PRINCE GEORGE

87-947-16645

Province of British Columbia | Ministry of Energy, Mines and Petroleum Resources

ASSESSMENT REPORT
TITLE PAGE AND SUMMARY

TYPE OF REPORT/SURVEY(S)	TOTAL COST
GEOPHYSICAL	$24,351.25

AUTHOR(S) William R. Lechow SIGNATURE(S) [signature], for

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED 3 DEC/87 YEAR OF WORK 1987

PROPERTY NAME(S) G

COMMODITIES PRESENT

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN

MINING DIVISION Cariboo NTS 93G/1W

LATITUDE 53°11'26" LONGITUDE 122°19'29"

NAMES and NUMBERS of all mineral tenures in good standing (when work was done) that form the property [Examples: TAX 1-4, FIRE 2 (12 units); PHOENIX (Lot 1706); Mineral Lease M 123; Mining or Certified Mining Lease ML 12 (claims involved)]:

G 22-24, 26-32

OWNER(S)

(1) Gabriel Resources Inc. (2)

MAILING ADDRESS

1900-999 W. Hastings Street
Vancouer, B.C. V6C W2

OPERATOR(S) (that is, Company paying for the work)

(1) Gabriel Resources Inc. (2)

MAILING ADDRESS

1900-999 W. Hastings Street
Vancouver, B.C. V6C 2W2

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):

The claims are primarily underlain by Upper Triassic Takla Group volcanic and sedimentary rocks intruded by early Cretaceous granitic dykes and stocks. Early Tertiary sediments overlie Takla Group rocks in the southwest parts of Ahbau Creek.

REFERENCES TO PREVIOUS WORK

(over)

12/88

LOG NO: 1223	RD.
ACTION:	
FILE NO: 87-947-16645	

REPORT ON
COMBINED HELICOPTER BORNE ELECTROMAGNETIC, MAGNETIC, AND VLF-EM SURVEY
AHBAU CREEK AREA
CARIBOO MINING ~~DISTRICT~~ DIVISION
QUESNEL AREA
BRITISH COLUMBIA

93G/1W

53°11'26" 122°19'29"

12/88

for
GABRIEL RESOURCES LIMITED
by
AERODAT LIMITED

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,645

September 1987

CLAIMS SURVEYED

CLAIM	UNITS	RECORD NUMBER	ANNIVERSARY
G 22-23	40	3229-30	MARCH 16
G 24-26	60	3231-33	MARCH 13
G 27	20	3234	MARCH 16
G 28	20	3235	MARCH 13
G 29-30	40	3236-37	MARCH 16
G 31-32	40	3238-39	MARCH 13
G 33-34	40	3240-41	MARCH 16

OWNER: GABRIEL RESOURCES LTD.
OPERATOR: GABRIEL RESOURCES LTD.

PART 1 OF 2

J8732

William R. Lechow
Consulting Geophysicist

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(Scale 1:10,000)

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2. FLIGHT LINE MAP;
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3. AIRBORNE ELECTROMAGNETIC SURVEY INTERPRETATION MAP;
showing flight lines and major structural features.

4. TOTAL FIELD MAGNETIC CONTOURS;
showing magnetic values contoured at 2 nanoTesla intervals, flight lines and fiducials.

5. VERTICAL MAGNETIC GRADIENT CONTOURS;
showing magnetic gradient values contoured at 0.5 nanoTeslas per metre.

6. APPARENT RESISTIVITY CONTOURS;
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showing relative contours of the VLF Total Field response, flight lines and fiducials.

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showing high frequency coaxial inphase and quadrature profiles, flight lines and fiducials.

1. INTRODUCTION

This report describes an airborne geophysical survey carried out on behalf of Gabriel Resources Limited by Aerodat Limited. Equipment operated included a three frequency electromagnetic system, a high sensitivity cesium vapour magnetometer, a two frequency VLF-EM system, a film tracking camera, an altimeter and an electronic positioning system. Electromagnetic, magnetic and altimeter data were recorded both in digital and analogue form.

The survey areas, comprising two blocks of ground in the Cariboo Mining District of British Columbia, are located approximately 25 and 45 kilometres north-northeast and north respectively of Quesnel, British Columbia.

Twelve flights, which were flown between June 12, and June 23, 1987, were required to complete the survey. Flight lines for the southernmost block were oriented at an azimuth of 030 degrees and flown at a nominal spacing of 100 metres. The northern area was divided into 3 blocks with line orientations of 075, 060 and 045 degrees azimuth. Coverage and data quality were considered to be well within the specifications described in the contract.

