GM 50183

REPORT ON A COMBINED HELICOPTER-BORNE MAGNETIC, ELECTROMAGNETIC AND VLF-EM SURVEY, ABCOURT OPTION

REPORT ON A COMBINED HELICOPTER-BORNE MAGNETIC, ELECTROMAGNETIC AND VLF-EM SURVEY, ABCOURT OPTION, QUEBEC

FOR

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J9084

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LIST OF MAPS

Maps are labelled according to area, map type and sheet number. 1:10,000 and 1:20,000 scale maps are presented in one map sheet. The 1:5,000 scale maps are presented in four map sheets.

<u>BLACK LINE MAPS</u>: **Scale 1:10,000**

Map Type	Description
1.	**BASE MAP;** Topographic base map plus survey area boundary, and UTM reference corners.
2.	**FLIGHT PATH MAP;** Photocombination of the base map with flight lines, fiducials and EM anomaly symbols.
3.	**COMPILATION/INTERPRETATION MAP;** Flight path map with interpretation.
4.	**TOTAL FIELD MAGNETIC CONTOURS;** with base map, flight lines and fiducials.
5.	**VERTICAL MAGNETIC GRADIENT CONTOURS;** with base map, flight lines and fiducials.
7.	**APPARENT RESISTIVITY CONTOURS;** Apparent Resistivity calculated for the 935 Hz data, with base map, flight lines and fiducials.
7a.	**APPARENT RESISTIVITY CONTOURS;** Apparent Resistivity calculated for the 4,600 Hz data, with base map, flight lines and fiducials.

<u>BLACK LINE MAPS</u>: **Scale 1:5,000**

8.	**HEM OFFSET PROFILES;** 935 Hz and 4600 Hz data with area boundary, UTM reference corners, flight lines and fiducials.
9.	**TOTAL FIELD MAGNETIC CONTOURS;** with area boundary, UTM reference corners, flight lines and fiducials.

<u>COLOUR MAPS</u>: **Scale 1:10,000**

4.	**TOTAL FIELD MAGNETICS;** with superimposed contours and flight lines, fiducials and EM anomaly symbols.
5.	**VERTICAL GRADIENT MAGNETICS;** with superimposed contours and flight lines, fiducials and EM anomaly symbols.

6. **APPARENT RESISTIVITY;** calculated for the 935 Hz data with superimposed contours and flight lines, fiducials and EM anomaly symbols.

7. **APPARENT RESISTIVITY;** calculated for the 4600 Hz data with superimposed contours and flight lines, fiducials and EM anomaly symbols.

8. **HEM OFFSET PROFILES;** 935 Hz and 33,000 Hz data with flight lines, fiducials and EM anomaly symbols.

9. **HEM OFFSET PROFILES;** 4175 Hz and 4600 Hz data with flight lines, fiducials and EM anomaly symbols.

COLOUR MAPS: Scale 1:20,000

10. **TOTAL FIELD MAGNETICS SHADOW MAP;** with survey area boundary and UTM reference corners.

STACKED PROFILES; Scale 1:10,000

Magnetic, electromagnetic and altimeter data are presented as a series of stacked profiles at a horizontal scale of 1:10,000. Apparent resistivity, apparent overburden thickness, EM anomaly symbols and fiducials are shown as well.

REPORT ON A COMBINED HELICOPTER-BORNE MAGNETIC, ELECTROMAGNETIC AND VLF-EM SURVEY, ABCOURT OPTION, QUEBEC

1. INTRODUCTION

This report describes an airborne geophysical survey carried out on behalf of EXPLORATIONS NORANDA LIMITEE (NORANDA) by Aerodat Limited under a contract dated October 31, 1990. Principal geophysical sensors included a four frequency electromagnetic system, a high sensitivity cesium vapour magnetometer and a two frequency VLF-EM system. Ancillary equipment included a radar ranging navigation system, a colour video tracking camera, a radar altimeter, a power line monitor and a base station magnetometer.

The survey was carried out over the Fiedmont Area, some 35 kilometres northwest of Senneterre, Quebec. Total survey coverage was approximately 513 line kilometres (494 km. traverse and 19 km. mag tie lines). The flight line spacing was 100m. The Aerodat job number is J9084.

The survey was flown in the period November 8 and 9, 1990. Preliminary maps were submitted to Noranda in early December.

This report describes the survey, the data processing and the data presentation. Electromagnetic anomalies which are thought to be the response to bedrock conductors have been identified and appear on selected map products as EM anomaly symbols with interpreted source characteristics. Where EM and Magnetic results supported it, anomaly centres are joined to form conductor axes. Recommendations concerning conductors with favourable characteristics are made with reference to a compilation/interpretation map.

2. SURVEY AREA

The survey area is shown in the attached index map which includes local topography and latitude - longitude coordinates. This index map also appears on map legends. (Figure 1)

A flight line spacing of 100 m was used throughout. Flight line direction was north-south. Two magnetic tie lines were flown east-west.
See claim map (Figure 2)

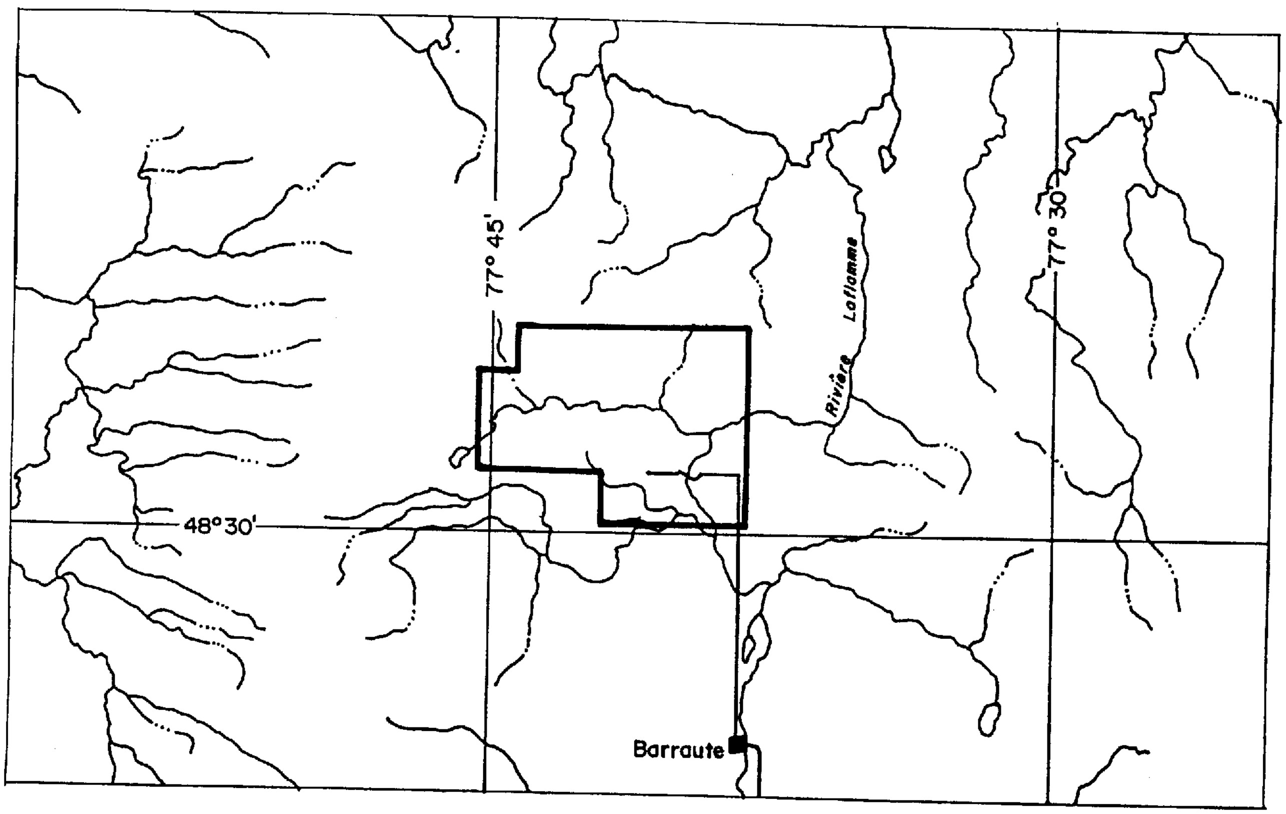

Figure 1

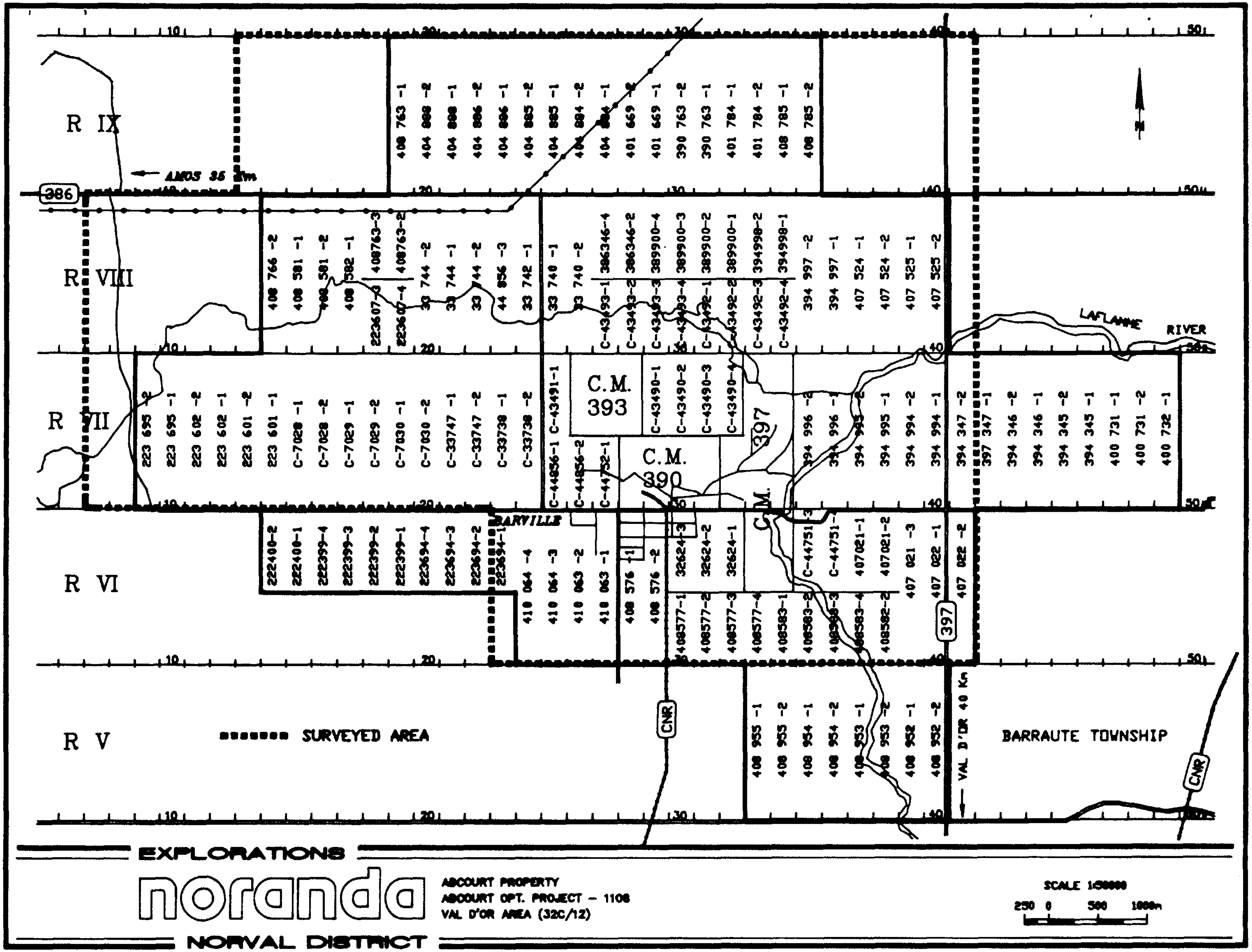

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Figure 2

3. SURVEY PROCEDURES

The field work was done on November 8 and 9, 1990. Principal personnel are listed in Appendix IV. Six survey flights were required to complete the project.

Following equipment installation and testing, the ground based transponders of the radar ranging navigation system were installed at two or more sites near the survey areas. The UTM coordinates of each site were taken from published 1:50,000 NTS maps. The base line (or line between transponders) was flown to determine their separation. The result was used to check the UTM coordinates assigned to each transponder.

Hereafter, the position of the aircraft is given as UTM x and y referenced to the transponder sites. These coordinates are correct for the NTS maps used. Topographic maps which are not based on the same UTM grid may show differences in the UTM coordinates.

The survey area as outlined on topographic maps provided by Noranda was identified from the air. Prominent topographic features needed to program the navigation system were selected. A test flight was used to confirm that area coverage will be as required.

The flight line spacing was 100 m. The aircraft ground speed was maintained at approximately 60 knots (30 metres per second). The nominal EM sensor height was 30 metres, consistent with the safety of the aircraft and crew.

4. DELIVERABLES

The results of the survey are presented in a report plus maps. White print copies of all 1:10,000 scale black line maps are folded and bound with the report. The report and these maps are presented in three copies.

The 1:5,000 scale black line maps are presented on Chronaflex. These maps are rolled and delivered in map tube(s).

The colour and shadow maps are delivered in two copies. These maps are rolled and delivered in map tube(s).

A full list of all map types is given at the beginning of this report. A summary is given here.

MAP TYPE	SCALE	DESCRIPTION
1	1:10,000	Base Map (Black line)
2	1:10,000	Flight Path Map (Black line)
3	1:10,000	Compilation/Interpretation Map (Black line)
4	1:10,000	Total Magnetic Field Contours (Black line)

5	1:10,000	Vertical Magnetic Gradient Contours (Black line)
6	1:10,000	Apparent Resistivity - 935 Hz (Black line)
7	1:10,000	Apparent Resistivity - 4600 Hz (Black line)
8	1:5,000	HEM Offset Profiles, 935 and 4600 Hz (Black line)
9	1:5,000	Total Field Magnetic Contours (Black line)
4	1:10,000	Total Field Magnetics (Colour)
5	1:10,000	Vertical Magnetic Gradient (Colour)
6	1:10,000	Apparent Resistivity - 935 Hz (Colour)
7	1:10,000	Apparent Resistivity - 4600 Hz (Colour)
8	1:10,000	HEM Offset Profiles - 935 & 33000 Hz (Colour)
9	1:10,000	HEM Offset Profiles - 4600 & 4175 Hz (Colour)
10	1:20,000	Total Field Magnetic Shadow Map (Colour)

All 1:10,000 and 1:20,000 scale maps show the whole survey area on one map sheet. The 1:5,000 scale maps show the survey area in four map sheets.

Eight (8) channels of HEM data, magnetic, altimeter, apparent resistivity, apparent overburden thickness and EM anomaly centres are presented as offset profiles at a horizontal scale of 1:10,000. Stacked profiles are labelled according to line number. Lines are numbered from 10010 to 10910 for a total of 91 survey lines.

The processed digital data is organized on 9 track archive tape. Both the profile and the gridded data are saved on tape. A full description of the archive tape(s) is delivered with the tape(s).

