REPORT ON THE
AIRBORNE GEOPHYSICAL SURVEY
GULLROCK PROPERTY,
RED LAKE, ONTARIO

PREPARED FOR
CROSSROADS EXPLORATIONS INC.

JANUARY, 2004

J. G. CLARK P.GEO.
TABLE OF CONTENTS

PAGE

Introduction and Terms of Reference ................................................................. 1
Property Description and Location ................................................................. 1
Claims ............................................................................................................. 1
Accessibility ................................................................................................. 3
Property History ......................................................................................... 3
Regional Geology ....................................................................................... 4
Property Geology ....................................................................................... 4
Mineralization ............................................................................................. 6
Exploration ................................................................................................. 7
Interpretation and Conclusions ................................................................. 7
Recommendations ..................................................................................... 8
References ................................................................................................. 8

LIST OF TABLES

Table 1: Property Holdings ........................................................................ 1

LIST OF FIGURES

Figure 1: Claim Map ................................................................................. 2
Figure 2: Gullrock Property Compilation Map ....................................... 5

LIST OF APPENDICES

Appendix I: Terraquest Technical Report
INTRODUCTION

Clark Expl. Consulting was retained by Crossroads Explorations Inc. ("Crossroads") in December 2003 to execute an airborne magnetic survey on the Gullrock Property.

PROPERTY DESCRIPTION AND LOCATION

Crossroads has an option agreement on the Gullrock property in the District of Kenora, Red Lake Mining Division in what is termed the Red Lake Mining Camp.

The Gullrock Property is located in Willans and Ranger Townships (Figure 1, 2) 16 km southeast of Balmertown along the Cochenour-Red Lake-Gullrock Deformation zone. The 6-claim property (Table 1) is centred at Longitude 93.6° W, Latitude 51.0° N.

CLAIMS

The claims are held in good standing in the Red Lake Mining Division (Figure 1).

TABLE 1 PROPERTY HOLDINGS
Crossroads Explorations Inc. Gullrock Property

<table>
<thead>
<tr>
<th>Claim #</th>
<th>Township</th>
<th>Date Staked</th>
<th>Expiry Date</th>
<th>Unit size</th>
<th>Work Req'd</th>
</tr>
</thead>
<tbody>
<tr>
<td>1234275</td>
<td>Ranger</td>
<td>Jan 28/02</td>
<td>Jan 28/04</td>
<td>12</td>
<td>$4800</td>
</tr>
<tr>
<td>1234276</td>
<td>Williams</td>
<td>Jan 28/02</td>
<td>Jan 28/04</td>
<td>12</td>
<td>$4800</td>
</tr>
<tr>
<td>1247982</td>
<td>Ranger</td>
<td>Jan 28/02</td>
<td>Jan 28/04</td>
<td>15</td>
<td>$6000</td>
</tr>
<tr>
<td>1248291</td>
<td>Williams</td>
<td>Jan 14/02</td>
<td>Jan 14/04</td>
<td>4</td>
<td>$1600</td>
</tr>
<tr>
<td>1248292</td>
<td>Williams</td>
<td>Jan 14/02</td>
<td>Jan 14/04</td>
<td>12</td>
<td>$4800</td>
</tr>
<tr>
<td>1249501</td>
<td>Ranger</td>
<td>Jan 16/02</td>
<td>Jan 16/04</td>
<td>10</td>
<td>$4000</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>65</td>
<td>$26,000</td>
</tr>
</tbody>
</table>
ACCESSIBILITY

The Gullrock property can be accessed by boat from the boat ramp beside Highway #105 at the south end of Gullrock Lake. Alternatively, a network of logging roads extends from the highway to the east end of the property. A truck can access the centre of claim 1248292. Recent logging in the winter of 2003 has extended the road west beyond the small lake northwest of Willans Lake as shown on Figure 2. This road requires only minor improvements to be passable with a 4-wheel drive truck.

Property History

Assessment records at the Ontario Mines and Northern Development indicate that the first recorded exploration was the drilling of three holes, Wl-1 to Wl-3 (Figure 2) on the east shore of Gullrock Lake in 1947. The holes intersected volcanic rocks, locally containing pyrite, pyrrhotite and chalcopyrite. Silicification is reported at the bottom of Hole W1-3.

Two later holes, (W2-1, W2-2) drilled on the east side of Gullrock Lake, intersected volcanic rocks and greywacke. No gold values are reported in the logs.

Gullrock Mining Corporation, in 1965, carried out a ground magnetometer and electromagnetic survey that covered most of claim 1234276. No anomalies were found during this survey on the Crossroads claims.