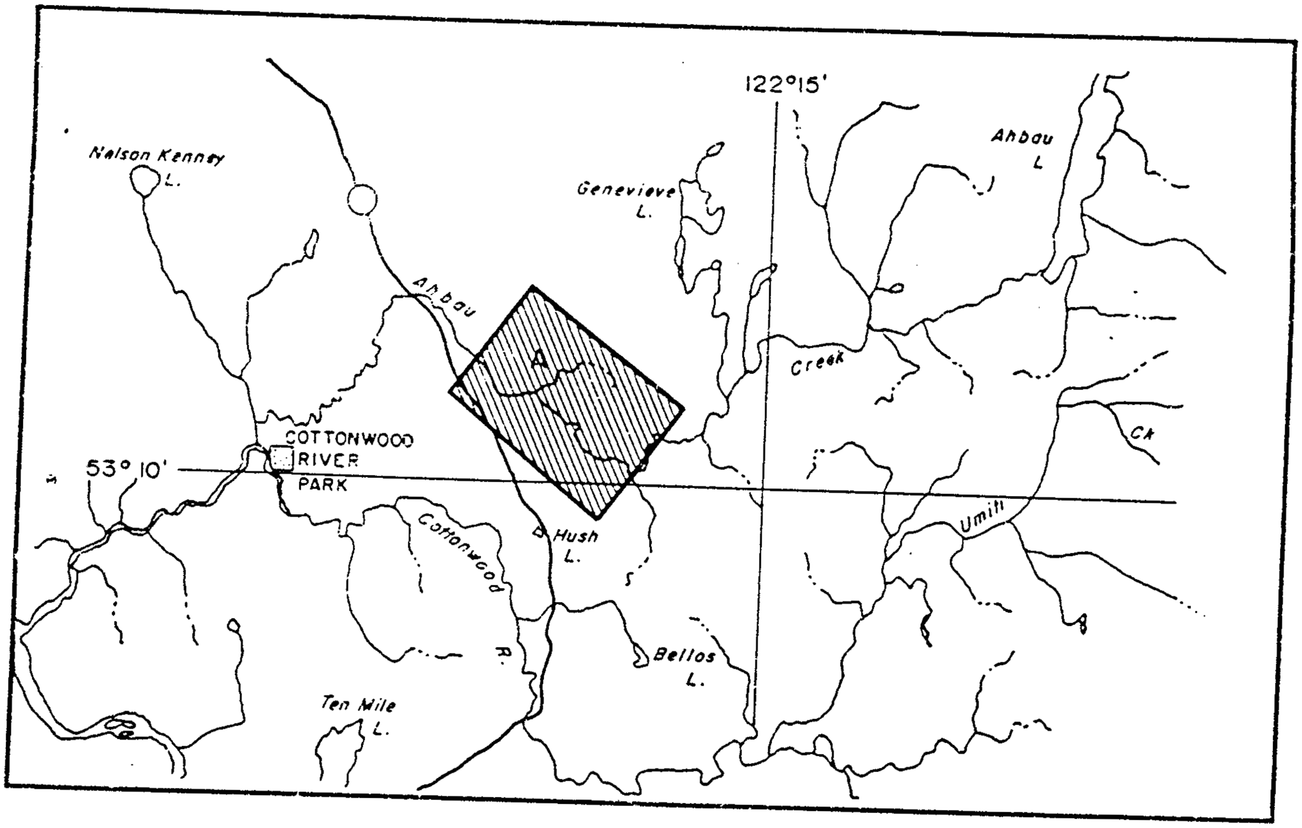
The survey objective is the detection and location of mineralized zones which can be directly or indirectly related to precious metal exploration targets. Of importance, therefore, are poorly mineralized conductors which may represent structural features which can play an essential role in the eventual location of primary minerals.

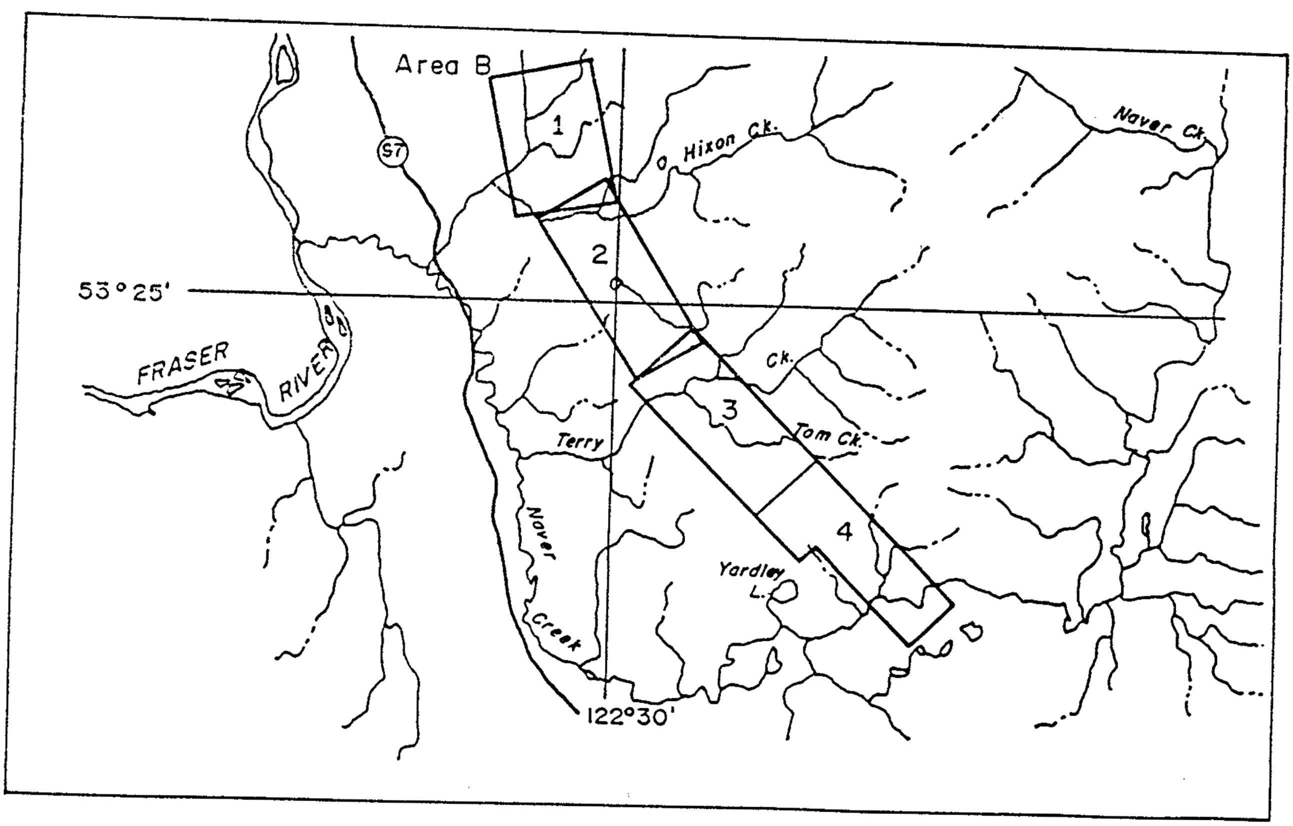
A total of 875 kilometres (275 km Ahbau Creek Area, 600 km Yardley Lake Property) of the recorded data were compiled in map form and are presented as part of this report according to specifications outlined by Gabriel Resources Limited.

2. SURVEY AREA LOCATION

The survey areas are depicted on the index maps shown. The Ahbau Creek area is centred at latitude 53 degrees 12 minutes north, longitude 122 degrees 22 minutes west, approximately 25 kilometres north-northeast of Quesnel, British Columbia (NTS Reference Map No. 93 G/1). The area is easily accessed by highway 97, the Cariboo Highway north from Quesnel. Relief in this area is in the order of 270 metres. The Ahbau Creek area was flown at 030 degrees azimuth.

