Technical Report on the Miller Mine Graphite Property, Grenville Township, Quebec, Canada

(in accordance with National Instrument 43-101)

Submitted to

Rémi Charbonneau
PhD, P.Geo., OGQ member #290
and
Steven Lauzier
P.Geo., OGQ member #1430

April 25, 2014

Signature Page and Qualification for the first Author

I, Rémi Charbonneau, P.Geo., Ph.D., do hereby certify that:

I reside at 7667 avenue De Chateaubriand, Montreal, Québec, Canada H2R 2M2 and I am currently Associate of Inlandsis Consultants s.e.n.c., located at the same address.

This certificate accompanies the report entitled "Technical Report on the Miller Mine Graphite Property, Grenville Township, Quebec, Canada (in accordance with National Instrument 43-101)", dated January 14, 2014.

I received a B.Sc. in Geology from the Université de Montréal in 1986 and a PhD in Glacial Geology in 1995 from the same institution. I have been working as a contract geologist in mineral exploration since 1995. I am an active Professional Geologist and a registered member of the *Ordre des Géologues du Québec* (licence #290).

I have worked in the mineral exploration industry for over 15 years on projects for various metals and industrial minerals. Based on my experience and the exploration stage of the Miller Mine Project, I am allowed to act as the Qualified Person for the Project within the meaning of NI 43-101.

I have visited the Miller Mine Property on several occasions since the spring of 2013 while contributing to exploration work for the Issuer.

I am responsible for items 1 to 27 and most figures of the present Technical Report. I worked in close collaboration with co-author Steven Lauzier in the preparation of items 9 and 10.

I fulfill the requirements set out in section 1.5 of National Instrument 43-101 for an "independent qualified person" relative to the Issuer.

I have acted as a Qualified Person for the Issuer since 2013. I have had no prior involvement with the Miller Mine Graphite Property which is the subject of this technical report.

I have read and used National Instrument 43-101 and Form 43-101F1 (April 8, 2011 version) to make the present report compliant with its specifications and terminology.

As of the date of this technical report, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

April 25th, 2014

"Rémi Charbonneau"

Rémi Charbonneau

PhD, P.Geo., OGQ #290

Signature Page and Qualification for the second Author

I, Steven Lauzier, P.Geo. hereby certify that:

I reside at the 1395, 3^{e} Avenue Acton Vale, Québec, Canada J0H 1A0. I am the founder of SL Exploration Inc, located at 1380 rue Leblanc, Acton Vale, Québec, Canada J0H 1A0.

This certificate accompanies the report entitled "Technical Report on the Miller Mine Graphite Property, Grenville Township, Quebec, Canada (in accordance with National Instrument 43-101)", dated January 14th, 2014.

I received a B.Sc. in Geology from the Université du Québec à Montréal (Montreal, Quebec) in 2010. I have been working as a contract geologist in mineral exploration for 4 years since my graduation.

I am an active Professional Geologist and a registered member of the *Ordre des Géologues du Québec* (licence #1430). I am not a qualified person with respect to the Miller Mine Graphite Property.

My specialty in exploration has been graphite since 2012 following the personal acquisition of graphite properties and their subsequent exploration in the southern Quebec area.

I am co-author of items 9 and 10 (Exploration and Drilling) in the present Technical Report.

I do not fulfill the requirements set out in section 1.5 of the National Instrument 43-101 for an "independent qualified person" relative to the Issuer, having been involved in full-time contracting for the Issuer.

I acquired the initial 9 claims of the Miller Mine Property in 2011 as a prospector in association with 9228-6202 Québec Inc. who sold the claims to the Issuer. I personally retain a 7.5% interest in the property while 9228-6202 Québec Inc holds the balance. I currently own shares and stock options in the Issuer, along with a residual NSR pursuant to the transaction with the Issuer.

I have read and used National Instrument 43-101 and Form 43-101F1 (April 8, 2011 version) to make the present report compliant with its specifications and terminology.