In September 1978, the Ontario Department of Mines released an airborne EM and Magnetic Survey over the Red Lake area, including Willans and Ranger Townships. In 1979 a new preliminary geological map was released.

In 1979, Dome Exploration (Canada) Ltd carried out electromagnetic and magnetometer surveys over the southeastern part of the current property. Four holes, (W17 series), as shown in Figure 2, were drilled to test conductors with coincident magnetic anomalies. The holes intersected sequences of volcanic rocks and cherty sedimentary rocks with local concentrations of barren iron sulphides. No economically significant mineralization is reported.
Hemlo Gold Mines Ltd. carried out geological mapping, soil geochemistry, and magnetic surveys over the northeastern half of the property in 1993. There is a weak linear arsenic anomaly as shown on Figure 2. No other work was carried out although an Induced Polarization Survey was recommended.

In 1997, Lucero Resource Corporation carried out magnetometer, VLF-EM, and limited IP surveys over the eastern half of the property. Of interest is the Quantec IP survey that indicated two anomalous zones as shown on Figure 2. Dome Exploration (Canada) Ltd. tested the smaller zone in 1979 (W17-135E-4) but there is no record that the larger zone has been tested. The IP anomaly extends to the west onto the adjoining claim believed to be owned by Ansil Resources where a Mobile Metal Ion (MMI) soil survey indicates a small gold-silver anomaly (Troup, 2001).

REGIONAL GEOLOGY

The Red Lake greenstone belt is located in the western part of the Uchi subprovince, a typical Archean granite-greenstone terrain containing east-trending belts of basic to felsic volcanic rocks, sedimentary rocks and synvolcanic intrusives. The volcanic complex comprises mainly mafic flows with minor amounts of intermediate to felsic volcanic rocks with interbedded chemical and clastic units. The greenstone belt is bounded on all sides by granitoid batholithic masses. The Red Lake belt has been dated at 2.99 to 2.9 Ga while the Birch-Uchi belt adjoining to the east has been dated at 2.75 to 2.73 Ga.

PROPERTY GEOLOGY

Outcrop is scarce on the northern part of the Gullrock property. The claims are underlain by a sequence of east to east-southeast trending massive to foliated mafic flows as mapped by Pirie, 1981. The mafic volcanics are up to 2 km thick and represent the majority of the rocks exposed on the claim group. Mafic pillow flows; massive flows and volcanoclastics are typical of the volcanic rocks and are classified by Roach, (1997), as magnesium-rich tholeiitic basalts and andesites. These volcanic rocks are tentatively correlated with the Balmer basalts. Chemical and clastic metasedimentary rocks have been intersected in drill holes but outcrop is scarce. They consist of minor silicate, oxide and sulphide iron formation, greywacke, and mafic volcanoclastics varying in thickness from less than 1.0 m to 150 m, interbedded with the mafic volcanics. These rocks may correlate with the Huston or Bruce
Channel assemblages. Felsic volcanic rocks exposed immediately south of the property boundary are correlated with the Confederation assemblage.

The Trout Lake Batholith consisting of quartz monzonite is exposed on the north part of the property. Numerous smaller bodies mapped on the property may represent apophyses.

Hydrothermal alteration consisting of silicification, soda depletion, and amphibole alteration has been noted around Orie Lake.

The major structure crossing the property is the Cochenour-Gullrock deformation zone that extends for at least 23 km in an east-southeast to southeast direction and dips to the south between 60° and 85°. It is a complex structure that includes the known Red Lake gold mines and is marked by strongly sheared to foliated hydrothermally altered metavolcanics, bounded by the quartz monzonite on the north part of the claim group. Some geologists believe that contact thermal metamorphism, shear deformation, and intense hydrothermal alteration associated with the gold mineralization, are coeval and linked to batholith emplacement (Andrews, 1986).

There are numerous northwest to northeast trending lineament and faults on the property. These structures have been interpreted using the airborne magnetics and lithological offsets. Of note are northeast structures along the east shore of Gullrock Lake and another between Orie and Willans Lake. Minor parasitic folds have been noted in both the metasedimentary and volcanic rocks.

MINERALIZATION

No economic mineralization has been discovered to date on the Gullrock property.