The Yardley Lake property is located at latitude 53 degrees 25 minutes north, longitude 122 degrees 30 minutes west. The centre of the area is approximately 42 kilometres north of Quesnel. The Yardley Lake property consists of three independent flight blocks, each of which was flown with a unique flight line orientation. The southernmost, block A was flown at 045 degrees azimuth, block B was flown at 060 degrees, and C was at 075 degrees. The Yardley Lake property was redesignated into 1:10,000 scale map sheets numbered 1 through 4, north to south respectively. The relief in the area is 350 metres, although the southern end of the area is consistently of a higher elevation than the remainder.


122°15'
Ahbau L
Nelson Kenney L.
Genevieve L.
Ahbau
A
Creek
Ck
COTTONWOOD RIVER PARK
53° 10'
Cottonwood R.
Hush L.
Umiti
Bellos L.
Ten Mile L.


Area B
1
57
Hixon Ck.
Naver Ck.
2
53° 25'
FRASER RIVER
Ck.
3
Terry
Tom Ck.
4
Naver Creek
Yardley L.
122°30'

3. AIRCRAFT AND EQUIPMENT

3.1 Aircraft

An Aerospatiale A-Star 350D helicopter, (C-GNSM), owned and operated by Maple Leaf Helicopters Limited, 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.

3.2 Equipment

3.2.1 Electromagnetic System

The electromagnetic system was an Aerodat 3-frequency system. Two vertical coaxial coil pairs were operated at 935 Hz and 4600 Hz and a horizontal coplanar coil pair at 4175 Hz. The transmitter-receiver separation was 7 metres. Inphase and quadrature signals were measured simultaneously for the 3 frequencies with a time constant of 0.1 seconds. The electromagnetic bird was towed 30 metres below the helicopter.

3.2.2 VLF-EM System

The transmitters monitored were Jim Creek, Washington at 24.8 kHz for the Line station and Cutler, Maine at 24.0 kHz for the Orthogonal station.

3.2.3 Magnetometer

The magnetometer employed a Scintrex Model VIW-2321 H8 cesium, optically pumped magnetometer sensor. The sensitivity of this instrument was 0.1 nanoTeslas at a 0.2 second sampling rate. The sensor was towed in a bird 12 metres below the helicopter.

3.2.4 Magnetic Base Station

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.

3.2.5 Radar Altimeter

A Hoffman HRA-100 radar altimeter was used to record terrain clearance. The output from the instrument is a linear function of altitude for maximum accuracy.

3.2.6 Tracking Camera

A Panasonic video tracking camera was used to record flight path on VHS video tape. The camera was operated in continuous mode and the fiducial numbers and time marks for cross reference to the analog and digital data were encoded on the video tape.

3.2.7 Analog Recorder

An RMS dot-matrix recorder was used to display the data during the survey. In addition to manual and time fiducials, the following data were recorded:

Channel	Input	Scale
CXI1	Low Frequency Inphase	2 ppm/mm
CXQ1	Low Frequency Quadrature	2 ppm/mm
CXI2	High Frequency Inphase	2 ppm/mm
CXQ2	High Frequency Quadrature	2 ppm/mm
CPI1	Mid Frequency Inphase	8 ppm/mm
CPQ1	Mid Frequency Quadrature	8 ppm/mm
VLT	VLF-EM Total Field, Line	2.5%/mm
VLQ	VLF-EM Quadrature, Line	2.5%/mm
VOT	VLF-EM Total Field, Ortho	2.5%/mm
VOQ	VLF-EM Quadrature, Ortho	2.5%/mm
ALT	Altimeter (150 m at top of chart)	3 m/mm
MAGF	Magnetometer, fine	2.5 nT/mm
MAGC	Magnetometer, coarse	25 nT/mm

3.2.8 Digital Recorder

A DGR 33 data system recorded the survey on magnetic tape. Information recorded was as follows:

Equipment	Recording Interval
EM system	0.1 seconds
VLF-EM	0.2 seconds
Magnetometer	0.2 seconds
Altimeter	0.2 seconds

4. DATA PRESENTATION

4.1 Base Maps

Photomosaic bases at a scale of 1:10,000 were prepared from photo lay down maps, supplied by Aerodat, on screened mylar bases.

4.2 Flight Path Maps

The flight path was manually recovered onto the photomosaic base using the VHS video tape. The recovered points were then digitized, transformed to local metric grids and merged with the data base. The flight path maps showing all flight lines, are presented on Cronaflex copies of the base maps, with camera frame and navigator's manual fiducials for cross reference to both the analogue and digital data.

4.3 Airborne Electromagnetic Survey Interpretation Maps

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 spheric events and to reduce system noise.

Local spheric 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 spheric events.

The signal to noise ratio was further enhanced by the application of a low pass digital filter. It 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 permits maximum profile shape resolution.

Following the filtering process, a base level correction was made. 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 interpretation of the electromagnetics.

4.4 Total Field Magnetic Contours

The aeromagnetic data were corrected for diurnal variations by adjustment with the digitally recorded base station magnetic values. No correction for regional variation was applied. The corrected profile data were interpolated onto regular grids at a 20 metre true scale interval using an Akima spline technique. The grid provided the basis for threading the presented contours at a 2 nanoTesla interval.

The contoured aeromagnetic data have been presented on Cronaflex copies of the photomosaic base maps.

4.5 Vertical Magnetic Gradient Contours

The vertical magnetic gradient was calculated from the gridded total field magnetic data. Contoured at a 0.5 nT/m interval, the gradient data were presented on Cronaflex copies of the photomosaic base maps.

4.6 Apparent Resistivity Contours

The electromagnetic information was processed to yield maps of the apparent resistivity of the ground.

The approach taken in computing apparent resistivity was to assume a model of a 200 metre thick conductive layer (i.e., effectively a half space) over a resistive bedrock. The computer then generated, from nomograms for this model, the resistivity that would be consistent with the bird elevation and recorded amplitude for the 4600 Hz coaxial frequency pair used. The apparent resistivity profile data were interpolated onto regular grids at a 20 metres true scale interval using an Akima spline technique.

The contoured apparent resistivity data were presented on Cronaflex copies of the photomosaic base map with the flight path.

4.7 VLF-EM Total Field Contours

The VLF-EM signals from NLK, Jim Creek, Washington, broadcasting at 24.8 kHz were compiled. The NLK data were compiled in contour map form and presented on Cronaflex copies of the photomosaic base map.

5. INTERPRETATION

5.1 Ahbau Creek Area

5.1.1 Geology

No geological maps, reports, or information on any form were available during the interpretation of the Ahbau Creek survey data.

