APPENDIX C

GRANGES INC.

GEOLOGICAL, GEOCHEMICAL, GEOPHYSICAL
AND DIAMOND DRILLING REPORT

UNUK, COUL, ICEY, BOU, KNIP & IRV CLAIM GROUPS

B.E. GABOURY

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REPROT ON
COMBINED HELICOPTER-BORNE
MAGNETIC AND ELECTROMAGNETIC
SURVEY
ISKUT-UNUK RIVER
BRITISH COLUMBIA

REPORT ON COMBINED HELICOPTER-BORNE MAGNETIC AND ELECTROMAGNETIC SURVEY ISKUT-UNUK RIVER BRITISH COLUMBIA

FOR
GRANGES INC.
BY
AERODAT LIMITED
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1. INTRODUCTION

This report describes an airborne geophysical survey carried out on behalf of Granges Inc. by Aerodat Limited. Equipment operated included a four frequency electromagnetic system, a high sensitivity cesium vapour magnetometer, a two frequency VLF-EM system, a video tracking camera, a radar altimeter and an electronic navigational system. Electromagnetic, magnetic and altimeter data were recorded both in digital and analog form. Positioning data were recorded on digital and VHS video tapes as well as being marked on the flight path mosaic by the operator while in flight.

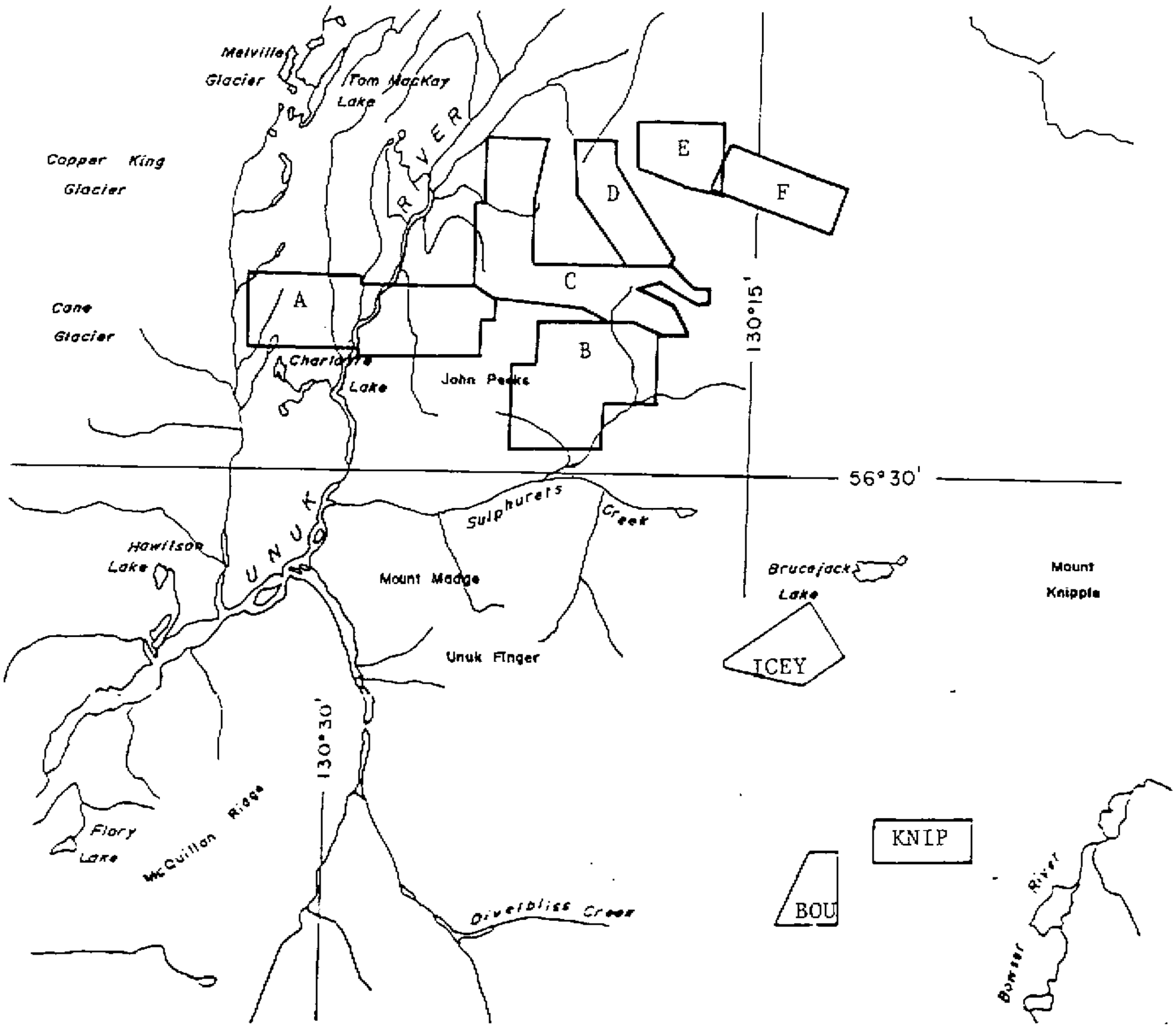
The survey is comprised of nine blocks in the Iskut-Unuk River area in northwestern British Columbia. Survey operations were carried out from January 27 to February 25, 1989. Except for the 100 metre line spacing of Block A, the survey lines were flown at nominal line spacing of 200 metres. Flight line directions were east-west for Blocks A, B and KNIP; approximately northwest-southeast for Blocks C, D and F; north-south for Block E and approximately southwest to northeast for Blocks BOU and ICEY. Coverage and data quality were considered to be well within the specifications described in the contract. A grand total of 650 kilometres were flown on flight lines inside the survey area boundaries and were compiled in map form to accompany this report.

The survey objective is the detection and location of mineralized zones which can be directly or indirectly related to precious or base metal exploration targets. In regard to base metal targets, short, isolated or flanking conductors displaying good conductivity and perhaps magnetic correlation are considered to be areas of extreme interest.

Also of importance, however, for precious metals, are poorly mineralized conductors, displaying weak conductivity but geophysical indications of dip, that may represent structural features or alteration zones.

2. SURVEY AREA LOCATION

The Iskut-Unuk River area is located in northwestern British Columbia. It consists of 9 blocks centred at around 56 degrees 30 minutes latitude and 130 degrees 15 minutes longitude.



3. AIRCRAFT AND EQUIPMENT

3.1 Aircraft

An Aerospatiale A-Star 350D helicopter, registration C-GXYM, owned and operated by Peace 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

The electromagnetic system was an Aerodat 4-frequency system. Two vertical coaxial coil pairs were operated at 935 Hz and 4600 Hz and two horizontal coplanar coil pairs at 4175 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 electromagnetic bird was towed 30 metres below the helicopter.

3.2.2 VLF-EM System

The VLF-EM System was a Herz Totem 2A. This instrument measured the total field and quadrature components of two selected transmitters, preferably oriented at right angles to one another. The sensor was towed in a bird 12 metres below the helicopter. The transmitters monitored were GBR (Rugby, England) and NAA (Cutler, Maine) broadcasting at 16.0 kHz and 24.0 kHz, respectively.

3.2.3 Magnetometer

The magnetometer employed was a Scintrex Model VIW-2321 H8 cesium, optically pumped magnetometer sensor. The sensitivity of this instrument was 0.1 nanoTeslas at a 0.1 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 King Air KRA-10 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 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	935 Hz. Coaxial Inphase	2.5 ppm/mm
CXQ1	935 Hz. Coaxial Quadrature	2.5 ppm/mm
CXI2	4600 Hz. Coaxial Inphase	2.5 ppm/mm
CXQ2	4600 Hz. Coaxial Quadrature	2.5 ppm/mm
CPI1	4175 Hz. Coplanar Inphase	10 ppm/mm
CPQ1	4175 Hz. Coplanar Quadrature	10 ppm/mm
CPI2	33 kHz Coplanar Inphase	20 ppm/mm
CPQ2	33 kHz Coplanar Quadrature	20 ppm/mm
PWRL	Power Line	60 Hz
VLT	VLF-EM Total Field, Line	2.5% ppm/mm
VLQ	VLF-EM Quadrature, Line	2.5% ppm/mm

Channel	Input	Scale
VOT	VLF-EM Total Field, Ortho	2.5% ppm/mm
VOQ	VLF-EM Quadrature, Ortho	2.5% ppm/mm
RALT	Radar Altimeter	10 ft./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

3.2.9 Radar Positioning System

A Motorola Mini-Ranger (MRS III) radar navigation system was used for both navigation and flight path recovery. Transponders sited at fixed locations were interrogated each second and the ranges from these points to the helicopter measured to a high degree of accuracy. A navigational computer triangulates the position of the helicopter and provides the pilot with navigation information. The range/range data was recorded on magnetic tape for subsequent flight path determination.

4. DATA PRESENTATION

4.1 Base Map

Topographic base maps at a scale of 1:20,000 were prepared from 1:50,000 government topographic maps on mylar bases.

4.2 Flight Path Map

Aside from the necessary visual navigation of a few of the more steep relief parts of the survey blocks, the flight path was derived from the Mini-Ranger radar positioning system. The distance from the helicopter to two established reference locations was measured each second and the position of the helicopter calculated by triangulation. It is estimated that the flight path is generally accurate to about 10 metres with respect to the photomosaic detail of the base map.

The flight path map, showing all flight lines, is presented on a Cronaflex copy of the topographic base map, with time and navigator's manual fiducials for cross reference to both the analog and digital data.

4.3 Airborne Electromagnetic Survey Interpretation Map

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. 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. An interpretation map was prepared showing flight lines, fiducials, peak locations of anomalies and conductor outlines. The data have been presented on a Cronaflex copy of the topographic base map.

4.4 Total Field Magnetic Contours

The aeromagnetic data were corrected for diurnal variations by adjustment with the recorded base station magnetic values. No correction for regional variation was applied. The corrected profile data were interpolated onto a regular grid at a 50 metre true scale interval using an Akima spline technique. The grid provided the basis for threading the presented contours at a 5 gamma interval.

The contoured aeromagnetic data have been presented on a Cronaflex copy of the topographic base map.

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 a Cronaflex copy of the base map.

4.6 Apparent Resistivity Contours

The electromagnetic information was processed to yield a map 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 a regular grid at a 50 metres true scale interval using an Akima spline technique.

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

5. INTERPRETATION

5.0 General

5.0.1 Geology

The geological information used for this report is provided by the generosity of Granges Inc. It consists of a report and accompanying geological map published by the Province of British Columbia, Ministry of Energy, Mines and Petroleum Resources, reprinted in 1988, titled Geology and Mineral Deposits of the Unuk River - Salmon River - Anyox Area, by E.W. Grove. It should be noted that no attempt is made to provide a concise geological report here. The brief capsule of geological information in this section serves merely as a connective background for the geophysical interpretation to follow. Only in highly obvious situations will geophysical-geological relations be hypothesized. Any comprehensive geological interpretation would be best left to the client, who with more knowledge of the geological details and objectives can further enhance the geological picture with the use of geophysical data provided by this survey.

The Iskut-Unuk River area is part of a well-defined geological entity called the Stewart Complex. It includes part of the contact of the eastern Coast Plutonic Complex with the west-central margin of the succeeding Bowser Basin. The area consists of metamorphic, sedimentary and volcanic rocks marked by deformation and erosion of the Western Cordillera and range in age from Middle Triassic to Quaternary. The known stratigraphy of the area is not detailed due mainly to the extensive glaciers, the complex character of the Mesozoic succession and the poor accessibility. For example, most of Blocks BOU, KNIP, ICEY and F, as well as good parts of Blocks B, C, D and E are covered by icefields.

The geology of the nine survey blocks is generally dominated by two Jurassic aged stratified volcanic-sedimentary sequences named Unuk River Formation and Salmon River Formation. The former unit consists mainly of thick-bedded epiclastic volcanic rocks and lithic tuffs, with associated pillow lavas, carbonate lenses and thin-bedded siltstones that are moderately folded and extensively faulted. The younger Salmon River Formation is mainly a complexly folded, colour-banded and thinly bedded siltstone-greywacke sequence with some rhyolite, chert, sandstone, argillate, slate, shale, conglomerate, limestone, quartzite and tuff.

A third conforming (Middle) Jurassic unit, named the Betty Creek Formation also extends into the northern portions of Blocks D and E. These strata consist mostly of red and green epiclastic volcanic sandstone and conglomerate beds. As well, a Lower Jurassic hornblende gabbro pluton occupies the southeastern corner of Block A and a Tertiary or older dyke zone intrudes into the eastern portion of Block F.

The metallogenesis of the area is related to the sedimentary, plutonic and volcanic processes during each major tectonic phase of its orogenic cycle. These processes combined to produce broad mineral zoning and a large array of mineral deposits that are well known for this part of the Western Cordillera. They include major massive sulphide deposits at Granduc Mountain and the Hidden Creek, Redwing, Double Ed and Bonanza properties at the Anyox area to the south; simple ore and gangue minerals in the numerous fissure vein and replacement vein deposits of the Stewart Complex; and porphyry deposits of copper-molybdenum at Mitchell-Sulphurets Creeks and of molybdenum at Kitsault.

