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Report of Airborne Electromagnetic Magnetic and VLF-EM Surveys, Tom Fox Project, Argyle Township, Plan M203 NTS: 42A2 Larder Lake Mining Division

Joutel Resources Ltd.

W. J. McGuinty
January 1992

Qual. 2.8230.

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1.0 Introduction

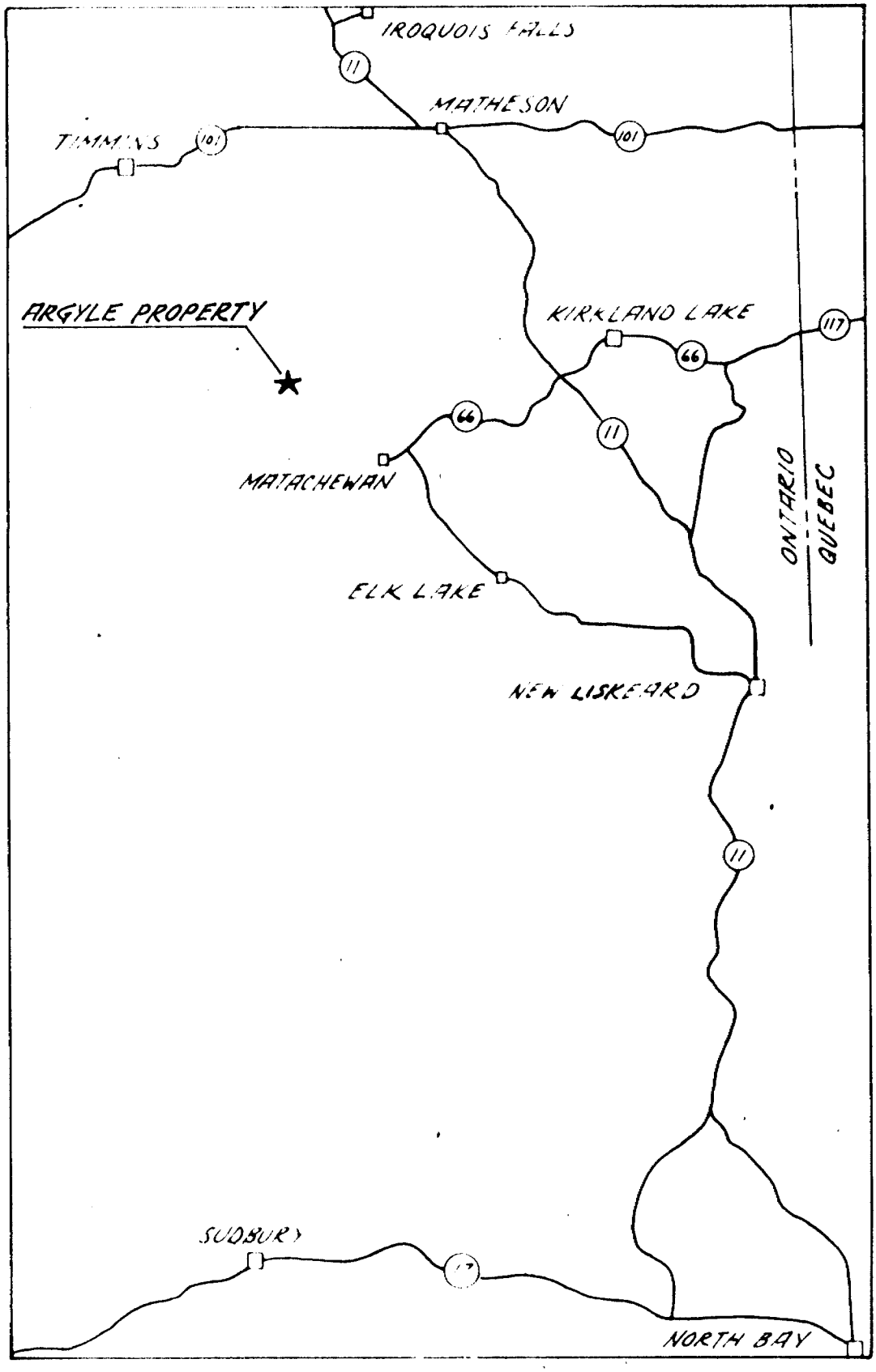
From May to December 1991, Joutel Resources Limited conducted geological mapping, helicopter borne and ground based geophysics on a 46 claim property in central Argyle township. The claims were acquired by Joutel under option agreement from F. Kiernicki of Kirkland Lake. The purpose of the acquisition was to re-evaluate the area of a known zinc occurrence for further base metal potential. Previous drill results during a gold exploration program in the early 1970's returned assays as high as 3.0% zinc over 7.2 feet in a quartz sulphide rich breccia. Similar results were obtained in the 1980's.

Remapping of the area with a view to evaluating strata form mineral deposition and regional structural implications was undertaken by Joutel.

2.0 Property Description, Location and Access

The Tom Fox property consists of 46 unpatented 16 hectare claims located in northwestern Argyle township, plan M-203, Larder Lake Mining Division. The claims are held under two separate options from F. Kiernicki of 26 claims (SW group) and 20 claims (NE group).

Access to the claims is primarily from Matachewan, Ontario and can be achieved by proceeding westerly from the village along Highway 566 for 20km to the turn off for the Argyle Lake Camp



JOUTEL RESOURCES LTD.
PROPERTY LOCATION MAP
ARGYLE TWP. PROPERTY
SCALE-1"=20Mi MAY/91

FIG. 1

JOUTEL RESOURCES LTD.

CLAIM MAP

ARGYLE PROPERTY

SCALE 1"=2640' OCT./91

FIG. 2

Property	Claim No.	Recorded Date	Work ($)	Expiry Date
Argyle	1132355	03/18/91	1760.00	03/18/96
Argyle	1132356	03/18/91	1760.00	03/18/96
Argyle	1132357	03/18/91	1760.00	03/18/96
Argyle	1132358	03/18/91	1760.00	03/18/96
Argyle	1168040	03/19/91	1760.00	03/19/96
Argyle	1168041	03/18/91	1760.00	03/18/96
Argyle	1168042	03/19/91	1760.00	03/19/96
Argyle	1168313	03/18/91	1760.00	03/18/96
Argyle	1168314	03/18/91	1760.00	03/18/96
Argyle	1168315	03/18/91	1760.00	03/18/96
Argyle	1168316	03/18/91	1760.00	03/18/96
Argyle	1168317	03/18/91	1760.00	03/18/96
Argyle	1169083	03/18/91	1760.00	03/18/96
Argyle	1169084	03/18/91	1760.00	03/18/96
Argyle	1169085	03/18/91	1760.00	03/18/96
Argyle	1169086	03/18/91	1760.00	03/18/96
Argyle	1169087	03/18/91	1760.00	03/18/96
Argyle	1169088	03/18/91	1760.00	03/18/96
Argyle	1169089	03/18/91	1760.00	03/18/96
Argyle	1169090	03/18/91	1760.00	03/18/96
Tom Fox	737273	12/28/83	4400.00	12/28/95
Tom Fox	737274	12/28/83	4400.00	12/28/95
Tom Fox	799866	09/26/84	4400.00	09/26/96
Tom Fox	799867	09/26/84	4400.00	09/26/96
Tom Fox	799868	09/26/84	4400.00	09/26/96
Tom Fox	799869	09/26/84	4400.00	09/26/96
Tom Fox	822232	11/27/84	4400.00	11/27/96
Tom Fox	822233	11/27/84	4400.00	11/27/96
Tom Fox	822234	11/27/84	4400.00	11/27/96
Tom Fox	822235	11/27/84	4400.00	11/27/96
Tom Fox	822542	03/25/85	4400.00	03/25/97
Tom Fox	822543	03/25/85	4400.00	03/25/92
Tom Fox	918081	09/10/86	4400.00	09/10/98
Tom Fox	918082	09/10/86	4400.00	09/10/98
Tom Fox	1132396	03/12/91	1760.00	03/12/96
Tom Fox	1132397	03/12/91	1760.00	03/12/96
Tom Fox	1132398	03/12/91	1760.00	03/12/96
Tom Fox	1132399	03/12/91	1760.00	03/12/96
Tom Fox	1168974	02/11/91	1760.00	02/11/96
Tom Fox	1168975	02/11/91	1760.00	02/11/96
Tom Fox	1168976	02/11/91	1760.00	02/11/96
Tom Fox	1168977	02/11/91	1760.00	02/11/96
Tom Fox	1168978	02/11/91	1760.00	02/11/96
Tom Fox	1168979	02/11/91	1760.00	02/11/96
Tom Fox	1168980	02/11/91	1760.00	02/11/96
Tom Fox	1168981	02/11/91	1760.00	02/11/96

and northerly along this road for 7km. A small bush track leads west to the Whitefish river which can be traversed by canoe. A well marked foot-trail leads to the original showings in the south west claim group.

Alternately, access to the west side of the property can be achieved by following Highway 566 to its end then westerly along a timber access road to an abandoned sawmill site and from there north for 3.5km. From this point a trail suitable for tracked vehicles leads the main showing in the south west group. Both accesses are limited to snowmobile only from highway 566 during winter months.

The property is generally flat. Several low rock or moraine covered ridges with less than 15m relative elevation change support spruce, alder and birch growth with considerable blow down. Swampy areas generally have peat floor and host small black spruce growth. In the northern section of the south west group a thick cedar grove can be found. Poor drainage allows the cedar to flourish on high ground in this vicinity.

