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MINING LANDS SECTION

REPORT ON COMBINED HELICOPTER BORNE MAGNETIC, ELECTROMAGNETIC AND VLF SURVEY SHOAL LAKE AREA DISTRICT OF KENORA NORTHWESTERN ONTARIO

FOR
BOND GOLD CANADA INC.
BY
AERODAT LIMITED
March 6, 1990

J8998

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(Scale 1:10,000)

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1. INTRODUCTION

This report describes an airborne geophysical survey carried out on behalf of Bond Gold Canada 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 and a radar altimeter. Electromagnetic, magnetic and altimeter data were recorded both in digital and analog form. Positioning data were stored in digital form and 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 Shoal Lake area, northwestern Ontario, is located approximately 37 kilometres west-southwest of Kenora. Three (3) flights, which were flown on February 7, 1990, were required to complete the survey. Flight lines were oriented at an Azimuth of 000-180 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 structural shear zones or alteration zones. Such horizons in close proximity to gabbroic or quartz porphyry intrusives will also be looked at. In a region north of the Crowduck Lake-Rush Bay Lineament, within the intermediate metavolcanics, any evidence of poor conductors will be looked at very closely for their possible association with ductile shear zones.

Interpretation of the magnetic data should reveal cross-cutting and splay-type structures and it may also reveal stratigraphically controlled shear or deformation zones, such as the Crowduck Lake-Rush Bay Lineament. An analysis of the VLF-EM data will also be carried out in order to locate structures, as well as any weakly conductive horizons which may lead to the location of primary precious metal targets.

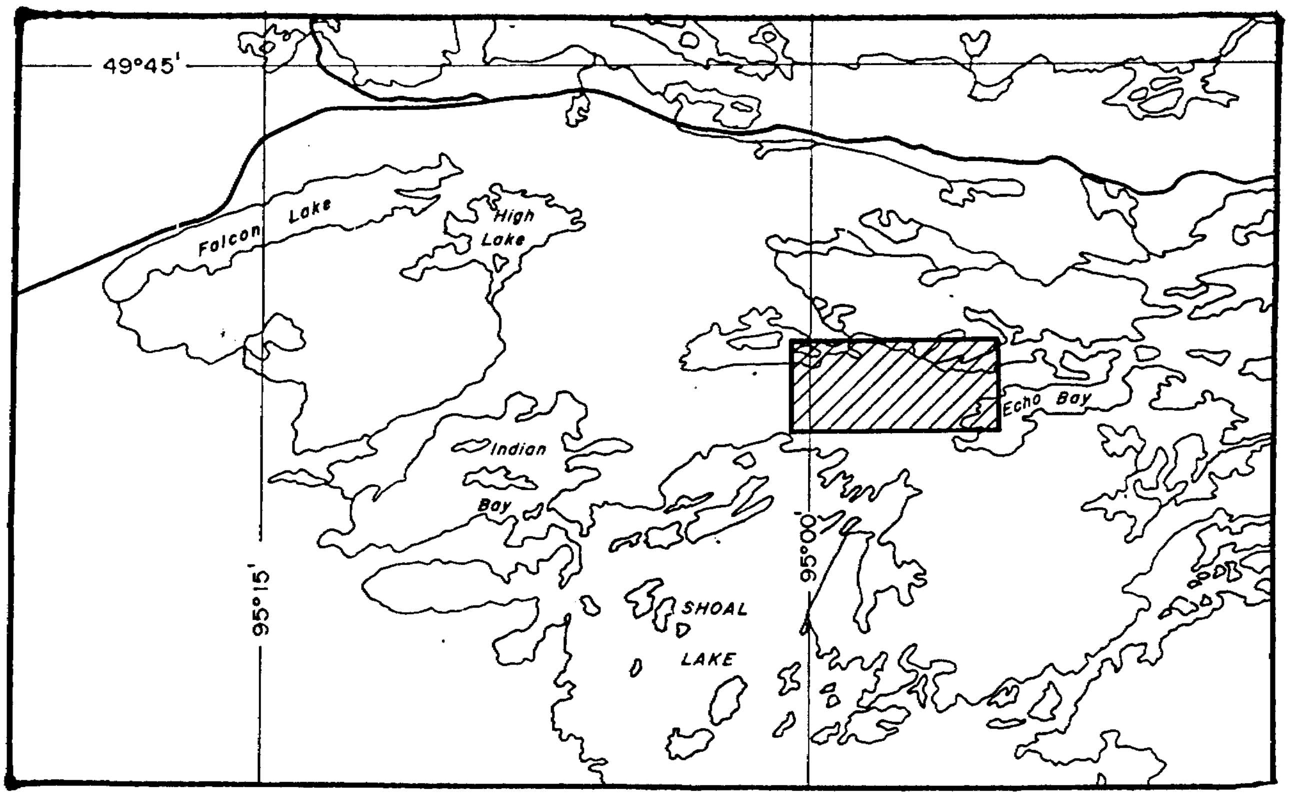
A total of 220 line kilometres of the recorded data were compiled in map form and are presented as part of this report according to specifications outlined by Bond Gold Canada Inc.

2. SURVEY AREA LOCATION

The survey area is depicted on the index map as shown. It is centred at Latitude 49 degrees 39 minutes north, Longitude 94 degrees 58 minutes west, approximately 37 kilometres west-southwest of Kenora, Ontario. The survey block encompasses an area from Echo Bay to the southeast, from Rush Bay to the northeast, westward to an area near Crowduck Lake to the northwest and to the southwest near Shoal Lake. (N.T.S. Reference Map No. 52E 10 and 11).

Means of access to most areas within the survey block can be made by a secondary road, as well as lumber roads. The main secondary road traverses across the northern shore of Echo Bay, where there are numerous cottages. Some of the areas that contain rough terrain may have to be gained by helicopter.

The elevation of Shoal Lake which is just to the southwest of the survey area, is 1060 feet above sea level. Few hills within the survey area rise 200 feet above this level. The highest elevation within the block is believed to be towards the northwest corner, just south of Crowduck Lake, where the elevation is approximately 1275 feet A.S.L. Otherwise, the region is gently rolling.


49°45'
Falcon Lake
High Lake
Indian Bay
SHOAL LAKE
Echo Bay
95°15'
95°00'

3. AIRCRAFT AND EQUIPMENT

3.1 Aircraft

An Aerospatiale A-Star 350D helicopter (C-FTPH), 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 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 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 transmitters monitored were NLK, Jim Creek, Washington broadcasting at 24.8 kHz. for the Line Station. The Orthogonal Station monitored was NSS, Annapolis, Maryland broadcasting at 21.4 kHz.

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 0.2 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 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 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	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%/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

Channel	Input	Scale
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 (III) radar positioning system was used for both navigation and flight path recovery. Transponders located at fixed locations were interrogated several times per second and the ranges from these points to the helicopter were measured to an accuracy of about 5 metres. A navigational computer triangulates the position of the helicopter and provides the pilot with navigation information. The positional data was recorded on magnetic tape for subsequent flight path generation.

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 for the survey area was derived from the Mini-Ranger radar positioning system. The distance from the helicopter to two established reference locations was measured several times per 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 topographic detail of the base map.

The flight path map showing all flight lines and EM anomalies are presented on a Cronaflex copy of the photomosaic 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 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 responses). The data are presented on a screened copy of the Cronaflex 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 5 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 gradient was calculated from the gridded total field magnetic data. Contoured at a 0.2 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 4 frequencies 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 NLK, Jim Creek, Washington was processed to produce a total field contour map on a 25 metre grid with a 2% 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

The survey block is in the Lake of the Woods greenstone belt in the western portion of the Wabigoon Subprovince, which is a major subdivision of the Superior Province. The Lake of the Woods greenstone belt consists of deformed and metamorphosed assemblages of volcanic and subordinate sedimentary rocks with an overall east-west alignment. Recent work by the OGS suggests four major lithostratigraphic groups. The oldest is the Lower Mafic group, which is conformably overlain by the Upper Diverse Group. The Warclub Group conformably overlies the Upper Diverse Group in the southern part of the Lake of the Woods greenstone belt, and the White Partridge Bay Group overlies the Upper Diverse Group in the northern portion of the Lake of the Woods greenstone belt.

It is believed that most, if not all, of the survey block is situated within the Upper Diverse Group. This group is composed of mixed, mafic to felsic, volcanic sequences and subordinate sedimentary horizons, which are characterized by abrupt lateral and vertical facies changes. The Upper Diverse Group consists of intercalations of three distinct lithologic subgroups. The most abundant subgroup, is a diverse sequence of mafic to felsic, calcalkalic pyroclastics and flows. Pyroclastic rocks are a major component of the group and include debris flows, ash flows, air fall and reworked tuff. The lava flows are commonly pillowed and highly vesiculated.

The second subgroup consists of a monotonous sequence of pillowed and massive mafic flows that are quite long and extend for considerable distance. The flows are typically aphyric and non-vesiculated, Mg-rich, tholeiitic to komatiitic basalt with minor ultramafic komatiites. The third subgroup consists of sedimentary rocks, which are intimately intercalated with the volcanics of the Upper Diverse Group. The sedimentary rocks consist of thinly to thickly bedded wacke, tuffaceous wacke, siltstone and minor oxide and sulphide-facies ironstone.

More specifically, the southern two thirds of the survey block is underlain predominately with mafic metavolcanics, although intercalated with minor felsic metavolcanics. North of this group, and beyond the survey block, are intermediate to felsic metavolcanics, with a band of Crowduck Lake Group sedimentary rocks.

Structurally, the Crowduck Lake-Rush Bay Lineament separates the northern intermediate to felsic metavolcanics from the major southern group of mafic metavolcanics. This lineament has been identified as a major ductile deformation zone within the survey area and seemingly may play a role in the gold-bearing processes. Other ductile deformation zones, defined by highly schistose and altered rock, occur on various scales throughout the remainder of the survey area.

Sulphides have been reported within the survey block, including pyrite, pyrrhotite, chalcopyrite and sphalerite. Some graphite has also been reported. While it seems that sulphides have been located, very little auriferous bearing materials have been noted. Just to the east of the survey block, there was a small gold producer called the Golden Horn Mine. Not much is known about the deposit.

Detailed studies have been carried out on numerous mineralized showings and deposits, primarily to the east of the survey area. Gold mineralization is epigenetic and occurs in three distinct geological environments. The first is in relatively minor deformation zones associated with the margins of some granitic intrusions. The mineralization occurs in and around the intrusions, indicating that they represent a favourable structural environment and do not have a direct genetic relationship to the mineralization. The second gold-bearing environment is quartz veins within relatively brittle fracture zones. This type of mineralization can occur anywhere within the Lake of the Woods greenstone belt. The third gold environment is within the major ductile deformation zones which transect the Lake of the Woods greenstone belt.

Major loci of mineralization within the deformation zones are 1) the margins of the deformation zones where there are deviations in the trend of the zones, 2) subsidiary splays off the main parts of the deformation zones, and 3) where the deformation zones are intersected at a high angle by the transition between amphibolite and greenschist facies of metamorphism.

Previous work in the region was carried out by Hudson's Bay Oil and Gas Co. Ltd. in 1974, in the form of an airborne magnetometer and electromagnetic survey. Some drilling by Selco Exploration Co. Ltd. in 1967 intersected minor amounts of chalcopyrite and sphalerite. No doubt there has been other extensive exploration work carried out by other companies in the area, but it would be beyond the realm of this report to discuss this work any further in detail.

5.2 Magnetics

The most obvious magnetic feature within the survey block is the wide, high intensity feature traversing east-west through the middle of the area. It is located within a mafic metavolcanic environment, which generally exhibits a moderate to low magnetic intensity. However, the high intensity features are believed associated with gabbro. These are narrow, banded units of basic intrusive rocks which are believed to have been the result of magma material migrating upward through zones of weakness within the mafic metavolcanics. In reference to geology Map 2069, it will be noted that mapping has uncovered a number of gabbroic units and as such, one could ascertain that there are also a number of fault structures as well.

The entire region that contains the high intensity magnetic feature is believed to be within an area referred to as the Crowduck Lake-Witch Bay Shear Zone. This is a major structural event that extends from the Manitoba border, through this survey area and eastward for a considerable distance. This structure comprises alternating zones of strongly to moderately strained rock, which collectively attain widths of up to several kilometres. Deformation intensity is typically in proportion to the competency of the original lithologies. Alterations, consisting of calcium and/or iron magnesium carbonatization and sericitization is widespread. Zones of silicification (both pervasive and in the form of quartz veins and stockworks) and disseminated sulphide mineralization are more restricted and are typically associated with gold mineralization. Several splays occur off the main shear zone.

The Golden Horn Mine, which is located just east of the east survey boundary, is interpreted to lie at the northern edge of the Crowduck Lake-Witch Bay Shear Zone. It is also coincident with the northern contact of the high intensity magnetic feature as well.

The long, linear magnetic trends towards the southern survey boundary are also interpreted as being due to gabbroic units. Associated with these geological units are also fault zones.

To the north of the Crowduck Lake-Witch Bay Shear Zone is a wide belt of rather low intensity magnetics. This low intensity environment is believed related to intermediate to felsic metavolcanic rocks.

Towards the northwest corner of the survey block, and south of Darkwater Lake, the east-southeast trending magnetic trend seems to be associated with the Crowduck Lake Group sedimentary rocks. Conglomerate seems to be the predominate rock type, but what is contained within this rock unit that is magnetic, is not known to the writer.

5.3 Vertical Magnetic Gradient

The areas of high intensity magnetics have been clearly "broken-up" into unique trends as a result of the computation of the vertical gradient. This interpretation is not as readily obvious when one refers to the magnetic total field map. These are the areas that have been related to the gabbroic and possible amphibditized units within the Lake of the Woods greenstone belt within the Shoal Lake Block.

It should also be noted that the zero contour interval coincides directly or very closely to geological contacts. It is because of this phenomenon that the calculated vertical magnetic gradient map can be compared to a pseudo-geological map. This is true for vertical bedding. However, with the bedding dipping, it will be found that the geological contacts will be closer to the magnetic peaks by a small distance.

Using known or accurate geological information and combining this data with the vertical gradient data, one can use the presented maps as a pseudo-geological map.

Obviously, the more that is known about an area geologically, the closer this type of presentation is to what the underlying rock types are.

This type of presentation is an invaluable tool in helping to define complex geology, especially in drift covered areas. Since portions of the survey block are overlain with Pleistocene till deposits and bodies of water, this presentation will be of extreme interest, assessing what the rock types may be beneath this rather thin cover. The calculated vertical gradient computation has been of exceptional value in areas of complex geology and areas of closely spaced geological horizons.

The writer has indicated a few fault zones on the interpretation map. Most are either cross-cutting faults or splay-type faults from the larger major Crowduck Lake-Witch Bay Fault Zone. The latter type structures are somewhat more difficult to interpret from the magnetics but it is suggested that a further and more comprehensive analysis of the magnetics may reveal the existence of such structures. These are thought to be the crucial structures in the ore forming process for precious metals, such as what was found near the former Golden Horn Mine.

Because of the nature of the computation of the vertical gradient map, magnetic anomalies produced by subsurface features are emphasized with respect to those resulting from more deeply buried rock formations. As a result, much more detail is obtained, providing a better opportunity to recognize fault zones. As mentioned, some faults have been interpreted by the writer, however, it will become more apparent to the client as more field geological information is obtained, that other fault zones do exist.

This presentation will also, perhaps, change the client's mind about certain geologic horizons and especially the location of contacts.

5.4 Electromagnetics

The electromagnetic data was first checked by a line by line examination of the analog 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 frequency coaxial and on each of the coplanar responses and to a lesser degree on the low frequency coaxial response. These areas tend to be associated with lake bottom sediments, creek 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 plotted 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 on the analog data and man-made or surficial features not obvious on the analog charts.

RESULTS

The results of this airborne survey clearly show a rather 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 Darkwater Lake, as well as Echo Bay. It is also very apparent that the local regions of swamps and in proximity to creeks and rivers are also somewhat conductive. This is particularly noticeable towards the southwest corner of the block.

