Logistics Report Prepared

for

Unity Mining Limited

Volterra Geoimaging

on the

Gog Range Project

Sheffield, Tasmania, Australia
Latitude: 48°19'S /Longitude: 146°19'E

Survey conducted by SJ Geophysics Ltd.
November 2013

SJ GEOPHYSICS
ACQUISITION ▪ Science on Target

Report prepared by
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1. SURVEY SUMMARY

SJ Geophysics Ltd. was contracted by Unity Mining Limited to acquire geophysical data on their Gog Range property. The following table provides a brief summary of the project.

Client	Unity Mining Limited
Project Name	Gog Range
Location	443400E 5406700N; UTM GDA 94/MGA Zone 55G
Survey Type	Volterra-3D Induced Polarization
Total Line Kilometers	17.200 km
Production Dates	November 7th – November 16th, 2013
Objective	The Gog Range property is part of the Firetower prospect area. This prospect is known to host a zone of volcanoclastic alteration-hosted gold mineralization. The exploration program conducted on the property so far includes ground geology and a drilling program partially based on magnetometer data results. The Volterra-3DIP survey carried out on the property covered three of the holes drilled as part of this exploration program and in particular hole FWD-38 known to have returned good gold assay results. The purpose of the Volterra–3DIP survey was to associate a resistive and chargeable signature with the zone of interest and potentially find additional zones of interest within the survey area.

Table 1: Survey Summary

This logistics report summarizes the operational aspects and methodologies of the geophysical survey. This report does not discuss or interpret the survey results.

2. Location and Access

The Gog Range project is located in the Northern interior of Tasmania, Australia (see Figure 1).

Figure 1: Overview map of the Gog Range project located in Tasmania, Australia

The closest town to the survey area is Sheffield, which is approximately 20 km directly north of the Gog Range project. The project area can be accessed from Sheffield by the following directions (Figure 2):

- From the B14 in Sheffield turn right onto C136
- After driving south for 4.3 km turn left onto Paradise Rd

- Continue onto Union Bridge Rd for approximately 7.2km
- Grid access on the right.