Previous drilling on the Gullrock property, as discussed above under History, has intersected predominately barren iron sulphides. A quartz vein south of claim 1249501, off the Gullrock property, contains pyrite, pyrrhotite, chalcopyrite, sphalerite and galena. No significant gold values have been reported from this occurrence.
EXPLORATION

Terraquest Ltd., on behalf of Crossroads, flew a fixed wing, 306 line-km airborne magnetic survey in December 2003 (Appendix I). The lines were spaced 50 m apart and the mean terrain clearance was 50m. The magnetic high appears to represent a fold nose plunging to the east. The IP anomaly and associated gold soil anomaly previously described appear to occur within this fold nose.

At the southeast end of the property, a series of small northeast trending isolated magnetic highs correspond with previously defined ground electromagnetic conductors that were drill tested and found to be caused by barren iron sulphides. Three northwest breaks are interpreted from the magnetics. They occur at the east and west ends of the property and through the centre of claim 1247982. There is also a possible northeast break associated with the northwest break at the east end of the property.

Crossroads has also committed to a humus geochemical sampling program to be completed as soon as conditions allow at an estimated cost, including assaying, of $55,000.

INTERPRETATION AND CONCLUSIONS

The Cochenour-Gullrock deformation zone extends across the Gullrock property. The Cochenour, Campbell Red Lake, and Red Lake Mines are all located along this deformation zone and on the limb of an F1 fold refolded by F2 folds. This structural preparation has maximized dilation in the F2 hinge area. Dubé, (2003), has indicated that in the Red Lake Mine, the Houston conglomerate marks a regional unconformity between it and the Balmer basalt. He notes that several of the Red Lake mines occur within or adjacent to a regional unconformity between the Balmer, Ball and Bruce Channel, and the younger Confederation assemblages. This represents a prime exploration target since over 90% of the gold found to date is adjacent to the unconformity. A similar relationship between major gold deposits and an unconformity is well established in Timmins where the Temiskaming conglomerate hosts or directly overlies the gold ore.

The Cochenour-Gullrock deformation zone and a possible regional unconformity occur on the Gullrock property and are considered to have potential for hosting gold mineralization. The intersections of the cross structures with the deformation zone are considered to be primary targets for potential gold mineralization and further exploration is warranted.
RECOMMENDATIONS

The Gullrock property is an early stage exploration property and a ground geochemical survey is recommended. A follow-up IP survey is recommended over areas of interest as defined by the airborne magnetic survey, the intersection of northwest and northeast trending lineaments with the deformation zone and any anomalies defined by the geochemical survey.

REFERENCES


Troup, W. R., 2001: Assessment file report on behalf of Ansil Resources Ltd., Willans Township


OPERATIONS REPORT

TRI-SENSOR
HIGH SENSITIVITY MAGNETIC

GULLROCK PROJECT

BALMERTOWN

ONTARIO

for

CLARK EXPLORATION LTD.

by

TERRAQUEST LTD.

December 29, 2003
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>INTRODUCTION</td>
<td>2</td>
</tr>
<tr>
<td>2.0</td>
<td>SURVEY AREA</td>
<td>2</td>
</tr>
<tr>
<td>3.0</td>
<td>EQUIPMENT SPECIFICATIONS</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>AIRCRAFT</td>
<td>4</td>
</tr>
<tr>
<td>32.</td>
<td>AIRBORNE GEOPHYSICAL EQUIPMENT</td>
<td>4</td>
</tr>
<tr>
<td>33.</td>
<td>BASE STATION</td>
<td>7</td>
</tr>
<tr>
<td>4.0</td>
<td>SURVEY SPECIFICATIONS</td>
<td></td>
</tr>
<tr>
<td>41.</td>
<td>LINES AND DATA</td>
<td>7</td>
</tr>
<tr>
<td>42.</td>
<td>TOLERANCES</td>
<td>7</td>
</tr>
<tr>
<td>43.</td>
<td>NAVIGATION AND RECOVERY</td>
<td>8</td>
</tr>
<tr>
<td>44.</td>
<td>OPERATIONAL LOGISTICS</td>
<td>8</td>
</tr>
<tr>
<td>5.0</td>
<td>DATA PROCESSING</td>
<td>8</td>
</tr>
<tr>
<td>6.0</td>
<td>SUMMARY</td>
<td>9</td>
</tr>
</tbody>
</table>

**APPENDIX I**  Personnel  
**APPENDIX II**  Certificate of Qualification  

**MAPS**  map scale 1:10,000  
1) Total magnetic field, black and white contours  
2) Gradient magnetics; measured horizontal gradient plotted as vectors along flight path, and calculated vertical gradient plotted as black and white contours
1.0 INTRODUCTION

This report describes the specification and parameters of an airborne geophysical survey carried out for CLARK EXPLORATION LTD., 1000 Alloy Drive, Thunder Bay, ON, P7B 6A5, attention Mr. Garry Clark, telephone 807-622-3284, fax 807-622-4156, email gjclark@tbaytel.net. The survey was performed by Terraquest Ltd., 1366 Boulder Creek Crs., Mississauga, Ontario, Canada L5J 4P5, telephone 905-403-0026, fax 905-403-0065 and email info@terraquest.ca.