All gridded data are also provided on diskettes suitable for displaying on IBM compatible 286 or 386 microcomputers using the Aerodat RTI software package.

The original black line maps on mylar, the analog records, the base station magnetometer records and the flight path video tapes are delivered at the conclusion of the project.

5. AIRCRAFT AND EQUIPMENT

5.1 Aircraft

An Astar 350B helicopter, (CG-JIX), owned and operated by Questral Helicopters, was used for the survey. Installation of the geophysical and ancillary equipment was carried out by Aerodat. The survey aircraft was flown at a mean terrain clearance of 60 metres.

5.2 Electromagnetic System

The electromagnetic system was an Aerodat 4-frequency system. Two vertical coaxial coil pairs were operated at 935 Hz and 4,600 Hz and two horizontal coplanar coil pairs at 4,175 Hz and 33 kHz. The transmitter-receiver separation was 7 metres. Inphase and quadrature signals were measured simultaneously for the 4 frequencies with a time constant of 0.1 seconds. The HEM bird was towed 30 metres below the helicopter.

5.3 VLF-EM System

The VLF-EM System was a Herz Totem 2A. This instrument measures the total field and quadrature components of two selected frequencies. The sensor was towed in a bird 15 metres below the helicopter.

VLF transmitters are designated "Line" and "Ortho". The line station is that which is in a direction from the survey area which is normal to the flight line direction. This is the VLF station most often used because of optimal coupling with near vertical conductors running perpendicular to the flight line direction. The ortho station is ideally 90 degrees in azimuth away from the line station.

The transmitters used were NAA, Cutler, Maine broadcasting at 24.0 kHz, NSS, Annapolis, Maryland, broadcasting at 21.4 kHz and NLK, Jim Creek, Washington broadcasting at 24.8 kHz. By flight, VLF stations were as follows:

FLIGHT NO.	LINE STATION	ORTHO STATION
1	24.0	24.8
2	24.0	21.4
3	21.4	24.8
4	21.4	24.8, 24.0, 21.4
5	24.0, 21.4	21.4
6	24.0	21.4

5.4 Magnetometer

The magnetometer employed was a Scintrex H8 cesium, optically pumped magnetometer sensor. The sensitivity of this instrument is 0.001 nanoTeslas at a 0.2 second sampling rate. The sensor was towed in a bird 15 metres below the helicopter.

5.5 Ancillary Systems

Base Station Magnetometer

An IFG-2 proton precession magnetometer was operated at the base of operations to record diurnal variations of the earth's magnetic field. The clock of the base station was synchronized with that of the airborne system to facilitate later correlation. Recording resolution was 1 nT. The update rate was 4 seconds.

Radar Altimeter

A King KRA-10 radar altimeter was used to record terrain clearance. The output from the instrument is a linear function of altitude.

Tracking Camera

A Panasonic colour video camera was used to record flight path on VHS video tape. The camera was operated in continuous mode. The flight number, 24 hour clock time (to .01 second), and manual fiducial number are encoded on the video tape.

Radar Ranging Navigation System

A Motorola Miniranger III positioning system was used to direct the pilot over a programmed grid. The ranges to at least two ground stations were digitally recorded. The output sampling rate is 1 second. Ranges are recorded with a resolution of 0.1 m.

Analog Recorder

A RMS dot matrix recorder was used to display the data during the survey. Record contents are as follows:

Label	Contents	Scale
GEOPHYSICAL SENSOR DATA		
MAGF	Total Field Magnetics, Fine	2.5 nT/mm
MAGC	Total Field Magnetics, Course	25 nT/mm
VLT	VLF-EM, Total Field, Line Station	2.5%/mm
VLQ	VLF-EM, Vertical Quadrature, Line Station	2.5%/mm
VOT	VLF-EM, Total Field, Ortho Station	2.5%/mm
VOQ	VLF-EM, Vertical Quadrature, Ortho Station	2.5%/mm
CXI1	935 Hz, Coaxial, Inphase	2.5ppm/mm
CXQ1	935 Hz, Coaxial, Quadrature	2.5ppm/mm
CXI2	4600 Hz, Coaxial, Inphase	2.5ppm/mm
CXQ2	4600 Hz, Coaxial, Quadrature	2.5ppm/mm
CPI1	4175 Hz, Coplanar, Inphase	10ppm/mm
CPQ1	4175 Hz, Coplanar, Quadrature	10ppm/mm
CPI2	33 kHz, Coplanar, Inphase	20ppm/mm
CPQ2	33 Khz, Coplanar, Quadrature	20ppm/mm

ANCILLARY DATA

RALT	Radar Altimeter	10ft/mm
PWRL	60 Hz Power Line Monitor	-

Chart speed is 2mm/second. The 24 hour clock time is printed every 20 seconds. The total magnetic field value is printed every 30 seconds. The ranges from the radar navigation system are printed every minute.

Vertical lines crossing the record are operator activated manual fiducial markers. The start of any survey line is identified by two closely spaced manual fiducials. The end of any survey line is identified by three closely spaced manual fiducials. Manual fiducials are numbered in order. Every tenth manual fiducial is indicated by its number, printed at the bottom of the record.

Calibration sequences are located at the start and end of each flight and at intermediate times where needed.

Digital Recorder

A DGR-33 data system recorded the digital survey data on magnetic media. Contents and update rates were as follows:

DATA TYPE	RECORDING INTERVAL
Magnetometer (1 Channel)	0.2 s
VLF-EM (4 Channels)	0.2 s
HEM (8 Channels)	0.1 s
Position (2 Channels)	0.2 s
Altimeter (1 Channels)	0.2 s
Power Line Monitor (1 Channel)	0.2 s
Manual Fiducial	
Clock Time	

6. DATA PROCESSING AND PRESENTATION

6.1 Base Map

The base maps were prepared from 1:10,000 scale topographic maps provided by Noranda. The survey area boundaries and UTM grid reference points were added.

6.2 Flight Path Map

The flight path map is drawn using the coordinate information generated by the electronic positioning system. The manual fiducials are shown as a small circle and labelled by fiducial number. The 24 hour clock time is shown as a small square, plotted every 30 seconds. Small tick marks are plotted every 2 seconds. Larger tick marks are plotted every 10 seconds. The line and flight numbers are given at the start and end of each survey line.

The flight path map is merged with the base map using a best fit match between selected flight path points over prominent topographic features and those same features as shown on the base map.

The flight path is drawn using linear interpolation between points generated by the navigation system. These points are separated by one second or about 30 metres (3 mm at the map scale of 1:10,000.)

6.3 Electromagnetic Survey Data

The electromagnetic data were recorded digitally at a sample rate of 10 per second with a time constant of 0.1 seconds. A two stage digital filtering process was carried out to reject major sferic events and the 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 signal to noise ratio was further enhanced by the application of a low pass 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 0.25 seconds. This low effective time constant gives minimal profile shape distortion.

Following the filtering process, a base level correction was made using EM zero levels determined during high altitude calibration sequences. The correction applied is a linear function of time that ensures the corrected amplitude of the various inphase and quadrature components is zero when no conductive or permeable source is present. The filtered and levelled data were used in the determination of apparent resistivity (see below).

6.4 Total Field Magnetics

The aeromagnetic data were corrected for diurnal variations by adjustment with the recorded base station magnetic values. Where needed, the magnetic tie line results were used to further level the magnetic data. No correction for regional variation was applied. The corrected profile data were interpolated on to a regular grid using an Akima spline technique. The grid provided the basis for threading the presented contours. The minimum contour interval is 2nT.

For the 1:10,000 scale maps, a grid cell size of 25 m was used. For the 1:5,000 scale map, the corrected profile data was re-gridded with a grid cell size of 10 m.

6.5 Vertical Magnetic Gradient

The vertical magnetic gradient was calculated from the gridded total field magnetic data. The calculation is based on a 17 x 17 point convolution in the space domain. The results are contoured using a minimum contour interval of 0.05 nT/m.

6.6 Apparent Resistivity and Overburden Thickness

The apparent resistivity is calculated by assuming a 200 metre thick conductive layer over resistive bedrock. The computer determines the resistivity that would be consistent with the bird elevation and recorded inphase and quadrature response amplitudes at the selected frequency. The apparent resistivity profile data were interpolated onto a regular grid at a 25 metres true scale interval using an Akima spline technique and contoured using logarithmically arranged contour intervals.

Apparent overburden thickness, shown in the stacked profiles, is determined by assuming a model of a horizontal layer at surface of unknown resistivity and thickness. The EM and the altimeter data are used to determine model parameters using a least squares inversion strategy.

6.7 VLF-EM

The VLF data were not processed and do not appear in map form. The VLF data is retained on the archive tape(s) however and could be presented at a later time if needed.

7. INTERPRETATION

7.1 General Comments

A preliminary goal of the airborne survey is to identify possible bedrock conductors. This is done by

- picking HEM anomalies which show the response characteristics of bedrock conductors
- joining these anomalies into conductor axes using EM anomaly patterns and their

relationship to the magnetic data.

It is understood that Noranda has a good sense of large scale formational conductors in the survey area from earlier regional INPUT results. The HEM survey has been undertaken in part to map all possible bedrock conductors with maximum resolution.

Noranda is also interested in large scale broad conductors at depth. Such targets may not be seen directly as an anomaly due to a narrow, near vertical conductor. A broad low amplitude EM response (due to a large conducting mass at depth) maybe the more interesting target. It may be possible to pick out such targets from the maps of apparent resistivity after making proper allowance for the effects numerous near vertical, near surface bedrock conductors.

A general discussion on some aspects of interpreting the airborne geophysical data is given in Appendix I.

Some general comments about the airborne data can be made before focusing on the EM results.

Magnetics

The total field magnetic contour map shows moderate to strong relief with numerous anomalies showing a predominantly east-west elongation. Two long, narrow magnetic highs which run north-east/south-west are overprinted on this east-west pattern.

Magnetic axes have been assigned to elongated magnetic highs. These axes appear on the compilation/interpretation map. These axes are used to give some idea of geologic strike.

Magnetic axes are drawn without reference to magnetic anomaly amplitude. Weak and strong magnetic highs are represented on the compilation map simply as magnetic axes. Magnetic anomalies which are circular or of short strike length are not well represented on the compilation map.

In this qualitative use of the aeromagnetic data, the vertical gradient results have not been used. The vertical gradient data and a more quantitative analysis could follow in areas of special interest.

HEM

Apparent resistivity maps have been prepared for the 935 and 4600 Hz data. These frequencies are for the coaxial coil pairs which give a positive peak (and hence an apparent resistivity high) over near vertical thin sheet conductors. The coplanar coil pairs, operating at 4175 and 33,000 Hz give a low over such conductors and hence a misleading apparent resistivity high.

EM anomalies are picked from the analog records and the offset profile plots. The survey area has many strong EM anomalies most of which are grouped in long strings. Many of these are responses to power lines. The power-line monitor on the analog records is used to identify such responses.

Background apparent resistivities as determined from the 33 kHz data are on the order of 100 ohm-m. The lower EM frequencies give much higher apparent resistivities - on the order of 300 to 500 ohm-m. This is the expected result for a thin conductive layer over resistive bedrock.

7.2 EM Anomaly Selection and Analysis

The identification of possible bedrock conductors is based on picking all promising EM anomalies. Ideal anomaly characteristics are:

- a detectable 935 Hz inphase response
- a coincident positive peak in the 4600 Hz inphase channel
- a coincident low in the 4175 Hz. inphase channel

Special care is required over magnetic anomalies - the quadrature channels may be the only indicators of a coincident conductors.

The survey area has roads, villages and power lines. The power lines may produce an EM anomaly. Where an EM anomaly peak coincides with a peak response in the power line monitor, the anomaly is flagged as being due to cultural sources. In those cases where the relationship is not clear, the EM anomaly is not labelled as cultural. Conductors which have some power line expression but which may be bedrock sources are given a special symbol in the compilation/interpretation map (see below).

Having picked an EM anomaly, the 935 Hz inphase and quadrature anomaly amplitudes are used to determine the conductance and depth of burial of a vertical thin sheet conductor model. These data appear in Appendix II.

The 935 Hz inphase anomaly amplitude and the thin sheet conductance range as determined from the 935 Hz response amplitudes are shown with the plotted anomaly symbols. Each anomaly is identified by flight line number and conductor letter.

Cultural EM anomaly symbols are open squares. Conductance range estimates and inphase response amplitudes are not plotted with the anomaly symbol.

7.3 Compilation/Interpretation Map

The compilation map shows EM anomaly centres with flight lines, survey area boundary and topographic base map. The following have been added

- conductor axes
- magnetic axes

- areas of low apparent resistivity.

The conductor axes are simply lines connecting EM anomaly centres. Connections are based on similar EM character and local geologic strike inferred from the total magnetic field contour map.

A double line has been used for conductor axes (or parts thereof) which have a coincident power line monitor response. These conductors are thought to be real - the power line response may be the result of appreciable 60 Hz current flowing in long formational conductors. Given the length of these conductors, current gathering of secondary 60 Hz currents (either induced or from grounded power line sources) seems likely. This explanation is supported by the shape of the power line monitor response - it is normally more broad and of lower amplitude than that seen over identifiable power lines.

Ground EM surveys over bedrock conductors carrying 60 Hz current may encounter difficulties. Effects are not predictable however as the current source is not a simple overhead line - it is a current distribution which in fact outlines the conductor.

Magnetic axes are simply the anomaly peaks from the contoured total field magnetic data. Low amplitude magnetic anomalies of no significant strike length are not represented as magnetic axes.

Areas of low apparent resistivity are shaded. These are isolated areas of 316 ohm.m or less taken from the 4600 Hz apparent resistivity map. These are areas away from bedrock conductors (which are of course also areas of low resistivity). This has been done to show areas of low resistivity which are not represented by conductor axes but may be due to broad or near-horizontal conductors at depth. It is understood that variations in overburden thickness or resistivity could also explain these areas of low resistivity.

7.4 Discussion

A number of formational conductors cross the survey area from west to east. They are concentrated in three bands each separated by about 1 kilometer.

The north and middle bands are made up of multiple parallel conductors of generally high conductance values (15 to 30 mhos). The north band extends across the entire survey area. The middle band terminates abruptly at or near survey line 10111. Most conductors in these two bands are parallel but not coincident with magnetic highs. Both conductor bands are pinched or broken by a north-east/south-west magnetic axis.

The south band is made up of fewer conductors of lower conductance (2 to 4 mhos). A string of conductors in the south-east part of the survey area may be a continuation of this band of conductors. There is no magnetic correlation with most conductors.

Looking at areas outside these three bands of conductors, there are a number of isolated conductors of relatively short strike length. Four conductors have been selected for comment. They are labelled C1, C2 and C3 (two conductors).

C1 - see line 10810, anomaly H
This is a short conductor axis with a coincident weak magnetic high (10nT). The conductance is moderate. This conductor bears no apparent relationship to the three conductor bands. It is south-west of a very strong (2500 nT) circular magnetic high.

C2 - see line 10450, anomaly G
This appears as a short (200m) conductor axis over a strong magnetic high (+150nT). Although the magnetic axis is shown extending further to the west, the total field magnetic contours show good correlation with the conductor. As with C1, conductance estimates are moderate (4.3 mhos). The conductor may extend farther to the west (ie. beyond the two anomalies shown). Anomaly K on line 10460 has been labelled as cultural however due to the power line. The labelling is uncertain and this may be a three anomaly conductor.