5.1.2 Magnetic Data

The Ahbau Creek survey area is dominated by a prominent elliptical magnetic feature which probably represents mafic intrusive rocks such as gabbro. Although the anomaly from the intrusive covers about seventy-five percent of the survey area, the remaining portion of the block to the north is apparently occupied by intermediate to felsic rocks of sedimentary or possibly volcanic origin. The northernmost corner of the area appears to have a mafic lithology probably related to other intrusive units. The vertical gradient map provides a clearer definition of the lithological associations.

5.1.3 VLF-EM Total Field Data

The contoured VLF total field data has demonstrated a NNW strike orientation owing to the coupling geometry of the survey site with the transmitter. A number of faults have been inferred from the VLF data. These tend to be oriented ENE, although a couple of variations from this orientation have also been revealed. There is a good likelihood that faulting with a strongly dissimilar orientation may also exist within the area. This would be masked however, by the lithological strike presented in the VLF data.

5.1.4 Electromagnetic Data

The Ahbau Creek survey area is not particularly rich in HEM conductivity anomalies. Of those which have been recognized and mapped, most tend to be broad and not particularly distinct. The majority of these lie on topographic and/or cultural features. In this area, however road routes generally conform with topography and topography in turn is controlled to a great extent by bedrock geology. From this, then, it would not be considered unusual to see natural EM responses aligned with roads, although the responses may in fact originate from a mineralized contact.

The following discussion outlines the characteristics of the principal conductors recognized in this area.

ZONE I (lines 10100 to 10150)

Zone I marks what appears to be two sub-parallel conductors situated in the vicinity of a railway-highway intersection. The more southerly conductor may be attributable to the overpass structure itself and thus can be disregarded. The remaining conductor in the zone lies in parallel with the highway, and may also prove to be cultural in origin. It has been selected, however since the highway is not uniformly associated with conductivity anomalies along its course. Some explanation is thus required for the localized conductivity that has been recorded at this site. The EM responses are generally poor and it is entirely likely that they are all in some way related to the construction of the highway. It should be examined, but only as a low priority.

ZONE II (line 10060, lines 10090 to 10150)

Zone II represents a conductive trend coincident with a railway. Although the track itself has provided weak EM responses, there appears to be an enhancement between lines 10120 and 10150 that may require justification. This may also be due to a bridge. Again, it is entirely likely that the zone can be dismissed as being attributable to culture.

ZONE III (lines 10190 to 10330)

A group of conductivity anomalies were detected along the course of a river at this site. The anomalies are weak and ill-defined. The conductivity does however, appear to coincide with a part of the contact of mafic intrusive rocks lying to the south. The zone should be examined further as a lower priority target.

ZONE IV (line 10390 and 10400)

A pair of very weak responses were recorded from two closely-spaced lines at this site. The zone lies within mafic rock, and is adjacent to a creek bed. The zone should be checked, but the very weak EM expression would not justify any more than a low priority for this site.

ZONE V (line 10330)

Zone V identifies a short conductor lying near the north margin of the block. It may coincide with a fault trending ENE. There is a suggestion of a southward dip to this feature. The trace of the conductor falls on a creek bed. It should be explored futher as a medium priority target.

ZONE VI (line 10660)

A short conductor responding on only a single flight line has been recognized at this site. The response is fairly weak and broad. It is coincident with a moderately broad magnetic low trending WNW, and there is no apparent local magnetic anomaly associated with the conductor. The site lies adjacent to a creek in a poorly drained area of land. It is recommended that this location be reviewed at a medium low priority level.

5.1.5 Apparent Resistivity Data

The resistivity map of the Ahbau area indicates a resistive terrain in the north corner of the block. The definition of this area may relate to a specific bedrock lithology rather than merely superficial geology, as the total field magnetic map does offer some correlative distinction in this area. The resistive unit does however, extend into the middle of the survey area and appears to be dissected by a river channel situtated in this area. This naturally implies that the resistive material behaves as a horizontal sheet of only moderate thickness. The magnetic map however shows a different lithology in the central portion of the block, suggest-ting that the resistive material overlaps the intrusive rocks. An additional occurrence of resistive material lies near the west corner of the block. It is probable that this occurrence represents the same material as that which lies farther to the north.

5.1.6 Summary

The Ahbau Creek survey block has provided only modest EM responses, in many cases of dubious bedrock origin. It is suspected that those which apparently mark short conductive trends yielding responses on only one or two flight lines, may offer the most promise as economic prospects.

The VLF map has been quite informative in identifying probable faults in the survey area. One must keep in mind, however that the VLF apparatus is "blind" to a band of azimuthal orientation within which any conductive feature would not be effectively coupled to the transmitter signal.

The magnetic data has outlined a mafic intrusion measuring approximately 3.5 kilometres in length. The location of this feature in relation to the surrounding country rock should be regarded as a controlling mechanism for the possible localization of economic mineralization.

5.2 Yardley Lake Property

5.2.1 Geology

No geological maps, reports, or information in any form were available during the interpretation of the Yardley Lake survey data.

5.2.2 Magnetic Data

The Yardley Lake area magnetic maps show what appears to be a volcanic terrain in the south end of the area (map sheet 4), with stringers of mafic rock extending north-northwestward (map sheets 1; 2 and 3). The stringers lie in contact with felsic rocks of relatively low susceptibility. A number of faults have been resolved by the calculated vertical magnetic gradient data.

5.2.3 VLF-EM Total Field Data

The VLF data from Yardley Lake is incomplete, since a signal was not recorded for the northwesternmost end of the property. The missing data accounts for about ten percent of the area, and lies entirely within map sheet 1. The data which have been recorded show a suite of faults generally oriented between E-W and NE-SW. It is suspected that fault identification in the area is incomplete; others still remain to be resolved.

5.2.4 Electromagnetic Data

SHEET 1

ZONE I (lines 20080 to 20120)

A pair of poorly-defined conductive trends have been identified at this site. They may in fact mark the outline of a single conductive ribbon rather than two discrete conductors.

The conductors lie in parallel with a negative magnetic feature, which is surrounded to the north and east by rocks of a more mafic composition. The complimentary lithology indicated here suggests some interest should be given to the area for additional investigation as a precious metal prospect. The area has little merit, based on EM alone, as a traditional base metal target.

