TELKWA GOLD CORPORATION

REPORT ON A

AIRBORNE GEOPHYSICAL SURVEY

BEAR CLAIM

SMITHERS, B.C.

Omineca Mining Division

Bear Claim Block

Latitude: 54°33'N

Longitude: 127°48'E

NTS 93L/12

By:

Cliff Candy, P.Geo.

June 1997

Project No. FGI-351

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Report on a Combined Helicopter-Borne Magnetic, Electromagnetic and VLF Survey

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1.0 Introduction

A program of airborne geophysical surveying was undertaken for Telkwa Gold Corporation by Geotech Ltd. on the Bear Claims near Smithers, B.C. This helicopter borne survey gathered electromagnetic data (at four frequencies), VLF electromagnetic data and total field magnetometer data.

This geophysical survey follows transient electromagnetometer TEM coverage obtained in July of 1992, and induced polarization surveying undertaken during July of 1994. The TEM coverage delineated a series of conductors trending approximately northeast-southwest. The induced polarization survey outlined a significant chargeability high, and good corelation with mapped alteration zones was observed in the conductivity data. In addition to the main chargeability high, the IP survey identified a number of lesser zones, some correlated with TEM conductors, and with possible breccia zones.

2.0 Bear Claims

The Mining Prospect consists of six Crown claims including five Crown claims comprising the Bear claim group and a sixth Crown claim, the Pass claim, all of which are located in the Limonite Creek - Many Bear Creek area of British Columbia. The six claims comprising the Mining Prospect are 100% owned by Telkwa. A description of the Bear claim group is as follows:

Claim Name	Tenure No.	Units	Expiry Date
Bear	241471	20	Dec. 14, 2004
Bear 2	313995	10	Oct. 11, 2004
Bear 3	313994	12	Oct. 12, 2004
Bear 4	313993	18	Oct. 12, 2004
Bear 5	328314	10	July 4, 2005
	Total Units	70	

3.0 Location and Access

The Bear claims are situated approximately 48 kilometres southwest of Smithers, B.C., on the north side of the Telkwa Pass. Access to the claims is by helicopter. The property is located at approximately the 1300 to 1400 metre elevation at longitude 127° 49' by latitude 54° 34'.

4.0 History and Previous Work

During the late summer/early fall of 1996, the Corporation drilled three diamond drill holes on the Bear Claim group. The first hole (96-1) was successfully completed to target depth while the remaining two holes (96-2 and 96-3) were terminated prematurely due to stuck drilling rods. All three holes were drilled to test the advanced argillic alteration zone at depth. Drill hole 96-2 encountered approximately 130 metres of vuggy silica prior to termination while hole 96-3 was terminated before encountering the vuggy silicia.

All three holes drilled in 1996 were cored using HQ and, when required, NQ sized equipment. After splitting, the core was sampled on one metre intervals for assay purposes. Core assays yieded values of less than 50 to 835 ppm copper, less than 1 to 3.6 ppm silver, and less than 2 to 52 ppb gold. Anomalous values in thallium and tellurium were also recorded.

Mineralization observed in drill cores is pervasive and accompanies the hydrothermal alteration. It consists of pyrite (up to 25%), and traces of bornite, chalcopyrite, colusite, and covellite.

Costs of the 1996 exploration program were $482,007. Previously, since 1992, total exploration expenditures on the Mining Prospect amounted to $400,000.

5.0 Physiography and Vegetation

The property is located both below and above the tree line in rugged topography. A pronounced ridge is central to the survey grid. The Telkwa Pass, at an elevation of 600 metres, and several hanging glaciers in the surrounding mountains, are topographic features of the area.

6.0 Local Geology

The survey grid covers an area of alternating rhyodacitic to dacitic rocks in the south, through to more andesitic volcanic in the north with the east west areas of the grid roughly bordered by granitic rocks. (Ref. 1) The principle areas of alteration are outlined on Figure 2, Geology and Grid Location. The main area of aluminous alteration is located north of the baseline, which was drill tested following the transient electromagnetometer (TEM) survey of the 1992 program. The two drillholes, at 530W, 230N and 125W, 285N, intersected disseminated pyrite up to 10-15% with 4-8% black specular hematite. South of the baseline are distinct zones of quartz-clay-sericite alteration of an original andesite host rock. The east and west ends of this argillic alteration host a quartz healed breccia and a limonite healed breccia. Varying pyrite from 2-5% seems to crudely form a halo along the borders of the south part of the zone. Two areas of transported limonite are displayed on this map. A third large zone is present downhill of lines 200W to 400W to the southeast. A gossan zone was observed late in the 1996 season in the creek draw approximately 500 metres to the south west of line 800W.

7.0 Instrumentation

A detailed description of the instrumentation, survey method and parameters are set forward in the report by J. Lobach, dated May 1997, that is appended to this report.

8.0 Geophysical Results

8.1 General

The magnetics, VLF and electromagnetics data was plotted by Geotech Ltd. on Plates 1 to 5, at a scale of 1:10000. These consist of a base plan showing the flight line locations, UTM coordinates and latitude and longitude information, a colour plot of the magnetics data, and three plots of the airborne EM information. The geological map of the Bear Claims was digitised and is used as an overlay for presentation of the geophysical results at a scale of 1:5000. This map also displays the main TEM conductors from the 1992 TEM survey. The complete list of TEM conductors and locations is described in Reference 2. A print of this digitised geological map is provided on Figure 5 without superimposed information. Figures 3 and 4 show the total field magnetics data and airborne EM conductivity data, respectively,

overlaid on the geological map. The interpreted airborne EM conductors are displayed on these plans.

In order to facilitate corelation of the data, a compilation map, Figure 2, has been prepared showing the outline of the magnetics highs and lows from Figure 3, the outline of the airborne conductivity highs from Figure 4, the chargeability highs from the 1994 IP survey, and the interpreted airborne EM conductors, are plotted on the the geological map base.

8.2 Discussion

The airborne magnetics detects a terrain in the northeastern area of the claim block which is underlain by rocks of high and variable magnetic mineral content. The geologic map shows the presence of a porphyritic granodiorite or quartz diorite in this area. The data shows that the northwesterly trend of Many Bear Creek represents the south western edge of this terrain, indicating that Many Bear Creek forms a major structural break in the area. An subtle airborne EM conductor of approximately 700 metres strike length is interpreted in this area. The high magnetic response of this northeastern quadrant entends into the grid area, associated with the north south trending diorite dyke. This zone is interpreted as extending as far south as Limonite Creek. In the vicinity of the ground survey grid, a local high is present in the northern area of lines 5W and 6W, near the andesite/granodiorite contact. The extended magnetics low to the northwest appears to be associated with a relatively lower magnetics mineral content granodiorite of the Coast range intrusives.

The airborne electromagnetics data did not show the presence of strong conductors that may be related to massive sulphides or other strongly conductive material such as graphite. Instead, the conductors are more subtle trends that are of assistance in mapping structure. The conductors delineated in the 1992 TEM survey were not fully expressed in the airborne coverage, with the exception of sections of conductors 1A and 2A, 2B and 4 in the central grid area, and 10A and 10B in the northern grid area, which are present as very subtle trends. This is likely due to the much higher detection limits possible with the ground based TEM survey. This information, however, aids in extending the strike length of TEM conductors to the southwest of the survey grid.

The 1994 induced polarization surveying showed a corelation of the aluminous alteration zones with higher conductivity zones. The high frequency EM channels, such as the 34000 Hz data plotted on Figure 4, allow the terrain conductivity to be mapped and thus provide a means of extended exploration for such zones. Ground prospecting followup is required, however, as

some areas of thicker overburden also are indicated as more conductive regions. The most prominent airborne conductivity anomaly is associated with the geologically mapped aluminous alteration zone that was seen in the 1994 IP survey in the vicinity of the Cypress Canada drillholes 92-1 and 92-2. The airborne conductivity anomaly extends this zone northeasterly into the Many Bear Creek area. The southern extent of this zone is the mapped fault that associated with the 1A TEM anomaly. South of this fault, the airborne conductivity, in agreement with the resistivity data obtained in the 1994 IP survey, shows a prominent resistive zone. This is likely due to increased silicification associated with the alteration in this area. The airborne data indicates that this anomaly extends approximately 250 metres beyond the end of line 10W to the south.