C3 - see line 10220, anomaly C and line 10160, anomaly A
These two conductors are of low to moderate conductance (up to 3.5 and 2.4 mhos respectively) and strike length (500 m). Unlike C1 and C2, these two conductors do not have coincident magnetic highs. Indeed, local magnetic strike is not consistent with that assigned to the two conductors. Magnetic relief is low however. (±10nT).

There are two short parallel conductors on the northern edge of the village of Barville. Conductances are moderate (up to 4.2 mhos - line 10330, anomaly M). These conductors may have a man made explanation.

The shaded areas are where the apparent resistivity as determined from the 4,600 Hz data is less than 316 ohm.m and where there are no conductor axes (which are almost always accompanied by resistivity lows). These low resistivity areas are not necessarily areas of more conductive bedrock - they may be best explained by variations in the thickness or resistivity of the overburden. They have been included in the compilation map as it is possible that they reflect something at depth.

The two resistivity lows just west of the C2 conductor are separated by a magnetic high. This offers some encouragement to the idea that their cause is related to conditions in the bedrock.

8. CONCLUSIONS

High resolution helicopterborne geophysical surveys have been completed over an area near Senneterre, Quebec. Total coverage is about 513 line kilometres. Results are presented on black line and colour maps at scales of 1:5,000, 1:10,000 and 1:20,000. Map types included EM anomaly centres, apparent resistivity, contoured magnetic field, and contoured vertical magnetic gradient.

EM anomaly centres have been joined into conductor axes. Conductors are discussed within the context of the airborne survey results.

Respectfully submitted,

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Consulting Geophysicist
for
AERODAT LIMITED
December 13, 1990

J9084

APPENDIX I
GENERAL INTERPRETIVE CONSIDERATIONS

Electromagnetic

The Aerodat four frequency system utilizes two different transmitter-receiver coil geometries. The traditional coaxial coil configuration is operated at two widely separated frequencies. The horizontal coplanar coil configuration is similarly operated at two different frequencies where one pair is approximately aligned with one of the coaxial frequencies.

The electromagnetic response measured by the helicopter system is a function of the "electrical" and "geometrical" properties of the conductor. The "electrical" property of a conductor is determined largely by its electrical conductivity, magnetic susceptibility and its size and shape; the "geometrical" property of the response is largely a function of the conductor's shape and orientation with respect to the measuring transmitter and receiver.

Electrical Considerations

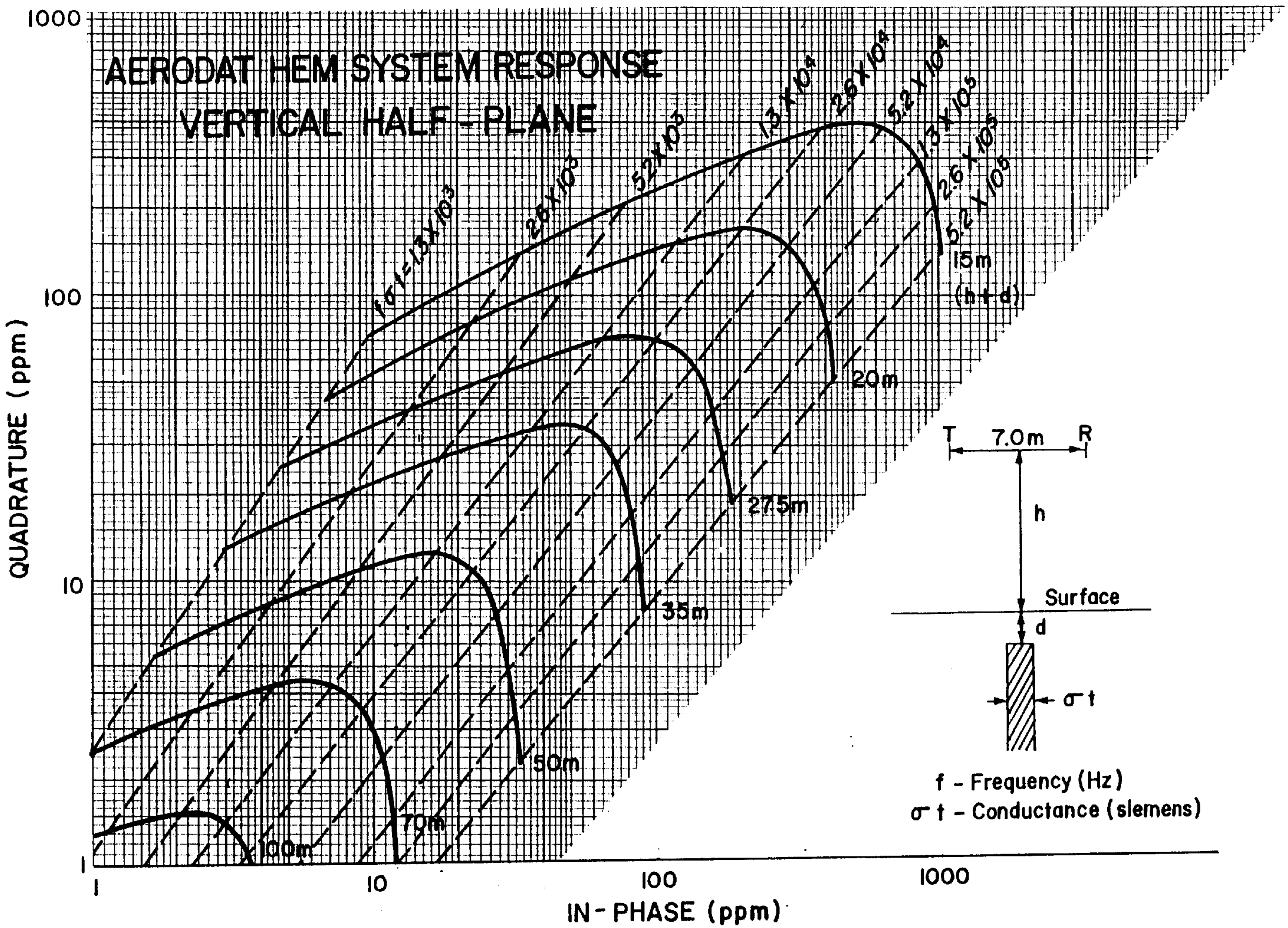
For a given conductive body the measure of its conductivity or conductance is closely related to the measured phase shift between the received and transmitted electromagnetic field. A small phase shift indicates a relatively high conductance, a large phase shift lower conductance. A small phase shift results in a large inphase to quadrature ratio and a large phase shift a low ratio. This relationship is shown quantitatively for non-magnetic vertical half-plane and half-space models on the accompanying phasor diagrams. Other physical models will show the same trend but different quantitative relationships.

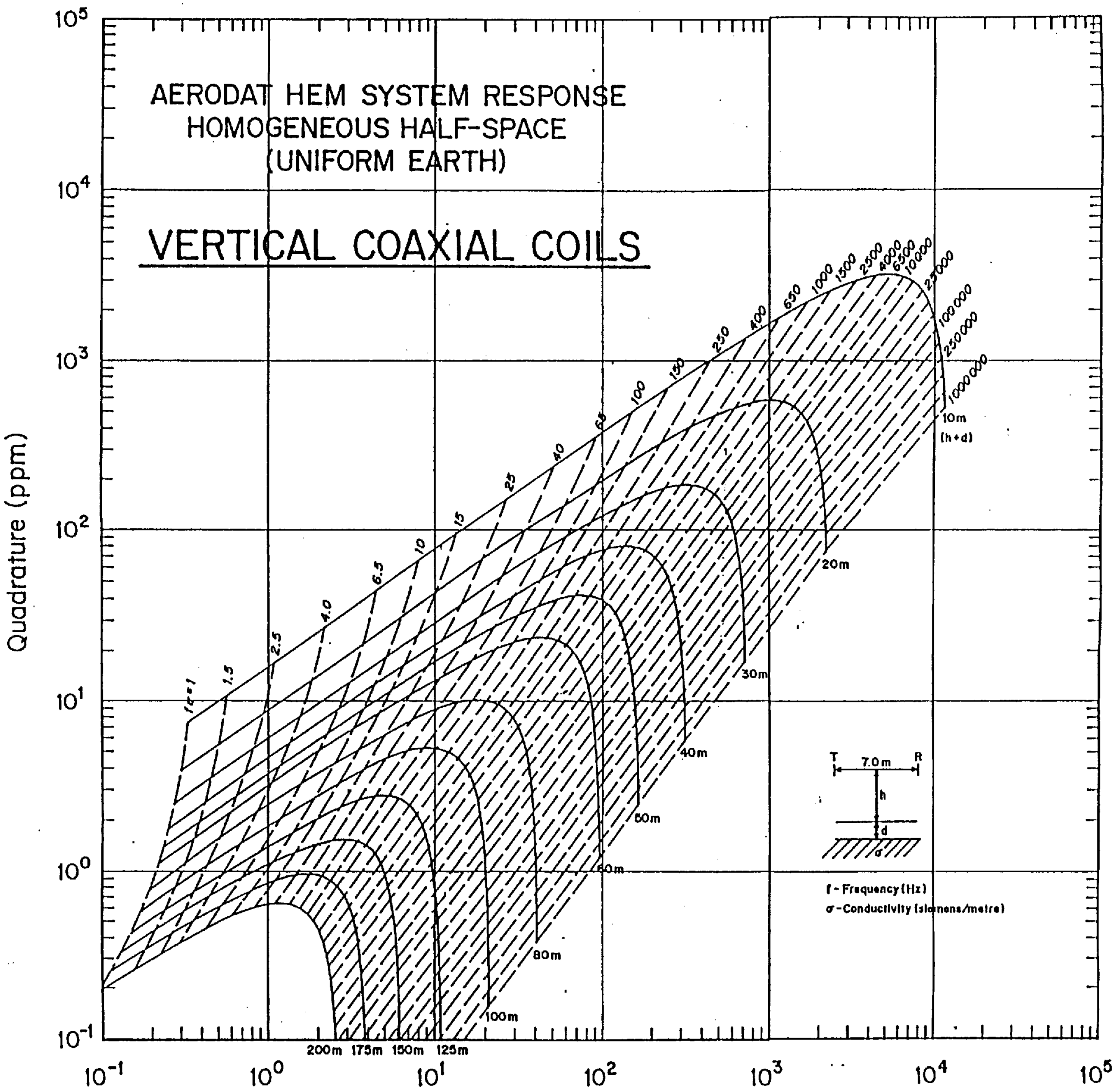
The phasor diagram for the vertical half-plane model, as presented, is for the coaxial coil configuration with the amplitudes in parts per million (ppm) of the primary field as measured at the response peak over the conductor. To assist the interpretation of the survey results the computer is used to identify the apparent conductance and depth of selected anomalies. The results of this calculation are presented in anomaly listings included in the survey report and the conductance and inphase amplitude are presented in symbolized form on the map presentation.

The conductance and depth values as presented are correct only as far as the model approximates the real geological situation. The actual geological source may be of limited length, have significant dip, may be strongly magnetic, its conductivity and thickness may vary with depth and/or strike and adjacent bodies and overburden may have modified the response. In general the conductance estimate is less affected by these limitations than is the depth estimate, but both should be considered as relative rather than absolute guides to the anomaly's properties.

Conductance in mhos is the reciprocal of resistance in ohms and in the case of narrow slab-like bodies is the product of electrical conductivity and thickness.

Most overburden will have an indicated conductance of less than 2 mhos; however, more


AERODAT HEM SYSTEM RESPONSE
VERTICAL HALF - PLANE
QUADRATURE (ppm)
IN - PHASE (ppm)
1000
100
10
1
1
10
100
1000
fσt=1.3X10³
2.6X10³
5.2X10³
1.3X10⁴
2.6X10⁴
5.2X10⁴
1.3X10⁵
2.6X10⁵
5.2X10⁵
15m
(h+d)
20m
27.5m
35m
50m
70m
100m
T
7.0m
R
h
Surface
d
σ t
f - Frequency (Hz)
σ t - Conductance (siemens)



AERODAT HEM SYSTEM RESPONSE
HOMOGENEOUS HALF-SPACE
(UNIFORM EARTH)
VERTICAL COAXIAL COILS
Quadrature (ppm)
10m (h+d)
20m
30m
40m
50m
60m
80m
100m
200m 175m 150m 125m
T 7.0m R
h
d
σ
f - Frequency (Hz)
σ - Conductivity (siemens/metre)

conductive clays may have an apparent conductance of say 2 to 4 mhos. Also in the low conductance range will be electrolytic conductors in faults and shears.

The higher ranges of conductance, greater than 4 mhos, indicate that a significant fraction of the electrical conduction is electronic rather than electrolytic in nature. Materials that conduct electronically are limited to certain metallic sulphides and to graphite. High conductance anomalies, roughly 10 mhos or greater, are generally limited to sulphide or graphite bearing rocks.

Sulphide minerals, with the exception of such ore minerals as sphalerite, cinnabar and stibnite, are good conductors; sulphides may occur in a disseminated manner that inhibits electrical conduction through the rock mass. In this case the apparent conductance can seriously underrate the quality of the conductor in geological terms. In a similar sense the relatively non-conducting sulphide minerals noted above may be present in significant consideration in association with minor conductive sulphides, and the electromagnetic response only relate to the minor associated mineralization. Indicated conductance is also of little direct significance for the identification of gold mineralization. Although gold is highly conductive, it would not be expected to exist in sufficient quantity to create a recognizable anomaly, but minor accessory sulphide mineralization could provide a useful indirect indication.

In summary, the estimated conductance of a conductor can provide a relatively positive identification of significant sulphide or graphite mineralization; however, a moderate to low conductance value does not rule out the possibility of significant economic mineralization.