5.0.2 Magnetics

Given its fine amplitude and spatial resolutions of 0.1 nT accuracy and 0.1 second sampling interval, respectively, the aeromagnetic data from the high sensitivity cesium vapour magnetometer can produce a contour map that is comparable in quality to ground data. Hence, with support from the derivative vertical magnetic gradient map and existing geological information, the geological mapping of the survey area could be substantially more refined and detailed.

While the amplitude distribution of the total field magnetic map could be useful in separating different rock types, the calculated vertical magnetic gradient contours when used in conjunction, can provide valuable added structural and positional information. The gradient effectively removes the regional background levels, sharpening residual anomalies and resolving closely spaced bodies. Its zero contour level also coincides closely to the actual geological contacts. This is especially true for vertical bedding with the steeper structures having their contacts closer to their magnetic peaks.

As well, breaks and offsets are more readily obvious on the gradient map. These pattern discontinuities are naturally often the result of faults, shears and lineaments.

Since tectonic activities of varying degrees can be important in the search for gold mineralization, any obvious contour shifts of significant extent would be interpreted as inferred faults. These of course, are highly tentative and require ground check for possible confirmation.

5.0.3 VLF-EM

Under the optimum conditions of relatively low surficial conductivity, flat terrain, significant physical extend of conductors and properly selected coupling of VLF station signal direction with conductor and flight line strikes, the VLF-EM contour map can be an effective mapping tool and supplement to the magnetics and EM.

Unfortunately, given the pervasive icefields, rugged terrain and for some survey blocks, high apparent resistivity, the VLF for most blocks proved to be relatively inactive and therefore an ineffectual mapping tool.

5.0.4 Electromagnetics

The electromagnetic data was first checked by a line to line examination of the analog records. Record quality was good with a noise level approaching no more than 4 ppm and occasional sferics activity. Virtually all of the system noise was removed by an appropriate low pass filter while most sferics responses were rejected by a statistical filter. As normal, however, a few sferics peaks were left in the processed data and these had to be carefully edited in the interpretation stage of the processed EM profile maps by the use of the original raw data on the analogs.

Initially, these noise responses along with desired bedrock type anomalies and geological/surficial noise peaks were selected automatically with a proprietary computer program. Typically, this user flexible routine chose narrower well defined anomalies, excluding long wavelength quadrature dominant responses of overburden sources and negative inphase profile deviations from high susceptibility magnetite sources.

Questionable anomalies were checked against the analogs for noise and each anomaly was then thoroughly evaluated mainly on shape definition, with only minor regards to apparent conductivity. In particular, the indication of a dipping source from a peak offset of the coaxial response with the coplanar would likely indicate an inclining narrower bedrock structure. Each EM anomaly would also be correlated with adjacent line EM responses and any coincidental photomosaic, magnetic, VLF-EM, altimeter, cultural, and geological data available. Such a process ensured that any EM anomaly of bedrock potential would be selected for the final interpretation map and properly grouped with any similar neighbouring responses into conductive zones which would have some geological meaning.

5.1 Blocks A, B and C

5.1.1 Geology

Survey blocks A, B and C are located on the western portion of the area where a large unit of the Lower Jurassic Unuk River Formation (stratified volcanic-sedimentary sequence) prevails, covering almost all of Block A, the major (west) portion of Block C and a western part of Block B.

A Lower Jurassic hornblende gabbro pluton, which forms Twin John Peak, intrudes into the southeastern corner of Block A. Otherwise, the only other geological unit found in these three blocks is the Middle Jurassic Salmon

River Formation (colour-banded, thinly bedded siltstone-greywacke sequence), which occupies the eastern parts of Blocks B and C as well as the northwestern corner of Block C.

Structurally, the area is expected to be complexly folded and faulted. Three roughly north-south striking faults and two northeast striking synclines, one through the eastern parts of Blocks B and C and the other at the northeastern corner of Block C, are outlined on the given geology map.

5.1.2 Magnetics

The three western blocks of A, B, and C, in spite of a simple mapped geology, have the most active magnetic response in the survey. With a base amplitude of around 57200 nT, areas A and B have magnetic ranges of close too 900 nT while Block C has by far the greatest magnetic variance of the nine survey blocks at up to 1800 nT. This wide range is due to a strong oval-shaped magnetic high in Block C's southwest corner. This intrusive-like body could very well be the unmapped continuation of the pluton shown on the geology map and confirmed by a similar, albeit weaker, magnetic high in the neighbouring southeast corner of Block A.

Other weaker magnetic highs in the three blocks which might reflect further undetected and perhaps buried intrusives in an otherwise expected uniform geology/magnetics environment include the northwest and eastern margins of Block C, the western margin of Block A and the eastern and northwestern portions of Block B.

The approximately north-south striking contact between the Unuk River and Salmon River Formations that runs through Areas B and C is clearly indicated on the magnetics as a steep gradient separating the higher magnetic intensities of the Unuk River Formation from its conforming neighbour. A similar distinctive magnetic linear occurs near the eastern edge of Block C where a syncline is mapped.

The relative complexity of the magnetics in these three blocks, in comparison to the other blocks and to the mapped geology, should allow for perhaps significant revision or at least more detailing of the known geology. Unfortunately, in spite of the patterned distribution of the magnetic intensities, not many offsets of significant lengths were seen in either the total field magnetic or vertical gradient contours. Of the three faults noted on the given geological map, only the one running north south through the centre of Block A seemed apparent on the magnetics. Six other similarly questionable faults, two in each block, were inferred from the magnetics on the interpretation map. Perhaps the multitude of faults expected in this area have little lateral, but maybe more vertical, displacement and hence are not as obvious on the magnetics.

5.1.3 VLF-EM

In spite of being the most apparently conductive of the nine survey blocks, the VLF-EM contours for Blocks A, B, and C proved no more detailed or useful. Indeed, the observed correlation between the selected conductors or resistivity with the VLF is lower than most of the other six blocks as many of the larger more conductive formational type conductors, such as A1, A7, B1, C7, C8 and C9 have no corresponding VLF highs. The same applies to most of the smaller conductors as it appears that the VLF signal coupled best mainly to the longer but narrow strike-biased conductors such as A11, B5, B9, B13, C3, C10 and C12, where the VLF contours rivaled the resistivity in functionally outlining the extent of a conductor.

The VLF-EM's inherent sensitivity to topography and signal-conductor orientation coupling bias are the expected culprits for its limited applicability in this environment.

5.1.4 Electromagnetics

Directly reflecting the much larger number of selected conductors, these three blocks have the most active resistivity contours of the survey. Nevertheless, due to the local geological units' characteristic resistiveness, the lack of overburden conductivity and infrequency of direct magnetic association of the conductors, the resistivity maps were useful, as in the other blocks, mainly for outlining conductive zones and not for geological mapping.

Indeed, with most of the identified conductors interpreted as bedrock and with little to no surficial conductivity providing a zero background, the resistivity contours produced a virtual bedrock conductor mapper. Only the smaller and/or weaker questionable bedrock zones such as A5, A8, A9, B3 and C5 were not identified by the resistivity maps. The remaining noted conductor outlines of the interpretation map were confirmed, and in a few cases (A4, B7 to B8, C3 and C10) extended, by the contours.

These three neighbouring blocks have very similar EM response results. As mentioned, all had little to no overburden conductivity or questionable bedrock response but mostly multiple peak, well defined and relatively conductive anomalies. Ironically, Blocks A, B and C each have 12 selected conductors. Due to and based on their similar characteristics, these 36 zones were separated into five groups for discussion below. The presented order roughly reflects the geological potential shown by the conductors' geophysical parameters but might in no way correspond to the eventual follow-up priority, which can only be properly assessed with more detailed geological information and objectives than those presently available.

A5, A9, B6, B9, B12, C2, C6

Amongst larger multiple peaked formational conductors, these are seven smaller (mostly single peak) more isolated and distinct zones perhaps of more anomalous mineralization.

In Block A, uniquely narrow conductors A5 and A9 have interesting unconforming northeast strikes, with A9 along a magnetic contact possibly reflecting the contact between the mapped pluton and the prevailing Unuk River Formation. A5's length is interestingly interrupted in the EM by two north south striking magnetic inferred faults. A9 appears almost vertically inclined while A5 seems to dip to the southeast. The smaller amplitudes of both zones suggest greater depths.

In Area B, similarly narrow and short conductors of B6, B9, B12 are not as isolated as the others of the group, but their distinction of apparently direct magnetic correlation, unique among the 28 higher rated "interpreted bedrock" conductors of these three areas, perhaps provides them extra appeal as geologically anomalous zones in spite of less defined EM responses.

In Block C, C2 and C6 are the only short non-formational like conductors of the area. They both appear to have a contact with an unmapped pluton implied by the magnetics.

A2, A3, A6, B4, B10, C7, and C10

These seven second priority bedrock zones are small to medium sized conductors not quite as attractive as the above zones because of their closer proximity or resemblance to the neighbouring massive formational conductors.

In Block A, the three short one or two line zones of A2, A3 and A6 fall next to the two large A1 and A7 formations. The singular more rounded EM peak of A2 showing a clear easterly dip appears more appealingly distinct than the more formational like multiple peaks of A3 and A6 which are more likely extensions, perhaps fault separated, from A1 and A7.

In Area B, B4 appears like an extended arm of the large B1 structure but is worthy of more consideration because of its unconforming ESE strike along a magnetically inferred cross fault. The larger more formational like B10 is distinguished for its apparent geologic/magnetic location along the Unuk River Formation/Salmon River Formation contact. Its better defined narrower northeastern end (Line 1080 to 1100) would be the best starting point for follow-up.

For Block C the similar zone of C7 lies along the same apparent contact plane down strike north of B10. C10, meanwhile is of shorter medium length but even more formational like wide multiple peaks, especially with the inclusion of the weaker subzone of C10a. Nevertheless, it is sufficiently separated from the massive C8-C9 formation to the west and has an attractive, though questionable, association with a magnetic high.

A1, A4, A7, A10, A11, B1, B2, B5, B7, B8, B11, C3, C8 and C9

Collectively, these 14 wide multiple peaked and mostly long conductors characterize the EM response of Blocks A, B, and C. Their large dimension, widely varying apparent conductivity and non-magnetic character is typical of formational, usually graphitic, conductors. They are all located within the two Jurassic aged Unuk River and Salmon River Formations. This is substantiated by an almost perfect correlation of the 14 zones' location on negative magnetic bodies representing these two volcanic-sedimentary sequences, as opposed to any known or unmapped intrusions of higher magnetic intensities. Narrower B2 zone and more distinctively resolved and narrow subzones of A11a, B1b and C8a, however, fall closer to the contact edge of these magnetic highs of possible intrusions. These regions and the possibly magnetic subzones of A1a, B2a-B2b and C9a would definitely be the initial areas of follow-up interest in an otherwise bewildering massive array of EM bedrock responses. Other distinctively well defined lines of EM anomalies such as A7a, A7b, A7c, B1a and C8b might also be of interest as possible indications of anomalous mineralization within these large formations. These conductors yield by far the most conductive responses of the survey and subzone A7a, with some extremely high modeled conductances of over 20 to perhaps a few hundred mhos, would be the best target for any investigation into the source of this conductivity.

A8, B3, C5, C11 and C12

Of the 36 identified conductors of Areas A, B, and C only 8 had some doubts of being bedrock, and of these 8 "possible bedrock conductors", at least 5 demonstrate reasonable bedrock potential. Most of these, including A8, B3, C5 and perhaps C11 are situated close enough to massive bedrock formations to be considered as likely weaker or at-depth extensions. Zones A8 and C11 also show added geological potential with possible direct magnetic association.

A12, C4, and C1

These are the three least bedrock promising conductors selected within Blocks A, B, and C. They are primary quadrature only responses with no indications of dip on the anomaly geometry. They might very well represent a few of the very few conductive overburden regions of the area. Although both A12 and C4 are very attractively narrow, geological support appears necessary here before recommendations for follow-up can be made.

5.2 Blocks D, E and F

5.2.1 Geology

A large unit of the Unuk River Formation, albeit largely covered by glaciers, occupies the better part of the three blocks. This Lower Jurassic aged stratified volcanic-sedimentary sequence is seen to take up all of Block F, the southeastern half of Block E and the south-central portion of Block D.

There is an inferred intrusion of a Tertiary or older SSW striking dyke zone into the eastern part of Block F and a similar aged, more oval shaped pluton in the southern portion of Block D. The northern portions of Blocks D and E are composed of alternating bands of Middle Jurassic Betty Creek Formation (red and green epiclastic volcanic sandstone and conglomerate beds) and Salmon River Formation (colour-banded siltstone-greywacke sequence). The latter unit also occupies the southern end of Block D.