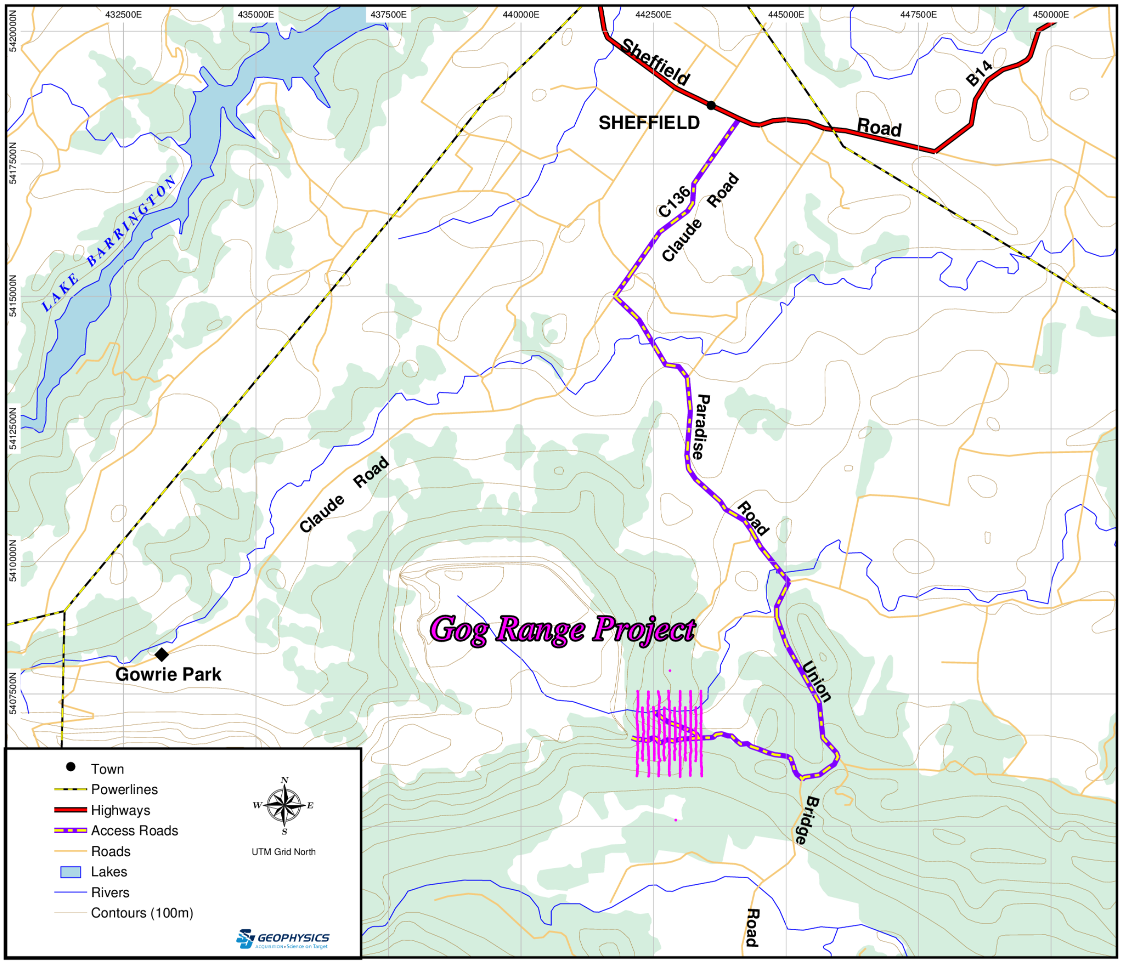

Figure 2: Location map for the Gog Range project showing towns and road access.

The Gog Range is predominated by a cool temperate rain forest containing thick vegetation and dense undergrowth. The tree species mostly consist of Tasmanian Blue Gum, Wattles, various Cycads, Myrtle Beeches, Sasafrass, and a few different species similar to pine. The undergrowth is characterized by several species of ferns as well as button grass in open areas. The high density scrub brush encountered on the lines consisted of a thick tea tree interwoven with Barra vines.

The fauna on the project was typical of Australia and, more specifically, to the island of Tasmania. Animals commonly seen were Wallabies, Brush-tail Possums, Rabbits, Echidnas, blue tongue lizards, and Bandicoots. These animals did not pose a risk to any equipment pre-placed or left on the ground overnight. Snakes were also common and consisted mostly of Tiger snakes and Copperheads. Both species are extremely poisonous and can be difficult to see amongst the brush.

3. Grid Information

The Gog Range grid consisted of 13 survey lines (6 receiver and 7 current lines), spaced 100 m apart with stations flagged and marked every 50 m (Table 2 and Figure 3). The transmitter and receiver lines were respectively 1600 m and 1000 m long with the transmitter lines extending 300 m past the receiver lines at each end in order to meet the survey objectives.

Grid	Gog Range
Number of Survey Lines	13
Survey Line Azimuth	0º
Line Spacing	100 m
Station Spacing	50 m
Elevation range	280 – 630 m

Table 2: Grid parameters

Line and station labels for the grid were based on the UTM coordinates, with the line labels being represented by the last four digits in the UTM easting and the station labels represented by the last four digits in the UTM northing. Please refer to Appendix A for a detailed breakdown of the survey lines.

All of the survey location information were recorded by the SJ Geophysics crew, including GPS control points and slope/clinometric data. Control points were recorded with Garmin GPSMAP 62s/60CSx GPS units in the UTM Zone 55 projection and GDA94/MGA datum. Slope data were recorded with a Suunto handheld clinometer.

The project grid, sitting atop Tasmania's Gog Range, approaches the base of Mt. Roland, a prominent conglomerate feature of the Fossey mountain trough.

Temperature on the Gog Range project ranged from around 5ºC at night up to 22 ºC during the day, making for excellent working conditions. Precipitation was, however, substantial at times as the area transitioned from spring into more predictable summer weather patterns, making ground conditions on grid quite damp.

