Reference #:** 32E-04, 05, 42H-05, 08,

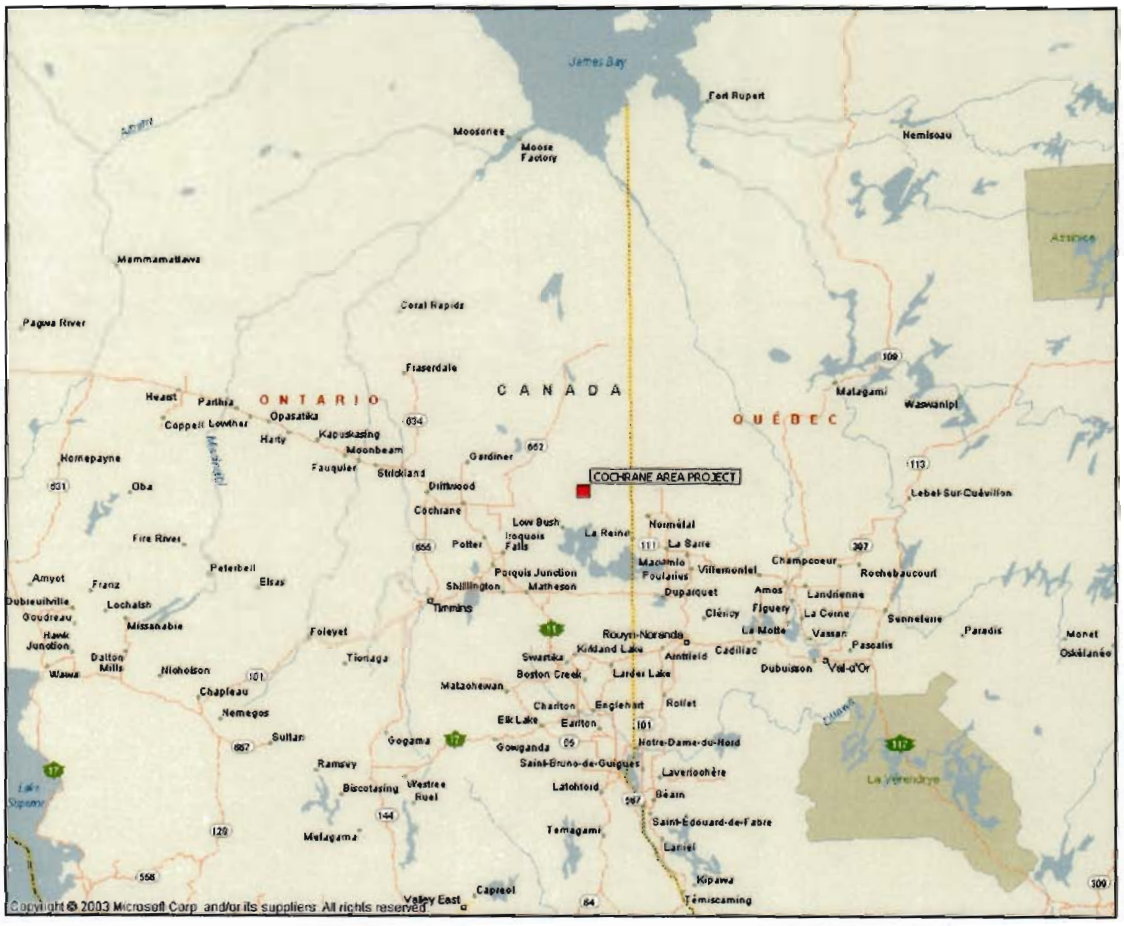

Figure 1: General Location of the Cochrane Area Grids

2.2 Access

- **Base of Operations:** Cochrane, ON and La Sarre, QC
- **Mode of Access:** Truck, ATV and/or Snowmobile

2.3 Survey Grid

- **Coordinate Reference System:** Local exploration grid (UTM referenced to NAD27)
- **Established:** prior to survey execution
- **Baseline Direction:** Various
- **Line Separation:** 100 meters
- **Station Interval:** 25 meters
- **Method of Chaining:** Metric, slope distance

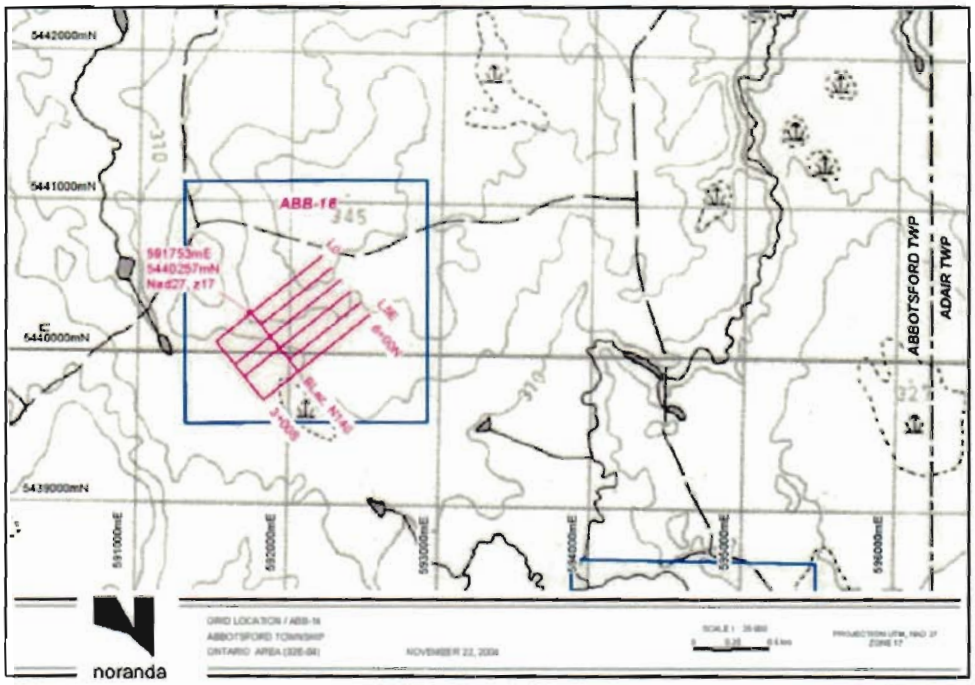

Figure 2: Grid Sketch for ABB-16 Grid

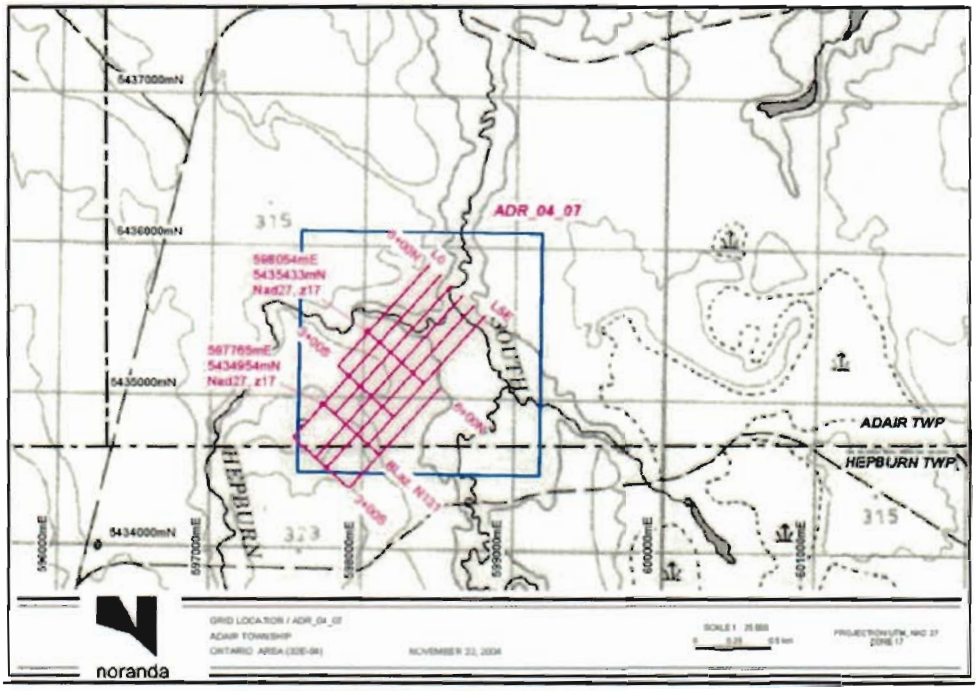

Figure 3: Grid Sketch for ADR_04_07 Grid

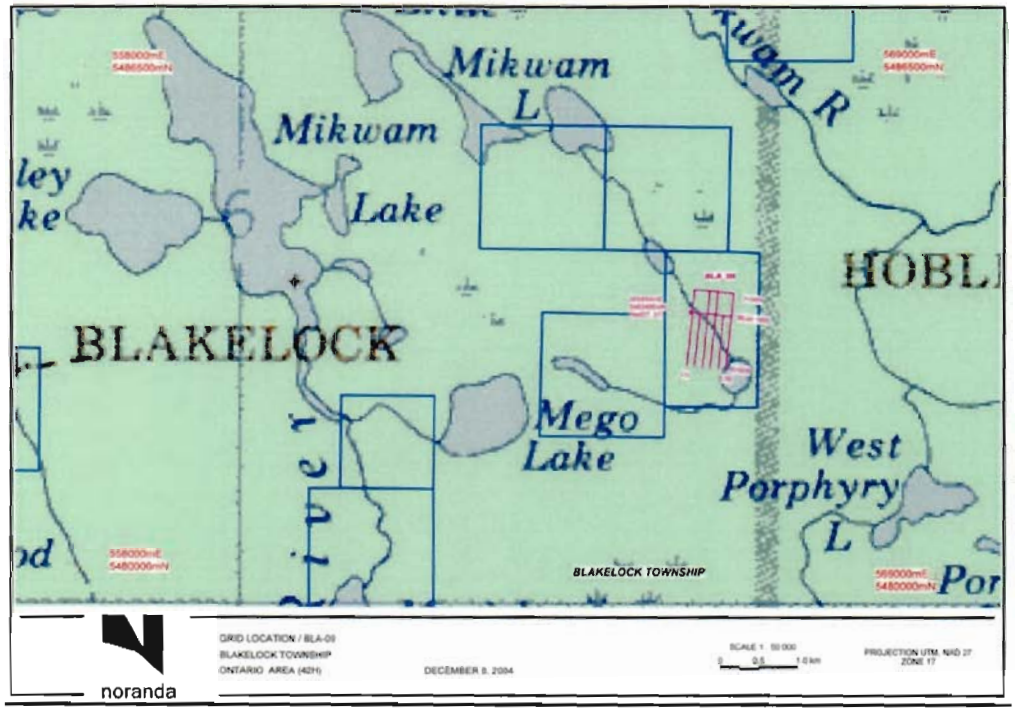

Figure 4: Grid Sketch for BLA-09 Grid

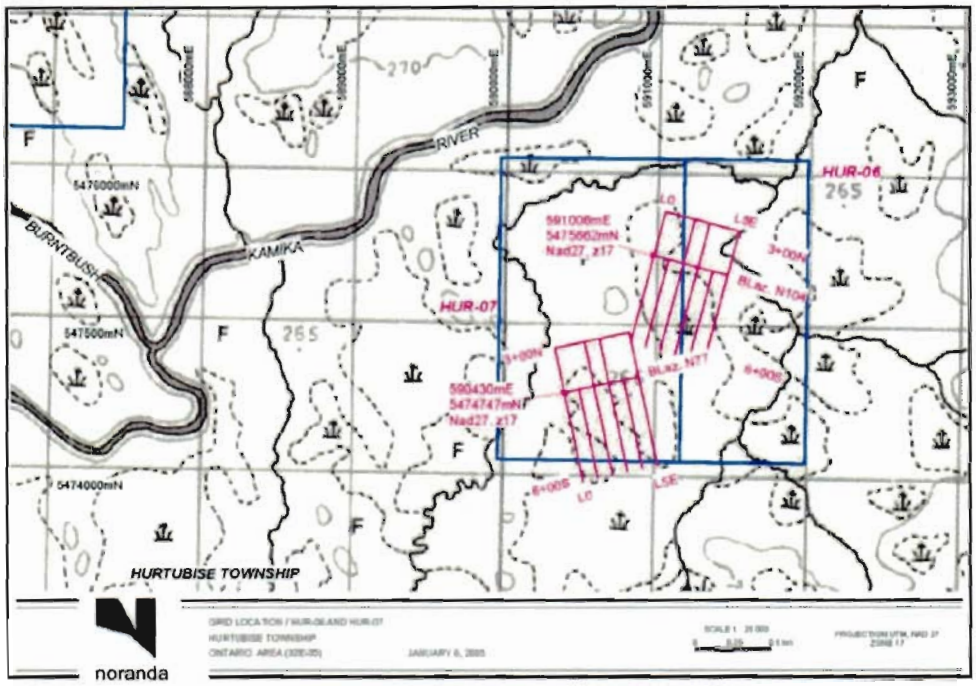

Figure 5: Grid Sketch for HUR-06 and 07 Grids

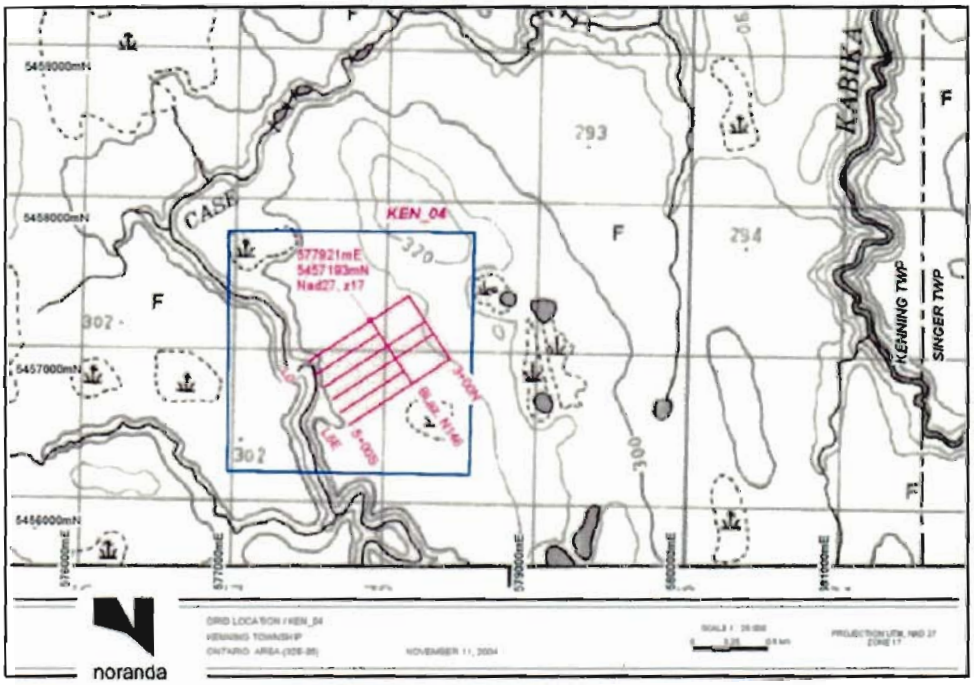

Figure 6: Grid Sketch for KEN-04 Grid

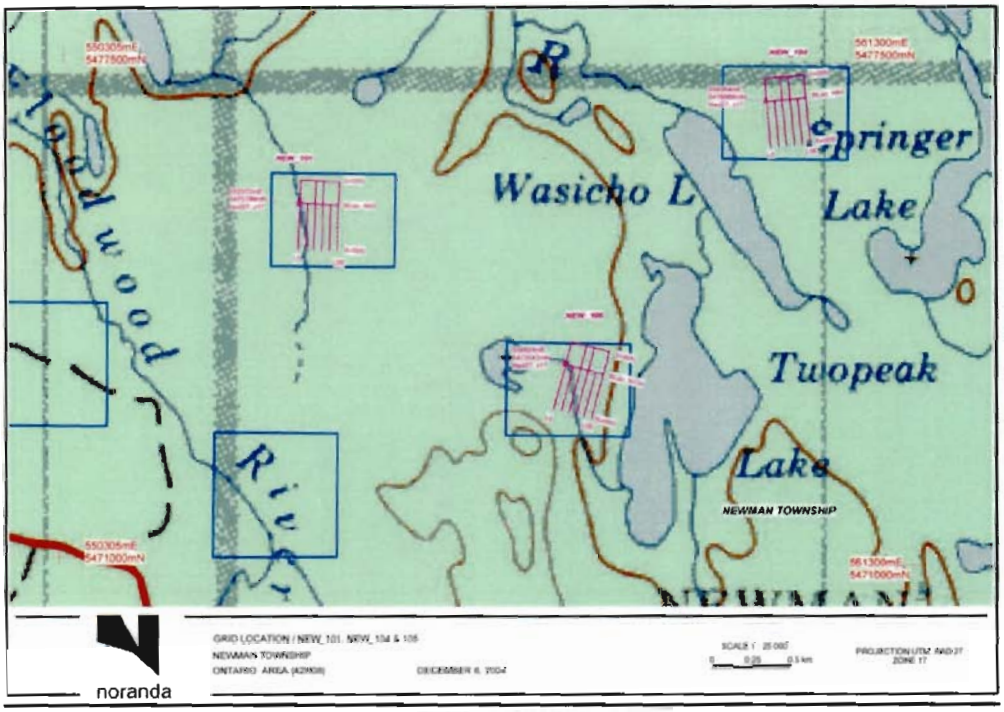

Figure 7: Grid Sketch for NEW-14, 101 and 105 Grids

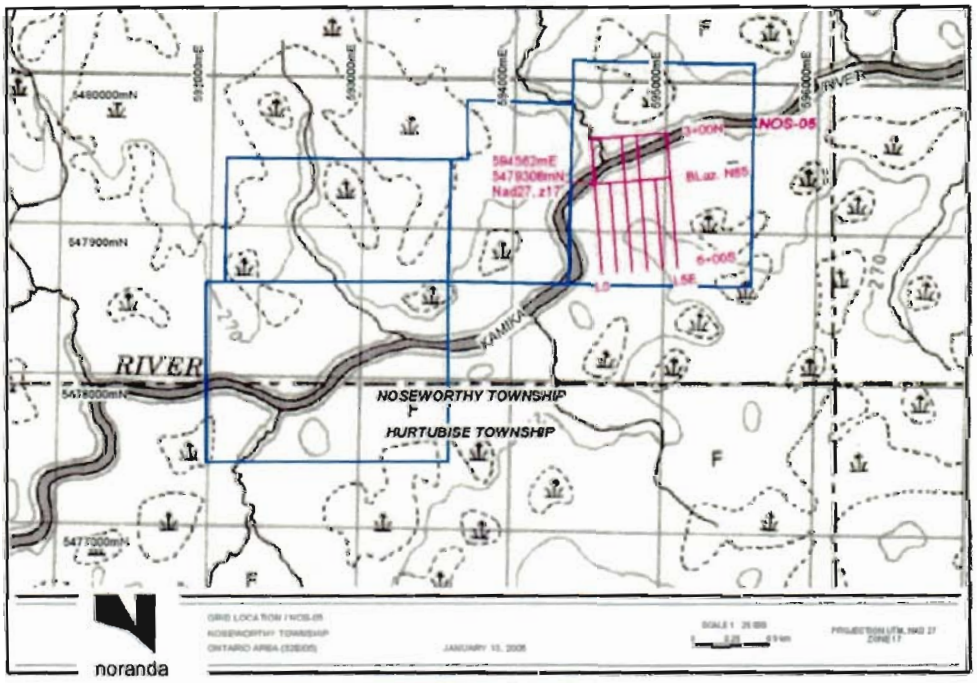

Figure 8: Grid Sketch for NOS-05 Grid

2.31395

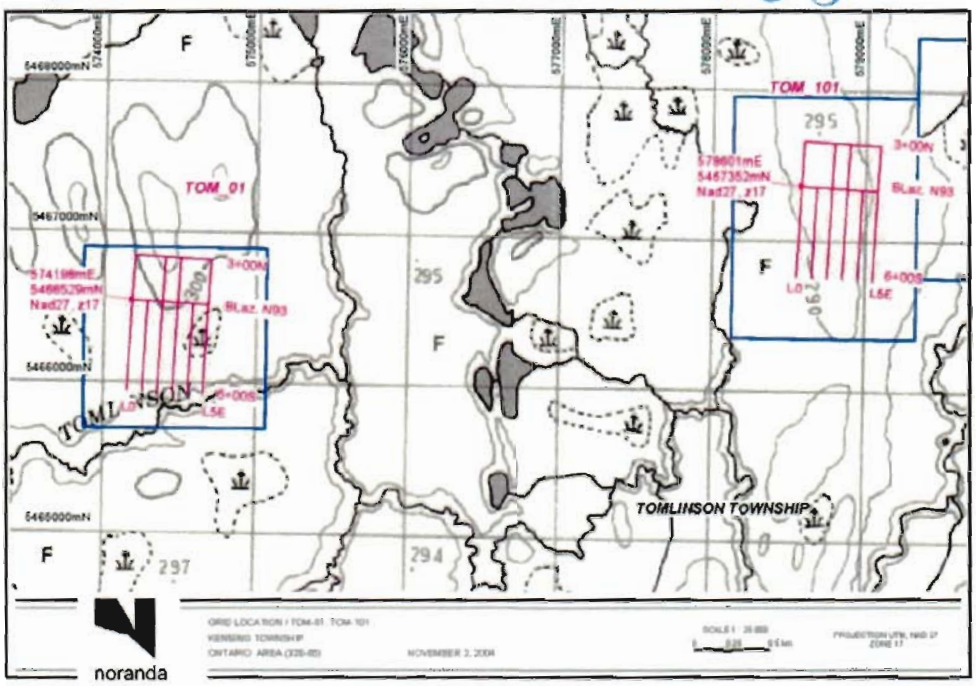

Figure 9: Grid Sketch for TOM-01 and 101 Grids

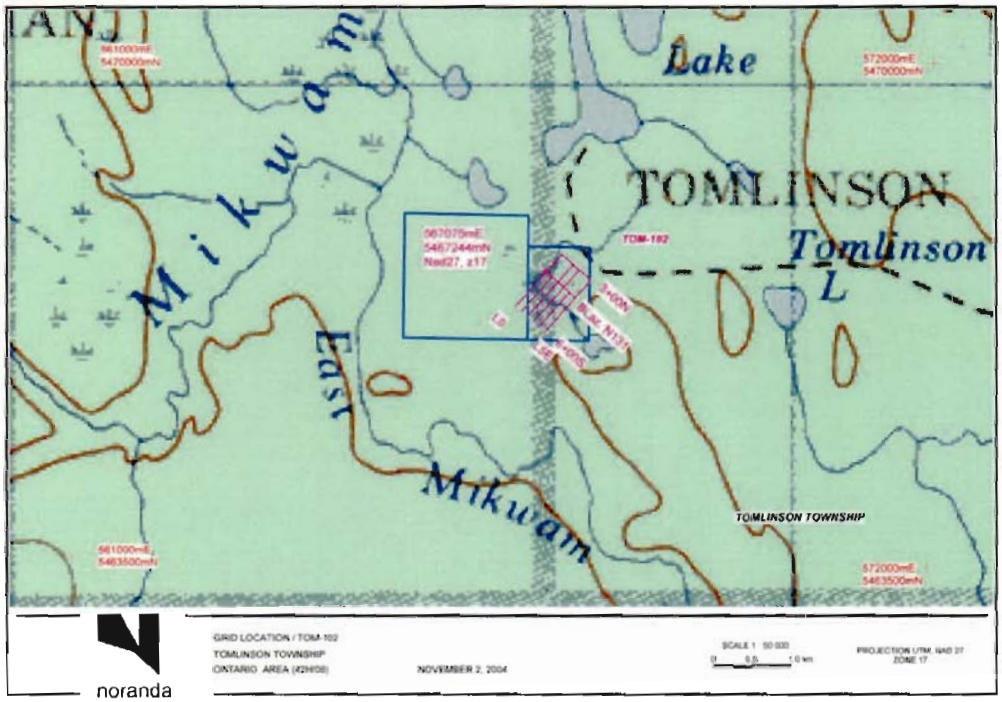

Figure 10: Grid Sketch for TOM-102 Grid

3. SURVEY WORK UNDERTAKEN

3.1 GENERALITIES

- **Survey Dates:** December 3rd to 19th, 2004
  January 11th to 23rd, 2005
  March 4th to 14th, 2005
- **Survey Period:** 38 days
- **Survey Days:** 4 days
- **Mob/Demob Days:** 2 days
- **Down Days** 2 days
- **Survey Coverage:** 62.8 kms

3.2 PERSONNEL

- **Project Supervisor:** Woody Coulson, Porcupine, ON
- **Project Managers:** John Cribbs, Porcupine, ON
  David MacGillivray, Matachewan, ON
  Kevin MacKenzie, Sydney, NS
- **Technicians:** Eric Dufour, Val D'Or, QC
  Steve Woito, Schumacher, ON
  Richard Chasse, Kirkland Lake, ON

3.3 SURVEY SPECIFICATIONS

- **Configuration:** In/Off loop profiling
- **Output Power Stage:** Low Power (3.5 kW)
- **Dimension:** 3 Component (X, Y and Z)
- **Loop Sizes and Locations:** 300m x 500m (See Appendix F)
- **Line Interval:** 100 meters
- **Sampling Interval:** 25 meters

3.4 SURVEY COVERAGE

GRID	LINE	MIN. EXTENT	MAX. EXTENT	COVERAGE
ABB-16	0	0N	600N	600
	100E	0N	600N	600
	200E	300S	600N	900
	300E	300S	600N	900
	400E	0N	600N	600

GRID	LINE	MIN. EXTENT	MAX. EXTENT	COVERAGE
	500E	0N	600N	600
ADR-02	0	0N	600N	600
	100E	0N	600N	600
	200E	300S	600N	900
	300E	300S	600N	900
	400E	0N	600N	600
	500E	0N	600N	600
ADR_04_07	0+00	3+00N	9+00N	600
South Loop	1+00E	3+00N	9+00N	600
	2+00E	0+00	9+00N	900
	3+00E	0+00	9+00N	900
	4+00E	3+00N	9+00N	600
	5+00E	3+00N	9+00N	600
ADR_04_07	1+00W	9+00N	1500N	600
North Loop	0+00	9+00N	1500N	600
	1+00E	6+00N	1500N	900
	2+00E	6+00N	1500N	900
	3+00E	9+00N	1400N	500
	4+00E	9+00N	1400N	500
BLA-09	0	600S	0	600
	100E	600S	0	600
	200E	600S	300N	900
	300E	600S	300N	900
	400E	600S	0	600
	500E	600S	0	600
HUR-07	0	600S	0	900
	100E	600S	0	900
	200E	600S	300N	600
	300E	600S	300N	600
	400E	600S	0	600
	500E	600S	0	600
HUR-06	0	600S	0	600
	100E	600S	0	600
	200E	600S	300N	900
	300E	600S	300N	900
	400E	600S	0	600
	500E	600S	0	600
KEN_04	0	600S	0	600
	100E	600S	0	600
	200E	600S	300N	900
	300E	600S	300N	900
	400E	600S	0	600
	500E	600S	0	600
NEW-14	0	600S	0	600
	100E	600S	0	600
	200E	600S	300N	900
	300E	600S	300N	900
	400E	600S	0	600
	500E	600S	0	600
NEW_101	0	600S	0S	600
	100E	600S	0S	600
	200E	600S	300N	900
	300E	600S	300N	900
	400E	600S	0S	600
	500E	600S	0S	600
NEW_105	0	600S	0S	600
	100E	600S	0S	600
	200E	600S	300N	900
	300E	600S	300N	900
	400E	600S	0S	600
	500E	600S	0S	600
NOS-05	0	600S	0	600
	100E	600S	0	600
GRID	LINE	MIN.	MAX.	COVERAGE

		EXTENT	EXTENT	
	200E	600S	300N	900
	300E	600S	300N	900
	400E	600S	0	600
	500E	600S	0	600
TOM_01	0	600S	0	600
	100E	600S	0	600
	200E	600S	300N	900
	300E	600S	300N	900
	400E	600S	0	600
	500E	600S	0	600
TOM_101	0	600S	0	600
	100E	600S	0	600
	200E	600S	300N	900
	300E	600S	300N	900
	400E	600S	0	600
	500E	600S	0	600
TOM_102	0	600S	0	600
	100E	600S	0	600
	200E	600S	300N	900
	300E	600S	300N	900
	400E	600S	0	600
	500E	600S	0	600
			TOTAL	**62.8 kms**

Table I: Survey Coverage for Surface TEM Survey

3.5 INSTRUMENTATION

- **Receiver:** Geonics Digital Protem 20 channel capability
- **Coils:** Geonics 3D-3 coil (200m^2 effective area)
- **Transmitter:** Geonics EM-37 (2.8 kW output)
- **Power Supply:** Geonics GPU 2000 motor generator

3.6 SURVEY PARAMETERS

Pulse repetition frequency:	30Hz
Gain:	1-6
Integration number:	15 sec
Loop Sizes:	300m x 500m
Current:	12.5 to 19 amps (see Appendix F)
Turn-off time:	200 to 250 µs(see Appendix F)
Gate positions	80-6136 µs (see Appendix C)
Synchronization mode:	Crystal

Table II: System Parameters for Surface TEM Survey

- **Coil Conventions:** (see Appendix C)

COMPONENT	COIL ORIENTATION
Z	Positive Up
X	Positive away from the loop along the line
Y	Positive 90° counterclockwise from X

Table III: Coil Conventions for Surface TEM Survey

- **Measured Parameters:** dB/dt, mV
- **Data Reduction**[1]**:** nanoVolts/Ampere-metre^2 (nV/Am^2)

3.7 MEASUREMENT ACCURACY AND REPEATABILITY

- **Number of Repeats per Station:** 0-1
- **Number of Repeats per Day:** 0-3
- **Average Repeatability:** 1-2% in early channels
- **Worst Repeatability:** 3% in early channels

3.8 DATA PRESENTATION

- **Profiles:** X,Y,Z components, and Total EM Field @ 1:5000 with variable vertical (profile) scales to best display data.