ZONE II (line 20310)

A single, broad, poorly-defined EM response marks Zone II. The site corresponds to a magnetic low as with Zone I, and in fact the two zones may be of similar geologic makeup and, genetic origin as well.

The site may mark a fault location, as evidenced by the magnetic data. From this, it is suggested that Zone II be explored further as a medium-low priority target.

ZONE III (lines 20360 to 20380)

A weak conductive trend is represented in Zone III. The trend directly coincides with a pronounced contact involving mafic rocks to the southwest, and rocks of relatively low susceptibility to the northeast. The EM responses offer a faint suggestion of a southwestward dip. It is likely that the conductivity stems from some mineralogy associated with the contact, perhaps graphite. Nonetheless the site should be checked further as a low priority subject.

ZONE IV (lines 20400 to 20450)

Zone IV is essentially a continuation of Zone III, although there is an apparent break or contortion at or near line 20390. Because of this, the conductor was treated as two entities. The description of Zone III is thus valid for Zone IV. It is recommended that the ground between Zone III and Zone IV be investigated in order to determine the nature or mechanism for the discontinuity in conductive trends. The northwest end of the conductor outlined in Zone IV is apparently folded parallel with the flight direction.

SHEET 2

ZONE I

This location marks a group of sub-parallel conductors situated on, or near, the northeast contact of what are apparently mafic volcanic rocks. This site is a southeastward continuation of Zone III and Zone IV on map sheet 1. The dip direction, where apparent, is southwestward. The conductors, although difficult to resolve, appear to describe a discontinuous en-echelon arrangement. There is a strong suggestion of a right-lateral strike slip fault dislocating the conductive trend on or about line 20790. It is recommended that the zone be checked in this vicinity as a medium priority target. The zone is accessible by road

ZONE II (lines 20900 to 20910)

Zone II identifies a short conductor which appears to be associated with a contact involving a small occurrence of mafic rocks lying immediately southwestward of the site. Although the lithology appears to be local, similar rocks lie farther to the southwest, about three-quarters of a kilometre distant, and to the northeast, by about one-half kilometre. It is suspected that the separate occurrences of mafic rocks are somehow correlated by one or more structural mechanisms.

Owing to this, it is recommended that the site be investigated further as a medium priority subject. The character of the EM responses is again vague and broad, offering little or no potential as a base metal occurrence.

ZONE III (line 20930)

Zone III marks an EM response which has probably been derived from a contact involving a resistive lithology to the southwest, and more conductive material lying to the northeast it is difficult to determine if the conductivity originates from bedrock or is merely surficial in nature. The magnetic data support the latter case. Of interest here however, is the inferred fault which intersects the site with an ESE trend. Evidence for the fault can be seen on both the vertical magnetic gradient and VLF total field maps. The presence of this fault implies a more critical importance to any neighboring conductivity anomalies, and it is thus recommended that this site be examined. The character of the EM response cannot, in itself, justify more than a low priority to the site.

ZONE IV (lines 20900 to 20910)

Zone IV has resolved a pair of EM responses which are probably associated with the fault previously described. The east end of this short conductor has provided a more distinct EM signature than that of Zone III, and it is recommended that the site be explored in greater detail at this location. It should be regarded as a medium priority subject. The geology appears to involve right-lateral fault dislocation of a mafic band to the west, and felsic rocks lying to the east. The responses appear to be derived from the felsic terrain immediately adjacent to the contact.

ZONE V (line 20930)

A single well-resolved EM response at this location falls directly on the zero level vertical magnetic gradient contour. This implies a conductor in the contact between felsic and mafic rocks. The site warrants examination as a medium priority target.

ZONE VI (lines 20940 to 20970)

This zone identifies a conductor which is probably a continuation of that of Zone V, although the two zones have apparently been dislocated by right-lateral strike-slip faulting. The zone should be given the same attention as that of Zone V.

ZONE VII (lines 20980 to 20990)

A pair of EM responses on adjacent flight lines at this site trace a short conductor which lies sub-parallel to that of Zone VI. It is possible that this site may however, also involve a fault although there is not a sufficiently clear indication of the fault to warrant its mapping. The geological setting is otherwise similar to that of Zone V and Zone VI, and the location may be similarly reviewed. Of the two EM responses resolved, the westernmost displays a more favourable character.

SHEET 3

ZONE I (lines 21120 to 21131)

A pair of distinct, broad EM responses on adjacent flight lines were detected within this zone. The magnetic signature is indistinct; the responses lie within rocks of relatively low susceptibility. It is recommended that the site be checked further as a medium-low priority.

ZONE II (line 21210)

A single, broad EM response was detected within Zone II. The magnetic gradient data show the EM response to lie on the limb of a fold in mafic rocks. This localized structural deformation adds interest to the otherwise unpromising conductivity anomaly. The site deserves further investigation, but only as a medium-low priority.

ZONE III (lines 21250 to 21260)

Zone III is marked by a pair of weak, poorly-defined EM responses situated at or near a contact involving mafic rocks to the east and felsic rocks to the west. The geological strike is obscured by folding and structural distortion. There appears to be an occurrence of an intermediate lithology immediately northwest of the conductor, and it is probable that the conductivity stems from mineralization at the contact. The geology can best be delineated using the vertical magnetic gradient map.

Although the conductor is quite obscure, it is recommended for review as a low priority.

ZONE IV (lines 21290 to 21351)

A discontinuous conductive trend demonstrating a westward inflection has been revealed at this site. The EM responses are weak and broad. The conductor appears to be aligned with a contorted band of intermediate rocks, possibly involving one or more faults, although this is not entirely clear. The zone may be examined further as a low priority item. There is road access to this site.

ZONE V (lines 21351 to 21381)

Zone V is marked by a pair of conductive trends which converge toward the northwest. The termination in this direction coincides with a prominent, relatively-isolated magnetic feature. The EM responses are weak, although anomaly "B" on line 21361 demonstrates notably greater response amplitude. It is thus recommended that the zone be investigated at this location. The site should merit a medium-low level of priority.

ZONE VI (line 21371)

A conductive trend has been resolved across two flight lines near the northeast margin of the area. The EM responses are broad, and their origin may relate to that of Zone IV, since the responses are similar in character. The geological setting is difficult to define since the site lies near the margin of the block. Zone VI should be regarded similarly to Zone IV. It is accessible by road.