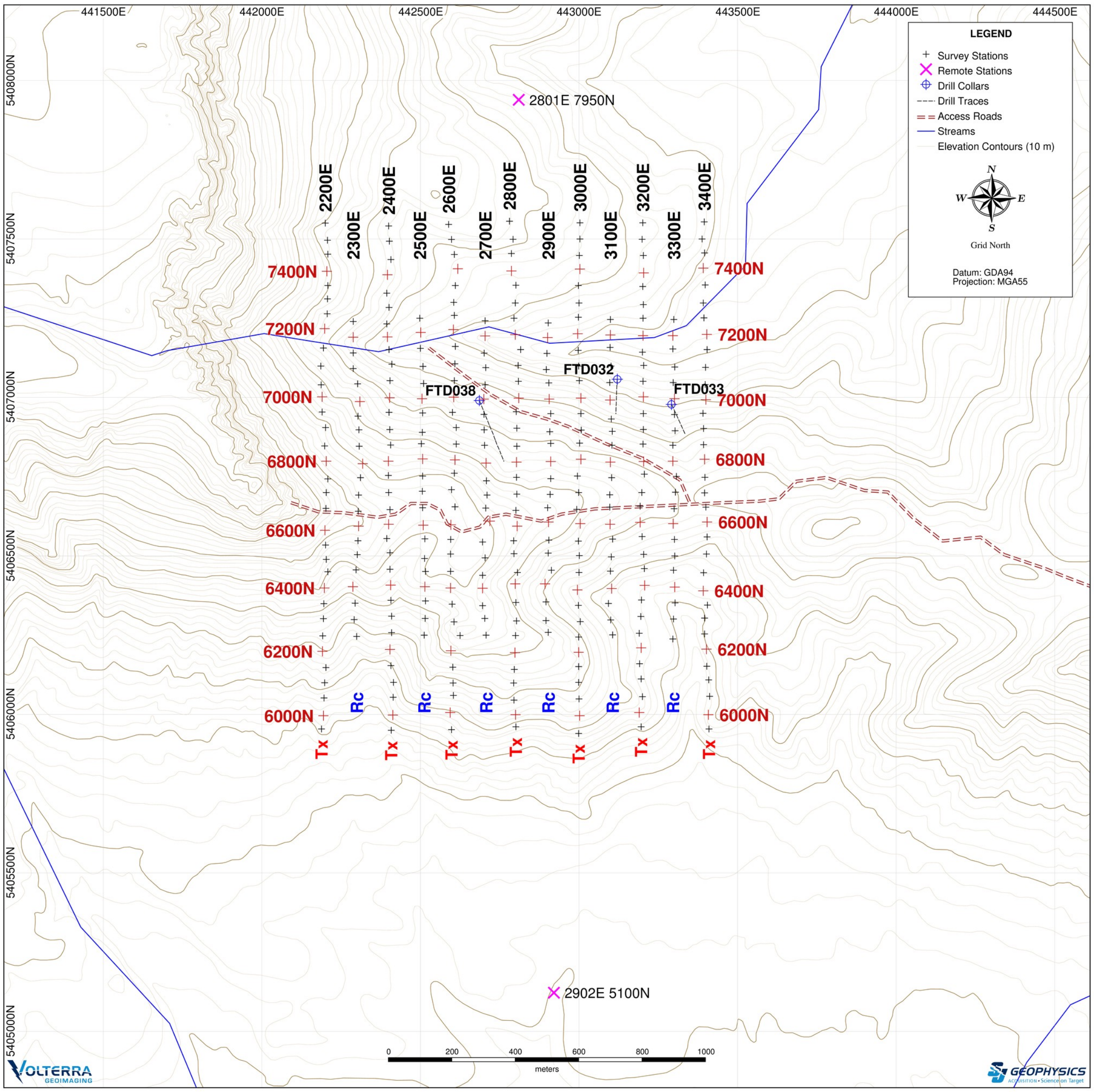

Figure 3: Grid Map showing the survey area for the Gog Range grid.

4. Field Work and Instrumentation

4.1. Survey Parameters and Instrumentation

The SJ Geophysics crew utilized their proprietary Volterra Geoimaging Distributed Acquisition System to collect 3DIP data for this survey. The current injection was controlled with a GDD Tx II transmitters and the resulting ground response was measured using a series of full-waveform, 24-bit, four-channel Dabtube (Digital Acquisition Board) units. The technical specifications of these instruments are listed in Appendix B and the equipment parameters and reading details are summarized in Table 3.

IP Transmitter	GDD TxII
Duty Cycle	50%
Waveform	Square
Cycle and Period	2 sec on / 2 sec off; 8 second
IP Signal Recording	Dabtube
IP Signal Processing	
Reading Length	Minimum 93 seconds
Vp Delay, Vp Integration	1200 ms, 600 ms
Mx Delay, # of Windows Width (Mx Intergration)	200 ms, 20 36, 39, 42, 45, 48, 52, 56, 60, 65, 70, 75, 81, 87, 94, 101, 109,118, 128, 140, 154 (200 ms – 1800 ms)
Properties Calculated	Vp, Mx, Sp, Apparent Resistivity and Chargeability

Table 3: Instruments parameters and reading details

One advantage of the Volterra-3DIP system is that the dipoles are not tied to a single large cable running back to a data processing unit. This makes field logistics easier, and furthermore, the number of dipoles that can be used with this system is highly flexible.