It is also interesting to note that the inphase responses for all frequencies are negative in a number of areas over horizons which display high intensity magnetic features. This is a reflection of the magnetite content within the gabbro. The higher the magnetite content, the more pronounced would be the negative electromagnetic response. As can be seen from the results, this particular phenomenon exists through the central portion of the survey block, where several gabbroic units have been identified. The writer suspects that some or perhaps all of these magnetically influenced units may be associated with amphibolitized sequences in close proximity to the gabbro. A check on the ground should confirm this.

Referring to the electromagnetic profile map, it will be noted that there were several long, linear, formational trends intercepted within the survey area. Those that were intercepted are well defined electrical conductors, which may or may not have important precious metal implications. One will also note that most of these long, formational trends are located south of the high intensity magnetic region. The significance of this is not known. There are a few isolated trends within the northern portion of the mafic metavolcanic belt, however, they do not correlate directly with the magnetic features.

The writer has interpreted direction of dip for most conductive trends and as a result, there are indications of perhaps synclinal and anticlinal structures. Refer to the interpretation map and magnetic total field map for further information.

As mentioned earlier, sulphides have been reported within the survey block, including pyrite, pyrrhotite, chalcopyrite and sphalerite. Except for the former Golden Horn Mine, which is located east of the survey area, there is no mention of gold values within the survey block. At least the writer is no aware of any. However, there has been graphite mentioned in a few drill holes put down by Selco Exploration Co. Ltd. in 1967.

Referring to geology Map 2069, it will be noted that chalcopyrite has been reported just in from the shore of Crowduck Lake. It is located just east of Zone S4 and seems to be located very close to the Crowduck Lake-Witch Bay Shear Zone. However, there was no EM response, whatsoever, near this showing. Another area where chalcopyrite was observed was on a small island in Rush Bay, near the northeast corner of the survey block. Again, there was no EM response intercepted. A sulphide showing was located very close to intercept 10180B, which would probably explain Zone S43.

In 1967, Selco Exploration Co. Ltd. put a drill hole down very close to intercept 10461F (Zone S29) and seemingly in a south direction. It is suggested that this is the same direction as the dip of the conductor which means a gross error in drilling down-dip. In this hole, they intersected pyrite, pyrrhotite, graphite, magnetite and a trace of sphalerite. The rock types included chlorite schist, porphyritic lava and felsic tuff and lapilli tuff.

Approximately 300 metres to the south of the above drill hole, Selco Exploration also put a drill hole down near intercept 10470D (Zone S31). Here too they would have appeared to have drilled the conductor down dip. In this hole, they intersected pyrite, pyrrhotite, quartz-carbonate vein and talc. The rock types included felsic tuff and lapilli tuff, basalt, slate and argillite. Assay values for either drill hole is known to the writer.

Further to the east, near intercept 10260C (Zone S37), Selco apparently put two drill holes down, one to the north and one to the south. They may have been confused of the dip direction for the conductor. The writer suggests that it may be to the south. In these holes, Selco intersected copper, zinc, quartz-carbonate veins, graphite, pyrrhotite, pyrite, talc, serpentinite and chalcopyrite. The rock types included felsic tuff, lapilli tuff, wacke, slate, argillite, dacite and mafic tuff.

The writer has outlined on the interpretation map, selected targets which have been assigned a letter and a number beside them eg. S1, S2 etc., representing the Shoal Lake project. Because of the number of conductors intercepted, the writer will only give a brief comment or two on each of them. A brief description of the associated geology will be given, along with a reference to the magnetics, either high, low or flanking and a priority, either high, medium or low.

Zone S1

Geology - Crowduck Lake Group sediments, conglomerate, argillite.

Magnetics - low

Best intercept - 10620D

Priority - low

Comments - could be due to graphitic argillite.

Zone S2

Geology - andesite and massive fine grained rhyolitic tuff.

Magnetics - low

Best intercept - none

Priority - low

Comments - there are lake bottom sediments involved here, but the conductor persists on land as well. The trend would seem to be associated with or is in an area interpreted as being part of the Crowduck Lake-Witch Bay Shear Zone. A reconnaissance survey is suggested.

Zone S3

Geology - intermediate andesite, bedded rhyolitic and dacitic tuff.

Magnetics - flank

Best intercept - 10670 A

Priority - high

Comments - the conductive trend displays poor conductivity but is still considered to be due to a bedrock source. It should also be noted that the trend is located on or very close to the Crowduck Lake - Witch Bay Shear Zone.

Zone S4

Geology - gabbro, mafic metavolcanics.

Magnetics - low

Best Intercept - 10630B

Priority - medium

Comments - the very weak trend could be correlating with a geological contact, with gabbro to the north and mafic metavolcanics to the south. Note that copper has been located approximately 300 metres to the east.

The conductor displays poor conductivity but may be of interest because of its location to the major Fault.

Zone S5

Geology - andesite, gabbro

Magnetics - low

Best Intercept - 10650B

Priority - medium

Comments - the EM responses with this trend are generally quite good. The strike length is rather short which is usually an indication of a base metal target. Note that the dip is towards the north.

Zone S6

Geology - andesite, gabbro.

Magnetics - flank

Best Intercept - 10570B

Priority - medium

Comments - the trend displays fair to poor conductivity and is correlating with the flank of a magnetic feature. This suggests a relationship with a geological contact. The conductor is interpreted as two en echelon portions and this would seem to be due to an absence of sulphides or perhaps oxidation in the middle.

Zone S7

Geology - andesite.

Magnetics - flank

Best Intercept - 10680B

Priority - low

Comments - the trend displays very poor conductivity but it is still considered to be a bedrock conductor.

Zone S8

Geology - bedded rhyolitic and dacitic tuff, andesite-dacite tuff.

Magnetics - high

Best Intercept - 10660A

Priority - medium

Comments - the anomalies towards the western portion of the trend do not display well defined EM responses. The best intercept, as indicated above, is 10660A. No doubt the conductor extends to the west, beyond the survey boundary. Note that the dip is to the south.

Zone S9

Geology - andesite, andesite-dacite tuff, grey granodiorite.

Magnetics - high

Best Intercept - 10680A

Priority - medium

Comments - there is definitely a tremendous influence from the surrounding swamp, but this trend is interpreted as being due to a bedrock source. The EM responses on the 4600 Hz. traces are quite sharp. There is a fault zone nearby, as well as a granodiorite intrusive, which suggests that the conductor may be of interest.

Zone S10

Geology - andesite, andesite-dacite tuff, grey granodiorite.

Magnetics - high

Best Intercept - none

Priority - low

Comments - this trend seems to be on strike with Zone S9 and is considered to be associated with the same geological environment.

Zone S11

Geology - andesite.

Magnetics - flank

Best Intercept - 10630D

Priority - medium

Comments - the anomalies along this trend are not well defined and this could be partially due to the considerable amount of swamp. However, the EM profile for intercept 10630D does indicate that the conductor is probably due to a bedrock source. Note the location of the conductor to the mapped fault zone on Map 2069.

Zone S12

Geology - andesite.

Magnetics - high

Best Intercept - all of them

Priority - high

Comments - the short trend, which displays good conductivity, may be associated with pyrrhotite because of the correlating magnetics. A ground reconnaissance survey is recommended.

Zone S13

Geology - Crowduck Lake Group sediments, conglomerate.

Magnetics - flank

Best Intercept - none

Priority - low

Comments - the lone intercept would appear to be located within the waters of Crowduck Lake. In fact, the anomaly may be related to an "edge effect" from the conductive lake bottom sediments.

Zone S14

Geology - Crowduck Lake Group sediments, conglomerate.

Magnetics - low

Best Intercept - 10520B

Priority - low

Comments - Intercept 10520B display a reasonable EM response and as such, is not considered to be associated with the conductive lake bottom sediments.

Zone S15

Geology - Crowduck Lake Group sediments, conglomerate, andesite.

Magnetics - low

Best Intercept - 10500F

Priority - low

Comments - the trend is located within the waters of Crowduck Lake and thus is suspected of being due to the lake bottom sediments. In fact, it seems to be related to an "edge effect". One should note also that is located close to the Crowduck Lake-Witch Bay Shear Zone.

Zone S16

Geology - andesite, massive fine grained rhyolitic and dacitic tuff.

Magnetics - low

Best Intercept - 10490B

Priority - medium

Comments - because of the relationship with the above rock types, the trend should be given further attention while in the field. However, in reference to the EM profile map, the trend does look like an "edge effect" from a highly conductive source to the south.

Zone S17

Geology - Crowduck Lake Group sediments, conglomerate, andesite - dacite tuff.

Magnetics - low

Best Intercept - 10441A

Priority - medium

Comments - most of the anomalies along this trend do not display very attractive EM responses. The best response, as indicated above, is intercept 10441A. It is quite possible that this conductor is also associated with the same source as that for Zone S15. It is very close to a sedimentary - andesite tuff contact.

Zone S18

Geology - massive fine grained rhyolitic and dacitic tuff, andesite.

Magnetics - low

Best Intercept - 10420B

Priority - high

Comments - the conductor seems to be located very close to a fault-contact between massive fine grained rhyolitic and dacitic tuff to the north and andesite to the south. The EM responses to the east are extremely poor so any work on the zone should be carried out towards the west end.

Zone S19

Geology - andesite and andesite - dacite tuff.

Magnetics - low

Best Intercept - 10420C

Priority - high

Comments - this is a short, isolated conductor which displays an excellent EM response. It certainly has the characteristics of a base metal target. Note that the dip is towards the north. A follow-up survey is recommended.

Zone S20

Geology - andesite, interbanded lensy mafic tuff, flows and sediments.

Magnetics - flank

Best Intercept - 10451D

Priority - medium

Comments - note that the conductor is located very close to the Crowduck Lake-Witch Bay Shear Zone. Although the anomalies to the east are not as strong, they do, however, have better profile characteristics. The western portion is believed to be due to a wide conductor and in fact, the strike length could be extended a little further to the west. A reconnaissance survey is recommended.

Zone S21

Geology - mafic tuff, lapilli tuff.

Magnetics - low

Best Intercept - 10520E

Priority - high

Comments - the trend displays poor conductivity but is still associated with a bedrock source. Its possible association with a fault zone makes the conductor an attractive target. The responses are quite sharp which indicates that a bedrock conductor is the cause. A ground survey is recommended. Access to the conductor from the road will make explaining it very easy.

Zone S22

Geology - porphyritic rhyolite flows and rhyolitic agglomerate.

Magnetics - low

Best Intercept - 10150A

Priority - low

Comments - the short trend is located within the waters of Cedarskirt Lake which is exhibiting highly conducting lake bottom sediments. However, the two anomalies for this zone display reasonable sharp coaxial responses, ones that are suggestive of being caused by a bedrock source. With favourable geology nearby and the presence of a few fault structures, one should look at this conductor a little closer.

Zone S23

Geology - porphyritic rhyolite flows and rhyolitic agglomerate.

Magnetics - low

Best Intercept - 10120G

Priority - high

Comments - this is an excellent target for base metals. It has a short strike length and is isolated. Note that the dip is to the north. The conductivity is very good but as mentioned, there is no magnetic correlation. Because of the favourable geology in the area, a ground survey is highly recommended.

Zone S24

Geology - andesite - dacite tuff, agglomerate and flows.

Magnetics - low

Best Intercept - 10250A

Priority - high

Comments - the isolated conductor displays a fair to good EM response but has no magnetic association. The trend is located north of the Crowduck Lake-Witch Bay Shear Zone and itself, seems to be correlating with another fault that traverses through Crowduck Creek. A check for acidic volcanic rocks in the vicinity of the conductor should be made in the field. There is also the possibility that Zone S24 is on strike and is associated with the same geological horizon as that for Zone S18.

Zone S25

Geology - andesite, basalt, gabbro.

Magnetics - flank

Best Intercept - none

Priority - low

Comments - it is not believed that overburden is the cause of this trend, even though the EM responses are not all that attractive. The trend is on the contact with a highly magnetic source that is located to the north. There is gabbro nearby and is believed to be related to the magnetic feature to the north. The anomaly to look at first would seem to be intercept 10060D.

Zone S26

Geology - andesite, gabbro.

Magnetics - high

Best Intercept - none

Priority - medium

Comments - the weak trend is located on the southern edge of what would seem to be a highly conductive swamp. In fact, it could very well be associated with an "edge effect". However, because of drilling encouragement by Selco Exploration on an area just to the southwest and also because of the mapped fault zone nearby, a ground survey is recommended.

Zone S27

Geology - andesite, gabbro.

Magnetics - flank

Best Intercept - 10290A

Priority - medium

Comments - the trend may be associated with the same geological environment as that for Zone S26. Note the location of the conductor with respect to the mapped fault zone. Refer to Map 2069. The conductive trend is also believed to be dipping to the south.

Zone S28

Geology - mafic metavolcanics.

Magnetics - flank

Best Intercept - they are all strong responses

Priority - medium

Comments - the main observation with this trend is that Selco Exploration drilled a hole towards the west end of the long conductor and it was put down in a southerly direction. This is the same direction as the conductor is dipping. Only for this reason that the writer recommends that a second look is warranted. Because of the lengthy strike extent of the conductor, it is rather difficult to recommend a specific location for drilling. In the general area of the Selco drill hole would seem to suffice.

Zone S29

Geology - andesite, gabbro, bedded rhyolitic and dacitic tuff.

Magnetics - low

Best Intercept - 10470C

Priority - high

Comments - it is not known if Selco Exploration were aware of this flanking conductor. If it has not been drilled, then it should be. It is often these types of conductors that prove out to be the most interesting. A ground EM survey is highly recommended.

Zone S30

Geology - mafic metavolcanics.

Magnetics - low

Best Intercept - all anomalies towards the western end

Priority - high

Comments - this is the same type of conductor as Zone S29, short, flanking and displaying good conductivity. A reconnaissance survey is definitely warranted.

Zones S31 to S34

Geology - basically mafic metavolcanics, with bedded rhyolitic and dacitic tuff.

Magnetics - except for a few locations, most sections of these conductive trends do not have any magnetic association

Best Intercept -

Priority - low

Comments - these are all long, formational trends that are generally believed to be caused by either pyrite and/or graphite. The western extent of Zone S31 was drilled by Selco Exploration. It was put down in the vicinity of intercept 10470D. But here again, they seemingly drilled down-dip!

Areas to look at further while in the field would be those regions where cross-cutting structures have perhaps offset these conductors, especially if any of these conductors are associated with stratigraphically controlled structures.

Zone S35

Geology - mainly mafic metavolcanics.

Magnetics - high

Best Intercept - none

Priority - low

Comments - this trend was picked, basically because of the EM responses on the quadrature traces. They are not well defined responses and as one will note on the base map, a swamp exists in the general region.

Zone S36

Geology - andesite, agglomerate and tuff.

Magnetics - low

Best Intercept - 10570E

Priority - high

Comments - the conductor displays quite a good EM response, but does not have any magnetic association. Referring to Map 2069, it will be noted that the conductor is located very close to a mapped fault zone. A ground EM survey is recommended.

Zones S37 to S43

Geology - mafic metavolcanics, bedded rhyolitic and dacitic tuff, gabbro.

Magnetics - flanking or lows

Best Intercept - ......

Priority - low to medium

Comments - except for Zones S38 and S39, most are long, formational trends in which pyrite and/or graphite is the cause. It seems that Zone S37, near intercept 10260C, and Zone S41, near intercept 10391A, has been drilled before by Selco Exploration. Note the direction of dip interpreted for each of these conductors. Zone S38 does not display a very good EM response and thus, does not warrant any further work. It may be found that cultural effects is the cause of Zone S39, as there are cottages nearby.

Zone S44

Geology - andesite, bedded rhyolitic and dacitic tuff, quartz porphyry.

Magnetics - flank

Best Intercept - 10130G

Priority - high

Comments - the conductive trend seems to have all the ingredients to turn out to be an interesting conductor. The rock types are favourable, in particular, the quartz porphyry. There is also some shearing in close proximity as well. The attitude of the zone is steeply dipping or near vertical. A ground survey is recommended.

There were many conductors intercepted during the course of flying this survey. Too many, in fact, to have them all drilled. The writer has given a brief summary in Section 5.1 of this report relating the geological implications and relationships with gold bearing structures. It is very obvious of the existence of either sulphides or graphitic mineralization within the survey block but to relate this to the geological environments must be done in the field. Although gold bearing horizons seem to be the main target of interest, one should not forget the base metal possibilities as well.