A northwesterly trending airborne conductive anomaly extends both north and south of the drillhole 94-2 and 94-3 area. The eastern area of this anomaly is associated with the pronounced chargeability high seen in the 1994 IP survey.

9.0 Summary and Conclusions

A program of airborne geophysical surveying was undertaken for Telkwa Gold Corporation by Geotech Ltd. on the Bear Claims near Smithers, B.C. as a part of a total program of 155.3 km of airborne surveying on the Bear, Pass, and Del Santo claim blocks. The airborne magnetics on the Bear Claims mapped geologic terrain on the basis of the magnetic mineral content of the rocks, and detected a number of structures such as the northwesterly trend of that follows Many Bear Creek.

The airborne electromagnetics data did not show the presence of strong conductors, but rather shows more subtle trends that will assist in mapping structure. This information aids in extending the strike length of conductors delineated in the 1992 TEM coverage to the southwest of the survey grid. The high frequency EM channels in the airborne data, corelated with the geologic mapping, and the results of the 1994 induced polarization survey, provided a means of extending this terrain resistivity information, and inferring the extent of alteration zones.

for Frontier Geosciences Inc.

Cliff Candy, P.Geo.

10.0 STATEMENT OF QUALIFICATIONS, CLIFF CANDY

I, Cliff Candy, Hereby certify that:

1) I am a geopysicist with buisness offices at 237 St. Georges Ave., North Vancouver, B.C., V7L 4T4.

2) I am a principle of Frontier Geosciences Inc., a company performing geophysical consulting and surveys.

3) I am a graduate of the University of British Columbia in Geophysics (B.Sc., 1977).

4) I am a member of the Assotiation of Professional Engineers and Geoscientists of British Columbia.

5) I have practiced my profession as geophysicist for over 19 years.

Signed _____
Cliff Candy, P.Geo.

North Vancouver, B.C., June 1997.

11.0 COST STATEMENT

For claim year ending August 12th, 1997:

Item	Cost
Cost of Bear claim geophysical survey (Geotech Ltd.)	$9921.00
Frontier Geosciences Report -31 hours @ $40.00 per hour	$1240.00
Total	$11,161.00

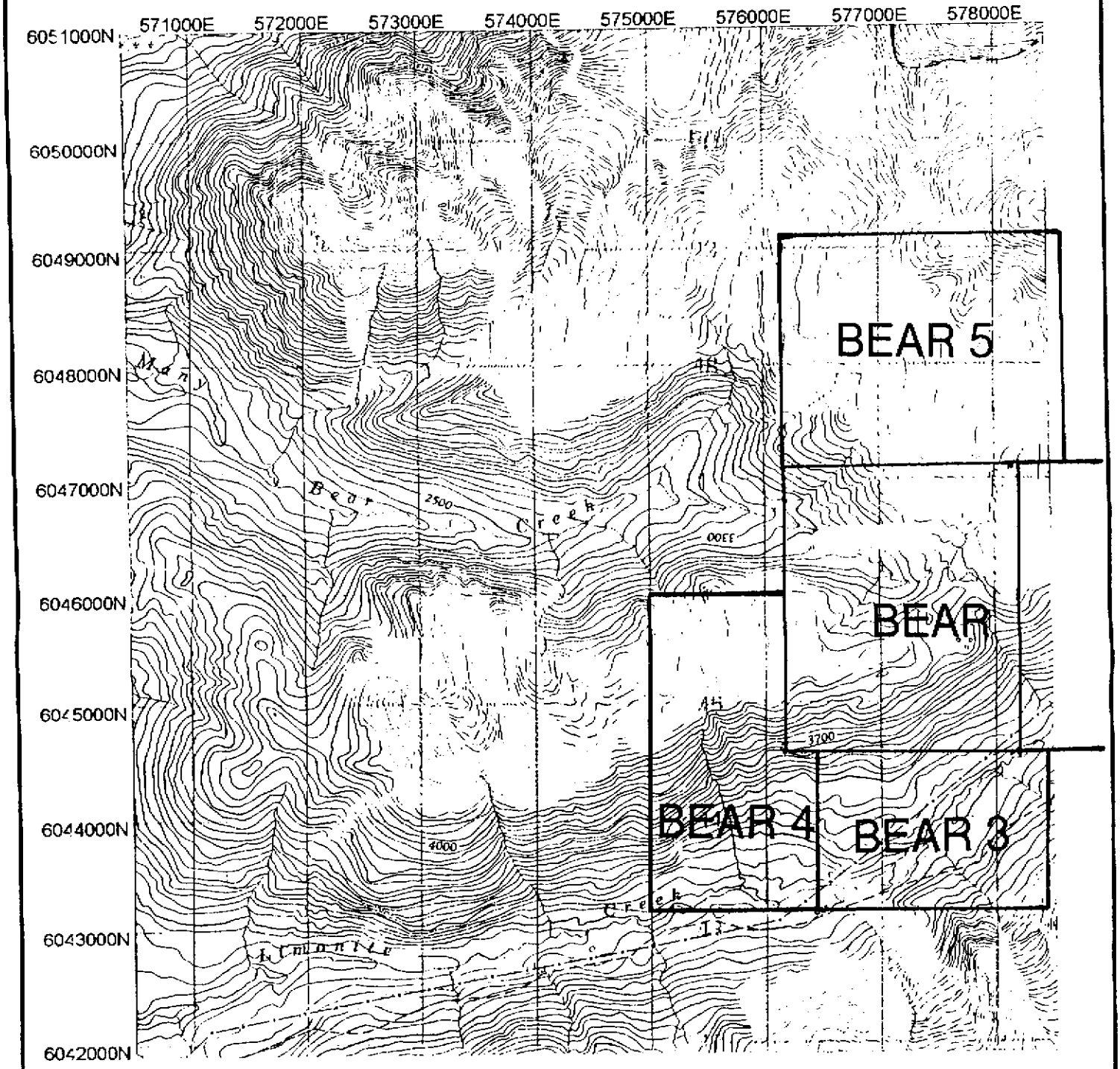
12.0 References

1. Jim Cuttle, P.Eng., Project Geologist.

2. Report on a Transient Electromagnetometer survey for the Limonite Creek Limited Partnership, by Frontier Geosciences Inc., July, 1992.

3. Report on an Induced Polarization Survey for the Limonite Creek Limited Partnership, by Frontier Geosciences Inc., July, 1994.

4. Geological Map of the Limonite Creek High Sulphidation Prospect, Omineca Mining Division, by James F. Cuttle, P.Geo. and Willard D. Tompson, P.Geo.



TELKWA GOLD CORPORATION		
BEAR CLAIM BLOCK		
AIRBORNE GEOPHYSICAL SURVEY		
SITE PLAN		
FRONTIER GEOSCIENCES INC.		
JUNE, 1997	1:50,000	FIG. 1

TELKWA GOLD CORPORATION

AIRBORNE GEOPHYSICAL SURVEY

COMPILATION MAP

FRONTIER GEOSCIENCES INC.

ASSESSMENT REPORT

25,134

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

25,134

TELKWA GOLD CORPORATION

TOTAL MAGNETIC FIELD (nT)

FRONTIER GEOSCIENCES INC.

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

25,134

TELKWA GOLD CORPORATION

MINERAL CLAIM BLOCK

MINERAL DEPOSITION MARKET

ELECTROMAGNETIC CONDUCTIVITY
(24000 Hz)

FRONTIER GEOSCIENCES INC.

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

25,134

TELKWA GOLD CORPORATION

AIRBORNE GEOPHYSICAL SURVEY

GEOLOGICAL MAP

FRONTIER GEOSCIENCES INC.