As of the date of this technical report, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

April 25th, 2014

"Steven Lauzier"
Steven Lauzier
P.Geo., OGQ #1430

Table of Contents

List of Tables

List of Figures

List of Appendices

Item 1: Summary

This report describes the exploration work and the graphite potential related to the Miller Mine graphite property (the “Property”) held by Canada Carbon Inc. (“Canada Carbon” or the “Issuer”). The relevant data for the property were obtained from Canada Carbon and from the Quebec government’s public database and reports (historical data). The present Technical Report (the “Report”) is compliant with National Instrument 43-101 (“NI 43-101”) Standards of Disclosure for Mineral Projects and prepared in accordance with Form 43-101F1 for use in financing activities.

The Miller Mine Property includes 81 claims (47.38 km^2) registered to Canada Carbon, another eight (8) claims (4.8km^2) to be transferred from a company with an adjacent property, and 95 pending claims. The property is located in the Grenville, Grenville Augmentation and Harrington townships in the Outaouais Region of southern Quebec, about 80 km west of Montreal.

Since March 2013, Canada Carbon has discovered many occurrences of graphite mineralization over a small area in the vicinity of the past-producing Miller mine. The mineralization occurs as two main plurimetric graphite veins (VN2 and VN3), many graphite veins of smaller size, and numerous plurimetric graphite-wollastonite pods. The veins are mostly oriented N-S, similar to the trend of the former mine pit. The veins contain 40% to 80% Cg whereas the pods generally grade around 10-15% Cg. The main mineralization of interest on the Miller Property is categorized as granulite-hosted lump vein-style mineralization and is therefore particularly well suited for high-tech applications due to its high purity potential. Processing of the graphite vein material yielded an ultra-pure product, achieving results of up to 100% Cg. The possible use of the graphite in nuclear applications was also evaluated by verifying the Equivalent Boron Content of the impurities in a concentrate, which surpassed purity requirements. Raman spectroscopy studies demonstrated a high degree of crystallinity for vein graphite from the Miller mine. Given this background, the viability of a small-scale mining operation should be evaluated through testwork on a bulk sample. The demonstrated ability to produce a high purity graphite concentrate suggests the Miller occurrence has economically interesting grades.

Authorization was granted by the Ministry of Natural Resources of Quebec to extract a bulk sample of up to 480 tonnes (metric tons) of material from the surface showings and piles of blocks. The Issuer has excavated a series of trenches along a contact between marble and paragneiss. The contact zone is mineralized with graphite veins and graphite-wollastonite pods. Pegmatite intrusions are also present along the contact. The mineralized contact zone can be followed at surface for over 50 m from the southern end of the trench. It is folded towards the east; at depth, the mineralized contact (graphite-wollastonite) was encountered at a vertical distance of 39.3 m below the VN2 showing. An airborne VTEM survey detected many anomalies of significant size on both claim blocks belonging to the Issuer. Ground geophysics also detected large local anomalies associated with graphite vein systems.

To detect additional large conductors, the authors recommend systematic IP surveying over the known VTEM anomalies and local PhiSpy surveys over anomalous areas in order to generate high-quality targets for prospecting, trenching and drilling. An IP survey and trenching program should be carried out in the trench area to extend known mineralization laterally and at depth. Results of the bulk sampling program can be used to evaluate the potential for a small-scale operation. The total budget is estimated at $500,000.

Item 2: Introduction

Canada Carbon Inc. ("Canada Carbon" or the "Issuer") is a Canadian mineral exploration company trading publicly on the TSX Venture Exchange ("TSXV") under the symbol "CCB" and on the Frankfurt Stock Exchange ("FSE") under the symbol "U7N1". This company was formerly Bolero Resources Corp. and traded on the TSX Venture Exchange under the symbol "BRU" prior to October 5, 2012. The present report is prepared in compliance with National Instrument 43-101 ("NI 43-101) policy guidelines for financing activities.

The exploration data presented in this report were obtained from Canada Carbon's internal database whereas historical data were obtained from the EXAMINE database of the Ministry of Natural Resources of Quebec ("MNR"; *Ministère des Ressources Naturelles*), unless indicated otherwise.

Steven Lauzier first visited the property in the winter of 2013 to observe the graphite veins still remaining in the walls of the former Miller mine pit. The property was frequently visited by both authors in the following months during the exploration program carried out by the Issuer.