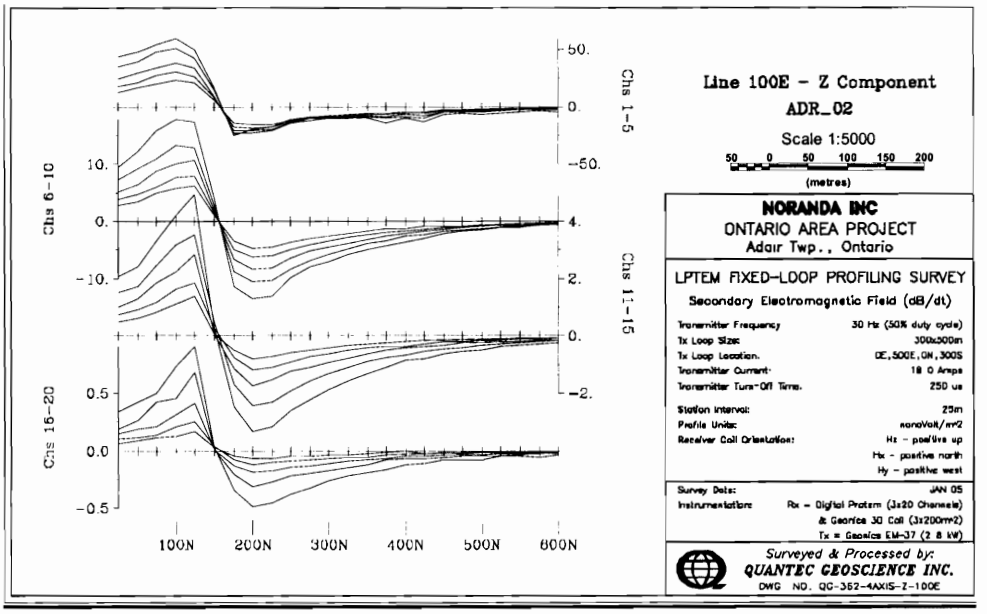

Figure 11: 4-Axis Surface TEM Profile Format

[1] Equivalent to Crone units of nanoTesla/second normalized to a unit current.

- **Digital Data:** Daily raw files and processed data (Geosoft .XYZ format) on CD

  a) raw data dump files, according to acquisition date, (DDMMYY.RAW, i.e. 050604.raw). Geonics Digital Protem format (refer to Protem manual)

  b) reduced XYZ ASCII data files, according to line number and component (i.e. l300ek.xyz where, k=component – Z, X, Y or T for Total Field).

  Column 1: N-S Line/E-W Station number
  Column 2: E-W Station/N-S Line number
  Column 3: Primary pulse (nanoVolt/ampere*m^2)
  Column 4: Channel 1 secondary rate of decay of TEM field (nanoVolt/ampere*m^2)
  Column 5: Channel 2
  ⇓
  Column 23: Channel 20 secondary rate of decay of TEM field (nanoVolt/ampere*m^2)

4. SURVEY SUMMARY

The TEM surveys over the grid areas were conducted in 3 phases based on availability of grids. Apart from long drives to each of the grids, the surveys progressed smoothly and without incident.

RESPECTFULLY SUBMITTED
QUANTEC GEOSCIENCE INC.

S. T. Coulson, P.Geo.
Senior Geophysicist

APPENDIX A

STATEMENT OF QUALIFICATIONS

I, Sherwood T. Coulson, hereby declare that:

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

2. I am a graduate of Cambrian College, Sudbury, Ontario in 1974 with an Honours Diploma in Geophysical Engineering Technology.

3. I am a practicing member of the Association of Professional Geoscientists of Ontario (Member #0944) since 2003.

4. I have practiced my profession in Europe and North and South America continuously since graduation.

5. I am a member of the Canadian Society of Exploration Geophysicists and the Prospectors and Developers Association.

6. I have no interest nor do I expect to receive any interest, direct or indirect, in the properties or securities of **NORANDA INC..**

7. I supervised the survey execution and reviewed the data as it was collected. I am the author of this report and the statements made by me represent my best opinion and judgment based on the information available to me at the time of the writing.

Porcupine, ON
May 2005

Sherwood T. Coulson, P.Geo.
Senior Geophysicist

APPENDIX B

THEORETICAL BASIS AND SURVEY PROCEDURES

TEM SURFACE AND BOREHOLE PROFILING

TEM profiling is conducted on lines either adjacent to (Off-Loop mode) or surrounded by (In-Loop mode) a large fixed rectangular transmit loop. Current is passed through the loop which following the Turn-Off, produces a primary magnetic field (H) both inside and outside (Figure B1). This primary field induces vortex current patterns, which energize conductors and which in turn create their own secondary magnetic field (Bs). The rate of change of the decaying secondary magnetic flux (dBs/dt) is measured as the vertical (**Hz**), in-line horizontal (**Hx**) and/or cross line horizontal (**Hy**) vector components on surface using an air-core sensor coil. These measurements of the TEM decay (20 log-time slices) are taken during the "Off-Time", using a 30 cycle/sec, base repetition rate.

In keeping with the industry standard, the primary field is always considered positive up inside the loop and negative down outside. Similarly, for secondary EM fields, the receiver coil is oriented positive vertical up for the **Hz** component. The convention for In-Loop surveys, has the in-line component, **Hx** oriented either positive east (for grid EW lines) or north (for grid NS lines). The Off-Loop survey convention differs, with the receiver coil orientation for **Hx** pointing positive away from the transmit loop (for EW or NS lines). Finally, the sign convention in all cases, has the **Hy** component pointing positive orthogonal to the left of the **Hx,** according to the right-hand-rule.

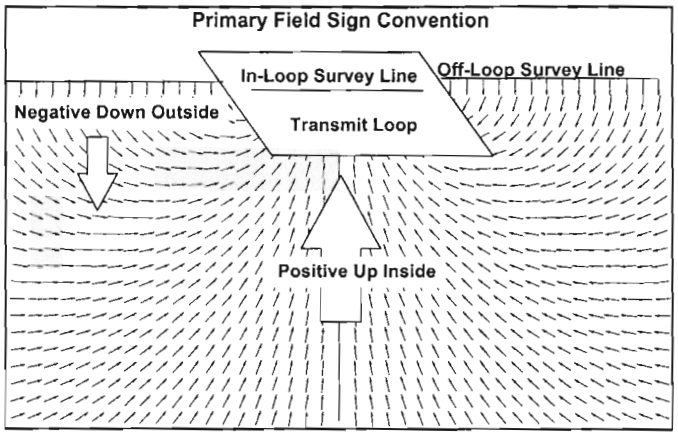

Figure B1: Primary field sign convention for TEM surveys.

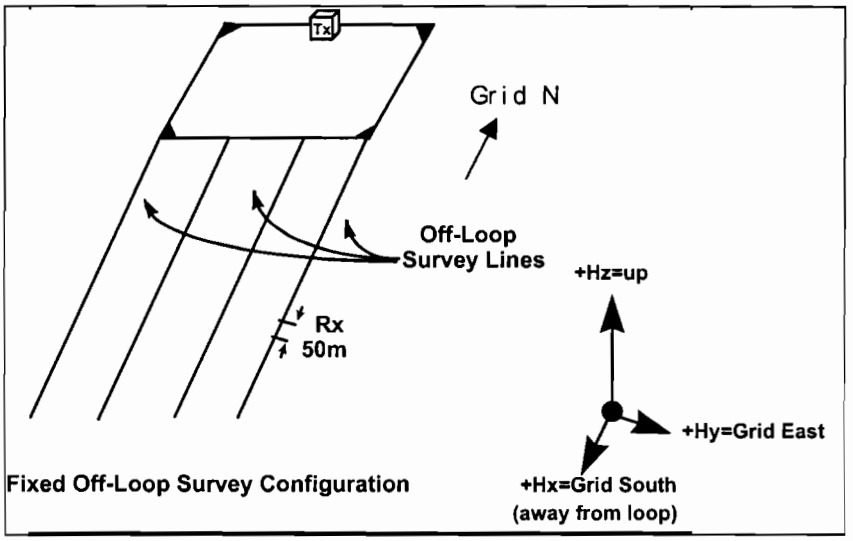

Figure B2: Loop Configuration and Polarity Conventions for Off-Loop Profiling Surveys

The borehole survey is particularly useful to determine the geometrical relationship between a conductor or a complex swarm of conductors around the drill hole. Of particular importance is its application in cases where the drilling is believed to have missed the target of interest. A 3-D borehole survey can effectively determine the direction and distance from the drill hole to the conductor by measuring two orthogonal secondary field components in addition to the axial component. Additionally, conductors located below the end of a drill hole, which either may be too deep and/or have gone previously undetected from surface, may be discovered during the course of a borehole survey.

The probe is manually lowered down the borehole at the end of a cable and, at successive depths, measurements of three (3-D) orthogonal components of the TEM field (Hx, Hy, Hz) are individually obtained in succession by electronically switching the sensor coils in the borehole antenna through the use of a relay/switching system from surface, via the borehole-cable shield. As the probe is free to rotate on its vertical axis, a correction is later applied to the 3-D data in order to rotate the components into their respective coordinate axis.

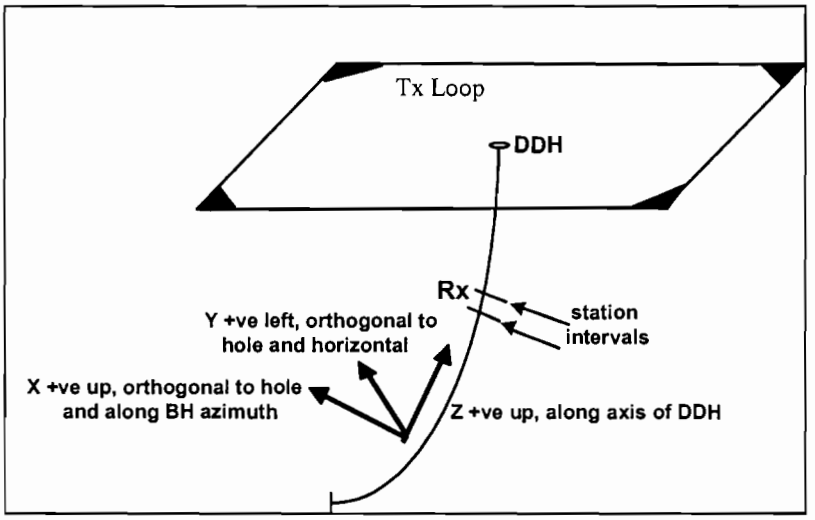

Figure B3: Loop Configuration and Polarity Conventions for 3-D Borehole Surveys

The secondary fields induced decay at a rate proportional to the conductivity-thickness and are then measured and profiled by the borehole sensor-probe.

a) Hz is positive up along the axis of borehole,
b) Hx is positive perpendicular to the borehole axis and pointing upward, in a vertical plane, in the direction

of the azimuth of the hole,

c) Hy is positive 90° counterclockwise to Hx and horizontal, according to the right-hand rule.

At the end of each survey day, the stored data are transferred to a microcomputer where they corrected for the turn-off time, loop area, system gain and current, and converted from millivolts to nanoVolts per ampere meter squared or nanoVolts per meter squared. The data are then transferred to disk for storage and processing. Report quality field plots are generated on site, using a 24-pin printer in order to monitor the data characteristics and to provide a preliminary interpretation capability.

The following equations govern the transient EM response for buried plate-like conductive bodies[1]

$$emf = \frac{1}{\tau} e^{-t/\tau}$$

Target Response to Transmitter Current Waveform: *where:* t = *fixed time*

e = *exponential decay*

τ = *time constant of conductor*

Equation 1: Conductor Response to the Transient EM Waveform

The time constant of the response is alternatively defined as the slope of the lin-log decay curve (Geonics) or, more exactly, as the time channel where the amplitude of the decay collapses to 37% (1/e) of its maximum value. Both τ and the analogous decay strength (i.e., the number of anomalous channels above background), are commonly used as indicators of conductor quality. This relationship between decay-strength and the conductivity-thickness can easily be demonstrated in the following equation for a vertically dipping conductive sheet:

$$\tau = \frac{\sigma \mu t h}{\pi^2} \quad \textit{for a thin plate}$$

where σ = *conductivity of target*

μ = *magnetic susceptibility*

t = *thickness of plate*

h = *vertical extension of plate*

Equation 2: Transient EM Decay Time Constant

[1] From Geonics Limited, EM-37 TEM System Design Parameter, Mississauga, Ont., 1982.

thereby giving, for an infinite vertical sheet:

$$\sigma t = \frac{\pi^2}{\mu h} \tau \approx \tau / 0.31 \quad mhos / metre \ (siemens)$$

Equation 3 Conductivity Thickness

From these equations and relationships, it therefore becomes obvious of the common use of the anomaly strength of decay as a simple, rule-of thumb indicator of the relative conductivity-thickness product for TEM surveys.

In addition, the total secondary field is calculated using the three components (Hx, Hy and Hz) in the following formula

$$Htot = \sqrt{Hx^2 + Hy^2 + Hz^2} \, nanoVolt / Am^2$$

Equation 4: Transient EM Total Secondary Field

APPENDIX C

INSTRUMENT SPECIFICATIONS

GEONICS LIMITED
Digital Protem Receiver System
Technical Specifications

Measured Quantity: Time rate of decay of magnetic flux along 3 axes

Sensors:

1. (L.F.): Air-cored coil of bandwidth 60 kHz; 100 cm diameter
2. (H.F.):Air-cored coil of bandwidth 850 kHz; 100 cm diameter
3. (3D-3): Three orthogonal component sensor; simultaneous operation
4. (3D-1): Three orthogonal component sensor; sequential operation

Time channels: 20 geometrically spaced time gates for each base frequency gives range from 6 μsec to 800 msec.

Repetition Rate: 0.3 Hz, 0.75, 3, 7.4, 30, 75 or 285 Hz for 60 Hz power-line networks (Base Frequency)

Synchronization: 1) reference cable.
2) high stability (oven controlled) quartz crystals. (Switch selectable)

Integration time: 2, 4, 8, 15, 30, 60, 120, 240 sec.

Calibration: Internal self-calibration
External Q coil calibration (optional)

Keyboards: Two 3 x 4 matrix sealed key pads with positive tactile feedback

Gain: Automatic or manual control

Dynamic Range: 23 bits (132 dB)

Display Quantity:

(1) Table of time rate of decay of magnetic flux (dB/dt)
(2) Curve of rate of decay of magnetic flux (dB/dt)
(3) Table of apparent resistivity (ρ_a)
(4) Curve of apparent resistivity (ρ_a)
(5) Profile of dB/dt
(6) Real time noise monitor
(7) Calibration curve
(8) Data acquisition statistics (real time)

Storage: Solid state memory with capacity for over 3000 data sets

Display: 8 lines by 40 character (240 x 64 dot) graphic LCD

Data Transfer: Standard RS-232 communications port.

Processor: CMOS 68HC000 8 MHz CPU

Receiver Battery: 12 volts rechargeable battery for 8 hours continuous operation. 6 hours in XTAL mode

Receiver Size: 34 x 38 x 27 cm

Receiver Weight: 15 kg

Operating Temp.: -40°C to +50°C

Transmitters: (1) Geonics TEM47
(2) Geonics TEM57
(3) Geonics TEM37

	30/25Hz			7.5/6.25Hz			3/2.5Hz		
30 gate mode	start	center	width	start	center	width	start	center	width
1	5.800	6.800	2.000	32.00	36.00	8.000	80.00	90.00	20.00
2	7.800	9.110	2.625	40.00	45.25	10.50	100.0	113.1	26.25
3	10.40	12.00	3.250	50.50	57.00	13.00	126.3	142.5	32.50
4	13.70	15.90	4.375	63.50	72.25	17.50	158.8	180.6	43.75
5	18.00	20.80	5.500	81.00	92.00	22.00	202.5	230.0	55.00
6	23.50	27.00	7.000	103.0	117.0	28.00	257.5	292.5	70.00
7	30.50	34.80	8.500	131.0	148.0	34.00	327.5	370.0	85.00
8	39.00	44.40	10.75	165.0	186.5	43.00	412.5	466.3	107.5
9	49.80	56.30	13.00	208.0	234.0	52.00	520.0	585.0	130.0
10	62.80	70.30	15.00	260.0	290.0	60.00	650.0	725.0	150.0
11	77.80	85.90	16.25	320.0	352.5	65.00	800.0	881.3	162.5
12	94.10	104.7	21.25	385.0	427.5	85.00	963.0	1069	212.5
13	115.3	129.1	27.50	470.0	525.0	110.0	1175	1313	275.0
14	142.8	159.7	33.75	580.0	647.5	135.0	1450	1619	337.5
15	176.6	198.4	43.75	715.0	802.5	175.0	1788	2006	437.5
16	220.3	248.6	56.25	890.0	1002.5	225.0	2225	2506	562.5
17	276.6	312.3	71.25	1115	1257.5	285.0	2790	3144	712.5
18	347.8	393.5	91.25	1400	1582.5	365.0	3500	3957	912.5
19	439.0	497.1	116.2	1765	1997.5	465.0	4413	4994	1162
20	555.3	629.0	147.5	2230	2525.0	590.0	5575	6313	1475
21	702.8	797.3	188.7	2820	3197.5	755.0	7050	7994	1887
22	891.5	1012	240.0	3575	4055.0	960.0	8940	10138	2400
23	1131	1285	306.2	4535	5147.5	1225	11338	12870	3062
24	1438	1634	391.2	5760	6542.5	1565	14400	16350	3913
25	1829	2079	498.7	7325	8322.5	1995	18310	20806	4987
26	2328	2645	636.2	9320	10592	2545	23300	26475	6363
27	2964	3370	812.5	11865	13490	3250	29663	33725	8125
28	3776	4295	1036	15115	17187	4145	37800	42975	10362
29	4813	5473	1321	19260	21902	5285	48150	54750	13212
30	6134	6978	1685	24545	27915	6740	61360	69800	16850
	7819			31285			78200		

Note: All times in microseconds

Table C1: Digital Protem 30 Channel Gate Locations

GATE	285/237.5 Hz			75/62.5 Hz			30/25 Hz			GATE
1	6.000	6.813	1.625	32.00	35.25	6.500	80.00	88.13	16.25	1
2	7.625	8.688	2.125	38.50	42.75	8.500	96.25	106.9	21.25	2
3	9.750	11.13	2.750	47.00	52.5	11.00	117.5	131.3	27.5	3
4	12.50	14.19	3.375	58.00	64.75	13.50	145.0	161.9	33.75	4
5	15.88	18.07	4.375	71.5	80.25	17.50	178.8	200.6	43.75	5
6	20.25	23.06	5.625	89.00	100.3	22.50	222.5	250.6	56.25	6
7	25.88	29.44	7.125	111.5	125.8	28.50	278.8	314.4	71.25	7
8	33.00	37.56	9.125	140.0	158.3	36.50	350.0	395.6	91.25	8
9	42.13	47.94	11.63	176.5	199.8	46.50	441.3	499.4	116.3	9
10	53.75	61.13	14.75	223.0	252.5	59.00	557.5	631.3	147.5	10
11	68.50	77.94	18.88	282.0	319.8	75.50	705.0	799.4	188.8	11
12	87.38	99.38	24.00	357.5	405.5	96.00	893.8	1014	240.0	12
13	111.4	126.7	30.63	453.5	514.8	122.5	1134	1287	306.3	13
14	151.7**	166.4	29.38	576.0	654.3	156.5	1440	1636	391.3	14
15	181.1	206.0	49.88	732.5	832.3	199.5	1831	2081	498.8	15
16	231.0	262.8	62.63	932.0	1059	254.5	2330	2648	636.3	16
17	294.6	335.2	81.25	1187	1349	325.0	2966	3373	812.5	17
18	375.9	427.7	103.6	1512	1719	414.5	3779	4297	1036	18
19	479.5	545.6	132.1	1926	2190	528.5	4815	5475	1321	19
20	611.6	695.9	168.5	2455	2792	674.0	6136	6978	1685	20
21*	780.1			3129			7821			21*

Table C2: Digital Protem 20 Channel Gate Locations

* End of Gate 20

** A Gap of 9.7 μsec exists between Gate 13 and Gate 14 in the micro-frequency range/

This Table applies to both synchronization modes regardless of which of TEM37, TEM47 and TEM57 transmitters is used, provided that correct Tx model is selected in Header (2.4).

Note: 7.5/6.25 and 0.75/0.625 Hz proportional to 75/62.5 Hz
3/2.5 and 0.3/0.25 Hz proportional to 30/25 Hz

GEONICS LIMITED
EM-37 Transient Electromagnetic Transmitter
Technical Specifications

Current Wave form: bipolar square wave.

Repetition Rate: 3Hz, 7.5Hz or 30Hz in countries using 60Hz power line frequency; 2.5Hz, 6.25Hz or 25Hz in countries using 50Hz power line frequency; all six base frequencies are switch selectable.

Turn-off Time(t): fast linear turn-off maximum of 450 μsec. at 30 amps into a 300x600 meter loop. Decreases proportionally with current and the root of the loop area to a maximum of 20 μsec. Actual value of t read on front panel meter.

Transmitter Loop: any dimensions from 40x40 meters to 300x600 meters maximum at 30 amps. Larger dimensions at reduced current. Transmitter output voltage switch adjustable for smaller loops. Value of loop resistance read from front panel meter; resistance must be greater than 1 ohm on lowest setting to prevent overload.

Protection: circuit breaker protection against input over voltage; instantaneous solid state protection against output short circuit; automatically resets on removal of short circuit. Input voltage output voltage and current indicated on front panel meter.

Output voltage: 24 to 160 volts (zero to peak) maximum

Output power: 2800 watt maximum

Motor generator: 5 HP Honda gasoline engine coupled to a 120 volt, three phase, 400 Hz alternator. Approximately 8 hours continuous operation from built-in fuel tank.