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

Del Santo, Bear and Pass Blocks
Smithers Area, Northern British Columbia
NTS 94L/10, NTS 94L/12

for

Telkwa Gold Corporation
P.O. Box 395
Smithers, B.C., V0J 2N0
Tel: (250) 847-2866

Project P1001

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May 1997

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REPORT ON A COMBINED HELICOPTER-BORNE MAGNETIC, ELECTROMAGNETIC AND VLF SURVEY
SMITHERS AREA, NORTHERN BRITISH COLUMBIA

1. INTRODUCTION

This report describes helicopter-borne geophysical surveys carried out on behalf of Telkwa Gold Corporation by Geotech Ltd. under an agreement dated March 20, 1997. Principal geophysical sensors included a four frequency, light-weight, electromagnetic system, a four channel VLF receiver and a high sensitivity cesium vapour magnetometer. Ancillary equipment included a GPS navigation system, laser altimeter, and a base station magnetometer.

Three survey blocks, referred to as Del Santo, Bear and Pass were surveyed. The Del Santo survey area lies about 45 kms southheast of Smithers, the Bear and Pass claims are 45 kms west of Smithers in British Columbia.

The combined areal extent of the blocks is 15.2 km^2. The total line kilometres flown on the three blocks was 155.3 km. The survey flying took place during the period March 23-28, 1997.

This report describes the survey, the data processing and presentation and provides a brief interpretation and EM anomaly or "red-ball" list.

2. SURVEY AREAS

The approximate locations of the survey areas are shown in figure 1. The latitude-longitude of the approximate centre of the block and the corner co-ordinates of the blocks in UTM (NAD27) easting and northing are as follows:

Del Santo Claim Block, NTS 93L/10 - 54°39'N/126°40'E

a) 649450E 6057800N
b) 649450E 6060500N
c) 651650E 6060600N
d) 651650E 6057900N

Bear Claim Block, NTS 93L/12 - 54°33'N/127°48'E

a) 576150E, 6044400N
b) 576100E, 6047150N
c) 578100E, 6047200N
d) 578150E, 6044450N

Pass Claim Block, NTS 93L/12 - 54°30'N/127°53'E

a) 573150E 6039800N
b) 573150E 6042000N
c) 575825E 6042025N
d) 575850E 6039825N

Topographic relief in all three areas is relatively high. The Bear and Pass claims straddle the first rise from the Telkwa Pass. Peak elevations reached 2000 meters. For some of the survey lines vertical rises of 200-300 meters occurred.

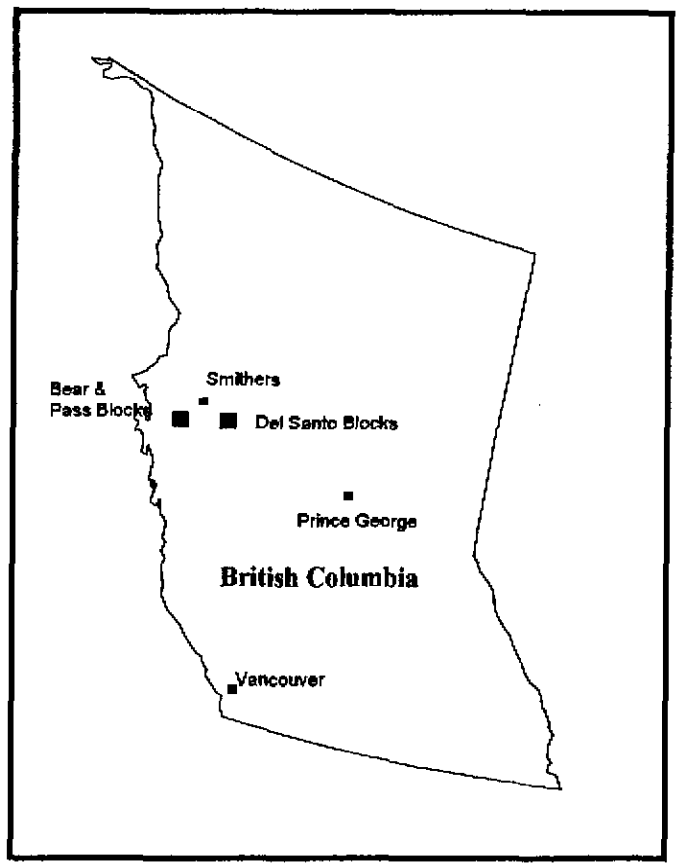


Figure 1
Del Santo, Bear and Pass Claim Blocks
British Columbia, CANADA

3. SURVEY SPECIFICATIONS AND PROCEDURES

The survey specifications are summarised in the following table:

Area Name	Del Santo	Bear	Pass	Total
Area (km^2)	5.2	5.0	5	15.2
Line Spacing (m)	100	100.0	100	
Survey Line (km)	50.1	51.0	54.2	155.3
Tie Lines (km)	0	0.0	0	0
Total Line (km)	50.1	51.0	54.2	155.3
Flight Direction	E-W	N-S	N-S	
Dates Flown (1997)	March 23	March 19, 20	March 27,28	

Nominal EM/Mag sensor terrain clearance was 100 ft. (bird height above ground, i.e. helicopter is maintained 200 ft above ground). Nominal survey speed was 50 km/hr. Scan rates for data acquisition was 0.1 second for both magnetometer and electromagnetics and 1.0 second for GPS location and altimeter. This translates to a geophysical reading about every 3 metres along flight track.

Navigation was assisted by a GPS receiver and data acquisition system which reports GPS co-ordinates as WGS-84 latitude/longitude and directs the pilot over a pre-programmed survey grid. The x-y-z position of the aircraft, as reported by the GPS, is recorded along with terrain clearance, as reported by the laser altimeter, at one second intervals.

Calibration lines at the start, middle (if required) and end of every survey flight were flown outside of ground effects, i.e. above 800 ft, to record electromagnetic zero levels

A base station magnetometer was set up at Canadian Helicopters base in Smithers. The base station was used to monitor and record the diurnal magnetic variation. In the event of a magnetic storm the survey crew was forewarned and flying postponed until conditions improved.

The operator was responsible for ensuring the instrument was properly warmed up prior to departure. He also maintained a detailed flight log during the survey noting the times of the flight as well as any unusual geophysical or topographic feature.

On return of the aircrew to the base camp the survey data was transferred to a portable hard drive (PCMCIA) and downloaded on the data processing work station. The data quality was checked using the *Replay* software and then archived for final processing at the Geotech offices in Toronto.

4. AIRCRAFT AND EQUIPMENT

4.1 Aircraft

A Bell LongRanger L1 helicopter - registration C-GVII - owned and operated by Canadian Helicopters was used for the survey. Installation of the geophysical and ancillary equipment was carried out by Geotech at the Canadian Helicopters base in Smithers, B.C. The survey aircraft was flown at a nominal terrain clearance of 200 ft.

4.2 Electromagnetic System

The electromagnetic system was a Geotech Hummingbird 4-frequency system. Two vertical coaxial coil pairs were operated at 3212 Hz and 34000 Hz. Two horizontal coplanar coil pairs were operated at 436 Hz and 7002 Hz. The transmitter-receiver separation of the 3212 Hz coaxial and the 436 Hz coplanar was 4.96 metres. The transmitter-receiver separation of the 34000 Hz coaxial and 7002 coplanar was 4.5 metres. In-phase and quadrature signals were measured simultaneously for the 4 frequencies with a time constant of 0.1 seconds. The HEM bird was towed 100 ft below the helicopter.

4.3 VLF Receiver

A Herz VLF receiver was installed as part of the geophysical package. The antenna was mounted on a boom extended 2 meters in front of the helicopter skid. The receiver measured the horizontal field strength and the vertical quadrature component of two transmitting VLF frequencies, one in the direction of the survey line and a second perpendicular to the line. The units of measurement are percent for the horizontal field and percent for the quadrature component.

The station NLK, in Seattle, Washington state was used as the orthogonal transmitter and NAA in Bangor Maine as the transmitter in the line direction.

Several test flights were used to locate the position of the VLF sensor. A skid mount was not possible due to the noisy generator on the Long Ranger helicopter. The sensor was then mounted in a towed bird, 15 meters below the helicopter. Noise from the generator was reduced, however back and forth motion of the bird caused the measured signal to oscillate. At speeds above 60 km/hr, the oscillation was reduced.