3.0 Exploration History

Prospecting activity in the Matachewan area began in earnest in 1916 with gold discoveries by Davidson and Otisse and revived in the 1930's with the discovery of the Ashley mine in Bannockburn

township. Parts of the Bannockburn gold area were mapped as parts of surveying projects from 1896 to 1918. H. C. Rickaby completed the first synthesis of the Bannockburn area in 1932 which includes mention of prospects in Argyle township. Two showings are documented by Rickaby in Argyle, a granite hosted gold-copper-molybdenite vein on the eastern boundary and the Tom Fox claims. Tom Fox's original discovery was described as rusty carbonate schist with pyrite in several pits.

In 1974, the Ontario Department of Mines flew an airborne Mag-E.M. survey over the Matachewan area including Argyle township. No significant E.M. anomalies were reported within the current Tom Fox property boundaries.

In 1975 Texas Gulf Canada optioned the property from Tom Fox and carried out geophysical, geological and soil geochemical surveys. Two holes totalling 810 feet were also drilled into a sulphidic "felsic" unit. Anomalous zinc mineralization was obtained in both holes.

In 1983 and 1984, limited geophysical surveys and trenching were carried out by F. Kiernicki and P. Fox. Anomalous gold assays were obtained from sampling. 2 VLF E.M. conductors were also identified of 900 and 600 feet in length respectively.

The property was optioned in 1985 by McAdam Resources Inc. who performed ground geophysical and geological surveys prior to

completing 6 diamond drill holes totalling 2455 feet. Drilling intersected pyroclastic breccias which were locally sericitized, carbonate altered and sulphide mineralized. A black quartz sulphide breccia vein was intersected in several holes, returning anomalous zinc mineralization. Based on low precious metal values McAdam returned the property to the owners in 1990.

4.0 Regional Geology

The Tom Fox property is situated in the western part of the archean Abitibi greenstone belt.

The Abitibi greenstone belt consists of a thick assemblage of Precambrian mafic to felsic metavolcanics and metasediments intruded by small to large masses of mafic to felsic plutonic rocks. Greenstones have an easterly regional strike and steep dips. The rocks are commonly isoclinally folded and are faulted in east, northeast and northwest directions. Metamorphism is commonly low greenschist facies.

Geological mapping of Argyle township by government agencies was initially done in 1932 (Rickaby) and revised as recently as 1991 (Kresz) This mapping shows that the township is underlain by calc-alkaline volcanics arrayed in a large synclinorium opening to the east. These calc-alkaline rocks are inferred to be the

equivalent of the Blake River group which hosts the extensive base metal mineral deposits of the Noranda Camp (Jensen MERQ-OGS, 1983). The outer volcanic series of the synclinorium consists of tholeiitic to komatiitic flows, tuffs, granitic intrusives and associated sediments belonging to the Kinojevis group. This package of rocks hosts the Robertson copper-zinc occurrence located 10km to the northeast. The Kinojevis group rocks are easily identifiable by their strong magnetic relief on airborne geophysical maps. Figure 3 is an adaption of the lithostragraphic MERQ-OGS map obtained from assessment files.

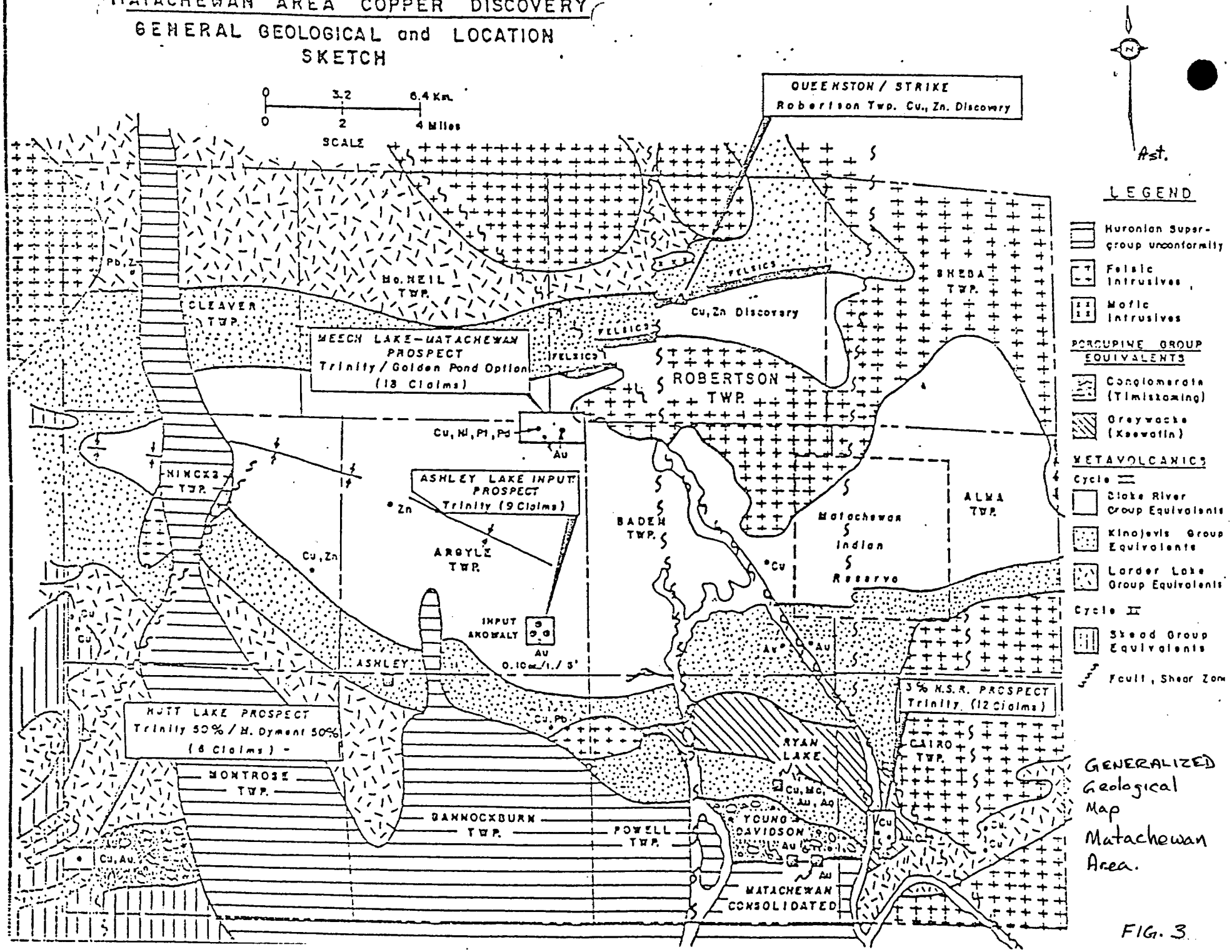
All archean rocks in this area have been intruded by northerly trending Matachewan period diabase.

5.0 1991 Exploration Program

Joutel Resources Ltd. undertook an airborne survey, horizontal loop E.M. survey and geological mapping of the Tom Fox property from May 1991 to December 1991. The airborne survey included the entire claim group while HLEM and mapping were confined to the southwestern group. Type samples from previous core drilling and from mapping were analysed using whole rock methods to assist in understanding the geological frame work.

MATACHEWAN AREA COPPER DISCOVERY

GENERAL GEOLOGICAL and LOCATION SKETCH



GENERALIZED Geological Map Matachewan Area.

FIG. 3

5.1 Airborne Geophysical Survey

In May, 1991 Areodat Ltd. was contracted by Joutel to conduct an helicopter borne combined magnetic, electromagnetic, VLF survey over the 46 claim block. A one hundred metre line spacing was used on a 045-225 degree azimuth so as to best detail both northerly and easterly trending targets believed to be important to control of mineralization. 180 line kilometres were completed.

The original review of data by the company did not identify any strong electromagnetic conductors. The information was reviewed a second time with a view to identifying weaker bedrock responses as a guide to exploration. Several clusters of E.M. conductors were established during the second review and have been plotted on the original survey maps. These anomalies occur west and northwest of the Tom Fox showing, outside the area re-mapped by Joutel but could be a more responsive strike extension of mineralization at the Tom Fox showing. Other anomalies occur in the northwest claim group and are currently unexplained.

A discussion of edge effect conductors in the Aerodat report is consistent with the observation by the author that strata within the Argyle township syncline is essentially flat lying. This will inevitably create problems for further geophysical testing.

A complete report of the Aerodat survey is provided in Appendix I.

6.0 Conclusions and Recommendations

Based on geological and geochemical evaluation, the potential for base metal deposition and mineralization exists on the Tom Fox property. Broadly distributed soda depletion, strong alteration and sulphide mineralization including chloritization indicate an active hydrothermal system capable of generating massive sulphides.

Further exploration of the current showing is warranted to more fully understand the controls to known hydrothermal systems. A stripping program with detailed mapping of the Tom Fox showing near L3+00N 2+00W is proposed to meet this need. Once structural control of mineralization is established, a drill program to test the strata adjacent to controlling structures should be undertaken. If strata is found to be flat lying then vertical or steep hole parallel to structure would test as many stratigraphic units as possible. Extensive whole rock geochemistry and bore hole electromagnetic surveys could be used to maximize the drill hole separation along the structure.

Aggressive surface evaluation of airborne geophysical anomalies throughout the property should be undertaken in conjunction with detailed evaluation of the Tom Fox showing with a view to drill testing the most promising areas. Should these

conductors be identified as flat lying, the adjacent vertical structures which may be hydrothermal control features should be identified as a guide for drilling.

References

Desautels, S. — McAdam Resources, diamond drill logs A88-1 to A88-6 inclusive, February 1988.