Component Dimensions and Weights

Transmitter Console : 20 by 42 by 32 cm, 20 kg

GPU: 44 by 32 by 21 cm, 65 kg

APPENDIX D

PRODUCTION LOG

NORTHEASTERN ONTARIO PROJECTS
SURFACE TEM SURVEYS

Date	Description	Grid	Line	Min Extent	Max Extent	Total Survey (m)
3-Dec-04	Drove to MCL_03 and picked up ski-doos. Drove to La Sarre and then to TOM_01 grid. Installed loop for TOM_01.	TOM_01				
4-Dec-04	Began survey of TOM_01.	TOM_01	5+00E	0+00	6+00S	600
			4+00E	0+00	6+00S	600
			3+00E	3+00N	6+00S	900
			2+00E	3+00N	6+00S	900
5-Dec-04	Truck broke down. Had truck towed to Ford dealership.					
6-Dec-04	Rented truck but didn't get out of La Sarre until early afternoon. No data was collected because batteries for receiver were forgotten in La Sarre.					
7-Dec-04	Completed survey of TOM_01. Pulled loop and moved to TOM_101. Installed loop for grid TOM_101.	TOM_01	1+00E	0+00	6+00S	600
			0+00	0+00	6+00S	600
8-Dec-04	Began survey of TOM_101.	TOM_101	0+00	0+00	6+00S	600
			1+00E	0+00	6+00S	600
			2+00E	3+00N	6+00S	900
			3+00E	3+00N	6+00S	900
9-Dec-04	Completed survey of TOM_101. Pulled loop and moved equipment to TOM_102. Installed loop for TOM_102 grid.	TOM_101	4+00E	0+00	6+00S	600
			5+00E	0+00	6+00S	600
10-Dec-04	Drove to TOM_102 but did not begin survey because of generator problems. Drove to Porcupine and switched generators.					
11-Dec-04	Began Survey of TOM_102	TOM_102	0+00	0+00	6+00S	600
			1+00E	0+00	6+00S	600
			2+00E	3+00N	6+00S	900
			3+00E	3+00N	6+00S	900
12-Dec-04	Completed survey of TOM_102. Pulled loop and moved equipment to KEN_04. Installed loop for KEN_04.	TOM_102	4+00E	0+00	6+00S	600
			5+00E	0+00	6+00S	600
13-Dec-04	Began survey of KEN_04.	KEN_04	0+00	0+00	6+00S	600
			1+00E	0+00	6+00S	600
			2+00E	3+00N	6+00S	900
			3+00E	3+00N	6+00S	900
14-Dec-04	Completed survey of KEN_04. Pulled loop and drove down to ADR_04_07. Accessed grid with Ski-doos and began installation of loop.	KEN_04	4+00E	0+00	6+00S	600
			5+00E	0+00	6+00S	600
15-Dec-04	Finished installation of loop. Began survey of grid ADR_04_07 South loop.	ADR_04_07	0+00	3+00N	9+00N	600
			1+00E	3+00N	9+00N	600
			2+00E	0+00	9+00N	900
			3+00E	0+00	9+00N	900
16-Dec-04	Completed survey of ADR_04_07 South loop. Pulled loop and began to look for access to Northern loop. Found access but had to use chainsaw to remove some tree stumps. Began installation of Northern loop.	ADR_04_07	4+00E	3+00N	9+00N	600
			5+00E	3+00N	9+00N	600
17-Dec-04	Completed installation of ADR_04_07 North loop. Began survey of grid.	ADR_04_07	1+00W	9+00N	1500N	600

			0+00	9+00N	1500N	600
			1+00E	6+00N	1500N	600
			2+00E	6+00N	1500N	600
18-Dec-04	Completed survey of ADR_04_07 North loop. Pulled loop and returned to La Sarre. Completed data and reprocessed data for Tomlinson grids.	ADR_04_07	1+00E	6+00N	1500N	300
			2+00E	6+00N	1500N	300
			3+00E	9+00N	1500N	500
			4+00E	9+00N	1500N	500
19-Dec-04	Drove Eric home to Val d'Or. Mob back to Timmins. Unloaded equipment.					
11-Jan-05	Locate grid NEW 101, the grid is located 110km from Cochrane (km 68 on detour lake road). The grid is 12km down various logging roads. Establish 300m x 500m loop. 7hrs round trip to Timmins					
15-Jan-05	Survey NEW 101	NEW_101	500E	0S	600S	600
	4hrs round trip from Cochrane to grid		400E	0S	600S	600
			300E	300N	600S	900
			200E	300N	600S	900
16-Jan-05	Survey NEW 101	NEW_101	100E	0S	600S	600
	Pickup loop NEW_101		0E	0S	600S	600
	Locate NEW_105, it took 2hrs to locate grid, numerous logging roads and clear cuts in the area					1200
	Establish NEW_105 300m x 500m loop					
17-Jan-05	Survey NEW_105	NEW_105	500E	0S	600S	600
			400E	0S	600S	600
			300E	300N	600S	900
			200E	300N	600S	900
18-Jan-05	Remove equipment and wire and demob to Timmins	NEW_105	100E	0S	600S	600
			0E	0S	600S	600
19-Jan-05	Pick up Richard Chasse in Kirkland Lake, Stop in Rouyn to obtain access maps to grids in Northeastern Ontario, and Mob to La Sarre. Locate grid ABB-16, no access cut to loop, just a flagging marking the point on the road closest to the grid, no trail cut or flagged into grid. Look for access into loop, none found. The last 10km of the road is overgrown with Alders and is not safe to drive in the dark. Not enough time to establish loop or finish breaking trail into grid.					
20-Jan-05	Finish breaking trail into ABB-16 and establish loop	ABB-16	500E	0N	600N	600
			400E	0N	600N	600
			300E	0N	600N	600
			200E	0N	600N	600
21-Jan-05	Survey ABB-16	ABB-16	300E	0N	300S	300
	Remove gear		200E	0N	300S	300
			100E	0N	600N	600
			0E	0N	600N	600
22-Jan-05	Locate ADR-02 and establish loop	ADR-02	500E	0N	600N	600
			400E	0N	600N	600
23-Jan-05	Survey ADR-02	ADR-02	300E	600N	300S	900
	Remove gear		200E	600N	300S	900
			100E	0N	600N	600
			0E	0N	600N	600
4-Mar-05	Mob to NOS-05 in Northeast ON.. Install a 300 x 500 meter loop from L0+00 to L5+00E and from 0+00 to 3+00N. Begin survey	NOS-05	L0+00	0+00	6+00S	600
			L1+00E	0+00	6+00S	600
			L2+00E	3+00N	0+00	300
5-Mar-05	Complete survey of NOS-05. Recover loop and equipment and demob.	NOS-05	L2+00E	0+00	6+00S	600
			L3+00E	3+00N	6+00S	900
			L4+00E	0+00	6+00S	600
			L5+00E	0+00	6+00S	600
7-Mar-05	Accessed HUR-07. Installed a 300 x 500 meter loop from L0+00 to L5+00E and from 0+00 to 3+00N. Began survey	HUR-07	L3+00E	3+00N	6+00S	900
			L2+00E	3+00N	6+00S	900

8-Mar-05	Completed survey of HUR-07. Recovered loop and equipment.	HUR-07	L0+00	0+00	6+00S	600
			L1+00E	0+00	6+00S	600
			L4+00E	0+00	6+00S	600
			L5+00E	0+00	6+00S	600
9-Mar-05	Installed a 300 x 500 meter loop from L0+00 to L5+00E and from 0+00 to 3+00N. Began survey of HUR-06.	HUR-06	L2+00E	3+00N	6+00S	900
			L3+00E	3+00N	6+00S	900
10-Mar-05	Completed survey of HUR-06. Recovered loop and equipment.	HUR-06	L0+00	0+00	6+00S	600
			L1+00E	0+00	6+00S	600
			L4+00E	0+00	6+00S	600
			L5+00E	0+00	6+00S	600
11-Mar-05	Locate NEW-14. Long skidoo ride. Install a 300 x 500 meter loop from L0+00 to L5+00E and from 0+00 to 3+00N. Begin survey.	NEW-14	L5+00E	0+00	6+00S	600
			L4+00E	0+00	6+00S	600
12-Mar-05	Complete survey of NEW-14,Recover loop and equipment and demob.	NEW-14	L3+00E	3+00N	6+00S	900
			L2+00E	3+00N	6+00S	900
			L1+00E	0+00	6+00S	600
			L0+00	0+00	6+00S	600
13-Mar-05	Locate BLA-09. Install a 300 x 500 meter loop from L0+00E to L5+00E and from 0+00 to 3+00N. Begin survey	BLA-09	L2+00E	3+00N	6+00S	900
			L3+00E	3+00N	6+00S	900
14-Mar-05	Complete survey of BLA-09. Recover loop and equipment and return to La Sarre.	BLA-09	L0+00	0+00	6+00S	600
			L1+00E	0+00	6+00S	600
			L4+00E	0+00	6+00S	600
			L5+00E	0+00	6+00S	600

APPENDIX E

LIST OF MAPS

- **LPTEM Surface Profiles:** **Multi-Channel 4-Axis Profile Plots:** showing time rate of decay of the secondary electromagnetic field, for X, Y , Z and Total Field components, 1:5000 scale, ch. 1-20 divided according to 4 vertical (linear) axes, nanoVolts per Ampere-meter^2

  Drawing #s=**QG336/362-4AXIS-K-Line#**, where K=Z, X, Y, TF (Total Field).

GRID	LINES	# PROFILES
ABB-16	0 - 500E	24
ADR-02	0 - 500E	24
ADR_04_07 - North loop	100W - 400E	24
ADR_04_07 - South loop	0 -500E	24
BLA-09	0 - 500E	24
HUR-07	0 - 500E	24
HUR-06	0 - 500E	24
KEN_04	0 - 500E	24
NEW-14	0 - 500E	24
NEW_101	0 - 500E	24
NEW_105	0 - 500E	24
NOS-05	0 - 500E	24
TOM_01	0 - 500E	24
TOM_101	0 - 500E	24
TOM_102	0 - 500E	24

Total Profiles: 356

APPENDIX F

PROFILES

Quantec Geoscience Inc.
P.O. Box 580, 101 King Street
Porcupine, ON P0N 1C0
Phone (705) 235-2166
Fax (705) 235-2255

Quantec Geoscience Inc.

Geophysical Survey Logistics Report

Regarding the SURFACE TRANSIENT ELECTROMAGNETIC SURVEYS over the DETOUR LAKE AREA GRIDS, near Cochrane, ON, on behalf of NORANDA INC. Laval, QC

QGI QGI QGI QGI QGI QGI QGI

S.T. Coulson
May 2005
Project QG-362

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1. INTRODUCTION

- **QGI Project No:** QG-362
- **Project Name:** Detour Lake Area Project
- **Survey Period:** March 22nd to 30th, 2005
- **Survey Type**: Fixed Loop Transient EM Surface
- **Client:** **NORANDA INC.**
- **Client Address** 3296 Ave. Francis Hughes
  Laval, QC H7L 5A7
- **Representatives:** Michel Allard, Alan Huard
- **Objectives:**

  The objective of the surface TEM survey was to ground truth conductive targets, outlined by airborne EM surveys.
- **Survey Type:** Logistics

2. GENERAL SURVEY DETAILS

2.1 LOCATION

- **Townships:** Atkinson Lake, Massicotte
- **Province:** Ontario and Quebec
- **Country:** Canada
- **Nearest Settlement:** Cochrane
- **NTS Map Reference #:** 32E/13

Figure 1: General Location of the Detour Lake Area Grids

2.2 Access

- **Base of Operations:** Abitibi Consolidated Camp 35 on Detour Lake Mine Road
- **Mode of Access:** Truck and Snowmobile

2.3 Survey Grid

- **Coordinate Reference System:** Local exploration grid (UTM referenced to NAD27)
- **Established:** prior to survey execution
- **Baseline Direction:** Various
- **Line Separation:** 100 meters
- **Station Interval:** 25 meters
- **Method of Chaining:** Metric, slope distance

Figure 2: Grid Sketch for ATK-08 Grid

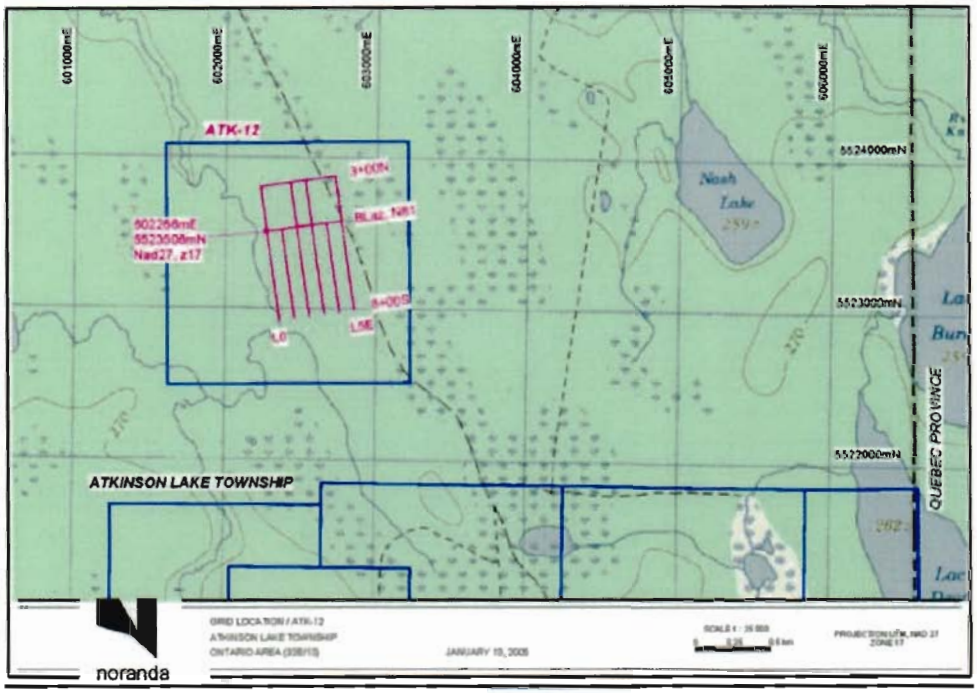


Figure 3: Grid Sketch for ATK-12 Grid

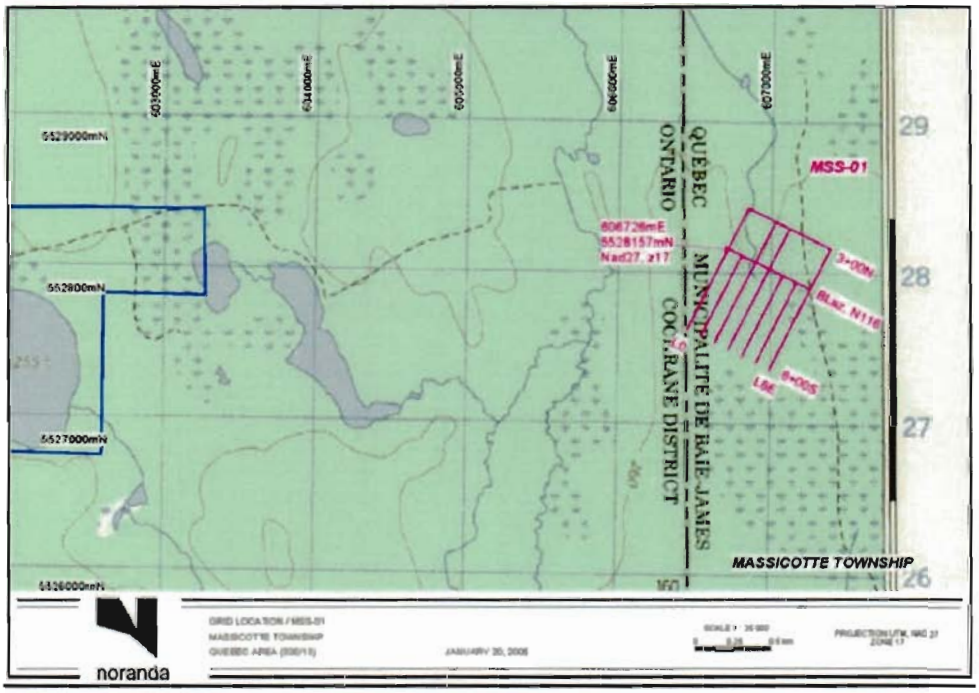


Figure 4: Grid Sketch for MSS-01 Grid

3. SURVEY WORK UNDERTAKEN

3.1 GENERALITIES

- **Survey Dates:** March 22nd to 30th, 2005
- **Survey Period:** 9 days
- **Survey Days:** 7 days
- **Mob/Demob Days:** 2 days
- **Survey Coverage:** 13.2 kms

3.2 PERSONNEL

- **Project Supervisor:** Woody Coulson, Porcupine, ON
- **Project Managers:** Kevin MacKenzie, Sydney, NS
- **Technicians:** Richard Chasse, Kirkland Lake, ON

3.3 SURVEY SPECIFICATIONS

- **Configuration:** In/Off loop profiling
- **Output Power Stage:** Low Power (2.8 kW)
- **Dimension:** 3 Component (X, Y and Z)
- **Loop Sizes and Locations:** 300m x 500m to 300m x 600m (See Appendix F)
- **Line Interval:** 100 meters
- **Sampling Interval:** 25 meters

3.4 SURVEY COVERAGE

GRID	LINE	MIN. EXTENT	MAX. EXTENT	COVERAGE (m)
ATK-08	L0+00	0+00	6+00S	600
	L1+00E	0+00	6+00S	600
	L2+00E	3+00N	6+00S	900
	L3+00E	3+00N	6+00S	900
	L4+00E	0+00	6+00S	600
	L5+00E	0+00	6+00S	600
ATK-12	L0+00	0+00	6+00S	600
	L1+00E	0+00	6+00S	600
	L2+00E	3+00N	6+00S	900
	L3+00E	3+00N	6+00S	900
	L4+00E	0+00	6+00S	600
	L5+00E	0+00	6+00S	600
MSS-01	L0+00	0+00	6+00S	600
	L1+00E	0+00	6+00S	600
	L2+00E	3+00N	6+00S	900

GRID	LINE	MIN. EXTENT	MAX. EXTENT	COVERAGE (m)
	L3+00E	3+00N	6+00S	900
	L4+00E	0+00	6+00S	600
	L5+00E	0+00	6+00S	600
	L6+00E	0+00	6+00S	600
			TOTAL	13.2kms

Table I: Survey Coverage for Surface TEM Survey

3.5 INSTRUMENTATION

- **Receiver:** Geonics Digital Protem 20 channel capability
- **Coils:** Geonics 3D-3 coil (200m^2 effective area)
- **Transmitter:** Geonics EM-37 (2.8 kW output)
- **Power Supply:** Geonics GPU 2000 motor generator

3.6 SURVEY PARAMETERS

Pulse repetition frequency:	30Hz
Gain:	1-6
Integration number:	15 sec
Loop Sizes:	300m x 500m to 300m x 600m
Current:	14.0 to 15.5 amps (see Appendix F)
Turn-off time:	205 to 215 µs(see Appendix F)
Gate positions	80-6136 µs (see Appendix C)
Synchronization mode:	Crystal

Table II: System Parameters for Surface TEM Survey

- **Coil Conventions:** (see Appendix C)

COMPONENT	COIL ORIENTATION
Z	Positive Up
X	Positive away from the loop along the line
Y	Positive 90° counterclockwise from X

Table III: Coil Conventions for Surface TEM Survey

- **Measured Parameters:** dB/dt, mV
- **Data Reduction**[1]**:** nanoVolts/Ampere-metre^2 (nV/Am^2)

3.7 MEASUREMENT ACCURACY AND REPEATABILITY

- **Number of Repeats per Station:** 0-1
- **Number of Repeats per Day:** 0-3
- **Average Repeatability:** 1-2% in early channels

[1] Equivalent to Crone units of nanoTesla/second normalized to a unit current.

- **Worst Repeatability:** 3% in early channels

3.8 DATA PRESENTATION

- **Profiles:** X,Y,Z components, and Total EM Field @ 1:5000 with variable vertical (profile) scales to best display data.

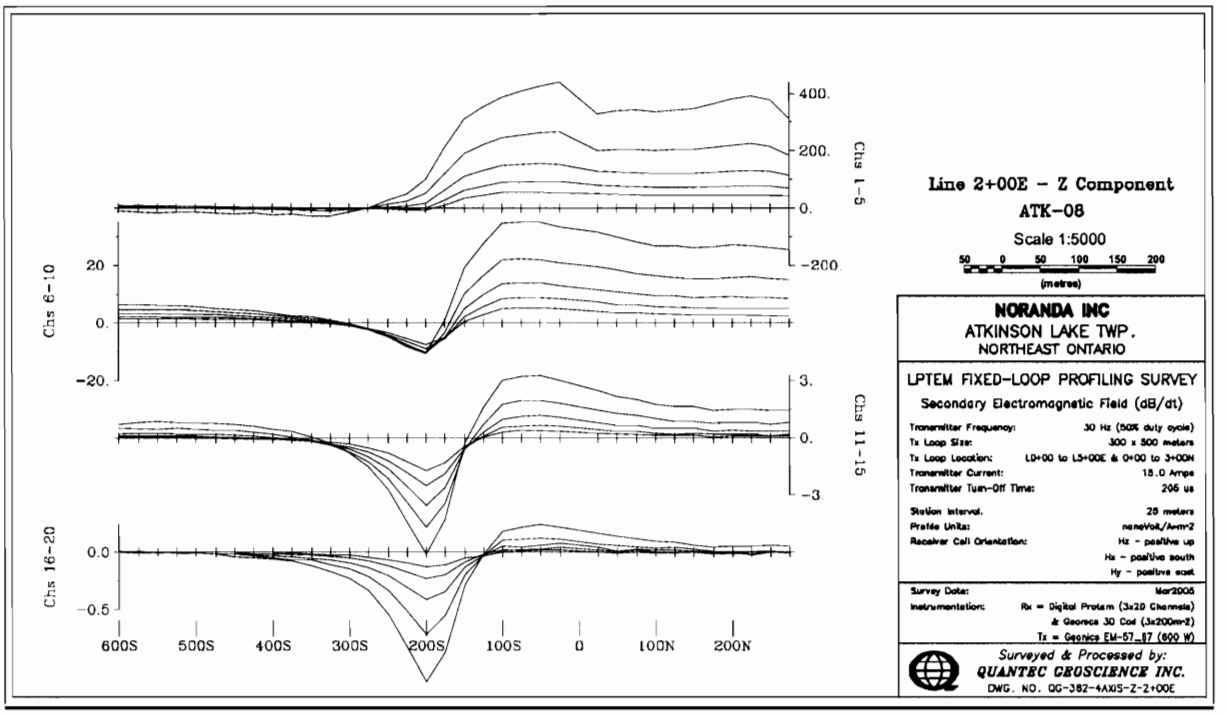


Figure 5: 4-Axis Surface TEM Profile Format

- **Digital Data:** Daily raw files and processed data (Geosoft .XYZ format) on CD

a) raw data dump files, according to acquisition date, (DDMMYY.RAW, i.e. 050604.raw). Geonics Digital Protem format (refer to Protem manual)

b) reduced XYZ ASCII data files, according to line number and component (i.e. l300ek.xyz where, k=component – Z, X, Y or T for Total Field).

Column 1: N-S Line/E-W Station number
Column 2: E-W Station/N-S Line number
Column 3: Primary pulse (nanoVolt/ampere*m^2)
Column 4: Channel 1 secondary rate of decay of TEM field (nanoVolt/ampere*m^2)
Column 5: Channel 2
⇓
Column 23: Channel 20 secondary rate of decay of TEM field (nanoVolt/ampere*m^2)

4. SURVEY SUMMARY

The TEM surveys over the grid areas were conducted in late March, just prior to break-up. Snow and ice conditions were poor and the work was completed just in time. Access was long from the Abitibi camp to the Detour Mine then south on the old winter road. Apart from the long drives to each of the grids, the surveys progressed smoothly and without incident.

RESPECTFULLY SUBMITTED
QUANTEC GEOSCIENCE INC.

S. T. Coulson, P.Geo.
Senior Geophysicist

APPENDIX A

STATEMENT OF QUALIFICATIONS

I, Sherwood T. Coulson, hereby declare that:

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

2. I am a graduate of Cambrian College, Sudbury, Ontario in 1974 with an Honours Diploma in Geophysical Engineering Technology.

3. I am a practicing member of the Association of Professional Geoscientists of Ontario (Member #0944) since 2003.

4. I have practiced my profession in Europe and North and South America continuously since graduation.

5. I am a member of the Canadian Society of Exploration Geophysicists and the Prospectors and Developers Association.

6. I have no interest nor do I expect to receive any interest, direct or indirect, in the properties or securities of **NORANDA INC.**.

7. I supervised the survey execution and reviewed the data as it was collected. I am the author of this report and the statements made by me represent my best opinion and judgment based on the information available to me at the time of the writing.

Porcupine, ON
May 2005

Sherwood T. Coulson, P.Geo.
Senior Geophysicist

APPENDIX B

THEORETICAL BASIS AND SURVEY PROCEDURES

TEM SURFACE AND BOREHOLE PROFILING

TEM profiling is conducted on lines either adjacent to (Off-Loop mode) or surrounded by (In-Loop mode) a large fixed rectangular transmit loop. Current is passed through the loop which following the Turn-Off, produces a primary magnetic field (H) both inside and outside (Figure B1). This primary field induces vortex current patterns, which energize conductors and which in turn create their own secondary magnetic field (Bs). The rate of change of the decaying secondary magnetic flux (dBs/dt) is measured as the vertical (**Hz**), in-line horizontal (**Hx**) and/or cross line horizontal (**Hy**) vector components on surface using an air-core sensor coil. These measurements of the TEM decay (20 log-time slices) are taken during the "Off-Time", using a 30 cycle/sec, base repetition rate.

In keeping with the industry standard, the primary field is always considered positive up inside the loop and negative down outside. Similarly, for secondary EM fields, the receiver coil is oriented positive vertical up for the **Hz** component. The convention for In-Loop surveys, has the in-line component, **Hx** oriented either positive east (for grid EW lines) or north (for grid NS lines). The Off-Loop survey convention differs, with the receiver coil orientation for **Hx** pointing positive away from the transmit loop (for EW or NS lines). Finally, the sign convention in all cases, has the **Hy** component pointing positive orthogonal to the left of the **Hx,** according to the right-hand-rule.

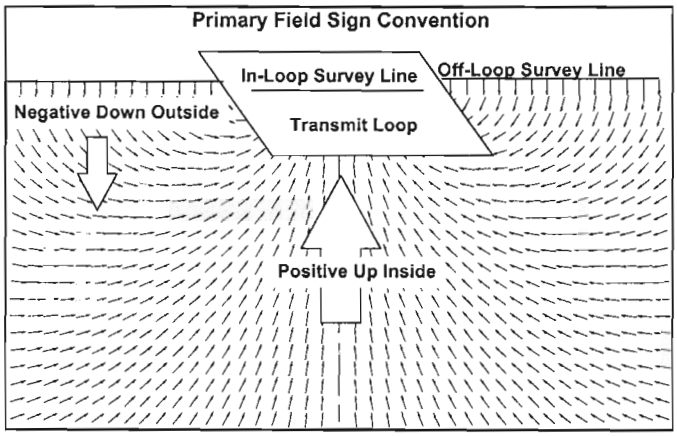


Figure B1: Primary field sign convention for TEM surveys.

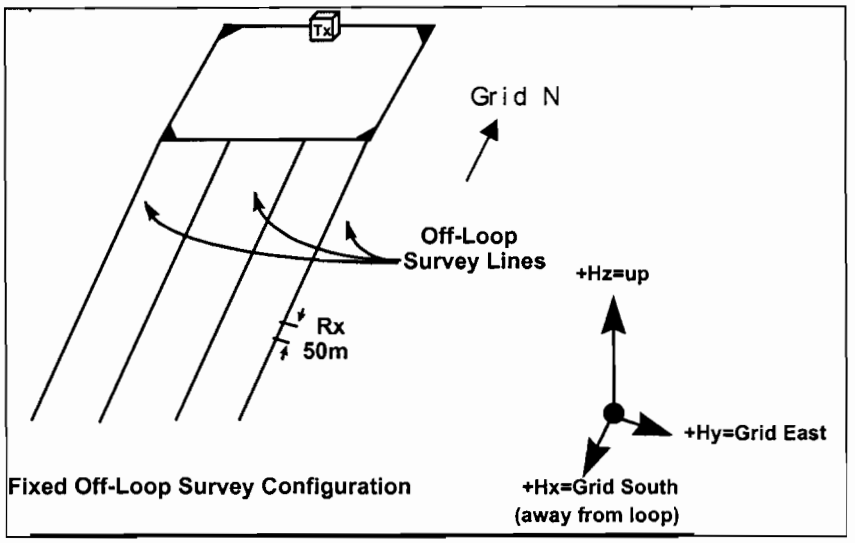


Figure B2: Loop Configuration and Polarity Conventions for Off-Loop Profiling Surveys

The borehole survey is particularly useful to determine the geometrical relationship between a conductor or a complex swarm of conductors around the drill hole. Of particular importance is its application in cases where the drilling is believed to have missed the target of interest. A 3-D borehole survey can effectively determine the direction and distance from the drill hole to the conductor by measuring two orthogonal secondary field components in addition to the axial component. Additionally, conductors located below the end of a drill hole, which either may be too deep and/or have gone previously undetected from surface, may be discovered during the course of a borehole survey.