Another significant advantage of using this system is that it can be easily laid out to go around obstacles such as rivers, roads, cliffs, and private property. The SJ Geophysics field crew capitalized on these advantages of the Volterra-3DIP system to improve and streamline the logistics of the survey as much as possible.

An interlaced cluster array was used for the survey. Table 4 lists the survey parameter. The dipoles were set up along the receiver lines in cluster of four, interlaced dipoles of lengths ranging from 100 m to 150 m (Figure 4). The adjacent clusters were sharing a common electrode at either end. This cluster-interlaced approach takes advantage of the four available channels, improves data quality, and provides data redundancy in the event that data from one dipole is lost.

Array Type	3D Distributed Array
Array Configuration	Interlaced Cluster
Amount of Lines Per Swath	5
Number of Dipoles Per Line	20 In-line
Dipole Length	100 m to 150 m cluster-interlaced
Array Length	1000 m
Current Interval	50 m

Table 4: Table 4 Survey parameters.

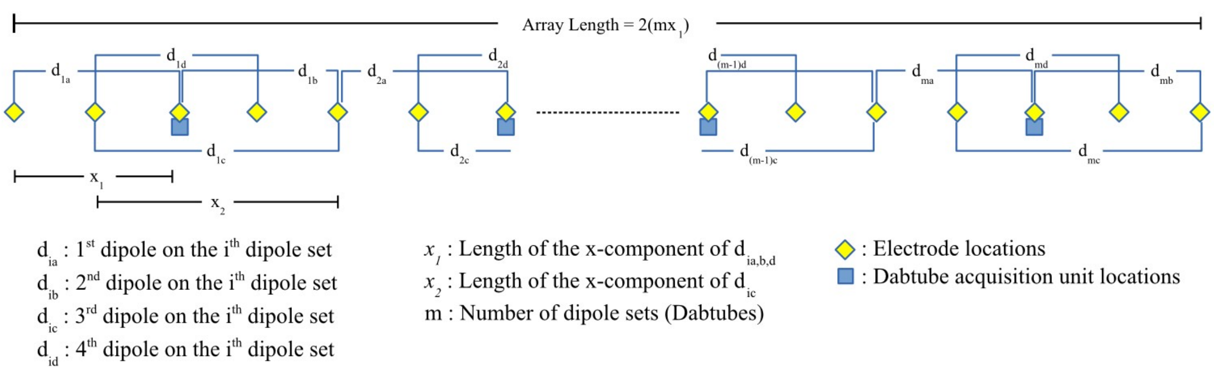

Figure 4: Schematic representation of the cluster interlaced array used on the Gog Range grid.

For the receiver dipoles, the electrodes consisted of stainless steel rods, ~50 cm long and 10 mm in diameter, which were hammered into the ground. At each current station (50 m intervals), current was injected using two to four long (~100 cm) stainless steel electrodes hammered into the ground. The remote current locations consisted of four 1 m stainless steel rods, 15 mm in diameter. Table 5 shows the UTM locations of the remote sites.

Name	Label	Easting GDA94/MGA Z55	Northing GDA94/MGA Z55
North Remote	2801E 7950N	442810	5407939
South Remote	2902E 5100N	442921	5405122

Table 5: Locations of 3DIP remote sites

Geographic locations were collected at current injection points, dipole electrodes, and IP remote stations.

GPS	Garmin GPSMAP 62s/60CSx
Average Accuracy	+/- 5 m declining in presence of thick tree cover
Projection / Datum	UTM GDA94/MGA Zone 55 G

Table 6: GPS instrument parameters

4.2. Field Logistics

The SJ Geophysics field crew consisted of two operators, with Unity Mining providing the additional staff necessary for the day-to-day operations of the survey. The Unity Mining crew members cycled in and out, taking days off throughout the project when necessary. Unity's Dave Evans and Phil Muir, the client contacts, also joined the crew and were essential in the completion of the survey. Table 6 lists the SJ Geophysics crew members on this project.

Crew Member Name	*Role*	*Dates on Site*
Mat Kootchin	Field Geophysicist	November 7th to November 16th
Ryan Halton	Field Technician	November 7th to November 16th

Table 7: Details of the SJ Geophysics crew on site

The SJ Geophysics crew's first day on site at the Gog Range was November 7th and they remained on site through November 16th. Mobilization to the project occurred between October 29th and November 6th and demobilization from the project site was on November 17th.