Hanych W. — Report on the Tom Fox property Argyle township, Northeastern Ontario for McAdam Resources Inc. December 1986.

Merq-OGS, 1983 — Lithostratigraphic Map of the Abitibi Subprovince. Ontario Geological Survey/Ministere de l'Energie et de Ressources, Quebec; 1:500,000; Catalogued as Map 2484 in Ontario and DV 83-16 in Quebec.

McAdam, J. — Report on VLF-electromagnetic Surveys performed on the Tom Fox Property, Argyle Township, Larder Lake Mining Division, McAdam Resources Report, November 1985.

Pyke, D.R., Ayres, L.R. and Innes, D.G. 1970, 1971 — Map 2205, Timmins - Kirkland Lake, Geological Compilation Series: Cochrane, Sudbury and Timiskaming Districts, Scale 1:253,440 or inch equals 4 miles; Ontario Division of Mines.

Rickaby H. C. — Bannockburn Gold Area, Ontario Department of Mines Annual Report, Volume 41 part 2 pp1-24, 1932.

Watkins, J. — Texas Gulf Limited, diamond drill holes A-51-1 and A-51-2, February 1975.

CERTIFICATE OF QUALIFICATIONS

I, William John McGuinty of 63 Rand Avenue, West in the town of Kirkland Lake in the Province of Ontario,

Do hereby certify:

1. That I am a graduate of the University of Ottawa (1983) with a degree of Bachelor of Science (B.Sc.) with Honours in Geology.

2. That I have been practicing my profession as a geologist and been engaged in mineral exploration since 1981.

3. That this report is based on visits to the property and personal appraisal of available data.

4. That I have disclosed in this report all relevant material which to the best of my knowledge might have a bearing on the viability or recommendations to the project.

5. That I do not have, nor do I expect to receive, directly or indirectly any interest in the property reported on herein.

6. That I am exploration manager for Joutel Resources Ltd.

February 1992

W. J. McGuinty,

Kirkland Lake

Appendix I

Report on a Combined Helicopter Borne Magnetic, Electromagnetic and VLF Survey, Argyle township Porperty.
Aerodat Ltd. July 12, 1991

REPORT ON A COMBINED HELICOPTER BORNE MAGNETIC, ELECTROMAGNETIC AND VLF SURVEY ARGYLE TOWNSHIP PROPERTY LARDER LAKE MINING DIVISION ONTARIO

FOR
JOUTEL RESOURCES LIMITED
BY
AERODAT LIMITED
JULY 12, 1991

J9127B

R.J. de Carle
Consulting Geophysicist

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(Scale 1:10,000)

MAPS: (As listed under Appendix "B" of the Agreement)

1. PHOTOMOSAIC BASE MAP;
prepared from a semi-controlled photo laydown, showing registration crosses on the map corresponding to UTM co-ordinates.

2. FLIGHT LINE MAP;
showing all flight lines, anomalies and fiducials with the photomosaic base map.

3. AIRBORNE ELECTROMAGNETIC SURVEY INTERPRETATION MAP;
showing flight lines, fiducials, conductor axes and anomaly peaks along with inphase amplitudes and conductivity thickness ranges for the 4600 Hz coaxial coil system with the photomosaic base map.

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

5. VERTICAL MAGNETIC GRADIENT CONTOURS;
showing magnetic gradient values contoured at 0.1 nanoTeslas per metre with the photomosaic base map.

6. APPARENT RESISTIVITY CONTOURS;
showing contoured apparent resistivity values for the 4600 Hz. coaxial coil, flight lines and fiducials with the base map.

7. VLF-EM TOTAL FIELD CONTOURS;
showing VLF-EM values contoured at 1% intervals, flight lines and fiducials with the photomosaic base map.

1. INTRODUCTION

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

The survey area, comprised of a block of ground in the Matachewan area, is located approximately 55 kilometres southeast of Timmins, Ontario. Two (2) flights, which were flown on May 15, 1991, were required to complete the survey. Flight lines were oriented at an Azimuth of 045-225 degrees and flown at a nominal line spacing of 100 metres. Coverage and data quality were considered to be well within the specifications described in the contract.

The survey objective is the detection and location of mineralized zones which can be directly or indirectly related to precious metal or base metal exploration targets. In reference to the electromagnetic data, the writer will pay particular attention to poorly defined EM responses which may reflect poorly mineralized conductors within gold bearing structural features. Weak conductors associated with sheared and altered metavolcanic and metasedimentary rock types are also considered primary targets for precious metals. In regards to base metal targets, short isolated or flanking conductors displaying good conductivity and having either magnetic

correlation or no magnetic correlation, are all considered to be areas of extreme interest. Interpretation of the magnetic data should reveal cross-cutting or splay-type structures and it may also reveal stratigraphically controlled sheared or deformation zones. An analysis of the VLF-EM data will also be carried out, in order to locate structures, as well as any weakly conductive horizons that may lead to the location of primary precious metal targets.

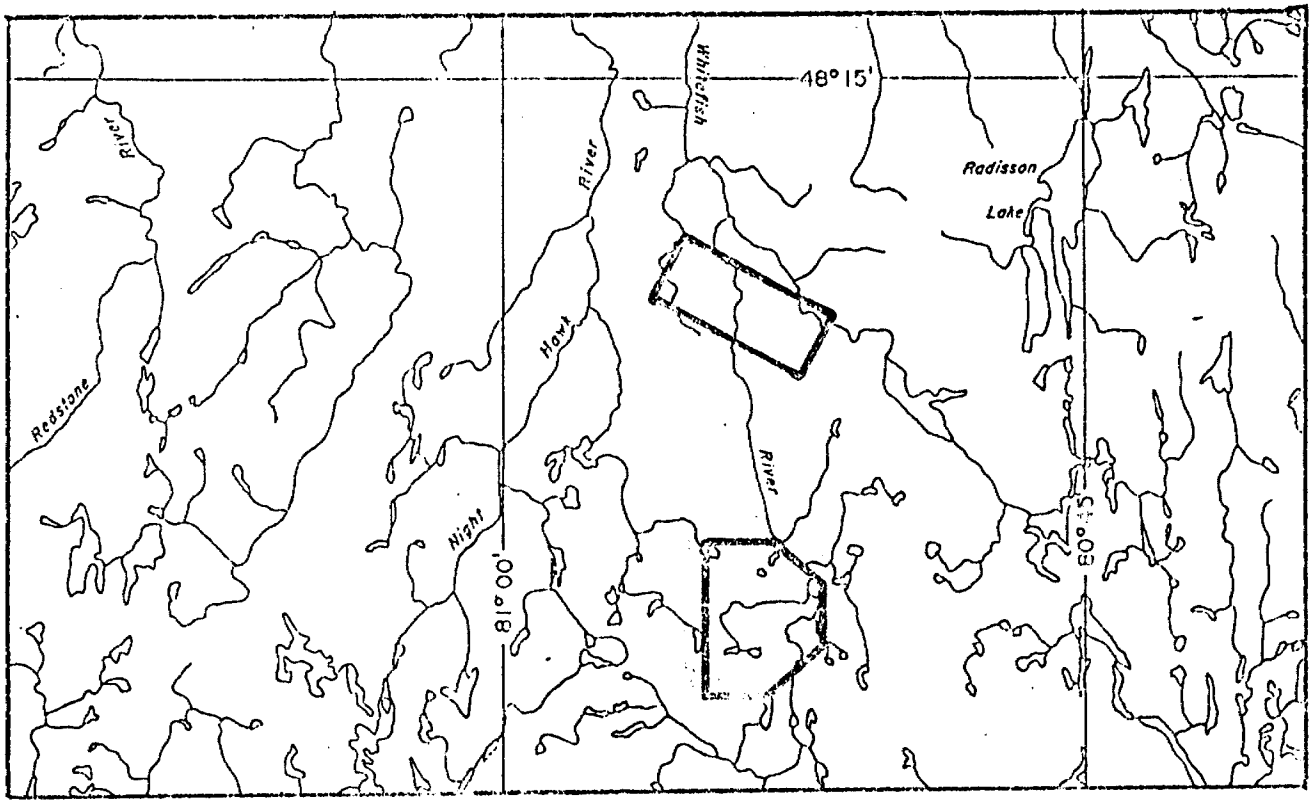
A total of 180 line kilometres of the recorded data were compiled in map form and are presented as part of this report according to specifications outlined by Joutel Resources Limited.

2. SURVEY AREA LOCATION

The survey area is depicted on the index map as shown. It is centred at Latitude 48 degrees 06 minutes north, Longitude 80 degrees 53 minutes west, approximately 55 kilometres southeast of Timmins, Ontario. The survey block is also located approximately 24 kilometres northwest of the village of Matachewan (N.T.S. Reference Map 42 A 2).

Means of access to the survey area can be made from Provincial Highway 566, which traverses across the southern boundary of Argyle Township. This road can be gained from Matachewan. From Highway 566, there are also what appear to be a number of lumber roads traversing throughout much of the region.

The terrain throughout much of the Argyle Property is characterized by gently rolling hills, with relief about 50 feet. For the most part, the elevation is approximately 1050 feet above sea level, with some areas being as high as 1100 feet A.S.L.



AIRBORNE GEOPHYSICAL SURVEY
on behalf of
JOUTEL RESOURCES LIMITED

ARGYLE TOWNSHIP, ONTARIO

BY

AERODAT LIMITED
J9127B

3. AIRCRAFT AND EQUIPMENT

3.1 Aircraft

An Aerospatiale A-Star 350D helicopter, (C-GIBU), owned and operated by Canadian Helicopters Limited, was used for the survey. Installation of the geophysical and ancillary equipment was carried out by Aerodat. The survey aircraft was flown at a mean terrain clearance of 60 metres.