5.2.2 Magnetics

The varying activity level and dynamic range of the magnetic contours of Blocks D, E and F reflect well the differing complexity of their expected geology. Block F, consisting basically of a singular Unuk River Formation, has magnetic values ranging only 140 nT. The inferred SSW striking dyke zone which intrudes into the southeastern portion of the area is seen to produce a relatively narrow modest magnetic high of 50 nT. Two other similar linears run across the centre and northwestern parts of the block, suggesting possible existence of other dykes. A stronger more oval shaped magnetic anomaly at the southeastern margin might indicate a pluton intrusion.

Block E has a similar magnetic background of 57,500 nT for the Unuk River Formation in the northwest. The intervening Betty Creek Formation appears to be indistinguishable magnetically from the Unuk River Formation.

The three geological units' apparent characteristic magnetic intensities hold true in Block D. While the mapped geological sequence is confirmed by the magnetics, as in Block E, however, the actual locationing and size of the formations as reflected by the magnetic contour patterns differ significantly from the given geological mapping. This is where the airborne magnetic data is particularly useful in refining the known geology. For example, it appears that the three bands of the Unuk River Formation in Block D, as represented by the higher amplitudes or red/purple colours of the magnetic contours, are more extensive than as mapped.

The more varying geology of Block D has also created a more interestingly complex magnetic map, with a wider range of 800 nT, up to a maximum amplitude of over 58,000 nT. Nevertheless, shifts and breaks in both the total field magnetic and calculated vertical gradient contours were hardly detected. As a result, only one questionable inferred fault was interpreted in Block D, as was in Block E.

5.2.3 VLF-EM

As characteristic of the VLF response in this resistive rugged environment, the resulting contours were relatively poorly defined. This was particularly so for the more resistive Block E, where the few very weak EM zones could not be correlated with the VLF and little VLF trending was apparent beside a few short or one line noise like highs on the contours.

The conductor mapping capability of the VLF fared better in the more conductive Blocks D and F as most of the identified EM conductors were substantiated by corresponding VLF highs and in some cases, such as D3, D6, D11-D11a, F2 and F4, had their zone outlines extended. This gave promise to a few other VLF highs, noted on the interpretation maps of Blocks D and F, where no EM response was apparent. Two of these, alongside conductor F4 and in between conductors F1 and F2 in Block F, also coincide well with magnetic high trends which might reflect dykes.

5.2.4 Electromagnetics

Of similar function as the VLF, given the resistive nature of the local geological units, the resistivity contours were mainly useful for outlining the selected conductors. With no conductive overburden, and hardly any lakes or rivers, the resulting zero background on the resistivity maps, unlike the VLF, more discreetly outlined the extent of each conductor.

The degree of magnetic correlation with the EM of the three areas tends to vary with the strength of the EM response. In Block E, where there are only four highly questionable bedrock zones identified, no magnetic association was seen. In the more conductive Block F, the five selected conductors follow magnetic trends, with zone F4 possibly being directly magnetic. In the most promising bedrock conductor area of Block D, interpreted bedrock zone of D11 falls directly on a 200 nT. high while conductors D1, D6 and D10 are situated on shoulders of larger magnetic bodies distinctive enough to be considered as individual magnetic highs.

In total, for the three survey blocks of D, E and F, there are 20 conductors of potential bedrock identified, of which eight are of the interpreted bedrock classification. For the purpose of follow-up prioritization these are further rated into eight groups and discussed below. This priority is highly tentative as it is based mostly on geophysical criteria which best support the existence of any bedrock source, rather than on any known detailed geological information and objective. Note that the letter prefix of a zone number stands for the Block name.

D11

Located within the Salmon River Formation in the southeastern corner of Block D, this multiple banded interpreted bedrock conductor has the only well correlated magnetic high in the three blocks. Though interrupted by two flight lines of no apparent EM response, both the magnetics and VLF suggest zone D11 and subzone D11a to the south are connected.

Unfortunately, the multiple peaks, weak measured conductance around 1 mho and probable long strike (past survey boundaries) make this conductor a low priority massive sulphide prospect despite of the magnetic association. A larger dimension graphitic or formational source appears more likely.

D7, D8, and D9

These three adjoining conductor zones are more likely parts of a singular massive multiple band conductive formation in the southwestern corner of Block D. Aside from the slight spatial separations, the reason for dividing this formation is their apparent geological locationing. It seems D7 is situated in the Unuk River Formation, D9 within the Salmon River Formation and the narrower one peak band of D8 near the mutual contact. The zoning of D8 amidst multiple anomaly peaks, however, is more geological speculative than geophysical, unlike similar narrow sub-zone D7a on the other side of D7 which appears more interestingly distinct. The main feature of these three zones is their high apparent conductance. At up to around 15 mhos on anomalies 5000 B (D7), 5010 E (D9) and 5020 D (D8), they have by far the highest conductance of the three areas. Their lack of magnetic association and large dimensions, however, make them more likely formational/graphitic conductors than massive sulphide prospects. The zones' termination on their northeastern ends might be due to a cross fault inferred from the magnetics.

D5, D6

Unlike the previous four bedrock zones, these are two small weak singular response conductors. Though of much weaker amplitude and apparent conductance, their anomalies' clear indication of dip (northwest for D5 and approximately vertical for D6) and more distinctive isolation make them perhaps more attractive targets. Apparent VLF high trends striking northeast through the two short zones provide hints of weaker extensions. Both conductors are located in the Unuk River Formation, but D6 might fall near the contact of a small Tertiary pluton that is mapped in the vicinity and suggested by a small oval magnetic high just northeast of the zone. This promising feature, however, is counteracted by a raised EM background between D6 and D7 which suggests the former zone as perhaps only an at-depth continuation of the larger formation.

D1 and F2

The last interpreted bedrock conductor of Block D and the only one of Block F have similar moderate length double-peaked, less defined and poorly conductive EM responses, with just enough indication of dip for the higher classification. D1 is somewhat more appealing for its apparent geological and magnetic location on a contact between the Betty Creek Formation and Unuk River Formation.

D10, D2, E3 and E4

These are the four most promising of the 12 "possible bedrock" rated conductors of the three blocks. Actually, their EM responses are very similar to the higher rated above D1 and F2 conductors, but lacked the confirmation from their shorter one or two line responses. As such, their weak ambiguous and, perhaps for D2, noisy responses need ground follow-up for a more assured classification. The two zones of Block D are somewhat more attractive for their locations on distinctive magnetic high shoulders which might reflect associated but distinct neighbouring magnetic bodies.

F4 and F3

These are two longer possible bedrock zones in Block F, each showing one southwestern end EM anomaly with some promise of dip, but more surficial like or non-apparent responses down strike. F4 is rated higher for having VLF support beyond its EM extend as well as being slightly offset from a narrow southwest striking magnetic high that is similar to a paralleling magnetic feature/mapped dyke zone to the southeast.

F5, D3, E2 and F1

These four zones consist of narrow, mainly quadrature EM anomalies only slightly less defined and promising as the above two possible bedrocks. The status for their follow-up depends on any geological support not apparent here and on the success of follow-ups of the higher rated possible bedrock conductors.

D4, E1

Both are wider oval shaped two line zones more characteristic of surficial responses. The lack of any overburden conductivity elsewhere and of any apparent drainage, however, give some hope for these zones as perhaps more attractive sources poorly defined by strikes at shallow angles to the flight line directions. Zone D4's multiple peaks have some indications of dip and inphase, but unfortunately, occurs in an ambiguously noisy part of the data where perhaps some ground confirmation could help.

5.3 BLOCKS BOU, KNIP AND ICEY

5.3.1 Geology

The ground surface of the three small southern Blocks BOU, KNIP and ICEY is mostly covered by a large icefield. As a result, their geological mapping is sketchy and mostly inferred from a few outcrops. Block ICEY appears to consist entirely of the Lower Jurassic Unuk River Formation (stratified volcanic-sedimentary sequence). Group KNIP is inferred to be uniformly of the Middle Jurassic Salmon River Formation (thinly bedded siltstone-greywacke sequence). Area BOU, meanwhile, is almost divided equally with the Unuk River Formation in the south and the Salmon River Formation to the north.

5.3.2 Magnetics

As reflective of their uniform inferred geology, the magnetic values of the three BOU, KNIP and ICEY Blocks vary over small ranges of only one to two hundred gammas. The Salmon River Formation that covers all of Block KNIP is seen to have the higher magnetic intensity at around 57,400 nT, while the Unuk River Formation of Group ICEY has average magnetic amplitudes of around 57,300 nT as has Block BOU, even though it is composed of both formations. Perhaps the east-west striking contact between the formations inferred on the geology map is inaccurate and runs more north-south next to the block's eastern boundary, as possibly suggested by the distribution pattern of the magnetic intensities in the contour map.

A similar subtle magnetic division seen running north-northwest through the centre of Block KNIP might infer a contact. Otherwise, Blocks KNIP and BOU have more uniform contours than Block ICEY, whose more alternating high and low contour patterns probably reflect the thick bedded volcanic-sedimentary banding of the Unuk River Formation.

The relative magnetic homogeneity of the three areas also resulted in less definitive vertical gradient contours. This, along with the blocks' limited size made the inference of possible faults very difficult even though the area is known to be heavily faulted. Only two highly questionable faults, one each in KNIP and ICEY, were interpreted.

5.3.3 VLF-EM

As mentioned, the combination of a very resistive environment, rough terrain and glacier cover usually results in a relatively non-descriptive, if not noisily weak VLF-EM contours. At first, this appears to be especially so for the three small blocks of KNIP, BOU and ICEY, as their contours seem weak and erratic. Upon closer examination, however, all six weak EM conductors outlined on the interpretation maps of the three blocks have some degree of confirmation by moderate to subtle high VLF trends on the contours.

This has raised hope for the possibility of other similar weak VLF trends being capable of reflecting actual conductors. Four of the more apparent such trends were identified and outlined on the interpretation maps, two each on Blocks BOU and ICEY. They may reflect very weakly conductive structures such as shear/fault zones and contacts that the EM is unable to detect. The north-end VLF trend of Block BOU, however, is apparent on the EM on the highest 33 kHz frequency and might reflect a more promising extension of what appears at first to be a surficial conductor on the middle EM frequencies of zone G3.

More interesting is the noted east-west striking VLF high which bisects Block BOU, as it very closely follows the inferred Unuk River Formation/Salmon River Formation contact. Although there is no observable EM response, a thorough ground check for a weakly conductive mineralized contact plane is recommended there.

5.3.4 Electromagnetics

As reflected in the generally flat EM profiles and resulting inactive resistivity contours, the three southern survey blocks lie in a very resistive environment. Hence, similar to the VLF, the resistivity contours, rather than of any use in mapping geological units, are more functional in outlining conductors.

The six identified conductors of the three blocks stand out amidst a flat background, despite their generally weak amplitudes and low apparent conductance (around 1 mho for the single "interpreted bedrock conductor" of H1 and much less for the remaining five "possible bedrock conductors"). Except for zone H1, the conductors' poor EM definition leaves their bedrock status highly questionable, especially with no support from either the magnetics or the homogeneously mapped geology. There is no well correlated association of the conductors with any magnetic trend. At best, zone I1 and perhaps G1 roughly follow magnetic lows while I2 questionably sits on a protruded shoulder of a larger magnetic high.

The six zoned conductors are discussed briefly below in a tentative and approximate order of priority. Given the lack of any detailed geological information and low apparent conductivity of all the EM responses, values which are much too low for any serious consideration for significant massive sulphides, this priority then is based strictly on the geophysical characteristics which are promising for the existence of bedrock sources, and therefore, perhaps potential for gold bearing structures. Primarily, the main criterion is the EM response geometry between the coaxial and coplanar components which reflects a dipping source.

H1

This wide and apparently long (extending past survey boundaries) conductor of Block KNIP has the only significant inphase, and hence conductance (of 1 to 2 mhos), response of the three areas. Despite the multiple EM peaks, reflecting multiple banding, it is also apparent that from the offsetting coaxial and coplanar peaks the structure is inclined. Though unclear, the NWW striking zone, more poorly defined because of its low angle of intersection with flight lines, appears to dip NNE. If not a shallowly inclined mineralized fault/shear or contact plane then the length and multiple peaks are characteristic of large formational, often graphitic, conductors. A ground EM survey with NNE striking traverse lines is needed to define the true extent and geometry of this bedrock conductor.

I2 and I1

Graphically separated on Block ICEY's interpretation map by a north striking inferred fault, the more promising single EM response of zone I2 might be an extension of the "V" shaped I1 zone. They both occur among negative inphase responses, possibly reflecting magnetite mineralization, as does a weaker neighbouring single response sub-zone of I1a. Zone I2 is somewhat more attractive for having what appears to be a corresponding inphase peak superimposed on a wider negative anomaly and a questionable magnetic association on a protruding shoulder of a magnetic high.

G2 and G1

These are two similar roughly east-west striking zones of Block BOU, consisting of very weak but narrow 4600 Hz coaxial anomalies. The one inphase peak of G2's 110A anomaly is a questionable noise response.