5.5 Apparent Resistivity

This data presentation did not extract any new information from that of the 4 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 there is a total absence of any resolution between the closely spaced conductors, even though a good many of the conductors display strong conductivity.

It will be noted that all lakes display highly conductive lake bottom sediments and most swamps display similar conductive backgrounds.

In the region of the multi-conductor belt, the apparent resistivity presentation shows this area as one wide resistivity low. There are no indications of the individual conductors. As well, the responses over the lakes and the swamps look very much like the wide, multi-conductor belt.

5.6 VLF-EM Total Field

There is some semblance of correlation with the magnetic data suggesting a probable relationship with the basement rocks, which are generally giving an east-west strike direction.

As for the 4 frequency conductors intercepted within the survey block, there is reasonable correlation with the VLF. The VLF does not, however, have the same resolution as the frequency system. Areas where there are at least two conductors only show up as a single trend on the VLF data, e.g. Zones S27, S28 and S30. However, this phenomena is generally known with the VLF system. It is also interesting to note that there was a lack of a VLF response over Zone S44, which generally displayed a good 4 frequency EM response.

Such environments as lake bottom sediments, creek bottom silts and swamps have responded quite well to the VLF system. Areas such as Crowduck Lake, Cedarskirt Lake and Rush Bay have all responded well. However, the conductive lake bottom sediments of Echo Bay did not show up at all.

Any relationship between the VLF data and stratigraphically controlled structural faults may be interpreted after a more comprehensive evaluation of the data. Some evidence of cross-faulting is also observed in the VLF data as well.

The VLF system should and will respond to most of the various bedrock conductors intercepted with the survey block, when surveyed on the ground. For some regions, there may be problems because of overlying conductive surficial material.

5.7 Conclusion and Recommendations

On the basis of the results of this airborne survey, ground follow-up work is recommended for many of the selected targets as outlined by the writer on the interpretation map. A number of these zones would be primarily base metal targets because of their shorter strike lengths. Some of the longer conductors, however, may be of interest with respect to their possible precious metal content, especially in the vicinity of fault zones, both cross-cutting and splay-type faults.

Because conductances are similar for the much longer conductors, selecting areas for further follow-up along these trends is difficult. Some of the conductive trends have magnetic association while others do not. However, this should not be an obstacle in determining the primary targets. Most of the longer conductors are formational in nature, and tend to correlate, to a degree, with several of the known stratigraphically controlled fault structures. Refer to geology Map 2069. If there is any evidence of cross-cutting structures that affect these zones, then further work, in these areas, is warranted.

Each of the conductive trends, both north and south of the Crowduck Lake-Rush Bay Lineament, should be investigated further. For the most part, these are the ones that will attract the most attention in the area because of their relationship with the major shear zone. These include Zones S3, S4, S5, S19, S21 and S24. Zones S9, S10 and S44 may be of interest because of their proximity to granodiorite or quartz porphyry intrusives.

It is recommended to the client that a complete and comprehensive evaluation be made of the magnetic data and especially the calculated vertical magnetic gradient data. All available geological information should be obtained, either through government geological maps, Bond Gold Canada Inc. mapping crews, diamond drill holes or through the assessment files. Once such information is obtained, a broad scale geological map should be compiled and then, in reference to the calculated vertical magnetic gradient map, a reasonable pseudo-structural map can then be prepared. In reference to Ontario Geological Survey Map 2069, a great deal is already known about the rock types within the survey block. However, the further assessment of the magnetic data should and will reveal changes related to geological contacts as well as structural effects.

Further structural information should also be obtained through a more comprehensive evaluation of magnetic data and possibly, to a lesser degree, through an overview of the VLF data. Cross-cutting faults are evident within some parts of the survey area. These are extremely important with respect to any mineralogical controls and as such, the development of these structural events through interpreting the magnetic data will be strongly advised. Strike slip faults or deformation zones are extremely important horizons for auriferous bearing environments and it is these signatures that should be pursued when carrying out a detailed analysis of the magnetic data. It is similar horizons such as these that the deposit that contained the Golden Horn Mine are associated with.

It is suggested that the assessment of the magnetics should be made before any serious follow-up of the electrical conductors is made. This will certainly make things easier, once a pseudo-geological and structural map has been established. It is quite often seen that magnetic lows correlate with sericitic shear zones or ones that have been highly carbonatized. In such cases, if there are any signs of mineralization, however weak, then further work is warranted. Quite often, poorly mineralized zones containing disseminated pyrite is the source, in which case only an IP survey would be able to detect such a source.

Within most of the survey area, there is generally a thin layer of overburden. However, the thickness of lake bottom sediments is not known. There may be some areas where this has hampered the detection of any weak bedrock conductors. However, for the most part, this has not been a problem.

The extent of the mineralization within the survey area is not known to the writer. One should not be disillusioned, however, by the detection of graphite as this mineral can, quite often, be the signature of a highly metamorphosed rock. Within these environments, stratigraphic auriferous formations are often found. Pyrite and pyrrhotite have been detected through the drilling of some conductors, which seem to be associated with massive or pillowed mafic flows.

Any base metal exploration should be concentrated in areas with conductors having short strike lengths, good conductivity, but not necessarily having magnetic correlation. Because of the number of these short conductors, the client will have to be very selective in deciding which ones get drilled. It would certainly be nice to drill them all.

In regards to a follow-up geophysical system, any of the horizontal loop EM systems can be used. It would seem that detectability should be easy for many of the types of conductors intercepted in the survey area. In fact, a VLF-EM system could be used although primarily as a reconnaissance tool. An induced polarization (IP) survey could be carried out in areas where anomalous gold values have been obtained but EM systems have not responded. As well, the latter may also be used in areas where ground EM methods have not defined the conductors fully or if disseminated sulphides are suspected.

Providing the overlying overburden cover does not act in such a manner to mask the radioactive effects from the basement rocks, a ground reconnaissance spectrometer survey could be carried out in regions of known fault zones. Potassium-rich alteration zones may exist and interpreted from such a survey. Any correlating EM conductors, whether they be strong or weak, could turn out to be very interesting zones.

In summary, the writer has given brief comments on most conductors and it is within Section 5.4 of this report where the client will establish some feeling for the types of conductors referred to. There is no question of the existence of bedrock conductors within the survey area. However, there may be zones that contain extremely poor mineralization, that under any circumstances, would not be detected by any airborne EM system.

It is a matter of using all resources, including geophysics, drill hole information and the compilation of a pseudo-geological and structural map. Geochemical till or soil sampling may render additional information, for some areas, that will lead to an interesting exploration program.

Respectfully submitted,

R.J. de Carle

Robert J. de Carle
Consulting Geophysicist
for
AERODAT LIMITED
March 6, 1990

J8998

APPENDIX I

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APPENDIX II
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 Bond Gold Canada Inc. and from a review of the proprietary airborne geophysical survey flown by Aerodat Limited for Bond Gold Canada Inc. 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 Bond Gold Canada Inc.

Signed,

R.J. de Carle

Palgrave, Ontario
March 6, 1990

Robert J. de Carle
Consulting Geophysicist
for
AERODAT LIMITED

APPENDIX III

PERSONNEL

FIELD

Flown	February, 1990
Pilot	L. Stanley
Operator	P. Moisan

OFFICE

Processing	A. E. Valentini G. McDonald
Report	R. de Carle

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 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 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 the geologic conductor can often be interpreted from the profile shape of the anomaly. The change in shape is primarily related to the change in inductive coupling among the transmitter, the target, and the receiver.

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

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

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

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

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

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

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

ANOMALY LIST

J8998 BOND GOLD CANADA INC., SHOAL LAKE AREA, NW ONTARIO. - EM ANOMALIES

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
2	10011	A	0	10.8	14.8	0.6	1	42
2	10011	B CULTURE	3	13.9	5.3	4.2	30	30
2	10020	A	1	8.4	7.3	1.1	1	58
2	10020	B CULTURE	3	8.1	2.5	4.7	31	43
2	10031	A CULTURE	2	17.6	8.8	3.1	33	20
2	10031	B	2	18.2	12.8	2.0	12	37
2	10040	A	0	13.9	20.9	0.6	4	33
2	10040	B	2	23.0	16.9	2.0	10	34
2	10040	C	0	6.3	16.9	0.2	12	23
2	10040	D CULTURE	2	13.5	6.5	3.0	35	24
2	10040	E	0	4.6	9.7	0.2	12	34
2	10050	A	0	5.2	16.7	0.1	8	25
2	10050	B CULTURE	2	35.1	21.2	3.0	12	28
2	10050	C	1	22.9	19.0	1.7	10	32
2	10050	D	0	13.3	23.1	0.5	0	39
2	10060	A	2	51.4	36.5	2.8	6	27
2	10060	B CULTURE	2	26.3	13.3	3.5	22	24
2	10060	C	1	31.2	27.6	1.8	13	24
2	10060	D	0	7.2	12.2	0.4	13	31
2	10070	A	0	7.0	21.1	0.1	7	24
2	10070	B	2	26.9	18.7	2.3	20	23
2	10070	C CULTURE	3	28.2	11.5	4.8	18	28
2	10070	D	0	12.6	17.8	0.6	12	28
2	10080	A	0	3.9	12.1	0.1	0	44
2	10080	B	0	7.6	19.9	0.2	0	37
2	10080	C	0	18.9	28.1	0.7	5	29
2	10080	D	0	11.3	18.9	0.5	0	43
2	10080	E CULTURE	3	31.3	13.1	4.8	13	31
2	10080	F	0	11.5	14.3	0.7	17	27
2	10090	A	0	10.4	16.3	0.5	17	24
2	10090	B CULTURE	3	37.4	17.3	4.4	14	27
2	10090	C	1	52.7	57.6	1.6	3	25
2	10090	D	0	8.2	13.8	0.4	6	36
2	10090	E	0	5.4	19.4	0.1	0	39
2	10090	F	0	0.1	3.5	0.0	0	29
2	10100	A	0	1.2	3.3	0.0	38	24

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J8998 BOND GOLD CANADA INC., SHOAL LAKE AREA, NW ONTARIO. - EM ANOMALIES

FLIGHT	LINE	ANOMALY		CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
2	10100	B		0	2.6	4.4	0.2	15	49
2	10100	C		1	18.1	20.8	1.0	12	28
2	10100	D	CULTURE	0	14.7	20.8	0.7	8	30
2	10100	E		0	10.4	13.8	0.6	7	37
2	10100	F		1	15.8	18.1	1.0	19	23
2	10110	A		0	5.7	11.9	0.2	9	34
2	10110	B		2	27.0	17.5	2.5	14	29
2	10110	C		0	8.2	10.6	0.6	11	38
2	10110	D		0	4.4	11.2	0.1	2	39
2	10110	E	CULTURE	1	18.1	13.8	1.8	11	37
2	10110	F		0	4.9	8.1	0.3	22	30
2	10110	G		0	0.6	3.4	0.0	19	30
2	10120	A		0	5.3	7.6	0.4	21	34
2	10120	B		0	5.7	11.4	0.3	13	31
2	10120	C	CULTURE	2	32.4	26.8	2.0	9	28
2	10120	D		0	5.7	8.6	0.4	20	32
2	10120	E		0	10.0	11.3	0.8	8	41
2	10120	F		2	23.0	16.0	2.2	11	33
2	10120	G		0	8.6	11.0	0.6	15	34
2	10130	A		0	8.8	15.0	0.4	12	30
2	10130	B		1	23.8	20.3	1.7	13	28
2	10130	C		1	9.7	9.5	1.0	16	37
2	10130	D		1	12.3	9.4	1.5	14	40
2	10130	E		0	0.6	7.2	0.0	0	40
2	10130	F	CULTURE	1	9.9	8.2	1.3	22	34
2	10130	G		0	9.5	13.7	0.5	15	29
2	10140	A		0	8.1	12.2	0.5	15	30
2	10140	B	CULTURE	1	17.6	14.8	1.5	10	36
2	10140	C		1	23.2	24.0	1.3	3	36
2	10140	D		2	25.3	15.3	2.7	16	29
2	10140	E		0	8.4	11.3	0.6	15	33
2	10140	F		2	47.1	31.5	2.9	12	23
2	10140	G		0	11.4	22.0	0.4	0	42
2	10150	A		0	58.7	124.5	0.7	0	25
2	10150	B		1	16.3	16.7	1.1	15	28
2	10150	C		0	9.0	13.0	0.5	15	30
2	10150	D		2	32.2	26.3	2.0	14	24
2	10150	E		0	21.2	28.3	0.9	2	32
2	10150	F		0	4.3	15.8	0.1	0	41
2	10150	G	CULTURE	2	14.0	7.3	2.7	20	37

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J8998 BOND GOLD CANADA INC., SHOAL LAKE AREA, NW ONTARIO. - EM ANOMALIES

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
2	10150	H	0	6.6	10.1	0.4	10	38
2	10160	A CULTURE	2	6.4	2.5	3.1	53	25
2	10160	B	0	8.4	20.8	0.2	0	35
2	10160	C	0	25.9	49.9	0.6	0	28
2	10160	D	1	25.9	23.6	1.6	14	25
2	10160	E	0	11.5	13.6	0.8	14	32
2	10160	F	0	3.6	15.7	0.0	11	19
2	10170	A	0	2.8	8.8	0.1	11	31
2	10170	B	0	8.8	10.7	0.7	13	37
2	10170	C	1	15.9	14.4	1.3	8	38
2	10170	D	0	16.1	28.3	0.5	0	35
2	10170	E	0	3.5	8.3	0.1	15	32
2	10170	F CULTURE	2	5.9	2.9	2.2	48	30
2	10180	A CULTURE	3	10.1	3.5	4.3	39	29
2	10180	B	0	1.8	6.3	0.0	18	27
2	10180	C	0	3.5	10.0	0.1	8	33
2	10180	D	0	14.9	22.4	0.6	3	34
2	10180	E	2	21.0	14.1	2.2	10	37
2	10180	F	0	7.2	8.5	0.7	17	37
2	10180	G	0	18.9	22.9	0.9	12	26
2	10190	A	1	25.4	23.9	1.5	16	23
2	10190	B	0	2.5	6.8	0.1	27	21
2	10190	C	1	17.2	16.7	1.2	11	33
2	10190	D	2	33.2	22.9	2.5	11	28
2	10190	E	0	10.6	17.2	0.5	5	35
2	10190	F	0	7.9	11.8	0.5	15	32
2	10190	G	0	0.8	5.3	0.0	11	29
2	10190	H CULTURE	2	6.0	2.2	3.3	54	27
3	10200	A CULTURE	2	5.7	1.9	3.7	40	43
3	10200	B	0	1.1	8.8	0.0	3	28
3	10200	C	2	25.6	18.9	2.1	17	25
3	10200	D	0	10.4	12.1	0.8	20	28
3	10200	E	2	21.0	12.3	2.7	17	31
3	10200	F	0	8.3	9.1	0.8	13	41
3	10200	G	0	2.4	4.9	0.1	25	34
3	10200	H	0	11.6	12.3	0.9	16	32
3	10210	A	0	13.4	15.5	0.9	18	26
3	10210	B	0	1.8	9.0	0.0	10	26
3	10210	C	0	9.4	11.2	0.7	11	38

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J8998 BOND GOLD CANADA INC., SHOAL LAKE AREA, NW ONTARIO. - EM ANOMALIES