The purpose of the survey of this type is to collect geophysical data that can be used to prospect directly for anomalous magnetic and conductive areas in the earth's crust which may be caused by or related to economic minerals. Secondly, the geophysical patterns may be used indirectly for exploration by mapping the geology in detail, including the faults, shear zones, folding, alteration zones and other structures.

To obtain this data, the area was systematically traversed by an aircraft, carrying geophysical equipment along parallel flight lines spaced at even intervals and oriented so as to intersect the geology and structure in a way as to provide optimum contour patterns of the geophysical data.

2.0 SURVEY AREA

This survey area is in northern western Ontario, at the northern edge of Gullrock Lake, approximately 10 kilometres southeast of Balmerton. The survey block is irregular in shape and covers 6 claims. The maximum north south dimension measures 2.8 kilometres and 6.9 kilometres east west. The centre of the survey is 51 degrees 0 minutes 36.84 minutes north and 93 degrees 32 minutes 12.04 seconds west. The survey coordinates in the NAD83 datum Zone 15 as measured from a map which was supplied by the client are as follows:

0  GULLROCK AREA FILE B128L.N02
1  Z 15
2  458650.0  5652300.0  AREA CORNER 1
2  464100.0  5652300.0  AREA CORNER 2
2  464100.0  5651100.0  AREA CORNER 3
2  465450.0  5651100.0  AREA CORNER 4
2  465450.0  5649900.0  AREA CORNER 5
2  464100.0  5649900.0  AREA CORNER 6
2  464100.0  5649500.0  AREA CORNER 7
2  462350.0  5649500.0  AREA CORNER 8
2  462350.0  5650900.0  AREA CORNER 9
2  458650.0  5650900.0  AREA CORNER 10
3  458650.0  5652300.0  NW WAYPOINTS 1
4  137  NUMBER OF LINES
5  50.0  SPACING, m.
6  458650.0  5649000.0  MASTER LINE BL
7  458650.0  5652800.0  MASTER LINE TL
8  75  MAX CROSS TRACK, m.
9  0  0  0  DELTA X/Y/Z
10  1  LOG FPR EVERY 1 SECS
11  0.9996000000  0.0  0.0 KO, X/Y SHIFT
14  200  LINES EXTENDED BEYOND AREA
16  10  FIRST LINE NUMBER
17  458650.0  5652300.0  0.00 MASTER POINT, HEADING
20  WGS-84  6378137.0  298.257223563 22  ELLIPSOID
21  0  NO EQUATORIAL CROSSING
30  20  9600  N 1 8  RS-232 PORT 2 INCOMING FORMAT
31  16  9600  O 1 8  RS-232 PORT 1 OUTGOING FORMAT
GULLROCK PROPERTY

Lines+Tie: 269+17 = 306km

Dec 11/03 NAD83 TERRAQUEST LTD.
3.0 EQUIPMENT SPECIFICATIONS

3.1 AIRCRAFT

The survey was carried using a single engine Cessna 206U aircraft registration C-GGLS, which carries three high sensitivity magnetometers. It is equipped with long range tanks, outboard tanks (total 8 hours range), tundra tires, cargo door and full avionics.

The aircraft has been extensively modified to support a tail stinger and two wing tip extensions. The transverse separation between the wing tip sensors is 13.5 metres and the longitudinal separation to the tail sensor is 7.2 metres. Considerable effort has been made to remove all ferruginous materials near the sensors and to ensure that the aircraft electrical system does not create any interference or noise. The figure of merit using Geological Survey of Canada standards is approximately 9 nT uncompensated and approximately 0.8 to 1.2 nT compensated depending on the latitude and geological environment.

The aircraft is owned and operated by Terraquest Ltd. under full Canadian Ministry of Transport approval and certification for specialty flying including airborne geophysical surveys. The aircraft is maintained at base operations by a regulatory AMO facility, Leggat Aviation Inc.