The VLF data collected from the sensor on the tow cable was of poor quality. Therefore it was decided to mount the sensor on a PVC boom 2 meters ahead of the helicopter. On the ground and under low power conditions for the helicopter, the VLF signal was at an acceptable quality. However high power was required from the helicopter, to fly the high elevations for these claims. The helicopter generator produced high levels of noise in the VLF sensor reducing the quality of the data to poor.

4.4 Magnetometer

The survey employed a Scintrex CS-2 cesium vapour, optically pumped magnetometer sensor mounted in the EM bird. The sensitivity of each magnetometer is 0.001 nanoTesla at a 0.2 second sampling rate.

4.5 Ancillary Systems

Magnetometer Base Station

A Scintrex MP-2 proton precession magnetometer base station was set up at the base of operations to record diurnal variations of the earth's magnetic field. The clock of the base station was synchronised with GPS time in order to allow correlation with the airborne data. Digital recording resolution was 0.1 nT. The sample rate was 1 per second.

Laser Altimeter

An Advantage laser altimeter was used to record terrain clearance. The antenna was mounted above the bubble inside the helicopter cockpit. The recorded value of terrain clearance was adjusted to give helicopter height above ground. This was possible given the fixed tow cable length of 100 ft.

GPS Navigation System

The navigation system consisted of a Picodas PNAV navigation system comprising a PC based acquisition system, navigate© software, a deviation indicator in front of the aircraft pilot to direct the flight, a full screen display with controls in front of the operator, a Novatel GPS receiver card mounted in the PNAV data acquisition console, and a Novatel GPS antenna mounted on the helicopter tail assembly.

Survey co-ordinates are set-up prior to survey and the information is fed into the airborne navigation system. The co-ordinate system employed in the survey design and digital recording is WGS-84

latitude and longitude. The GPS positional data is recorded at one second intervals and used with the base station data to calculate differentially corrected locations.

In steep topography conditions, satellites can be lost from direct view by the GPS antenna. In some cases the pilot would not have directional information for periods as long as 10 seconds. When GPS signals again became available the pilot would have to shift back to the correct position on the terrain. This resulted in helicopter tracks wondering 50 to 100 meters off line. Given the steep topography, it was not possible to correct this situation using GPS navigation.

Digital Acquisition System

A Geotech Hummingbird data acquisition system recorded the digital survey data on an internal hard disk drive. Data is displayed on an LCD screen as traces to allow the operator to monitor the integrity of the system. Contents and update rates were as follows:

Data Type	Sampling	Resolution
Magnetometer	0.1sec	0.001nT
HEM	0.1sec	0.1ppm
VLF	1.0 sec	
Position	1.0sec	0.1m
Laser Altimeter	1.0 sec	1 ft
GPSClockTime	0.1sec	
SystemClockTime	0.1sec	

5. PERSONNEL

The following Geotech personnel were involved in the project

Field

Party Chief: John Lobach
Operator: Klaus Motschka

Office

Data Processing: Neil Fiset
Reporting and Interpretation: Neil Fiset

The survey pilot, Darryll Adzich, was employed directly by the helicopter operator - Canadian Helicopters.

6. DELIVERABLES

The survey is described in a report which is provided in two copies. Folded paper copies of the black line maps and colour maps are bound with the report. The maps were produced at a scale of 1:10,000.

Plates 1, 2, 3 and 5 show minimal topographic features from a 1:20,000 National Topographic Series (NTS) map. The basic coordinate/projection system used is Universal Transverse Mercator. For reference the NAD27 latitude and longitude are also noted on the maps. All the maps show the flight path trace with time reference fiducials marked at an appropriate interval.

The following table describes the map products accompanying the report:

	Plate Description
1	3212 Hz Coaxial HEM anomalies w/GPS flight path
2	3212 & 34000 Hz Coaxial In-Phase and Quadrature profiles
3	436 & 7002 Hz Coplanar In-Phase and Quadrature profiles
4	Total Magnetic Field Contours (colour version)
5	VLF Orthogonal and Line profiles

The corrected digital profile data is archived on CD-ROM in a flat file Geosoft XYZ format. In addition the profile and anomaly maps and blackline version of the contour maps are included, in DXF format. The Geosoft grid files used to generate the contour plots are also included. A description of the file formats is delivered with the digital data in a *readme.txt* file.

7. DATA PROCESSING AND PRESENTATION

7.1 Base Map

The skeletal base seen in Plate 1 is derived from scanning a 1:10,000 topographic sheet and then vectorizing the main hydrological features (rivers, lakes) using CAD overlay under AutoCAD. The map is then output as a DXF file and in turn made compatible with Geosoft by converting to a PLT format.

The basic geographic projection/co-ordinate system used to create all the maps is the Universal Transverse Mercator system (UTM).

7.2 Flight Path Map

The raw flight path, as WGS 84 latitude/longitude, is translated into the local UTM co-ordinate system, expressed as UTM eastings (x) and UTM northings (y). The local datum used in the conversion from WGS84 to UTM was North American Datum 1927 - Alberta & British Columbia. That local datum uses the Clark1866 ellipsoid with a centre shift of 7, -162, and -188 metres shift in the x, y, and z directions respectively.

The time reference fiducials are drawn on the map at appropriate intervals and can be used to reference the data listings to the plan map.

7.3 Electromagnetic Data

A two stage digital filtering process was used 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 filter used was a 0.5 sec non-linear filter.

The signal to noise ratio was further improved by the application of a low pass linear digital filter. This filter has zero phase shift which prevents any lag or peak displacement from occurring, and it

suppresses only variations with a wavelength less than about 2 seconds or 60 metres. This filter is a 2 sec linear filter.

Following the filtering process, a base level correction was made using EM zero levels determined during the high altitude calibration sequences. These are generally done at the beginning and end of flight. The correction applied is a linear function of time that ensures the corrected amplitude of the various in-phase and quadrature components is zero when no conductive or permeable source is present. The filtered and levelled data were used in the determination of apparent resistivity. Where necessary, manually picked zero-levels were picked during the intervening period between high level calibrations.

7.4 VLF Data

The areas where the VLF signals were saturated were manually removed from the database. A low pass filter was applied to smooth out the high frequency signal component which is not related to ground effect. The data was then plotted in offset profile form.

7.5 Magnetic Data

The aeromagnetic data were corrected for diurnal variations by adjustment using the base station data. No corrections for the regional reference field (IGRF) were needed or applied. The corrected profile data were interpolated on to a 25 m grid using a bicubic spline technique. The grid provided the basis for threading the presented contours. The minimum contour interval is 10 nT depending on the local magnetic activity.

7.6 EM Anomaly Selection and Analysis

The main purpose of EM anomaly selection is to identify possible near-vertical or dipping thin sheet bedrock conductors. If the source conductance is not large, such anomalies may not register on the apparent resistivity maps as a distinctive resistivity low.

The response type expected from a vertical thin sheet conductor is a positive anomaly in the coaxial EM channels with a coincident low in the coplanar channels of the same frequency.

A second very common type of EM anomaly is a negative in-phase response due to a near surface concentration of magnetite (or pyrrhotite). For a half space with a uniform weight percent magnetite (W_m) and an EM sensor clearance of 30 metres, the coaxial in-phase response (R) is approximately

$$R = -2.5 * W_m \text{ ppm.}$$

A half space of 1% by weight magnetite produces a coaxial in-phase response of -2.5 ppm (and a coplanar in-phase response of -10 ppm). This is independent of operating frequency. It is very sensitive to sensor height. Given that the volume magnetic susceptibility of pyrrhotite is about 1/4 that of magnetite, the equivalent relationship for pyrrhotite is

$$R = -0.6 * W_p \text{ ppm.}$$

In some cases a negative in-phase anomaly will be accompanied by a positive quadrature response which suggests a source which is both conductive and magnetic (or conductors and magnetic sources which are very close). In rare instances, the coaxial in-phase trace shows a small positive peak superimposed on larger negative responses in both coaxial and coplanar channels. Such anomalies are often of special exploration interest.

Anomaly Selection

EM anomalies were manually picked from the offset profiles. Each anomaly had to have a response in the 3212 Hz coaxial channel. The coaxial channel is more sensitive to vertical thin conductors typified by sulphide mineralisation. The anomalies were identified by a letter label and noted with the peak in-phase and quadrature amplitudes.