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	AMPLITUDE (PPM) QUAD.	CONDUCTOR CTP MHOS	CONDUCTOR DEPTH MTRS	BIRD HEIGHT MTRS
3	10210	D	1	20.9	16.7	1.7	10	34
3	10210	E	2	20.0	14.5	2.0	19	27
3	10210	F	2	22.2	12.7	2.8	12	36
3	10210	G	0	0.4	4.9	0.0	0	34
3	10210	H CULTURE	2	4.5	2.0	2.3	53	34
3	10220	A CULTURE	2	5.8	2.2	3.1	48	34
3	10220	B	0	0.5	4.9	0.0	0	39
3	10220	C	0	8.0	8.0	0.9	8	48
3	10220	D	1	10.3	7.6	1.5	20	38
3	10220	E	1	13.1	11.6	1.3	8	42
3	10220	F	0	7.2	14.4	0.3	1	39
3	10220	G	0	3.6	8.3	0.1	13	34
3	10220	H	0	7.8	10.2	0.6	19	31
3	10220	J	0	0.1	4.9	0.0	0	50
3	10230	A	0	0.0	5.1	0.0	0	32
3	10230	B	0	7.0	11.2	0.4	13	34
3	10230	C	0	3.1	9.4	0.1	11	30
3	10230	D	0	13.1	21.7	0.5	3	33
3	10230	E	1	27.2	23.8	1.7	14	25
3	10230	F	1	13.2	12.2	1.2	21	28
3	10230	G	0	8.5	12.8	0.5	5	40
3	10230	H	0	2.4	7.0	0.1	8	38
3	10241	A	0	8.9	10.3	0.7	9	42
3	10241	B	0	9.5	10.9	0.8	13	37
3	10241	C	0	9.0	12.9	0.5	17	29
3	10241	D	2	26.7	15.2	3.0	10	34
3	10241	E	0	12.2	18.8	0.6	1	38
3	10241	F	0	9.3	11.1	0.7	16	33
3	10241	G	0	9.9	14.0	0.6	17	27
3	10241	H	0	1.8	7.3	0.0	4	38
3	10250	A	0	11.2	18.9	0.5	11	27
3	10250	B	1	16.5	13.2	1.6	17	30
3	10250	C	0	7.9	10.2	0.6	17	33
3	10250	D	0	14.3	19.1	0.7	4	36
3	10250	E	4	45.8	14.0	8.1	16	25
3	10250	F	1	17.9	14.3	1.7	22	24
3	10250	G	1	11.6	10.9	1.1	16	35
3	10250	H	0	16.1	24.0	0.7	3	33
3	10260	A	0	12.6	14.9	0.8	3	41
3	10260	B	0	8.5	10.0	0.7	18	33

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J8998 BOND GOLD CANADA INC., SHOAL LAKE AREA, NW ONTARIO. - EM ANOMALIES

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
3	10260	C	1	12.4	11.7	1.1	16	34
3	10260	D	4	37.0	7.8	12.5	16	29
3	10260	E	0	12.4	14.5	0.8	7	38
3	10260	F	2	26.2	15.1	2.9	16	29
3	10260	G	0	10.9	13.7	0.7	12	34
3	10260	H	0	2.0	5.1	0.1	11	44
3	10270	A	0	1.1	4.2	0.0	13	38
3	10270	B	0	8.5	10.6	0.6	16	33
3	10270	C	3	35.9	13.9	5.5	9	34
3	10270	D	0	12.9	16.0	0.8	6	37
3	10270	E	4	40.4	8.9	12.1	17	27
3	10270	F	0	12.9	19.7	0.6	0	41
3	10270	G	0	12.7	15.1	0.8	15	30
3	10270	H	2	27.7	13.4	3.8	10	36
3	10280	A	3	33.2	15.2	4.3	15	28
3	10280	B	1	16.1	14.4	1.4	24	23
3	10280	C	0	16.8	31.8	0.5	0	41
3	10280	D	0	23.6	38.1	0.7	0	41
3	10280	E	2	11.1	6.5	2.1	33	28
3	10280	F	0	12.2	16.7	0.7	9	32
3	10280	G	4	51.2	14.6	9.2	16	23
3	10280	H	1	15.3	12.6	1.5	24	25
3	10280	J	0	2.7	3.4	0.4	49	25
3	10290	A	1	8.5	6.5	1.3	33	29
3	10290	B	1	8.9	7.9	1.1	28	29
3	10290	C	4	40.2	7.8	14.3	10	34
3	10290	D	0	11.1	13.6	0.7	7	38
3	10290	E	0	7.6	7.2	0.9	30	29
3	10290	F	0	26.3	42.3	0.7	0	37
3	10290	G	0	29.9	51.0	0.7	0	34
3	10290	H	1	18.8	14.8	1.7	19	27
3	10290	J	2	18.8	10.9	2.6	13	37
3	10300	A	2	15.8	9.0	2.5	9	45
3	10300	B	2	21.6	10.5	3.5	17	33
3	10300	C	0	7.9	14.5	0.3	0	51
3	10300	D	0	8.7	14.9	0.4	0	48
3	10300	E	1	12.5	10.9	1.3	8	44
3	10300	F	3	23.3	6.9	6.9	10	41
3	10300	G	1	9.6	8.7	1.1	20	36
3	10300	H	0	4.0	3.6	0.8	40	35
3	10310	A	0	4.9	7.2	0.4	28	27

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J8998 BOND GOLD CANADA INC., SHOAL LAKE AREA, NW ONTARIO. - EM ANOMALIES

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	AMPLITUDE (PPM) QUAD.	CONDUCTOR CTP MHOS	CONDUCTOR DEPTH MTRS	BIRD HEIGHT MTRS
3	10310	B	0	10.8	14.0	0.7	13	31
3	10310	C	1	9.5	9.2	1.0	20	34
3	10310	D	1	19.9	16.3	1.7	6	39
3	10310	E	1	16.4	17.7	1.1	15	27
3	10310	F	0	14.0	28.1	0.4	0	36
3	10310	G	0	15.3	33.9	0.4	0	35
3	10310	H	2	29.8	16.9	3.1	17	26
3	10310	J	2	24.5	16.9	2.3	13	31
3	10322	A	0	8.3	13.5	0.4	19	25
3	10322	B	0	10.7	11.8	0.9	15	34
3	10322	C	0	10.8	11.3	0.9	11	39
3	10322	D	0	13.2	17.9	0.7	2	39
3	10322	E	1	8.5	7.7	1.0	27	31
3	10322	F	0	6.9	13.7	0.3	6	35
3	10322	G	1	20.4	17.1	1.6	16	28
3	10322	H	3	36.1	14.8	5.1	10	33
3	10330	A	3	17.6	6.5	4.7	16	39
3	10330	B	0	6.7	6.5	0.8	18	43
3	10330	C	0	7.3	7.0	0.9	25	35
3	10330	D	0	7.4	11.8	0.4	1	44
3	10330	E	0	10.8	11.4	0.9	8	42
3	10330	F	1	8.1	6.6	1.2	26	35
3	10330	G	0	5.3	5.2	0.8	32	34
3	10340	A	1	7.2	5.5	1.2	35	30
3	10340	B	1	12.3	11.9	1.1	18	32
3	10340	C	2	19.8	13.7	2.1	6	41
3	10340	D	0	7.7	13.6	0.4	6	37
3	10340	E	0	3.2	6.3	0.2	17	37
3	10340	F	0	7.0	8.2	0.7	28	27
3	10340	G	3	32.4	14.2	4.5	10	34
3	10350	A	3	22.4	8.1	5.2	10	41
3	10350	B	0	2.1	3.5	0.2	35	34
3	10350	C	1	10.7	8.9	1.3	23	32
3	10350	D	0	8.1	9.8	0.7	5	46
3	10350	E	0	5.2	7.3	0.4	16	39
3	10350	F	2	20.0	13.2	2.2	19	29
3	10350	G	0	3.2	3.8	0.4	42	30
3	10360	A	0	7.7	25.5	0.1	7	22
3	10360	B	0	3.0	12.2	0.0	8	26
3	10360	C	0	0.0	3.7	0.0	0	25

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J8998 BOND GOLD CANADA INC., SHOAL LAKE AREA, NW ONTARIO. - EM ANOMALIES

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	AMPLITUDE (PPM) QUAD.	CONDUCTOR CTP MHOS	CONDUCTOR DEPTH MTRS	BIRD HEIGHT MTRS
3	10360	D	1	17.7	20.6	1.0	14	25
3	10360	E	0	6.2	11.9	0.3	15	28
3	10360	F	0	14.0	20.5	0.6	10	28
3	10360	G	0	1.1	5.5	0.0	11	32
3	10360	H	0	5.6	7.4	0.5	18	37
3	10360	J	0	5.5	8.2	0.4	24	29
3	10370	A	0	6.1	7.4	0.6	28	28
3	10370	B	0	2.4	8.9	0.0	6	34
3	10370	C	0	4.0	8.7	0.2	13	34
3	10370	D	0	4.7	9.7	0.2	17	29
3	10370	E	0	3.5	7.2	0.2	18	33
3	10370	F	0	3.4	10.0	0.1	13	28
3	10370	G	0	5.4	15.3	0.1	11	25
3	10380	A	0	7.1	19.4	0.2	8	25
3	10380	B	0	1.7	9.7	0.0	8	26
3	10380	C	0	2.2	8.2	0.0	21	20
3	10380	D	0	3.4	7.4	0.2	9	41
3	10380	E	0	4.6	10.4	0.2	8	36
3	10380	F	0	4.1	15.0	0.1	0	33
3	10380	G	0	5.2	10.0	0.3	12	34
3	10380	H	0	6.6	8.5	0.6	27	27
3	10380	J	1	9.9	9.1	1.1	29	25
3	10391	A	1	8.3	4.9	1.9	11	56
3	10391	B	0	3.7	7.9	0.2	9	40
3	10391	C	0	8.5	13.9	0.4	0	44
3	10391	D	0	6.0	7.3	0.6	21	36
3	10391	E	2	13.6	6.9	2.8	23	35
3	10391	F	0	5.9	13.3	0.2	3	37
3	10391	G	0	6.4	13.5	0.2	8	33
3	10400	A	0	7.4	18.2	0.2	12	23
3	10400	B	0	5.9	18.9	0.1	0	35
3	10400	C	2	26.0	14.0	3.2	15	31
3	10400	D	0	10.0	12.3	0.7	18	30
3	10400	E	0	19.3	29.3	0.7	0	34
3	10400	F	0	27.7	57.9	0.5	0	26
3	10400	G	0	6.6	10.6	0.4	18	30
3	10400	H	2	25.2	17.1	2.3	13	30
3	10410	A	1	14.2	12.8	1.3	5	43
3	10410	B	0	10.9	13.1	0.8	0	48
3	10410	C	0	14.0	19.7	0.7	0	50

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J8998 BOND GOLD CANADA INC., SHOAL LAKE AREA, NW ONTARIO. - EM ANOMALIES

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	AMPLITUDE (PPM) QUAD.	CONDUCTOR CTP MHOS	CONDUCTOR DEPTH MTRS	BIRD HEIGHT MTRS
3	10410	D	0	6.6	7.2	0.7	23	35
3	10410	E	3	19.0	6.5	5.4	17	37
3	10410	F	1	10.1	9.2	1.1	20	34
3	10410	G	0	6.6	16.1	0.2	4	32
3	10410	H	0	6.8	16.7	0.2	0	37
3	10420	A	0	10.6	25.3	0.3	0	34
3	10420	B	0	15.7	29.2	0.5	6	26
3	10420	C	2	51.6	36.0	2.9	11	23
3	10420	D	0	-1.1	6.5	0.0	0	27
3	10420	E	0	10.2	15.5	0.5	17	24
3	10420	F	0	3.6	5.1	0.3	35	28
3	10420	G	0	13.2	22.7	0.5	0	42
3	10420	H	0	17.5	36.5	0.4	0	37
3	10420	J	1	25.1	31.2	1.0	0	35
3	10420	K	0	14.3	27.4	0.4	0	34
3	10420	M	1	14.4	13.5	1.2	12	36
3	10430	A	0	11.1	12.1	0.9	15	34
3	10430	B	0	7.4	17.0	0.2	0	42
3	10430	C	1	21.9	21.8	1.3	0	40
3	10430	D	0	15.7	27.2	0.5	0	35
3	10430	E	0	7.9	17.9	0.2	0	38
3	10430	F	0	1.9	4.6	0.1	30	27
3	10430	G	0	9.8	23.3	0.3	1	31
3	10430	H	0	1.5	5.7	0.0	11	36
3	10430	J	0	11.5	15.4	0.7	9	34
3	10430	K	0	11.8	19.4	0.5	9	29
3	10430	M	0	10.5	19.7	0.4	0	38
3	10441	A	0	13.2	19.3	0.6	6	33
3	10441	B	0	3.3	8.4	0.1	18	28
3	10441	C	0	5.1	10.4	0.2	13	31
3	10441	D	0	1.8	6.8	0.0	13	30
3	10441	E	0	3.9	4.4	0.5	43	26
3	10441	F	0	14.5	19.3	0.7	7	33
3	10441	G	0	2.0	3.8	0.1	39	26
3	10441	H	0	3.4	4.4	0.4	37	30
3	10441	J	0	2.6	5.8	0.1	15	39
3	10441	K	0	5.2	8.0	0.4	16	37
3	10441	M	2	25.9	15.0	2.9	5	40
3	10451	A	0	11.4	16.5	0.6	15	26
3	10451	B	0	5.5	10.1	0.3	20	27
3	10451	C	0	2.3	4.4	0.2	32	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.

J8998 BOND GOLD CANADA INC., SHOAL LAKE AREA, NW ONTARIO. - EM ANOMALIES

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
3	10451	D	0	3.4	8.6	0.1	20	25
3	10451	E	0	7.3	6.9	0.9	41	19
3	10451	F	2	18.8	11.8	2.3	14	35
3	10451	G	2	11.0	6.2	2.2	30	31
3	10451	H	2	18.7	12.9	2.1	24	24
3	10451	J	0	3.7	5.5	0.3	33	28
3	10451	K	2	25.2	17.7	2.2	15	28
3	10451	M	3	26.5	9.5	5.6	8	41
3	10461	A	3	25.0	7.1	7.5	5	45
3	10461	B	2	26.8	19.6	2.2	13	28
3	10461	C	0	3.6	4.8	0.4	30	35
3	10461	D	2	14.7	8.4	2.4	27	28
3	10461	E	3	20.8	9.0	4.0	18	34
3	10461	F	2	27.4	14.7	3.3	20	25
3	10461	G	0	3.3	3.3	0.6	41	36
3	10470	A	0	5.5	7.8	0.4	21	34
3	10470	B	0	10.9	14.7	0.6	16	28
3	10470	C	1	18.8	19.0	1.2	10	31
3	10470	D	2	12.3	6.4	2.6	29	31
3	10470	E	0	2.1	4.8	0.1	25	32
3	10470	F	2	49.9	43.7	2.1	7	24
3	10470	G	3	38.9	13.6	6.5	8	34
3	10480	A	3	51.2	17.6	7.2	5	33
3	10480	B	2	40.6	26.2	2.9	12	25
3	10480	C	0	6.2	6.8	0.7	32	27
3	10480	D	0	3.8	12.8	0.1	13	23
3	10480	E	0	-1.5	10.0	0.0	0	20
3	10480	F	0	7.6	11.3	0.5	13	34
3	10480	G	0	9.1	10.8	0.7	0	55
3	10490	A	1	28.3	33.3	1.2	0	37
3	10490	B	0	4.5	13.8	0.1	9	27
3	10490	C	0	7.1	15.3	0.3	3	36
3	10490	D	0	1.5	8.5	0.0	6	30
3	10490	E	0	1.4	6.0	0.0	17	27
3	10490	F	0	3.9	9.8	0.1	19	24
3	10490	G	2	25.7	16.7	2.5	10	34
3	10490	H	3	21.8	7.8	5.3	11	41
3	10500	A	1	20.3	19.3	1.4	14	27
3	10500	B	1	21.9	17.8	1.7	10	33
3	10500	C	0	2.0	6.0	0.0	29	19

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.