Item 3: Reliance on Other Experts

There is little historical information available regarding exploration and mining activities in the late 1800s and early 1900s, and such information consists mainly of general statements and cannot be directly verified. Land tenure information on mining claims was obtained from the GESTIM web site maintained by the MRN and accessed in March 2014. Metallurgical testwork and reports are also discussed and presented under Item 13. The tests were performed at accredited laboratories. External reports discussed herein are presented in the appendices. Venetia Bodycomb of Vee Geoservices provided the linguistic editing of a draft version of the Report.

Item 4: Property Description and Location

The Miller Graphite Property (the "Property") is located in the Outaouais Region of southern Quebec, some 80 km west of Montreal (Figure 1). The property is located on NTS map sheets 31G/10 and 31G/15 (1:50,000 scale).

The initial acquisition (9 claims) included a 2% Net Production Return (NPR) royalty that was later reduced to 1.5% in exchange for 100,000 shares. This land package is where most of the exploration work has been carried out and it hosts the major discoveries. The property subsequently underwent significant expansion with the addition of 55 claims.

The Issuer has entered into agreements to acquire a 100% interest in five (5) claims from Nouveau-Monde Mining Enterprises Inc. ("Nouveau-Monde") and eight (8) additional claims from Caribou King Resources Inc. ("Caribou King"). Two (2) Nouveau-Monde claims are currently pending due to exploration restrictions and will be transferred once the MNR allows it. The Issuer has also granted Nouveau-Monde a 2% Net Smelter Return (NSR) royalty which can be reduced at any time to 1% by paying $1,000,000 to Nouveau-Monde**.** Eight (8) claims (4.8 km^2) belonging to Caribou King are still expected to be transferred. The latter claims are subject to an existing 2% Net of Processed Material Returns Royalty in favour of a third party, which can be reduced at any time to 1% by paying $1,000,000 to the royalty holder**.** The Issuer also entered into agreements with Marksman Geological Ltd. to purchase fourteen (14) other claims.

Table 1 lists 81 claims (47.38km^2) in good standing and registered to Canada Carbon. These claims form two (2) blocks, as shown in Figure 2. Some of the land underlying certain claims is categorized for recreational land usage, and these claims are affected by exploration restriction and were still pending at the time of writing this report. Quebec's mining law, the Mining Act, which was recently amended by Bill 70 (the "Act to amend the Mining Act", assented on December 10, 2013), allows the MNR to decide whether it will modify the exploration restriction or to leave it as is. If the former decision is made, the MNR will remove the exploration restriction from the pending claims. A total of 95 claims are pending at the date of writing this report.

The work on the property was carried out on the existing active claims, except for the airborne survey which overlaps some of the pending claims for logistical purposes (e.g., flight line paths).

The historical pit and tailings of the former Miller Mine have not been restored and are naturally vegetated. No environmental liabilities are applicable to past claim holders or to Canada Carbon.

There are no other known significant factors or risks in addition to those noted in the Report that could affect access, title, or the right or ability to perform the recommended exploration program.