The conductance (or conductivity-thickness product) and depth are determined using a vertical thin sheet model as described in Ghosh (1972). The quality of the conductor is measured by its IP/Q ratio and conductance (siemens). Any coincident magnetic response was also noted.

A table of anomaly picks may be found in the appendix.

Occasional false anomalies in the 3212 Hz coaxial channels means special care is needed when picking EM anomalies. EM anomalies which show coaxial in-phase and quadrature responses of opposite polarity are also picked and given a special anomaly symbol on the maps. Low amplitude coaxial anomalies which may be real or false are picked if there is a coincident anomaly in the 7002 Hz coplanar channels. As long as this work is done carefully, the uncertainties resulting from these false anomalies can be minimised.

8. RESULTS

8.1 Del Santo Claim Block

There were no HEM anomalies encountered on the Del Santo claim block.

The magnetics map features a broad 700 metre wide circular anomaly centred at 651250E, 6059500N. It has a peak response of about 50 nT above background. An interesting Y-shaped linear structure lies at 6500500E,6058500N. Arms of the structure extend through the map area to the north and south. It has a peak amplitude of 200 nT.

The VLF data showed no coherent pattern over the block. The reasons for the poor quality VLF data is explained in section 4.3.

8.2 Bear Claim Block

Seven HEM anomalies in the 3212 Hz coaxial channel were identified on the Bear Claims. With the exception of the anomalies due to magnetic permeability effects, the anomalies are weak and poorly defined. Two anomalies, 102A and 103A, lie on adjacent lines and are likely caused by the same geological feature. The near zero inphase response and the lack of magnetic correlation suggest the source of the anomaly is a poor conductor, such as overburden. Two other positive HEM anomalies are weak and isolated and are probably also due to overburden.

There are three anomalies associated with magnetic highs which are marked by a strong negative inphase response (80 ppm in one case) and a flat quadrature response. The lack of quadrature response indicates the magnetic source is a non or poor electrical conductor. The 436 Hz coplanar channel is marked by severe high frequency noise in the southeast corner of the block which is a result of a high voltage power line crossing the area.

The magnetic survey yielded a prominant linear anomaly running from north to south just to the east of the centre of the block. It peaks at about 750 nT above background. The linear is marked by a fold like structure at 6046500N as well as dropouts in the magnetic response, such as at 6046200N, 6045100N, and 6045800N. The dropouts could be due to magnetite alteration in fault zones or may be just a relic of the gridding process as the anomaly runs parallel to the sampling direction. An interesting 200 nT isolated magnetic anomaly lies at 576300E,6045300N.

The VLF data showed no coherent pattern over the block. The reasons for the poor quality VLF data is explained in section 4.3.

8.3 Pass Claim Block

The HEM survey over the Pass claims yielded four isolated anomalies in the 3212 Hz coaxial channel. All four have negative inphase responses indicating a strong magnetic permeability effect. Three of the anomalies, 130A, 140A, and 170A, are directly coincident with magnetic anomalies and also have a slight positive quadrature response which suggests an element of electrical conductivity in the source. The other anomaly, 60A, lies adjacent to a magnetic high, yet still has a negative inphase anomaly. This may be due to remnant magnetisation in the source.

The magnetic results indicate a regional gradient with magnetic response decreasing to the north. Superimposed on this gradient are two large oval-shaped anomalies generally trending east-west. These latter anomalies have responses in the range of 400 to 700 nT. A small isolated circular anomaly of 100 nT at 574600E,6041700N may be of interest.

The VLF data showed no coherent pattern over the block.

9. CONCLUSIONS

A high resolution helicopter-borne geophysical survey has been completed over three claim blocks in the Smithers area of Northern British Columbia. Geophysical Sensors included a four frequency EM system and magnetometer. Combined areal coverage amounted to 15.2 km2. Total survey line coverage was 155.3 line kilometres. Results have been presented as colour and black line maps at a scale of 1:10,000.

No good and well-defined bedrock conductors, excepting magnetic sources, were mapped by this HEM survey. Several isolated weak anomalies were identified which have likely sources in the overburden. The magnetics shows the area is not geologically uniform at least as far as the distribution of magnetite is concerned. The magnetics may, therefore, be used to direct the next stages of exploration to targets which are not conductive and were not detected by the EM survey. It remains for the weak EM anomalies to be examined in conjunction with the other geoscientific data collected during the preliminary and follow-up prospecting activity.

Respectfully submitted,

Neil Fiset, B.Sc.
Consulting Geophysicist
for
Geotech Ltd.

April 25, 1997

APPENDIX A

EM ANOMALY LISTINGS

Bear Claim Block

Line UTM E	UTM N	Label	3312 Hz Inphase (ppm)	3312 Hz Quad (ppm)	Conductance (S)	Depth (m)	Magnetic Correlation (nT)
Line 101 578011.4	6047032.3	A	-20.0	0.0	0	*	300.0
Line 102 577910.7	6045819.2	A	0.0	3.0	0.1	*	0.0
Line 103 577827.0	6045780.2	A	0.0	5.0	0.1	*	0.0
Line 106 577569.8	6044692.6	A	6.0	4.0	3	12	0.0
Line 109 577200.7	6046983.0	A	-11.0	0.0	0	*	500.0
Line 153 576415.3	6045083.4	A	7.0	6.0	2	5	0.0
Line 154 576300.4	6045340.0	A	-82.0	0.0	0	*	400.0

Pass Claim Block

Line UTM E	UTM N	Label	3312 Hz Inphase (ppm)	3312 Hz Quad (ppm)	Conductance (S)	Depth (m)	Magnetic Correlation (nT)
Line 60							
573846.7	6041393.9	A	-12.0	0.0	0	*	0
Line 130							
574585.0	6039991.6	A	-4.0	1.0	0	*	100
Line 140							
574629.8	6040870.2	A	-6.0	1.0	0	*	200
Line 170							
574998.4	6040081.1	A	-18.0	1.0	0	*	200

APPENDIX B

REFERENCES

Ghosh, M.K., 1972. Interpretation of Airborne EM Measurements Based on Thin Sheet Models; Ph.D. Thesis, University of Toronto.

FIGURES

Figure 1: Location Map

Appendices

Appendix A: EM Anomaly Listings

Appendix B: References

MAPS

The results of the survey are presented in a series of black line and colour maps at a scale of 1:10,000. The HEM anomaly maps contains skeletal topographic features derived from local 1:20,000 scale and 1:50,000 topographic maps.