3.2 AIRBORNE GEOPHYSICAL EQUIPMENT

The primary airborne geophysical equipment includes three high sensitivity cesium vapour magnetometers. Ancillary support equipment includes a tri-axial fluxgate magnetometer, video camera, video recorder, radar altimeter, barometric altimeter, GPS receiver, GPS receiver with a real-time correction service, and a navigation system. The navigation system comprises a left/right-up/down indicator for the pilot and a screen showing the survey area, planned flight lines, and the real time flight path. All data were collected and stored by the data acquisition system. The following provides detailed equipment specifications:

Cesium Vapour Magnetometer Sensor (mounted in tail stinger and wing tip extensions)
- Model: CS-2
- Manufacturer: Scintrex
- Resolution: 0.001 nT counting at 0.1 per second
- Sensitivity: +/- 0.005 nT
- Dynamic Range: 15,000 to 100,000 nT
- Fourth Difference: 0.02 nT

Tri-Axial Fluxgate Magnetic Sensor (for compensation, mounted in midpart of tail stinger)
- Model: MAG-03MC
- Manufacturer: Hartington Instruments Ltd.
- Input: 24-34 VDC, >30 milliamps
- Field Range: +/- 100,000 nanotesla
- Internal noise: at 1Hz to 1 kHz: 0.6 nT rms.
- Bandwidth: 0 to 1 kHz maximally flat, -12 dB/octave roll off beyond 1 kHz
- Freq. Response: 1 to 100 Hz: +/-0.5%, 100 to 500 Hz: +/-1.5%, 0.5 to 1 kHz: +/-5.0%
- Calibration. Accuracy: +/-0.5%
- Orthogonality: +/-0.5% worst case
- Package alignment: +/-0.5% over full temperature range
- Scaling Error: absolute: +/-0.5%, between axes: +/-0.5%

VLF-EM System: uses 3 orthogonal coils mounted in tube projected forward from the midpoint of the port wing, coupled with a rack mounted receiver-console to measure the total field strength and quadrature components of the VLF field using the transmitter in Maine NAA frequency 24 kHz.
- Model: TOTEM 2A
- Manufacturer: Hertz Industries
Accuracy 1%
Sampling Interval 0.5 seconds

Video Camera (mounted in belly of aircraft)
Model VDC-2982 (colour)
Manufacturer Sanyo
Serial Number 698000-30
Specifications ¼”, 470hr, 1.3LX, 12 VDC, C/CS, EI/ES, backlite compensation
Lens Rainbow 2/3”, 4.7 mm, F1.8-360, auto iris

Video Recorder
Model Camcorder model VL-239
Manufacturer Sharp
Media 8mm cassette
Serial Number 610516300

Radar Altimeter
Model KRA-10A
Manufacturer King
Serial Number 071-1114-00
Accuracy 5% up to 2,500 feet
Calibrate accuracy 1%
Output Analog for pilot, converted to digital for data acquisition

Barometric Altimeter
Model LX18001AN
Manufacturer Sensym
Source coupled to aircraft barometric system

Navigation Interface (console mounted in rack with remote displays for pilot)
Model PNAV 2001
Manufacturer Picodas Group Inc.
Data input real time processing of GPS output data
Pilot readout left/right and up/down pilot indicator
Operator readout screen modes: map, survey and line
Data recording all data recorded in real time by PDAS 1000

Real-Time GPS Correction (connects to Novatel GPS receiver see below)
Model Landstar Mark III
Manufacturer Racal
Antenna post type
Operating temperature 0-50 °C
Broadcast Services Service Satellite Link: American Satellite Corp. (AMSC)
L band broadcast (1525 to 1559 MHz satellite band
Data update 2 seconds, Data latency 5-6 seconds
Cold acquisition 12 seconds
Reacquisition 7 seconds

Power supplies:
1) PC6B converter to convert 13.75 volt aircraft power to 27.5 volts DC.
2) Power distribution unit located in the instrument rack, manufactured by Picodas Group Inc., interfaces with the aircraft power and provides filtered and continuous power at 13.75 and 27.5 VDC to components.
3) The 1000A console manufactured by Picodas Group Inc. contains three 32 VDC switching power supply for the cesium vapour magnetometer sensors; console also
provides switching power for fluxgate magnetometer (real time magnetic compensation), radar altimeter, barometric altimeter, and ancillary equipment.