Geometrical Considerations

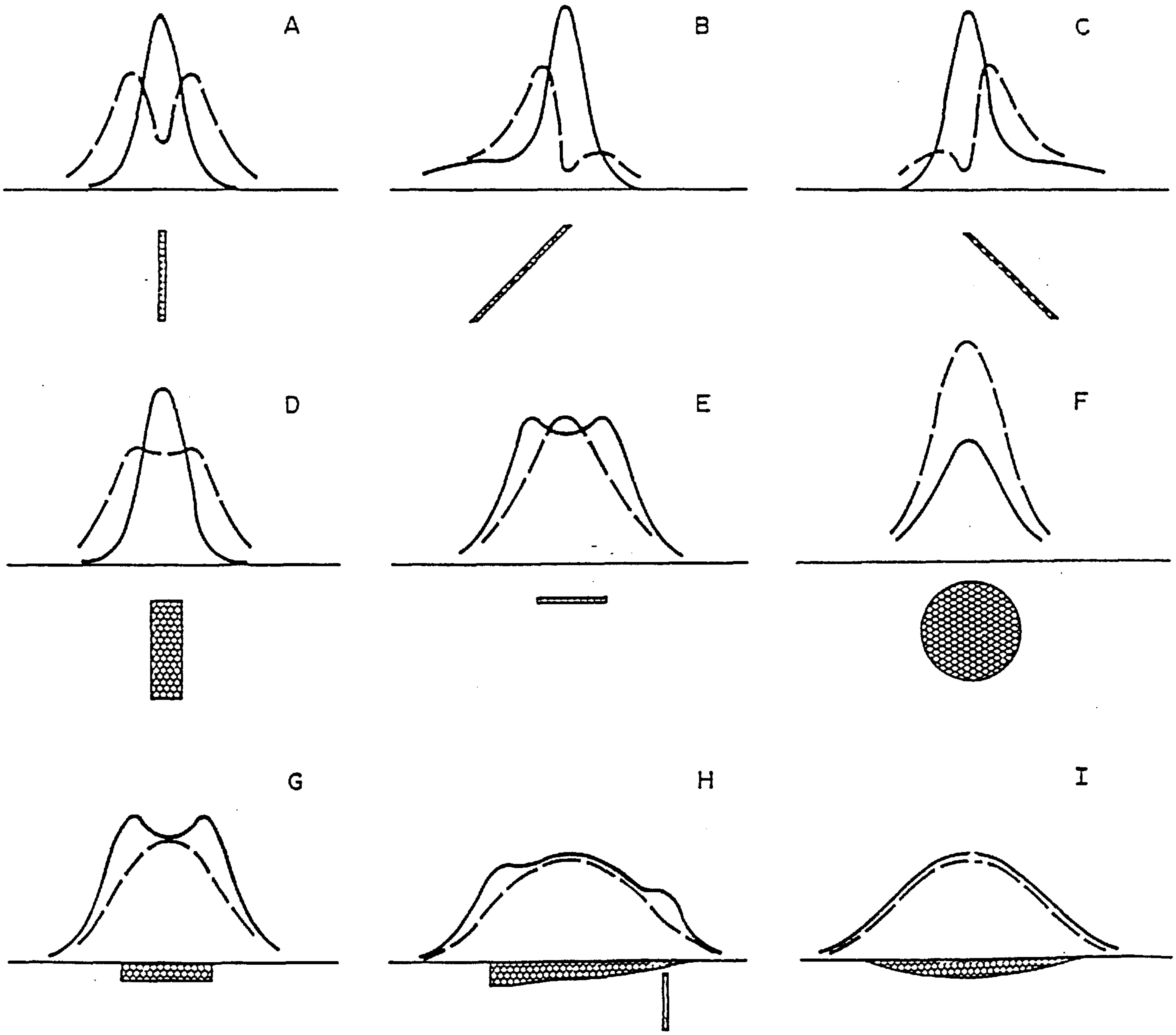
Geometrical information about the geologic conductor can often be interpreted from the profile shape of the anomaly. The change in shape is primarily related to the change in inductive coupling among the transmitter, the target, and the receiver. The accompanying figure shows a selection of HEM response profile shapes from nine idealized targets. Response profiles are labelled A through I. These labels are used in the discussion which follows.

In the case of a thin, steeply dipping, sheet-like conductor, the coaxial coil pair will yield a near symmetric peak over the conductor. On the other hand, the coplanar coil pair will pass through a null couple relationship and yield a minimum over the conductor, flanked by positive side lobes.(Profile A) As the dip of the conductor decrease from vertical, the coaxial anomaly shape changes only slightly, but in the case of the coplanar coil pair the side lobe on the down dip side strengthens relative to that on the up dip side.(Profiles B and C).

As the thickness of the conductor increases, induced current flow across the thickness of the conductor becomes relatively significant and complete null coupling with the coplanar coils is no longer possible.(Profile D) As a result, the apparent minimum of the coplanar response over the conductor diminishes with increasing thickness, and in the limiting case of a fully 3

HEM RESPONSE PROFILE SHAPE AS AN INDICATOR OF CONDUCTOR GEOMETRY

——— COAXIAL vertical scale 1 ppm/unit
– – – COPLANAR vertical scale 4ppm/unit



dimensional body or a horizontal layer or half-space, the minimum disappears completely.

A horizontal conducting layer such as overburden will produce a response in the coaxial and coplanar coils that is a function of altitude (and conductivity if not uniform). The profile shape will be similar in both coil configurations with an amplitude ratio (coplanar:coaxial) of about 4:1*.(Profiles E and G).

In the case of a spherical conductor, the induced currents are confined to the volume of the sphere, but not relatively restricted to any arbitrary plane as in the case of a sheet-like form. The response of the coplanar coil pair directly over the sphere may be up to 8* times greater than that of the coaxial pair.(Profile F)

In summary, a steeply dipping, sheet-like conductor will display a decrease in the coplanar response coincident with the peak of the coaxial response. The relative strength of this coplanar null is related inversely to the thickness of the conductor; a pronounced null indicates a relatively thin conductor. The dip of such a conductor can be inferred from the relative amplitudes of the side-lobes.

Massive conductors that could be approximated by a conducting sphere will display a simple single peak profile form on both coaxial and coplanar coils, with a ratio between the coplanar to coaxial response amplitudes as high as 8*.

Overburden anomalies often produce broad poorly defined anomaly profiles.(Profile I) In most cases, the response of the coplanar coils closely follows that of the coaxial coils with a relative amplitude ratio of 4*.

Occasionally, if the edge of an overburden zone is sharply defined with some significant depth extent, an edge effect will occur in the coaxial coils. In the case of a horizontal conductive ring or ribbon, the coaxial response will consist of two peaks, one over each edge; whereas the coplanar coil will yield a single peak.(Profile H)

* It should be noted at this point that Aerodat's definition of the measured ppm unit is related to the primary field sensed in the receiving coil without normalization to the maximum coupled (coaxial configuration). If such normalization were applied to the Aerodat units, the amplitude of the coplanar coil pair would be halved.

Magnetics

The Total Field Magnetic Map shows contours of the total magnetic field, uncorrected for regional variation. Whether an EM anomaly with a magnetic correlation is more likely to be caused by a sulphide deposit than one without depends on the type of mineralization. An apparent coincidence between an EM and a magnetic anomaly may be caused by a conductor which is also magnetic, or by a conductor which lies in close proximity to a magnetic body. The majority of conductors which are also magnetic are sulphides containing pyrrhotite and/or magnetite. Conductive and magnetic bodies in close association can be, and often are, graphite and magnetite. It is often very difficult to distinguish between these cases. If the conductor is also magnetic, it will usually produce an EM anomaly whose general pattern resembles that of the magnetics. Depending on the magnetic permeability of the conducting body, the amplitude of the inphase EM anomaly will be weakened, and if the conductivity is also weak, the inphase EM anomaly may even be reversed in sign.

VLF Electromagnetics

The VLF-EM method employs the radiation from powerful military radio transmitters as the primary signals. The magnetic field associated with the primary field is elliptically polarized in the vicinity of electrical conductors. The Herz Totem uses three coils in the X, Y, Z configuration to measure the total field and vertical quadrature component of the polarization ellipse.

The relatively high frequency of VLF (15-25) kHz provides high response factors for bodies of low conductance. Relatively "disconnected" sulphide ores have been found to produce measurable VLF signals. For the same reason, poor conductors such as sheared contacts, breccia zones, narrow faults, alteration zones and porous flow tops normally produce VLF anomalies. The method can therefore be used effectively for geological mapping. The only relative disadvantage of the method lies in its sensitivity to conductive overburden. In conductive ground the depth of exploration is severely limited.

The effect of strike direction is important in the sense of the relation of the conductor axis relative to the energizing electromagnetic field. A conductor aligned along a radius drawn from a transmitting station will be in a maximum coupled orientation and thereby produce a stronger response than a similar conductor at a different strike angle. Theoretically, it would be possible for a conductor, oriented tangentially to the transmitter to produce no signal. The most obvious effect of the strike angle consideration is that conductors favourably oriented with respect to the transmitter location and also near perpendicular to the flight direction are most clearly rendered and usually dominate the map presentation.

The total field response is an indicator of the existence and position of a conductivity anomaly. The response will be a maximum over the conductor, without any special filtering, and strongly favour the upper edge of the conductor even in the case of a relatively shallow dip.

The vertical quadrature component over steeply dipping sheet-like conductor will be a cross-over type response with the cross-over closely associated with the upper edge of the conductor.

The response is a cross-over type due to the fact that it is the vertical rather than total field quadrature component that is measured. The response shape is due largely to geometrical rather than conductivity considerations and the distance between the maximum and minimum on either side of the cross-over is related to target depth. For a given target geometry, the larger this distance the greater the depth.

The amplitude of the quadrature response, as opposed to shape is a function of target conductance and depth as well as the conductivity of the overburden and host rock. As the primary field travels down to the conductor through conductive material it is both attenuated and phase shifted in a negative sense. The secondary field produced by this altered field at the target also has an associated phase shift. This phase shift is positive and is larger for relatively poor conductors. This secondary field is attenuated and phase shifted in a negative sense during return travel to the surface. The net effect of these 3 phase shifts determine the phase of the secondary field sensed at the receiver.

A relatively poor conductor in resistive ground will yield a net positive phase shift. A relatively good conductor in more conductive ground will yield a net negative phase shift. A combination is possible whereby the net phase shift is zero and the response is purely in-phase with no quadrature component.

A net positive phase shift combined with the geometrical cross-over shape will lead to a positive quadrature response on the side of approach and a negative on the side of departure. A net negative phase shift would produce the reverse. A further sign reversal occurs with a 180 degree change in instrument orientation as occurs on reciprocal line headings. During digital processing of the quadrature data for map presentation this is corrected for by normalizing the sign to one of the flight line headings.

APPENDIX II

ANOMALY LISTINGS

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
6	10010	A	3	6.4	5.6	5.0	25	40
6	10010	B CULT	0	0.7	4.7	0.0	0	46
6	10010	C	4	16.7	11.6	9.8	16	34
6	10010	D	5	23.7	11.3	18.3	10	38
6	10010	E CULT	2	3.3	3.4	2.9	26	50
6	10010	F	3	11.8	10.4	6.3	8	44
6	10010	G	2	8.5	10.3	3.5	11	40
6	10020	A	2	6.1	9.3	2.2	10	40
6	10020	B	3	13.8	12.1	6.7	10	39
6	10020	C CULT	3	6.1	6.1	4.0	19	43
6	10020	D	5	31.2	11.1	29.4	8	38
6	10020	E	3	8.1	6.6	6.0	19	42
6	10020	F CULT	0	4.0	12.7	0.6	0	46
6	10020	G	2	5.7	6.1	3.5	23	38
6	10030	A	2	3.9	3.9	3.3	23	50
6	10030	B CULT	1	3.4	6.1	1.3	1	55
6	10030	C	5	14.9	6.2	18.8	3	55
6	10030	D CULT	2	3.3	3.5	2.8	20	55
6	10030	E	4	7.3	4.7	8.1	15	54
6	10030	F	0	1.9	5.4	0.4	3	48
6	10040	A	0	1.6	6.6	0.2	3	40
6	10040	B	4	16.5	8.2	15.3	10	44
6	10040	C CULT	3	5.9	5.6	4.3	9	56
6	10040	D	5	28.2	10.4	27.1	1	46
6	10040	E CULT	2	8.2	12.2	2.6	0	48
6	10040	F	2	2.8	3.5	2.0	30	44
6	10050	A	2	2.4	2.5	2.5	42	42
6	10050	B CULT	2	7.9	11.0	2.8	0	48
6	10050	C	6	46.4	16.4	33.4	2	38
6	10050	D CULT	3	8.8	8.3	5.1	13	43
6	10050	E	4	20.2	10.7	15.1	12	38
6	10060	A	5	36.0	16.6	21.8	7	35
6	10060	B	2	12.5	19.0	3.0	4	35
6	10060	C CULT	3	12.6	12.9	5.2	8	40
6	10060	D	5	54.5	20.9	31.5	1	37
6	10060	E CULT	2	9.8	11.8	3.8	5	44
6	10060	F	0	2.1	4.3	0.8	20	41
5	10070	A	1	3.2	5.8	1.2	22	35

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
5	10070	B	CULT	3	11.3	11.9	4.8	12	37
5	10070	C		5	43.3	17.4	27.6	6	34
5	10070	D	CULT	3	10.4	10.4	5.0	10	41
5	10070	E		3	14.0	16.7	4.4	6	36
5	10070	F		5	36.6	16.3	22.9	9	33
5	10080	A		0	3.0	7.7	0.7	12	35
5	10080	B		4	20.7	13.0	12.1	16	32
5	10080	C		3	15.8	18.6	4.7	10	31
5	10080	D	CULT	3	22.4	23.4	6.3	2	36
5	10080	E		5	32.5	13.8	23.5	7	37
5	10080	F		2	8.6	10.7	3.4	10	40
5	10080	G	CULT	3	7.2	7.3	4.2	15	43
5	10080	H		1	2.9	4.9	1.3	27	34
5	10090	A		3	11.0	11.3	4.9	13	37
5	10090	B		5	30.0	16.3	16.6	9	34
5	10090	C	CULT	3	22.6	20.2	7.8	3	38
5	10090	D		3	23.6	21.6	7.7	3	37
5	10090	E		4	20.0	11.4	13.6	15	34
5	10090	F		2	7.4	11.3	2.4	14	32
5	10101	A		2	7.7	9.8	3.2	16	35
5	10101	B		4	23.5	13.2	14.6	10	37
5	10101	C		4	22.9	17.2	9.9	4	40
5	10101	D	CULT	5	29.7	15.3	17.7	4	40
5	10101	E		5	27.0	13.9	17.2	8	38
5	10101	F		3	9.3	10.6	4.0	15	35
5	10101	G	CULT	3	9.2	6.4	7.9	21	40
5	10101	H		2	6.3	6.8	3.7	22	38
5	10102	A		2	4.2	6.1	2.0	21	38
5	10102	B	CULT	3	6.1	4.2	6.8	25	46
5	10111	A		2	6.6	8.1	3.1	19	36
5	10111	B	CULT	3	4.7	3.4	5.7	26	51
5	10111	C		2	5.9	7.0	3.1	24	34
5	10111	D		3	11.3	11.7	4.9	15	34
5	10111	E		3	16.9	14.2	7.6	5	42
5	10111	F	CULT	4	16.0	11.2	9.6	5	46
5	10111	G		3	12.2	9.2	7.8	10	45
5	10111	H		4	15.4	10.1	10.3	15	37
5	10111	J		4	18.3	12.4	10.5	15	34
5	10111	K		2	4.9	6.3	2.5	25	34
4	10120	A		3	11.0	12.8	4.2	10	37