ZONE VII (lines 21421 to 21441)

Zone VII has revealed a vague conductive trend which is probably of similar nature and origin to that of Zone IV, and thus should be given similar treatment. The zone can be accessed by road.

ZONE VIII (lines 21501 to 21531)

This site has indicated the presence of two sub-parallel conductors, which are apparently associated with mafic rocks lying immediately to the northeast. Response "A" derived from line 21521 shows a relatively strong amplitude making it the most favourable location for follow-up. An apparently dissociated surficial conductive trend has been identified to the east of this site. Zone VIII can be regarded as a medium-low priority target.

ZONE IX (lines 21541 to 21561)

This zone has disclosed an obscure, short conductor lying amidst felsic rocks. It offers no notable magnetic expression itself. This site should be checked at a low priority level.

ZONE X (lines 21591 to 21691)

A group of parallel conductors have been resolved at this location. They offer evidence of folding as well as faulting. The fault orientation is approximately ENE. Although the responses are broad, they demonstrate increased amplitudes toward the southeast.

The conductors lie within felsic rocks, and probably along the contact with mafic rocks to the northeast. The site should undergo additional exploration at a medium-low priority level.

SHEET 4

ZONE I (line 21661 to line 21691)

Zone I is the overlap of Sheet 3, Zone X. See the previous description.

ZONE II (lines 21731 to 21741)

A pair of EM responses on two closely-spaced lines have defined a conductivity trend which appears to coincide with a contact between mafic rocks to the northwest, and felsic or intermediate rocks to the southeast. Since the trend is oblique to the flight direction, the responses are broadened and diminished in amplitude. Zone II may be worth further examination as a medium-low priority target. There is a possibility of a fault near this conductor, however the supporting evidence for this is vague.

ZONE III (lines 21761 to 21771)

A group of diffuse conductive responses which can be attributed to mafic rocks demonstrate a local enhancement at this location. The most distinct response lies on line 21771. It may be worthwhile to justify the mechanism for the enhancement by a ground follow-up. For simplicity, the remaining responses have been omitted from the interpretation map. The site should be viewed as a low priority subject.

ZONE IV (lines 21761 to 21930)

Zone IV defines a major group of conductors in the area, which lie alongside mafic rocks, probably in a felsic terrain. The zone is intersected by at least two faults, and it is recommended that additional exploration be given this site beginning in the vicinity of the faults. The northwest end of the group is directly accessible by road. Zone IV can be considered as a medium-high priority for follow-up work.

ZONE V (lines 21831 to 21871)

A pair of conductors have been resolved at this location which are associated with a relatively isolated magnetic feature. The EM responses are strong, and the zone lies along the projection of a fault trace bearing to the northwest. The conductivity appears to reflex about the northwest end. The zone should be investigated further as a medium-high priority subject.

ZONE VI (lines 21891 to 21920)

A pair of conductors have been disclosed lying within, or more probably, in contact with mafic rocks at this location. There is some suggestion of a northeast dip to the southwesternmost conductor. Responses at this site are broad, however they exhibit a sharper degree of definition than other responses recorded over the same group of rocks further to the southeast and northwest. The site should be ground checked as a medium-low priority.

ZONE VII (line 21691)

A single EM response here appears to be in near coincidence with a fault. Although the response is broad, it may represent an oblique orientation between the flight line and the conductor. The magnetic data indicate a fault dislocation at this site. The zones should be visited for additional information. It can be regarded as a medium priority target.

5.2.5 Resistivity Data

The contoured resistivity data from the Yardley Lake property delineate various zones of surficial geology as resistivity highs. Those conductors described in detail previously lie along the depressions on the resistivity map. Notable areas of resistive terrain lie in the southeastern portion of the property, within map sheet 4, and partly extending into sheet 3. This area probably consists of either a thin veneer of overburden on resistive bedrock, or a thicker sequence of coarse, resistive overburden such as sand.

5.2.6 Summary

The Yardley Lake property has provided EM responses which do not offer direct indications of the presence of base-metal sulphides. In the exploration for precious metals however, there really is no single "signature" type EM response indicative of a good prospect. In this case, EM responses have to be evaluated as indicators of structures which may host or localize such mineralization, or they may possibly mark the presence of accessory minerals. An attempt has thus been made to review the EM data with regard to its usefulness as a mapping device, in order to locate isolated anomalous bedrock occurrences. The magnetic maps also offer support for this purpose. It is recommended that the information contained herein be incorporated with any additional data available from ground geophysics, geochemistry and geological sampling in order to establish an overall schedule for follow-up work.

William R. Lechow
Geophysicist
September, 1987

J8732

APPENDIX I

GENERAL INTERPRETIVE CONSIDERATIONS

Electromagnetic

The Aerodat three frequency system utilizes two different transmitter-receiver coil geometries. The traditional coaxial coil configuration is operated at two widely separated frequencies and the horizontal coplanar coil pair is operated at a frequency 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 a non-magnetic vertical half-plane model on the accompanying phasor diagram. 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 at selected anomalies. The results of this calculation are presented in table form in Appendix II 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 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.

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. As the dip of the conductor decreased 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.

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. 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 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*.

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.

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. 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.

* 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 measureable 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 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 LIST

J8732A AHBAU CREEK, BRITISH COLUMBIA

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
2	10070	A	1	12.0	9.6	1.4	0	55
2	10090	A	1	9.0	6.2	1.6	10	52
2	10100	A	0	5.6	5.7	0.7	14	50
2	10100	B	2	12.2	7.5	2.1	0	62
2	10110	A	1	14.6	10.0	1.9	0	59
2	10110	B	1	4.9	2.6	1.8	13	69
2	10120	A	1	7.6	5.6	1.3	8	57
2	10120	B	2	13.4	8.3	2.1	0	58
2	10130	A	1	13.0	9.1	1.8	0	55
2	10130	B	0	8.4	8.5	0.9	24	31
2	10140	A	1	9.5	6.3	1.7	5	57
2	10140	B	1	19.3	15.6	1.7	0	57
2	10150	A	2	21.8	16.0	2.0	0	49
2	10150	B	1	15.5	12.2	1.6	11	38
2	10190	A	1	11.1	8.4	1.5	0	79
2	10190	B	0	11.4	13.0	0.8	8	39
2	10220	A	1	8.8	6.5	1.4	0	78
2	10220	B	1	10.4	8.1	1.4	15	42
2	10230	A	1	10.3	10.0	1.0	1	51
2	10230	B	1	11.8	8.4	1.7	0	72
2	10240	A	1	9.6	7.6	1.3	0	70
2	10240	B	1	11.6	9.7	1.3	5	48
2	10250	A	1	12.8	9.9	1.5	1	52
2	10270	A	1	11.5	9.2	1.4	0	60
3	10280	A	1	13.6	14.8	1.0	0	47
3	10300	A	1	17.2	12.9	1.8	8	40
3	10310	A	2	15.5	10.4	2.0	0	62
3	10330	A	0	8.7	10.9	0.7	0	51

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.