3.2 Equipment

3.2.1 Electromagnetic System

The electromagnetic system was an Aerodat 5-frequency system. Two vertical coaxial coil pairs were operated at 935 Hz. and 4600 Hz. and three horizontal coplanar coil pairs were operated at 865 Hz., 4175 Hz. and 32 kHz. The transmitter-receiver separation was 7 metres. Inphase and quadrature signals were measured simultaneously for the 5 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 measures 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 15 metres below the helicopter. The VLF transmitters monitored were NAA, Cutler, Maine

broadcasting at 24.0 kHz for the Line Station and NLK, Seattle, Washington broadcasting at 24.8 kHz for the Orthogonal Station.

3.2.3 Magnetometer

The magnetometer employed was an Aerodat/Scintrex Model VIW-2321 H8 cesium, optically pumped magnetometer sensor. The sensitivity of this instrument was 0.1 nanoTeslas at a 0.2 second sampling rate. The sensor was towed in a bird 15 metres below the helicopter.

3.2.4 Magnetic Base Station

An IFG (GSM-8) proton precession magnetometer was operated at the base of operations near Matachewan 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

An Aerodat colour video tracking camera was used to record flight path on VHS video tape. The camera was operated in continuous mode and the fiducial

numbers and time marks for cross reference to the analog and digital data were encoded on the video tape.

3.2.7 Analog Recorder

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

Channel	Input	Scale
CXI1	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	865 Hz Coplanar Inphase	10 ppm/mm
CPQ1	865 Hz Coplanar Quadrature	10 ppm/mm
CPI2	4175 Hz Coplanar Inphase	10 ppm/mm
CPQ2	4175 Hz Coplanar Quadrature	10 ppm/mm
CPI3	32 kHz Coplanar Inphase	20 ppm/mm
CPQ3	32 kHz Coplanar Quadrature	20 ppm/mm
PWRL	Power Line	60 Hz
VLT	VLF-EM Total Field, Line	2.5%/mm
VLQ	VLF-EM Quadrature, Line	2.5%/mm
VOT	VLF-EM Total Field, Ortho	2.5%/mm
VOQ	VLF-EM Quadrature, Ortho	2.5%/mm

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 Global Positioning System

A Trimble (Pathfinder) Global Positioning System (GPS) was used for both navigation and flight path recovery. Navigational satellites were interrogated by the GPS antennae and the navigational computer calculated the position of the helicopter in either UTM co-ordinates or Latitude and Longitudes. The navigational computer used was a Picodas PNAV 2001 display unit and Processor, which also displays to the pilot and navigator the flight path of the helicopter. The positional data were recorded on magnetic tape for subsequent flight path determination.

4. DATA PRESENTATION

4.1 Base Map

A photomosaic base map at a scale of 1:10,000 was prepared from a semi-controlled photo laydown and has been presented on a screened mylar Cronaflex base map.

4.2 Flight Path Map

The flight path was derived from the Global Positioning System. The flight lines have the time and the navigator's manual fiducials for cross reference to both analog and digital data.

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

The flight path map is merged with the base map by matching UTM coordinates from the base maps and the flight path record. The match is confirmed by checking the position of prominent topographic features as recorded by manual fiducial marks or as seen on the flight path video record.

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 to reduce system noise.

Local sferic activity can produce sharp, large amplitude events that cannot be removed by conventional filtering procedures. Smoothing or stacking will reduce their amplitude but leave a broader residual response that can be confused with geological phenomena. To avoid this possibility, a computer algorithm searches out and rejects the major sferic events.

The 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 peak locations of anomalies and conductivity thickness ranges along with the Inphase amplitudes (computed from the 4600 Hz coaxial response). The data are presented on a screened copy of the Geonafics photomosaic base map.

4.4 Magnetic Total Field Contours

The aeromagnetic data were corrected for diurnal variations by adjustment with the digitally recorded base station magnetic values. The corrected profile data were interpolated onto a regular grid at a 25 metre true scale interval using an Akima spline technique. The grid provided the basis for threading the presented contours at a 2 nanoTesla interval.

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

4.5 Vertical Magnetic Gradient Contours

The vertical magnetic gradient was calculated from the gridded total field magnetic data. Contoured at a 0.1 nT/m interval, based on a 25 metre grid, the gradient data were presented on a Cronaflex copy of the photomosaic 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 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 of EM data. The apparent resistivity profile data were interpolated onto a regular grid at a 25 metres true scale interval using a cubic spline technique.

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

4.7 VLF-EM Total Field Contours

The VLF electromagnetic data derived from Cutler, Maine was processed to produce a total field contour map on a 25 metre grid with a 1% contour interval. The VLF data for the Line Station is presented on a screened copy of the Cronaflex photomosaic base map.

5. INTERPRETATION

5.1 Geology

Most of the underlying rock types have been designated as being the equivalent to the Blake River Group. These Archean rocks within the survey area consist mainly of calcalkalic basalt and andesite, along with massive, pillowed and fragmental lava with some magnesium-rich tholeiitic lava as well. There are also known to exist within these Blake River Group sequences, calcalkalic dacite and rhyolite flows, breccia and tuff.

Towards the northern portion of the survey area are believed to be ultramafic rocks, consisting of gabbro and diorite.

A few north-south to northwest-southeast Matachewan type diabase dikes traverse through the survey block as well.

Structurally, the writer is not aware of any fault zones within the survey area. There is however, a major splay-type fault that cuts across the northeast survey boundary, coinciding with the Whitefish River. This fault is believed to be an off-shoot from the Montreal River Fault.

With respect to any mineralization within the survey area, or previous exploration work carried out, the writer did not have access to any of this information in order to assist with the geophysical interpretation. The potential in this area is for both base and

precious metals. The closest known past producer to this survey area is the former Ashley Gold Mining Corp. Ltd. gold producer. It's located approximately 10 kilometres to the south of the survey area, just outside Bannockburn Township.

5.2 Magnetics

The most obvious magnetic feature within this survey area is the large expanse of relatively low magnetic background throughout most of the region. This would be the area that has previously been described as being associated with the calcalkalic basalt and andesite. Differentiating between these rock types and magnesium-rich tholeiitic lavas based on the magnetics, would seem to be rather difficult.

The north-south to north-northwest trending magnetic features are interpreted as being associated with the Matachewan type diabase dikes. These dikes will be much more obvious with the calculated magnetic vertical gradient presentation. Any change in magnetic intensities along the dikes could be related to the depths of these intrusives.

It is believed that a large ultramafic sill is responsible for the high intensity magnetic feature located towards the northern survey boundary. A mapped gabbro sill is seen just to the northeast of the survey area, suggesting the presence of the one immediately to the north of the survey block. The Matachewan diabase dikes have in turn, intruded the ultramafic sill.

5.3 Vertical Gradient Magnetics

The areas of high intensity magnetics have been broken up into unique trends as a result of the computation of the vertical gradient. These areas are particularly related to the Matachewan type diabase dikes. It is also interesting to note that the central north-south dike has apparently been offset by the north-northwest trending dike, indicating that the latter dike is the younger. Towards the northwest corner of the survey block, note the northwest trending magnetic feature. Is this another diabase dike?

The Blake River metavolcanics are basically showing a rather low intensity magnetic background. The magnetics in these areas are generally indicating strike directions which will be helpful in any follow-up.

A few fault zones have been indicated on the Interpretation Map by the writer. Most are either cross-cutting faults or splay-type faults. Any fault structures in close proximity to the ultramafic sill towards the north, will be of interest for their possible precious metal mineralogical controls.

5.4 Electromagnetics

The electromagnetic data was first checked by a line-by-line examination of the anomaly records. Record quality was good and any instrument noise was well within the specifications of the contract. Any subtle noise that did exist was removed by an appropriate de-spiking filter. Geologic noise, in the form of surficial conductivity, is

present on the high coplanar coil, the mid coplanar frequency coil and to a lesser degree on the high frequency coaxial coil. These areas tend to be associated with lake bottom sediments, river bottom silts and swamps.

Anomalies were picked off the analog traces of the low and high frequency coaxial responses and then validated on the coplanar profile data. The data were then edited and re-plotted on a copy of the profile map. This procedure ensured that every anomalous response spotted on the analog data was plotted on the final map and allowed for the rejection - or inclusion if warranted - of obvious surficial conductors. Each conductor or group of conductors was evaluated on the basis of magnetic (and lithologic, where applicable) correlations apparent from the analog data and man-made or surficial features not obvious on the analog charts.

RESULTS

The results of this airborne survey clearly show an extremely resistive overlying overburden cover, as well as underlying basement rocks. Much more apparent is the moderate to highly conductive lake bottom sediments that are scattered throughout the survey block. This is most noticeable within Tomfox Lake and East Night Hawk Lake.

A phenomenon which is obvious over these types of environments is the so-called "edge effect". This is where there are wide, flat-lying, sheet-like conductors that are displaying

EM signatures at the edges, that give the appearance of widely spaced vertical or near vertical bedrock conductors. These phenomena most often exhibit two widely spaced, positive coaxial responses with one positive coplanar response in between. The writer may have outlined one such zone on the Interpretation Map. However, there may be occasions where fault zones along the edge of grabens may give rise to a little stronger EM response. If the EM responses are sharp enough, there is a very good chance that mineralization may be the cause.