Data Acquisition System (mounted in rack)
Model PDAS 1000
Manufacturer Picodas Group Inc.
Operating System MSDOS
Microprocessor 80486dx-66 CPU
Coprocessor Intel 80486dx
Memory on board 8 MB, page interleaving, shadow RAM for BIOS, EMS 4.0
Clock real time, hardware implementation of MC14618 in the integrated peripheral controller
I/O slots 5 AT and 3 PC compatible slots
Display electroluminescent 640 x 400 pixels
Graphic display scrolling analog chart with 5 windows operator selectable, freeze display capability to hold image for inspection
Recording media standard hard drive with extra shock mounts, standard floppy drive and quarter inch tape backup (QIC format)
Sampling selectable sampling for each input type: 1.0, 0.5, 0.25, 0.2, 0.1 seconds
Inputs 12 differential analog input with 16 bit resolution
Serial ports 2 RS-232C (expandable)
Parallel ports 10 definable 8 bit I/O, 2 definable 8 bit outputs

The PDAS 1000 contains several boards as described below:

Magnetometer Board (three boards, one for each magnetometer sensor)
Model PCB
Manufacturer Picodas Group Inc.
Input range 20,000 - 100,000 nT
Sampling 1,000 per second
Bandwidth selectable 0.7, 1.0 or 2.0 Hz
Resolution 0.0001 nT
Microprocessor TMS 9995
Firmware 8 Kbit EPROM board resident
Internal crystal 18,432 kHz
Crystal accuracy absolute <0.01%
Host interfacing 8 kByte dual port memory
Address selection within 20 bit addressing in 8 kByte software selectable steps
Input signal TTL, CMOS, open collectible compatible or sine wave with decoupler
Input impedance TTL>1 kOhm

Magnetic compensation for aircraft and heading effects is done in real time. Raw magnetic values are also stored and thus compensation with different variable can be performed at a later date.

GPS Differential Receiver Board
Model GPS card 3951 R
Manufacturer Novatel
Antenna Model 511, low profile
Channels 12
Position update 0.2 second for navigation
Accuracy position with SA implement 100 metres, with no SA 10 metres, velocity 0.1 knot time recovery 1pps, 100 nsec pulse width
Data recording all raw GPS and positional data logged by PDAS1000

Analog Processor Board
Model PCB
3.3 BASE STATION EQUIPMENT

High sensitivity magnetic base station data was provided by a cesium vapour magnetometer logging onto a notebook and with time synchronization from the GPS base station receiver.

The magnetometer is the same as used in the aircraft, a CS-2 magnetometer manufactured by Scintrex. The processor is also the same as used in the aircraft but is housed in a portable box model MEP-710, manufactured by Picodas Group Inc. The logging software is written by Picodas Group Inc., BASEMAG version 5.02 for an IBM compatible PC (notebook) with RS232 input. It supports real time graphics, automatic startup, compressed data storage, selectable start/stop times, plotting of data to screen or printer at user-selected scales, and fourth-digital difference and diurnal quality flags which are set by user in BASEPLOT. Time recorded is taken from the base GPS receiver.

The GPS base station data are provided by a GPS receiver, with logging onto a notebook.

- **Model**: MX 4200D
- **Manufacturer**: Magnavox
- **Serial number**: 5057
- **Type**: continuous tracking, L1 frequency, C/A ode (SPS), 6-channel independent
- **Receiver sensitivity**: -143 dBm Costas threshold
- **Logging rate**: 1 per second

4.0 SURVEY SPECIFICATIONS

4.1 LINES AND DATA

- **Survey lines**: 289 km
- **Tie lines**: 17 km
- **Total**: 306 km
- **Survey Line Interval**: 50 metres
- **Tie Line Interval**: 1 kilometres
- **Survey Line Direction**: 00 degrees
- **Tie Line Direction**: 090 degrees
- **Terrain Clearance**: 50 metres (mean terrain clearance)
- **Average Ground Speed**: 60 metres/second
- **Magnetic Sample Interval**: 6 metres
- **VLF-EM Interval**: 30 metres

4.2 TOLERANCES

**Line Spacing**: Reflights will take place if the final differentially corrected flight path deviates from the intended flight path by +/-25 metres over a distance greater than 1 kilometre.

**Terrain Clearance**: The aircraft terrain clearance was smoothly maintained at 60 metres MTC in a drape mode. Reflights will take place if the final differentially corrected altitude deviates from the flight altitude by +/-35% over a distance of one kilometre or more.

**Diurnal Magnetic Variation**: The airborne survey will be confined to periods in which the diurnal activity is 2 nT or less over a chord of 30 seconds in length.
GPS Data: GPS data shall include at least four satellites for accurate navigation and flight path recovery. There shall be no significant gaps in any of the digital data including GPS and magnetic data.

4.3 NAVIGATION AND RECOVERY

The satellite navigation system was used to ferry to the survey sites and to survey along each line. The survey coordinates of each area outline was supplied by the client and was used to establish the survey boundaries and the flight lines. The NAD83 ellipsoid was used with x-y-z delta shifts of 0, 0 and 0 respectively. The UTM zone is 15.