Although there is no indication of dip, the zones' narrowness without any apparent correlating surface drainage channels and their locationing parallel to an inferred geological contact are encouraging signs.

G3

The zone's one line double coaxial peaks with a central coplanar peak appear first to be a typical flat lying surficial source. Possible extension of the zone eastward along Group BOU's northern margins as suggested by both the VLF and 33 kHz coplanar EM, however, provides added interest.

Follow-up of this lowest ranked zone should depend on the success on recommended follow-ups on higher potentialed possible bedrock zones of similar striking but narrower G1 and G2.

6. RECOMMENDATIONS

In summary, the airborne geophysical survey in the Iskut-Unuk River area of northwestern British Columbia has shown its nine separate survey blocks, though of similar location and geology, to be widely varying in both of their magnetic and electromagnetic characteristics. Their activity levels can be basically divided into three groups of three blocks each, and hence the grouping set-up used for the Interpretation Chapter of this report. Coincidentally, there is an almost suprisingly consistent trend of decreasing EM activity and number of selected conductors going from Block A through to I (or ICEY).

In total there were 62 conductors of bedrock potential selected, of which the majority (37) were confidently interpreted as bedrock conductors. Their identification was significantly aided by a virtual zero overburden conductivity level. This resulted in resistivity contours which can function almost directly as potential bedrock mappers. Unfortunately, due probably to the VLF-EM's inherent sensitivity to topographic effects in this relatively steep terrain and signal to conductor orientation coupling bias, the VLF contours fared significantly worse.

As usual, the magnetics proved to be the most valuable mapping geophysical parameter. In general, it appears that for many of the survey blocks, a more in-depth analysis of the total field magnetic data along with the derivative vertical gradient in conjunction with more detailed geological information should provide a more accurate and complex geological picture than that provided by the government geological map.

Looking at the statistical distribution of the selected conductors it is apparent that the majority (47 of 62) comes from the northwestern blocks of A, B, C and D. As well, these four areas contain all but two of the 37 interpreted bedrock conductors (one each in Blocks F and KNIP). Given the large number of potential bedrock conductors and survey blocks, a prioritized summary table is presented on the next page to facilitate planning of ground follow-up. Similar to the interpretation process seen for the section of the report covering Blocks A, B and C, the conductors are divided into five groupings of similar geophysical characteristics and, hence hopefully, geological potential.

To reiterate, the interpreted bedrock conductors are divided into three classes: I-shorter, narrower, more isolated and/or distinct zones perhaps upgraded by magnetic association (such as B6, B9, B12 and D11); II-small to medium size zones with closer resemblance or proximity to large formational zones, in some cases enhanced by magnetics, direct (C10) or indirect as in a correlation with a sharp gradient indicating a geological contact or fault (B4, B10, C7 and D8); and III-long, wide, multiple EM peak zones of varying conductivity typical of formational/graphitic conductors or weaker, poorly defined interpreted bedrocks. The more questionable EM bedrock responses of the "possible bedrock" zones are subdivided into classes IV and V in the table, with the former having stronger bedrock potential by demonstrations of either hints of dip on the EM anomaly geometry or magnetic association (A8?, C11, D2? and F4?). The last class conductors appear more typical of surficial sources and follow-up is not recommended unless additional geological or geophysical data warrant it.

SUMMARY TABLE OF SELECTED CONDUCTORS

	INTERPRETED BEDROCK			POSSIBLE BEDROCK	
CLASS	**I**	**II**	**III**	**IV**	**V**
BLOCK					
A	A9, A5	A3, A2, A6	A11, A10, A4, A7, A1	A8	A12
B	B9, B6, B12	B4, B10	B2, B1, B5 B7, B11, B8	B3	
C	C2, C6	C7, C10	C8, C9, C3	C11, C5 C12	C4, C1
D	D11, D5	D6, D8	D7, D9, D1	D10, D2 D3	D4
E				E3, E4	E2, E1
F			F2	F3, F4	F5, F1
BOU				G1, G2	G3
KNIP			H1		
ICEY				I2	I1

Recommendations of follow-up depend on the geological objectives of the survey. Unfortunately, for the case of massive sulphide exploration, the mostly large formational type conductor zones, low apparent conductance of the remaining bedrocks and lack of direct magnetic correlation are not encouraging characteristics. Unless they are inconspicuous amidst the strong multiple peak EM responses of the formational conductors, the only zones worthly of low priority consideration as minor sulphide prospects are D11, C10 and B9.

In the search for gold, the considerations are even more geophysically indirect and geologically subjective. For this reason, the ranking of the conductors in the presented summary table of selected conductors is based primarily on geophysical parameters which best support anomalous bedrock sources. Of course, the table should be used judiciously within the geological/economical constraints at hand as not all of the 37 interpreted bedrock zones, or ideally the 52 top four classed conductors, can be afforded ground follow-ups.

The final priority of their follow-up should be subjected to the much more detailed and concise geological information that is available to the client. The ground follow-ups of some of the higher rated zones within each conductor group or survey block could then establish more accurate priorities for the other selected conductors.

Respectfully submitted,

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J8903

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 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 chance 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 ration 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 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 to 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

E.M. ANOMALY LIST - BLOCK A

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
16	7003	A	0	2.6	0.7	3.9	0	124
16	7003	B	3	8.2	2.3	5.4	0	82
16	7003	C	2	8.5	4.4	2.3	26	42
15	7011	A	2	9.8	4.4	3.0	4	63
15	7011	B	2	9.4	4.4	2.8	0	93
15	7011	C	4	7.9	1.1	14.0	0	113
15	-7011	D	4	6.5	1.2	8.9	0	115
16	7012	A	0	7.5	0.8	19.9	0	82
16	7020	A	0	8.0	0.6	33.0	0	89
16	7020	B	5	11.3	1.1	25.4	0	79
16	7020	C	0	8.1	0.7	27.3	25	54
16	7030	A	1	5.2	4.1	1.0	30	42
16	7030	B	1	5.7	4.7	1.0	40	28
16	7030	C	4	8.5	1.5	10.3	6	70
16	7041	A	3	19.3	5.4	7.1	0	60
16	7041	B	3	17.2	4.5	7.5	11	47
16	7041	C	3	12.2	3.8	5.3	0	67
16	7041	D	3	7.5	2.4	4.3	13	63
16	7041	E	1	4.6	2.5	1.7	24	60
16	7041	F	2	4.0	1.8	2.1	1	90
16	7041	G	2	5.6	1.8	3.9	24	61
16	7041	H	2	6.3	3.2	2.1	17	59
16	7041	J	0	3.5	0.2	38.1	14	93
16	7041	K	2	5.9	3.1	2.0	21	56
16	7041	M	1	7.3	5.6	1.2	20	45
16	7041	N	1	8.6	6.2	1.4	11	51
16	7051	A	2	5.0	2.5	2.0	0	99
16	7051	B	2	5.1	2.4	2.2	0	100
16	7051	C	1	5.6	3.8	1.3	0	82
16	7051	D	1	5.5	2.9	1.9	6	73
16	7051	E	2	5.2	2.4	2.3	16	66
16	7051	F	2	6.3	2.6	2.9	8	71
16	7051	G	2	6.6	2.5	3.3	0	99
16	7051	H	3	6.0	1.7	4.8	0	114
16	7051	J	3	5.2	1.2	6.1	0	104
16	7051	K	3	5.4	1.3	5.8	0	109
16	7051	M	0	4.7	0.7	10.9	0	93
16	7051	N	1	4.7	3.6	1.0	24	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.

E.M. ANOMALY LIST - BLOCK A

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
16	7051	O	4	18.1	3.9	9.9	0	65
16	7051	P	4	18.7	3.5	12.1	10	47
16	7051	Q	4	21.9	4.4	11.5	4	50
16	7051	R	5	28.2	3.9	20.4	2	48
16	7051	S	4	9.4	1.3	14.9	0	79
16	7051	T	0	8.8	0.4	67.4	0	98
16	7051	U	5	13.1	1.6	19.4	0	93
16	7051	V	0	8.3	0.1	408.5	0	123
16	7051	W	4	7.5	1.1	12.8	0	106
16	7060	A	1	15.0	10.3	1.9	5	47
16	7060	B	3	27.5	10.8	5.0	0	47
16	7060	C	4	43.0	10.6	10.6	0	57
16	7060	D	4	27.8	7.6	8.1	0	55
16	7060	E	4	21.2	4.1	12.0	0	67
16	7060	F	4	20.8	5.3	8.2	0	64
16	7060	G	4	39.4	10.2	9.7	0	48
16	7060	H	4	43.3	10.8	10.5	3	39
16	7060	J	4	25.4	6.6	8.5	5	45
16	7060	K	4	16.7	2.9	12.9	0	78
16	7060	M	2	9.4	5.4	2.1	4	61
16	7060	N	0	2.2	4.3	0.1	8	54
16	7060	O	3	4.7	1.4	4.1	22	68
16	7060	P	2	7.9	4.5	2.0	15	53
16	7060	Q	1	3.8	2.1	1.5	22	67
16	7060	R	1	4.5	2.9	1.3	0	90
16	7060	S	0	4.2	4.3	0.6	3	68
16	7070	A	1	6.5	5.7	1.0	12	52
16	7070	B	1	5.7	4.7	1.0	22	47
16	7070	C	1	5.1	3.3	1.4	6	71
16	7070	D	2	4.2	1.5	3.0	0	108
16	7070	E	2	8.9	4.8	2.2	13	54
16	7070	F	1	8.1	5.4	1.6	27	38
16	7070	G	1	7.9	5.9	1.3	22	42
16	7070	H	0	4.8	4.2	0.9	9	62
16	7070	J	1	3.7	1.8	1.8	30	62
16	7070	K	0	0.6	1.2	0.0	0	102
16	7070	M	0	3.6	3.8	0.6	31	42
16	7070	N	3	16.1	6.6	4.0	0	64
16	7070	O	4	32.7	8.2	9.6	0	46
16	7070	P	4	36.5	8.3	11.3	6	39
16	7070	Q	5	23.5	2.8	23.7	0	66
16	7070	R	0	12.3	-0.7	0.0	0	113
16	7070	S	6	22.6	1.7	43.8	0	81

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.

E.M. ANOMALY LIST - BLOCK A

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
16	7070	T	5	21.4	2.3	26.6	0	77
16	7070	U	5	21.0	2.5	23.0	0	78
16	7070	V	3	15.2	5.7	4.4	7	52
16	7080	A	2	7.5	2.8	3.5	8	67
16	7080	B	3	12.9	3.2	7.3	0	85
16	7080	C	4	16.5	2.6	14.7	0	79
16	7080	D	5	22.6	3.5	16.5	0	65
16	7080	E	5	19.5	2.3	22.8	0	85
16	7080	F	5	25.5	3.3	21.7	0	54
16	7080	G	4	29.7	7.1	9.9	6	42
16	7080	H	0	7.5	1.0	14.7	0	95
16	7080	J	0	1.5	3.7	0.1	19	43
16	7080	K	1	7.7	5.3	1.5	22	44
16	7080	M	1	6.2	5.2	1.0	24	43
16	7080	N	1	7.6	6.7	1.0	19	42
16	7080	O	1	4.4	3.4	1.0	3	74
17	7090	A	0	5.1	4.8	0.8	0	68
17	7090	B	0	3.6	6.1	0.3	0	61
17	7090	C	0	3.8	5.6	0.3	17	43
17	7090	D	0	-0.6	3.5	0.0	0	69
17	7090	E	0	3.7	4.4	0.5	38	30
17	7090	F	2	12.2	5.0	3.6	9	53
17	7090	G	3	14.3	5.6	4.1	4	56
17	7090	H	2	19.3	8.6	3.8	10	42
17	7090	J	3	25.8	10.7	4.6	9	39
17	7090	K	3	14.5	5.5	4.3	0	61
17	7090	M	3	13.2	4.8	4.4	0	77
17	7090	N	3	16.2	5.9	4.7	0	71
17	7090	O	2	17.4	8.1	3.4	0	54
17	7100	A	3	8.6	2.8	4.4	0	104
17	7100	B	2	15.7	6.6	3.8	0	87
17	7100	C	3	23.6	6.6	7.5	0	76
17	7100	D	3	35.3	10.4	7.9	0	49
17	7100	E	4	22.1	5.8	8.0	0	59
17	7100	F	4	11.3	2.2	9.8	0	94
17	7100	G	3	7.2	1.6	7.1	0	108
17	7100	H	0	6.4	8.3	0.5	11	43
17	7100	J	0	8.8	12.7	0.5	17	28
17	7100	K	0	3.8	5.9	0.3	0	58
17	7100	M	0	3.1	6.0	0.2	0	62
17	7110	A	0	-0.4	-1.0	0.0	0	126