J8998 BOND GOLD CANADA INC., SHOAL LAKE AREA, NW ONTARIO. - EM ANOMALIES

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	AMPLITUDE (PPM) QUAD.	CONDUCTOR CTP MHOS	CONDUCTOR DEPTH MTRS	BIRD HEIGHT MTRS
3	10500	D	0	0.3	6.0	0.0	0	28
3	10500	E	0	2.2	9.6	0.0	11	26
3	10500	F	1	18.5	16.4	1.5	6	38
3	10510	A	0	11.5	23.6	0.4	0	37
3	10510	B	0	10.4	19.6	0.4	0	41
3	10510	C	0	0.9	7.5	0.0	1	31
3	10510	D	0	0.1	6.3	0.0	0	30
3	10510	E	0	1.0	6.1	0.0	12	27
3	10510	F	1	21.6	22.0	1.3	12	27
3	10510	G	0	6.9	10.2	0.5	19	30
4	10520	A	0	14.6	38.3	0.3	0	30
4	10520	B	0	15.6	35.1	0.4	11	17
4	10520	C	0	8.8	21.6	0.2	11	22
4	10520	D	0	0.3	6.0	0.0	0	32
4	10520	E	0	0.3	11.6	0.0	0	20
4	10520	F	0	0.3	3.4	0.0	1	37
4	10520	G	0	14.6	20.3	0.7	14	24
4	10530	A	1	18.3	18.5	1.2	12	30
4	10530	B	0	8.2	11.5	0.5	12	35
4	10530	C	0	0.5	5.6	0.0	9	23
4	10530	D	0	-2.1	3.9	0.0	0	27
4	10530	E	0	3.8	12.0	0.1	9	28
4	10542	A	0	4.6	5.9	0.5	24	37
4	10542	B	0	11.3	14.3	0.7	15	30
4	10542	C	0	2.7	4.9	0.2	36	24
4	10542	D	0	15.7	22.8	0.7	0	40
4	10550	A	0	21.0	34.5	0.6	0	39
4	10550	B	0	-1.8	2.2	0.0	0	31
4	10550	C	0	1.5	4.2	0.0	20	37
4	10550	D	0	6.0	9.8	0.4	12	37
4	10550	E	0	3.9	6.9	0.2	25	28
4	10560	A	2	14.1	7.7	2.6	25	31
4	10560	B	0	4.1	7.7	0.2	20	31
4	10560	C	0	9.1	9.0	0.9	17	37
4	10560	D	0	3.1	2.8	0.7	51	31
4	10570	A	0	2.8	11.2	0.0	0	36
4	10570	B	1	4.6	2.7	1.5	49	33
4	10570	C	1	7.0	6.3	1.0	17	45

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

J8998 BOND GOLD CANADA INC., SHOAL LAKE AREA, NW ONTARIO. - EM ANOMALIES

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	QUAD.	CONDUCTOR CTP MHOS	DEPTH MTRS	BIRD HEIGHT MTRS
4	10570	D	0	8.4	14.3	0.4	8	34
4	10570	E	3	35.3	14.9	4.9	10	33
4	10580	A	2	19.2	13.6	2.0	8	39
4	10580	B	0	8.4	17.8	0.3	16	21
4	10580	C	0	6.4	7.3	0.7	31	27
4	10580	D	0	1.6	3.9	0.1	31	30
4	10580	E	0	2.1	10.8	0.0	0	36
4	10590	A	0	2.6	5.6	0.1	0	61
4	10590	B	0	2.1	9.5	0.0	0	37
4	10590	C	0	1.7	3.9	0.1	26	36
4	10590	D	0	5.2	6.4	0.5	21	39
4	10590	E	0	8.7	16.8	0.3	13	26
4	10590	F	0	13.8	35.2	0.3	0	32
4	10601	A	0	21.6	36.6	0.6	0	37
4	10601	B	1	15.9	12.5	1.6	20	28
4	10601	C	0	-3.2	3.8	0.0	0	28
4	10601	D	0	8.1	23.7	0.2	0	34
4	10601	E	0	4.6	10.9	0.2	0	43
4	10610	A	0	6.3	16.2	0.2	0	41
4	10610	B	0	11.2	29.3	0.2	0	37
4	10610	C	0	-2.2	4.4	0.0	0	22
4	10610	D	0	-3.2	2.1	0.0	0	27
4	10610	E	0	9.1	10.0	0.8	20	32
4	10610	F	0	14.5	26.5	0.5	0	41
4	10620	A	1	22.7	28.8	1.0	4	30
4	10620	B	0	16.7	27.8	0.6	5	28
4	10620	C	0	1.1	5.4	0.0	11	32
4	10620	D	0	7.2	12.4	0.4	4	40
4	10630	A	0	2.9	7.2	0.1	12	37
4	10630	B	0	1.5	8.6	0.0	5	30
4	10630	C	0	-0.6	3.5	0.0	0	32
4	10630	D	0	13.4	26.0	0.4	4	28
4	10641	A	0	12.3	15.0	0.8	17	27
4	10641	B	1	4.3	3.4	1.0	40	37
4	10641	C	0	-1.0	2.3	0.0	0	33
4	10650	A	0	0.7	6.4	0.0	0	34
4	10650	B	2	15.8	6.5	3.9	25	32

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J8998 BOND GOLD CANADA INC., SHOAL LAKE AREA, NW ONTARIO. - EM ANOMALIES

FLIGHT	LINE	ANOMALY	CATEGORY	AMPLITUDE (PPM) INPHASE	AMPLITUDE (PPM) QUAD.	CONDUCTOR CTP MHOS	CONDUCTOR DEPTH MTRS	BIRD HEIGHT MTRS
4	10650	C	0	-2.0	2.2	0.0	0	29
4	10650	D	0	4.1	9.6	0.2	8	36
4	10650	E	0	6.7	12.3	0.3	10	33
4	10660	A	1	14.5	14.6	1.1	21	24
4	10660	B	0	-5.9	5.2	0.0	0	24
4	10660	C	0	6.2	9.0	0.4	24	27
4	10660	D	0	1.6	9.2	0.0	3	32
4	10670	A	0	2.0	12.7	0.0	2	28
4	10670	B	0	-2.5	5.3	0.0	0	27
4	10670	C	0	4.1	6.2	0.3	31	27
4	10670	D	0	-3.4	8.2	0.0	0	27
4	10670	E	0	-0.3	2.3	0.0	0	42
4	10670	F	0	7.3	9.4	0.6	15	37
4	10680	A	1	26.0	25.5	1.4	0	44
4	10680	B	0	5.8	9.7	0.3	0	48
4	10680	C	0	2.8	3.6	0.4	37	35
4	10680	D	0	-3.4	3.6	0.0	0	31
4	10680	E	0	-1.2	3.9	0.0	0	32
4	10690	A	0	-2.0	3.8	0.0	0	31
4	10690	B	0	-3.2	4.0	0.0	0	32
4	10690	C	0	1.9	3.7	0.1	31	34
4	10690	D	0	5.8	10.6	0.3	3	43
4	10690	E	1	27.1	31.3	1.2	0	41

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

Ministry of Northern Development and Mines
Ontario

W9?-074

52E10NW9449 2.13246 ECHO BAY

900

Report of Work

Mining Act

(Geophysical, Geological and Geochemical S...

Mining Lands Section, Mineral Development and Lands Branch.

Type of Survey(s)	Mining Division	Township or Area
MAGNETIC, ELECTROMAGNETIC, VLF	KENORA	ECHO BAY, GLASS, EWART

Recorded Holder(s)	Prospector's Licence No.
BOND GOLD CANADA INC. 2.13246	T-3608

Address	Telephone No.
#1100 - 20 ADELAIDE ST E, TORONTO	367-1031

Survey Company: AERODAT LIMITED

Name and Address of Author (of Geo-Technical Report)	Date of Survey (from & to)
R.J. DE CARLE PALGRAVE, ONTARIO LON 1PO	07 02 90 07 02 90 (Day Mo. Yr. Day Mo. Yr.)

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey:	Geophysical	
Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid:	- Other	
Enter 20 days (for each)	Geological	
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical	
	- Electromagnetic	
	- Magnetometer	
	- Other	
	Geological	
	Geochemical	

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	40
	Magnetometer	40
	Other	

Total miles flown over claim(s).

Date	Recorded Holder or Agent (Signature)
APRIL 20 '90	[signature]

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Mining Claim Prefix	Mining Claim Number	Mining Claim Prefix	Mining Claim Number
	PLEASE SEE SCHEDULE "A" ATTACHED				

RECEIVED
APR 27 1990
MINING LANDS SECTION

Total number of mining claims covered by this report of work: ~~108~~ 100

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in this Report of Work, having performed the work or witnessed same during and/or after its completion and annexed report is true.

Name and Address of Person Certifying: ROBIN JOWETT #1100 - 20 ADELAIDE ST. TORONTO M5C 2T6

Telephone No.	Date	Certified By (Signature)
367-1031	APRIL 20 '90	[signature]

ONTARIO GEOLOGICAL SURVEY
ASSESSMENT FILES
OFFICE
MAY 31 1990

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
8000	April 23/90	[signature]
	Date Approved as Recorded	Provincial Manager, Mining Lands
	30 May 90	[signature]

Received Stamp
KENORA MINING DIV.
RECEIVED
APR 23 1990
AM 8:15 PM
7 8 9 10 11 12 1 2 3 4 5 6

1362 (89/06)

1050520

W9001·074

SCHEDULE "A"

CLAIM NO.	CLAIM NO.	CLAIM NO.
1050520	1050591	~~856178~~
1050521	1050592	~~856180~~
1050522	1050593	~~856182~~
1050523	1050594	~~856183~~
1050524	1050595	~~856184~~
1050525	1050596	~~856185~~
1050526	1050597	~~897175~~
1050527	1050598	
1050528	1050599	
1050529	1050600	
1050530	1050601	
1050531	1050602	
1050532	1050603	
1050533	1050604	
1050534	1050605	
1050535	1050606	
1050536	1050607	
1050537	1050608	
1050538	1050609	
1050539	1050610	
1050540	1050612	
1050541	1050613	
1050542	1050614	
1050543	1050615	
1050544	1050616	
1050545	1050617	
1050546	1050618	
1050547	1050619	
1050548	1050620	
1050549	1050621	
1050550	1050622	
1050551	1050623	
1050552	1050624	
1050553	1050625	
1050554	1050626	
1050555	1050627	
1050556	1050628	
1050557	1050629	
1050558	1050630	
1050559	1050631	
1050560	1050632	
1050582	1050633	
1050583	1050634	
1050584	1050635	
1050585	1050636	
1050586	1050637	
1050587	1050638	
1050588	1050639	
1050589	1050640	
1050590	1050641	

over max.

BOND GOLD CANADA INC.

20 Adelaide Street, East
Suite 1100
Toronto, Ontario M5C 2T6

416 367-1031
416 947-1257 Facsimile

BOND
GOLD CANADA INC.

RECEIVED

APR 23 1990

MINING LANDS SECTION

April 23, 1990

2.13246

Mining Lands Section
880 Bay Street
3rd Floor
Toronto, Ontario
M5S 1Z8

To Whom It May Concern:

Please find enclosed duplicate copies of reports and maps for Airborne Geophysical (Electromagnetic and Magnetic) assessment work. The survey was flown February 7, 1990. Also enclosed is a copy of the Report of Work for this report forwarded to the Mining Recorder in Kenora.

If you have any questions regarding this filing, please feel free to contact me.

Yours truly,

Alison C. Dunlop

Alison Dunlop
Research Geologist

/acd
Encl.

Ministry of Northern Development and Mines

Ontario

Geophysical-Geological-Geochemical Technical Data Statement

File 2.13246

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) MAGNETIC, ELECTROMAGNETIC, VLF

Township or Area SHOAL LAKE

Claim Holder(s) BOND GOLD CANADA INC.

Survey Company AERODAT LIMITED

Author of Report R.J. DE CARLE

Address of Author PALGRAVE, ONTARIO

Covering Dates of Survey FEBRUARY 7 1990 (linecutting to office)

Total Miles of Line Cut

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

	DAYS per claim
Geophysical	
--Electromagnetic	~~40~~
--Magnetometer	~~40~~
--Radiometric	
--Other	
Geological	
Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer 40 Electromagnetic 40 Radiometric
(enter days per claim)

DATE: 13/4/90 SIGNATURE: [signature] Author of Report or Agent

MINING CLAIMS TRAVERSED
List numerically

KENORA MINING DIVISION
(prefix) (number)

SEE SCHEDULE "A" ATTACHED

If space insufficient, attach list

TOTAL CLAIMS 108

OFFICE USE ONLY

Res. Geol. Qualifications 2.4517

Previous Surveys

File No.	Type	Date	Claim Holder

837 (85/12)

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS - If more than one survey, specify data for each type of survey

Number of Stations ____________________ Number of Readings ____________________

Station interval ____________________ Line spacing ____________________

Profile scale ____________________

Contour interval ____________________

MAGNETIC

Instrument ____________________

Accuracy – Scale constant ____________________

Diurnal correction method ____________________

Base Station check-in interval (hours) ____________________

Base Station location and value ____________________

____

ELECTROMAGNETIC

Instrument ____________________

Coil configuration ____________________

Coil separation ____________________

Accuracy ____________________

Method: ☐ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency ____________________ (specify V.L.F. station)

Parameters measured ____________________

GRAVITY

Instrument ____________________

Scale constant ____________________

Corrections made ____________________

____

Base station value and location ____________________

____

Elevation accuracy ____________________

INDUCED POLARIZATION / RESISTIVITY

Instrument ____________________

Method ☐ Time Domain ☐ Frequency Domain

Parameters – On time ____________________ Frequency ____________________

– Off time ____________________ Range ____________________

– Delay time ____________________

– Integration time ____________________

Power ____________________

Electrode array ____________________

Electrode spacing ____________________

Type of electrode ____________________

SCHEDULE "A"

CLAIM NO.	CLAIM NO.	CLAIM NO.
1050520	1050591	856178
1050521	1050592	856180
1050522	1050593	856182
1050523	1050594	856183
1050524	1050595	856184
1050525	1050596	856185
1050526	1050597	897175
1050527	1050598	
1050528	1050599	
1050529	1050600	
1050530	1050601	
1050531	1050602	
1050532	1050603	
1050533	1050604	
1050534	1050605	
1050535	1050606	
1050536	1050607	
1050537	1050608	
1050538	1050609	
1050539	1050610	
1050540	1050612	
1050541	1050613	
1050542	1050614	
1050543	1050615	
1050544	1050616	
1050545	1050617	
1050546	1050618	
1050547	1050619	
1050548	1050620	
1050549	1050621	
1050550	1050622	
1050551	1050623	
1050552	1050624	
1050553	1050625	
1050554	1050626	
1050555	1050627	
1050556	1050628	
1050557	1050629	
1050558	1050630	
1050559	1050631	
1050560	1050632	
1050582	1050633	
1050583	1050634	
1050584	1050635	
1050585	1050636	
1050586	1050637	
1050587	1050638	
1050588	1050639	
1050589	1050640	
1050590	1050641	

SELF POTENTIAL

Instrument ______ Range ______

Survey Method ______

Corrections made ______

RADIOMETRIC

Instrument ______

Values measured ______

Energy windows (levels) ______

Height of instrument ______ Background Count ______

Size of detector ______

Overburden ______
(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey ______

Instrument ______

Accuracy ______

Parameters measured ______

Additional information (for understanding results) ______

AIRBORNE SURVEYS

Type of survey(s) ELECTROMAGNETIC, MAGNETIC, VLF-EM

Instrument(s) AERODAT 4 FREQUENCY, SCINTREX VIW-2321, HERZ TOTEM 2A
(specify for each type of survey)

Accuracy EM: 2ppm, MAG: 0.1nT, VLF: 1%
(specify for each type of survey)

Aircraft used AEROSPATIALE A-STAR 350D

Sensor altitude EM: 30 metres, MAG: 45 metres, VLF: 45 metres

Navigation and flight path recovery method MINI RANGER III electronic navigation, video tracking camera

Aircraft altitude 60 metres Line Spacing 100 metres

Miles flown over total area 220 km (137.5 miles) Over claims only 176.2 km (110.1 miles)

GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken ___

Total Number of Samples ___

Type of Sample ___ (Nature of Material)

Average Sample Weight ___

Method of Collection ___

Soil Horizon Sampled ___

Horizon Development ___

Sample Depth ___

Terrain ___

Drainage Development ___

Estimated Range of Overburden Thickness ___

SAMPLE PREPARATION

(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis ___

General ___

ANALYTICAL METHODS

Values expressed in: per cent ☐ p. p. m. ☐ p. p. b. ☐

Cu, Pb, Zn, Ni, Co, Ag, Mo, As,-(circle)

Others ___

Field Analysis (___ tests)

Extraction Method ___

Analytical Method ___

Reagents Used ___

Field Laboratory Analysis

No. (___ tests)

Extraction Method ___

Analytical Method ___

Reagents Used ___

Commercial Laboratory (___ tests)