J8732A AHBAU CREEK, BRITISH COLUMBIA

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
3	10330	B	2	15.1	9.3	2.2	0	63
3	10390	A	1	8.5	7.3	1.1	3	56
3	10400	A	0	7.6	11.0	0.5	1	47
4	10660	A	1	16.1	17.9	1.0	0	45

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.

J8732B YARDLEY LAKE PROPERTY, BRITISH COLUMBIA

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
5	20080	A	2	16.1	7.0	3.7	7	49
5	20090	A	3	15.6	4.9	5.6	0	59
5	20090	B	3	20.7	7.8	4.8	0	52
5	20100	A	2	12.5	7.9	2.0	21	36
5	20100	B	3	18.7	5.2	7.0	6	50
5	20120	A	3	13.5	3.5	7.0	0	76
5	20120	B	2	12.7	6.2	2.9	15	44
5	20310	A	3	12.3	4.1	4.8	8	56
5	20360	A	1	9.8	7.6	1.4	6	52
5	20370	A	1	13.3	9.6	1.7	10	44
5	20380	A	1	14.4	10.3	1.8	7	45
5	20400	A	2	15.0	8.2	2.6	5	50
5	20410	A	2	10.5	5.4	2.5	10	53
5	20430	A	2	12.1	7.0	2.2	7	51
5	20450	A	1	8.2	5.6	1.5	8	56
7	20730	A	2	9.7	4.6	2.7	9	57
7	20740	A	2	10.3	5.7	2.2	14	49
7	20750	A	2	10.0	5.9	2.0	12	51
7	20760	A	1	11.8	8.8	1.6	12	43
7	20771	A	2	15.8	10.7	2.0	6	46
7	20780	A	1	22.6	17.5	1.9	6	38
7	20780	B	1	17.0	12.2	1.9	13	37
7	20790	A	2	14.9	8.8	2.3	7	47
7	20790	B	1	17.7	12.7	1.9	0	52
7	20800	A	1	19.1	15.7	1.6	0	49

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.

J8732B YARDLEY LAKE PROPERTY, BRITISH COLUMBIA

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
7	20800	B	2	20.2	13.8	2.1	16	31
7	20810	A	2	19.8	13.4	2.2	12	36
7	20810	B	1	18.7	15.4	1.6	4	41
7	20820	A	2	20.0	13.5	2.2	4	43
7	20830	A	2	16.1	9.4	2.4	13	40
7	20840	A	2	14.4	8.7	2.2	14	41
7	20850	A	1	17.2	12.1	1.9	4	45
7	20860	A	1	11.8	9.4	1.4	0	56
7	20900	A	0	20.7	26.3	0.9	0	47
7	20900	B	0	8.1	8.2	0.9	9	47
7	20910	A	1	11.5	11.2	1.1	12	38
7	20910	B	1	18.6	20.8	1.1	7	33
7	20930	A	1	14.4	12.0	1.4	18	31
7	20930	B	3	23.2	9.6	4.4	12	37
7	20940	A	2	22.6	12.1	3.1	3	45
7	20950	A	2	12.3	7.7	2.0	0	58
7	20960	A	1	14.8	10.7	1.8	0	56
7	20970	A	1	15.4	10.5	1.9	6	45
7	20980	A	2	18.4	11.4	2.4	0	51
7	20990	A	2	17.9	12.1	2.1	6	44
7	21120	A	2	20.9	9.3	3.9	5	46
7	21131	A	3	23.9	10.5	4.1	11	38
7	21210	A	0	22.7	32.3	0.8	12	21
8	21250	A	1	11.7	7.5	1.9	4	54
8	21260	A	2	10.9	5.5	2.6	0	77

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.

J8732B YARDLEY LAKE PROPERTY, BRITISH COLUMBIA

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	AMPLITUDE (PPM) QUAD.	CONDUCTOR CTP MHOS	CONDUCTOR DEPTH MTRS	BIRD HEIGHT MTRS
8	21290	A	2	9.3	5.0	2.3	3	62
8	21300	A	1	17.5	14.5	1.6	18	29
11	21321	A	2	25.0	14.4	2.9	0	45
11	21331	A	2	14.7	7.4	2.9	9	48
11	21341	A	2	13.4	6.5	3.0	0	67
11	21351	A	2	18.7	13.4	2.0	5	43
11	21351	B	3	18.9	5.5	6.7	0	55
11	21351	C	3	20.4	7.7	4.8	5	48
11	21361	A	3	27.8	9.9	5.7	8	40
11	21361	B	3	27.3	11.1	4.8	11	36
11	21361	C	3	22.9	9.3	4.5	0	55
11	21371	A	2	21.2	9.8	3.7	0	59
11	21371	B	3	28.8	9.1	6.8	13	35
11	21371	C	3	23.7	7.9	5.9	13	38
11	21381	A	3	22.4	8.6	4.8	3	48
11	21381	B	3	20.0	7.1	5.2	11	42
11	21421	A	1	18.2	14.0	1.8	0	47
11	21441	A	1	24.8	23.1	1.5	2	37
11	21501	A	0	14.9	20.7	0.7	0	43
11	21501	B	2	26.9	16.8	2.7	0	44
11	21511	A	1	20.3	19.7	1.3	2	40
11	21511	B	2	19.5	9.8	3.2	3	48
11	21511	C	1	17.2	18.6	1.1	0	43
11	21521	A	1	21.2	25.8	1.0	13	23
11	21521	B	2	23.5	11.5	3.5	5	43
11	21521	C	2	19.9	14.2	2.0	0	48
11	21531	A	2	29.3	17.2	3.0	10	33
11	21531	B	2	26.4	13.1	3.6	20	27
11	21531	C	0	14.6	16.8	0.9	12	31
12	21541	A	1	13.0	9.4	1.7	24	30

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.