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
4	10120	B	CULT	3	9.8	8.3	6.2	20	37
4	10120	C		6	41.0	12.8	37.9	3	39
4	10120	D		1	6.8	13.1	1.6	1	41
4	10120	E		3	13.2	12.6	5.9	9	39
4	10120	F		2	6.8	11.4	2.0	0	48
4	10120	G	CULT	4	16.4	12.1	9.0	3	47
4	10120	H		3	13.3	11.6	6.6	7	43
4	10120	J		4	19.0	11.1	12.9	12	38
4	10120	K		4	25.7	15.9	13.3	6	38
4	10120	M		4	18.8	12.9	10.4	11	37
4	10120	N		2	9.2	10.6	3.9	11	40
4	10130	A		3	16.7	18.0	5.4	6	36
4	10130	B		4	25.1	16.5	12.2	7	37
4	10130	C		4	23.2	18.6	9.1	7	36
4	10130	D	CULT	4	51.0	36.9	13.6	0	33
4	10130	E		5	61.0	30.3	23.3	0	35
4	10130	F		3	20.0	21.6	5.8	7	33
4	10130	G		3	13.2	16.5	4.1	6	37
4	10130	H		4	28.8	21.0	11.1	1	40
4	10130	J		4	22.4	13.4	13.3	12	35
4	10130	K	CULT	3	13.0	11.7	6.3	18	32
4	10130	M		2	8.9	13.4	2.7	8	36
4	10140	A		2	6.9	9.3	2.8	11	41
4	10140	B	CULT	3	8.6	9.1	4.3	13	40
4	10140	C		2	11.0	13.3	3.9	9	37
4	10140	D		4	21.4	14.5	11.1	6	40
4	10140	E		2	7.7	13.3	2.0	6	37
4	10140	F		5	34.4	18.3	17.8	4	37
4	10140	G	CULT	4	30.0	22.3	11.0	2	37
4	10140	H		4	22.7	14.8	11.9	7	39
4	10140	J		3	14.0	13.9	5.7	10	36
4	10140	K		3	12.2	13.6	4.6	10	36
4	10150	A		3	15.7	15.2	6.1	6	39
4	10150	B		5	32.4	15.5	20.1	8	35
4	10150	C	CULT	4	22.9	19.5	8.4	10	32
4	10150	D		5	50.0	30.5	16.8	3	32
4	10150	E		0	2.9	13.7	0.2	0	32
4	10150	F		0	2.8	10.1	0.4	5	34
4	10150	G		4	19.3	16.1	8.1	8	36
4	10150	H		3	18.9	18.2	6.6	9	33
4	10150	J		1	4.8	9.5	1.3	4	42
4	10150	K	CULT	3	12.1	11.3	5.8	16	34

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
4	10150	M		1	5.3	9.0	1.8	18	32
4	10160	A		2	7.6	11.6	2.4	9	37
4	10160	B		1	5.6	9.1	1.9	10	39
4	10160	C		2	8.0	9.7	3.4	18	33
4	10160	D		4	20.7	16.0	9.2	14	31
4	10160	E		5	32.0	14.6	21.3	7	37
4	10160	F		1	5.1	10.0	1.4	10	36
4	10160	G		0	2.4	12.5	0.2	0	34
4	10160	H		4	23.1	18.0	9.4	4	39
4	10160	J	CULT	3	9.2	8.1	5.7	17	40
4	10160	K		4	16.3	9.1	13.1	11	42
4	10160	M		3	12.6	10.5	6.9	11	41
4	10161	A		1	3.3	6.7	1.0	9	44
4	10161	B	CULT	2	6.8	7.4	3.7	18	39
4	10170	A		4	17.5	13.6	8.6	8	39
4	10170	B		4	16.8	8.6	14.8	11	43
4	10170	C	CULT	3	18.8	17.5	6.9	10	34
4	10170	D		5	44.3	26.4	16.7	2	35
4	10170	E		1	10.1	24.1	1.5	0	35
4	10170	F		0	5.1	15.1	0.7	0	35
4	10170	G		3	19.2	16.8	7.6	8	36
4	10170	H		6	25.9	8.1	32.9	11	38
4	10170	J		3	13.6	10.9	7.5	13	39
4	10170	K		3	8.6	8.0	5.1	7	50
4	10170	M		2	5.1	6.1	2.9	13	48
4	10170	N		1	5.6	11.6	1.3	9	34
4	10170	O	CULT	2	7.2	7.7	3.9	19	38
4	10170	P		2	5.9	9.4	2.0	14	35
4	10180	A		1	4.5	9.2	1.2	9	38
4	10180	B	CULT	3	5.8	4.0	6.7	30	43
4	10180	C		0	2.6	8.0	0.5	0	44
4	10180	D		3	10.2	7.5	7.6	18	40
4	10180	E		3	12.9	11.3	6.5	14	37
4	10180	F		4	17.8	14.0	8.5	12	35
4	10180	G		5	24.5	8.0	30.6	6	44
4	10180	H		3	12.5	11.3	6.2	8	42
4	10180	J		2	13.6	17.8	3.9	0	41
4	10180	K		3	30.2	33.3	6.6	0	38
4	10180	M		4	40.5	38.2	8.9	0	37
4	10180	N		5	44.0	26.7	16.2	2	35
4	10180	O	CULT	4	46.5	30.4	15.0	1	34

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
4	10180	P		5	26.4	13.4	17.4	10	36
4	10180	Q		3	13.2	11.9	6.3	14	36
4	10180	R		4	21.5	14.6	11.0	10	36
4	10190	A		4	29.0	19.5	12.4	7	34
4	10190	B		4	22.4	14.4	12.0	8	38
4	10190	C	CULT	5	57.4	29.9	21.5	1	34
4	10190	D		5	48.9	19.5	29.0	4	34
4	10190	E		4	39.9	31.1	11.4	1	35
4	10190	F		4	34.4	32.7	8.3	0	35
4	10190	G		4	30.3	23.8	10.2	4	35
4	10190	H		2	11.4	14.1	3.9	7	38
4	10190	J		5	23.5	9.2	23.7	11	39
4	10190	K		4	25.2	17.6	11.2	9	34
4	10190	M		3	18.0	17.1	6.6	7	37
4	10190	N		3	15.6	12.8	7.6	8	40
4	10190	O		4	15.9	12.2	8.4	12	37
4	10190	P		0	4.2	10.7	0.8	0	42
4	10190	Q	CULT	3	7.2	6.5	5.0	19	43
4	10190	R		0	3.8	10.7	0.7	7	34
4	10200	A		0	3.6	8.1	0.9	7	41
4	10200	B	CULT	3	9.1	6.7	7.3	20	41
4	10200	C		4	24.4	17.4	10.8	14	30
4	10200	D		4	22.0	15.2	10.9	10	35
4	10200	E		4	18.5	14.7	8.5	8	38
4	10200	F		4	27.0	16.6	13.6	4	40
4	10200	G		5	21.7	10.7	17.0	12	38
4	10200	H		3	14.9	15.7	5.4	2	43
4	10200	J		3	12.8	12.2	5.8	7	42
4	10200	K		3	19.3	18.4	6.8	0	42
4	10200	M		4	24.1	14.3	13.7	5	41
4	10200	N		4	26.3	17.5	12.2	7	36
4	10200	O	CULT	4	12.2	8.5	8.7	20	36
4	10200	P		3	12.0	9.7	7.1	11	42
4	10200	Q		3	10.3	10.6	4.8	12	39
4	10200	R		4	16.6	11.5	9.8	7	43
4	10210	A		4	21.9	15.2	10.8	7	38
4	10210	B		2	10.7	13.3	3.7	12	34
4	10210	C		3	10.9	13.1	4.0	12	35
4	10210	D	CULT	4	15.2	12.0	8.0	14	35
4	10210	E		4	27.9	25.2	8.3	2	36
4	10210	F		3	14.8	16.2	5.1	7	37
4	10210	G		3	13.3	16.0	4.3	3	41

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
4	10210	H		3	15.3	15.0	6.0	9	37
4	10210	J		4	18.2	11.8	11.1	10	40
4	10210	K		4	25.6	15.3	13.9	6	39
4	10210	M		3	13.1	11.4	6.6	11	39
4	10210	N		3	8.1	7.6	4.9	13	45
4	10210	O		2	10.5	15.3	3.0	8	35
4	10210	P	CULT	2	7.9	9.7	3.4	10	42
4	10210	Q		1	4.8	9.5	1.3	9	37
4	10220	A		2	5.2	6.9	2.5	10	47
4	10220	B	CULT	2	7.3	9.2	3.1	11	41
4	10220	C		2	10.4	13.6	3.5	9	36
4	10220	D		1	4.0	6.2	1.8	11	47
4	10220	E		2	9.3	11.0	3.8	9	41
4	10220	F		4	23.6	14.1	13.5	6	40
4	10220	G		5	19.5	9.5	16.6	8	43
4	10220	H		3	11.4	10.9	5.5	14	37
4	10220	J		3	9.1	10.1	4.1	10	41
4	10220	K		5	41.6	24.4	16.7	0	39
4	10220	M	CULT	3	13.1	11.1	6.9	7	44
4	10220	N		2	9.5	11.4	3.7	9	40
4	10220	O		3	14.7	15.3	5.4	7	37
4	10220	P		4	19.0	14.0	9.5	9	37
4	10230	A		4	23.9	16.6	11.1	8	36
4	10230	B		3	14.0	16.0	4.7	11	33
4	10230	C	CULT	3	11.2	11.0	5.3	15	35
4	10230	D		4	36.2	22.4	14.9	2	37
4	10230	E		5	56.9	27.1	24.1	2	34
4	10230	F		1	3.5	6.7	1.2	19	34
4	10230	G		2	7.5	9.5	3.1	8	44
4	10230	H		4	11.2	8.0	8.2	16	41
4	10230	J		4	21.5	12.9	13.0	11	36
4	10230	K		4	18.1	13.8	8.9	6	41
4	10230	M		3	11.4	12.3	4.7	9	40
4	10230	N		2	4.6	6.9	2.0	13	42
4	10230	O		2	11.1	14.6	3.5	17	27
4	10230	P	CULT	3	10.4	11.0	4.6	16	34
4	10230	Q	CULT	2	11.5	14.1	3.9	12	33
4	10240	A	CULT	3	8.7	8.4	4.9	12	44
4	10240	B		0	2.5	5.1	0.9	8	49
4	10240	C		3	11.3	10.6	5.6	19	32
4	10240	D		3	13.5	11.9	6.6	12	37
4	10240	E		4	21.6	13.3	12.6	6	41

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
4	10240	F		4	14.9	10.9	8.8	14	37
4	10240	G		5	21.9	10.9	16.8	4	45
4	10240	H		4	19.3	13.9	9.8	2	45
4	10240	J	CULT	3	9.2	8.9	5.0	13	42
4	10240	K		3	11.2	13.3	4.1	8	38
4	10240	M		4	18.6	14.8	8.5	8	38
4	10250	A		4	13.6	8.0	11.4	9	47
4	10250	B		5	27.8	11.9	22.2	9	37
4	10250	C	CULT	3	12.4	11.3	6.1	16	34
4	10250	D		4	24.2	21.6	8.0	7	34
4	10250	E		5	45.5	23.2	20.6	5	33
4	10250	F		2	5.4	8.2	2.1	21	31
4	10250	G		4	18.2	10.9	12.3	11	39
4	10250	H		4	17.4	10.8	11.6	13	37
4	10250	J		4	16.2	12.3	8.6	9	41
4	10250	K		3	13.7	12.4	6.4	16	33
4	10250	M	CULT	3	11.6	10.6	5.9	12	40
4	10250	N	CULT	3	11.0	10.9	5.2	14	37
4	10260	A	CULT	4	13.7	9.4	9.3	16	37
4	10260	B	CULT	1	6.3	10.7	1.9	9	37
4	10260	C		3	14.3	12.4	6.9	4	45
4	10260	D		2	8.5	10.9	3.3	13	36
4	10260	E		4	13.0	9.4	8.5	11	43
4	10260	F		4	15.2	9.6	10.8	15	38
4	10260	G		4	17.9	10.7	12.3	9	42
4	10260	H		3	13.3	10.6	7.5	9	43
4	10260	J	CULT	3	7.9	7.0	5.3	17	43
4	10260	K		5	40.7	16.6	26.6	4	37
4	10260	M		4	24.3	16.2	11.8	9	35
4	10270	A		4	22.6	16.3	10.4	7	37
4	10270	B		6	55.9	20.3	34.1	3	34
4	10270	C		6	55.4	17.8	39.9	2	36
4	10270	D	CULT	2	9.0	13.8	2.6	9	35
4	10270	E		4	26.5	15.8	14.1	0	44
4	10270	F		5	33.0	17.1	18.2	6	37
4	10270	G		0	3.0	7.0	0.8	7	43
4	10270	H		4	20.5	12.6	12.4	8	40
4	10270	J		3	13.1	10.8	7.1	7	44
4	10270	K	CULT	4	12.6	9.0	8.5	20	35
4	10270	M	CULT	4	19.7	14.0	10.1	14	33
4	10280	A	CULT	3	12.3	12.1	5.5	13	36

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EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY	CATEGORY		AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
4	10280	B	CULT	3	8.6	6.0	7.7	26	37
4	10280	C		3	11.0	8.7	7.1	13	42
4	10280	D		3	11.5	10.5	5.9	8	43
4	10280	E		4	12.4	9.2	8.1	12	43
4	10280	F		4	18.9	12.2	11.3	8	41
4	10280	G		1	5.6	12.4	1.2	5	36
4	10280	H		5	24.9	11.9	18.5	10	37
4	10280	J		4	23.6	14.3	13.3	6	40
4	10280	K	CULT	2	8.5	10.1	3.6	8	43
4	10280	M		5	31.2	14.8	20.1	5	38
4	10280	N		5	34.2	16.0	21.1	4	39
4	10280	O		4	29.7	18.9	13.4	6	36
4	10290	A		4	23.4	14.9	12.4	6	39
4	10290	B		4	20.5	12.5	12.5	10	38
4	10290	C		4	23.3	13.1	14.6	10	37
4	10290	D	CULT	2	9.9	15.2	2.7	4	38
4	10290	E		4	25.7	20.4	9.6	4	37
4	10290	F		5	34.1	17.9	18.1	5	37
4	10290	G		0	3.7	13.1	0.5	0	37
4	10290	H		3	15.4	12.9	7.4	12	36
4	10290	J		4	16.9	13.5	8.2	0	48
4	10290	K		4	26.3	14.4	15.7	1	44
4	10290	M	CULT	4	12.5	7.7	10.4	25	32
4	10290	N	CULT	4	21.8	15.7	10.3	14	31
4	10300	A	CULT	3	15.0	16.9	4.9	4	39
4	10300	B		0	1.9	9.6	0.1	0	37
4	10300	C		4	19.9	13.3	11.0	5	43
4	10300	D		4	20.8	13.7	11.4	0	49
4	10300	E		4	16.9	12.4	9.2	0	48
4	10300	F		4	32.5	22.3	12.5	5	34
4	10300	G		4	29.2	27.2	8.1	2	35
4	10300	H	CULT	2	11.7	15.7	3.5	6	37
4	10300	J		2	9.2	12.4	3.1	7	39
4	10300	K		4	20.0	12.9	11.5	9	38
4	10300	M		5	27.7	14.6	16.8	8	37
4	10300	N		3	20.2	18.7	7.1	8	34
4	10310	A	CULT	0	1.9	4.1	0.7	16	45
4	10310	B		4	18.9	15.5	8.2	5	40
4	10310	C		5	40.6	16.4	26.9	3	37
4	10310	D		4	26.0	17.4	12.0	6	37
4	10310	E	CULT	2	12.4	17.7	3.3	5	35
4	10310	F		4	29.1	23.6	9.7	4	35