The probe is manually lowered down the borehole at the end of a cable and, at successive depths, measurements of three (3-D) orthogonal components of the TEM field (Hx, Hy, Hz) are individually obtained in succession by electronically switching the sensor coils in the borehole antenna through the use of a relay/switching system from surface, via the borehole-cable shield. As the probe is free to rotate on its vertical axis, a correction is later applied to the 3-D data in order to rotate the components into their respective coordinate axis.

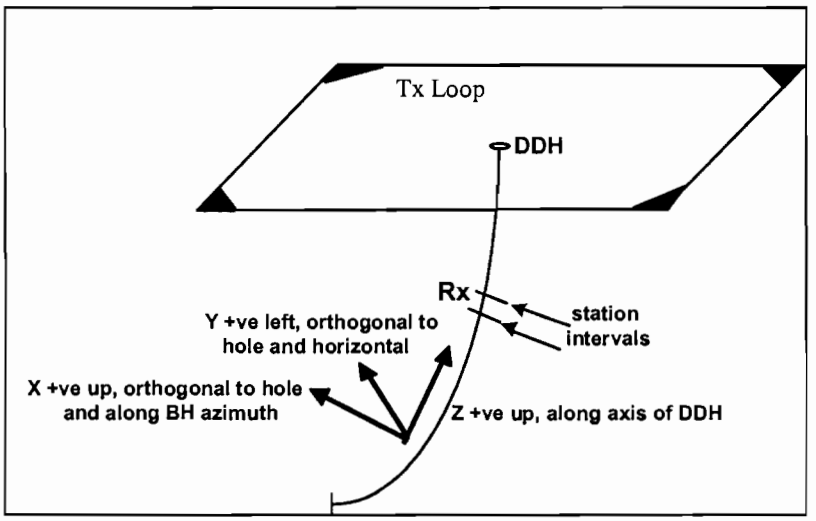


Figure B3: Loop Configuration and Polarity Conventions for 3-D Borehole Surveys

The secondary fields induced decay at a rate proportional to the conductivity-thickness and are then measured and profiled by the borehole sensor-probe.

a) Hz is positive up along the axis of borehole,
b) Hx is positive perpendicular to the borehole axis and pointing upward, in a vertical plane, in the direction

of the azimuth of the hole,

c) Hy is positive 90° counterclockwise to Hx and horizontal, according to the right-hand rule.

At the end of each survey day, the stored data are transferred to a microcomputer where they corrected for the turn-off time, loop area, system gain and current, and converted from millivolts to nanoVolts per ampere meter squared or nanoVolts per meter squared. The data are then transferred to disk for storage and processing. Report quality field plots are generated on site, using a 24-pin printer in order to monitor the data characteristics and to provide a preliminary interpretation capability.

The following equations govern the transient EM response for buried plate-like conductive bodies[1]

$$emf = \frac{1}{\tau} e^{-t/\tau}$$

Target Response to Transmitter Current Waveform: *where:* t = *fixed time*

e = *exponential decay*

τ = *time constant of conductor*

Equation 1: Conductor Response to the Transient EM Waveform

The time constant of the response is alternatively defined as the slope of the lin-log decay curve (Geonics) or, more exactly, as the time channel where the amplitude of the decay collapses to 37% (1/e) of its maximum value. Both τ and the analogous decay strength (i.e., the number of anomalous channels above background), are commonly used as indicators of conductor quality. This relationship between decay-strength and the conductivity-thickness can easily be demonstrated in the following equation for a vertically dipping conductive sheet:

$$\tau = \frac{\sigma \mu t h}{\pi^2} \quad \textit{for a thin plate}$$

where σ = *conductivity of target*

μ = *magnetic susceptibility*

t = *thickness of plate*

h = *vertical extension of plate*

Equation 2: Transient EM Decay Time Constant

[1] From Geonics Limited, EM-37 TEM System Design Parameter, Mississauga, Ont., 1982.

thereby giving, for an infinite vertical sheet:

$$\sigma t = \frac{\pi^2}{\mu h}\tau \approx \tau/_{0.31} \quad mhos / metre\ (siemens)$$

Equation 3 Conductivity Thickness

From these equations and relationships, it therefore becomes obvious of the common use of the anomaly strength of decay as a simple, rule-of thumb indicator of the relative conductivity-thickness product for TEM surveys.

In addition, the total secondary field is calculated using the three components (Hx, Hy and Hz) in the following formula

$$Htot = \sqrt{Hx^2 + Hy^2 + Hz^2}\ nanoVolt / Am^2.$$

Equation 4: Transient EM Total Secondary Field

APPENDIX C

INSTRUMENT SPECIFICATIONS

GEONICS LIMITED
Digital Protem Receiver System
Technical Specifications

Measured Quantity: Time rate of decay of magnetic flux along 3 axes

Sensors:

1. (L.F.): Air-cored coil of bandwidth 60 kHz; 100 cm diameter
2. (H.F.):Air-cored coil of bandwidth 850 kHz; 100 cm diameter
3. (3D-3): Three orthogonal component sensor; simultaneous operation
4. (3D-1): Three orthogonal component sensor; sequential operation

Time channels: 20 geometrically spaced time gates for each base frequency gives range from 6 μsec to 800 msec.

Repetition Rate: 0.3 Hz, 0.75, 3, 7.4, 30, 75 or 285 Hz for 60 Hz power-line networks (Base Frequency)

Synchronization: 1) reference cable.
2) high stability (oven controlled) quartz crystals. (Switch selectable)

Integration time: 2, 4, 8, 15, 30, 60, 120, 240 sec.

Calibration: Internal self-calibration
External Q coil calibration (optional)

Keyboards: Two 3 x 4 matrix sealed key pads with positive tactile feedback

Gain: Automatic or manual control

Dynamic Range: 23 bits (132 dB)

Display Quantity:

(1) Table of time rate of decay of magnetic flux (dB/dt)
(2) Curve of rate of decay of magnetic flux (dB/dt)
(3) Table of apparent resistivity (ρ_a)
(4) Curve of apparent resistivity (ρ_a)
(5) Profile of dB/dt
(6) Real time noise monitor
(7) Calibration curve
(8) Data acquisition statistics (real time)

Storage: Solid state memory with capacity for over 3000 data sets

Display: 8 lines by 40 character (240 x 64 dot) graphic LCD

Data Transfer: Standard RS-232 communications port.

Processor: CMOS 68HC000 8 MHz CPU

Receiver Battery: 12 volts rechargeable battery for 8 hours continuous operation. 6 hours in XTAL mode

Receiver Size: 34 x 38 x 27 cm

Receiver Weight: 15 kg

Operating Temp.: -40°C to +50°C

Transmitters: (1) Geonics TEM47
(2) Geonics TEM57
(3) Geonics TEM37

	30/25Hz			7.5/6.25Hz			3/2.5Hz		
30 gate mode	start	center	width	start	center	width	start	center	width
1	5.800	6.800	2.000	32.00	36.00	8.000	80.00	90.00	20.00
2	7.800	9.110	2.625	40.00	45.25	10.50	100.0	113.1	26.25
3	10.40	12.00	3.250	50.50	57.00	13.00	126.3	142.5	32.50
4	13.70	15.90	4.375	63.50	72.25	17.50	158.8	180.6	43.75
5	18.00	20.80	5.500	81.00	92.00	22.00	202.5	230.0	55.00
6	23.50	27.00	7.000	103.0	117.0	28.00	257.5	292.5	70.00
7	30.50	34.80	8.500	131.0	148.0	34.00	327.5	370.0	85.00
8	39.00	44.40	10.75	165.0	186.5	43.00	412.5	466.3	107.5
9	49.80	56.30	13.00	208.0	234.0	52.00	520.0	585.0	130.0
10	62.80	70.30	15.00	260.0	290.0	60.00	650.0	725.0	150.0
11	77.80	85.90	16.25	320.0	352.5	65.00	800.0	881.3	162.5
12	94.10	104.7	21.25	385.0	427.5	85.00	963.0	1069	212.5
13	115.3	129.1	27.50	470.0	525.0	110.0	1175	1313	275.0
14	142.8	159.7	33.75	580.0	647.5	135.0	1450	1619	337.5
15	176.6	198.4	43.75	715.0	802.5	175.0	1788	2006	437.5
16	220.3	248.6	56.25	890.0	1002.5	225.0	2225	2506	562.5
17	276.6	312.3	71.25	1115	1257.5	285.0	2790	3144	712.5
18	347.8	393.5	91.25	1400	1582.5	365.0	3500	3957	912.5
19	439.0	497.1	116.2	1765	1997.5	465.0	4413	4994	1162
20	555.3	629.0	147.5	2230	2525.0	590.0	5575	6313	1475
21	702.8	797.3	188.7	2820	3197.5	755.0	7050	7994	1887
22	891.5	1012	240.0	3575	4055.0	960.0	8940	10138	2400
23	1131	1285	306.2	4535	5147.5	1225	11338	12870	3062
24	1438	1634	391.2	5760	6542.5	1565	14400	16350	3913
25	1829	2079	498.7	7325	8322.5	1995	18310	20806	4987
26	2328	2645	636.2	9320	10592	2545	23300	26475	6363
27	2964	3370	812.5	11865	13490	3250	29663	33725	8125
28	3776	4295	1036	15115	17187	4145	37800	42975	10362
29	4813	5473	1321	19260	21902	5285	48150	54750	13212
30	6134	6978	1685	24545	27915	6740	61360	69800	16850
	7819			31285			78200		

Note: All times in microseconds

Table C1: Digital Protem 30 Channel Gate Locations

GATE	285/237.5 Hz			75/62.5 Hz			30/25 Hz			GATE
1	6.000	6.813	1.625	32.00	35.25	6.500	80.00	88.13	16.25	1
2	7.625	8.688	2.125	38.50	42.75	8.500	96.25	106.9	21.25	2
3	9.750	11.13	2.750	47.00	52.5	11.00	117.5	131.3	27.5	3
4	12.50	14.19	3.375	58.00	64.75	13.50	145.0	161.9	33.75	4
5	15.88	18.07	4.375	71.5	80.25	17.50	178.8	200.6	43.75	5
6	20.25	23.06	5.625	89.00	100.3	22.50	222.5	250.6	56.25	6
7	25.88	29.44	7.125	111.5	125.8	28.50	278.8	314.4	71.25	7
8	33.00	37.56	9.125	140.0	158.3	36.50	350.0	395.6	91.25	8
9	42.13	47.94	11.63	176.5	199.8	46.50	441.3	499.4	116.3	9
10	53.75	61.13	14.75	223.0	252.5	59.00	557.5	631.3	147.5	10
11	68.50	77.94	18.88	282.0	319.8	75.50	705.0	799.4	188.8	11
12	87.38	99.38	24.00	357.5	405.5	96.00	893.8	1014	240.0	12
13	111.4	126.7	30.63	453.5	514.8	122.5	1134	1287	306.3	13
14	151.7**	166.4	29.38	576.0	654.3	156.5	1440	1636	391.3	14
15	181.1	206.0	49.88	732.5	832.3	199.5	1831	2081	498.8	15
16	231.0	262.8	62.63	932.0	1059	254.5	2330	2648	636.3	16
17	294.6	335.2	81.25	1187	1349	325.0	2966	3373	812.5	17
18	375.9	427.7	103.6	1512	1719	414.5	3779	4297	1036	18
19	479.5	545.6	132.1	1926	2190	528.5	4815	5475	1321	19
20	611.6	695.9	168.5	2455	2792	674.0	6136	6978	1685	20
21*	780.1			3129			7821			21*

Table C2: Digital Protem 20 Channel Gate Locations

* End of Gate 20

** A Gap of 9.7 μsec exists between Gate 13 and Gate 14 in the micro-frequency range/

This Table applies to both synchronization modes regardless of which of TEM37, TEM47 and TEM57 transmitters is used, provided that correct Tx model is selected in Header (2.4).

Note: 7.5/6.25 and 0.75/0.625 Hz proportional to 75/62.5 Hz
3/2.5 and 0.3/0.25 Hz proportional to 30/25 Hz

GEONICS LIMITED
EM-37 Transient Electromagnetic Transmitter
Technical Specifications

Current Wave form: bipolar square wave.

Repetition Rate: 3Hz, 7.5Hz or 30Hz in countries using 60Hz power line frequency; 2.5Hz, 6.25Hz or 25Hz in countries using 50Hz power line frequency; all six base frequencies are switch selectable.

Turn-off Time(t): fast linear turn-off maximum of 450 μsec. at 30 amps into a 300x600 meter loop. Decreases proportionally with current and the root of the loop area to a maximum of 20 μsec. Actual value of t read on front panel meter.

Transmitter Loop: any dimensions from 40x40 meters to 300x600 meters maximum at 30 amps. Larger dimensions at reduced current. Transmitter output voltage switch adjustable for smaller loops. Value of loop resistance read from front panel meter; resistance must be greater than 1 ohm on lowest setting to prevent overload.

Protection: circuit breaker protection against input over voltage; instantaneous solid state protection against output short circuit; automatically resets on removal of short circuit. Input voltage output voltage and current indicated on front panel meter.

Output voltage: 24 to 160 volts (zero to peak) maximum

Output power: 2800 watt maximum

Motor generator: 5 HP Honda gasoline engine coupled to a 120 volt, three phase, 400 Hz alternator. Approximately 8 hours continuous operation from built-in fuel tank.

Component Dimensions and Weights

Transmitter Console : 20 by 42 by 32 cm, 20 kg

GPU: 44 by 32 by 21 cm, 65 kg

APPENDIX D

PRODUCTION LOG

NORTHEASTERN ONTARIO AND NORTHWESTERN QUEBEC PROJECTS						
SURFACE TEM SURVEYS						
Date	**Description**	**Grid**	**Line**	**Min Extent**	**Max Extent**	**Total Survey (m)**
22-Mar-05	Mob to Camp 35 and set up accomadations. Arranged for fuel and emergency procedures with camp security. Mob Day					
23-Mar-05	Mob to ATK-08. Difficult skidoo access for the last 15 kilometers (4 hrs.). Zig zag pattern through difficult terrain. Established a 300 x 500 meter loop from L0+00 to L5+00E and from 0+00 to 3+00N. Began Survey	ATK-08	L5+00E	0+00	6+00S	600
			L4+00E	0+00	6+00S	600
24-Mar-05	Completed survey of ATK-08. Recovered loop and equipment and relocated to ATK-12. Heavy snowfall and high winds made demob very difficult.	ATK-08	L3+00E	3+00N	6+00S	900
			L2+00E	3+00N	6+00S	900
			L1+00E	0+00	6+00S	600
			L0+00	0+00	6+00S	600
25-Mar-05	Installed a 300 x 500 meter loop from L0+00 to L5+00E and from 0+00 to 3+00N. Began survey.	ATK-12	L3+00E	3+00N	6+00S	900
			L2+00E	3+00N	6+00S	900
26-Mar-05	Completed survey of ATK-12. Recovered loop and equipment and relocated to a convenient location from which to access MSS-01.	ATK-12	L5+00E	0+00	6+00S	600
			L4+00E	0+00	6+00S	600
			L1+00E	0+00	6+00S	600
			L0+00	0+00	6+00S	600
27-Feb-05	Accessed MSS-01 by skidoo. Snow conditions are getting very soft but trail was not too difficult. Installed a 300 x 600 meter loop from L0+00 to L6+00E and from 0+00 to 3+00N. Very warm weather made snow conditions deteriorate as we surveyed. Began survey.	MSS-01	L2+00E	3+00N	6+00S	900
			L3+00E	3+00N	6+00S	900
28-Mar-05	Continued survey of MSS-01. Very soft snow and warm temperatures made slow progress	MSS-01	L4+00E	0+00	6+00S	600
			L5+00E	0+00	6+00S	600
			L6+00E	0+00	6+00S	600
			L1+00E	0+00	6+00S	600
29-Mar-05	Completed survey of MSS-01. Recovered loop and equipment and demobed to camp. Very warm weather made the trip out with the gear difficult. Skidoo access to this area is hazardous from now on.	MSS-01	L0+00	0+00	6+00S	600
30-Mar-05	Returned to Timmins with skidoos and geophysics equipment.					

APPENDIX E

LIST OF MAPS

- **LPTEM Surface Profiles:** **Multi-Channel 4-Axis Profile Plots:** showing time rate of decay of the secondary electromagnetic field, for X, Y , Z and Total Field components, 1:5000 scale, ch. 1-20 divided according to 4 vertical (linear) axes, nanoVolts per Ampere-meter^2

  Drawing #s=**QG-362-4AXIS-K-Line#**, where K=Z, X, Y, TF (Total Field).

GRID	LINES	# PROFILES
ATK-08	0 - 500E	24
ATK-12	0 - 500E	24
MSS-01	0 - 600E	28

Total Profiles: 76

APPENDIX F

PROFILES

GSM-19 Magnetometer Specifications

Performance

Resolution: 0.01 nT
Relative Sensitivty: 0.02 nT
Absolute Accuracy: 0.02 nT
Range: 20,000 to 120,000 nT
Operating Temperature: -40°C to +60°C

Operation 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.
Walking Mag: 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.

Operating Parameters

Power Consumption: Only 2Ws per reading. Operates continuously for 45 hours on standby.
Power Source: 12V 2.6Ah sealed lead acid battery standard, other batteries available.
Operating Temperature: -50°C to +60°C

Storage Capacity

Manual Operation: 29,000 readings standard, with up to 116,000 optional. With 3 VLF stations: 12,000 standard and up to 48,000 optional.
Base Station: 105,000 readings standard, with up to 419,000 optional (88 hours or 14 days uninterrupted operation with 3 sec. Intervals).

Dimensions and Weights

Console: 223 x 69 x 240mm, 2.1kg
Sensor: 170 x 71mm diameter cylinder
Sensor and Staff Assembly: 2.0kg

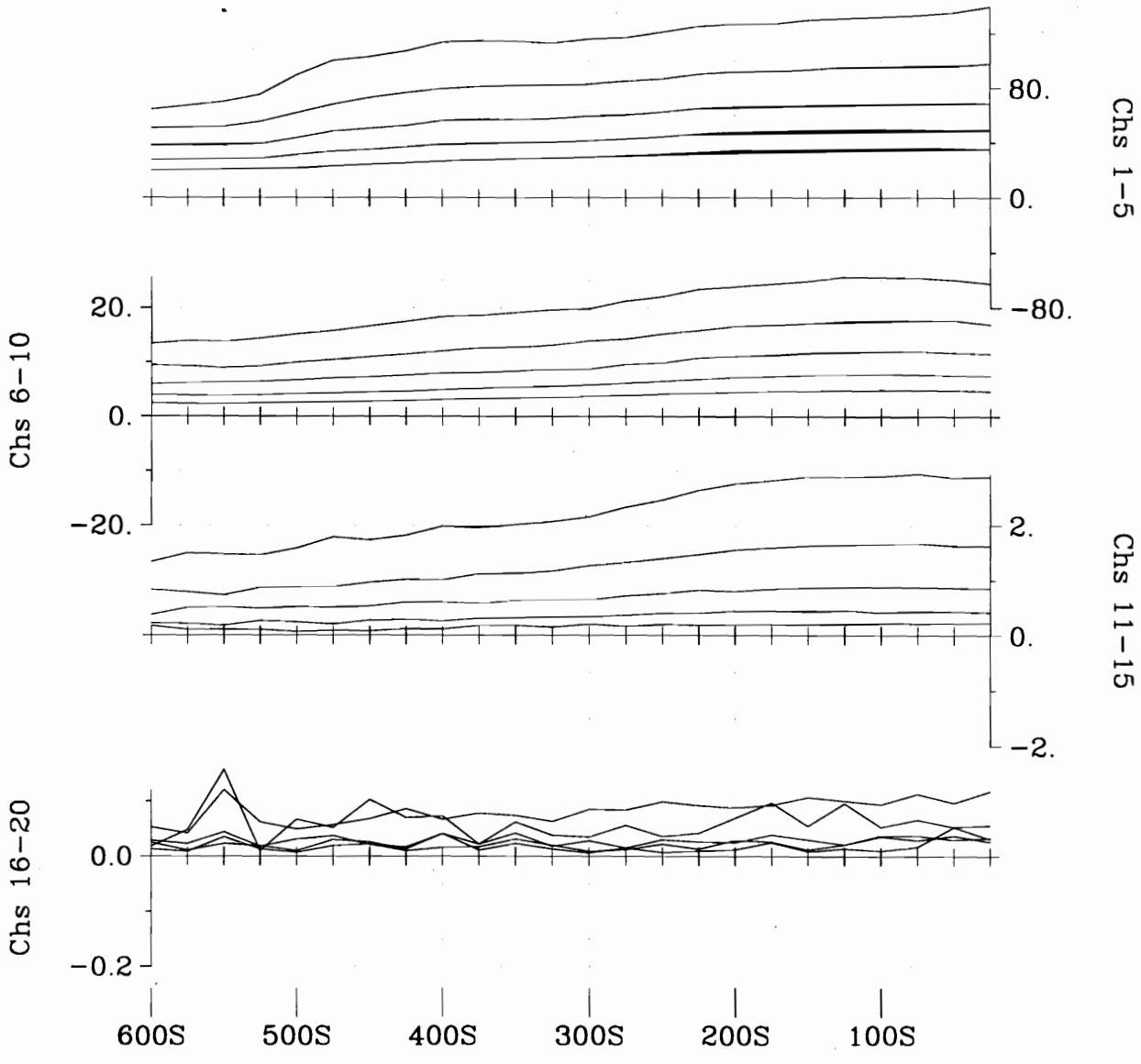
Standard Components

GSM-19 magnetometer console, harness, battery charger, shipping case, sensor with cable, staff, instruction manual, data transfer cable and software.

Appendix B

LINE PROFILES FOR SURFACE TRANSIENT EM SURVEY ON BLA-09 GRID

Quantec Geoscience Inc.



Line 0+00 – Total Field

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

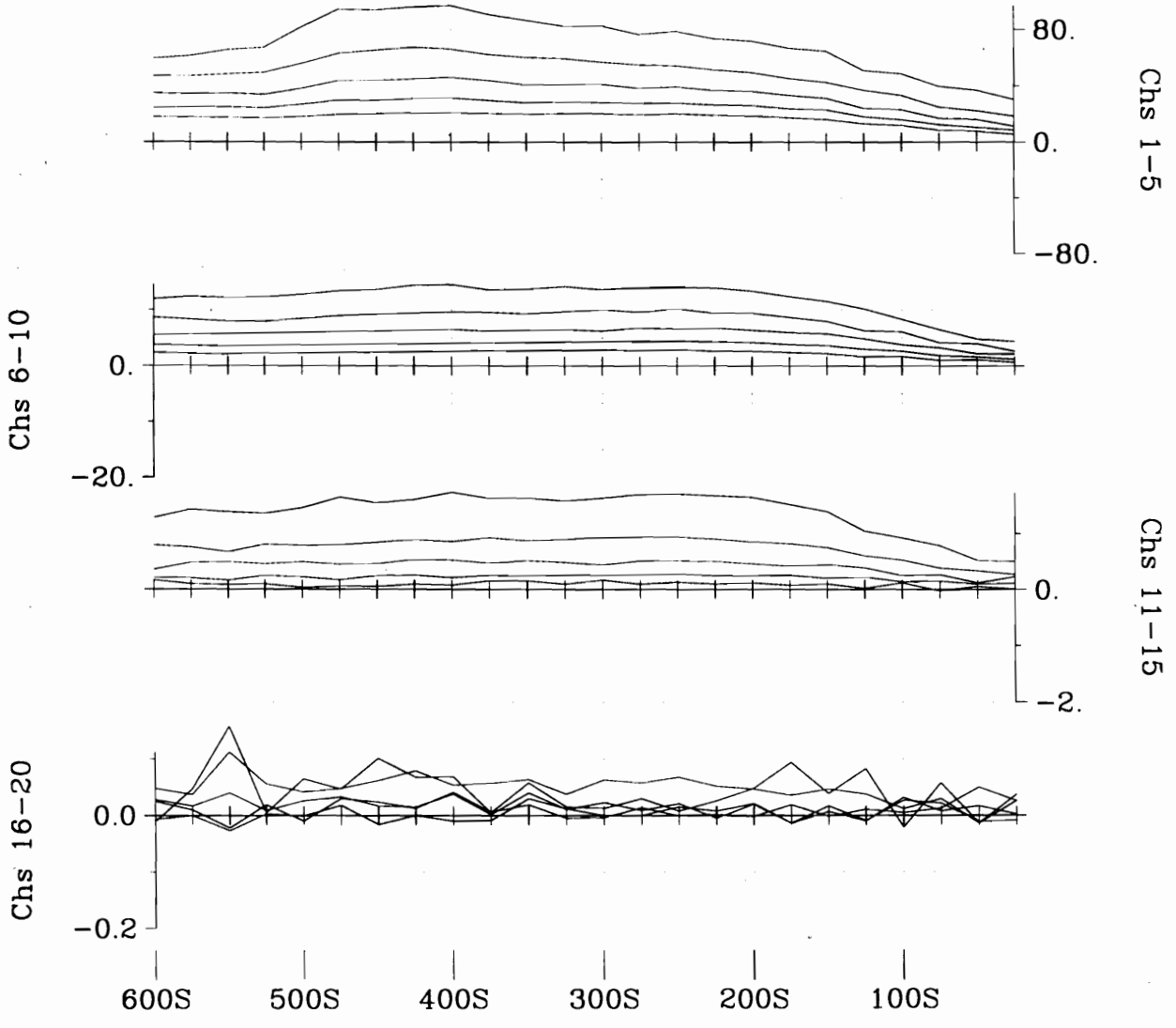
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive south
	Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-TF-0+00