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E.M. ANOMALY LIST - BLOCK A

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
17	7110	B	0	1.0	0.2	4.3	80	78
17	7110	C	2	6.9	2.4	3.7	16	62
17	7110	D	2	5.5	1.8	3.8	24	61
17	7110	E	2	4.9	2.4	2.0	25	58
17	7110	F	3	12.0	3.6	5.5	15	50
17	7110	G	3	16.6	5.1	5.9	6	52
17	7110	H	3	13.8	3.4	7.6	0	66
17	7110	J	5	16.2	2.3	16.8	1	60
17	7121	A	1	5.4	4.3	1.0	17	54
17	7121	B	0	4.0	6.7	0.3	0	59
17	7121	C	0	4.3	7.9	0.2	0	53
17	7121	D	0	5.7	8.9	0.4	3	48
17	7121	E	0	5.8	9.2	0.4	8	42
17	7121	F	0	8.0	9.7	0.7	18	34
17	7121	G	0	8.7	10.2	0.7	25	26
17	7121	H	0	3.3	14.9	0.0	13	18
17	7121	J	0	1.7	13.7	0.0	0	27
17	7121	K	0	-0.2	2.7	0.0	0	43
17	7121	M	0	-0.8	1.5	0.0	0	46
17	7121	N	0	5.7	0.6	18.8	0	92
17	7121	O	1	3.8	2.0	1.7	29	60
17	7121	P	0	4.1	4.3	0.6	18	52
17	7121	Q	0	9.0	10.6	0.7	23	27
17	7121	R	0	4.5	8.1	0.3	13	38
17	7121	S	0	7.1	8.5	0.6	9	45
17	7130	A	0	8.8	14.7	0.4	9	33
17	7130	B	0	6.5	12.3	0.3	16	27
17	7130	C	0	5.7	10.8	0.3	23	22
17	7130	D	0	0.7	9.6	0.0	4	21
17	7130	E	2	4.4	1.5	3.3	0	105
17	7130	F	3	13.3	3.8	6.1	0	81
17	7130	G	3	15.2	4.5	6.1	0	77
17	7130	H	3	26.3	8.8	6.1	9	40
17	7130	J	2	15.0	8.1	2.7	0	67
17	7130	K	1	8.0	5.9	1.4	22	41
17	7130	M	0	5.3	5.3	0.7	0	69
17	7130	N	0	2.2	3.7	0.2	0	91
17	7130	O	1	4.1	2.9	1.1	28	53
17	7131	A	2	9.2	5.3	2.0	5	60
17	7131	B	2	5.9	2.0	3.7	0	95
17	7131	C	2	5.1	2.4	2.2	4	78
17	7140	A	2	11.5	6.2	2.4	0	76

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E.M. ANOMALY LIST - BLOCK A

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
17	7140	B	2	13.0	8.4	2.0	9	47
17	7140	C	1	9.2	5.9	1.8	0	68
17	7140	D	1	8.1	6.8	1.1	10	51
17	7140	E	1	4.5	3.1	1.2	26	53
17	7140	F	0	1.9	3.2	0.2	0	92
17	7140	G	1	3.6	2.1	1.4	16	74
17	7140	H	2	9.4	4.7	2.5	13	53
17	7140	J	1	5.7	4.3	1.1	18	53
17	7140	K	2	5.4	2.1	2.9	1	83
17	7140	M	0	4.8	0.5	18.1	0	98
17	7140	N	0	11.1	12.2	0.9	11	37
17	7140	O	0	16.6	23.4	0.7	0	37
17	7140	P	0	7.6	13.0	0.4	9	35
17	7140	Q	0	10.4	14.9	0.6	3	40
17	7140	R	0	10.1	17.4	0.4	8	31
17	7140	S	3	8.5	2.2	6.1	31	43
17	7150	A	0	5.7	0.2	85.4	10	80
17	7150	B	0	5.1	7.3	0.4	25	30
17	7150	C	0	11.8	21.1	0.4	4	32
17	7150	D	0	10.1	26.9	0.2	8	22
17	7150	E	0	19.5	39.1	0.5	9	19
17	7150	F	0	35.7	52.1	0.9	3	24
17	7150	G	1	10.3	10.4	1.0	22	30
17	7150	H	0	3.0	3.8	0.4	33	38
17	7150	J	1	8.4	5.5	1.6	10	55
17	7150	K	1	6.0	4.6	1.1	19	51
17	7150	M	1	5.8	3.8	1.4	0	74
17	7150	N	0	5.1	6.1	0.5	0	74
17	7150	O	0	4.0	5.2	0.4	0	84
17	7150	P	0	4.3	5.0	0.5	0	90
17	7150	Q	0	3.4	4.4	0.4	0	91
17	7150	R	1	5.3	3.0	1.7	38	41
17	7150	S	0	4.6	0.8	8.7	26	68
18	7160	A	0	2.8	2.7	0.6	0	97
18	7160	B	2	8.7	3.5	3.3	0	86
18	7160	C	2	14.0	8.6	2.2	0	57
18	7160	D	1	14.3	12.3	1.4	15	34
18	7160	E	1	12.8	10.0	1.5	23	30
18	7160	F	0	11.7	13.6	0.8	0	60
18	7160	G	0	11.9	14.7	0.8	0	59
18	7160	H	0	9.4	9.5	0.9	0	70
18	7160	J	1	7.7	7.0	1.0	0	81
18	7160	K	1	5.8	3.9	1.4	11	63

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.

E.M. ANOMALY LIST - BLOCK A

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	AMPLITUDE (PPM) QUAD.	CONDUCTOR CTP MHOS	CONDUCTOR DEPTH MTRS	BIRD HEIGHT MTRS
18	7160	M	2	7.2	2.7	3.4	20	56
18	7160	N	2	4.7	1.6	3.4	0	91
18	7160	O	3	5.4	1.2	6.5	0	137
18	7160	P	4	8.1	1.3	11.6	0	103
18	7160	Q	5	10.2	1.2	19.0	0	111
18	7160	R	0	15.8	22.7	0.7	1	36
18	7160	S	0	14.7	18.9	0.8	2	38
18	7160	T	0	6.6	8.7	0.5	18	35
18	7160	U	0	5.1	6.3	0.5	9	51
18	7160	V	2	16.4	10.2	2.3	0	53
18	7170	A	1	36.7	32.6	1.9	4	31
18	7170	B	2	59.2	54.9	2.1	3	25
18	7170	C	0	8.1	14.0	0.4	0	42
18	7170	D	0	4.1	7.1	0.3	12	42
18	7170	E	0	2.8	6.2	0.1	6	46
18	7170	F	3	6.4	1.6	5.8	0	89
18	7170	G	2	5.7	2.8	2.1	0	82
18	7170	H	1	5.3	4.0	1.1	16	57
18	7170	J	1	5.1	3.0	1.6	29	50
18	7171	A	2	4.8	1.5	3.9	13	76
18	7171	B	2	4.6	1.8	2.7	0	103
18	7171	C	2	6.8	3.0	2.7	0	75
18	7171	D	3	8.0	2.1	5.8	0	100
18	7171	E	3	7.2	2.0	5.2	0	98
18	7171	F	1	4.1	2.4	1.5	32	53
18	7171	G	1	5.9	4.4	1.2	3	67
18	7180	A	0	1.8	3.0	0.2	0	93
18	7180	B	0	2.5	5.2	0.1	0	58
18	7180	C	0	2.3	5.3	0.1	0	56
18	7180	D	1	8.2	4.9	1.9	1	66
18	7180	E	1	5.3	4.4	1.0	0	71
18	7180	F	0	4.9	7.2	0.4	0	66
18	7180	G	0	6.0	7.5	0.6	0	78
18	7180	H	0	4.0	5.3	0.4	4	59
18	7180	J	0	3.7	4.4	0.5	20	48
18	7180	K	2	7.4	3.3	2.7	25	48
18	7180	M	4	6.0	1.1	8.8	0	111
18	7180	N	0	5.8	1.0	9.5	0	120
18	7180	O	3	8.3	2.2	5.8	0	101
18	7180	P	1	6.4	4.2	1.5	19	52
18	7180	Q	2	4.6	1.8	2.7	0	98
18	7190	A	1	10.0	8.0	1.3	12	45

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E.M. ANOMALY LIST - BLOCK A

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
18	7190	B	1	21.8	22.8	1.2	9	30
18	7190	C	0	7.1	10.3	0.5	14	35
18	7190	D	1	4.6	2.6	1.6	0	109
18	7190	E	0	4.9	0.7	11.7	38	54
18	7190	F	0	6.0	1.0	10.0	14	71
18	7190	G	0	4.9	0.0	171.9	0	98
18	7190	H	0	3.3	-0.6	0.0	0	90
18	7190	J	0	4.0	-0.5	0.0	0	98
18	7190	K	0	4.1	0.4	18.9	40	59
18	7190	M	0	4.3	0.5	15.0	28	69
18	7190	N	2	4.7	2.2	2.1	22	63
18	7190	O	2	6.8	3.0	2.7	20	56
18	7190	P	1	4.9	3.2	1.3	37	41
18	7190	Q	0	4.1	4.3	0.6	25	45
18	7200	A	0	3.9	0.3	26.0	29	73
18	7200	B	2	4.1	1.9	2.1	14	76
18	7200	C	2	4.8	2.1	2.4	0	90
18	7200	D	1	4.8	2.7	1.6	0	84
18	7200	E	0	6.7	1.0	12.1	0	105
18	7200	F	2	11.5	5.3	3.0	0	75
18	7200	G	2	11.0	6.5	2.1	8	53
18	7200	H	1	4.6	3.4	1.1	26	51
18	7200	J	2	6.9	3.0	2.7	19	57
18	7200	K	3	15.2	4.2	6.7	12	48
18	7200	M	3	10.6	3.2	5.3	29	38
18	7200	N	4	18.6	3.5	11.9	0	62
18	7200	O	4	18.0	3.9	9.8	0	82
18	7200	P	3	22.5	7.6	5.7	0	71
18	7200	Q	2	5.6	2.4	2.6	3	79
18	7200	R	2	5.3	2.3	2.5	8	75
18	7210	A	0	13.9	20.5	0.6	4	34
18	7210	B	0	13.8	26.5	0.4	13	19
18	7210	C	0	3.0	8.3	0.1	27	18
18	7210	D	3	17.7	6.6	4.7	0	58
18	7210	E	3	20.9	7.8	4.9	12	40
18	7210	F	3	14.5	4.1	6.4	0	69
18	7210	G	2	7.2	2.5	3.8	0	95
18	7210	H	2	5.6	2.7	2.2	0	114
18	7210	J	1	5.5	3.9	1.2	30	44
18	7210	K	1	4.9	2.9	1.5	41	39
18	7210	M	3	9.2	3.0	4.5	24	46
18	7210	N	0	6.6	7.3	0.7	16	42
18	7210	O	0	3.4	3.2	0.7	14	65

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E.M. ANOMALY LIST - BLOCK A

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
18	7210	P	1	7.6	7.0	1.0	4	56
18	7210	Q	0	6.3	5.6	0.9	3	61
18	7210	R	1	5.5	3.6	1.4	3	72
18	7210	S	2	7.6	3.3	2.8	0	79
18	7210	T	3	7.1	2.2	4.5	0	101
18	7210	U	3	5.4	1.7	4.0	0	89
18	7210	V	2	6.1	2.5	2.8	1	78
18	7210	W	1	5.9	3.6	1.6	7	67
18	7210	X	1	6.0	3.2	1.9	31	45
18	7210	Y	1	7.1	5.7	1.1	12	52
18	7210	Z	0	3.5	2.8	0.9	19	64
19	7222	A	0	5.5	8.5	0.4	0	62
19	7222	B	0	7.1	11.6	0.4	0	50
19	7222	C	0	1.7	4.7	0.0	6	49
19	7222	D	2	9.4	4.0	3.1	0	70
19	7222	E	2	6.8	2.9	2.8	0	90
19	7222	F	1	5.0	4.1	1.0	22	50
19	7222	G	0	4.4	3.8	0.8	32	42
19	7222	H	1	3.5	2.3	1.2	24	64
19	7222	J	1	6.3	5.4	1.0	14	52
19	7222	K	0	10.6	12.2	0.8	13	35
19	7222	M	1	10.2	10.2	1.0	23	29
19	7222	N	3	7.4	2.4	4.2	3	73
19	7222	O	2	9.1	4.3	2.7	0	72
19	7222	P	1	6.8	3.9	1.8	5	67
19	7222	Q	2	6.8	3.3	2.3	5	70
19	7222	R	2	5.5	2.1	3.0	20	63
19	7222	S	1	7.0	4.0	1.9	8	64
19	7222	T	1	7.6	5.7	1.3	6	58
19	7222	U	1	5.3	3.5	1.4	12	64
19	7222	V	0	5.0	4.7	0.8	22	46
18	7230	A	0	6.3	10.6	0.4	11	36
18	7230	B	0	5.4	12.4	0.2	8	33
18	7230	C	0	2.0	4.0	0.1	32	32
18	7230	D	0	2.0	2.7	0.3	34	46
18	7230	E	0	1.7	4.4	0.1	27	30
18	7230	F	0	0.0	7.1	0.0	0	7
18	7230	G	0	5.3	6.4	0.5	21	39
18	7230	H	0	9.9	14.7	0.5	16	27
18	7230	J	0	12.5	13.9	0.9	22	24
18	7230	K	1	12.8	13.3	1.0	15	32
18	7230	M	1	7.7	6.9	1.0	18	42
18	7230	N	0	4.9	5.6	0.6	16	47

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.