J8732B YARDLEY LAKE PROPERTY, BRITISH COLUMBIA

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
12	21541	B	3	34.1	12.8	5.7	17	27
12	21551	A	3	25.5	7.9	6.7	0	51
12	21551	B	3	26.2	10.1	5.0	10	38
12	21551	C	1	13.8	11.0	1.5	22	29
12	21561	A	2	15.4	9.7	2.2	14	39
12	21561	B	3	19.8	7.0	5.2	13	40
12	21561	C	3	25.5	7.9	6.7	12	37
12	21581	A	3	23.2	9.5	4.5	7	43
12	21581	B	3	24.0	8.2	5.8	9	41
12	21591	A	3	20.0	8.0	4.4	0	55
12	21591	B	2	23.3	11.5	3.5	14	34
12	21591	C	2	21.3	12.2	2.8	11	37
12	21611	A	2	28.0	20.2	2.2	0	43
12	21611	B	2	17.7	7.7	3.8	14	40
12	21611	C	2	27.0	13.0	3.8	13	33
13	21631	A	2	30.5	21.3	2.4	0	43
13	21631	B	2	21.2	10.6	3.3	0	52
13	21631	C	2	20.8	11.5	2.9	0	54
13	21641	A	2	18.1	8.9	3.2	5	48
13	21641	B	3	21.3	9.1	4.1	4	47
13	21661	A	4	29.5	8.2	8.1	2	45
13	21661	B	3	30.4	8.8	7.7	3	44
13	21671	A	3	21.8	6.1	7.3	0	53
13	21671	B	3	21.6	6.0	7.4	0	58
13	21671	C	3	32.7	12.7	5.4	0	59
13	21691	A	3	24.9	10.8	4.2	3	45
13	21691	B	3	45.7	19.5	5.2	0	61
13	21731	A	3	23.3	8.5	5.2	1	50
13	21741	A	3	32.4	12.8	5.2	2	43
13	21761	A	3	26.1	11.8	4.1	17	30
13	21761	B	3	33.6	11.4	6.5	1	44
13	21771	A	3	22.1	9.3	4.2	6	45

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.

J8732B YARDLEY LAKE PROPERTY, BRITISH COLUMBIA

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
13	21771	B	3	30.3	10.6	6.0	0	48
13	21771	C	2	27.5	14.7	3.3	14	31
13	21781	A	3	37.8	14.3	5.8	0	51
13	21781	B	2	30.1	14.8	3.8	1	43
13	21791	A	3	30.0	13.5	4.3	0	50
13	21791	B	3	39.3	17.2	4.8	0	45
13	21801	A	3	35.3	12.5	6.2	0	55
13	21801	B	3	40.3	14.9	6.1	0	54
13	21801	C	3	42.4	16.3	5.9	0	54
13	21811	A	3	41.5	14.7	6.5	0	57
13	21811	B	3	44.8	14.9	7.2	0	51
13	21821	A	3	39.9	12.6	7.5	0	52
13	21821	B	3	42.4	13.3	7.7	0	59
13	21831	A	4	46.1	13.5	8.6	0	67
13	21831	B	4	37.8	10.4	8.8	0	58
13	21831	C	3	36.5	11.2	7.6	0	51
13	21831	D	3	47.0	16.2	7.0	0	44
13	21841	A	4	34.3	9.4	8.6	0	53
13	21841	B	4	54.9	17.0	8.4	0	49
13	21841	C	4	63.5	18.1	9.8	0	55
13	21841	D	4	68.1	21.2	8.9	0	51
13	21851	A	4	78.4	26.3	8.4	0	38
13	21851	B	3	78.4	29.4	7.3	0	43
13	21851	C	3	45.3	14.3	7.8	0	51
13	21851	D	3	47.4	16.2	7.1	0	54
13	21851	E	3	41.3	15.0	6.3	0	48
13	21861	A	3	15.7	6.4	4.0	0	64
13	21861	B	4	20.9	5.3	8.3	0	73
13	21861	C	3	73.4	29.9	6.4	0	47
13	21871	A	3	68.4	33.5	5.0	0	36
13	21871	B	4	34.3	9.9	8.1	0	55
13	21871	C	3	39.6	17.1	4.9	0	48
13	21881	A	3	19.5	6.0	6.2	0	68
13	21891	A	3	43.9	14.8	7.1	2	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.

J8732B YARDLEY LAKE PROPERTY, BRITISH COLUMBIA

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
13	21891	B	1	30.9	35.2	1.2	0	39
13	21891	C	3	55.7	26.9	4.7	0	39
9	21900	A	3	45.7	17.1	6.2	5	35
9	21900	B	2	23.8	13.3	3.0	3	44
9	21900	C	4	20.4	3.6	13.4	6	50
9	21910	A	4	33.5	7.4	11.4	5	41
9	21910	B	2	23.5	11.1	3.7	5	43
9	21920	A	3	24.7	9.6	4.9	2	47
9	21930	A	3	22.5	8.5	4.9	8	43

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, WILLIAM R. LECHOW, certify that: -

1. I hold a B. Sc. (Hons.) in Geological Sciences from Brock University. After graduation, I attended the University of Western Ontario as a full-time student during which time I obtained additional credits in geophysics.

2. I reside at 17 Willingdon Blvd. in the city of Etobicoke, Ontario.

3. I have been continuously engaged in a professional role in the minerals industry in Canada and abroad for the past twelve years.

4. I have been an associate member of the Society of Exploration Geophysicists since 1974 and hold memberships on other professional societies involved in the minerals extraction and exploration industry.

5. The accompanying report was prepared from information supplied by Gabriel Resources Limited and from a review of the proprietary airborne geophysical survey flown by Aerodat Limited for Gabriel Resources Limited I have not personally visited the property.

6. I have no interest, direct or indirect, in the property described nor do I hold securities in Gabriel Resources Limited.

Signed

William R. Lechow
Geophysicist

Mississauga, Ontario
September, 1987

COST STATEMENT

AIRBORNE GEOPHYSICAL SURVEY
12-23 June 1987
AHBAU CREEK AREA

Aerodat Limited - 275 Line Km @ $75.00	$20,625.00
Em Profiles @ $2	550.00
Mark Management - Planning, Supervision, Reporting	3,176.25
TOTAL COST	$24,351.25