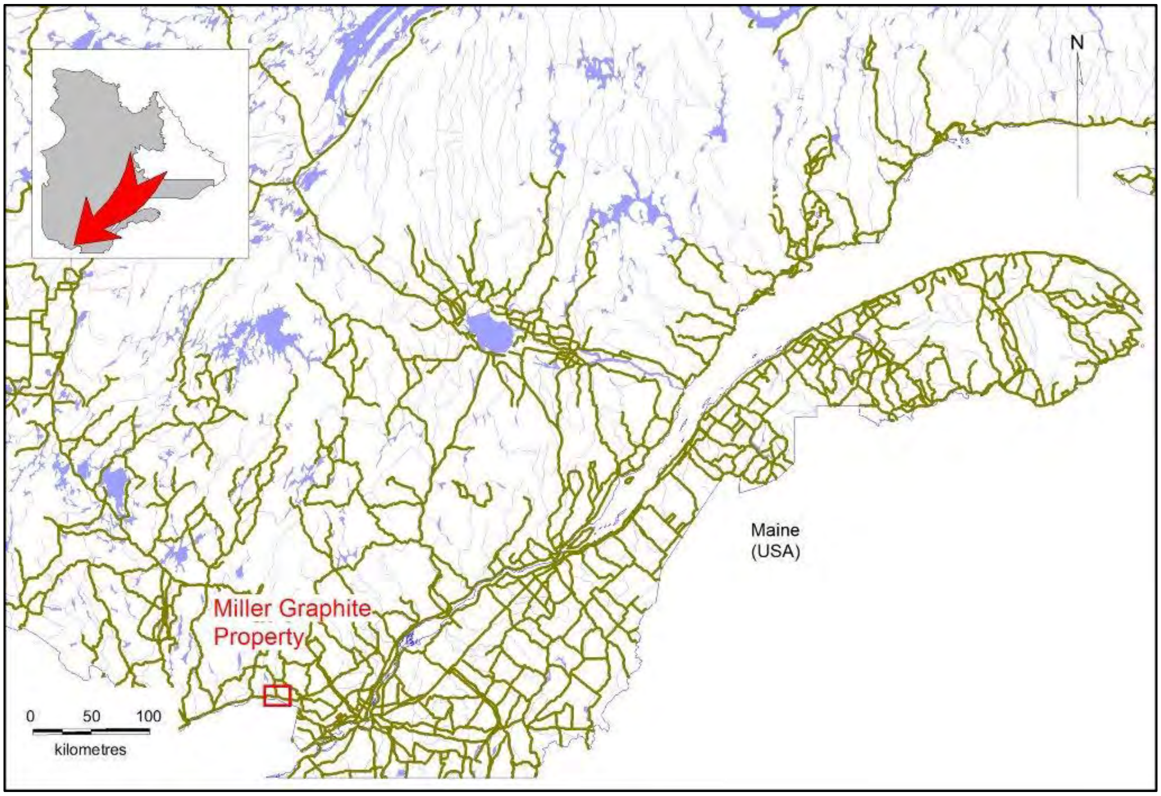


Figure 1 Location of the Miller graghite property

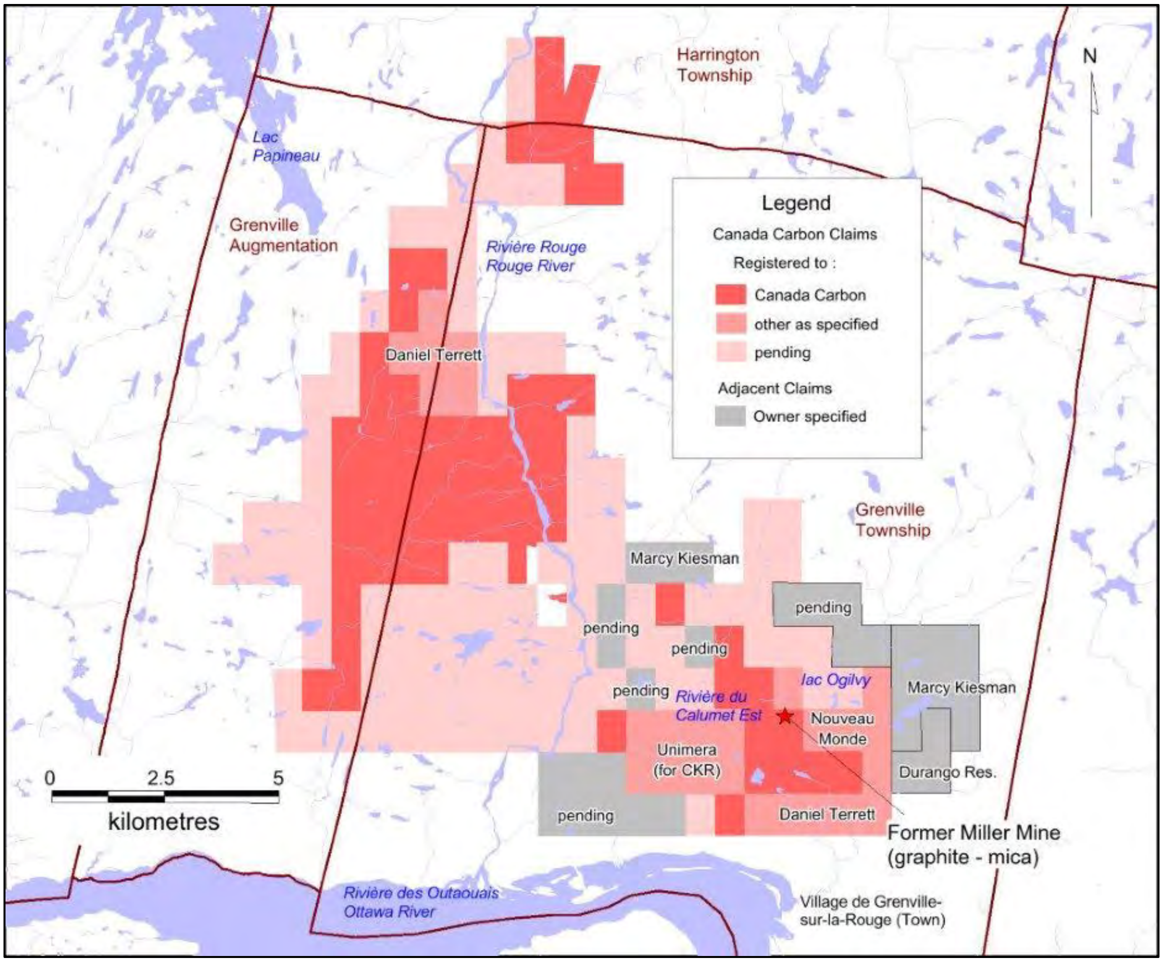


Figure 2 Claim map pf the Miller Propert and surrounding area.

Table 1 Claim list of the Miller Property, held 100% by Carbon Canada.

NTS 31G10

Claim#	Expiry Date	Claim#	Expiry Date	Claim#	Expiry Date	Claim#	Expiry Date
2344486	10-May-16	2380950	3-Mar-15	2388722	6-Aug-15	2391757	15-Oct-15
2344487	10-May-16	2380951	3-Mar-15	2389447	25-Aug-15	2391758	15-Oct-15
2344488	10-May-16	2380952	3-Mar-15	2389448	25-Aug-15	2391759	15-Oct-15
2349738	6-Jun-16	2380953	3-Mar-15	2389449	25-Aug-15	2391760	15-Oct-15
2349739	6-Jun-16	2299284	12-Jul-15	2389450	25-Aug-15	2391761	15-Oct-15
2349740	6-Jun-16	2388112	16-Jul-15	2389451	25-Aug-15	2391762	15-Oct-15