E.M. ANOMALY LIST - BLOCK A

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
18	7230	O	1	6.2	4.6	1.2	0	80
18	7230	P	1	6.6	5.6	1.0	3	61
18	7230	Q	1	6.5	3.6	1.9	0	86
18	7230	R	2	7.5	3.9	2.2	0	91
18	7230	S	2	6.5	3.2	2.2	0	88
18	7230	T	1	9.9	6.3	1.8	7	55
18	7230	U	1	9.8	6.4	1.8	0	66
18	7230	V	1	6.4	4.9	1.2	1	67
18	7230	W	0	5.1	4.6	0.8	0	78
18	7230	X	1	5.3	3.5	1.4	14	62
18	7230	Y	0	6.8	6.2	0.9	12	50
18	7230	Z	0	4.6	8.3	0.3	4	46
19	7240	A	0	1.8	4.4	0.1	0	89
19	7240	B	0	5.1	9.2	0.3	3	46
19	7240	C	0	4.9	7.2	0.4	19	36
19	7240	D	2	7.6	4.3	2.0	8	61
19	7240	E	1	6.9	4.0	1.8	11	61
19	7240	F	0	1.0	0.0	11.9	0	162
19	7240	G	1	5.7	3.5	1.6	3	72
19	7240	H	1	13.2	14.2	1.0	16	30
19	7240	J	3	24.3	10.2	4.4	0	51
19	7240	K	2	19.1	12.4	2.2	16	33
19	7240	M	2	14.9	9.4	2.1	9	44
19	7240	N	1	11.6	9.8	1.3	0	61
19	7250	A	0	4.0	3.2	0.9	0	93
19	7250	B	1	6.2	3.7	1.7	0	100
19	7250	C	0	5.3	6.7	0.5	8	50
19	7250	D	0	5.3	8.6	0.3	15	36
19	7250	E	0	4.1	7.3	0.3	12	41
19	7250	F	0	4.8	5.8	0.5	19	43
19	7250	G	3	5.3	1.3	5.6	11	77
19	7250	H	3	6.1	1.7	4.9	2	81
19	7250	J	2	5.4	2.3	2.6	19	63
19	7250	K	1	6.0	3.5	1.7	19	56
19	7250	M	1	2.5	1.5	1.1	14	87
19	7250	N	1	5.8	3.3	1.7	5	71
19	7250	O	1	5.0	2.9	1.6	11	69
19	7250	P	2	5.4	2.0	3.1	0	108
19	7250	Q	1	5.3	3.2	1.5	19	59
19	7250	R	1	5.5	3.4	1.5	26	50
19	7250	S	1	5.4	4.0	1.2	14	59
19	7250	T	1	5.6	3.4	1.6	41	35
19	7250	U	1	7.5	4.8	1.6	2	66

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.

E.M. ANOMALY LIST - BLOCK A

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
19	7250	V	1	6.9	5.7	1.1	0	66
19	7250	W	0	6.5	6.8	0.7	18	41
19	7250	X	0	4.0	7.0	0.3	1	52
19	7260	A	0	2.8	4.2	0.3	0	75
19	7260	B	2	4.7	2.0	2.5	7	80
19	7260	C	2	4.4	1.9	2.3	9	79
19	7260	D	0	3.5	5.6	0.3	3	56
19	7260	E	0	3.6	5.0	0.4	19	45
19	7261	A	0	1.2	4.2	0.0	0	63
19	7261	B	0	3.0	4.1	0.3	21	47
19	7261	C	2	11.3	4.5	3.7	20	44
19	7261	D	2	7.6	3.3	2.8	21	52
19	7261	E	3	7.7	2.3	4.8	30	45
19	7261	F	4	6.1	1.2	8.0	15	69
19	7261	G	0	2.7	-1.4	0.0	0	115
19	7261	H	3	8.4	1.8	7.9	19	57
19	7261	J	2	8.5	4.5	2.2	22	46
19	7261	K	1	4.5	3.0	1.3	29	51
19	7270	A	0	1.0	4.0	0.0	0	77
19	7270	B	2	10.6	5.9	2.3	17	45
19	7270	C	2	6.7	3.2	2.4	9	66

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.

E.M. ANOMALY LIST - BLOCK B

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
6	1000	A	4	25.5	5.9	9.9	4	47
6	1000	B	3	23.5	8.6	5.2	1	49
6	1000	C	3	32.8	14.1	4.7	1	43
6	1000	D	1	10.7	7.8	1.5	17	41
6	1000	E	0	7.9	8.2	0.8	12	43
6	1000	F	0	0.9	3.3	0.0	22	35
6	1000	G	0	5.4	8.5	0.4	5	47
6	1000	H	0	2.6	5.4	0.1	0	56
6	1010	A	0	1.0	11.1	0.0	0	50
6	1010	B	0	4.5	14.7	0.1	9	26
6	1010	C	0	4.0	12.1	0.1	0	42
6	1010	D	0	3.3	11.3	0.1	0	58
6	1010	E	0	12.4	15.1	0.8	4	40
6	1010	F	1	19.2	14.7	1.8	6	40
6	1010	G	2	22.0	11.8	3.1	0	57
6	1010	H	2	29.3	14.8	3.6	2	42
6	1020	A	1	9.4	8.4	1.1	0	86
6	1020	B	0	1.7	7.7	0.0	1	38
6	1020	C	2	32.4	24.9	2.2	0	38
6	1020	D	0	14.9	23.6	0.6	0	42
6	1020	E	0	8.3	15.8	0.3	6	33
6	1020	F	0	1.4	5.0	0.0	0	63
6	1020	G	0	3.4	5.5	0.3	0	62
6	1020	H	0	4.9	7.1	0.4	21	35
6	1031	A	3	14.5	4.6	5.4	0	63
6	1031	B	0	3.1	5.1	0.2	30	31
6	1031	C	1	9.2	5.9	1.8	4	59
6	1031	D	0	8.4	10.3	0.7	9	42
6	1031	E	1	8.0	7.5	1.0	15	43
6	1031	F	0	8.2	8.1	0.9	3	53
6	1031	G	0	0.9	3.8	0.0	0	59
6	1031	H	0	4.4	7.3	0.3	0	54
6	1031	J	1	10.8	9.1	1.3	0	68
6	1031	K	1	10.6	9.1	1.2	0	75
6	1031	M	0	3.4	5.4	0.3	0	62
6	1031	N	0	2.2	3.5	0.2	0	79
6	1050	A	2	7.4	2.7	3.6	0	77
6	1050	B	2	8.2	3.3	3.2	0	78
6	1050	C	0	1.6	3.5	0.1	23	42
6	1050	D	2	6.2	3.3	2.0	5	71

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.

E.M. ANOMALY LIST - BLOCK B

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
6	1050	E	0	7.5	10.7	0.5	6	42
6	1050	F	2	2.7	1.1	2.1	49	57
6	1050	G	0	1.4	4.5	0.0	0	66
6	1050	H	0	3.9	6.8	0.3	5	50
6	1050	J	0	3.9	7.0	0.2	0	54
6	1050	K	0	4.4	9.3	0.2	0	56
6	1050	M	0	2.1	9.0	0.0	0	44
6	1050	N	0	1.7	6.9	0.0	0	46
6	1050	O	0	4.2	9.2	0.2	25	21
6	1051	A	0	0.2	10.3	0.0	0	42
6	1051	B	0	0.1	6.1	0.0	0	49
6	1051	C	0	0.5	8.0	0.0	0	49
6	1051	D	0	1.6	6.9	0.0	0	52
6	1051	E	1	8.6	7.4	1.1	0	68
6	1051	F	0	3.5	6.8	0.2	14	39
6	1051	G	0	7.4	11.1	0.5	0	49
6	1051	H	1	8.1	6.7	1.2	0	61
6	1051	J	1	4.7	3.6	1.0	6	69
6	1060	A	0	5.5	10.8	0.3	9	35
6	1060	B	0	6.4	7.8	0.6	22	34
6	1060	C	3	4.9	1.5	4.0	51	37
6	1060	D	0	5.1	0.7	12.5	0	99
6	1060	E	0	3.0	-1.2	0.0	0	48
6	1060	F	2	9.5	3.7	3.6	9	59
6	1060	G	2	9.0	4.4	2.5	6	61
6	1060	H	3	20.4	6.7	5.8	0	70
6	1060	J	1	9.3	6.0	1.7	0	72
6	1060	K	3	10.0	2.7	6.0	0	79
6	1070	A	3	11.2	3.4	5.3	10	56
6	1070	B	3	17.1	7.0	4.1	13	43
6	1070	C	1	6.6	3.6	1.9	22	51
6	1070	D	3	10.5	2.4	7.7	0	77
6	1070	E	3	11.6	3.7	5.0	8	57
6	1070	F	1	3.7	2.4	1.2	18	69
6	1070	G	0	2.4	0.3	11.4	43	76
6	1080	A	0	0.9	4.0	0.0	13	38
6	1080	B	1	6.7	5.8	1.0	7	57
6	1080	C	0	2.3	6.5	0.1	0	64
6	1080	D	1	5.9	4.1	1.3	0	82
6	1080	E	2	13.0	8.2	2.0	5	51
6	1080	F	2	24.2	11.8	3.6	0	53

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E.M. ANOMALY LIST - BLOCK B

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
6	1080	G	3	16.9	6.0	4.9	0	76
6	1080	H	2	11.2	5.7	2.6	4	58
7	1090	A	0	3.0	3.6	0.4	0	82
7	1090	B	2	6.1	2.6	2.7	0	97
7	1090	C	2	5.1	2.5	2.1	14	68
7	1090	D	0	1.6	2.3	0.2	19	64
7	1090	E	2	16.0	10.7	2.0	0	56
7	1090	F	2	13.9	8.2	2.3	0	79
7	1090	G	2	8.7	4.3	2.5	0	74
7	1090	H	2	14.2	7.2	2.8	0	69
7	1090	J	2	8.9	5.2	2.0	0	93
7	1100	A	0	2.3	6.2	0.1	0	68
7	1100	B	1	5.3	4.3	1.0	0	116
7	1100	C	2	21.4	13.2	2.5	0	72
7	1100	D	2	16.6	8.4	3.0	0	71
7	1100	E	2	17.2	9.8	2.6	0	52
7	1100	F	2	19.8	13.0	2.2	0	59
7	1100	G	2	29.0	18.2	2.7	0	47
7	1100	H	2	24.5	17.1	2.2	0	49
7	1100	J	1	9.3	7.2	1.3	1	58
7	1100	K	1	2.7	1.4	1.5	4	98
7	1100	M	3	5.0	1.1	6.4	0	106
7	1100	N	0	6.0	13.1	0.2	7	34
7	1100	O	0	4.9	7.0	0.4	12	44
7	1110	A	0	0.7	1.7	0.0	22	59
7	1110	B	0	0.5	-0.1	3.3	131	70
7	1110	C	2	5.5	2.8	2.0	9	71
7	1110	D	2	8.4	4.8	2.0	0	70
7	1110	E	2	12.2	7.8	2.0	0	73
7	1110	F	1	6.3	3.4	1.9	0	95
7	1110	G	1	2.2	1.1	1.4	0	114
7	1121	A	0	-0.1	4.9	0.0	0	42
7	1121	B	0	0.7	4.4	0.0	0	62
7	1121	C	0	6.5	10.0	0.4	0	62
7	1121	D	0	4.6	7.8	0.3	0	78
7	1121	E	2	14.3	8.7	2.2	0	77
7	1121	F	2	21.7	12.2	2.9	0	59
7	1121	G	1	15.6	12.1	1.6	0	55
7	1121	H	1	12.8	8.9	1.8	0	56
7	1121	J	0	4.6	5.4	0.5	4	60
7	1121	K	0	5.2	5.6	0.6	0	79

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.