Line 0+00 – X Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

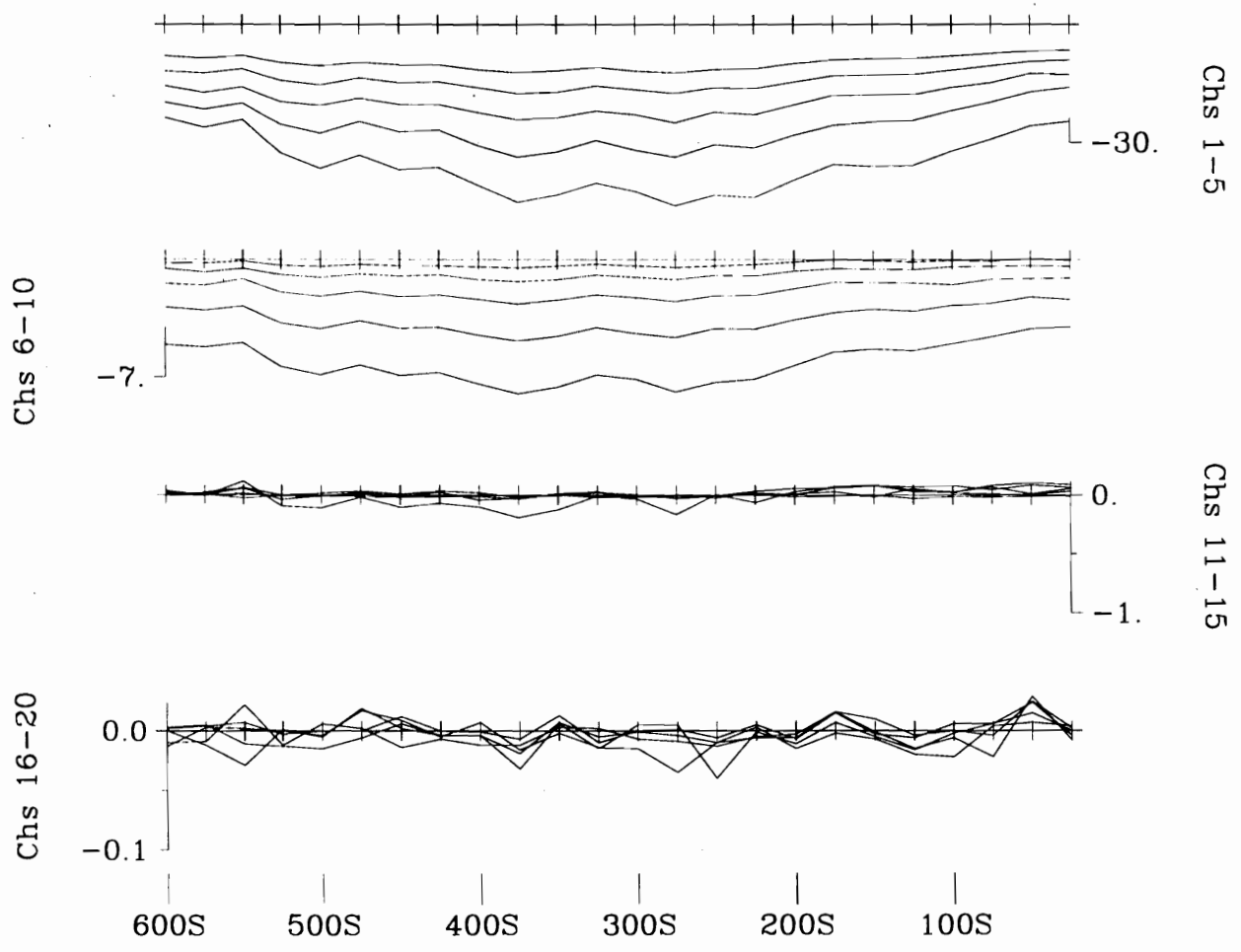
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz – positive up
	Hx – positive south
	Hy – positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-X-0+00



Line 0+00 – Y Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

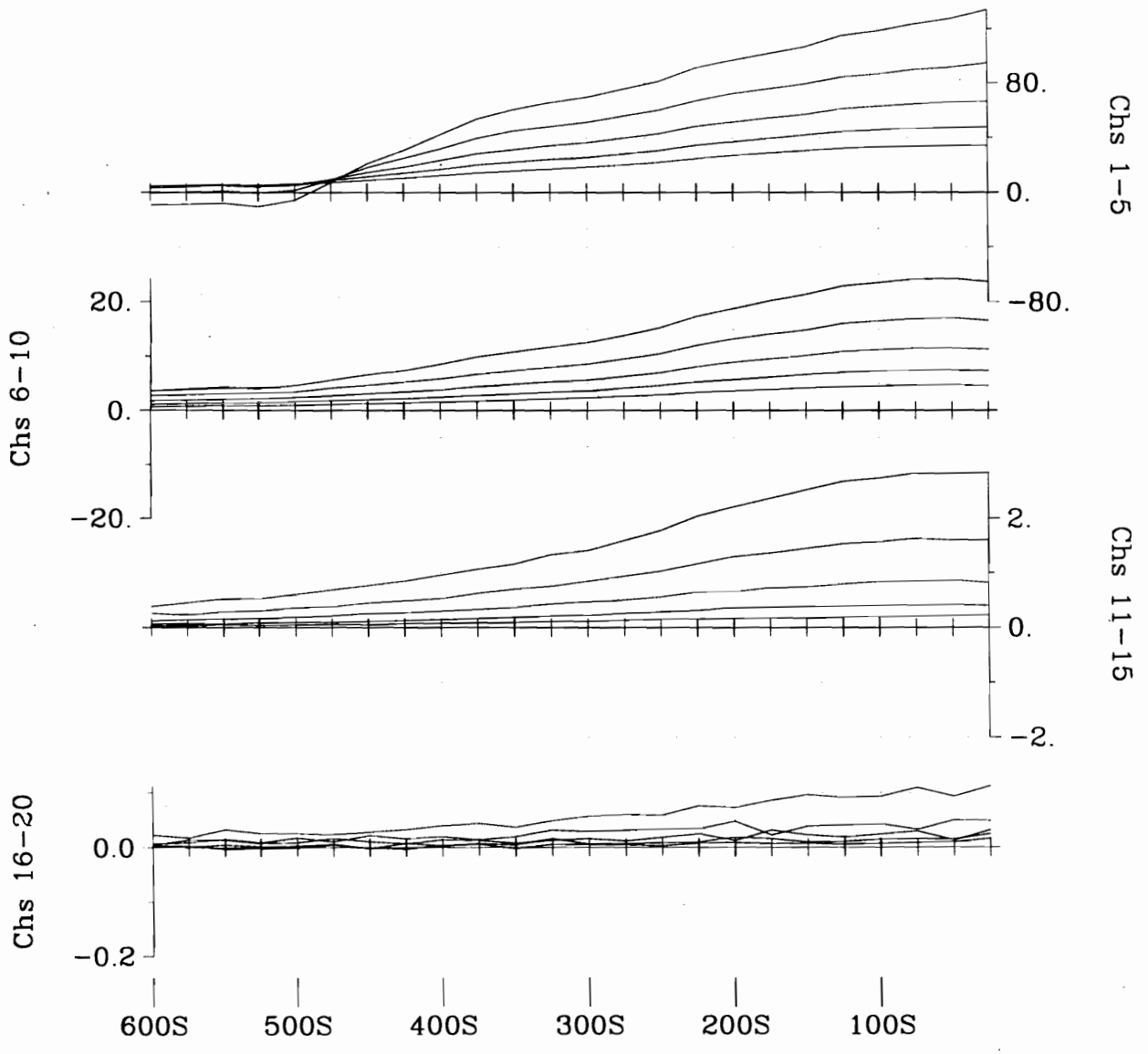
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz – positive up
	Hx – positive south
	Hy – positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-Y-0+00



Line 0+00 – Z Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

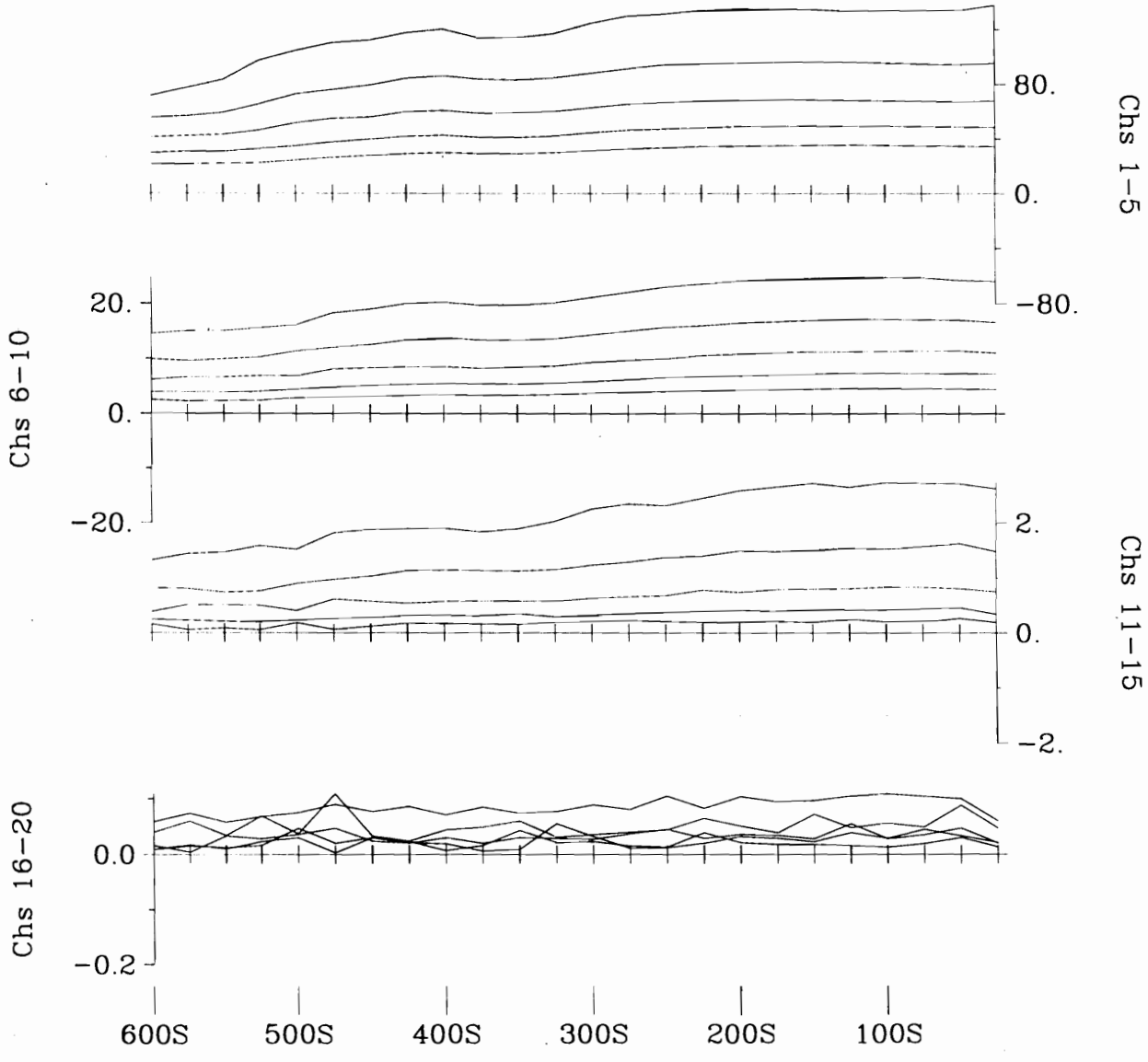
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive south
	Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-Z-0+00



Line 1+00E – Total Field

BLA–09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED–LOOP PROFILING SURVEY

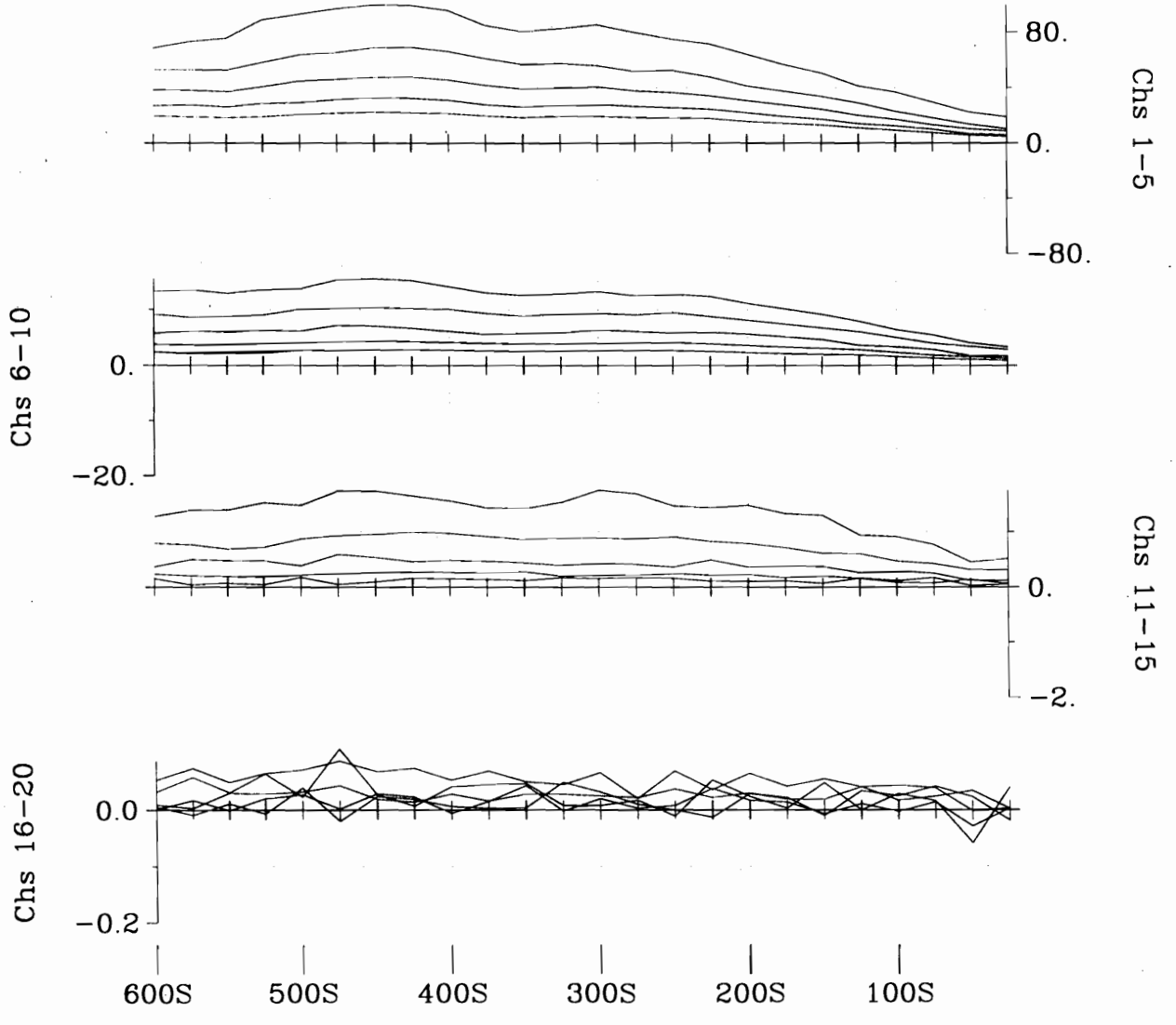
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn–Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz – positive up
	Hx – positive south
	Hy – positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM–37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG–362–4AXIS–TF–1+00E



Line 1+00E – X Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

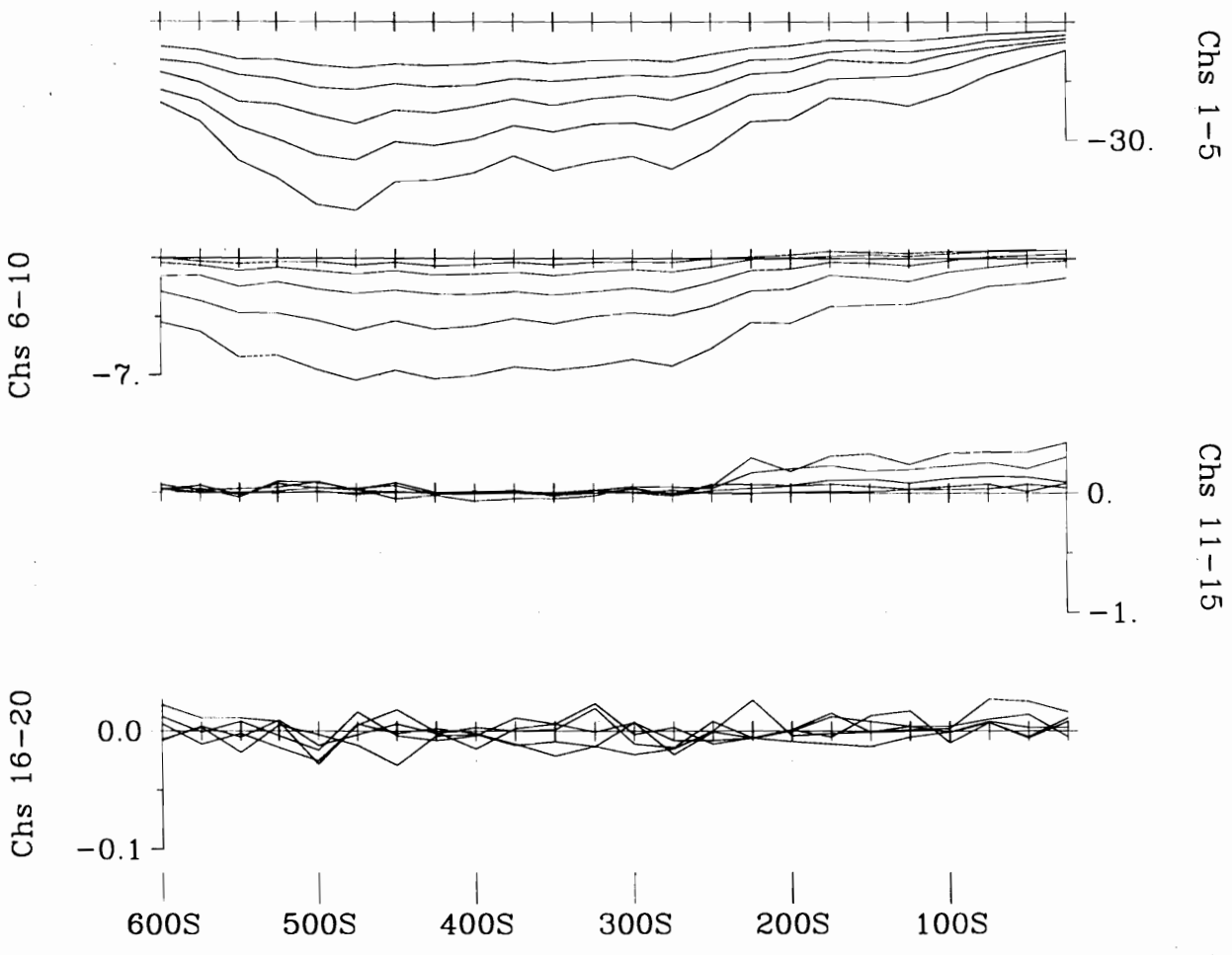
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive south
	Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-X-1+00E



Line 1+00E – Y Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

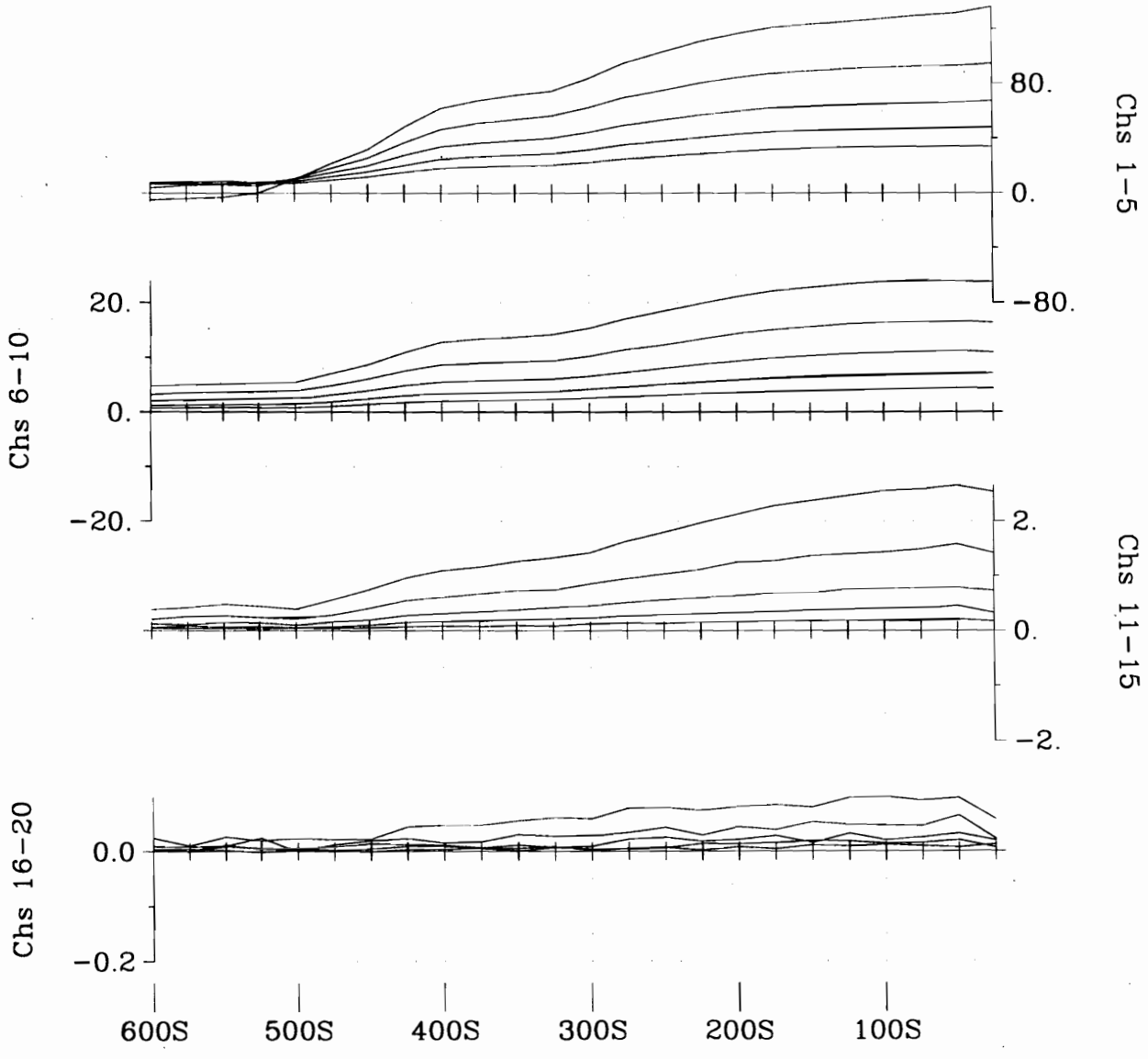
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive south Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels) & Geonics 3D Coil (3x200m^2) Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-Y-1+00E



Line 1+00E – Z Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

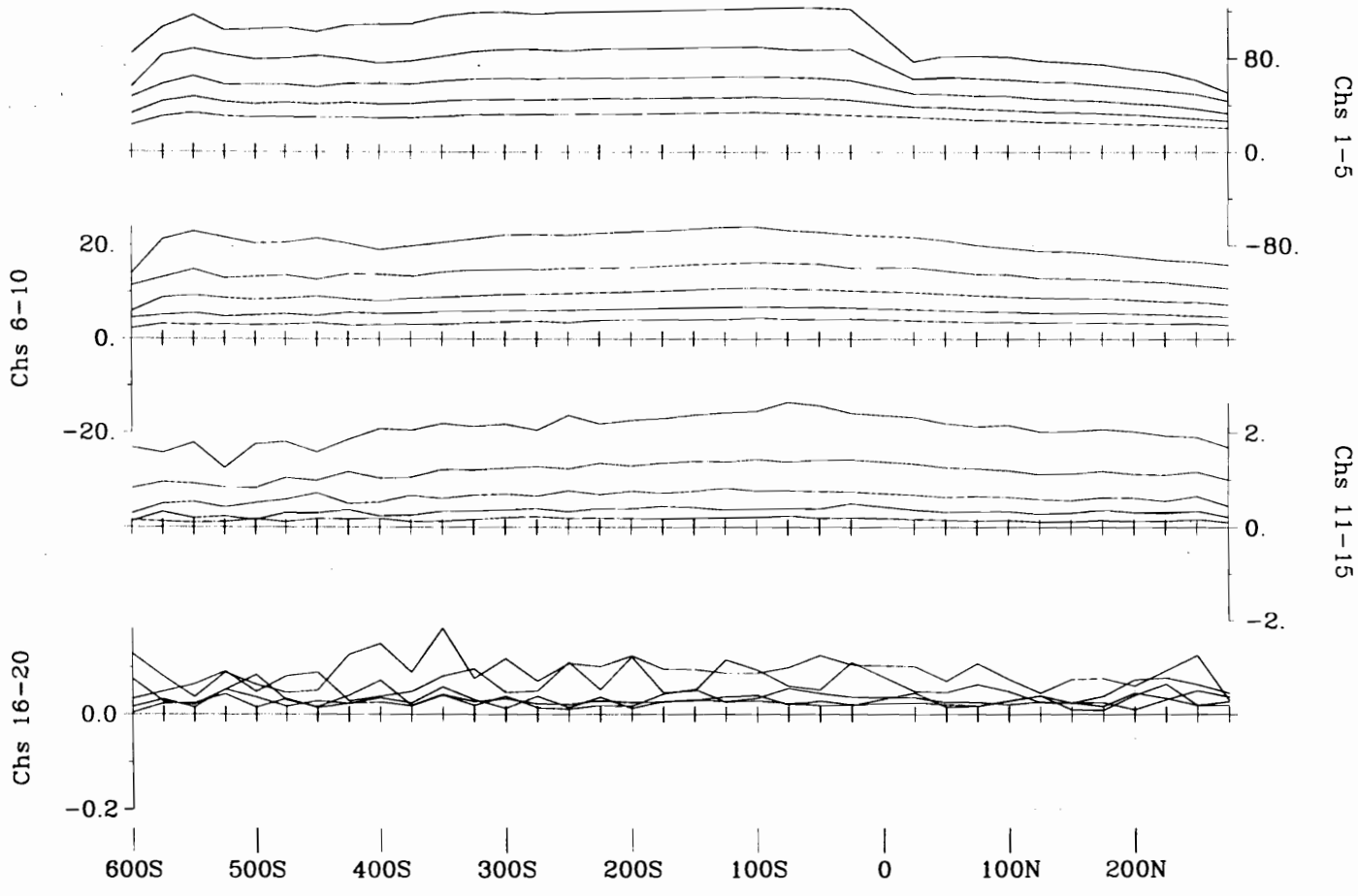
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive south
	Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-Z-1+00E