There were no electromagnetic responses intercepted within this survey block, including Zone A1, that one could clearly associate with a bedrock source. It does not seem that the nature of the overlying conductive materials would inhibit the detection of any weak bedrock conductor either. In reference to both the lower coaxial and coplanar frequencies, if any deep seated conductors do exist here, they have not been picked up with either frequency.

A great deal more work will have to be carried out within the survey block before a full understanding of the geological and structural implications are known. The nature of the sulphides within any base metal target or fracture filled horizon may be such that the airborne system will not detect them. Any alteration processes that may have taken place within the survey area are probably varied and complex and it is not within the realm of this report to discuss its relationship with mineralization any further.

5.5 Apparent Resistivity

This data presentation did not extract any new information from that of the 5 frequency EM profile presentation. As a result of a 200 metre model being used in the calculation of the apparent resistivity data set, it is clear that any near vertical conductor that may exist in this area, would not be resolved with this presentation, even though some of the so-called "edge effects" may be due to mineralized fault structures.

It will be noted that most lakes have been outlined with this presentation and tend to exhibit apparent resistivities in the order of 1000 ohm-metres. Swamps will generally be in the range of 2500-3000 ohm-metres. Because the apparent resistivity background of the underlying rock types are typically over 4000 ohm-metres, this would tend to suggest that, if any bedrock conductors did exist within the survey area, the airborne 5 frequency EM system probably would have detected them. This may be another reason to believe that there are insufficient amounts of sulphides within the survey block.

With the exception of the conductive lake bottom sediments and swamps that exist within the survey block, some of the other anomalous features should be investigated further. It is suggested that northwest-southeast trending features be investigated, especially those that exist towards the northern portion of the survey boundary. There is also a region within the central portion of the block that should be assessed further as well.

With the assistance of more detailed geological information, this data set may or may not be of any further help in interpreting zones of interest.

5.6 VLF-EM Total Field

There is little, if any, semblance of correlation with the magnetic data, suggesting a probable absence of any relationship with the basement rocks. Depending on what the geological implications are within the survey area, some of the more subtle VLF responses may warrant a further look. This would be particularly true towards the north, in close proximity to the ultramafic sill, as well as the dikes.

In comparing the VLF data with the apparent resistivity data presentation, it will be seen that there is reasonable correlation. Based on this comparison, this would tend to suggest that the VLF-EM system has responded to the conductive lake bottom sediments, as well as to the swamps. In fact, the correlation is quite good. There are some discrepancies however, and these may be the areas that are bedrock related. However, it is felt that the apparent resistivity more accurately outlines the conductive surficial materials compared with the VLF data.

The writer is not sure of the thickness of the overlying Pleistocene materials, but there is a good chance that the VLF is not penetrating through to the basement. It seems that the depth of penetration capabilities of the VLF-EM system is 100 feet at the best of times.

It is suggested that with the assistance of all available geology, that coincident VLF anomalies with magnetic features be looked at. These signatures may be reflecting disseminated pyrrhotite, that was unable to be picked up with the 5 frequency EM system. Structures in close proximity to the ultramafic sill will be of interest as well.

5.7 Conclusion and Recommendations

On the basis of the results of this airborne survey, ground follow-up is suggested for a few areas as indicated by the writer in Section 5.5 of this report. It is felt that each of these targets would be of primary interest for their base metal potential. However, this is also an area that has geological implications to having precious metal potential as well, as noted towards the northwest corner of Bannockburn Township.

There were no 5 frequency EM responses intercepted that one could associate with bedrock sources. However, the apparent resistivity data presentation may be of interest in a couple of areas for their possible relationship with bedrock sources, one being located near the contact with the ultramafic sill.

Structural information should be obtained through a more comprehensive evaluation of the magnetic data and possibly, to a lesser degree, through an overview of the VLF data. Cross-cutting and splay type faults are evident within some portions of the survey block. These are extremely important with respect to any precious metal mineralogical controls and as such, the development of these structural events through interpreting the magnetic

data will be strongly advised. The development of any possible deformation zones will be important, particularly near the contact with the ultramafic sill.

Prospecting and soil geochemical surveying should be carried out in the vicinity of Zone A1, as well as in the region of a few of the apparent resistivity features.

Because of the absence of any strong electromagnetic responses in this area, it is felt that an induced polarization (IP) survey would be more conducive to the type of mineralogical environment that may be found as a result of following up on some of these anomalous features.

In summary, only one, very weak conductor has been outlined on the Interpretation Map by the writer. However, this is certainly not a priority target. Apparent resistivity trends in the vicinity of the large ultramafic sill may be associated with a metamorphosed aureole. As such, these should be looked at further. Fault structures in this same region should also be important targets. At this point, the writer is not familiar with the importance, if any, or the implications of the diabase dikes with respect to mineralization controls.

It is a matter of using all resources, including the various geophysical data presentations, previous drill hole and geological information, that may lead to an interesting on-going exploration program.

Respectfully submitted,

R. J. de Carle

Robert J. de Carle
Consulting Geophysicist
for
AERODAT LIMITED
July 12, 1991

J9127B

APPENDIX I

REFERENCES

MERQ-OGS
1983: Lithostratigraphic map of the Abitibi Subprovince; Ontario Geological Survey/Ministere de l'Energie et des Ressources, Quebec; 1:500,000; catalogued as Map 2484 in Ontario and DV 83-16 in Quebec.

Pyke, D. R., Ayres, L. D., Innes, D. G.
1973: Timmins - Kirkland Lake Sheet, Geological Compilation Series, Map 2205, Cochrane, Sudbury and Timiskaming Districts, Scale 1:253,440.

APPENDIX II

PERSONNEL

FIELD

Flown	May 15, 1991
Pilots	Greg Charbonneau
Operators	Scott Wessler

OFFICE

Processing	Tom Furuya George McDonald
Report	R.J. de Carle

APPENDIX III

CERTIFICATE OF QUALIFICATIONS

I, ROBERT J. DE CARLE, certify that: -

1. I hold a B. A. Sc. in Applied Geophysics with a minor in geology from Michigan Technological University, having graduated in 1970.

2. I reside at 28 Westview Crescent in the town of Palgrave, Ontario.

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

4. I have been an active member of the Society of Exploration Geophysicists since 1967 and hold memberships on other professional societies involved in the minerals extraction and exploration industry.

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

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

Signed,

Palgrave, Ontario
July 12, 1991

Robert J. de Carle
Consulting Geophysicist
for
AERODAT LIMITED

APPENDIX IV

GENERAL INTERPRETIVE CONSIDERATIONS

Electromagnetic

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

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

Electrical Considerations

For a given conductive body the measure of its conductivity or conductance is closely related to the measured phase shift between the received and transmitted electromagnetic field. A small phase shift indicates a relatively high conductance, a large phase shift lower conductance. A small phase shift results in a large inphase to quadrature ratio and a large phase shift a low ratio. This relationship is shown quantitatively for 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 IV 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 [illegible] can often be interpreted from the profile

shape of the anomaly. The change in shape is primarily related to the change in inductive coupling among the transmitter, the target, and the receiver.

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

As the thickness of the conductor increases, induced current flow across the thickness of the conductor becomes relatively significant and complete null coupling with the coplanar coils is no longer possible. As a result, the apparent minimum of the coplanar response over the conductor diminishes with increasing thickness, and in the limiting case of a fully 3 dimensional body or a horizontal layer or half-space, the minimum disappears completely.

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

In the case of a spherical conductor, the induced currents are confined to the volume of the

sphere, but not relatively restricted to any arbitrary plane as in the case of a sheet-like form. The response of the coplanar coil pair directly over the sphere may be up to 8* times greater than that of the coaxial pair.

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

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

Overburden anomalies often produce broad poorly defined anomaly profiles. In most cases, the response of the coplanar coils closely follows that of the coaxial coils with a relative amplitude 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 component is an indication 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 V

ANOMALY LIST

JOUTEL RESOURCES LIMITED - ARGYLE PROPERTY

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
5	30330	A	0	0.1	5.5	0.0	11	-11

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.

Ontario

Ministry of Northern Development and Mines

Ministère du Développement du Nord et des Mines

Geoscience Approvals Section
933 Ramsey Lake Road
6th Floor
Sudbury, Ontario
P3E 6B5

Telephone: (705) 670-5853
Fax: (705) 670-5863

January 20, 1994

Our File: 2.15155
Transaction #: W9380.00223

Mining Recorder
Ministry of Northern
Development and Mines
4 Government Road East
Kirkland Lake, Ontario
P2N 1A2

Dear Sir/Madam:

Subject: APPROVAL OF ASSESSMENT WORK CREDITS ON MINING CLAIMS L737273 ET AL IN ARGYLE TOWNSHIP

The 45 days specified in the Notice of Reduction dated December 9, 1993 have passed.

The assessment work credits for Airborne Geophysics filed under Section 15 of the Mining Act Regulations have been approved as outlined on the attached Assessment Work Credit Form.

The approval date is January 20, 1994.

If you have any questions regarding this correspondence, please contact Lucille Jerome at (705) 670-5855.