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EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
4	10310	G		4	28.7	25.4	8.6	1	37
4	10310	H		4	17.1	13.8	8.1	9	38
4	10310	J		4	28.2	18.6	12.6	7	35
4	10310	K		0	2.2	12.1	0.1	0	35
4	10320	A	CULT	2	4.8	5.3	3.1	14	51
4	10320	B	CULT	4	11.0	5.3	13.9	14	49
4	10320	C	CULT	5	18.4	8.3	18.1	5	48
4	10320	D		0	3.0	16.1	0.2	0	29
4	10320	E		4	14.1	10.9	8.0	9	42
4	10320	F		3	13.2	11.4	6.7	9	42
4	10320	G		2	12.9	16.4	3.9	2	40
4	10320	H		4	21.8	18.0	8.6	3	40
4	10320	J	CULT	3	14.3	16.0	4.9	5	39
4	10320	K		4	21.0	13.7	11.6	9	37
4	10320	M		5	39.0	20.6	18.7	3	37
4	10320	N		4	27.6	22.9	9.2	2	38
4	10320	O	CULT	0	1.8	7.3	0.2	1	41
4	10330	A	CULT	1	4.7	7.5	1.8	16	38
4	10330	B		4	30.2	23.6	10.3	5	34
4	10330	C		5	51.4	26.7	20.9	1	35
4	10330	D		4	28.4	18.4	12.9	5	37
4	10330	E	CULT	3	22.6	22.7	6.7	5	34
4	10330	F		3	17.6	22.5	4.4	3	35
4	10330	G		3	11.0	12.7	4.2	13	34
4	10330	H		0	2.0	11.7	0.1	0	34
4	10330	J	CULT	6	25.1	6.3	43.7	18	33
4	10330	K	CULT	6	35.5	6.9	68.1	9	36
4	10330	M		3	9.3	10.2	4.2	13	38
4	10330	N		0	3.7	12.6	0.5	0	37
4	10330	O	CULT	4	30.4	19.4	13.5	6	35
4	10330	P	CULT	3	28.1	27.5	7.5	0	42
4	10340	A	CULT	3	28.8	27.3	7.9	0	40
4	10340	B	CULT	4	27.1	18.5	11.9	7	36
4	10340	C		0	4.3	15.9	0.5	0	36
4	10340	D		2	13.8	26.3	2.3	0	33
4	10340	E		3	26.4	31.6	5.6	0	34
4	10340	F		0	3.3	9.0	0.7	3	40
4	10340	G		1	4.5	7.1	1.8	22	32
4	10340	H		1	6.3	11.8	1.7	6	38
4	10340	J		3	15.3	19.4	4.2	4	36
4	10340	K	CULT	3	24.2	22.8	7.5	4	36
4	10340	M		4	18.8	15.7	8.0	8	37

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EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY	CATEGORY		AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
4	10340	N		5	46.2	21.5	23.3	0	38
4	10340	O		5	35.5	20.4	16.3	2	38
4	10340	P		4	26.6	18.1	11.8	4	39
4	10340	Q	CULT	2	4.9	6.7	2.3	18	40
4	10350	A	CULT	1	4.2	8.0	1.3	13	37
4	10350	B		4	10.1	5.3	12.0	26	38
4	10350	C		3	7.1	5.0	7.0	33	34
4	10350	D		3	17.1	15.1	7.2	11	35
4	10350	E		5	37.8	14.9	27.2	8	34
4	10350	F		3	20.6	18.7	7.4	9	34
4	10350	G		3	25.3	25.6	6.9	2	35
4	10350	H	CULT	3	24.5	26.9	6.1	3	33
4	10350	J		1	6.6	17.6	1.0	2	33
4	10350	K		3	11.2	10.9	5.3	16	34
4	10350	M		0	3.7	9.3	0.8	4	40
4	10350	N	CULT	2	10.2	14.4	3.1	9	35
4	10350	O		0	6.1	17.9	0.8	0	33
4	10350	P		2	13.3	24.9	2.3	0	34
4	10350	Q	CULT	3	7.2	7.1	4.4	28	31
4	10350	R	CULT	4	18.8	11.5	12.1	16	33
4	10350	S	CULT	4	13.8	8.2	11.3	19	37
4	10350	T	CULT	4	42.8	39.0	9.5	0	34
1	10360	A	CULT	3	26.3	30.4	5.9	0	43
1	10360	B	CULT	4	19.1	10.0	15.0	5	47
1	10360	C	CULT	4	25.9	15.1	14.4	1	44
1	10360	D	CULT	2	8.5	12.6	2.7	5	41
1	10360	E		0	5.0	15.0	0.7	0	40
1	10360	F		3	11.9	10.4	6.3	7	45
1	10360	G		0	4.2	17.8	0.4	0	36
1	10360	H	CULT	3	25.9	28.6	6.2	0	39
1	10360	J		3	23.6	25.5	6.2	0	40
1	10360	K		3	13.3	13.9	5.2	4	43
1	10360	M		5	23.3	12.0	16.4	5	43
1	10360	N	CULT	2	7.1	11.1	2.3	9	38
1	10370	A	CULT	2	4.7	6.4	2.3	22	37
1	10370	B		4	20.6	11.8	13.7	12	37
1	10370	C		3	15.8	19.5	4.4	2	38
1	10370	D		4	41.5	31.2	12.1	0	35
1	10370	E		4	41.7	39.5	9.0	0	35
1	10370	F	CULT	3	21.8	25.9	5.3	2	34
1	10370	G		4	21.4	15.3	10.3	9	37
1	10370	H		4	20.8	17.9	8.0	6	37

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EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
1	10370	J		1	6.6	15.3	1.2	2	36
1	10370	K		0	5.2	15.4	0.8	0	36
1	10370	M	CULT	2	10.3	15.5	2.8	4	38
1	10370	N	CULT	4	24.0	19.5	9.0	0	43
1	10370	O	CULT	4	26.7	15.3	14.9	3	41
1	10370	P		0	3.7	16.6	0.3	0	42
1	10370	Q	CULT	3	31.4	33.0	7.1	0	41
1	10380	A		0	1.6	5.5	0.3	4	44
1	10380	B	CULT	3	26.7	30.7	5.9	0	45
1	10380	C	CULT	3	24.1	27.4	5.8	0	36
1	10380	D	CULT	3	27.8	27.1	7.5	1	36
1	10380	E		0	3.7	17.4	0.3	0	35
1	10380	F	CULT	2	12.6	17.2	3.5	3	38
1	10380	G		2	9.5	14.2	2.8	4	39
1	10380	H		1	7.9	17.9	1.4	0	37
1	10380	J		3	14.9	13.1	6.8	16	32
1	10380	K		4	23.5	16.2	11.2	9	35
1	10380	M		4	27.7	16.8	14.0	5	38
1	10380	N	CULT	2	11.2	17.1	2.9	4	37
1	10380	O		4	34.7	30.9	9.1	0	37
1	10380	P		4	38.1	27.8	12.2	0	38
1	10380	Q		3	21.1	22.8	5.9	0	38
1	10380	R		4	29.2	17.3	14.7	6	37
1	10380	S	CULT	2	5.4	7.7	2.3	14	41
1	10390	A	CULT	1	4.8	7.5	1.9	17	37
1	10390	B		5	36.8	14.6	26.7	6	37
1	10390	C		2	12.9	18.6	3.3	5	34
1	10390	D		3	16.4	20.0	4.6	5	35
1	10390	E	CULT	2	12.8	23.1	2.4	1	34
1	10390	F		5	25.9	12.2	19.1	8	39
1	10390	G		4	22.2	13.2	13.3	7	40
1	10390	H		4	20.8	13.4	11.7	14	33
1	10390	J		4	16.6	12.9	8.4	14	34
1	10390	K		1	8.3	16.3	1.8	2	37
1	10390	M		0	4.6	14.6	0.6	0	37
1	10390	N	CULT	4	40.6	40.0	8.4	1	31
1	10390	O	CULT	4	37.8	37.4	8.2	1	32
1	10390	P	CULT	3	28.6	35.5	5.5	0	40
1	10390	Q		1	3.9	5.9	1.8	19	40
1	10400	A		0	1.8	4.6	0.5	17	39
1	10400	B	CULT	3	28.1	32.3	6.1	0	41
1	10400	C	CULT	3	22.3	25.0	5.7	3	34

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
1	10400	D	CULT	3	25.4	23.1	7.9	3	36
1	10400	E		0	4.8	17.8	0.5	0	35
1	10400	F		1	8.4	21.6	1.2	0	35
1	10400	G		1	7.8	19.0	1.3	0	35
1	10400	H		4	19.3	12.5	11.3	9	40
1	10400	J		4	20.8	14.4	10.6	8	38
1	10400	K		5	32.1	14.9	20.8	5	39
1	10400	M	CULT	2	10.8	21.3	2.0	0	36
1	10400	N		4	29.4	21.7	11.0	5	35
1	10400	O		2	11.3	17.6	2.8	3	37
1	10400	P		4	16.0	12.7	8.1	12	37
1	10400	Q	CULT	4	14.0	8.9	10.4	18	36
1	10400	R		0	5.0	12.6	0.9	4	36
1	10410	A	CULT	3	9.5	8.9	5.3	19	36
1	10410	B		4	25.1	14.5	14.4	9	37
1	10410	C		2	8.0	11.9	2.6	7	39
1	10410	D		4	21.0	15.1	10.1	7	38
1	10410	E	CULT	2	11.4	20.4	2.3	1	36
1	10410	F		5	25.9	11.5	20.7	7	41
1	10410	G		4	25.3	14.9	14.1	8	37
1	10410	H		4	28.6	16.2	15.5	5	39
1	10410	J		1	10.0	21.0	1.8	1	34
1	10410	K		1	11.0	25.4	1.6	0	32
1	10410	M		0	8.0	26.5	0.8	0	31
1	10410	N	CULT	3	18.2	21.4	5.0	4	35
1	10410	O	CULT	1	9.7	24.0	1.4	0	34
1	10410	P	CULT	3	29.1	34.2	6.0	0	40
1	10410	A		0	0.8	8.1	0.0	0	36
1	10420	A		0	2.1	13.0	0.1	0	35
1	10420	B	CULT	3	28.4	33.8	5.8	0	41
1	10420	C		1	5.6	13.8	1.0	5	34
1	10420	D	CULT	0	4.6	22.9	0.3	0	31
1	10420	E	CULT	2	14.5	20.6	3.5	7	32
1	10420	F		0	2.1	15.0	0.1	0	37
1	10420	G		1	8.1	22.7	1.0	0	40
1	10420	H		0	6.4	19.2	0.8	0	39
1	10420	J		1	4.3	8.7	1.2	6	42
1	10420	K		2	10.4	12.9	3.7	9	37
1	10420	M		4	18.7	12.7	10.5	4	44
1	10420	N		5	25.4	12.1	18.7	4	44
1	10420	O	CULT	1	11.7	24.5	1.9	0	35
1	10420	P		3	11.4	13.8	4.0	10	35
1	10420	Q		1	6.1	13.4	1.3	2	38

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

					AMPLITUDE (PPM)		CONDUCTOR		BIRD
							CTP	DEPTH	HEIGHT
FLIGHT	LINE	ANOMALY		CATEGORY	INPHASE	QUAD.	MHOS	MTRS	MTRS
1	10420	R	CULT	4	35.2	24.3	12.8	1	38
1	10430	A		4	13.9	10.7	8.0	6	45
1	10430	B		5	38.3	13.8	30.7	0	45
1	10430	C	CULT	4	18.8	14.7	8.7	6	41
1	10430	D		4	21.5	17.3	8.8	7	36
1	10430	E		2	11.9	24.1	2.0	0	37
1	10430	F		5	27.8	11.9	22.2	3	43
1	10430	G		5	31.3	16.2	17.9	0	44
1	10430	H		5	31.1	17.2	16.4	0	44
1	10430	J		1	6.0	10.7	1.7	5	41
1	10430	K		0	6.1	19.1	0.8	0	36
1	10430	M		1	9.3	26.5	1.1	0	35
1	10430	N	CULT	3	21.4	29.0	4.4	2	33
1	10430	O	CULT	0	2.8	15.7	0.2	0	36
1	10430	P	CULT	3	24.9	35.3	4.4	0	41
1	10430	Q		2	7.2	9.0	3.1	16	37
1	10440	A		1	2.4	4.5	1.0	25	37
1	10440	B	CULT	2	15.1	21.9	3.5	0	39
1	10440	C	CULT	0	4.3	18.1	0.4	0	36
1	10440	D	CULT	2	11.6	21.3	2.3	0	36
1	10440	E		1	7.1	19.0	1.0	0	39
1	10440	F		0	3.7	14.7	0.4	0	39
1	10440	G		1	4.7	10.5	1.1	4	40
1	10440	H		4	30.7	20.0	13.2	0	42
1	10440	J		5	32.3	16.9	17.8	5	37
1	10440	K	CULT	1	10.4	23.6	1.6	0	32
1	10440	M		0	6.9	20.7	0.9	0	36
1	10440	N	CULT	3	22.3	23.8	6.1	0	38
1	10440	O		5	42.7	17.4	27.0	0	41
1	10440	P		5	37.8	18.2	20.9	2	39
1	10440	Q		4	29.4	20.1	12.2	2	39
1	10450	A		5	38.8	18.2	21.8	0	41
1	10450	B		5	40.0	17.7	23.8	0	40
1	10450	C		5	42.2	16.0	29.6	1	40
1	10450	D		5	39.1	18.0	22.4	1	40
1	10450	E		3	19.4	18.2	6.9	3	39
1	10450	F	CULT	1	7.5	19.9	1.1	0	35
1	10450	G		3	22.8	31.9	4.3	0	33
1	10450	H	CULT	2	14.0	25.7	2.5	0	33
1	10450	J		4	25.6	14.1	15.5	6	39
1	10450	K		4	29.7	18.6	13.7	2	40
1	10450	M		0	5.2	14.0	0.9	0	37

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EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
1	10450	N		0	5.3	17.8	0.6	0	37
1	10450	O		1	8.6	23.2	1.1	0	35
1	10450	P	CULT	3	18.0	22.4	4.6	4	34
1	10450	Q	CULT	1	10.4	25.2	1.5	0	32
1	10450	R	CULT	3	24.7	34.8	4.4	0	38
1	10450	S		0	1.7	3.9	0.6	24	37
1	10460	A		0	1.6	3.1	0.7	28	41
1	10460	B	CULT	3	21.9	21.1	7.0	2	38
1	10460	C	CULT	2	10.7	14.8	3.2	3	40
1	10460	D		0	5.8	15.6	0.9	0	40
1	10460	E		0	3.3	13.3	0.3	0	37
1	10460	F		0	6.0	17.2	0.9	0	35
1	10460	G		4	24.4	17.3	10.9	4	39
1	10460	H		5	31.7	17.4	16.7	3	40
1	10460	J	CULT	2	11.1	20.2	2.2	2	34
1	10460	K	CULT	2	11.7	19.5	2.6	0	37
1	10460	M	CULT	2	17.3	25.8	3.6	0	36
1	10460	N		2	7.9	14.1	2.0	4	38
1	10460	O		3	15.8	15.0	6.3	6	39
1	10460	P		5	23.5	11.6	17.4	6	42
1	10460	Q		5	32.7	13.7	24.0	5	39
1	10460	R		5	32.4	15.7	19.8	3	41
1	10470	A		5	28.2	14.2	18.0	5	40
1	10470	B		5	33.2	13.1	26.1	4	40
1	10470	C		5	28.1	13.0	20.1	3	42
1	10470	D		3	15.0	12.8	7.1	7	41
1	10470	E	CULT	1	13.2	28.2	1.9	0	37
1	10470	F	CULT	2	12.4	21.4	2.5	2	34
1	10470	G		5	30.2	14.6	19.4	2	42
1	10470	H		4	22.5	15.6	10.9	5	40
1	10470	J		2	7.5	11.8	2.3	4	41
1	10470	K		0	4.2	14.2	0.5	0	38
1	10470	M		0	4.6	15.3	0.6	0	36
1	10470	N	CULT	3	18.5	23.3	4.6	1	37
1	10470	O	CULT	3	16.2	15.6	6.2	5	40
1	10470	P		3	4.1	3.2	4.9	38	41
1	10480	A		2	3.2	3.8	2.3	32	40
1	10480	B	CULT	3	15.9	15.6	6.1	5	39
1	10480	C		1	6.6	13.8	1.4	4	36
1	10480	D	CULT	3	23.6	25.9	6.0	1	36
1	10480	E		0	4.4	12.1	0.8	0	39
1	10480	F		0	2.8	10.0	0.4	0	40