Name of Laboratory ___

Extraction Method ___

Analytical Method ___

Reagents Used ___

General ___

NOTES

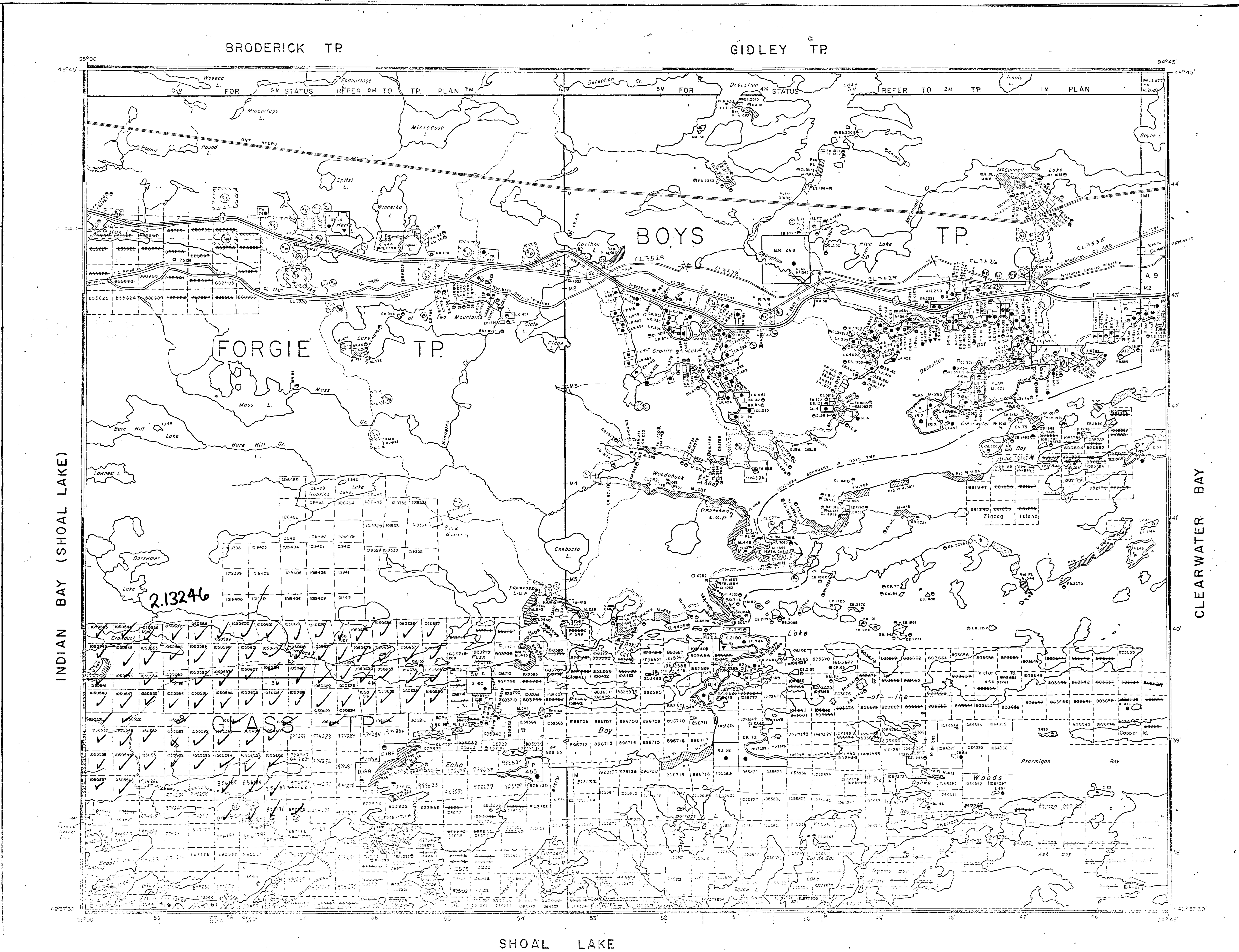
RESERVE FLOODING RIGHTS TO CONTOUR 1064' ON ALL LANDS BORDERING ON LAKE OF THE WOODS.

400' SHOWN THUS S.R.O. RESERVED TO M.N.R. FILE 163473

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. – MINING RIGHTS ONLY
S.R.O. – SURFACE RIGHTS ONLY
M.+ S. – MINING AND SURFACE RIGHTS

	Description	Order No.	Date	Disposition	File
R1	M.N.R. RESERVE			S.R.O.	77094 vol.5
R2	CROWN RESERVE			S.R.O.	163473
R3	M.T.C. RESERVE				83811
R4	CROWN RESERVE			S.R.O.	163473
R5	PUBLIC RESERVE			S.R.O.	122182
R6	CROWN RESERVE			S.R.O	77094 vol.6
R7	CROWN RESERVE			S.R.O.	163473 vol. 1
R8	CROWN RESERVE			S.R.O.	
R9	PUBLIC USE RESERVE			S.R.O.	163473 vol.2
R10	TOWER RESERVE				99852
R11	CROWN RESERVE			S.R.O.	179645
R12	SEC. 43/70	W.65/76	19/11/76	S.R.O.	188521
R13	SEC. 36/80	W.20/83	9/8/83	M.& S.	188521
R14	SEC. 36/80	W. 2/85	21/8/85	M. & S.	
R15	SEC. 36/80	W.63/86	13/8/86	M.& S.	18855
R16	PUBLIC RESERVE				188515



LEGEND

HIGHWAY AND ROUTE No.
OTHER ROADS
TRAILS
SURVEYED LINES:
TOWNSHIPS, BASE LINES, ETC.
LOTS, MINING CLAIMS, PARCELS, ETC.
UNSURVEYED LINES:
LOT LINES
PARCEL BOUNDARY
MINING CLAIMS ETC.
RAILWAY AND RIGHT OF WAY
UTILITY LINES
NON-PERENNIAL STREAM
FLOODING OR FLOODING RIGHTS
SUBDIVISION OR COMPOSITE PLAN
RESERVATIONS
ORIGINAL SHORELINE
MARSH OR MUSKEG
MINES
TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" , SURFACE RIGHTS ONLY	
" , MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
" , SURFACE RIGHTS ONLY	
" , MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	▼
ORDER-IN-COUNCIL	OC
RESERVATION	(R)
CANCELLED	
SAND & GRAVEL	(S)

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC 1

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000 8000
METRES 0 200 1000 (1 KM) 2000 (2 KM)

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.

KENORA RECEIVED APR 12 1989 AM PM 7 8 9 10 11 12 1 2 3 4 5 6

AREA [redacted]

ECHO BAY

M.N.R. ADMINISTRATIVE DISTRICT
KENORA

MINING DIVISION
KENORA

LAND TITLES / REGISTRY DIVISION
KENORA

Ontario — Ministry of Natural Resources — Ministry of Northern Development and Mines

Date JANUARY, 1987 — Number G-2616

52E10NW9449 2.13246 ECHO BAY

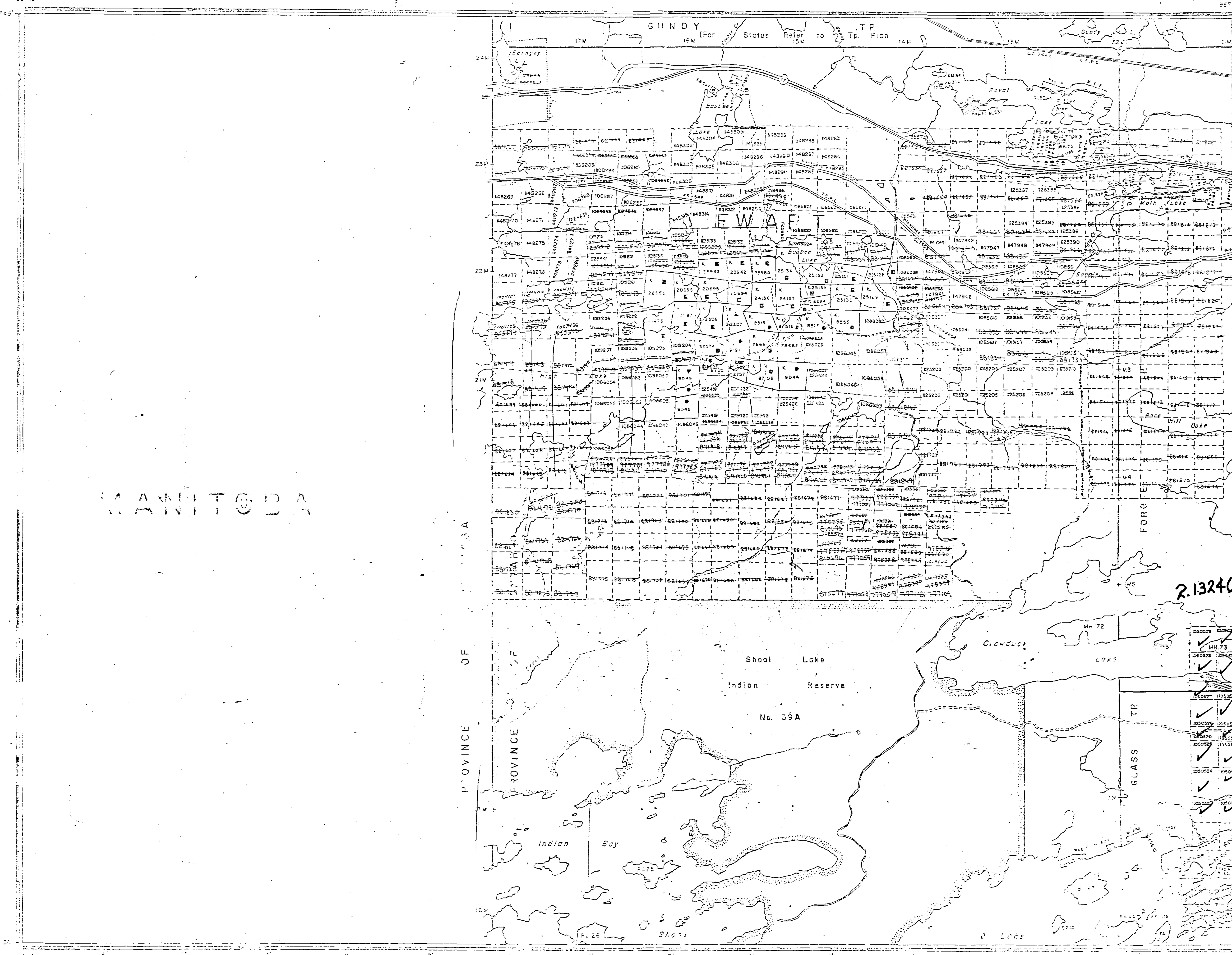
200

REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. – MINING RIGHTS ONLY
S.R.O. – SURFACE RIGHTS ONLY
M.+S. – MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File
[illegible]	[illegible]	[illegible]	S.R.O.	[illegible]



ECHO BAY (LAKE OF THE WOODS) G-2616

SNOWSHOE BAY (SHOAL LAKE) G-2645

52E10NW9449 2.13246 ECHO BAY

210

LEGEND

HIGHWAY AND ROUTE No.
OTHER ROADS
TRAILS
SURVEYED LINES:
TOWNSHIPS, BASE LINES, ETC.
LOTS, MINING CLAIMS, PARCELS, ETC.
UNSURVEYED LINES:
LOT LINES
PARCEL BOUNDARY
MINING CLAIMS ETC.
RAILWAY AND RIGHT OF WAY
UTILITY LINES
NON-PERENNIAL STREAM
FLOODING OR FLOODING RIGHTS
SUBDIVISION OR COMPOSITE PLAN
RESERVATIONS
ORIGINAL SHORELINE
MARSH OR MUSKEG
MINES
TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT — SYMBOL

PATENT, SURFACE & MINING RIGHTS
" , SURFACE RIGHTS ONLY
" , MINING RIGHTS ONLY
LEASE, SURFACE & MINING RIGHTS
" , SURFACE RIGHTS ONLY
" , MINING RIGHTS ONLY
LICENCE OF OCCUPATION
ORDER-IN-COUNCIL
RESERVATION
CANCELLED
SAND & GRAVEL

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63.

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.

KENORA MINING DIV.
RECEIVED
MAY 15 1990
AM 7 8 9 10 11 12 1 2 3 4 5 6 PM

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000
METRES 0 200 1000 (1 KM) 2000 (2 KM)

AREA **EWART TP.** AND **INDIAN BAY**

M.N.R. ADMINISTRATIVE DISTRICT
KENORA

MINING DIVISION
KENORA

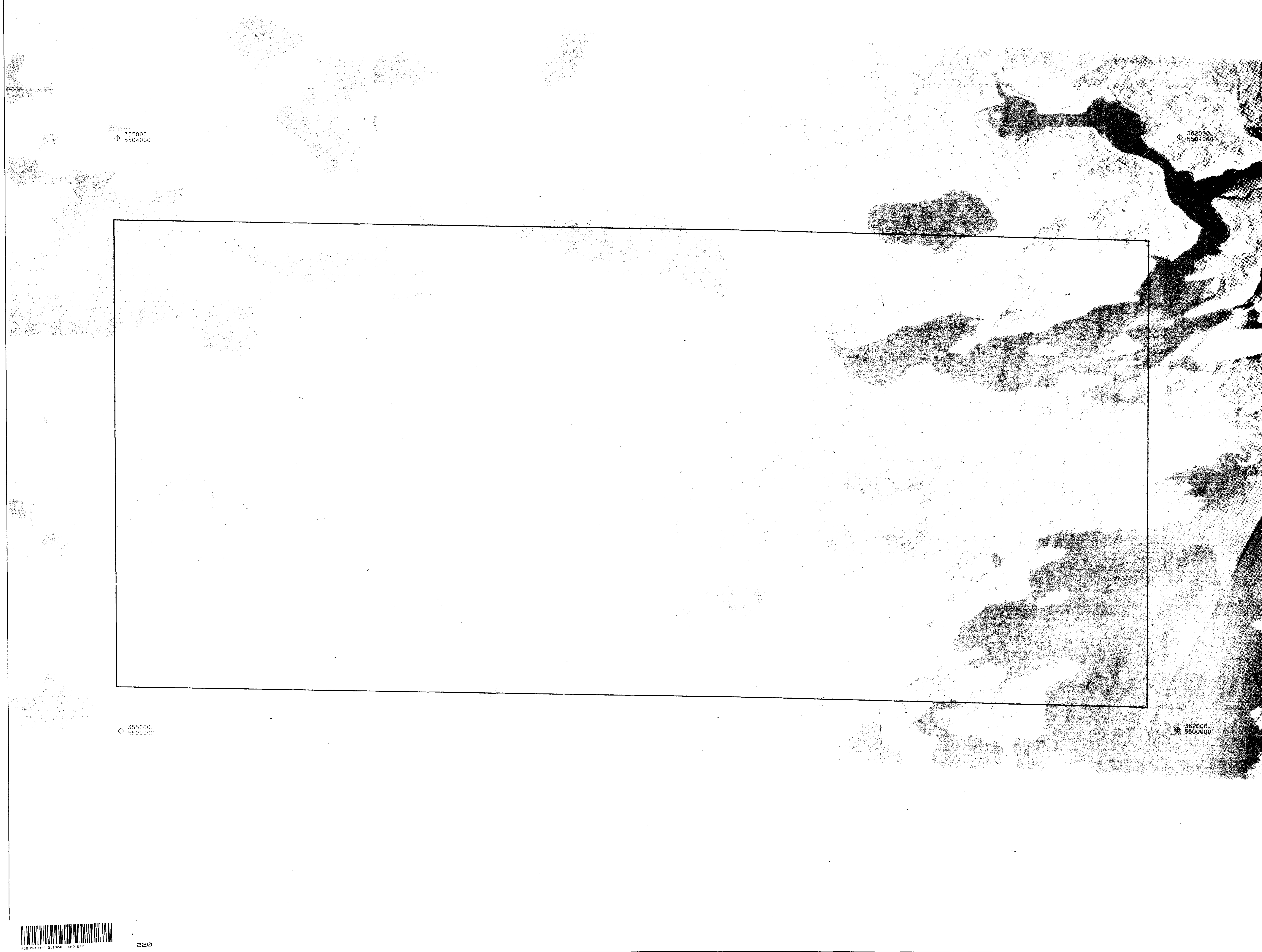
LAND TITLES / REGISTRY DIVISION
KENORA

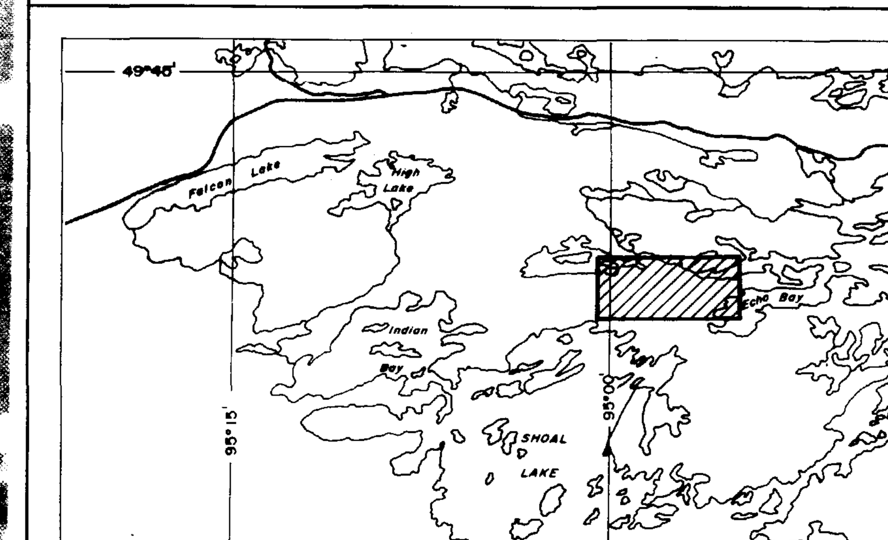
Ministry of Natural Resources — Land Management Branch
Ontario

Date: [illegible] UARY, 1924

M.1875

Number G-262[illegible]





BOND GOLD CANADA INC.