During the course of the geophysical survey, the SJ Geophysics crew conducted daily tailgate safety meetings which included a comprehensive review of safe work practices specific to our geophysical surveys and field operations. At the tailgate meetings, personnel discussed issues related to: changing weather conditions (including ramifications on the survey/personal safety), encounters with or sightings of potentially problematic wildlife, efficient organization of daily tasks, and any other work-related questions or concerns.

The SJ Geophysics crew was accommodated by the client in the town of Sheffield. A three-bedroom house at the Pioneer Holiday Apartments offered sufficient space and the necessary facilities for comfortable field operations (ie. laundry, dry-room, kitchen, etc..). An internet connection was not available on site and the crew made use of Telstra's cellular service for internet and communications with the office.

Transportation to and from grid was provided by Unity Mining Ltd.. A small rental truck with a tray-back and Unity Mining's Land Cruiser afforded the crew access to and within the grid, taking advantage of their 4x4 capabilities. While access on grid was generally fairly good, several of the roads were quite slick, rutted, and held water. With terrain and elevation changes being considerable across the grid, the crew took advantage of the available access and modified logistics accordingly. When possible, lines were surveyed 'downward' and crew members could be collected when finished. Not only did this improve working conditions and overall crew morale, it also played a large role in the survey's success and timely completion.

Survey of the Gog Range grid started on the east side, mostly due to ease of access and logistics, but also to ease the crew into their roles and the challenging terrain. A small central east-west track bisected most of the grid and a quad-bike was used to shuttle gear up and down this track. As the survey progressed westward, the track and quad allowed the crew to establish a second transmitter site much further up the hill which greatly improved deteriorating radio communications.

Grid lines had been put in by Rogers Line Cutting and were very well cut, allowing the crew to move about within the grid safely and effectively. They were, however, put in with GPS and not slope-chained which, because of the steep terrain, gave rise to several long stations exceeding 50 m. To overcome this, crew members simply carried extra wire to add 'extensions' when necessary. Overall, this wasn't too much of a hindrance to the survey's setup or forward production.

Exposed cliffs and deep eroded river ravines were some of the many challenges presented by the terrain. Steep grid lines passed up and over loose scree slopes, massive old growth forests with muddy rooted sections, and ground cover which was quite dense in places. Though the weather was, for the most part, cooperative, heavy rains in the area caused water levels in the Minnow River to rise dramatically. This river cut across the north end of all transmitter/receiver lines and made crossings and setup quite challenging. Deeply eroded river rocks were very slippery and at times the river was not passable.

Despite those challenging conditions, the survey went smoothly and completed in a timely manner.

5. *Quality Assurance*

5.1. Locations

Good quality survey location data is crucial to successful analysis and interpretation of the collected geophysical data.

The quality of the location data for this survey is fair to good. Although the grid was heavily vegetated and mountainous terrain reduced the availability of satellites, sufficient satellite coverage was available in most spots. However, in the steep ravines and near cliff faces, GPS multi-path effects degraded the collected signal. As a result, the positional accuracy of some of the GPS points is questionable. In these areas, the GPS points were removed and the clinometer measurements combined with an idealized ground distance and azimuth were used to interpolate locations.

5.2. IP Data

All geophysical data go through a series of quality assurance checks in the field and in the office to ensure data are of sufficiently good quality. Prior to field data acquisition, a contact resistivity test is performed using a small waveform generator attached in parallel to one Dabtube input. This is done for each dipole in the array, and allows the operator to identify potential breaks in the wires, damaged Dabtubes and areas of poor ground contact which could otherwise degrade input signal quality during data acquisition stages. Furthermore, this test allows the operator to inspect the raw data being recorded by the Dabtube to ensure that there are no problems with the acquisition unit and to ensure the receiver is synching to the appropriate GPS time.

During acquisition stages, a dedicated 'transmitter' Dabtube is used to monitor the current being injected at each station through the use of a current monitor. In doing so, the transmitter operator is able to inspect the quality of the input current and can easily identify when there may be current leakage problems or when a transmitter is not functioning properly. The 'transmitter' Dabtube is also used to obtain the GPS time when current is on.

Following field data collection, data are downloaded from each Dabtube receiver unit and clipped to the GPS time windows used during acquisition as recorded by the transmitter Dabtube. All processed data are inspected and any bad units or readings are flagged for removal. The data are then exported to an .xml format for importation into SJ Geophysics' proprietary QA/QC software package called JavIP.