2349741	6-Jun-16	2388113	16-Jul-15	2389452	25-Aug-15	2391763	15-Oct-15
2349742	6-Jun-16	2388114	16-Jul-15	2389453	25-Aug-15	2391764	15-Oct-15
2349743	6-Jun-16	2388115	16-Jul-15	2389454	25-Aug-15	2391765	15-Oct-15
2349744	6-Jun-16	2388116	16-Jul-15	2389455	25-Aug-15	2391766	15-Oct-15
2349745	6-Jun-16	2388715	6-Aug-15	2390083	5-Sep-15	2391767	15-Oct-15
2380944	3-Mar-15	2388716	6-Aug-15	2390084	5-Sep-15	2391768	15-Oct-15
2380945	3-Mar-15	2388717	6-Aug-15	2390085	5-Sep-15	2391769	15-Oct-15
2380946	3-Mar-15	2388718	6-Aug-15	2390086	5-Sep-15	2391770	15-Oct-15
2380947	3-Mar-15	2388719	6-Aug-15	2390088	5-Sep-15	2391771	15-Oct-15
2380948	3-Mar-15	2388720	6-Aug-15	2391755	15-Oct-15	2393080	22-Oct-15
2380949	3-Mar-15	2388721	6-Aug-15	2391756	15-Oct-15	2393440	30-Oct-15
2393635	31-Oct-15						