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

				AMPLITUDE (PPM)		CONDUCTOR		BIRD
FLIGHT	LINE	ANOMALY	CATEGORY	INPHASE	QUAD.	CTP MHOS	DEPTH MTRS	HEIGHT MTRS
1	10480	G	1	4.9	11.8	1.0	4	37
1	10480	H	0	3.3	17.1	0.2	0	35
1	10480	J	3	17.6	16.1	6.9	8	36
1	10480	K	5	33.4	18.6	16.6	4	37
1	10480	M CULT	2	10.8	17.5	2.6	3	37
1	10480	N CULT	2	13.0	21.5	2.7	0	40
1	10480	O	3	17.2	19.0	5.3	5	36
1	10480	P	4	22.9	15.7	11.1	8	37
1	10480	Q	5	30.9	16.8	16.7	6	37
1	10490	A	4	29.1	16.5	15.5	5	38
1	10490	B	3	13.3	15.3	4.6	5	40
1	10490	C	3	22.3	24.5	5.9	0	40
1	10490	D CULT	3	13.4	15.9	4.4	4	39
1	10490	E CULT	2	10.2	19.7	2.0	0	37
1	10490	F	5	43.1	18.6	25.1	3	37
1	10490	G	4	21.7	18.1	8.4	11	32
1	10490	H	0	3.6	8.8	0.8	8	38
1	10490	J	2	7.6	13.5	2.0	3	40
1	10490	K	0	2.0	12.7	0.1	0	34
1	10490	M CULT	3	26.2	29.3	6.1	0	35
1	10490	N	2	10.0	14.6	2.9	6	37
1	10490	O CULT	3	18.4	17.8	6.5	5	38
1	10490	P	2	4.3	4.5	3.2	32	37
2	10500	A	4	20.9	12.2	13.4	5	43
2	10500	B	2	10.0	13.3	3.3	3	42
2	10500	C	2	11.3	19.7	2.4	0	40
2	10500	D CULT	2	11.5	16.4	3.2	0	49
2	10500	E	5	43.5	16.7	29.4	2	38
2	10500	F	4	18.1	12.5	10.2	13	36
2	10500	G	1	5.8	12.0	1.4	7	35
2	10500	H	1	7.8	22.4	1.0	0	32
2	10500	J	0	2.1	15.8	0.1	0	35
2	10500	K CULT	2	9.9	17.5	2.2	4	34
2	10500	M	2	7.9	14.0	2.0	8	34
2	10500	N CULT	3	18.5	16.3	7.4	3	41
2	10510	A CULT	3	18.1	17.7	6.4	6	37
2	10510	B CULT	2	10.0	17.6	2.2	4	35
2	10510	C	0	3.8	13.3	0.5	0	37
2	10510	D	0	4.2	12.8	0.6	0	38
2	10510	E	2	8.6	13.8	2.4	7	36
2	10510	F	2	7.7	13.3	2.0	9	34
2	10510	G	4	20.0	13.2	11.2	13	34

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
2	10510	H		5	43.4	18.4	25.8	3	37
2	10510	J	CULT	2	12.1	17.3	3.3	0	48
2	10510	K	CULT	1	6.3	11.0	1.8	2	43
2	10510	M		0	5.4	14.2	0.9	0	39
2	10510	N		2	10.0	14.8	2.9	6	37
2	10510	O		3	16.0	14.4	6.8	11	36
2	10520	A		3	12.2	12.8	5.0	11	37
2	10520	B		0	2.6	10.8	0.3	0	39
2	10520	C	CULT	2	7.9	13.1	2.2	1	42
2	10520	D	CULT	3	24.6	28.8	5.6	0	40
2	10520	E		5	38.0	14.5	28.4	5	37
2	10520	F		4	19.1	10.3	14.4	12	39
2	10520	G		1	6.8	12.0	1.9	4	40
2	10520	H		3	13.9	15.6	4.8	10	34
2	10520	J		3	14.4	16.5	4.7	9	34
2	10520	K		3	21.4	22.6	6.1	7	32
2	10520	M		2	9.5	16.0	2.3	9	31
2	10530	A		0	6.4	19.5	0.8	0	33
2	10530	B		3	16.7	18.0	5.4	5	37
2	10530	C		1	3.7	5.7	1.7	10	49
2	10530	D		4	13.9	9.2	9.8	14	40
2	10530	E		2	12.2	16.3	3.6	7	35
2	10530	F		4	25.2	18.6	10.4	13	29
2	10530	G		5	49.2	19.2	29.9	3	35
2	10530	H	CULT	3	16.5	19.9	4.6	0	41
2	10530	J	CULT	2	8.2	12.2	2.6	5	41
2	10530	K		0	1.2	11.1	0.0	0	36
2	10530	M		0	2.6	10.8	0.3	0	37
2	10530	N		3	13.7	13.7	5.6	10	37
3	10540	A		2	6.1	9.1	2.3	10	40
3	10540	B		4	11.8	7.7	9.4	7	51
3	10540	C		3	11.3	11.2	5.2	9	41
3	10540	D		3	14.8	12.9	6.9	8	40
3	10540	E		4	23.6	15.1	12.3	9	36
3	10540	F		5	55.1	21.1	31.7	4	34
3	10540	G	CULT	3	21.1	22.9	5.9	1	37
3	10540	H	CULT	2	10.8	16.8	2.8	5	36
3	10540	J		2	10.8	21.2	2.0	0	37
3	10540	K		2	14.5	23.8	2.9	0	37
3	10540	M		4	25.3	22.9	8.0	6	34
3	10540	N		4	22.9	19.5	8.4	9	32
3	10550	A		4	25.4	18.9	10.4	10	33

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
3	10550	B	4	30.1	23.1	10.5	7	32
3	10550	C	4	52.4	37.2	14.0	0	33
3	10550	D	4	58.3	58.5	9.3	0	34
3	10550	E	4	35.6	35.4	8.0	0	37
3	10550	F CULT	2	12.2	19.7	2.8	3	35
3	10550	G CULT	4	21.6	15.8	10.0	8	37
3	10550	H	5	46.1	17.7	29.9	5	35
3	10550	J	4	21.8	15.6	10.3	9	36
3	10550	K	4	22.1	16.7	9.7	8	36
3	10550	M	4	25.4	18.1	11.0	6	37
3	10550	N	4	18.6	10.4	13.6	7	44
3	10550	O	2	8.3	11.7	2.8	7	40
3	10550	P	0	1.5	8.6	0.1	0	36
3	10550	Q	0	4.1	12.5	0.6	2	35
3	10560	A	1	4.4	10.4	1.0	0	44
3	10560	B	2	5.6	6.5	3.1	16	44
3	10560	C	3	6.3	6.4	4.0	13	48
3	10560	D	4	25.5	14.9	14.3	4	41
3	10560	E	4	18.7	14.1	9.1	7	39
3	10560	F	4	17.4	12.8	9.2	11	38
3	10560	G	5	36.4	16.6	22.2	5	37
3	10560	H CULT	1	10.6	21.3	1.9	0	36
3	10560	J CULT	2	12.0	17.8	3.1	7	33
3	10560	K	4	36.8	31.5	9.8	0	37
3	10560	M	4	40.4	32.5	11.0	0	41
3	10560	N	4	34.0	24.1	12.2	3	36
3	10560	O	4	32.6	18.8	15.8	7	34
3	10570	A	4	20.9	14.9	10.2	12	34
3	10570	B	4	37.9	23.2	15.3	3	35
3	10570	C	4	32.5	20.8	13.7	1	40
3	10570	D	4	37.7	32.2	9.9	0	37
3	10570	E	3	25.7	30.5	5.6	0	35
3	10570	F CULT	2	11.7	17.7	3.0	2	38
3	10570	G CULT	4	27.8	23.9	8.8	3	36
3	10570	H	5	39.2	14.9	28.8	6	36
3	10570	J	4	16.2	11.7	9.2	12	37
3	10570	K	4	21.9	17.2	9.2	7	36
3	10570	M	5	39.5	20.6	19.1	2	38
3	10570	N	3	10.2	10.8	4.6	6	45
3	10570	O	4	22.2	13.9	12.4	6	40
3	10570	P	3	14.7	14.9	5.6	8	37
3	10570	Q	0	6.1	18.1	0.8	0	35
3	10570	R	0	1.9	12.0	0.1	0	36

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
3	10580	A	0	4.7	12.5	0.8	3	36
3	10580	B	1	5.1	10.1	1.4	1	45
3	10580	C	2	11.5	14.4	3.8	4	41
3	10580	D	4	15.3	8.3	13.3	15	40
3	10580	E	3	9.6	10.7	4.2	8	42
3	10580	F	5	31.5	17.1	16.9	5	37
3	10580	G	4	16.9	11.5	10.1	12	38
3	10580	H	5	40.0	14.3	31.5	6	36
3	10580	J CULT	3	13.7	17.4	4.0	5	36
3	10580	K CULT	2	12.4	18.8	3.0	4	35
3	10580	M	3	16.8	20.3	4.7	4	36
3	10580	N	4	26.9	23.6	8.5	1	37
3	10580	O	5	39.8	21.4	18.4	5	35
3	10590	A	4	25.6	14.9	14.4	12	33
3	10590	B	4	38.7	23.8	15.3	6	33
3	10590	C	4	45.9	41.9	9.7	0	34
3	10590	D	1	10.6	24.2	1.6	0	35
3	10590	E CULT	2	8.8	12.3	2.9	5	41
3	10590	F CULT	3	16.9	16.4	6.3	2	42
3	10590	G	6	34.0	10.9	34.6	5	39
3	10590	H	4	15.1	11.8	8.1	11	39
3	10590	J	4	18.0	14.1	8.6	6	41
3	10590	K	2	9.4	12.1	3.4	6	41
3	10590	M	4	15.1	11.3	8.6	12	39
3	10590	N	2	6.8	10.9	2.1	7	40
3	10590	O	1	4.6	11.1	1.0	3	38
3	10600	A	1	3.4	4.7	1.9	16	49
3	10600	B	2	6.5	9.2	2.5	3	48
3	10600	C	3	9.0	8.3	5.3	15	41
3	10600	D	2	6.2	10.2	2.0	9	39
3	10600	E	3	11.8	12.6	4.8	9	39
3	10600	F	3	14.9	12.8	7.1	11	37
3	10600	G	5	38.8	14.9	28.4	5	37
3	10600	H CULT	2	11.8	17.2	3.1	0	41
3	10600	J CULT	2	7.9	13.0	2.2	5	39
3	10600	K	3	21.5	20.6	7.0	2	38
3	10600	M	4	33.8	28.3	9.8	0	37
3	10600	N	4	27.4	21.3	10.0	4	37
3	10600	O	5	32.5	15.4	20.4	7	36
3	10610	A	5	33.1	15.7	20.5	9	34
3	10610	B	4	48.7	34.7	13.6	0	34

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	CONDUCTOR DEPTH MTRS	BIRD HEIGHT MTRS
3	10610	C		4	41.6	32.2	11.6	0	34
3	10610	D		1	6.7	18.7	1.0	0	35
3	10610	E	CULT	1	8.1	15.7	1.8	2	37
3	10610	F	CULT	3	21.9	24.7	5.7	1	36
3	10610	G		6	50.7	16.5	38.2	5	34
3	10610	H		3	14.2	14.2	5.6	7	39
3	10610	J		3	15.6	13.8	6.9	9	38
3	10610	K		3	8.9	9.7	4.2	13	39
3	10610	M		2	8.2	10.6	3.2	16	34
3	10610	N		1	7.5	13.8	1.8	4	37
3	10610	O		1	5.6	9.5	1.8	9	40
3	10620	A		1	5.1	8.3	1.8	9	42
3	10620	B		2	7.6	12.0	2.3	4	42
3	10620	C		2	9.1	11.3	3.5	10	38
3	10620	D		4	23.7	20.1	8.5	10	32
3	10620	E		3	21.1	21.5	6.4	8	32
3	10620	F		5	42.3	16.8	27.9	7	33
3	10620	G	CULT	2	12.5	19.0	3.0	0	39
3	10620	H	CULT	1	5.8	9.8	1.8	11	37
3	10620	J		1	6.9	18.1	1.1	0	37
3	10620	K		3	24.4	23.1	7.4	2	37
3	10620	M		4	36.5	29.3	10.6	0	37
3	10620	N		4	23.8	14.8	12.8	7	38
3	10630	A		3	20.6	20.1	6.7	7	34
3	10630	B		4	36.8	35.1	8.5	0	36
3	10630	C		4	38.2	35.6	8.9	0	36
3	10630	D		0	4.6	15.9	0.6	0	35
3	10630	E	CULT	2	7.6	9.7	3.1	14	37
3	10630	F	CULT	1	9.7	23.4	1.4	0	37
3	10630	G		3	13.3	10.4	7.7	17	35
3	10630	H		3	19.3	17.7	7.1	10	33
3	10630	J		4	20.2	15.7	9.0	9	36
3	10630	K		3	11.3	12.2	4.7	8	41
3	10630	M		2	7.0	10.6	2.4	5	43
3	10630	N		2	7.2	11.2	2.3	1	46
3	10640	A		2	7.3	10.2	2.7	4	45
3	10640	B		1	6.3	11.4	1.7	2	43
3	10640	C		3	12.0	11.2	5.8	10	40
3	10640	D		4	16.7	13.0	8.4	9	39
3	10640	E		3	13.9	14.2	5.4	8	38
3	10640	F		3	19.0	16.7	7.5	10	34
3	10640	G	CULT	2	8.3	14.3	2.1	4	38