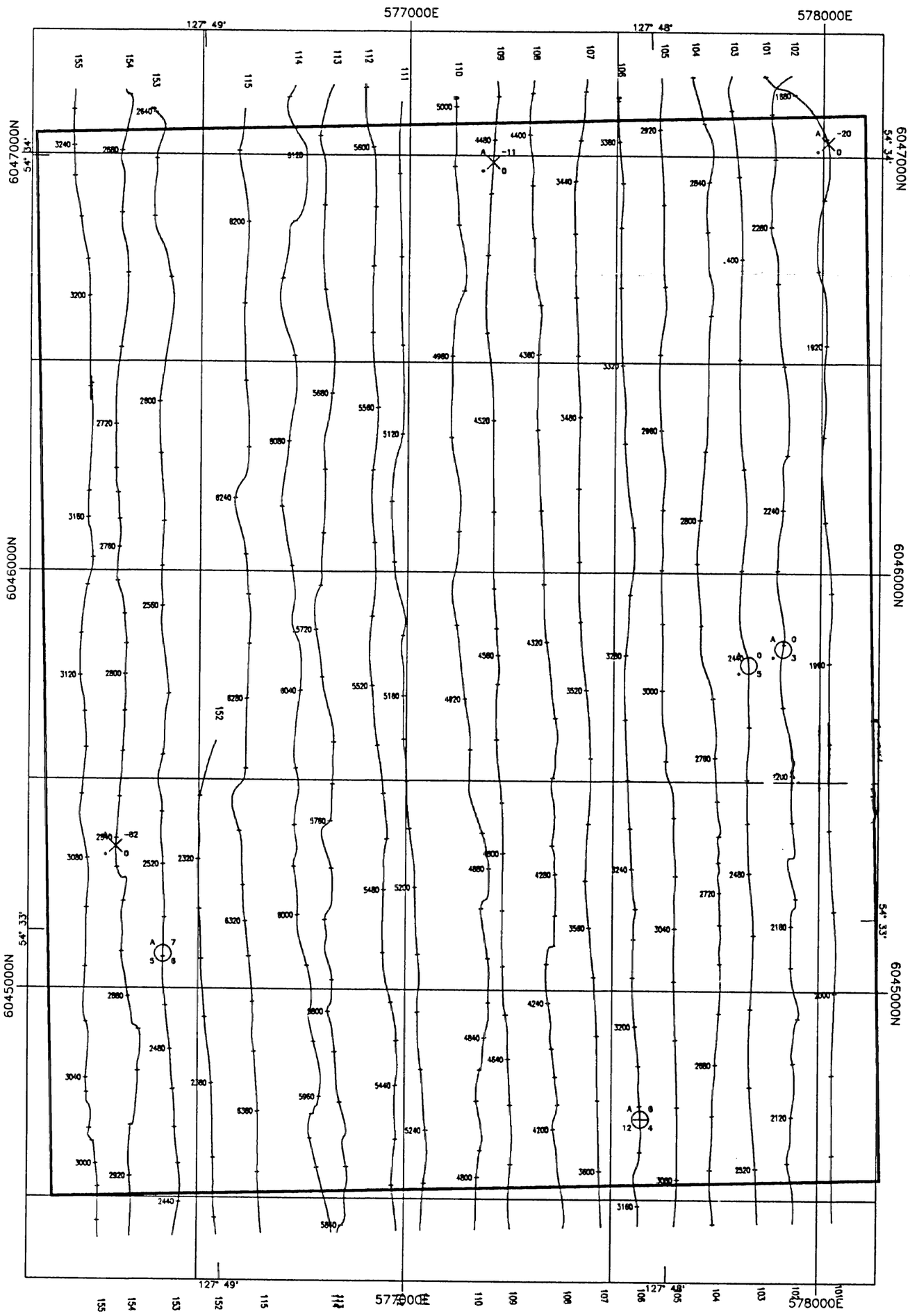
Map products are as follows:

- × Plate 1. 3212 Hz Coaxial HEM anomalies w/ GPS flight path.
- × Plate 2. 3212 & 34000 Hz Coaxial In-Phase and Quadrature profiles.
- × Plate 3. 436 & 7002 Hz Coplanar In-Phase and Quadrature profiles.
- × Plate 4. Total Magnetic Field Contours (colour version).
- × Plate 5. VLF Orthogonal and Line profiles.

All the maps show the flight path and HEM anomaly centres. Colour contour maps show colour fill plus superimposed line contours.

DIGITAL DATA on CD-ROM

A CD-ROM was prepared to accompany the report. It contains a digital flat file of the profile data in ASCII format in addition to the maps in DXF and Geosoft format. A *readme.txt* file may be found on the CD-ROM which describes the contents in more detail.



Grid North
UTM Zone 9

Anomaly Symbols:

Conductance >32 S ....
Conductance 16-32 S ...
Conductance 8-16 S ...
Conductance 2-8 S ...
Conductance 0-2 S ....
Negative Inphase ....

Anomaly Letter — In-Phase (ppm)
Depth (m) — Quadrature (ppm)

Notes:
Flight path derived from GPS.

Survey Specifications:
Aircraft: LongRanger - L1
EM System: Geotech Hummingbird 4 Frequency
Magnetometer: Cesium Vapour CS-2
Mag Sensitivity: 0.001 nT
Nominal Sample Interval: 3 metres (0.1 sec)
Terrain Clearance: 33 metres (100 ft)
Flight Line Spacing: 100 metres
Flight Line Direction: North-South

scale 1:10,000

100 0 100 200 300 400 500 600
(meters)

Telkwa Gold Corporation
British Columbia

ELECTROMAGNETIC ANOMALIES
COAXIAL - 3212 HZ
Bear Claims

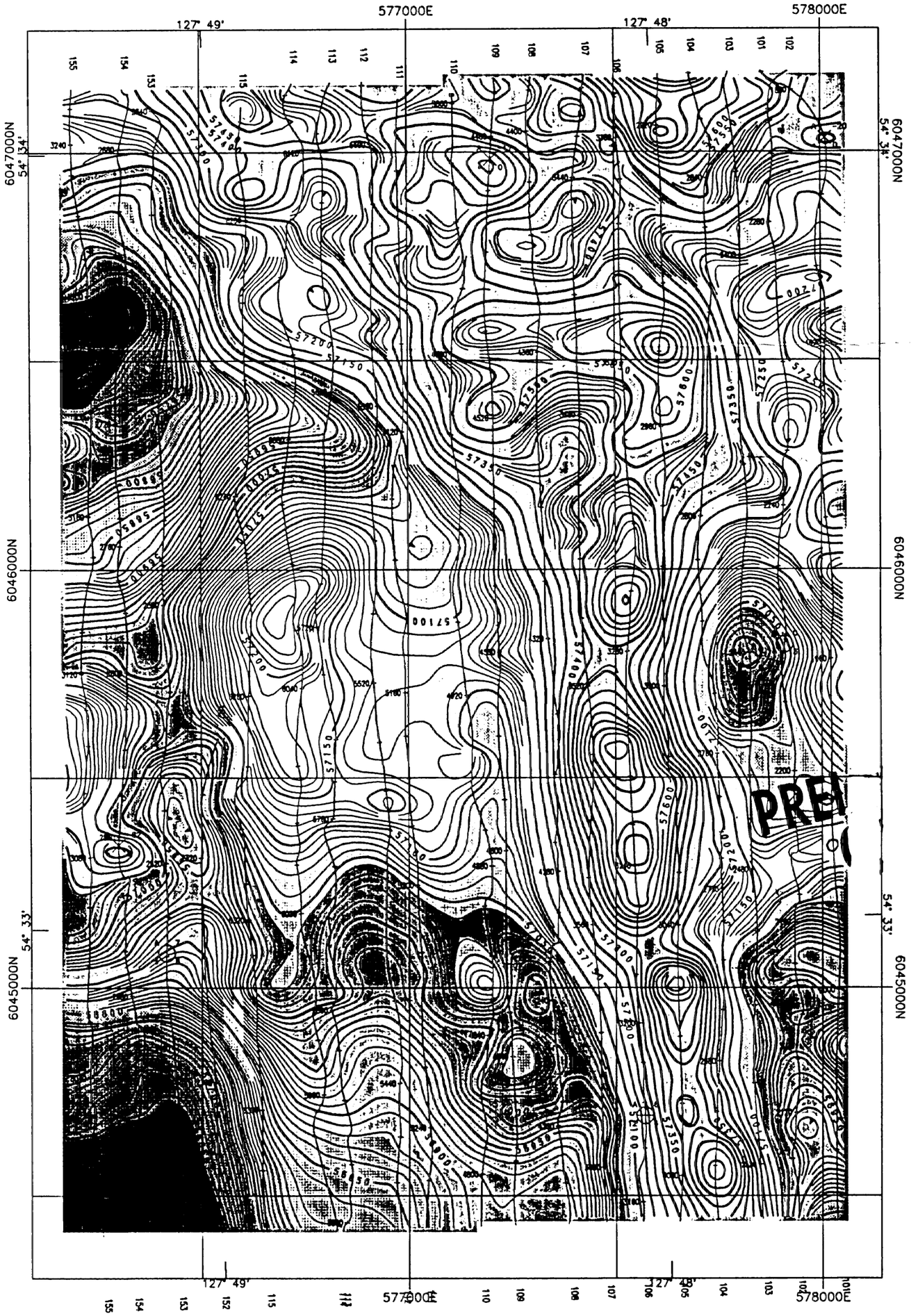
NTS 93L/12

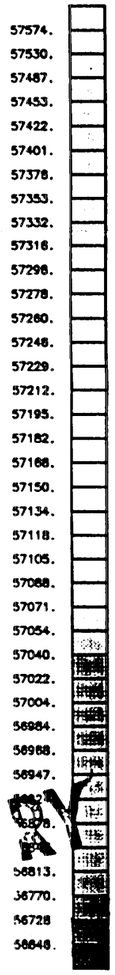
Flown and processed by

Geotech Ltd.
12-30 West Beaver Creek Road
Richmond Hill, Ont., L4B 3K1
March, 1997

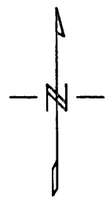
Ref. 1975

Plate 1





Magnetic Level
nT



Grid North
UTM Zone 9

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

25,134

Notes:
Flight path derived from GPS.
Data levelled using base station.