2.13246

BASE MAP

SHOAL LAKE AREA

NORTHWESTERN ONTARIO

RECEIVED
APR 23 1990
MINING LANDS SECTION

SCALE 1:10,000

0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

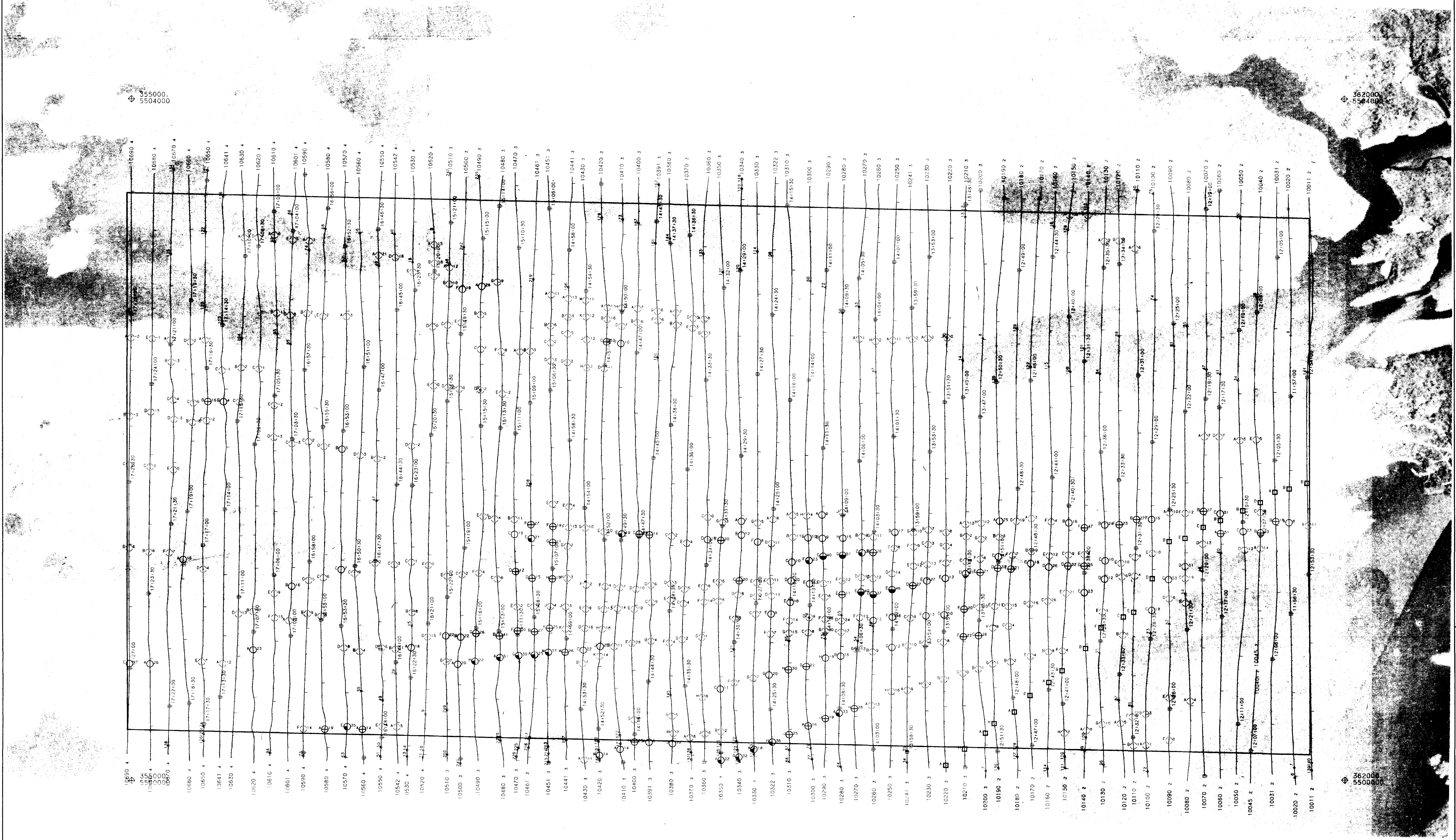
AERODAT LIMITED

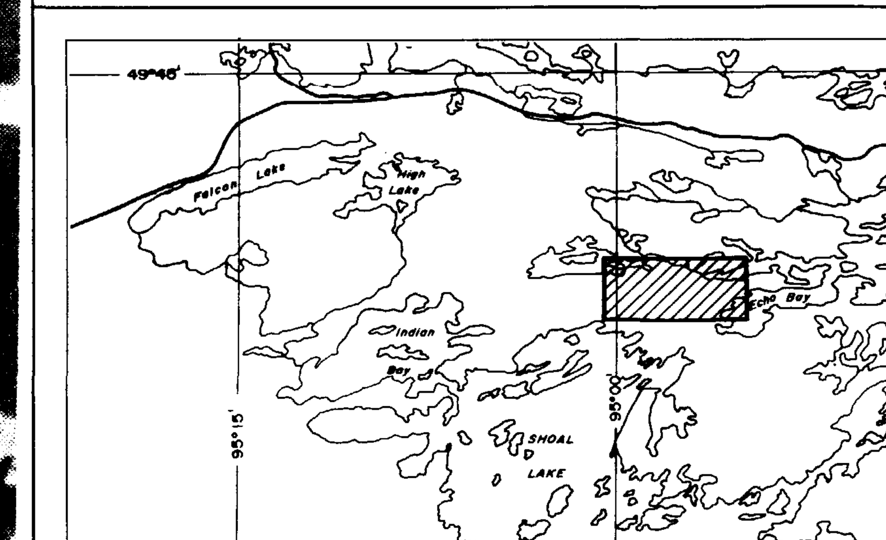
DATE: FEB 1990

NTS No: 52 E/10

MAP No: 1

J8998





Flight Path

Navigation and recovery using Motorola Mini-Ranger (MRS III) radar 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
- Cultural response
- EM Anomaly A, 4500 Hz inphase amplitude 7 ppm, Conductivity thickness 1-2 mhos (see code).

BOND GOLD CANADA INC.

FLIGHT PATH

RECEIVED
APR 23 1990
MINING LANDS SECTION

2.13246

SHOAL LAKE AREA

NORTHWESTERN ONTARIO

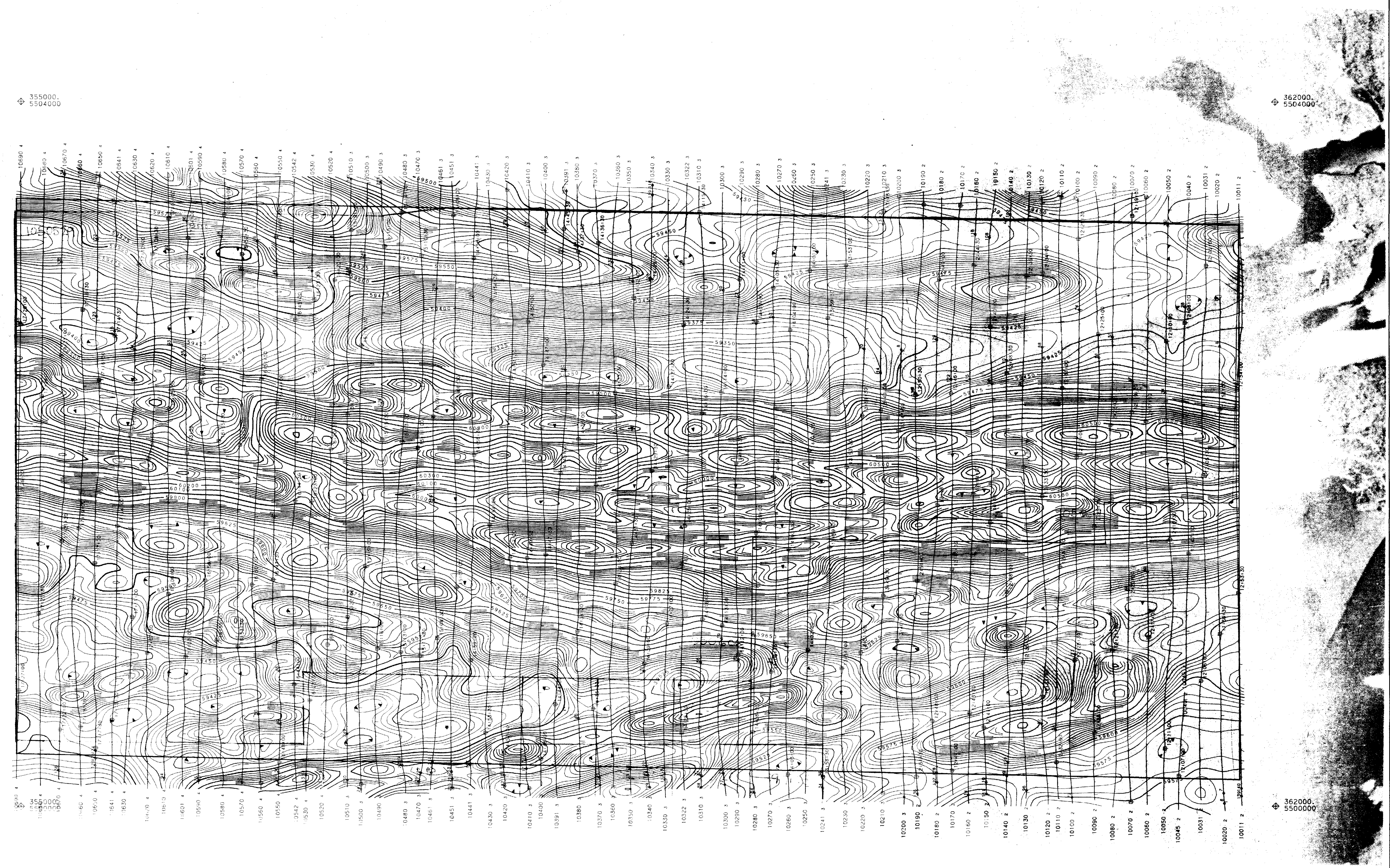
SCALE 1:10,000

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

AERODAT LIMITED

DATE: FEB 1990
NTS No: 52 E/10
MAP No: 2
J8998

230



Magnetics

Total Field Magnetic Intensity Contours in nT.

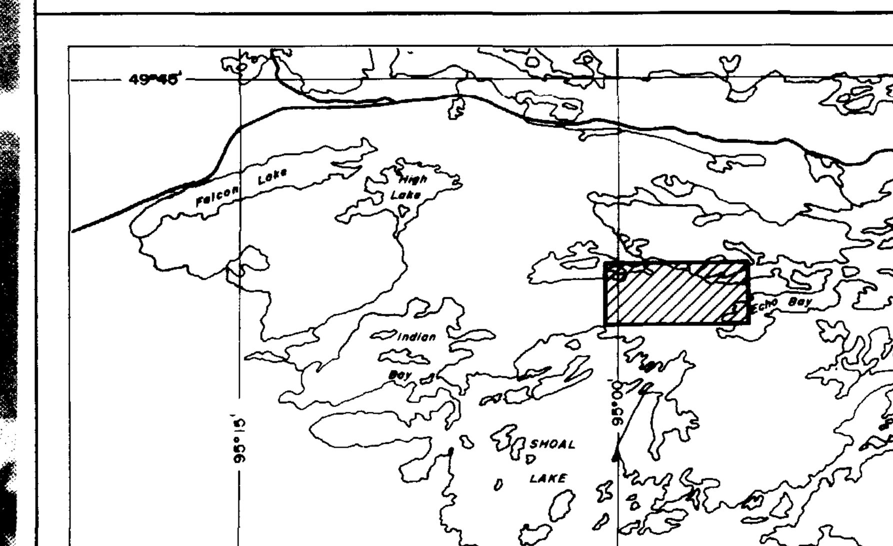
Cesium high sensitivity magnetometer.

Sensor elevation 45m

Flight Path

Navigation and recovery using Motorola Mini-Ranger (MRS III) radar navigation system.

Average terrain clearance 60m
Average line spacing 100m



BOND GOLD CANADA INC.

TOTAL FIELD MAGNETIC CONTOURS

2.13246

SHOAL LAKE AREA

NORTHWESTERN ONTARIO

RECEIVED
APR 23 1990
MINING LANDS SECTION

SCALE 1:10,000

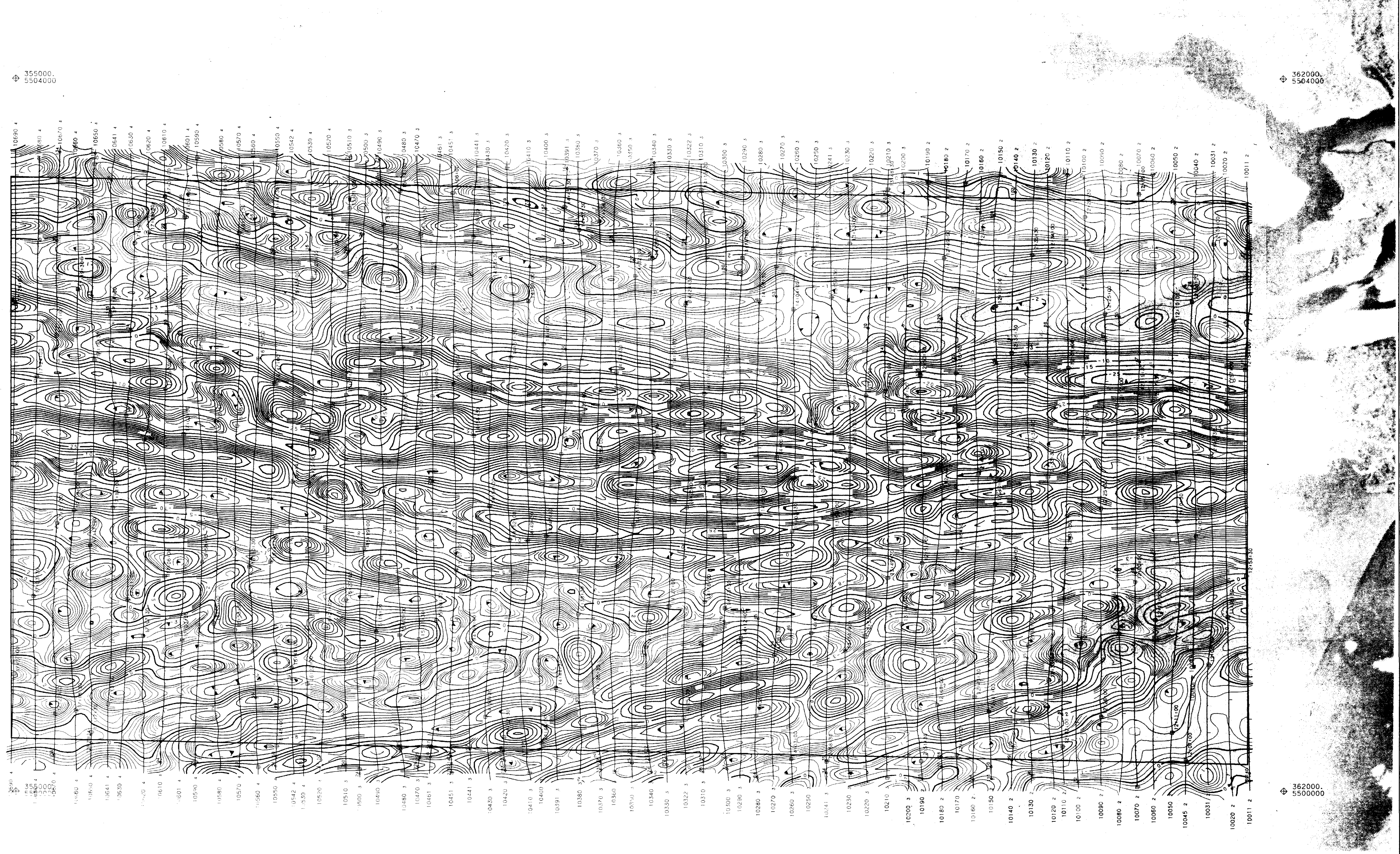
0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