Each evening, the analyzed data are imported into JavIP. This package integrates the location information with each reading, thus allowing the calculation of the apparent resistivity and apparent chargeability. The package's interactive quality control tools, plot of decay curves, table of calculated parameters and a dot plot (graphical display of data of the various parameters), provide the field geophysicist a method to verify each data point. After the field geophysicist removes known bad points from field observations and other obvious outliers, the database is delivered to SJ Geophysics in the head office for a second review. In this second review, the data are scrutinized to ensure erroneous data points are not passed along to the final stage of processing: the inversion.

The data collected on the Gog Range project were of excellent quality. The voltage potentials (Vp), for the most part, were strong and the signals and resulting decay curves were very clean. On the Gog Range project most of the data flagged for removal were due to non-coupling. This phenomena is typical in IP surveys and is related to the survey configuration. Non-coupling occurs when the receiver dipole is sub-parallel to the equipotential lines which can result in a significant decrease in signal strength and lead to untrustworthy data. Some poor quality data were flagged for removal, mostly due to dipoles being inadvertently disconnected (usually due to animal activity)

Currents generally decreased as injection locations progressed over the central east-west ridge. This area was notably drier and consisted of several cliffs and scree slopes having very little to no soil profile. Currents attained were sufficient however, and Vp's across the arrays were quite good. Because of the high signal strength and quality, very little of the data was deleted.

Figure 5 shows data from the West side of the grid where data was very clean. This is an accurate representation of all data obtained on the Gog Range project.

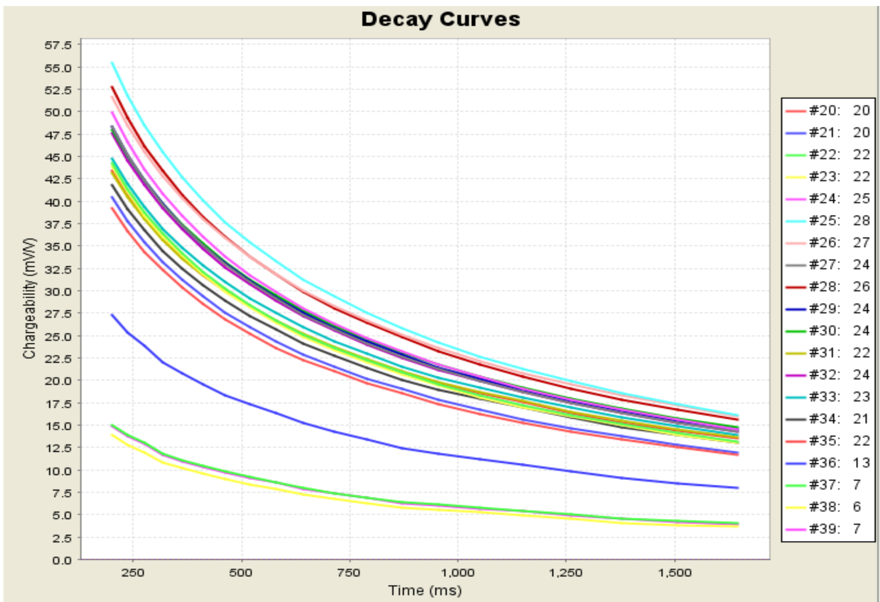

Figure 5: Example of clean decay curves

6. Geophysical Techniques

6.1. IP Method

The time domain IP technique energizes the ground by injecting square wave current pulses via a pair of current electrodes. During current injection, the apparent (bulk) resistivity of the ground is calculated from the measured primary voltage and the input current. Following current injection, a time decaying voltage is also measured at the receiver electrodes. This IP effect measures the amount of polarizable (or “chargeable”) particles in the subsurface rock.

Under ideal circumstances, high chargeability corresponds to disseminated metallic sulfides. Unfortunately, IP responses are rarely uniquely interpretable as other rock materials are also chargeable, such as some graphitic rocks, clays and some metamorphic rocks (e.g., serpentinite). Therefore, it is prudent from a geological perspective to incorporate other data sets to assist in interpretation.

IP and resistivity measurements are generally considered repeatable to within about five percent. However, changing field conditions, such as variable water content or electrode contact, reduce the overall repeatability. These measurements are influenced to a large degree by the rock materials near the surface or, more precisely, near the measurement electrodes. In the past, interpretation of a traditional IP pseudosection was often uncertain because strong responses located near the surface could mask a weaker one at depth. Geophysical inversion techniques help to overcome this uncertainty.