E.M. ANOMALY LIST - BLOCK B

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
7	1121	M	0	5.6	6.2	0.6	0	85
7	1121	N	1	5.6	4.5	1.0	0	98
7	1121	O	2	17.1	10.0	2.5	0	95
7	1121	P	2	31.4	16.1	3.7	0	54
7	1121	Q	0	5.0	7.1	0.4	19	37
7	1130	A	1	9.8	8.3	1.2	5	52
7	1130	B	2	32.4	26.6	2.0	0	39
7	1130	C	1	26.1	27.7	1.3	0	36
7	1130	D	1	5.4	4.1	1.1	18	54
7	1130	E	0	3.1	4.9	0.3	1	62
7	1130	F	0	1.1	4.6	0.0	0	65
7	1130	G	1	6.0	3.9	1.5	2	71
7	1130	H	2	22.7	15.1	2.3	0	53
7	1130	J	1	9.5	7.3	1.4	0	68
7	1130	K	0	2.0	3.5	0.2	0	93
7	1130	M	0	3.9	6.2	0.3	0	70
7	1130	N	0	4.1	11.0	0.1	0	60
7	1130	O	1	14.8	13.8	1.2	0	68
7	1130	P	1	11.7	10.4	1.2	0	72
7	1130	Q	0	2.2	4.3	0.1	1	61
7	1140	A	0	1.8	12.4	0.0	0	29
7	1140	B	0	2.8	6.3	0.1	0	68
7	1140	C	0	7.8	7.5	0.9	0	68
7	1140	D	1	17.1	13.2	1.7	0	66
7	1140	E	0	8.2	9.6	0.7	0	65
7	1140	F	0	7.1	7.1	0.8	0	76
7	1140	G	1	9.2	6.1	1.7	0	66
7	1140	H	1	12.5	8.3	1.9	0	64
7	1140	J	2	16.1	9.3	2.5	0	66
7	1140	K	2	12.9	7.0	2.5	0	70
7	1140	M	2	12.5	6.5	2.6	0	64
7	1140	N	2	11.7	7.4	2.0	0	62
7	1140	O	0	0.8	2.6	0.0	29	36
7	1140	P	0	1.4	2.6	0.1	35	40
7	1140	Q	0	6.8	6.6	0.9	26	35
7	1140	R	0	6.0	5.8	0.8	19	44
7	1140	S	1	7.9	4.6	1.9	7	61
7	1152	A	0	1.9	4.2	0.1	0	104
7	1152	B	0	3.0	4.8	0.3	0	86
7	1152	C	1	15.6	14.0	1.3	0	76
7	1152	D	1	15.5	15.5	1.1	0	64
7	1152	E	0	8.9	10.2	0.8	0	67

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E.M. ANOMALY LIST - BLOCK B

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
7	1152	F	0	6.4	8.1	0.6	7	48
7	1152	G	0	7.4	7.2	0.9	0	62
7	1152	H	2	17.5	10.8	2.3	0	63
7	1152	J	2	11.6	5.8	2.7	0	80
7	1152	K	1	4.1	2.3	1.6	0	89
7	1160	A	0	2.8	3.7	0.3	10	61
7	1160	B	0	3.4	4.6	0.4	20	46
7	1160	C	0	1.6	12.3	0.0	0	36
7	1160	D	0	5.1	15.2	0.1	0	42
7	1160	E	1	27.4	23.3	1.8	0	51
7	1160	F	1	7.7	4.4	1.9	5	64
7	1160	G	2	14.2	8.4	2.3	0	66
7	1160	H	2	7.2	4.0	2.0	0	84
7	1160	J	0	1.9	1.2	0.9	0	115
7	1160	K	1	3.0	2.0	1.1	0	110
7	1161	A	1	7.0	4.1	1.8	0	75
7	1161	B	1	6.4	3.6	1.8	9	65
7	1161	C	2	14.0	7.2	2.8	0	69
7	1161	D	2	9.2	4.8	2.3	0	81
7	1161	E	0	3.9	4.1	0.6	0	108
7	1161	F	0	3.6	3.6	0.6	0	114
7	1170	A	0	6.0	7.4	0.6	0	64
7	1170	B	1	12.0	11.7	1.1	0	68
7	1170	C	1	11.4	8.8	1.5	0	74
7	1170	D	0	11.3	12.6	0.9	0	73
7	1170	E	0	5.6	11.7	0.2	0	66
7	1170	F	0	4.8	5.8	0.5	0	81
7	1170	G	1	7.9	6.4	1.2	0	77
7	1170	H	2	15.9	10.0	2.2	0	71
7	1170	J	1	15.2	11.4	1.7	0	59
7	1170	K	1	10.1	7.6	1.4	0	63
7	1170	M	1	7.1	5.4	1.2	0	83
7	1170	N	0	4.4	5.4	0.5	0	71
7	1170	O	1	10.9	7.2	1.8	0	82
7	1170	P	1	5.5	4.0	1.2	0	76
7	1170	Q	0	4.0	4.9	0.5	18	48
7	1180	A	0	1.5	4.1	0.0	26	32
7	1180	B	0	2.3	4.7	0.1	0	68
7	1180	C	1	13.6	10.1	1.7	4	49
7	1180	D	1	12.5	8.7	1.8	0	80
7	1180	E	0	4.1	7.3	0.3	0	80

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.

E.M. ANOMALY LIST - BLOCK B

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
7	1180	F	0	8.3	8.5	0.9	0	66
7	1180	G	1	11.1	8.9	1.4	0	66
7	1180	H	2	10.7	6.4	2.0	0	65
7	1180	J	2	9.1	4.9	2.2	0	77
7	1180	K	2	8.5	4.4	2.3	0	77
7	1190	A	0	-0.6	1.6	0.0	0	57
7	1190	B	0	2.0	2.6	0.3	0	90
7	1190	C	0	4.6	7.2	0.3	0	70
7	1190	D	0	7.6	7.4	0.9	0	60
7	1190	E	1	7.8	5.6	1.4	24	41
7	1190	F	1	11.0	8.5	1.4	16	40
7	1190	G	2	22.5	14.8	2.3	11	35
7	1190	H	2	23.8	14.8	2.6	0	55
7	1190	J	2	9.9	5.9	2.0	25	37
7	1190	K	0	2.5	5.9	0.1	0	98
7	1190	M	2	8.7	3.9	2.8	0	99
7	1190	N	1	4.8	3.7	1.0	23	51
7	1190	O	1	4.2	2.6	1.4	4	80
8	1220	A	1	2.7	1.4	1.5	26	76
8	1220	B	2	19.0	11.5	2.5	0	51
8	1220	C	3	17.7	6.4	4.9	0	82
8	1220	D	4	22.7	5.5	9.0	0	69
8	1220	E	1	9.3	7.2	1.3	0	80
8	1220	F	1	7.8	6.9	1.0	8	52
8	1220	G	1	7.3	5.4	1.3	11	55
8	1220	H	1	4.5	3.5	1.0	30	46
8	1220	J	1	10.0	7.8	1.4	0	58
8	1221	A	1	5.3	2.9	1.8	30	49
8	1221	B	0	2.6	4.5	0.2	17	46
8	1221	C	0	0.3	2.0	0.0	0	70
8	1221	D	3	62.9	27.4	5.6	0	55
8	1221	E	3	180.9	78.1	7.8	0	28
8	1221	F	4	209.1	77.0	9.9	0	31
8	1221	G	3	189.7	87.2	7.3	0	32
8	1221	H	2	9.6	5.0	2.4	9	56
8	1221	J	2	11.0	5.4	2.7	18	44
8	1221	K	1	6.8	4.9	1.3	34	34
8	1221	M	1	5.9	4.2	1.3	42	29
8	1221	N	0	0.8	3.1	0.0	18	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.

E.M. ANOMALY LIST - BLOCK C

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
9	2000	A	2	21.4	13.0	2.6	0	49
9	2000	B	0	3.8	8.3	0.2	20	28
9	2010	A	0	5.5	6.4	0.6	26	34
9	2010	B	1	16.2	14.8	1.3	0	48
9	2010	C	1	8.1	6.4	1.2	10	52
9	2010	D	1	6.7	4.8	1.3	21	47
9	2010	E	1	5.9	4.1	1.3	13	59
9	2020	A	0	4.8	13.2	0.1	4	34
9	2020	B	0	6.3	6.9	0.7	3	56
9	2020	C	0	4.4	8.4	0.2	1	48
9	2020	D	2	10.2	5.3	2.4	0	67
9	2020	E	0	2.0	4.9	0.1	17	39
9	2020	F	2	9.6	4.9	2.5	0	89
9	2020	G	0	4.2	5.7	0.4	4	57
9	2030	A	3	15.7	6.3	4.1	0	60
9	2030	B	0	12.8	16.0	0.8	0	43
9	2030	C	1	26.8	26.9	1.4	0	42
9	2030	D	0	5.5	7.1	0.5	2	55
9	2030	E	1	6.0	4.0	1.4	0	75
9	2030	F	0	4.1	6.7	0.3	1	55
9	2030	G	1	18.5	13.3	1.9	9	39
9	2030	H	1	15.4	14.9	1.2	0	47
9	2030	J	1	15.8	16.7	1.1	0	56
9	2040	A	0	7.2	15.3	0.3	6	33
9	2040	B	1	13.5	13.6	1.1	14	33
9	2040	C	0	9.3	10.1	0.8	22	30
9	2040	D	1	7.0	4.8	1.4	0	96
9	2040	E	3	39.2	11.9	7.8	0	56
9	2040	F	3	28.8	9.7	6.2	0	69
9	2040	G	3	16.1	5.5	5.1	0	91
9	2040	H	2	14.6	6.3	3.6	0	73
9	2040	J	2	12.8	6.0	3.1	0	60
9	2040	K	1	8.2	5.2	1.7	14	52
9	2040	M	1	9.4	7.2	1.4	15	44
9	2040	N	2	24.1	14.7	2.7	11	34
9	2040	O	1	20.1	15.5	1.8	7	39
9	2040	P	1	20.2	16.0	1.7	9	36
9	2050	A	1	7.6	5.1	1.5	1	66
9	2050	B	0	2.3	7.0	0.0	6	40

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E.M. ANOMALY LIST - BLOCK C

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
9	2050	C	1	10.7	7.8	1.5	2	55
9	2050	D	2	16.7	10.4	2.3	0	61
9	2050	E	2	26.0	17.6	2.4	0	46
9	2050	F	2	41.5	29.0	2.7	0	39
9	2050	G	2	37.0	26.8	2.4	0	43
9	2050	H	3	18.0	6.7	4.7	0	71
9	2060	A	2	7.8	2.8	3.7	14	60
9	2060	B	3	12.5	3.1	7.3	5	60
9	2060	C	0	4.6	4.8	0.6	19	49
9	2060	D	1	9.6	7.6	1.3	11	47
9	2060	E	2	8.0	3.5	2.9	18	54
9	2070	A	2	10.8	5.1	2.9	0	69
9	2070	B	2	4.5	1.9	2.4	0	90
9	2070	C	0	3.4	5.5	0.3	0	78
9	2070	D	1	6.1	3.4	1.8	0	96
9	2070	E	1	9.8	9.0	1.1	0	72
9	2070	F	2	12.6	7.0	2.4	0	62
9	2080	A	2	11.3	4.8	3.4	11	52
9	2080	B	1	9.8	6.9	1.6	4	56
9	2080	C	1	13.6	14.2	1.0	0	59
9	2080	D	0	7.5	12.4	0.4	0	54
9	2080	E	1	12.5	9.7	1.5	0	74
9	2080	F	2	14.7	7.4	2.9	0	72
9	2080	G	0	7.0	7.4	0.8	19	38
9	2080	H	2	6.1	2.3	3.2	23	57
9	2080	J	3	6.4	1.8	4.9	0	1228
9	2080	K	1	6.4	5.3	1.1	27	39
10	2090	A	2	4.5	2.0	2.3	30	58
10	2090	B	0	5.0	6.1	0.5	0	63
10	2090	C	0	9.7	9.7	0.9	0	68
10	2090	D	0	13.4	17.3	0.8	0	44
10	2090	E	1	14.4	13.6	1.2	0	52
10	2090	F	2	14.1	6.7	3.1	0	78
10	2090	G	0	4.4	6.2	0.4	14	45
10	2090	H	0	5.7	10.0	0.3	0	55
10	2090	J	0	7.4	13.1	0.4	0	44
10	2090	K	1	17.0	16.0	1.3	0	48
10	2090	M	0	10.2	14.1	0.6	0	56
10	2090	N	0	10.3	16.0	0.5	0	63
10	2090	O	0	7.9	9.6	0.7	2	50
10	2090	P	1	9.3	7.8	1.2	2	55

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E.M. ANOMALY LIST - BLOCK C

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
10	2090	Q	3	17.3	6.2	4.9	0	69
10	2100	A	3	4.4	1.3	4.1	31	61
10	2100	B	4	18.1	4.4	8.4	0	67
10	2100	C	2	12.8	6.6	2.7	0	64
10	2100	D	1	5.5	2.9	1.9	9	70
10	2100	E	1	5.8	4.9	1.0	2	66
10	2100	F	0	7.6	8.1	0.8	0	92
10	2100	G	1	15.7	16.7	1.1	0	62
10	2100	H	0	5.4	4.9	0.9	0	93
10	2100	J	0	5.5	6.5	0.6	0	63
10	2100	K	0	5.2	6.3	0.5	0	62
10	2110	A	0	11.0	19.4	0.4	0	40
10	2110	B	0	9.4	16.2	0.4	0	49
10	2110	C	2	35.4	26.8	2.3	0	52
10	2110	D	2	46.9	33.5	2.7	2	32
10	2110	E	2	49.9	34.6	2.9	0	39
10	2110	F	1	19.4	15.7	1.7	0	57
10	2110	G	2	18.9	12.0	2.3	0	53
10	2110	H	1	18.3	15.2	1.6	0	65
10	2110	J	0	14.5	16.6	0.9	0	57
10	2110	K	0	9.2	9.1	0.9	0	86
10	2110	M	0	7.1	8.6	0.6	2	52
10	2110	N	0	7.6	7.2	0.9	0	59
10	2110	O	2	13.7	5.8	3.6	0	68
10	2110	P	0	3.1	5.0	0.3	25	36
10	2110	Q	0	1.7	10.0	0.0	15	18
10	2110	R	0	6.8	11.7	0.4	4	41
10	2120	A	0	0.2	3.7	0.0	0	52
10	2120	B	1	7.0	5.1	1.3	20	47
10	2120	C	0	4.1	5.8	0.4	13	48
10	2120	D	0	6.0	9.4	0.4	7	42
10	2120	E	0	5.6	9.8	0.3	8	40
10	2120	F	0	4.6	12.6	0.1	2	36
10	2120	G	2	14.5	8.1	2.5	0	71
10	2120	H	0	5.3	4.8	0.8	42	26
10	2120	J	0	5.2	7.5	0.4	30	25
10	2120	K	0	12.8	15.3	0.8	17	26
10	2120	M	0	10.0	13.6	0.6	18	27
10	2120	N	1	11.4	10.5	1.1	16	36
10	2120	O	2	37.0	24.7	2.7	0	38
10	2120	P	2	39.0	24.6	3.0	0	46
10	2120	Q	2	84.6	52.9	3.9	0	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.