The flight path guidance accuracy is variable depending upon the number and condition (health) of the satellites employed. The selective availability normally imposed by the military was at a minimum during this period and consequently the accuracy was for the most part better than 10 metres. Real-time correction using the Racal (receiver and broadcast services) improves the accuracy to about 3 metres or less.

A video camera recorded the ground image along the flight path. A video display screen in the cockpit enabled the operator to monitor the flight path during the survey.

4.4 OPERATIONAL LOGISTICS

The base of operations was in Sioux Lookout, Ontario. The base station (combined high sensitivity magnetic and GPS) was set up at the airport on December 17, 2003, well away from cultural interference.

The survey was flown successfully in 4 flights GLS517-520 from December 19th to 20th. Prior to survey operations were curtailed significantly by high wind, snow and poor visibility.

5.0 DATA PROCESSING

The data were transmitted via an FTP site to Terraquest Ltd. where it was reviewed thoroughly for quality control and tolerances on all channels. This included any corrections to the flight path, making flight path plots, importing the base station data, creating a database on a flight by flight basis, and posting the data. All data were checked for continuity and integrity. Any errors or omission or data beyond tolerances were flagged for relight and the crew was notified by return FTP transmission, ready for their flight in the morning.

The final processing, performed by CGI Controlled Geophysics Inc. in Thornhill, Ontario involved tie line leveling in the standard manner by tying the survey lines to the tie lines using GEOSOFT software. The total field was gridded and microlevelled in the Fourier domain (generally less than 1 nT corrections) to reduce any linear noise along the flight path without degrading the geologic signal. The vertical magnetic gradient was calculated from the final processed total magnetic field gridded data. The final levelled datasets were gridded and were contoured.

The measured horizontal gradient was obtained as follows. a) The raw transverse gradient is the value from the left sensor minus the value from the right sensor divided by their separation. b) The raw longitudinal gradient is the difference between the tail sensor and the average of the left and right sensors, and divided by the longitudinal separation. c) The raw gradients are then DC shifted to account for line heading effects and differences in the sensors. d) The gradients are then rotated from aircraft centric components to true geographic components; these are the final North and East gradients, which are listed in the database.

The final processed database and gridded data are archived in a CD-ROM disk.
6.0 SUMMARY

An airborne tri-sensor high sensitivity magnetic survey was performed at 50 metre mean terrain clearance, 50 metre line intervals, 1000 metre tie line interval, and data sample points at 6 metres along the flight lines. A high sensitivity magnetic and a GPS base station located in Sioux Lookout, Ontario recorded the diurnal magnetic activity and reference GPS data during the survey for adherence to survey tolerances.

The data were subjected to final processing to produce digital files: a) total magnetic field, b) calculated vertical magnetic gradient c) measured longitudinal and transverse magnetic gradients. All data have been archived on a CD-ROM.

Respectfully Submitted.
TERRAQUEST LTD.

Charles Q. Barrie, M.Sc.
APPENDIX I

PERSONNEL

Field: Pilot Operators
Todd Whitley
Philip Briggs

Office: Chief Geophysicist Manager
Chris Vaughan (CGI)
Charles Barrie

APPENDIX II

CERTIFICATE OF QUALIFICATION

I, Charles Barrie, certify that I:

1) am registered as a Fellow with the Geological Association of Canada and work professionally as a geologist,
2) hold an Honours degree in Geology from McMaster University, Canada, obtained in 1977,
3) hold an M.Sc. in Geology from Dalhousie University, Canada, obtained in 1980,
4) am a member of the Prospectors and Developers Association of Canada,
5) am a member of the Canadian Institute of Mining, Metallurgy and Petroleum,
6) have worked as a geologist for over twenty five years,
7) am employed by and am an owner of Terraquest Ltd., specializing in high sensitivity airborne geophysical surveys, and
8) have prepared this operations and specifications report pertaining to airborne data collected by Terraquest Ltd..

Mississauga, Ontario, Canada

Signed

Charles Q. Barrie, M.Sc.
Vice President, Terraquest Ltd.
APPENDIX III

Daily Log:

16/12/03 TUESDAY KAPUSKASING
Todd takes plane only as far as Hearst due to weather (low vis).
Phil drives to Sioux Lookout.

17/12/03 WEDNESDAY SIOUX LOOKOUT
Phil set up base station
Todd is grounded in Hearst.