Survey Specifications:
Aircraft: LongRanger – L1
EM System: Geotech Hummingbird 4 Frequency
Magnetometer: Cesium Vapour CS-2
Mag Sensitivity: 0.001 nT
Nominal Sample Interval: 3 metres (0.1 sec)
Terrain Clearance: 33 metres (100 ft)
Flight Line Spacing: 100 metres
Flight Line Direction: North-South

Contour interval: 10, 50 & 250 nT

scale 1:10,000

100 0 100 200 300 400 500 600
(meters)

Telkwa Gold Corporation
British Columbia

TOTAL FIELD MAGNETICS
Bear Claims

NTS 93L/12

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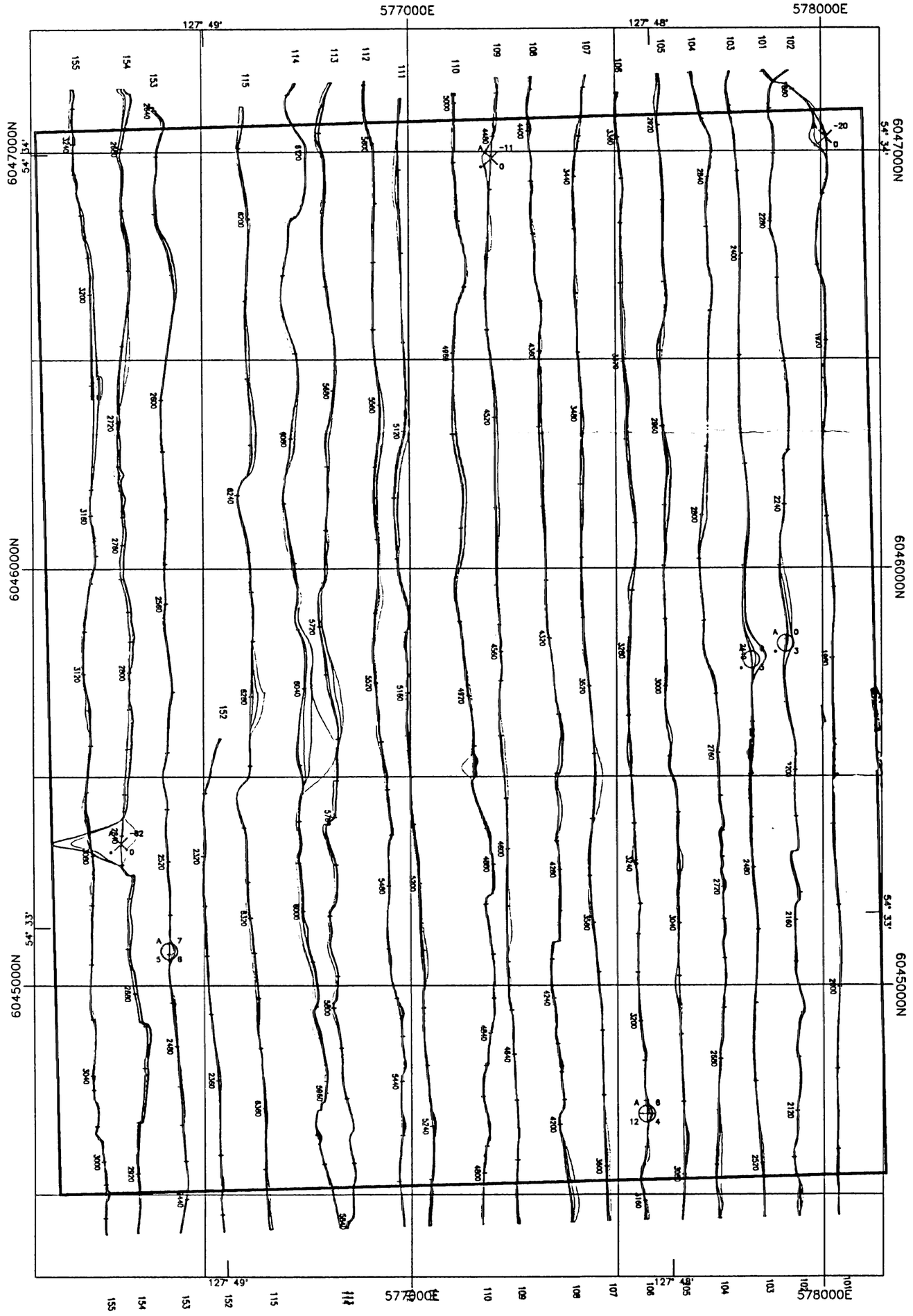
Richmond Hill, Ont., L4B 3K1
March, 1997

Plate 2

Ref. 7975



Grid North
UTM Zone 9

1 cm = 25 ppm, positive to the right.

- 3212 Hz Vertical Coaxial In-Phase
- 3212 Hz Vertical Coaxial Quadrature
- 34000 Hz Vertical Coaxial In-Phase
- 34000 Hz Vertical Coaxial Quadrature

Notes:
Flight path derived from GPS.

Survey Specifications:
Aircraft: LongRanger - L1
EM System: Geotech Hummingbird 4 Frequency
Magnetometer: Cesium Vapour CS-2
Mag Sensitivity: 0.001 nT
Nominal Sample Interval: 3 metres (0.1 sec)
Terrain Clearance: 33 metres (100 ft)
Flight Line Spacing: 100 metres
Flight Line Direction: North-South

scale 1:10,000

100 0 100 200 300 400 500 600
(meters)