NTS 31G15

Claim#	Expiry Date	Claim#	Expiry Date	Claim#	Expiry Date	Claim#	Expiry Date
2390087	5-Sep-15	2391774	15-Oct-15	2391777	15-Oct-15	2391780	15-Oct-15
2391772	15-Oct-15	2391775	15-Oct-15	2391778	15-Oct-15	2391781	15-Oct-15
2391773	15-Oct-15	2391776	15-Oct-15	2391779	15-Oct-15	2391782	15-Oct-15

Item 4.1 Surface agreement

In September 2013, Canada Carbon entered into a surface access agreement (the "Agreement") with two landholders who are affiliated with each other. The agreement provides the Issuer with surface access for an initial period of five (5) years and allows the Issuer to carry out regular graphite prospecting and exploration programs including, but not limited to, conducting topographic, geological, geochemical and geophysical surveys, conducting underground or surface excavations, explorations and drillings, digging and trenching, and obtaining and testing geochemical or metallurgic samples. This agreement covers the area of interest on which Canada Carbon is working at this time.

The agreement grants the Issuer an exclusive and irrevocable option to acquire or lease from the landholder all or part of the property deemed reasonably necessary for the extraction of mineral substances. If the Issuer exercises this option, either by acquiring or leasing all or part of the property prior to the expiry of the five-year term, the term will be extended through the period of commercial production.

Pursuant to the Agreement, Canada Carbon has agreed to issue 40,000 common shares in the capital of the Company to the landholders for the first year of the term, and for each subsequent year of the term and until the Issuer begins operating the property as a mine (not including milling for the purposes of testing by a pilot plant), either 40,000 additional common shares or $5,000 payable in cash, at the option of the landholder. Should Canada Carbon begin commercial production during the term, the payments outlined above will cease and the Landholder will be entitled to a 2.5% NSR upon and subject to the terms of definitive royalty agreements.

Item 4.2 Exploration Restrictions

The Miller Property is located on private land and the surface right owners should be kept informed about upcoming exploration programs, and the Company should obtain their permission before initiating any exploration program.

Four categories of land status in the region impose certain restrictions on exploration activities, as depicted on Figure 3: (1) Large areas dedicated to resort and recreational activities ("*territoire affecté à la villégiature*") that are not available for map staking: land affected by this restriction surrounds and limits the staking play. (2) Ecological reserves in which exploration is prohibited: two such projects occupy small areas on the west side of the Rouge River. (3) Wildlife habitats in which activities are forbidden (with exceptions) to any activities that can modify a biological, physical or chemical component associated with the habitat (only applicable to public land): a large area of white-tailed deer (*Odocoileus virginianus*) habitat overlaps the eastern part of the property but the restriction is not applicable because this particular area is on private land.