6.2. 3DIP Method

Three dimensional IP surveys have been designed to take advantage of recent advances in 3D inversion techniques. Unlike conventional 2DIP, the electrode arrays are not restricted to an in-line geometry. Ideally, a 3DIP survey would consist of a random assortment of current injections and receiver dipoles, also of randomized azimuths. Unfortunately, logistical considerations usually prohibit a completely randomized approach.

In the distributed 3DIP configuration, a receiver array is established along one survey line while current lines are located on two adjacent lines lying on either side of the receiver line. Current injections are performed sequentially at fixed increments (25, 50, 100 or 200 m) along the current lines. By injecting current at multiple locations along current lines adjacent to receiver arrays, data acquisition rates are significantly improved over conventional surveys. Meanwhile, geophysical data are collected along a receiver array which consists of dipoles usually laid out along even intervals dictated partly by the receiver cable.

The Volterra-3DIP system provides much more flexibility because each Dabtube receiver can record up to four dipoles, thus eliminating the need for specialized receiver cables and a centralized receiver control station. Dipoles can be oriented in any direction, can be of varying lengths, and completely avoid inaccessible areas if necessary.

Although more randomized than conventional 3DIP, most Volterra-3DIP surveys still follow some form of cut lines, alternating receiver dipoles and current injections and deviating where necessary for geophysical or logistical purposes. In addition, cross-line receiver dipoles are often used to increase near-surface resolution and allow for larger spacing between lines. The specifics of each survey are customized before the survey starts and sometimes during the survey by the field geophysicist.

7. GEOPHYSICAL INVERSION

The purpose of geophysical inversions is to estimate the 3D distribution of the rocks physical properties of the subsurface (density, resistivity, chargeability, and magnetic susceptibility) based on geophysical measurements collected at the surface. The rock property distribution is represented in 3D models created by mathematical algorithms called geophysical inversions. Unfortunately, given the complexity of the subsurface's rock properties in comparison to the amount of collected data, the geophysical inversion problem is defined as “under-determined” and as a consequence there are many different possible subsurface 3D physical property models that could fit the available data. The inversion algorithm is designed to favour geologically realistic models and despite this limitation, a combination of high quality surface measurements combined with geophysical inversion leads to a better understanding of the subsurface.

Geophysical inversions are commonly setup for every survey carried out by SJ Geophysics. Several inversion programs are available, but SJ Geophysics primarily uses the UBC-GIF algorithms (e.g. DCIP2D, DCIP3D, MAG3D, GRAV3D) which were developed by a consortium of major mining companies under the auspices of the University of British Columbia's Geophysical Inversion Facility.

The IP surveys measure two different geophysical properties, the inversion program used for resistivity and chargeability inversions (DCIP2D or DCIP3D) successively solves two inverse problems. The measured potential, normalized to the current, are first inverted to calculate the spatial distribution of electrical resistivity in the subsurface. Secondly, the chargeability data are inverted to recover the spatial distribution of polarizable particles in subsurface rocks. Several inversions are generally carried out and their outputs are evaluated with regard to the known geology, the estimated depth of investigation and the surface measurements. When available, additional information, such as geological boundaries and down-hole geophysical data, can be added to the inversion in order to constrain the inversion model.

Eventually the final inversion models are gridded and mapped as cross-sections as well as plan maps that are sliced at different depths beneath the surface (the list of provided maps is available in Appendices C, D and E). Inversion results are also visualized in 3D using the open source software packages Mayavi and Paraview using both 2D and 3D views. Additional data can then be overlain to aid in interpretation and facilitate discussion of potential drilling targets.

APPENDIX A: SURVEY DETAILS

Gog Range Grid

Line	*Series*	*Type*	*Start Station*	*End Station*	*Survey Length (m)*
2200	E	Tx	5950	7550	1600
2300	E	Rx	6250	7250	1000
2400	E	Tx	5950	7550	1600
2500	E	Rx	6250	7250	1000
2600	E	Tx	5950	7550	1600
2700	E	Rx	6250	7250	1000
2800	E	Tx	5950	7550	1600
2900	E	Rx	6250	7250	1000
3000	E	Tx	5950	7550	1600
3100	E	Rx	6250	7250	1000
3200	E	Tx	5950	7550	1600
3300	E	Rx	6250	7250	1000
3400	E	Tx	5950	7550	1600