Yours sincerely,

Ron C. Gashinski
Senior Manager, Mining Lands Section
Mining and Land Management Branch
Mines and Minerals Division

LJ/ls

cc: Resident Geologist
Kirkland Lake, Ontario

Assessment Files Library
Toronto, Ontario

ASSESSMENT WORK CREDIT FORM

FILE NUMBER: 2.15155
DATE: January 20, 1994
RECORDER'S REPORT NUMBER: W9380.00223

RECORDED HOLDER: Fred Kiernicki **CLIENT NUMBER:**152022

TOWNSHIP OR AREA: Argyle Township

CLAIM ON THIS CLAIM	VALUE OF WORK DONE TO THIS CLAIM	VALUE APPLIED FROM THIS CLAIM	VALUE ASSIGNED	RESERVE
L737273	89	89	0	
737274	89	89	0	
799866	89	89	0	
799867	89	89	0	
799868	89	89	0	
799869	89	89	0	
822232	89	89	0	
822233	89	89	0	
822234	89	89	0	
822235	89	89	0	
822542	89	89	0	
822543	90	90	0	
918081	90	90	0	
918082	90	90	0	
	1249	1249	0	0

Ministère du Développement du Nord et des Mines
Ontario

Rapport sur les travaux exécutés après l'enregistrement d'un claim

Loi sur les mines

N° de transaction: W9340.00223

[redacted].GAO

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la **Loi sur les mines** et serviront à la correspondance. Adresser toute question sur la collecte de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5; téléphone : (705) 670-7264.

2.15155

Directives :
- Dactylographier ou écrire en lettres moulées.
- Se reporter à la **Loi sur les mines** et aux règlements pour connaître les directives de dépôt des travaux d'évaluation ou consulter le registrateur de claims.
- Remplir une formule pour chaque groupe de travaux.
- Joindre à la présente formule deux exemplaires des rapports techniques et des cartes.
- Joindre à la présente formule une esquisse indiquant les claims ayant fait l'objet des travaux.

Titulaire(s) enregistré(s) FRED KIRZNICKI ~~Jontel Resources Ltd.~~	N° de client 152022
Adresse P.O. Box 193 KIRKLAND LAKE ONTARIO P2N 3M7	N° de téléphone 705 567 3261
Division des mines LARDER LAKE	Canton/secteur ARGYLE
	N° de plan M ou G M 203
Dates d'exécution des travaux du : MAY 15, 1991	au : Dec 15 /91

Travaux exécutés (cocher un seul groupe de travaux)

	Groupe de travaux	Genre
	Levé géotechnique	Helicopter borne Magnetic, Electromagnetic, VLF EM
	Travaux physiques, y compris forage	D198/1.
	Réhabilitation	
	Autres travaux autorisés	
	Essais	
	Valeur transférée de la réserve	

RECEIVED
SEP 21 1993
MINING LANDS BRANCH

Total des travaux d'évaluation réclamé sur le relevé des frais ci-annexé 2498.00 $

Nota : Le ministre peut rejeter une partie ou la totalité des travaux d'évaluation présentés pour obtenir des crédits d'évaluation si le titulaire enregistré ne peut vérifier les dépenses réclamées sur le relevé des frais dans les trente jours suivant une demande de vérification.

Les personnes et la compagnie d'arpentage qui ont exécuté les travaux (donner le nom et l'adresse de l'auteur du rapport)

Nom	Adresse
W. J. McGuinty	c/o Jontel Resources Ltd, Box 193 KIRKLAND LAKE
Aerodat Ltd	3883 Nashua Drive MISSISSAUGA ONT L4V1R3
Robert J. de Carle	28 Westview Crescent Palgrave Ont

(Joindre une annexe au besoin)

Certification d'intérêt bénéficiaire * Voir la note n° 1 au verso

Je certifie qu'au moment où les travaux ont été exécutés, les claims dont il est question dans le présent rapport étaient enregistrés au nom de leur titulaire actuel ou détenus à titre bénéficiaire par l'actuel titulaire enregistré.	Date Sept 3/93	Titulaire enregistré ou représentant (Signature) Fred Kirznicki

Certification du rapport sur les travaux exécutés

Je certifie que j'ai une connaissance directe des faits exposés dans le présent rapport, pour avoir exécuté les travaux ou en avoir constaté l'exécution avant ou après leur achèvement. Je certifie aussi que le rapport ci-annexé est exact.

Nom et adresse du certificateur: W. J. McGUINTY A/S Jontel Resources Ltd Kirkland Lake Ont.

N° de téléphone	Date	Certifié par (signature)
567 3261	Aug 21 1992	

Réservé au ministère

Valeur totale des crédits enregistrés	Date d'enregistrement	Registrateur de claims	Cachet reçu
$2478.	Sept 13/93	ACTING Barry J. Stoll	LARDER LAKE MINING DIVISION '93 SEP 13 PM 12 55
	Date d'approbation prévue Dec 12/93	Date d'approbation	
	Date d'envoi de l'avis de modification		

0241 (05/91)

Numéro de rapport sur les travaux exécutés pour l'affectation de la réserve	Numéro de claim	Nombre d'unités	Valeur des travaux d'évaluation exécutés sur ce claim	Valeur affectée à ce claim	Valeur transférée de ce claim	Réserve : travaux à réclamer à une date ultérieure
	L 737273	1	$ 177	$ 177	Ø	
	737274	1	177	177		
	799 866	1	177	177		
	799 867	1	177	177		
	799868	1	177	177		
	799869	1	177	177		
	822232	1	177	177		
	822233	1	177	177		
	822234	1	177	177		
	822235	1	177	177		
	822542	1	177	177		
	822543	1	177	177		
	918081	1	177	177		
	L 918082	1	177	177		
	14		2478	2478		
	Nombre total de claims		Valeur totale des travaux exécutés	Valeur totale des travaux qui a été affectée	Total transféré	Réserve totale

RECEIVED

Les crédits que vous réclamez dans le présent rapport peuvent être réduits. Afin de diminuer les conséquences défavorables de telles réductions, veuillez indiquer l'ordre dans lequel vous désirez qu'elles soient appliquées à vos claims. Veuillez cocher (✓) l'une des options suivantes :

1. ☐ Les crédits doivent être réduits en commençant par le dernier claim sur la liste.
2. ☐ Les crédits doivent être réduits également entre tous les claims figurant dans le présent rapport.
3. ☐ Les crédits doivent être réduits selon l'ordre donné en annexe.

Si vous n'avez pas choisi d'option, la première sera appliquée.

Note 1 : Exemples d'intérêts bénéficiaires : cessions non enregistrées, ententes sur des options, protocoles d'entente, etc. relatifs aux claims.

Note 2: Si des travaux ont été exécutés sur un terrain faisant l'objet de lettres patentes ou d'un bail, veuillez [illegible]plir ce qui suit

Je certifie que le titulaire enregistré possédait un intérêt bénéficiaire sur le terrain faisant l'objet de lettres patentes ou d'un bail, au moment où les travaux ont été exécutés.	Signature	Date 21 AUG 92

Ontario

Ministry of Northern Development and Mines

Ministère du Développement du Nord et des mines

Statement of Costs for Assessment Credit

État des coûts aux fins du crédit d'évaluation

Mining Act/Loi sur les mines

Transaction No./N° de transaction
W9380:00223

Personal information collected on this form is obtained under the authority of the **Mining Act**. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la **Loi sur les mines** et serviront à tenir à jour un registre des concessions minières. Adresser toute quesiton sur la collece de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre		
	Field Supervision Supervision sur le terrain		560.00
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil	Type Airborne survey cost		
			1918.00
Supplies Used Fournitures utilisées	Type		
Equipment Rental Location de matériel	Type		
	Total Direct Costs Total des coûts directs		2478.00

2. Indirect Costs/Coûts indirects

** **Note:** When claiming Rehabilitation work indirect costs are not allowable as assessment work.
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type		
Food and Lodging Nourriture et hébergement			
Mobilization and Demobilization Mobilisation et démobilisation			
	Sub Total of Indirect Costs Total partiel des coûts indirects		
	Amount Allowable (not greater than 20% of Direct Costs) Montant admissible (n'excédant pas 20 % des coûts directs)		
	Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs) / **Valeur totale du crédit d'évaluation (Total des coûts directs et indirects admissibles**		

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note : Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.

2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit	Total Assessment Claimed
× 0.50 =	

Remises pour dépôt

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.

2. Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation	Évaluation totale demandée
× 0,50 =	

Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as Agent, Exploration Manager am authorized
(Recorded Holder, Agent, Position in Company)

to make this certification

Attestation de l'état des coûts

J'atteste par la présente :
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de _____ je suis autorisé
(titulaire enregistré, représentant, poste occupé dans la compagnie)

à faire cette attestation.

Signature	Date
	21 AUG 92

0212 (04/91)

Nota : Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.

Ministry of Northern Development and Mines

Ontario

Ministère du Développement du Nord et des mines

Statement of Costs for Assessment Credit

État des coûts aux fins du crédit d'évaluation

Mining Act/Loi sur les mines

Transaction No./N° de transaction: W9380-00223

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Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil	Type Airborne survey cost		
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	Total Direct Costs Total des coûts directs		2478.00

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Food and Lodging Nourriture et hébergement			
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	Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs) / **Valeur totale du crédit d'évaluation (Total des coûts directs et indirects admissibles)**		

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note : Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

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× 0.50 =	

Remises pour dépôt

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Valeur totale du crédit d'évaluation	Évaluation totale demandée
× 0,50 =	

Certification Verifying Statement of Costs

I hereby certify:
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that as Agent, Exploration Manager I am authorized
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Signature

Date: 21 AUG 92

Attestation de l'état des coûts

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(titulaire enregistré, représentant, poste occupé dans la compagnie)

à faire cette attestation.

Signature

Date

Nota : Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.