18/12/03 THURSDAY SIOUX LOOKOUT
Todd is grounded in Hearst for morning
Todd flies plane to Thunder Bay in the afternoon and is grounded there due to weather
(low ceilings, snow, etc.)

19/12/03 FRIDAY SIOUX LOOKOUT
Flew flight Gls517 ties 5010 5040 and lines 10 to 50 1 hr grid time.
Flew flight Gls 518 lines 60 to 490 after fueling in Red lake 2.5 hrs grid time.

20/12/03 SATURDAY SIOUX LOOKOUT
Flew flight Gls519 lines 500 to 1010 grid time 3 hrs
Flew flight Gls520 lines 1020 to 1360 grid time 2.5 hrs
Send data to ftp site.
## Work Report Summary

**Transaction No:** W0420.00044  
**Recording Date:** 2004-JAN-12  
**Approval Date:** 2004-JAN-16  
**Client(s):** ENGLISH, PERRY VERN  
**Survey Type(s):** AMAG

### Work Report Details:

<table>
<thead>
<tr>
<th>Claim#</th>
<th>Perform</th>
<th>Perform Approve</th>
<th>Applied</th>
<th>Applied Approve</th>
<th>Assign</th>
<th>Assign Approve</th>
<th>Reserve</th>
<th>Reserve Approve</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>KRL 1234275</td>
<td>$6,848</td>
<td>$6,848</td>
<td>$4,800</td>
<td>$4,800</td>
<td>$0</td>
<td>0</td>
<td>$2,048</td>
<td>$2,048</td>
<td>2005-JAN-28</td>
</tr>
<tr>
<td>KRL 1234276</td>
<td>$6,848</td>
<td>$6,848</td>
<td>$4,800</td>
<td>$4,800</td>
<td>$0</td>
<td>0</td>
<td>$2,048</td>
<td>$2,048</td>
<td>2005-JAN-28</td>
</tr>
<tr>
<td>KRL 1247982</td>
<td>$8,560</td>
<td>$8,560</td>
<td>$6,000</td>
<td>$6,000</td>
<td>$0</td>
<td>0</td>
<td>$2,560</td>
<td>$2,560</td>
<td>2005-JAN-28</td>
</tr>
<tr>
<td>KRL 1248291</td>
<td>$2,284</td>
<td>$2,284</td>
<td>$1,500</td>
<td>$1,500</td>
<td>$0</td>
<td>0</td>
<td>$884</td>
<td>$884</td>
<td>2005-JAN-14</td>
</tr>
<tr>
<td>KRL 1248292</td>
<td>$6,848</td>
<td>$6,848</td>
<td>$4,800</td>
<td>$4,800</td>
<td>$0</td>
<td>0</td>
<td>$2,048</td>
<td>$2,048</td>
<td>2005-JAN-14</td>
</tr>
<tr>
<td>KRL 1249501</td>
<td>$5,707</td>
<td>$5,707</td>
<td>$4,000</td>
<td>$4,000</td>
<td>$0</td>
<td>0</td>
<td>$1,707</td>
<td>$1,707</td>
<td>2005-JAN-16</td>
</tr>
</tbody>
</table>

**Total Remaining:** $11,095

Status of claim is based on information currently on record.
Dear Sir or Madam

Subject: Approval of Assessment Work

We have approved your Assessment Work Submission with the above noted Transaction Number(s). The attached Work Report Summary indicates the results of the approval.

At the discretion of the Ministry, the assessment work performed on the mining lands noted in this work report may be subject to inspection and/or investigation at any time.

If you have any question regarding this correspondence, please contact STEVEN BENETEAU by email at steve.beneteau@ndm.gov.on.ca or by phone at (705) 670-5855.

Yours Sincerely,

Ron C. Gashinski
Senior Manager, Mining Lands Section

Cc: Resident Geologist
   James Garnet Clark
   (Agent)

Assessment File Library
Perry Vern English
(Claim Holder)

Perry Vern English
(Assessment Office)
Magnetic IGFR at 51° 00'N, 93° 30'W and 400 n A.S.L. on December 20, 2003

Inclination: 76.7°
Declination: 0.68°
Intensity: 58865.00 nT

Scale 1:10000

CROSSROADS EXPLORATION INC.
GULLROCK PROJECT - BALTERTOWN, ON

Horizontal Magnetic Gradient Vectors and Vertical Magnetic Gradient Contours on a Scanned Topo Base

Data Acquisition by Terraquest Limited, Mississauga, Ontario, Canada

Map: B128TMIBW Image: Ciaimsmap HI Date: Dec. 30, 2003