AERODAT LIMITED

DATE: FEB 1990
NTS No: 52 E/10
MAP No: 4
J8998

240



N

Vertical Gradient

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

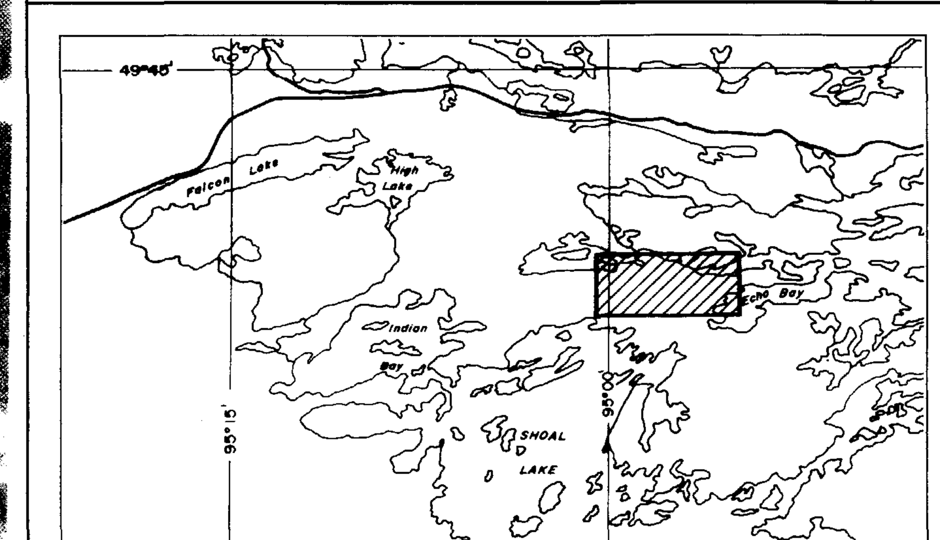
Cesium high sensitivity magnetometer.

Sensor elevation 45m

Flight Path

Navigation and recovery using Motorola Mini-Ranger (MRS III) radar navigation system.

Average terrain clearance 60m
Average line spacing 100m



BOND GOLD CANADA INC.

CALCULATED VERTICAL MAGNETIC GRADIENT

2.13246

RECEIVED
APR 23 1990
MINING LANDS SECTION

SHOAL LAKE AREA

NORTHWESTERN ONTARIO

SCALE 1:10,000

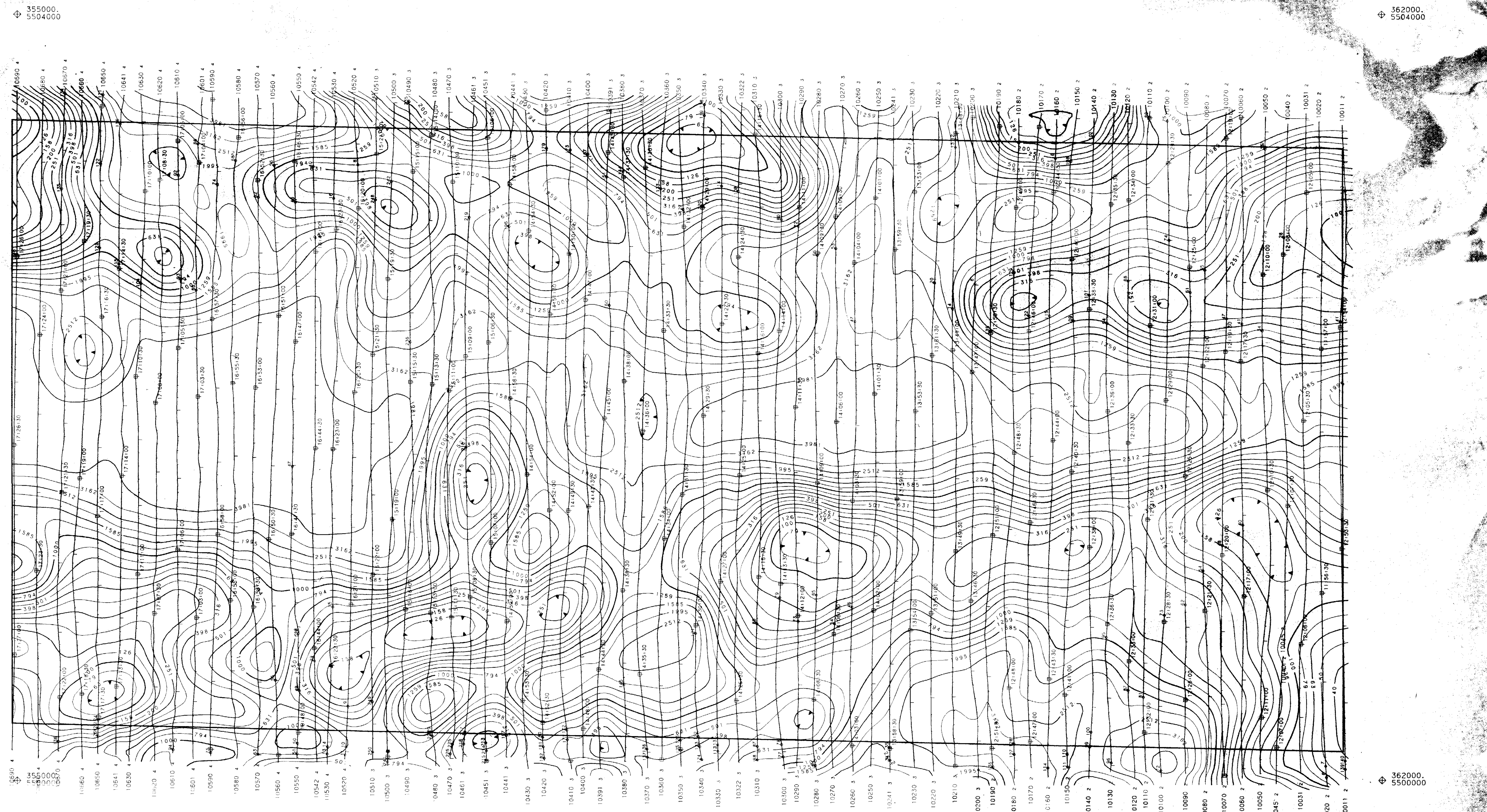
0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

AERODAT LIMITED

DATE:	FEB 1990
NTS No:	52 E/10
MAP No:	5 J8998

250



Apparent Resistivity

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

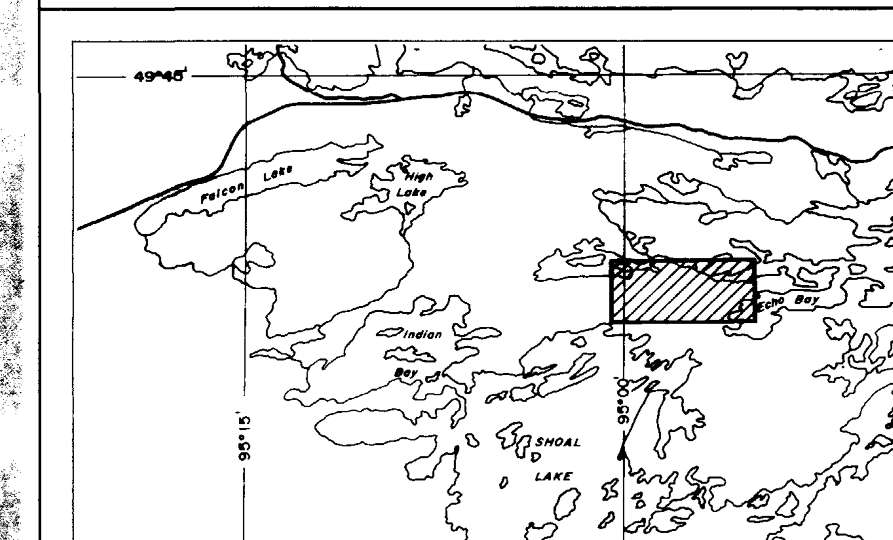
Contouring in ohm•m at logarithmic intervals.

Sensor elevation 30m

Flight Path

Navigation and recovery using Motorola Mini-Ranger (MRS III) radar navigation system.

Average terrain clearance 60m
Average line spacing 100m



BOND GOLD CANADA INC.

APPARENT RESISTIVITY CONTOURS

2.13246

RECEIVED
APR 23 1990
MINING LANDS SECTION

SHOAL LAKE AREA

NORTHWESTERN ONTARIO

SCALE 1:10,000

DATE:	FEB 1990
NTS No:	52 E/10
MAP No:	6 CX2 J8998

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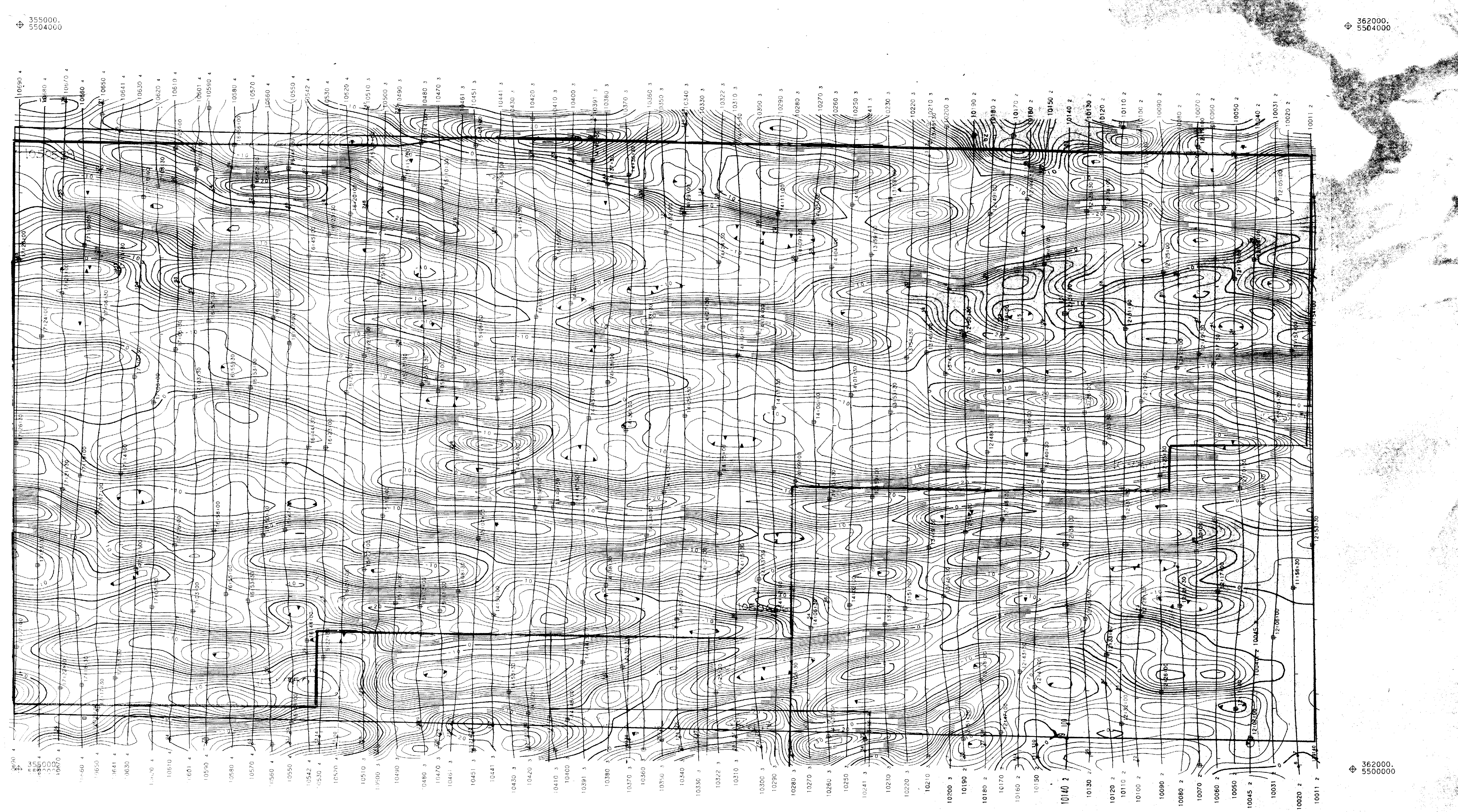
260



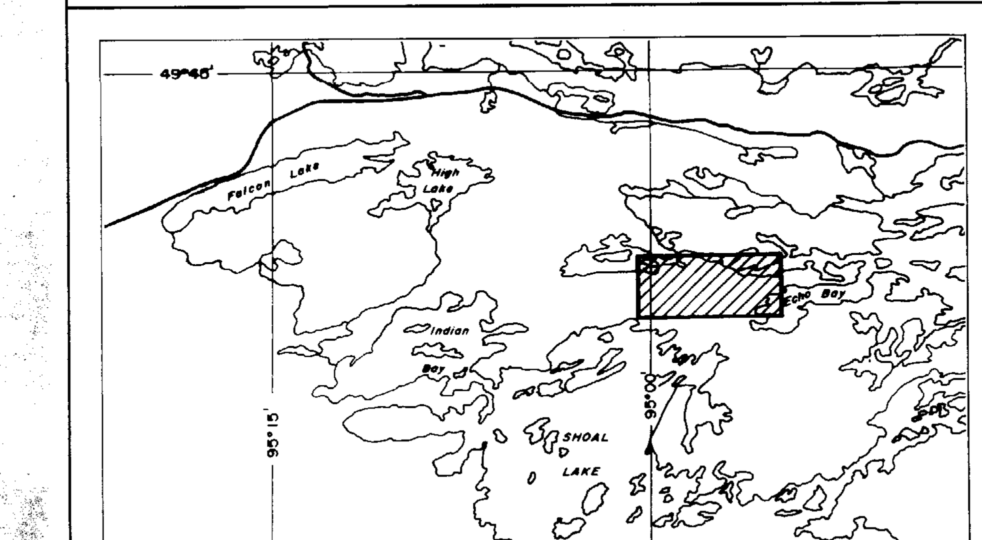
N

VLF-EM

VLF-EM Total Field Intensity in percent.
Station: NLK
Jim Creek, Washington
24.8 kHz
Sensor elevation 45m

Flight Path

Navigation and recovery using Motorola Mini-Ranger (MRS III) radar navigation system.
Average terrain clearance 60m
Average line spacing 100m



BOND GOLD CANADA INC.

VLF-EM TOTAL FIELD CONTOURS

2.13246

SHOAL LAKE AREA

NORTHWESTERN ONTARIO

RECEIVED
APR 23 1990
MINING LANDS SECTION

SCALE 1:10,000

0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

AERODAT LIMITED

DATE: FEB 1990
NTS No: 52 E/10
MAP No: 7
J8998

270