E.M. ANOMALY LIST - BLOCK C

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
10	2120	R	2	103.7	73.5	3.5	0	26
10	2120	S	1	8.6	6.8	1.3	0	72
10	2130	A	0	5.0	12.5	0.2	8	32
10	2130	B	0	9.0	11.3	0.7	8	40
10	2130	C	3	24.5	10.6	4.2	0	54
10	2130	D	2	21.2	15.2	2.0	0	54
10	2130	E	3	26.5	11.9	4.1	0	64
10	2130	F	2	8.7	3.9	2.8	0	94
10	2130	G	2	8.7	4.4	2.4	0	84
10	2130	H	0	6.2	7.3	0.6	3	54
10	2130	J	0	8.0	9.6	0.7	1	50
10	2130	K	0	6.9	8.6	0.6	7	46
10	2140	A	0	4.3	7.6	0.3	0	57
10	2140	B	0	4.8	9.4	0.2	0	56
10	2140	C	2	21.5	10.7	3.4	0	75
10	2140	D	3	66.1	24.5	7.0	0	43
10	2140	E	0	7.9	8.2	0.8	0	62
10	2140	F	1	9.9	9.6	1.0	0	61
10	2140	G	0	9.8	13.7	0.6	6	39
10	2140	H	0	5.6	13.3	0.2	7	33
10	2140	J	1	4.0	2.9	1.1	20	62
10	2140	K	1	4.4	2.9	1.3	20	61
10	2170	A	0	-0.7	0.6	0.0	0	62
15	5870	A	0	2.8	8.2	0.1	22	22
15	5870	B	0	2.3	8.0	0.0	29	13
15	5870	C	0	0.3	11.2	0.0	9	7
15	5870	D	0	-0.7	16.6	0.0	0	6
14	5950	A	1	3.6	1.9	1.6	13	78
14	5950	B	2	15.3	8.0	2.8	0	60
14	5950	C	1	9.7	7.3	1.4	10	49
14	5950	D	0	4.5	3.7	0.9	40	35
14	5950	E	0	-4.2	2.4	0.0	0	18
14	5960	A	0	3.4	0.7	6.2	18	86
14	6010	A	0	1.9	11.1	0.0	0	63
14	6010	B	0	1.2	14.5	0.0	0	38
14	6010	C	0	2.3	16.7	0.0	3	22
14	6010	D	0	5.4	81.2	0.0	0	22
14	6010	E	0	2.1	21.7	0.0	0	25

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.

E.M. ANOMALY LIST - BLOCK C

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
14	6020	A	0	3.3	6.7	0.2	0	75
14	6030	A	0	2.9	8.2	0.1	0	61
14	6030	B	0	11.5	26.2	0.3	1	30
14	6030	C	0	2.5	19.7	0.0	0	25
14	6030	D	0	7.1	17.9	0.2	7	28
14	6030	E	0	3.1	13.0	0.0	0	46
14	6040	A	0	3.8	3.6	0.7	2	73
14	6050	A	0	2.6	4.2	0.2	0	66
14	6050	B	0	5.7	12.1	0.2	0	42
14	6070	A	0	-5.1	6.4	0.0	0	7
14	6070	B	0	6.7	11.0	0.4	0	53
14	6070	C	0	2.8	7.0	0.1	16	33
14	6090	A	0	3.2	6.1	0.2	0	85
14	6111	A	0	2.2	8.1	0.0	0	55
14	6111	B	0	0.8	6.9	0.0	0	36
14	6111	C	0	1.2	5.5	0.0	12	32
14	6120	A	0	4.6	6.7	0.4	9	48
14	6120	B	0	4.7	5.9	0.5	0	67
14	6120	C	0	-0.1	1.3	0.0	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.

E.M. ANOMALY LIST - BLOCK D

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
13	5000	A	1	4.4	3.2	1.1	57	22
13	5000	B	0	4.2	0.5	14.4	16	83
13	5000	C	2	5.9	2.3	3.0	28	52
13	5000	D	1	14.6	11.7	1.5	3	47
13	5010	A	3	19.8	7.6	4.6	25	28
13	5010	B	3	7.9	1.8	7.1	48	29
13	5010	C	4	6.6	1.2	9.2	47	35
13	5010	D	0	4.3	0.7	9.4	43	53
13	5010	E	0	4.1	0.5	13.9	38	61
13	5010	F	0	4.3	0.7	9.4	27	69
13	5010	G	0	5.3	0.9	9.4	34	56
13	5010	H	4	7.9	1.5	9.1	20	57
13	5010	J	3	9.7	2.6	6.0	23	47
13	5010	K	2	7.3	2.9	3.2	40	34
13	5010	M	1	4.1	2.7	1.2	66	17
13	5010	N	0	3.8	3.5	0.7	59	17
13	5020	A	3	4.8	1.2	5.3	31	59
13	5020	B	3	5.2	1.6	4.0	19	68
13	5020	C	2	5.0	1.7	3.5	9	78
13	5020	D	0	2.2	0.2	17.4	2	122
13	5020	E	0	1.4	0.0	21.4	24	122
13	5020	F	0	2.6	-0.1	60.7	0	143
12	5030	A	0	4.4	3.9	0.8	0	1239
12	5030	B	2	4.4	1.9	2.3	0	1246
12	5030	C	3	5.2	1.2	6.1	0	1241
12	5030	D	2	6.2	3.0	2.3	0	87
12	5030	E	2	27.0	16.4	2.8	0	1240
12	5030	F	2	26.1	13.7	3.3	0	1241
12	5030	G	3	23.9	10.7	4.0	0	1245
12	5030	H	3	17.5	7.0	4.2	0	1243
12	5030	J	1	3.4	2.3	1.1	44	44
12	5040	A	0	1.1	5.4	0.0	22	21
12	5050	A	1	5.4	4.5	1.0	28	42
12	5060	A	0	2.5	8.9	0.0	15	26
12	5060	B	0	2.5	8.2	0.0	6	36
12	5060	C	0	2.4	15.7	0.0	0	27
12	5060	D	0	1.2	10.6	0.0	3	26
12	5060	E	1	2.6	1.7	1.0	25	72

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.

E.M. ANOMALY LIST - BLOCK D

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
12	5060	F	2	3.5	1.3	2.7	0	114
12	5060	G	1	6.3	4.5	1.3	15	54
12	5060	H	0	4.1	5.7	0.4	6	54
12	5070	A	0	-0.5	2.8	0.0	0	34
12	5070	B	0	0.8	3.5	0.0	11	42
12	5080	A	0	0.0	5.1	0.0	0	31
12	5090	A	0	4.3	11.7	0.1	25	14
12	5090	B	0	5.2	5.5	0.7	40	24
12	5090	C	0	1.6	4.4	0.0	8	48
12	5090	D	0	1.2	5.4	0.0	1	44
12	5090	E	0	3.7	4.4	0.5	15	53
12	5090	F	0	1.0	7.2	0.0	17	17
12	5090	G	0	0.8	4.6	0.0	24	19
12	5100	A	0	1.3	-0.2	0.0	0	44
12	5100	B	0	2.2	8.7	0.0	21	19
12	5100	C	0	2.1	7.6	0.0	17	26
12	5100	D	0	2.1	3.8	0.2	45	21
12	5100	E	0	2.4	0.7	3.3	61	53
12	5100	F	0	3.6	3.3	0.7	38	40
12	5111	A	0	3.1	1.0	3.2	64	39
12	5111	B	0	3.1	0.8	4.4	66	39
12	5111	C	0	2.9	6.5	0.1	13	38
12	5111	D	0	3.7	7.3	0.2	8	44

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.

E.M. ANOMALY LIST - BLOCK E

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
11	4170	A	0	0.7	2.5	0.0	0	82
11	4170	B	0	1.3	3.5	0.0	11	50
11	4170	C	0	-0.1	2.2	0.0	0	69
11	4160	A	0	0.2	8.6	0.0	0	30
11	4160	B	0	0.6	10.1	0.0	0	34
11	4100	A	0	-0.3	5.0	0.0	0	36
11	4100	B	0	0.1	3.9	0.0	0	41
11	4060	A	0	2.7	5.1	0.2	21	38
11	4050	A	0	2.5	1.7	0.9	49	48
111	4002	A	0	1.2	5.3	0.0	2	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.

E.M. ANOMALY LIST - BLOCK F

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
111	3060	A	0	0.0	5.9	0.0	0	33
111	3060	B	0	0.9	5.0	0.0	12	31
111	3060	C	0	0.4	5.1	0.0	0	32
111	3050	A	0	-2.0	1.9	0.0	0	56
111	3040	A	0	0.2	4.0	0.0	10	20
111	3040	B	0	0.2	4.0	0.0	10	20
111	3040	C	0	3.2	6.2	0.2	5	50
111	3040	D	0	1.3	8.3	0.0	0	39
111	3040	E	0	0.1	6.6	0.0	0	64
111	3040	F	0	0.7	7.1	0.0	0	36
111	3040	G	0	2.9	8.8	0.1	0	45
111	3040	H	0	-1.6	5.7	0.0	0	53
111	3030	A	0	1.3	3.4	0.0	17	45
111	3030	B	0	3.6	7.6	0.2	1	49
111	3030	C	0	5.2	5.4	0.7	4	61
111	3020	A	0	7.7	8.6	0.7	0	70
111	3020	B	0	5.9	12.7	0.2	0	43
111	3020	C	0	3.5	6.1	0.2	0	72
111	3020	D	0	1.7	4.1	0.1	11	49
111	3020	E	0	-0.5	5.4	0.0	0	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.

E.M. ANOMALY LIST - BLOCK BOU

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
3	100	A	0	-0.7	3.6	0.0	0	51
3	100	B	0	-3.3	2.1	0.0	0	58
3	100	C	0	0.5	4.2	0.0	10	30
3	110	A	1	2.9	2.0	1.0	37	55
3	120	A	0	0.0	4.2	0.0	0	21
3	131	A	0	0.3	2.2	0.0	23	29
3	131	B	0	-0.4	3.2	0.0	0	23
3	140	A	0	-3.1	2.0	0.0	0	57

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.

E.M. ANOMALY LIST - BLOCK KNIP

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
1	10	A	0	1.3	2.0	0.2	20	66
1	20	A	1	7.0	5.0	1.4	21	46
1	20	B	1	6.6	5.3	1.1	18	48
1	20	C	1	4.5	3.4	1.0	31	46
1	20	D	1	4.1	2.7	1.2	40	43
1	30	A	0	5.1	6.5	0.5	0	64
1	30	B	0	4.2	4.4	0.6	0	90
1	40	A	2	23.3	15.3	2.4	0	55
1	40	B	1	14.8	13.1	1.3	14	34
1	50	A	0	2.4	0.0	53.1	61	61

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.

E.M. ANOMALY LIST - BLOCK ICEY

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
5	300	A	0	-0.9	2.2	0.0	0	38
5	310	A	0	-2.6	1.7	0.0	0	50
5	320	A	0	-9.3	2.9	0.0	0	25
5	320	B	0	-1.1	1.5	0.0	0	41
5	330	A	0	-0.5	2.0	0.0	0	56
5	330	B	0	-0.9	2.9	0.0	0	61
5	330	C	0	-0.6	2.6	0.0	0	51
5	340	A	0	-0.2	3.9	0.0	0	32

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

PERSONNEL

FIELD

Flown	January/February, 1989
Pilot	R. Hague, J. Kamphaus
Operator	Kevin McCart

OFFICE

Processing	Diana Bradley
Report	Richard Yee, P.Eng.