0212 (04/91)

Ontario

42A02SW9701 2.15155 ARGYLE

900

Ministry of Northern Development and Mines

Ministère du Développement du Nord et des Mines

Geoscience Approvals Section
933 Ramsey Lake Road
6th Floor
Sudbury, Ontario
P3E 6B5

Telephone: (705) 670-5853
Fax: (705) 670-5863

January 20, 1994

Our File: 2.15155
Transaction #: W9380.00223

Mining Recorder
Ministry of Northern
Development and Mines
4 Government Road East
Kirkland Lake, Ontario
P2N 1A2

Dear Sir/Madam:

Subject: APPROVAL OF ASSESSMENT WORK CREDITS ON MINING CLAIMS L737273 ET AL IN ARGYLE TOWNSHIP

The 45 days specified in the Notice of Reduction dated December 9, 1993 have passed.

The assessment work credits for Airborne Geophysics filed under Section 15 of the Mining Act Regulations have been approved as outlined on the attached Assessment Work Credit Form.

The approval date is January 20, 1994.

If you have any questions regarding this correspondence, please contact Lucille Jerome at (705) 670-5855.

Yours sincerely,

Ron C. Gashinski
Senior Manager, Mining Lands Section
Mining and Land Management Branch
Mines and Minerals Division

LJ/ls

cc: Resident Geologist
Kirkland Lake, Ontario

Assessment Files Library
Toronto, Ontario

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

Mc Neil Twp.

Robertson Twp.

Baden Twp.

Bannockburn Twp.

Tomfox L.

Argyle L.

Argyle

Whitefish

Powell

Ashmore

GRAVEL FILE 165449

COPY OF THIS M-PLAN WAS ARCHIVED MAR. 22/93

THE TOWNSHIP OF ARGYLE

DISTRICT OF TIMISKAMING

LARDER LAKE MINING DIVISION

SCALE: 1-INCH=40 CHAINS

LEGEND

PATENTED LAND
CROWN LAND SALE
LEASES
LOCATED LAND
LICENSE OF OCCUPATION
MINING RIGHTS ONLY
SURFACE RIGHTS ONLY
ROADS
IMPROVED ROADS
KING'S HIGHWAYS
RAILWAYS
POWER LINES
MARSH OR MUSKEG
MINES
CANCELLED

NOTES

400' Surface rights reservation [illegible] rivers.

WITHDRAWALS AND REOPENINGS

(R) Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. W-9/86
O-12/88L OPENS W-8/86.

(R2) Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. W-9/86

(R3) Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. W-10/76

(R3) AND PART (R1) REOPENED FOR STAKING UNDER ORDER 0-90/87 NR

O-L.23-90 NR OPENS PART OF W18/86, NOV 21/90

DATE OF ISSUE

PLAN NO.- M-203

LARDER LAKE RECORDER'S OFFICE

MINISTRY OF NATURAL RESOURCES

SURVEYS AND MAPPING BRANCH

ast

N

Flight Path

Navigation and recovery using a Global Positioning (GPS) navigation system.

Average terrain clearance 60m
Average line spacing 100m

EM Anomalies

Conductivity Thickness (mhos)

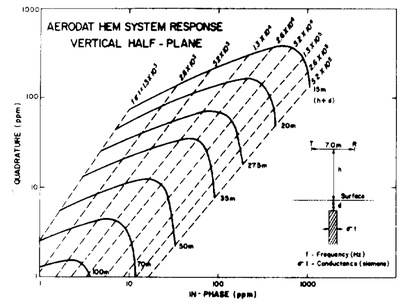
- 0 - 1
- 1 - 2
- 2 - 4
- 4 - 8
- 8 - 15
- 15 - 30
- > 30

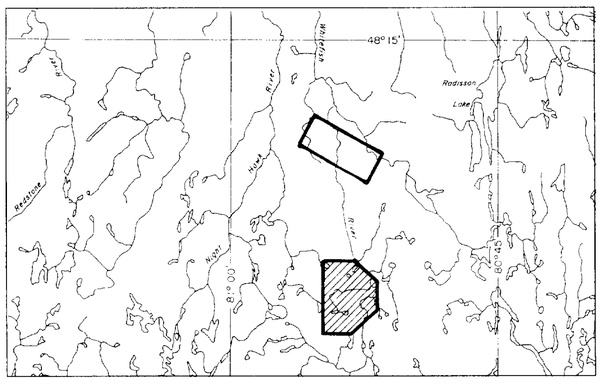
EM Anomaly A, 4600 Hz
Inphase amplitude / ppm
Conductivity thickness
1-2 mhos (see code).

INTERPRETATION LEGEND

Interpreted bedrock conductor axis

Fault





JOUTEL RESOURCES LIMITED

INTERPRETATION 2.15155

ARGYLE PROPERTY

ONTARIO

SCALE 1:10,000

0 330 660 1320 2640 Feet
0 100 200 500 1000 Metres

AERODAT LIMITED

DATE: MAY 1991
RPS No: 42 A
MAP No: 4 91127 1

42A02SW9701 2.15155 ARGYLE

210

ast

N

Flight Path

Navigation and recovery using a Global Positioning (GPS) navigation system.

Average terrain clearance 60m
Average line spacing 100m

Magnetics

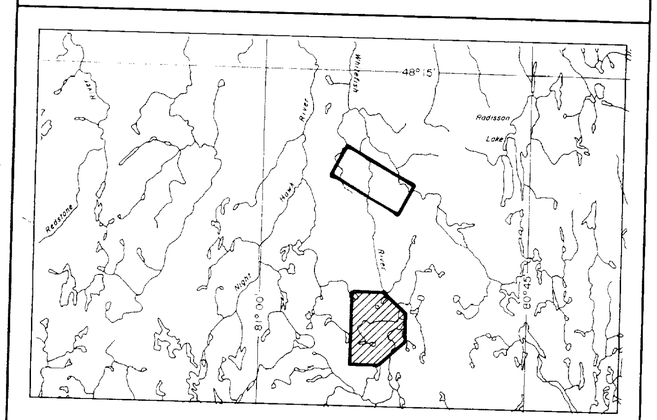
Total Field Magnetic Intensity Contours in nT.

Cesium high sensitivity magnetometer.

Sensor elevation 45m

Map contours are multiples of those listed below

———	2 nT
———	10 nT
———	50 nT
———	250 nT
———	1000 nT



JOUTEL RESOURCES LIMITED

TOTAL FIELD MAGNETIC CONTOURS

15155

ARGYLE PROPERTY

ONTARIO

SCALE 1:10,000

0 330 660 1320 2640 Feet
0 100 200 400 1000 Metres

AERODAT LIMITED

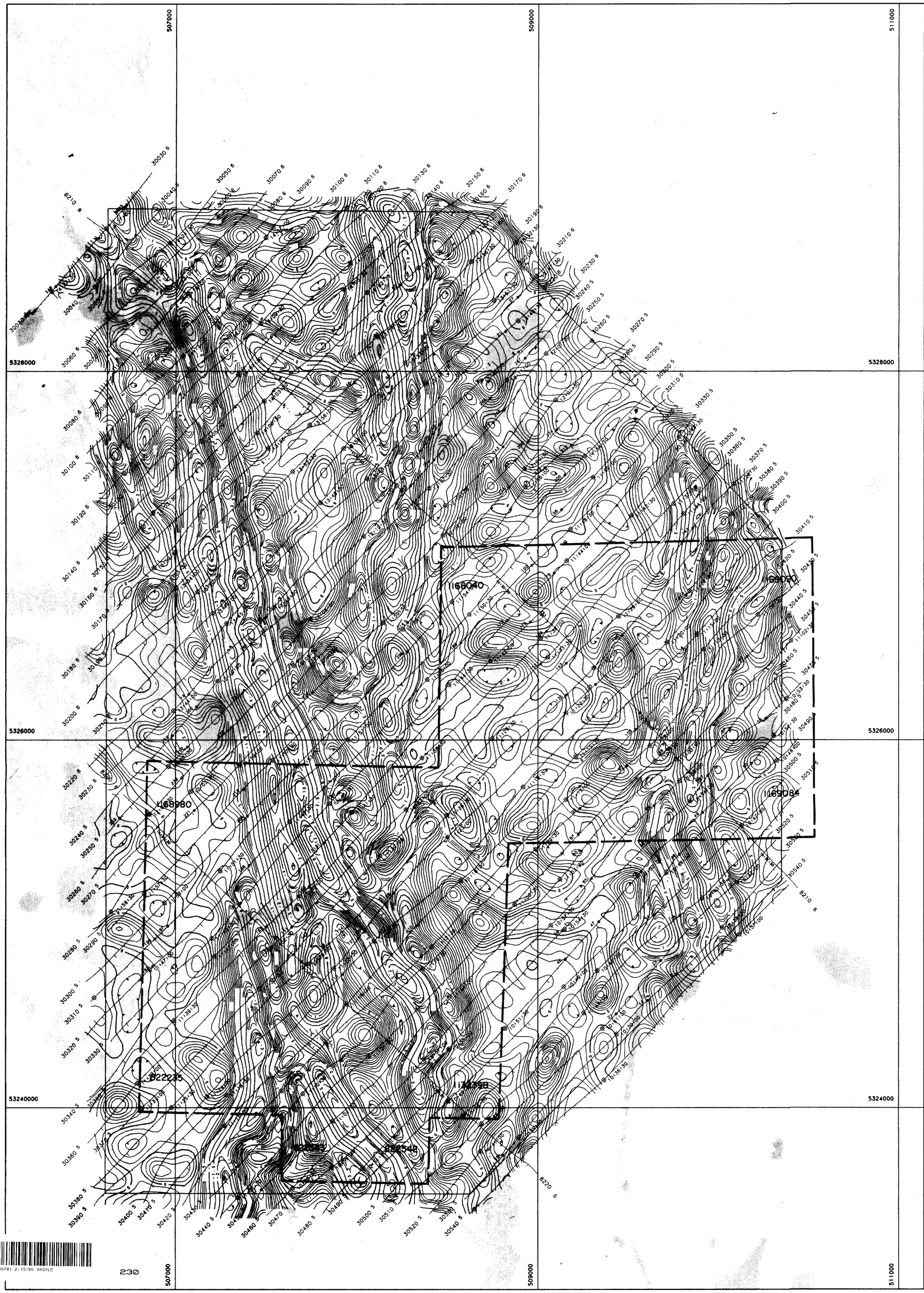
DATE: MAY 1991

NTS No: 42 A

MAP No: 4 J9127 1

42A02SW9721 2.15155 ARGYLE

220



ast

N

Flight Path

Navigation and recovery using a Global Positioning (GPS) navigation system.