Line 2+00E – Total Field

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

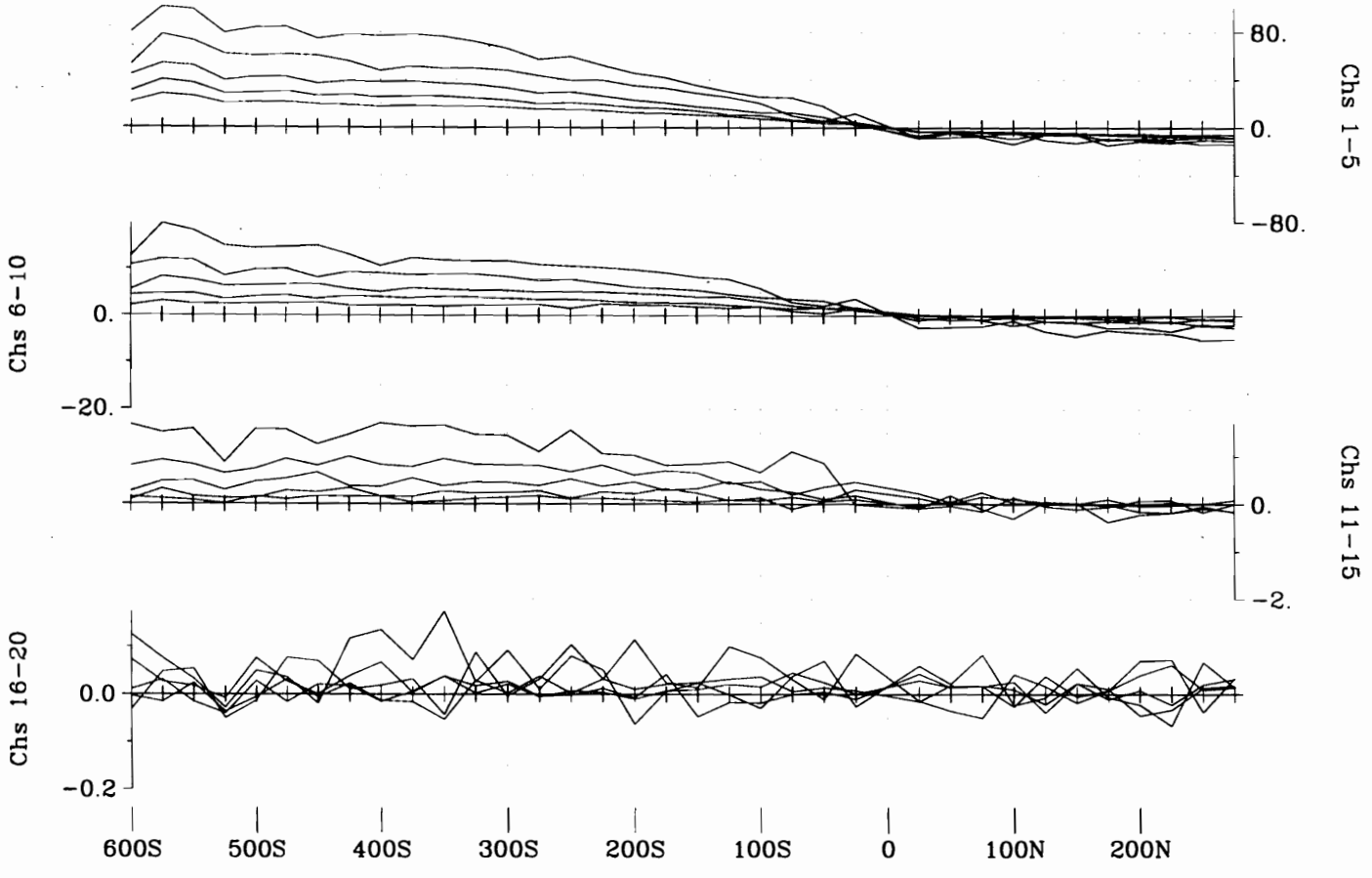
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A•m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive south Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels) & Geonics 3D Coil (3x200m^2) Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-TF-2+00E



Line 2+00E – X Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

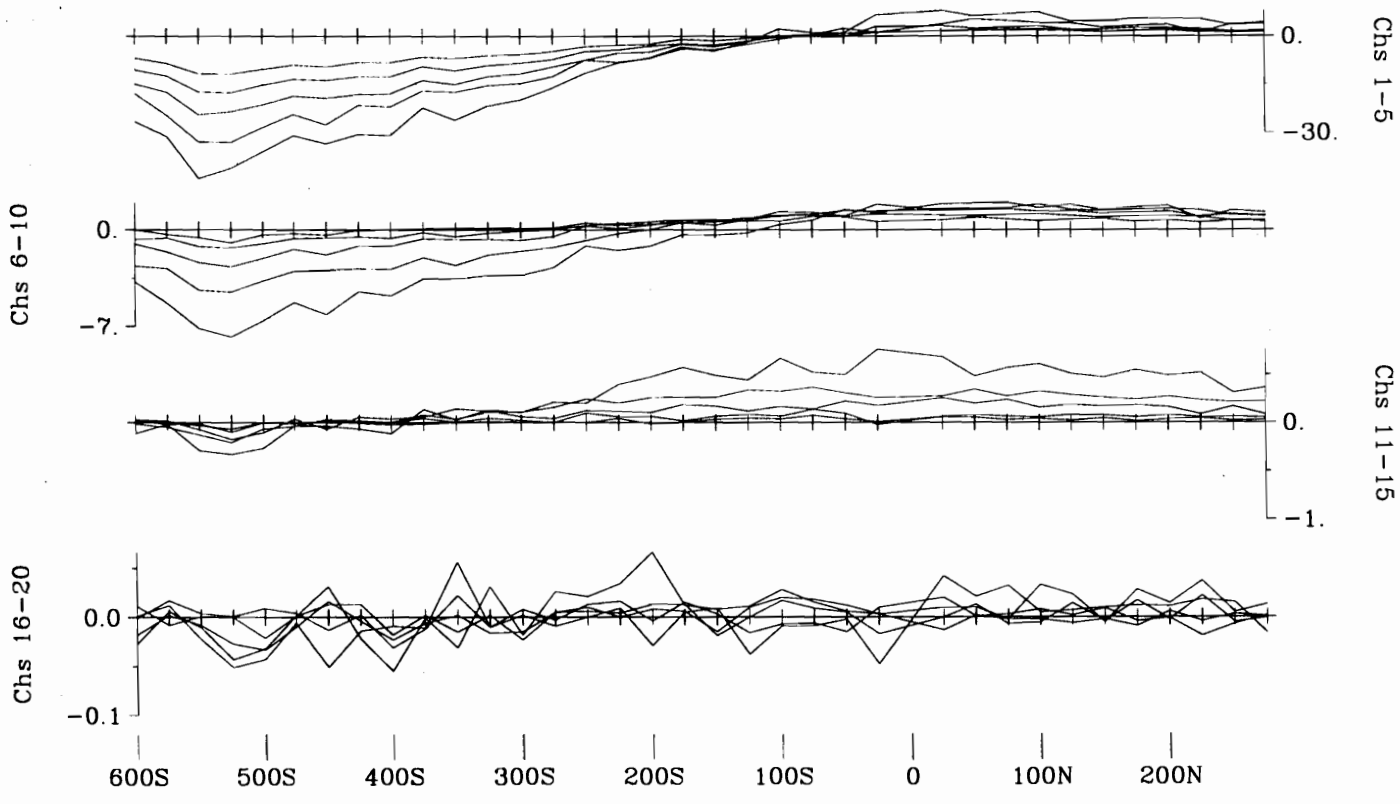
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/Aem^2
Receiver Coil Orientation:	Hz - positive up Hx - positive south Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels) & Geonics 3D Coil (3x200m^2) Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-X-2+00E



Line 2+00E – Y Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

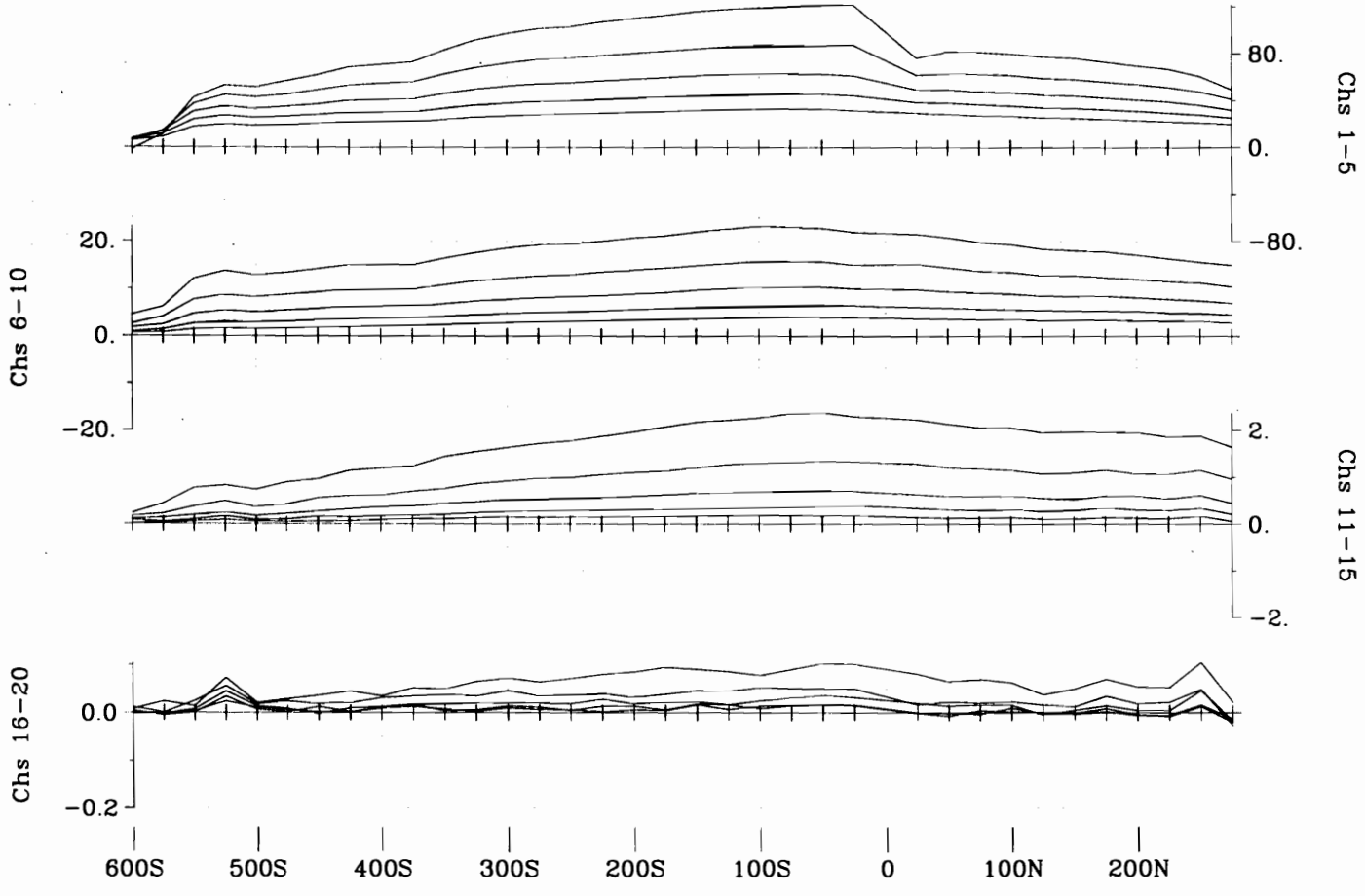
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A•m^2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive south
	Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-Y-2+00E



Line 2+00E – Z Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

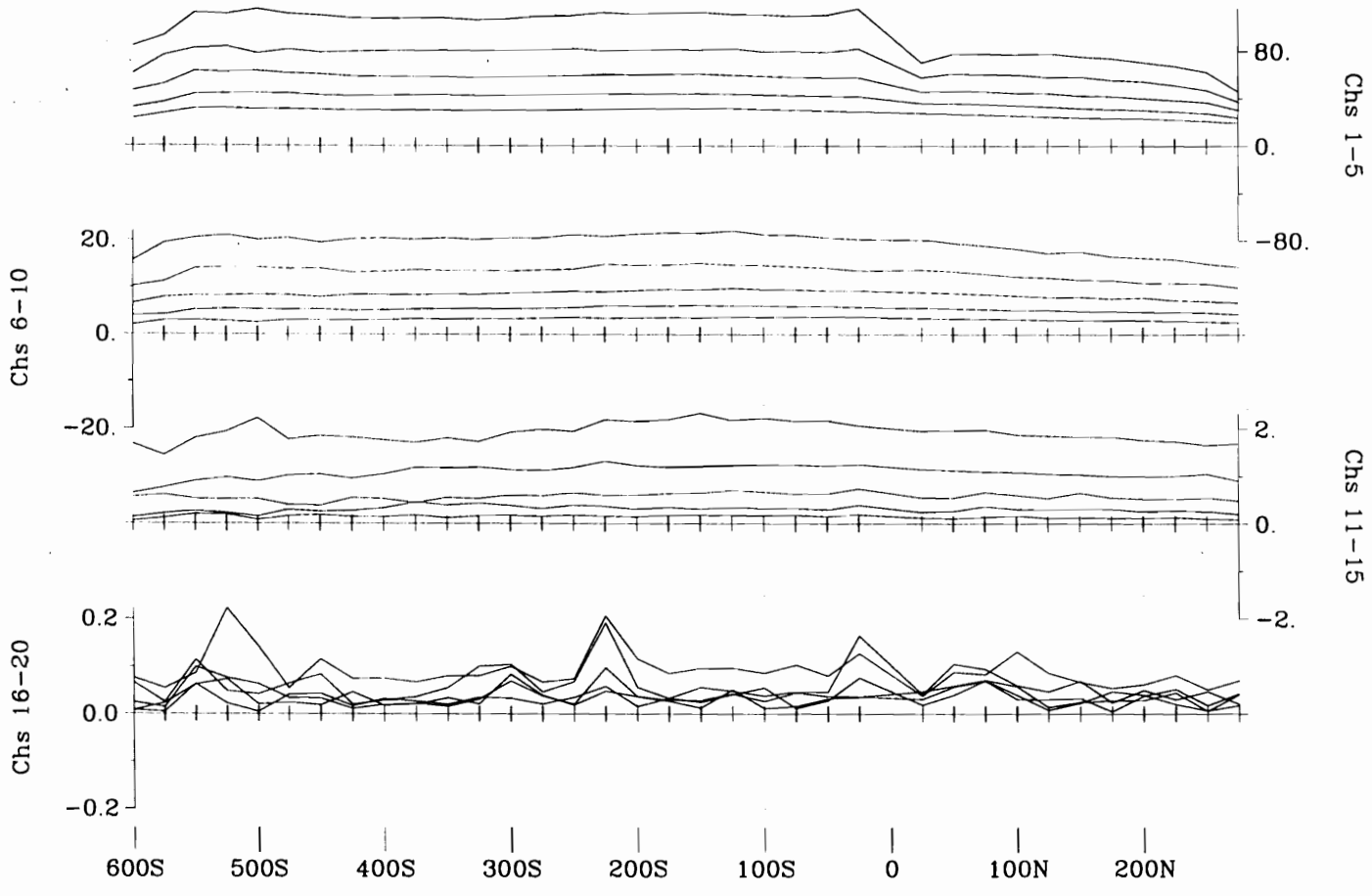
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A•m^2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive south
	Hy - positive east
Survey Date:	Mar. 14, 2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-Z-2+00E



Line 3+00E – Total Field

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

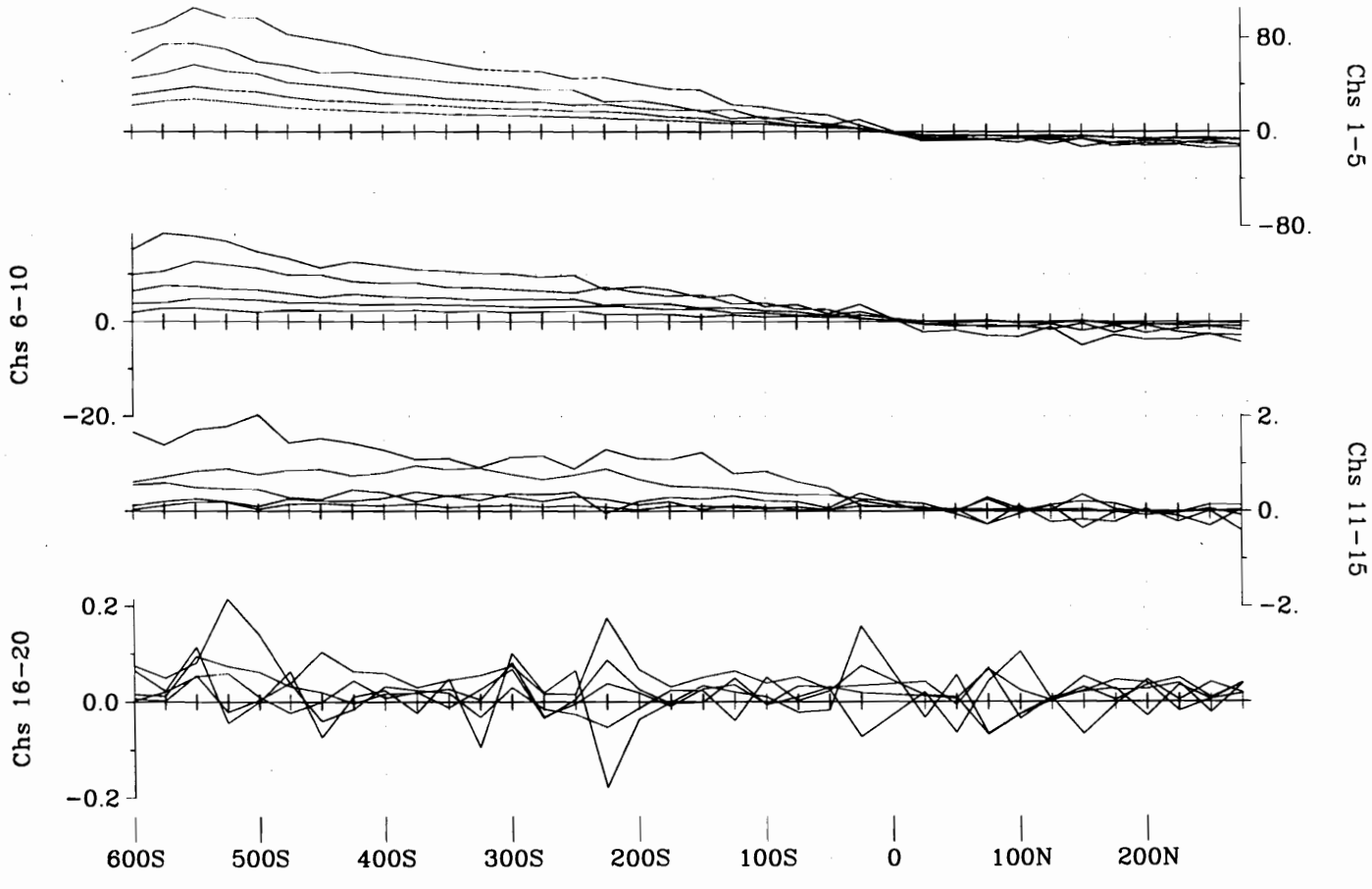
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive south Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels) & Geonics 3D Coil (3x200m^2) Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-TF-3+00E



Line 3+00E – X Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

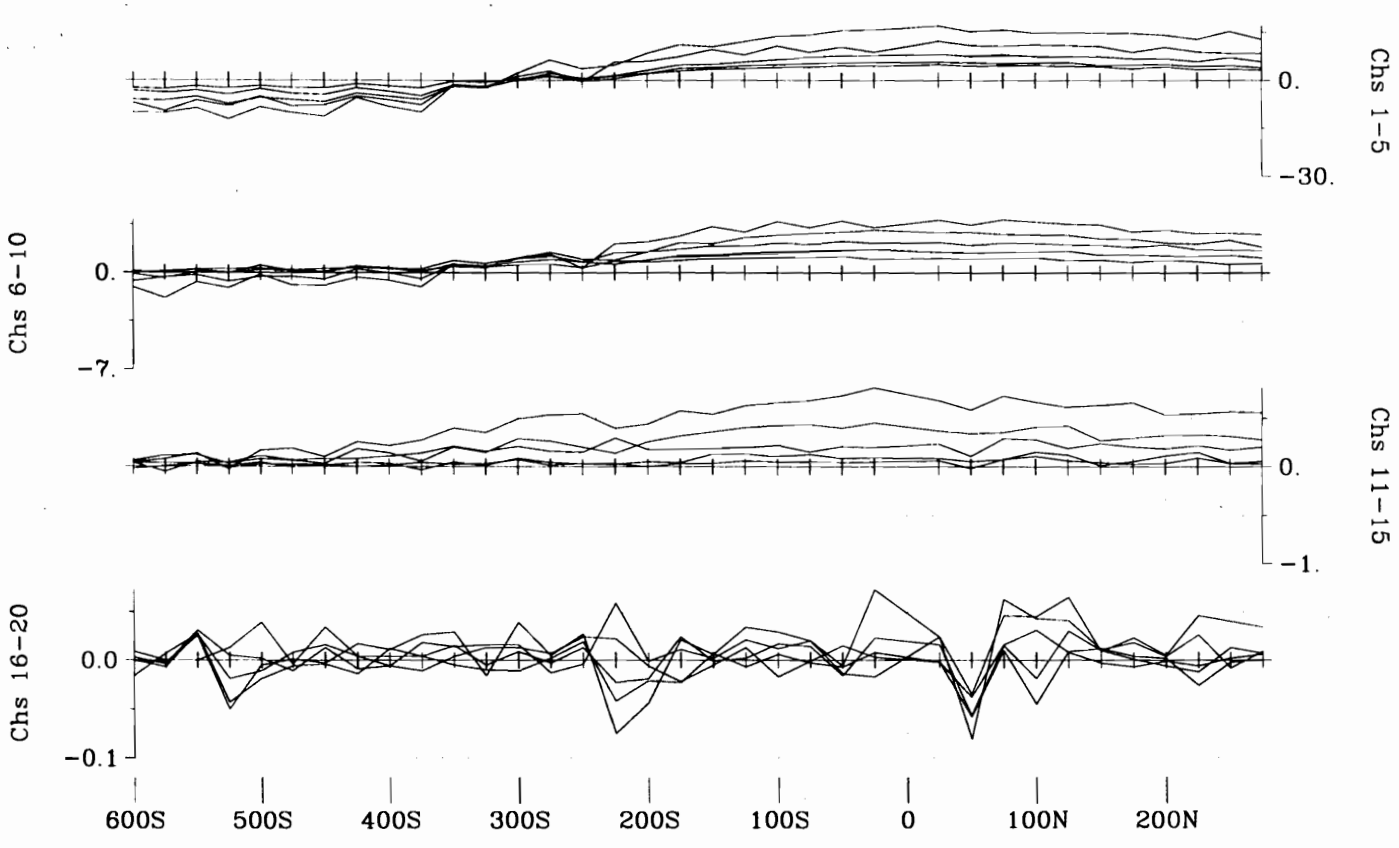
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/Am^2
Receiver Coil Orientation:	Hz - positive up Hx - positive south Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels) & Geonics 3D Coil (3x200m^2) Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-X-3+00E



Line 3+00E – Y Component

BLA–09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED–LOOP PROFILING SURVEY

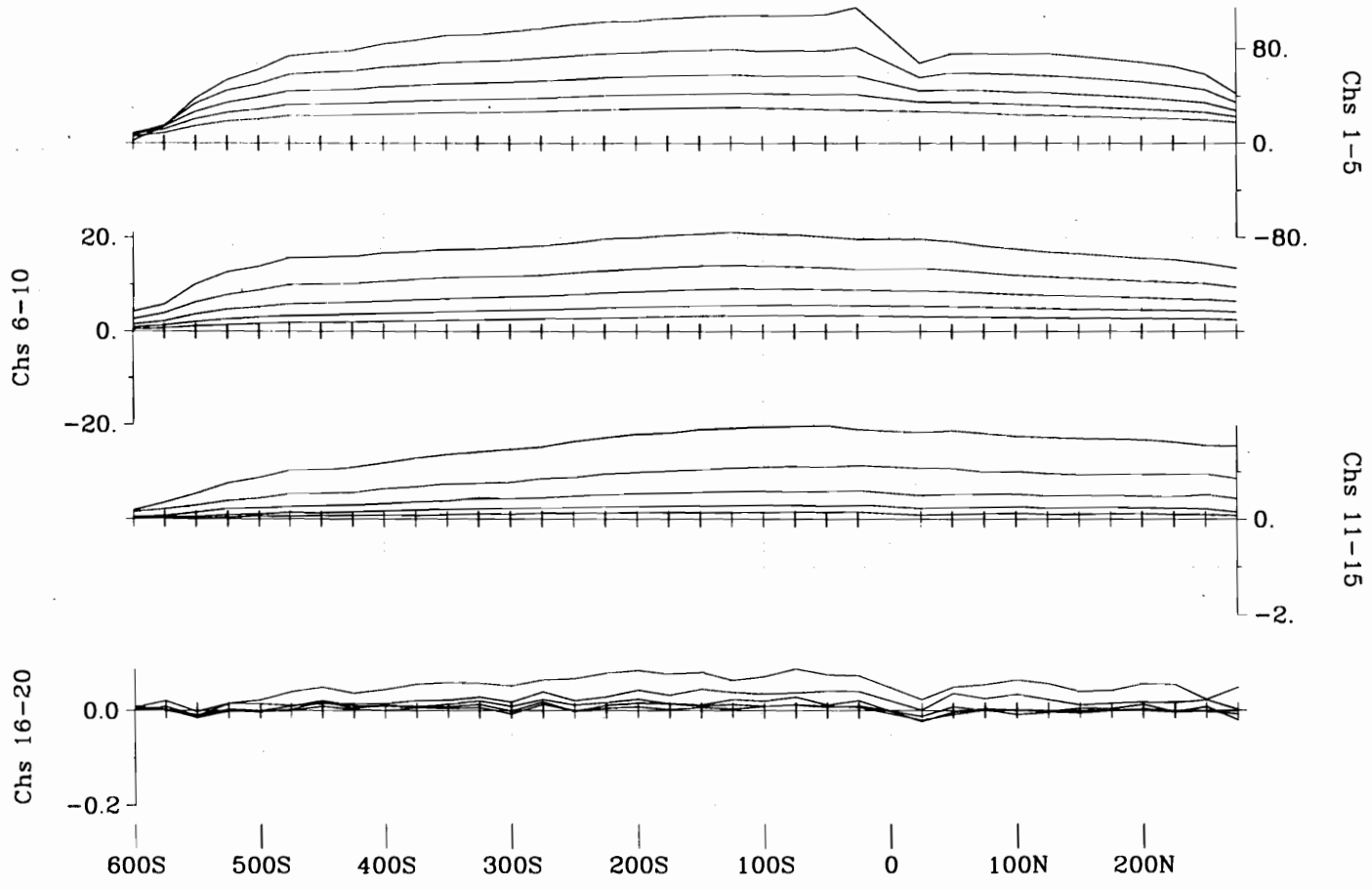
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn–Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz – positive up Hx – positive south Hy – positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels) & Geonics 3D Coil (3x200m^2) Tx = Geonics EM–37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG–362–4AXIS–Y–3+00E