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
3	10640	H	CULT	2	6.9	8.5	3.2	18	36
3	10640	J		2	17.3	24.7	3.8	2	34
3	10640	K		3	21.8	28.8	4.6	0	35
3	10640	M		3	18.2	16.0	7.4	9	36
3	10650	A		3	13.3	14.3	5.0	10	36
3	10650	B		3	18.8	23.6	4.6	4	34
3	10650	C		2	16.2	26.4	3.1	0	34
3	10650	D	CULT	3	9.3	7.0	7.1	26	34
3	10650	E	CULT	4	26.1	23.2	8.3	6	33
3	10650	F		4	22.6	17.9	9.2	11	32
3	10650	G		3	11.7	13.0	4.5	10	37
3	10650	H		2	9.4	10.9	3.9	7	43
3	10650	J		2	9.5	16.3	2.3	2	38
3	10650	K		2	11.1	18.7	2.5	1	37
3	10650	M		0	2.5	5.4	0.8	21	34
3	10660	A		1	6.8	13.9	1.5	0	40
3	10660	B		2	7.8	12.7	2.2	1	43
3	10660	C		3	13.3	15.9	4.3	7	36
3	10660	D		4	18.4	11.4	11.8	15	35
3	10660	E	CULT	3	12.3	13.7	4.6	7	40
3	10660	F	CULT	3	5.5	3.9	6.3	33	40
3	10660	G		2	12.9	19.1	3.2	6	34
3	10660	H		2	10.9	15.5	3.1	7	36
3	10670	A		2	8.4	15.1	2.0	8	33
3	10670	B		2	15.1	21.2	3.7	7	31
3	10670	C	CULT	3	6.6	4.8	6.5	30	38
3	10670	D	CULT	3	19.3	17.0	7.5	10	34
3	10670	E		5	23.6	12.0	16.7	13	35
3	10670	F		4	21.1	15.6	9.8	10	35
3	10670	G		2	12.3	19.1	2.9	4	35
3	10670	H		2	10.5	18.7	2.3	1	37
3	10670	J		0	2.5	10.7	0.2	1	35
3	10670	K		0	4.6	16.2	0.5	0	35
3	10670	M		0	4.5	15.2	0.6	0	35
3	10680	A		0	2.4	10.1	0.2	0	41
3	10680	B		1	5.6	10.5	1.6	2	43
3	10680	C		3	15.0	17.1	4.8	3	40
3	10680	D		4	20.3	14.9	9.8	6	40
3	10680	E		4	19.7	12.2	12.1	8	41
3	10680	F	CULT	5	16.6	7.7	16.9	16	39
3	10680	G	CULT	3	5.8	4.7	5.3	30	39

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
3	10680	H		3	15.7	15.2	6.1	6	39
3	10680	J		1	5.2	10.3	1.4	4	41
5	10690	A		1	3.8	7.9	1.1	10	40
5	10690	B		2	8.2	10.9	3.1	8	40
5	10690	C	CULT	3	5.0	3.9	5.3	37	37
5	10690	D	CULT	3	12.1	10.0	6.9	13	39
5	10690	E		4	9.6	6.7	8.0	21	40
5	10690	F		3	14.3	11.6	7.5	12	38
5	10690	G		3	13.2	13.0	5.6	8	40
5	10690	H		1	7.0	12.8	1.8	9	34
5	10690	J		0	2.9	11.0	0.3	3	34
5	10700	A		0	2.9	11.0	0.3	0	37
5	10700	B		3	9.2	10.5	4.0	11	40
5	10700	C		3	12.5	13.7	4.7	8	39
5	10700	D		3	11.9	12.7	4.8	10	37
5	10700	E		2	5.4	5.4	3.8	23	41
5	10700	F	CULT	3	6.1	3.9	7.6	25	48
5	10700	G		1	4.5	9.8	1.1	7	38
5	10700	H		1	4.6	8.7	1.4	10	39
5	10710	A		1	4.1	8.6	1.1	11	37
5	10710	B		1	5.4	12.8	1.1	2	38
5	10710	C	CULT	4	9.1	3.8	15.9	24	45
5	10710	D		3	15.1	18.3	4.5	8	33
5	10710	E		3	21.6	19.5	7.6	9	32
5	10710	F		3	12.0	11.7	5.5	14	36
5	10710	G		0	2.8	10.0	0.4	3	36
5	10720	A		0	2.7	7.2	0.6	9	39
5	10720	B		2	8.3	11.4	2.9	11	37
5	10720	C		4	17.9	14.3	8.3	12	35
5	10720	D		3	13.5	13.2	5.7	11	36
5	10720	E	CULT	2	5.6	6.7	3.0	14	45
5	10720	F	CULT	3	4.4	2.6	7.5	38	46
5	10720	G		1	6.8	12.6	1.7	5	38
5	10720	H		1	3.3	5.6	1.4	22	37
5	10730	A		1	2.9	4.8	1.3	26	36
5	10730	B		0	2.9	7.9	0.6	11	35
5	10730	C	CULT	4	6.0	3.2	9.7	33	43
5	10730	D	CULT	3	9.7	7.5	6.9	11	47
5	10730	E		3	12.3	11.9	5.6	15	34
5	10730	F		3	12.9	11.4	6.4	11	39

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
5	10730	G		3	15.4	15.7	5.7	10	34
5	10730	H		0	3.1	11.2	0.4	4	33
5	10740	A		0	2.4	7.0	0.5	7	40
5	10740	B		4	15.2	9.2	11.4	15	39
5	10740	C		3	10.8	12.2	4.3	14	34
5	10740	D		3	11.6	12.4	4.8	12	36
5	10740	E	CULT	1	6.2	11.0	1.8	0	49
5	10740	F		2	5.8	7.1	2.9	16	41
5	10740	G		0	2.4	5.3	0.8	17	39
5	10750	A		0	2.8	6.2	0.8	15	38
5	10750	B		1	3.6	6.4	1.3	17	38
5	10750	C	CULT	2	4.8	4.6	3.9	23	46
5	10750	D	CULT	2	7.5	10.2	2.8	0	51
5	10750	E		0	2.9	7.7	0.6	10	36
5	10750	F		2	9.2	10.9	3.8	12	37
5	10750	G		2	10.1	12.7	3.6	12	35
5	10750	H		2	5.4	7.5	2.4	22	33
5	10750	J		5	31.7	17.1	17.0	11	32
5	10750	K		0	2.8	8.2	0.5	9	35
5	10760	A		1	3.5	6.9	1.1	13	39
5	10760	B		3	11.6	9.2	7.2	17	37
5	10760	C		2	7.4	8.4	3.6	18	36
5	10760	D		3	11.3	10.9	5.4	12	38
5	10760	E		3	12.1	11.8	5.5	15	34
5	10760	F		1	4.4	9.7	1.1	7	38
5	10760	G	CULT	3	8.3	8.9	4.1	6	48
5	10760	H	CULT	2	3.7	4.7	2.3	21	45
5	10770	A	CULT	1	4.6	7.9	1.6	12	39
5	10770	B	CULT	2	9.8	14.6	2.8	0	44
5	10770	C		3	9.9	8.7	5.9	14	41
5	10770	D		3	16.5	14.8	6.9	8	37
5	10770	E		2	9.5	14.0	2.8	10	34
5	10770	F		3	14.0	14.2	5.5	16	30
5	10770	G		2	11.7	20.4	2.4	7	30
5	10780	A		2	9.3	13.9	2.7	9	34
5	10780	B		3	9.8	10.4	4.5	17	34
5	10780	C		2	10.8	13.7	3.7	10	36
5	10780	D		3	16.4	13.5	7.8	12	35
5	10780	E		3	10.2	9.9	5.2	14	38
5	10780	F	CULT	1	4.2	8.7	1.2	0	54

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
5	10790	A	CULT	1	3.9	8.2	1.1	7	41
5	10790	B	CULT	2	10.0	19.0	2.0	0	44
5	10790	C		3	8.8	9.7	4.1	12	41
5	10790	D		2	10.4	14.1	3.3	8	36
5	10790	E		0	2.8	13.8	0.2	0	34
5	10790	F		2	9.7	12.7	3.3	11	35
5	10790	G		3	11.2	12.6	4.4	12	35
5	10790	H		3	15.5	20.4	4.0	5	34
5	10800	A		2	10.0	16.6	2.4	7	33
5	10800	B		0	3.0	10.5	0.4	2	36
5	10800	C		0	1.7	9.3	0.1	0	36
5	10800	D		1	5.4	13.0	1.1	5	35
5	10800	E		2	10.9	13.9	3.6	13	32
5	10800	F	CULT	2	6.6	8.9	2.7	0	60
5	10810	A	CULT	2	6.4	8.6	2.7	0	59
5	10810	B		2	8.7	11.6	3.1	8	40
5	10810	C		3	9.7	9.8	4.8	12	41
5	10810	D		2	10.8	15.2	3.2	8	35
5	10810	E		0	2.6	9.5	0.3	0	39
5	10810	F		0	3.3	11.7	0.4	3	34
5	10810	G		2	14.7	22.4	3.2	6	31
5	10810	H		3	7.9	8.6	4.0	17	38
5	10820	A		1	3.4	5.8	1.4	16	41
5	10820	B		2	6.1	9.9	2.0	11	37
5	10820	C		0	2.8	10.2	0.4	7	31
5	10820	D		3	10.5	11.7	4.3	11	38
5	10820	E		3	9.0	9.3	4.5	18	35
5	10820	F		3	13.3	11.9	6.4	13	36
5	10820	G	CULT	2	7.6	9.4	3.3	0	55
5	10830	A	CULT	0	2.6	7.5	0.5	1	45
5	10830	B	CULT	2	8.9	12.5	2.9	0	52
5	10830	C		3	13.2	11.1	7.0	11	40
5	10830	D		3	9.6	9.1	5.2	14	40
5	10830	E		3	12.2	13.0	4.9	10	37
5	10830	F		0	3.4	12.5	0.4	0	36
5	10830	G		0	2.9	10.3	0.4	5	34
5	10830	H		1	6.2	12.1	1.5	10	33
5	10840	A		2	6.7	10.2	2.3	9	39
5	10840	B		0	3.5	8.9	0.8	9	36

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
5	10840	C	0	3.6	9.8	0.7	6	37
5	10840	D	4	11.8	8.7	8.0	15	41
5	10840	E	3	9.9	9.1	5.5	17	37
5	10840	F	4	18.1	14.8	8.1	10	36
5	10840	G CULT	2	9.4	10.9	3.9	0	54
5	10850	A CULT	0	2.4	4.9	0.9	11	48
5	10850	B CULT	3	10.7	10.7	5.1	4	47
5	10850	C	4	16.6	13.1	8.2	11	37
5	10850	D	3	12.8	10.7	6.9	11	41
5	10850	E	0	4.7	12.3	0.9	5	35
5	10850	F	2	10.7	13.9	3.5	8	37
5	10850	G	1	5.6	9.2	1.9	13	37
5	10850	H	2	6.0	9.4	2.1	15	34
5	10860	A	0	2.4	5.5	0.7	10	45
5	10860	B	2	7.3	8.0	3.8	14	42
5	10860	C	0	4.0	9.4	0.9	7	38
5	10860	D	2	10.4	12.4	3.9	10	37
5	10860	E	0	4.9	12.8	0.9	3	36
5	10860	F	3	11.3	10.6	5.6	12	39
5	10860	G	3	12.4	10.1	7.1	15	38
5	10860	H CULT	2	7.5	9.3	3.2	0	56
5	10860	J CULT	1	2.6	3.3	1.9	19	55
5	10870	A CULT	1	3.1	5.6	1.2	16	42
5	10870	B CULT	3	10.3	10.4	4.9	5	46
5	10870	C	2	4.7	7.1	2.0	10	46
5	10870	D	3	9.2	10.4	4.0	13	38
5	10870	E	4	14.0	9.8	9.1	13	40
5	10870	F	1	4.9	11.7	1.0	4	37
5	10870	G	3	15.5	13.8	6.8	13	34
5	10870	H	2	6.8	10.8	2.2	14	33
5	10870	J	3	10.7	10.9	4.9	16	34
5	10880	A	0	3.1	10.8	0.4	3	35
5	10880	B	2	8.0	9.4	3.6	14	39
5	10880	C	2	6.5	9.3	2.5	16	35
5	10880	D	4	19.3	14.1	9.6	12	34
5	10880	E	4	15.1	10.0	10.1	12	41
5	10880	F	2	8.0	8.9	3.9	11	42
5	10880	G CULT	3	7.6	5.4	7.1	6	59
5	10890	A CULT	1	3.7	5.8	1.7	18	41
5	10890	B CULT	4	12.5	9.3	8.1	6	48

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

EXPLORATIONS NORANDA LIMITEE - ABCOURT OPTION

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
5	10890	C		2	9.4	11.4	3.7	9	39
5	10890	D		4	14.8	9.1	11.1	11	43
5	10890	E		4	15.6	11.1	9.3	16	34
5	10890	F		3	8.3	9.2	4.0	16	37
5	10890	G		3	11.8	11.5	5.4	14	36
5	10890	H		1	5.5	10.7	1.5	5	40
5	10900	A		2	7.3	12.0	2.1	6	39
5	10900	B		3	8.3	8.6	4.4	14	41
5	10900	C		2	7.4	8.3	3.7	15	40
5	10900	D		4	11.1	7.5	8.8	19	39
5	10900	E		3	11.0	9.1	6.6	11	44
5	10900	F		3	10.6	10.5	5.1	15	37
5	10900	G	CULT	3	7.0	5.0	6.9	11	56
5	10900	H	CULT	1	2.5	3.6	1.5	21	50
5	10910	A	CULT	2	4.9	6.7	2.3	12	45
5	10910	B	CULT	3	10.6	9.0	6.3	7	48
5	10910	C		2	9.4	11.4	3.7	12	37
5	10910	D		3	11.7	12.4	4.8	11	37
5	10910	E		1	6.8	12.3	1.8	10	34
5	10910	F		4	14.1	8.1	11.9	19	36
5	10910	G		2	8.2	9.4	3.8	19	34
5	10910	H		3	10.4	11.3	4.5	13	37
5	10910	J		1	6.5	11.3	1.9	5	40

Estimated depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or overburden effects.

APPENDIX III

CERTIFICATE OF QUALIFICATIONS

I, IAN JOHNSON, certify that:

1. I am registered as a Professional Engineer in the Province of Ontario.

2. I reside at 38 Tinti Place in the town of Thornhill, Ontario.

3. I hold a Ph.D. in Geophysics from the University of British Columbia, having graduated in 1972.

4. I have been continuously engaged in both professional and managerial roles in the minerals industry in Canada and abroad for the past fourteen years.

5. The accompanying report was prepared from published or publicly available information and material supplied by Explorations Noranda Limitee and Aerodat Limited in the form of government reports and proprietary airborne exploration data. I have not personally visited the specific property.

7. I have no interest, direct or indirect, in the property described nor in Explorations Noranda Limitee.

8. I hereby consent to the use of this report in a Statement of Material Facts of the Company and for the preparation of a prospectus for submission to the appropriate securities commission and/or other regulatory authorities.

Signed,

Ian Johnson, Ph.D., P. Eng.

REGISTERED PROFESSIONAL ENGINEER
I. M. JOHNSON
PROVINCE OF ONTARIO

J9084
Thornhill, Ontario
November 21, 1990

APPENDIX IV

PERSONNEL

FIELD

Flown	November 8 and 9, 1990
Pilot	Luc Kukovica
Operators	Pierre Moisan Joe Mercier

OFFICE

Processing	Adriana Carbone Sandra A. Takata George McDonald
Report	Ian Johnson