Average terrain clearance 60m
Average line spacing 100m

Vertical Gradient

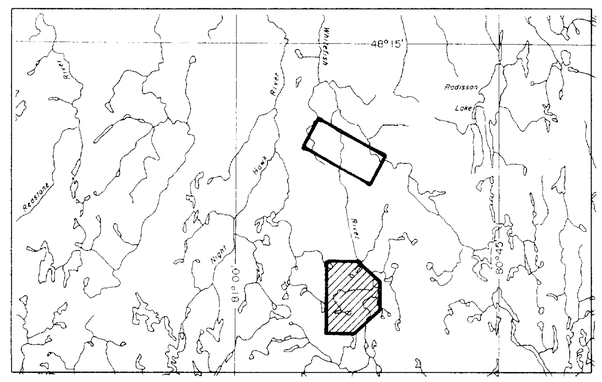
Vertical Magnetic Gradient calculated from the total field magnetic intensity in nT/m.

Cesium high sensitivity magnetometer.

Sensor elevation 45m

Map contours are multiples of those listed below

	0.10 nT
	0.50 nT
	2.50 nT
	10.0 nT
	50.0 nT



JOUTEL RESOURCES LIMITED

CALCULATED VERTICAL MAGNETIC GRADIENT

2.15155

ARGYLE PROPERTY

ONTARIO

SCALE 1:10,000

0 330 660 1320 2640 Feet

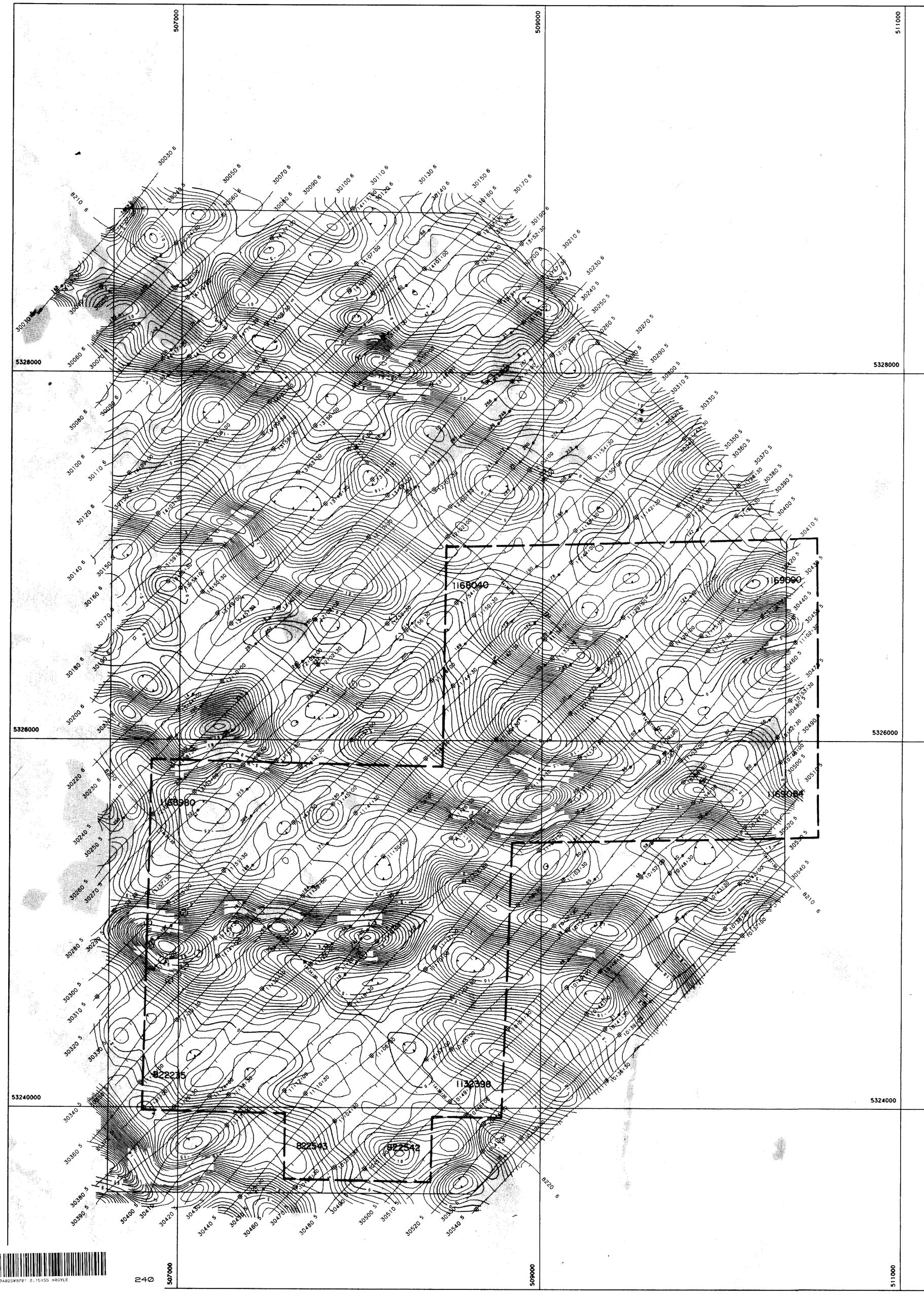
0 100 200 500 1000 Metres

AERODAT LIMITED

DATE: MAY 1991

NTS No: 42 A

MAP No: 5 J9127- 1



Flight Path

Navigation and recovery using a Global Positioning (GPS) navigation system.

Average terrain clearance 60m
Average line spacing 100m

VLF-EM

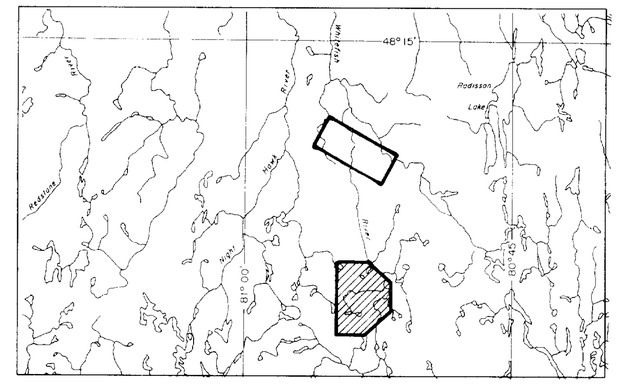
VLF-EM Total Field Intensity in percent.

Station: NAA
Cutler, Maine
24.0 kHz

Sensor elevation 45m

Map contours are multiples of those listed below

1 %
5 %
25 %
100 %



JOUTEL RESOURCES LIMITED

VLF-EM TOTAL FIELD CONTOURS (LINE CHANNEL)

ARGYLE PROPERTY

15155

ONTARIO

SCALE 1:10,000

0 330 660 1320 2640 Feet
0 100 200 500 1000 Metres

AERODAT LIMITED

DATE: MAY 1991
NTS No: 42 A
MAP No: 6 J9127-1

507000

509000

511000

5328000

5326000

5324000

1168040

1169090

1168960

1169084

822235

1132398

822543

822542

ast

N

Flight Path

Navigation and recovery using a Global Positioning (GPS) navigation system.

Average terrain clearance 60m
Average line spacing 100m

Apparent Resistivity

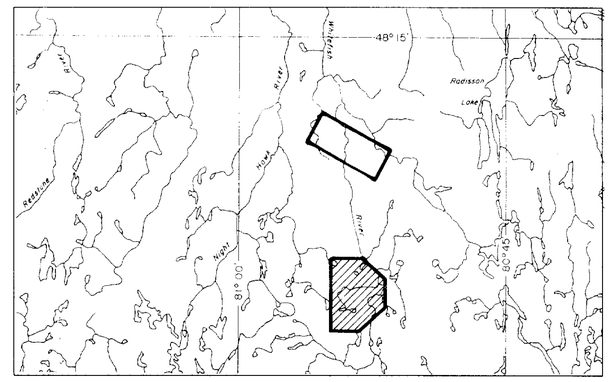
Calculated from 4600 Hz coaxial EM response assuming a 200 m conductive layer.

Contouring in ohm•m at logarithmic intervals.

Sensor elevation 30m

Map contours are multiples of those listed below

0.1 log(ohm•m)
0.5 log(ohm•m)
1.0 log(ohm•m)
5.00 log(ohm•m)



JOUTEL RESOURCES LIMITED

APPARENT RESISTIVITY CONTOURS (4600 Hz)

2.15155

ARGYLE PROPERTY

ONTARIO

SCALE 1:10,000

0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

AERODAT LIMITED

DATE: MAY 1991

NTS No: 42 A

MAP No: 7 J9127- 1

42A02SW8701 2.15155 ARGYLE

250