Line 3+00E – Z Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

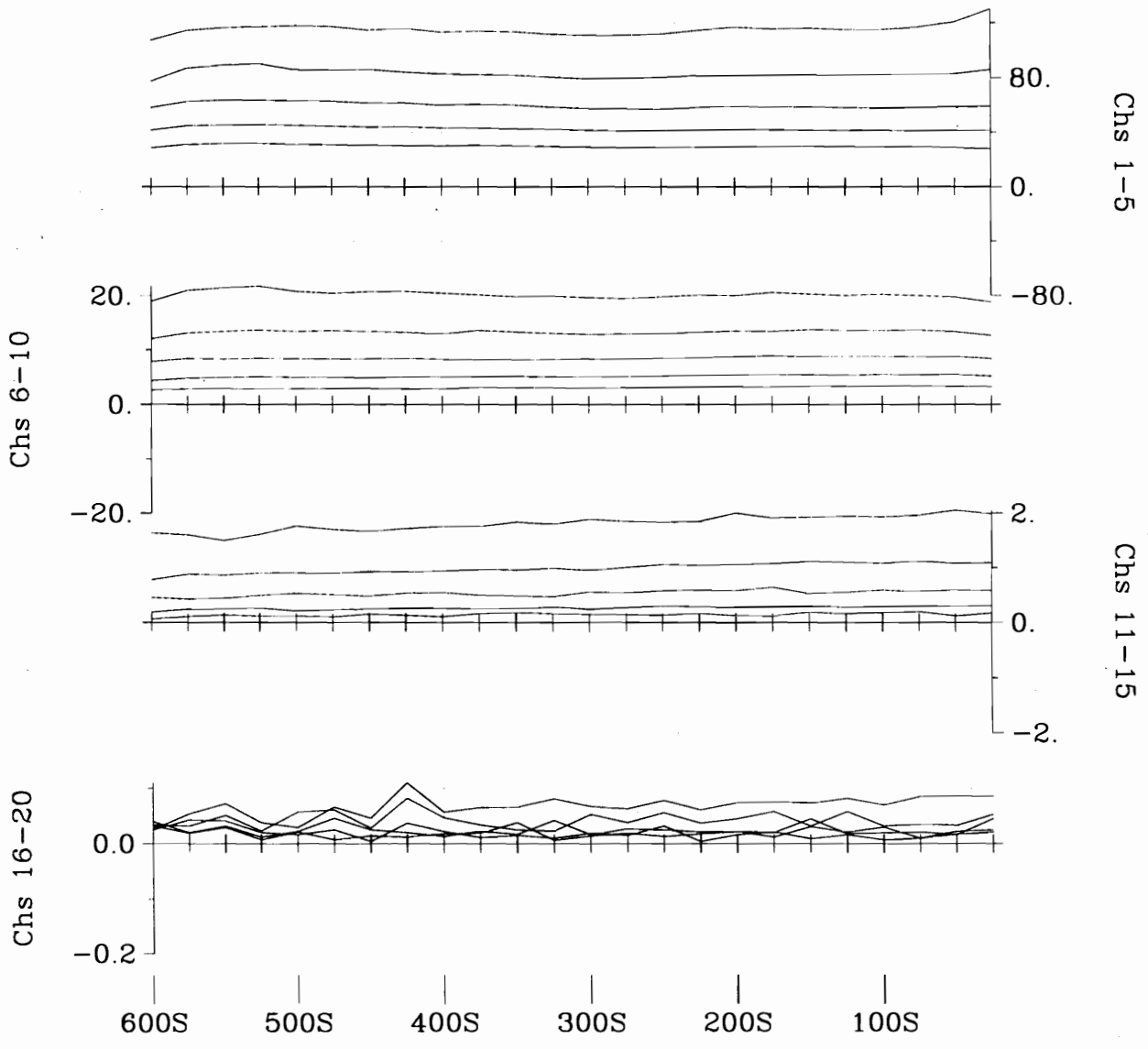
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A•m^2
Receiver Coil Orientation:	Hz - positive up Hx - positive south Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels) & Geonics 3D Coil (3x200m^2) Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-Z-3+00E



Line 4+00E – Total Field

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

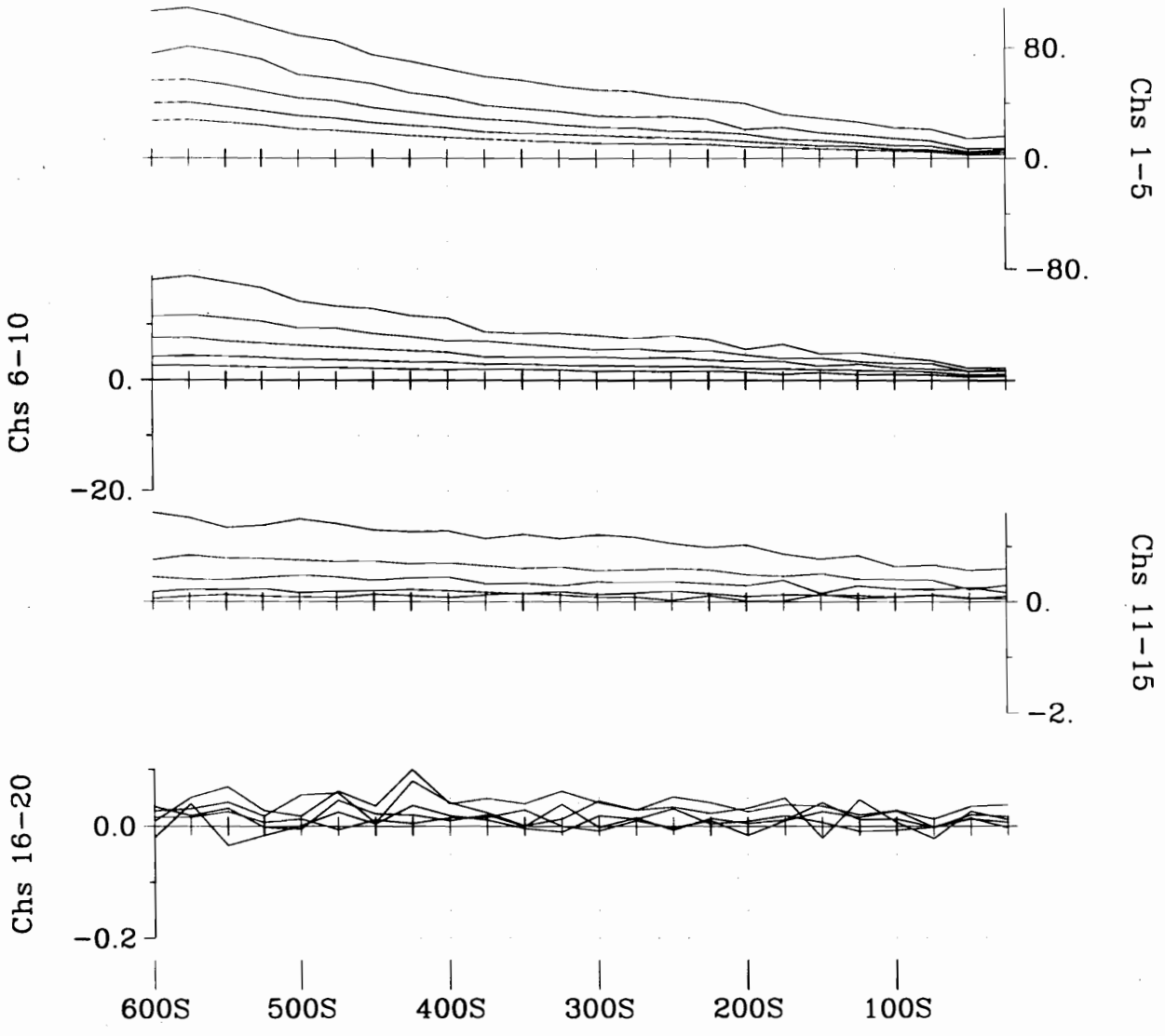
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive south
	Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-TF-4+00E



Line 4+00E – X Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

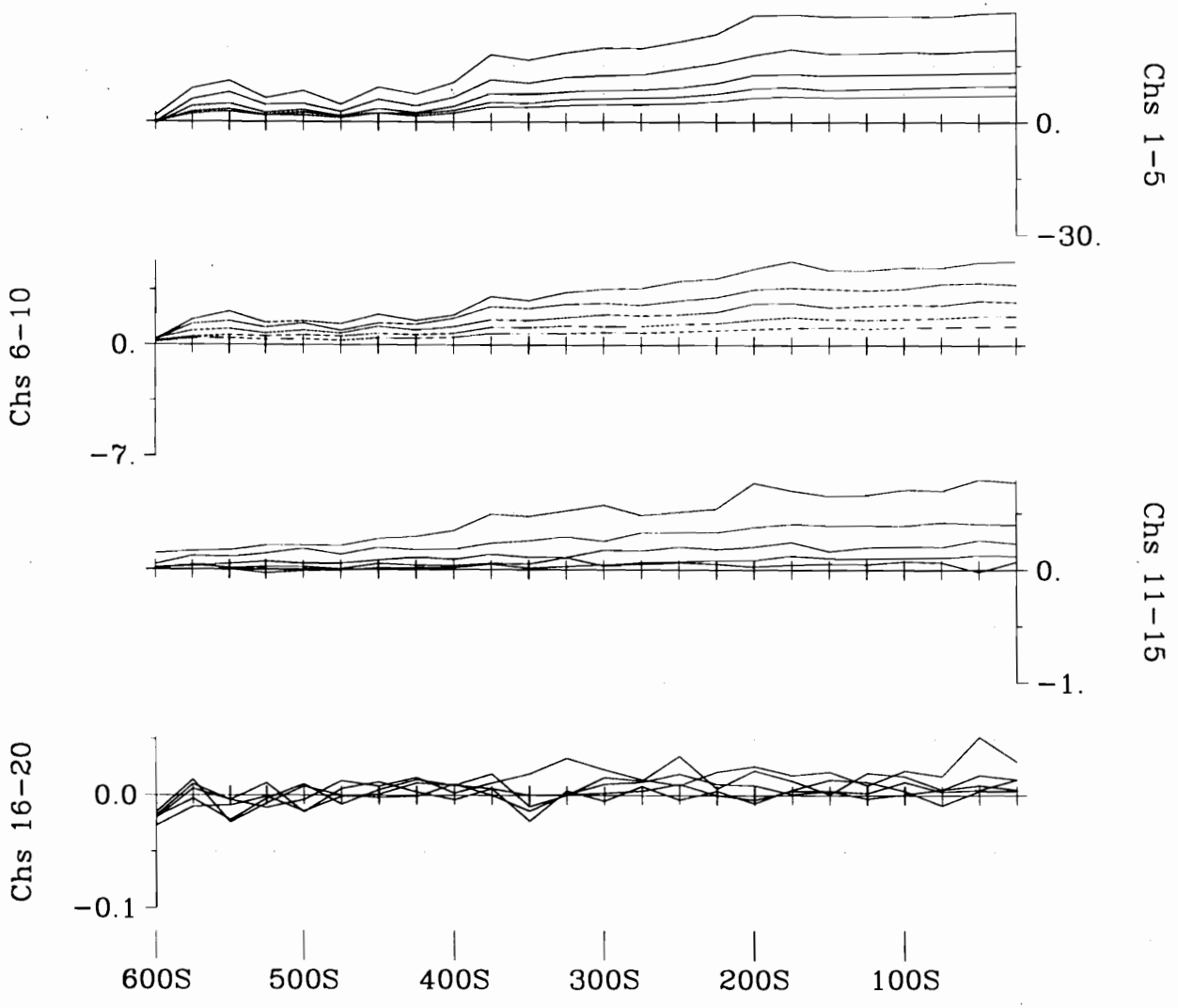
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive south
	Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-X-4+00E



Line 4+00E – Y Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

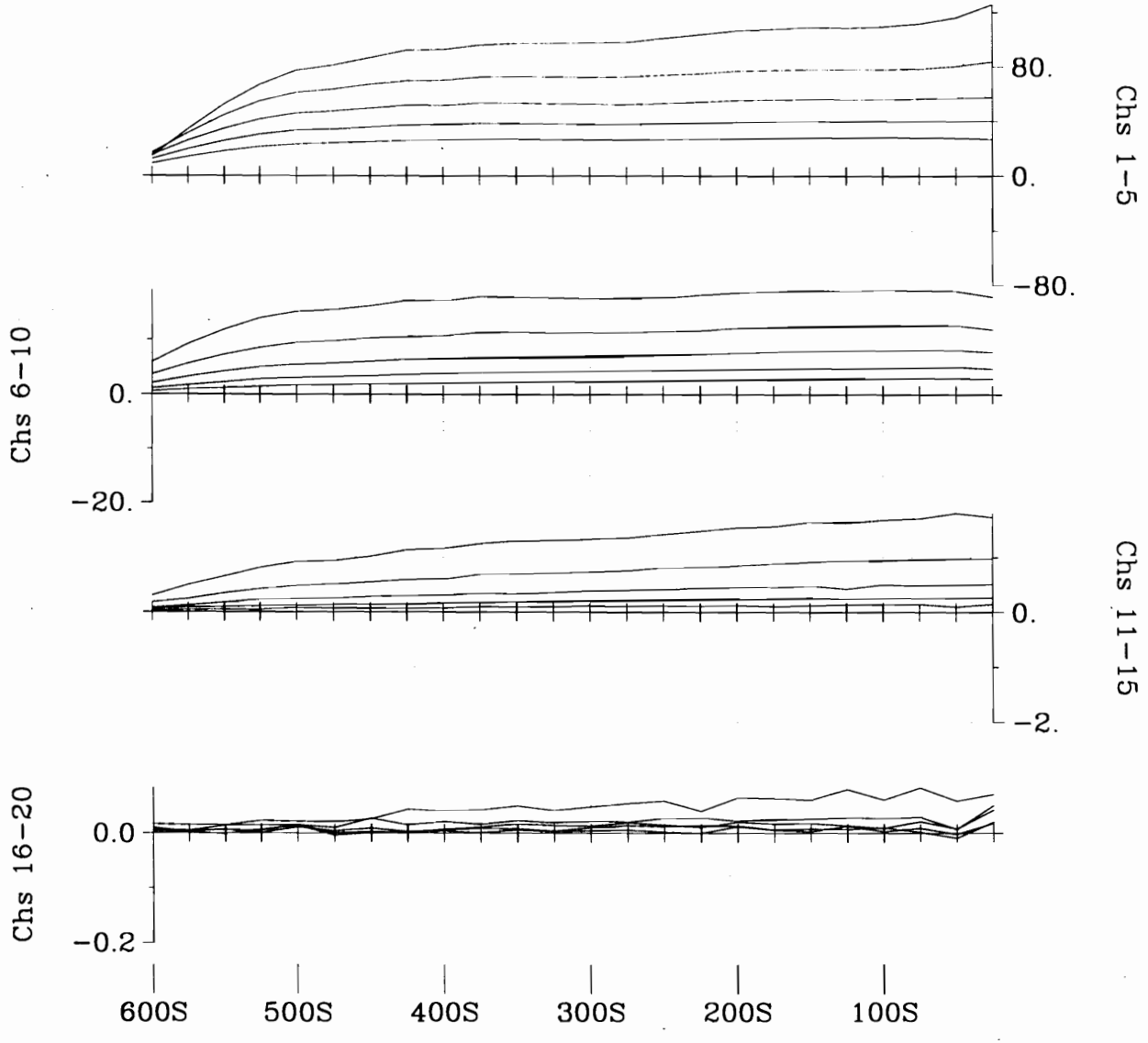
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz – positive up
	Hx – positive south
	Hy – positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-Y-4+00E



Line 4+00E – Z Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

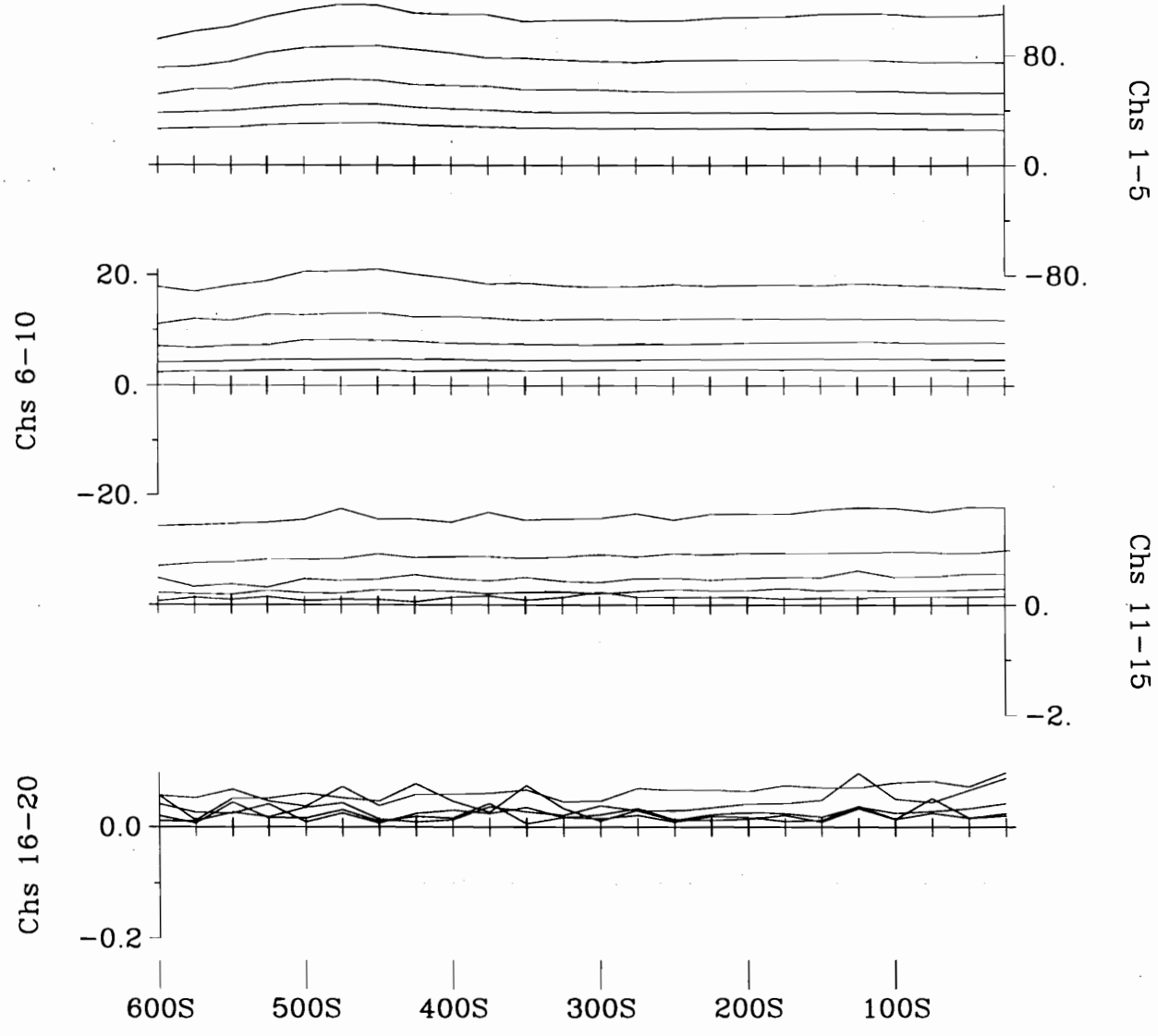
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive south
	Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-Z-4+00E



Line 5+00E – Total Field

BLA–09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED–LOOP PROFILING SURVEY

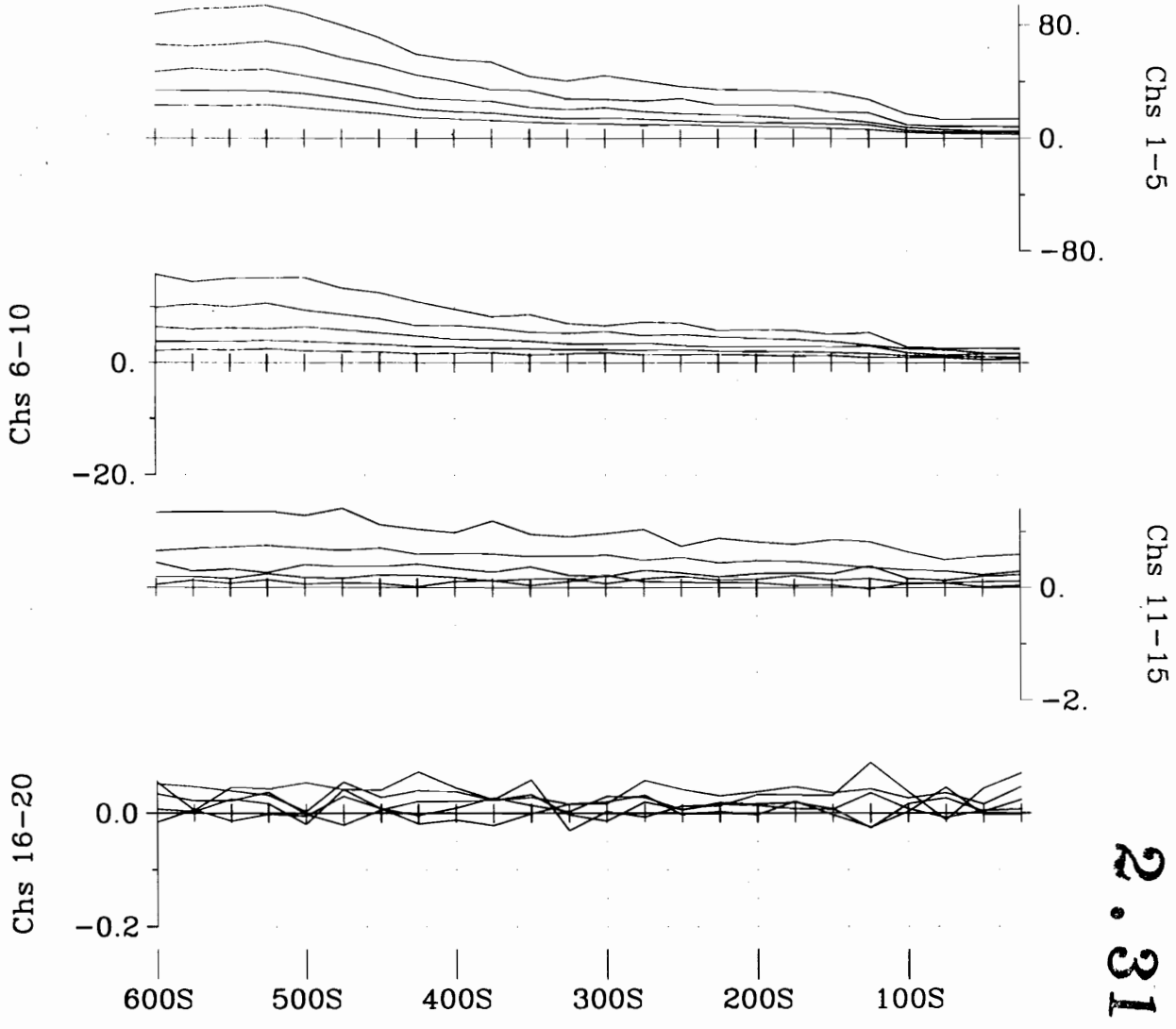
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn–Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz – positive up
	Hx – positive south
	Hy – positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM–37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG–362–4AXIS–TF–5+00E



Line 5+00E – X Component

BLA–09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED–LOOP PROFILING SURVEY

Secondary Electromagnetic Field (dB/dt)

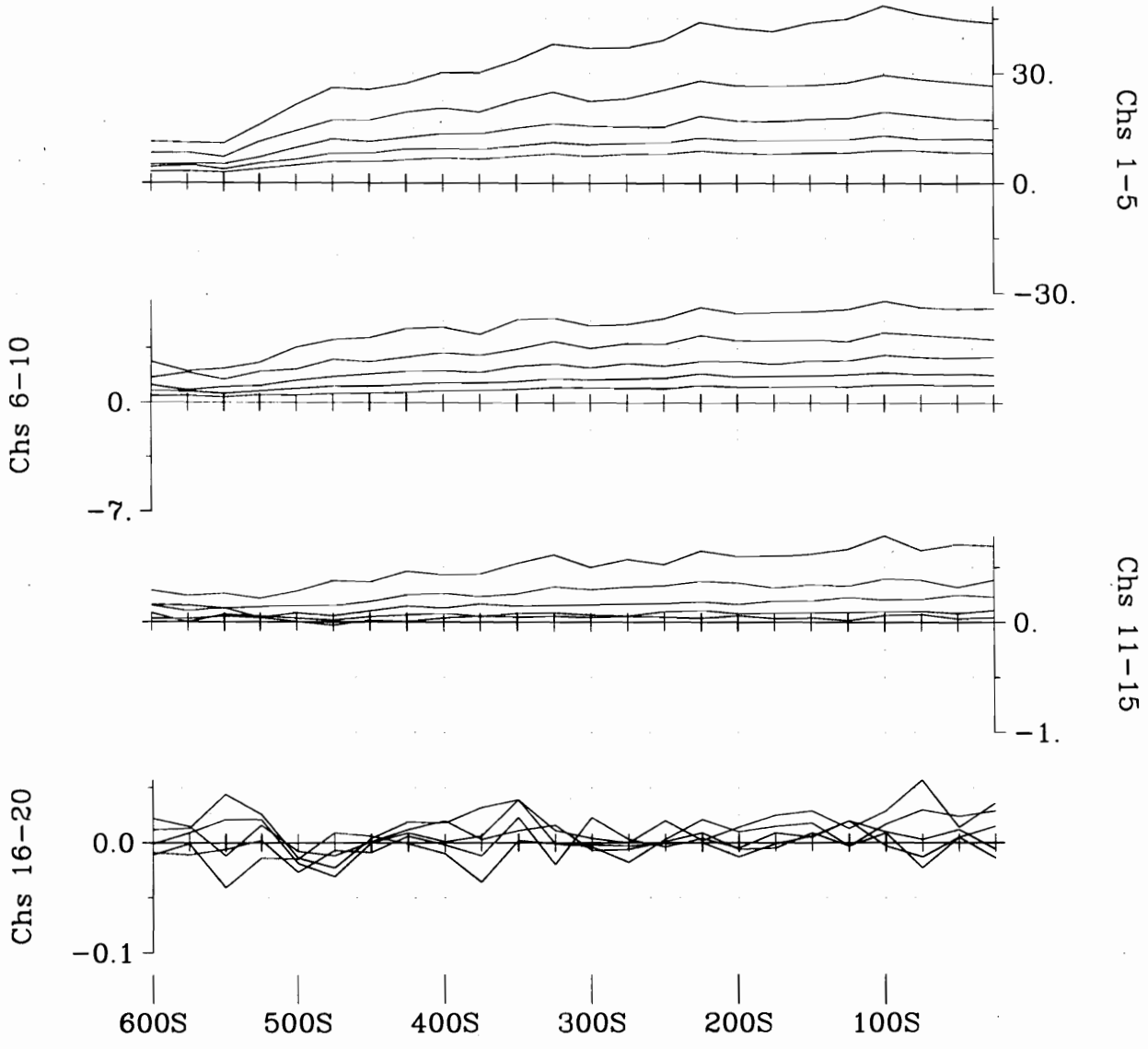
Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn–Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz – positive up
	Hx – positive south
	Hy – positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM–37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG–362–4AXIS–X–5+00E