Total Linear Metres = 17200

Rx = Receiver Line, Tx = Transmitter Line

Appendix B: Instrument Specifications

Dabtube 24-bit four channel receiver

Technical:

Input impedance:	10 MΩ
Input overvoltage protection:	5.6 V
Internal memory:	Storage Capacity 16 GB
Number of inputs:	4
Synchronization:	GPS
Programmable Gain (V/V):	1, 2, 4, 8, 16, 32, 64, 128
Selectable Sampling Rates (samples/second):	64000, 32000, 16000, 4000, 1000
Common mode rejection:	More than 80 dB (for Rs=0)
Self potential (Sp):	Range: -5.0 V to +5.0 V Resolution: 0.24 µV Proprietary intelligent stacking process rejecting strong non-linear SP drifts.
Primary voltage:	Range: -5 V to +5 V (24 bit) Resolution: 0.24 µV Accuracy: typ. <1.0%
Chargeability:	Resolution: 1 µV/V Accuracy: typ. <1.0%

General (4 dipole unit):

Dimensions:	Diameter: 5.5cm, Length: 60cm
Weight:	0.85 kg
Battery:	3.6V external
Operating temperature range:	-20 °C to 40 °C

GDD Tx II IP Transmitter

Input voltage:	120V / 60 Hz or 240V / 50Hz (optional)
Output power:	3.6 kW maximum
Output voltage:	150 to 2200 V
Output current:	5 mA to 10 A
Time domain:	1, 2, 4, 8 second on/off cycle
Operating temp. range:	-40 °C to +65 °C
Display:	Digital LCD read to 0.001 A
Dimensions:	34 x 21 x 39 cm
Weight:	20 kg

APPENDIX C: INTERPRETED RESISTIVITY AND CHARGEABILITY CROSS-SECTIONS

Cross-Sections showing vertical cross-sections through the Resistivity and Chargeability Inversion Models along all 15 survey lines are provided at a 1:5000 scale. These maps are provided in digital PDF format as file 3DSections_GogRange.pdf

APPENDIX D: INTERPRETED RESISTIVITY PLAN MAPS

Plan maps showing the spacial distribution of the interpreted resistivity parameter at depths below topography of 25 m, 50 m, 75 m, 100 m, 150 m, 200 m, 250 m, 300 m and 400 m are provided at a 1:5000 scale. These maps are provided in digital PDF format as file Planmap_GogRange_RES.pdf

Plate Number	Title
R-1	Interpreted Resistivity Inversion Model – Depth 25 m Below Topography
R-2	Interpreted Resistivity Inversion Model – Depth 50 m Below Topography
R-3	Interpreted Resistivity Inversion Model – Depth 75 m Below Topography
R-4	Interpreted Resistivity Inversion Model – Depth 100 m Below Topography
R-5	Interpreted Resistivity Inversion Model – Depth 150 m Below Topography
R-6	Interpreted Resistivity Inversion Model – Depth 200 m Below Topography
R-7	Interpreted Resistivity Inversion Model – Depth 250 m Below Topography
R-8	Interpreted Resistivity Inversion Model – Depth 300 m Below Topography
R-9	Interpreted Resistivity Inversion Model – Depth 400 m Below Topography

APPENDIX E: INTERPRETED CHARGEABILITY PLAN MAPS

Plan maps showing the spacial distribution of the interpreted chargeability parameter at depths below topography of 25 m, 50 m, 75 m, 100 m, 150 m, 150 m, 200 m, 250 m, 300 m and 400 m are provided at a 1:5000 scale. These maps are provided in digital PDF format as file Planmap_GogRange_CHG.pdf

Plate Number	Title
C-1	Interpreted Chargeability Inversion Model – Depth 25 m Below Topography
C-2	Interpreted Chargeability Inversion Model – Depth 50 m Below Topography
C-3	Interpreted Chargeability Inversion Model – Depth 75 m Below Topography
C-4	Interpreted Chargeability Inversion Model – Depth 100 m Below Topography
C-5	Interpreted Chargeability Inversion Model – Depth 150 m Below Topography
C-6	Interpreted Chargeability Inversion Model – Depth 200 m Below Topography
C-7	Interpreted Chargeability Inversion Model – Depth 250 m Below Topography
C-8	Interpreted Chargeability Inversion Model – Depth 300 m Below Topography
C-9	Interpreted Chargeability Inversion Model – Depth 400 m Below Topography