Telkwa Gold Corporation
British Columbia

ELECTROMAGNETIC PROFILES COAXIAL - 3212 & 34000 HZ Bear Claims

NTS 93L/12

Flown and processed by

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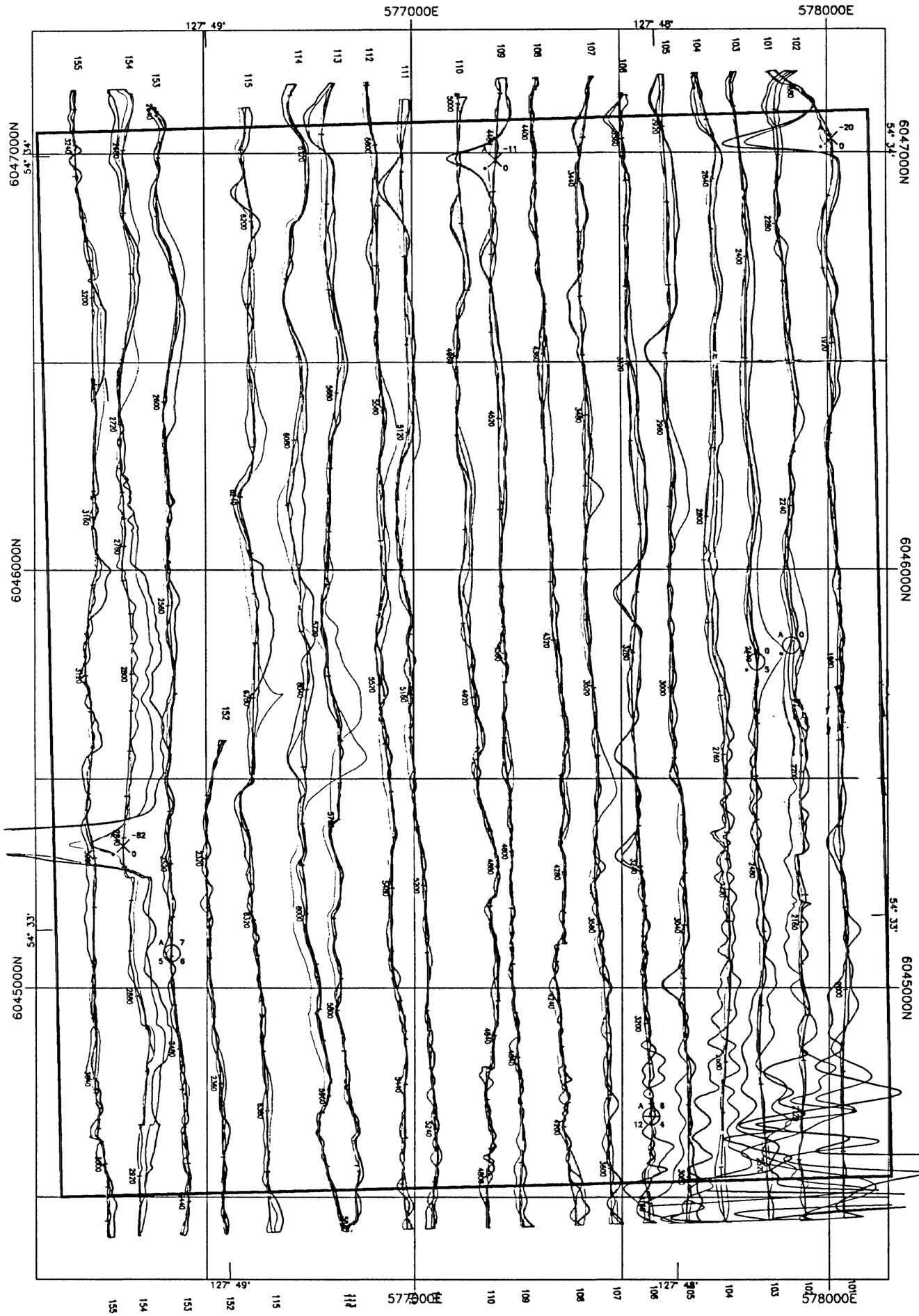
Richmond Hill, Ont., L4B 3K1
March, 1997

Plate 3

Ref. T975



Grid North
UTM Zone 9

1 cm = 50 ppm, positive to the right.

- 436 Hz Horizontal Coplanar In-Phase
- 436 Hz Horizontal Coplanar Quadrature
- 7002 Hz Horizontal Coplanar In-Phase
- 7002 Hz Horizontal Coplanar Quadrature

Flight path derived from GPS.

Survey Specifications:
- Aircraft: LongRanger - L1
- EM System: Geotech Hummingbird 4 Frequency
- Magnetometer: Cesium Vapour CS-2
- Mag Sensitivity: 0.001 nT
- Nominal Sample Interval: 3 metres (0.1 sec)
- Terrain Clearance: 33 metres (100 ft)
- Flight Line Spacing: 100 metres
- Flight Line Direction: North-South

scale 1:10,000

100 0 100 200 300 400 500 600
(meters)

Telkwa Gold Corporation
British Columbia

ELECTROMAGNETIC PROFILES COPLANAR - 436 & 7002 HZ Bear Claims

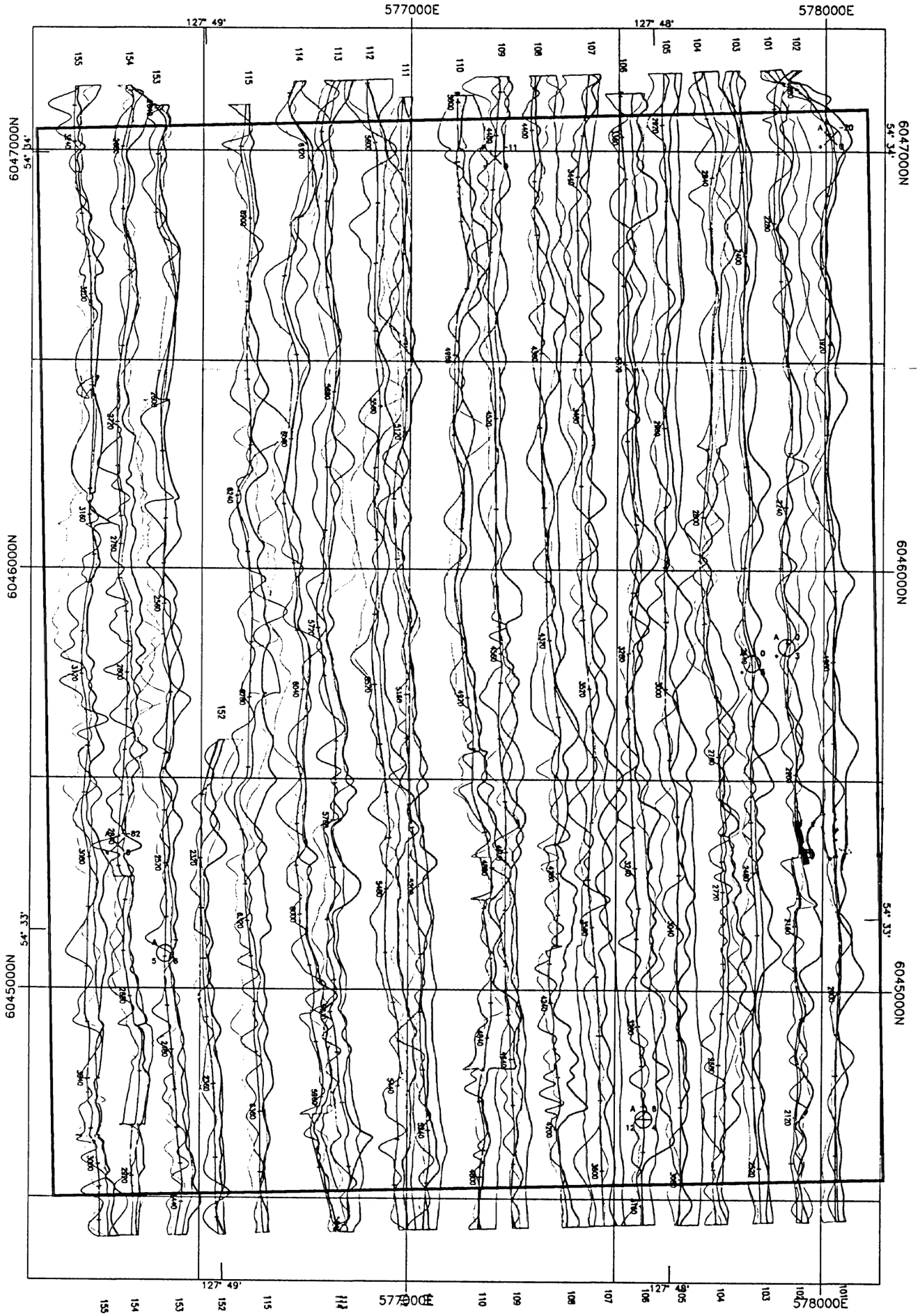
NTS 93L/12

Flown and processed by

Geotech Ltd.
12-30 West Beaver Creek Road
Richmond Hill, Ont., L4B 3K1
March, 1997

Ref. T975

Plate 4



Grid North
UTM Zone 9

positive to the right.

——— Total Field Line Direction, 1cm=300
——— Quadrature Line Direction, 1cm=50%
——— Total Field Orthogonal Direction, 1cm=300
——— Quadrature Orthogonal Direction, 1cm=50%

Notes:
Flight path derived from GPS.

Survey Specifications:
Aircraft: LongRanger - L1
EM System: Geotech Hummingbird 4 Frequency
Magnetometer: Cesium Vapour CS-2
Mag Sensitivity: 0.001 nT
Nominal Sample Interval: 3 metres (0.1 sec)
Terrain Clearance: 33 metres (100 ft)
Flight Line Spacing: 100 metres
Flight Line Direction: North-South

scale 1:10,000

100 0 100 200 300 400 500 600
(meters)

Telkwa Gold Corporation
British Columbia

VLF PROFILES
LINE & ORTHOGONAL
Bear Claims

NTS 93L/12

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March, 1997

Ref. T975

Plate 5