2.31.3.3.3.5



Line 5+00E – Y Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

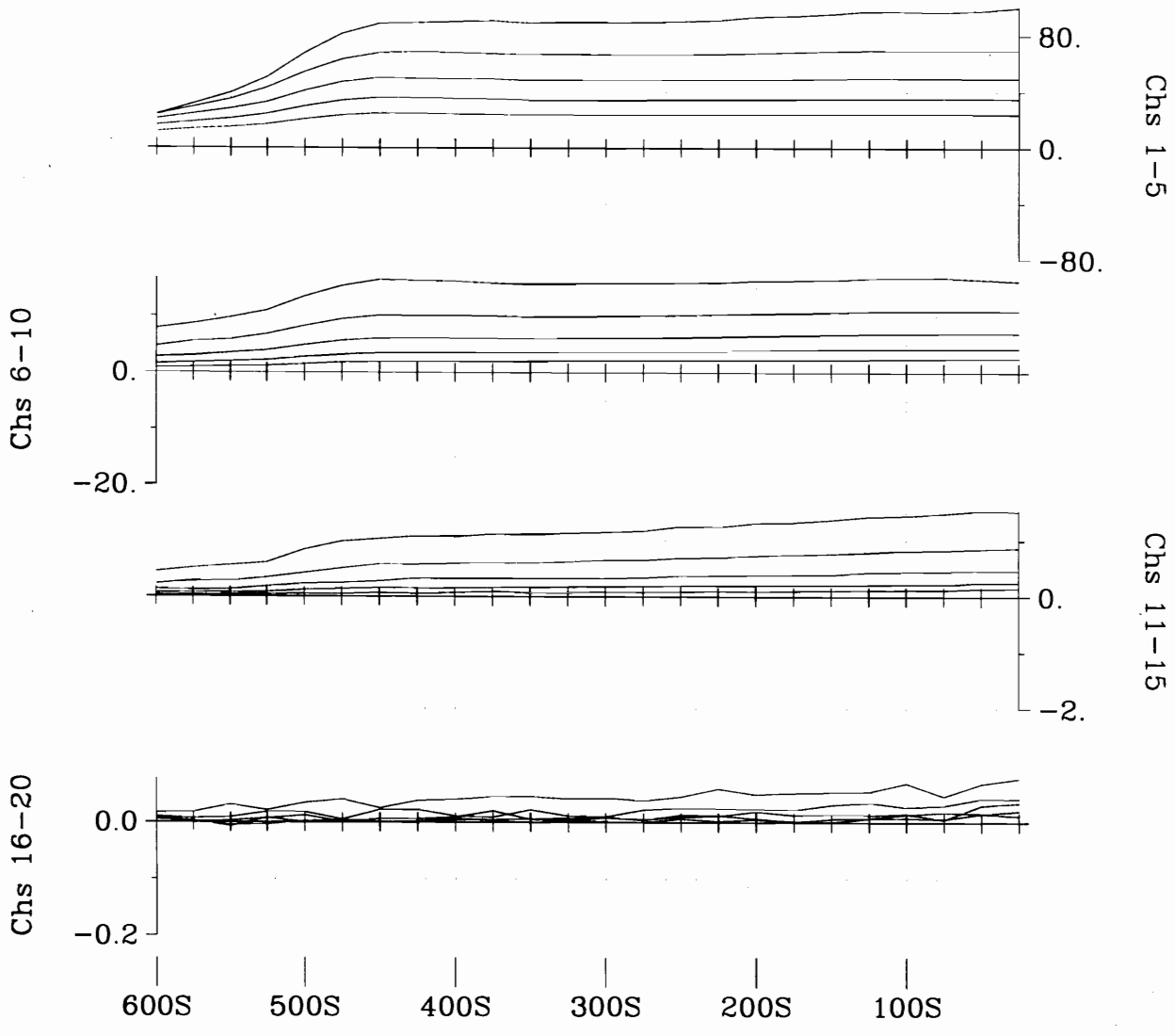
Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz – positive up
	Hx – positive south
	Hy – positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-Y-5+00E



Line 5+00E – Z Component

BLA-09

Scale 1:5000

50 0 50 100 150 200

(metres)

NORANDA INC

BLAKELOCK TOWNSHIP

NORTHWEST ONTARIO

LPTEM FIXED-LOOP PROFILING SURVEY

Secondary Electromagnetic Field (dB/dt)

Transmitter Frequency:	30 Hz (50% duty cycle)
Tx Loop Size:	300 x 500 meters
Tx Loop Location:	L0+00 to L5+00E & 0+00 to 3+00N
Transmitter Current:	17.0 Amps
Transmitter Turn-Off Time:	230 us
Station Interval:	25 meters
Profile Units:	nanoVolt/A*m^2
Receiver Coil Orientation:	Hz - positive up
	Hx - positive south
	Hy - positive east
Survey Date:	Mar.14,2005
Instrumentation:	Rx = Digital Protem (3x20 Channels)
	& Geonics 3D Coil (3x200m^2)
	Tx = Geonics EM-37 (2.8 kW)

Surveyed & Processed by:

QUANTEC GEOSCIENCE INC.

DWG. NO. QG-362-4AXIS-Z-5+00E

5486500 mN

5486000 mN

5485500 mN

5485000 mN

5484500 mN

5484000 mN

563500 mE

564000 mE

564500 mE

565000 mE

N

0 200 400

metres

L1800 L1805 L1810 L1815 L1820 L1825 L1830 L1835 L1841 L1845 L1850 L1855 L1860 L1865 L1870

2.31395

▼ EM Anomaly

Contour Values in pV /A /m^4

UTM Projection NAD83 Zone 17

FALCONBRIDGE LIMITED

Exploration Division Timmins, ONTARIO

Detour-Normetal Project

Grid BLA-03

EM Data

Contoured Time Gate 0.480msec

PROJECT : 602 MAP No:

DRAWN: FS DATE: Jan/2006

Scale: 1:2,500

5486500 mN

563500 mE

564000 mE

564500 mE

565000 mE

N

0 200 400

metres

5486000 mN

5485500 mN

5485000 mN

5484500 mN

5484000 mN

L1800 L1805 L1810 L1815 L1820 L1825 L1830 L1835 L1841 L1845 L1850 L1855 L1860 L1865 L1870

UTM Projection NAD83 Zone 17

2.31395

▼ VTEM Anomaly

Contour Values in pV /A /m^4

FALCONBRIDGE LIMITED

Exploration Division Timmins, ONTARIO

Detour-Normetal Project

Grid BLA-03
EM Data
Time Gate 3.18 msec

PROJECT : 602 MAP No:	Scale: 1:2,500
DRAWN: FS DATE: Jan/2006	

5486500 mN

563500 mE

564000 mE

565000 mE

N

0 200 400

metres

5486000 mN

5485500 mN

5485000 mN

5484500 mN

5484000 mN

L1800 L1805 L1810 L1815 L1820 L1825 L1830 L1835 L1841 L1845 L1850 L1855 L1860 L1865 L1870

UTM Projection NAD83 Zone 17

2.31395

▼ EM Anomaly

Contour Values in pV /A /m^4

FALCONBRIDGE LIMITED

Exploration Division Timmins, ONTARIO

Detour-Normetal Project

Grid BLA-03

EM Data

Contoured Time Channel 7.540msec

PROJECT : 602	MAP No:	Scale: 1:2,500
DRAWN: FS	DATE: Jan/2006	

5486500 mN

5486000 mN

5485500 mN

5485000 mN

5484500 mN

5484000 mN

563500 mE

564000 mE

564500 mE

565000 mE

N

0 200 400

metres

L1800 L1805 L1810 L1815 L1820 L1825 L1830 L1835 L1841 L1845 L1850 L1855 L1860 L1865 L1870

57400 57600 57500 57700 57800 57900 58100

UTM Projection NAD83 Zone 17

2.31395

▼ EM Anomaly

FALCONBRIDGE LIMITED

Exploration Division Timmins, ONTARIO

Detour-Normetal Project

Grid BLA-03

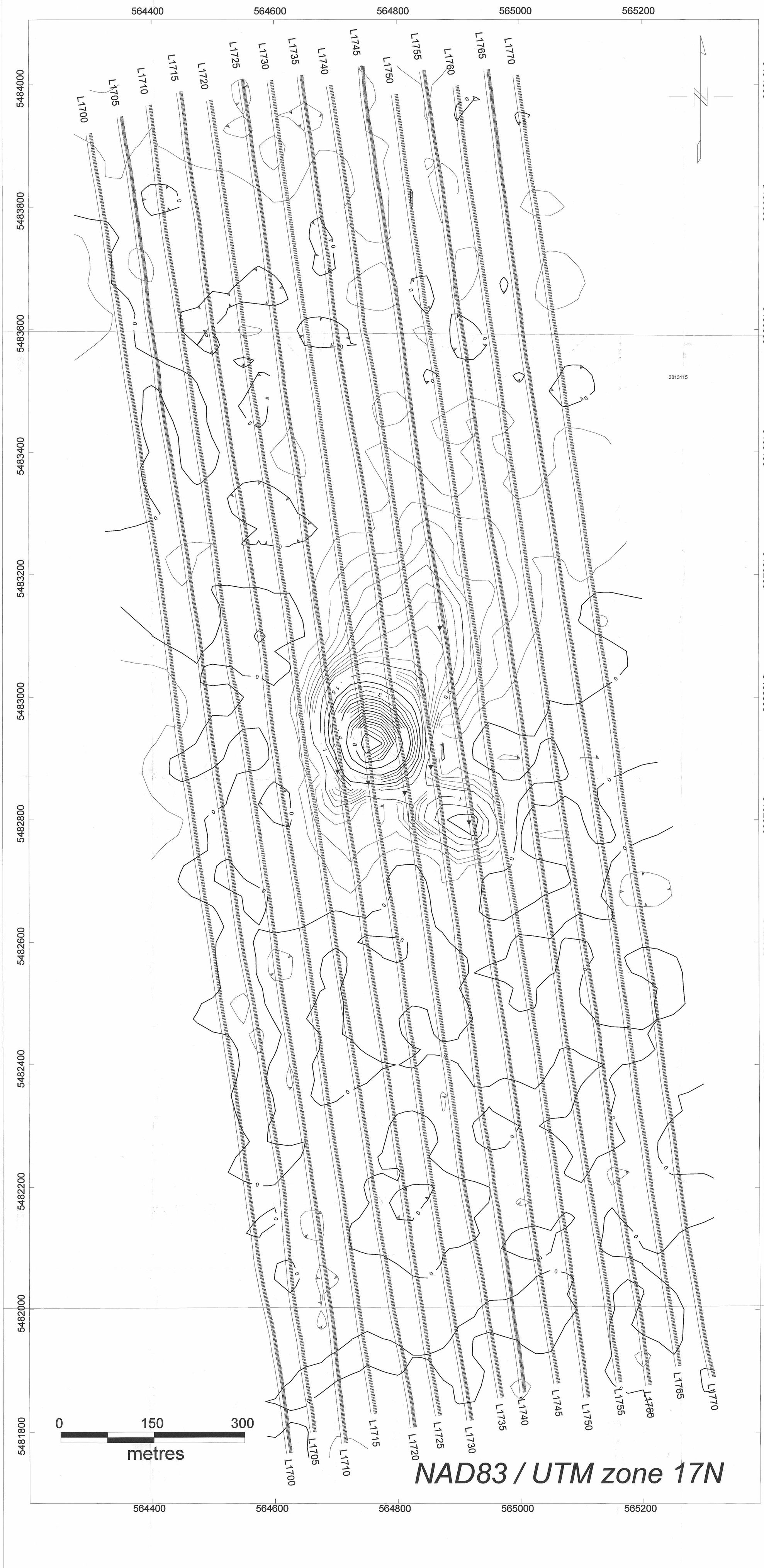
Mag Data

Base Values 57,000 nT

PROJECT : 602 MAP No:

DRAWN: FS DATE: Jan/2006

Scale: 1:2,500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5482000
5481800
L1700
L1705
L1710
L1715
L1720
L1725
L1730
L1735
L1740
L1745
L1750
L1755
L1760
L1765
L1770
3013115
0
150
300
metres
NAD83 / UTM zone 17N
2.31395
EM Anomaly
Contour Values in pV /A /m4
FALCONBRIDGE LIMITED
Exploration Division
Timmins, ONTARIO
Detour-Normetal Project
Grid BLA-06
EM Data
Contoured Time Channel 0.480mse
PROJECT : 602
MAP No:
DRAWN: FS
DATE: Jan/2006
Scale: 1:2,500

564400 564600 564800 565000 565200

5484000 5483800 5483600 5483400 5483200 5483000 5482800 5482600 5482400 5482200 5482000 5481800

L1700 L1705 L1710 L1715 L1720 L1725 L1730 L1735 L1740 L1745 L1750 L1755 L1760 L1765 L1770

3013115

0 150 300

metres

NAD83 / UTM zone 17N

564400 564600 564800 565000 565200

5484000 5483800 5483600 5483400 5483200 5483000 5482800 5482600 5482400 5482200 5482000 5481800

L1700 L1705 L1710 L1715 L1720 L1725 L1730 L1735 L1740 L1745 L1750 L1755 L1760 L1765 L1770

2.31395

▼ EM Anomaly

Contour Values in pV /A /m^4

FALCONBRIDGE LIMITED

Exploration Division Timmins, ONTARIO

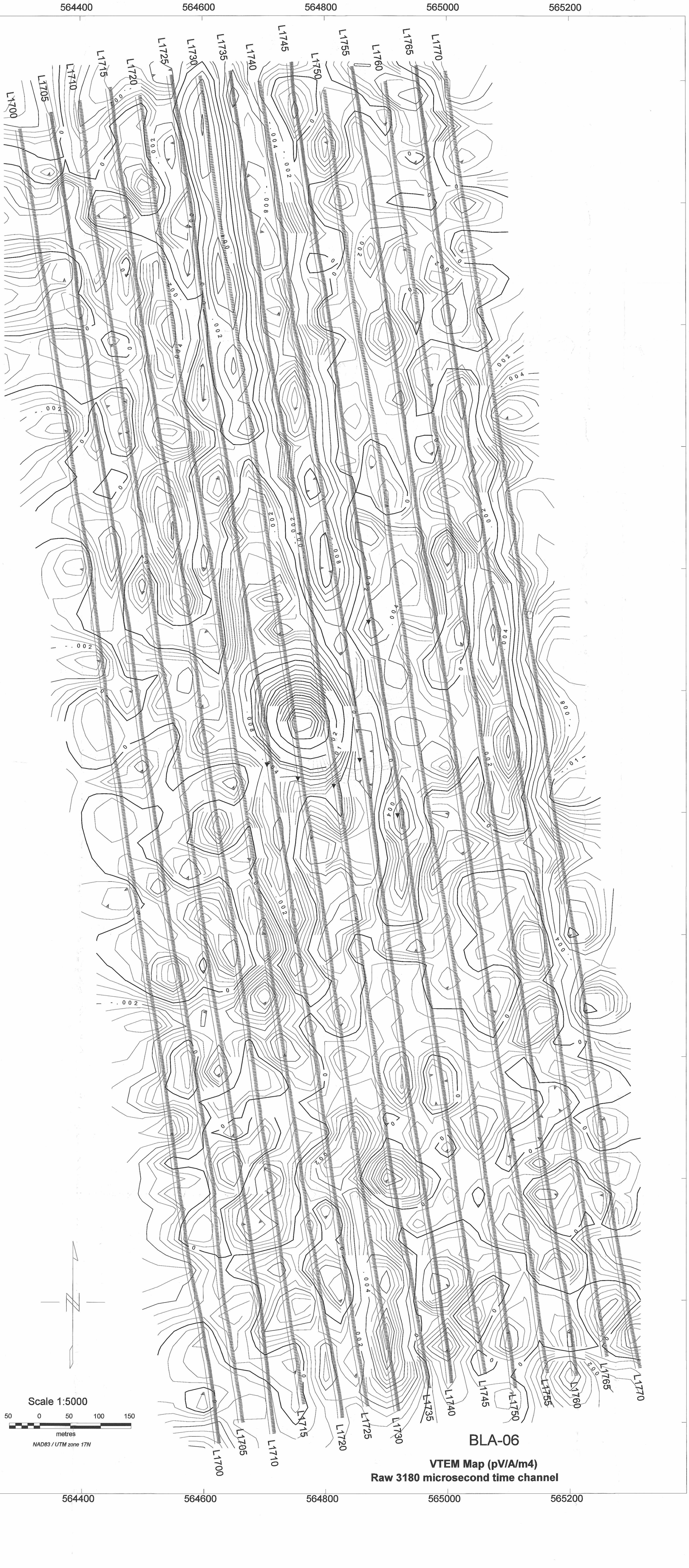
Detour-Normetal Project

Grid BLA-06

EM Data

Contoured Time Channel 3.180mse

PROJECT : 602	MAP No:	Scale: 1:2,500
DRAWN: FS	DATE: Jan/2006	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5482000
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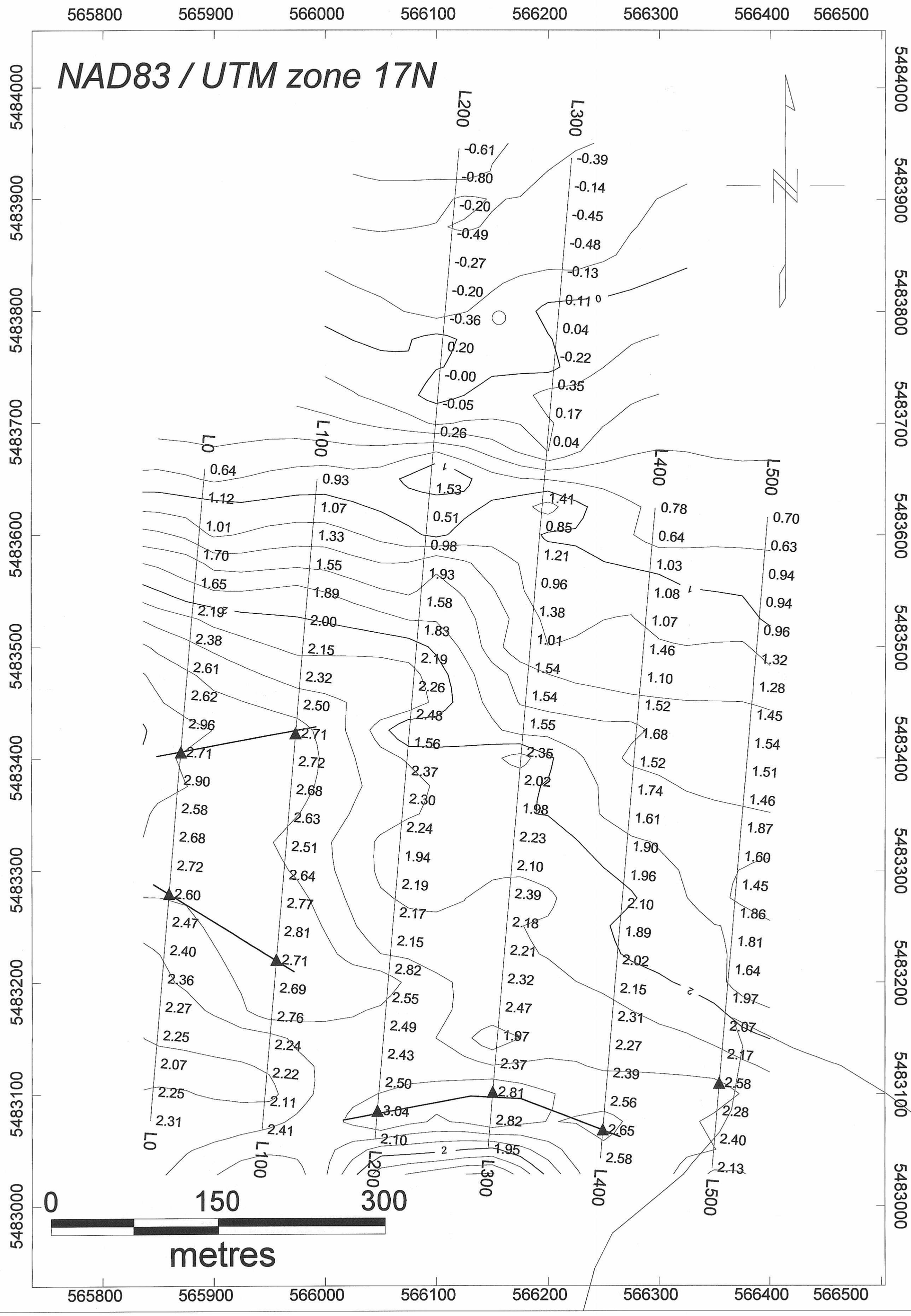
L1700
L1705
L1710
L1715
L1720
L1725
L1730
L1735
L1740
L1745
L1750
L1755
L1760
L1765
L1770
Scale 1:5000
50 0 50 100 150
metres
NAD83 / UTM zone 17N
BLA-06
VTEM Map (pV/A/m4)
Raw 3180 microsecond time channel
2.31395
VTEM Anomaly
Contour Values in pV /A /m4
FALCONBRIDGE LIMITED
Exploration Division
Timmins, ONTARIO
Detour-Normetal Project
Grid BLA-06
EM Data
Time Gate 7.540 msec
PROJECT : 602
MAP No:
DRAWN: FS
DATE: Jan/2006
Scale: 1:2,500

564400
564600
564800
565000
565200
5484000
5483800
5483600
5483400
5483200
5483000
5482800
5482600
5482400
5482200
5482000
5481800
L1700 E
L1705 E
L1710 E
L1715 E
L1720 E
L1725 E
L1730 E
L1735 E
L1740 E
L1745 E
L1750 E
L1755 E
L1760 E
L1765 E
L1770 E
57400
57300
57500
0
150
300
metres
3013115
2.31395
▼ EM Anomaly
NAD83 / UTM zone 17N
FALCONBRIDGE LIMITED
Exploration Division
Timmins, ONTARIO
Detour-Normetal Project
Grid BLA-06
Mag Data
Base Values 57,000 nT
PROJECT : 602
MAP No:
DRAWN: FS
DATE: Jan/2006
Scale: 1:2,500

3019524



▼ EM Anomaly

2.31895

FALCONBRIDGE LIMITED
Exploration Division Timmins, ONTARIO

Detour-Normetal Project

Grid BLA-09

EM Data

Channel 10 (X Component)

nanoV / A-metre2

PROJECT : 602 MAP No:
DRAWN: FS DATE: Jan/2006

Scale: 1:2,500

3019524

NAD83 / UTM zone 17N

565800 565900 566000 566100 566200 566300 566400 566500

5484000 5483900 5483800 5483700 5483600 5483500 5483400 5483300 5483200 5483100 5483000

L0 L100 L200 L300 L400 L500

N

0 150 300

metres

▼ EM Anomaly

2.31395

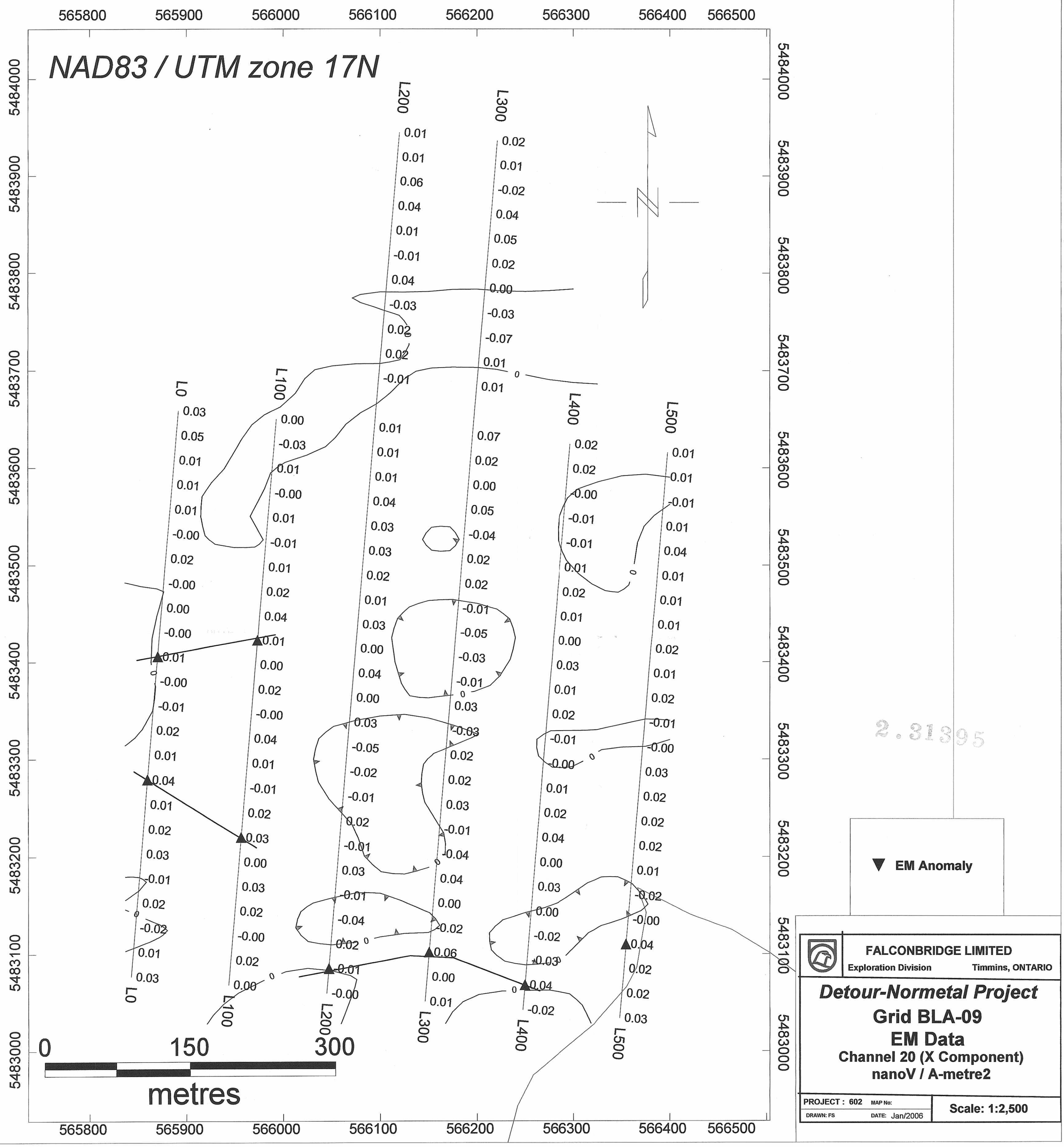
FALCONBRIDGE LIMITED
Exploration Division Timmins, ONTARIO

Detour-Normetal Project

Grid BLA-09
EM Data
Contoured Ch. 15

PROJECT : 602 MAP No:
DRAWN: FS DATE: Jan/2006
Scale: 1:2,500

3019524



2.31395

FALCONBRIDGE LIMITED
Exploration Division — Timmins, ONTARIO

Detour-Normetal Project

Grid BLA-09

EM Data

Channel 20 (X Component)

nanoV / A-metre2

PROJECT : 602	MAP No:	Scale: 1:2,500
DRAWN: FS	DATE: Jan/2006	

3019524

MAGNETIC MAP (nT)
Base values 57 000 nT

565800 566000 566200 566400

5484000 5483800 5483600 5483400 5483200 5483000

NAD83 / UTM zone 17N

L0 L100 L200 L300 L400 L500

B0 B0

57400 57400 57400 57400 57300

0 150 300

metres

▼ EM Anomaly

2.31395

FALCONBRIDGE LIMITED
Exploration Division **Timmins, ONTARIO**

Detour-Normetal Project

Grid BLA-09

Mag Data

Base Values 57,000 nT

PROJECT : 602	MAP No:	Scale: 1:2,500
DRAWN: FS	DATE: Jan/2006	

NAD83 / UTM zone 17N