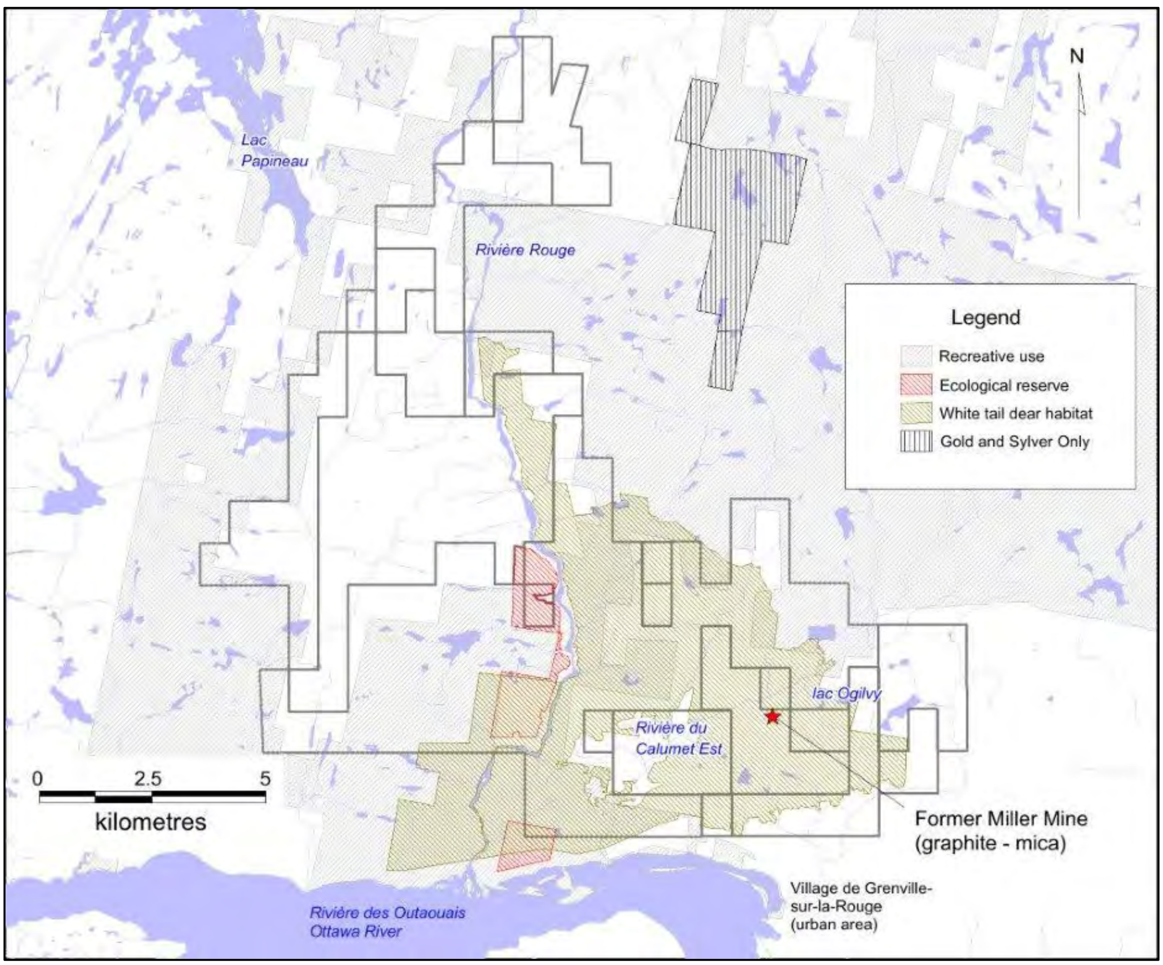


Figure 3 Exploration restrictions on the Property.

Item 4.3 Bulk Sampling

Canada Carbon has received permission in March 2013 to collect and ship up to 480 tonnes of graphite-bearing material from its Miller Mine graphite property in Quebec. According to the authorization granted by the MRN, the material may be extracted for mineralogical testing as well as for distribution to potential purchasers. The sample must be collected between March 15 and September 15, 2014, and the results of the treatment must be reported to the MRN by September 15, 2015. The objective of the bulk sample is to test the historically mined trench area of the property, along with multiple veins of graphite mineralization found over the area during field exploration by the Issuer. Stockpiles of graphitic material from historical production have been found in various areas around the former mine and can also be sent out for the purpose of bulk sampling. The removal of graphitic material exposed in the trench will also help the Issuer to understand the distribution of graphite pods and veins along the mineralized contact it has discovered.

The Issuer is currently in discussions with industry-leading graphite processors with respect to toll milling of the bulk sample material and anticipates shipping of graphite concentrate in the second quarter of 2014. Appendix 1 shows the bulk sample authorization received from the MRN.

Item 5: Accessibility, Climate, Local Resources, Infrastructure and Physiography

The property is well served by a network of public and private roads owing to its location in a well-developed area of southern Quebec. The site of the abandoned Miller mine is accessible from Scotch Road leading north from the village of Grenville-sur-la-Rouge. From this small and winding public access, a private road leads westward for about half a kilometre; the entrance to this road is restricted by a locked barrier and a copy of the key was borrowed so that exploration teams could access the site.

Southern Quebec is characterized by a continental climate. The land is usually free of snow from May to November. Vehicle access via the private road during the winter season would require contracting a snow removal service.

Local resources are available at the town of Grenville-sur-la-Rouge and at the nearby cities of Hawkesbury (Ontario) or Lachute, located respectively 10 km south and 20 km east of the Property. Transportation and housing are available nearby and the local work force should be able to support a mining operation. A power line crosses the southern part of the Property and a railroad passes through the Ottawa Valley near Grenville.

The property is characterized by steep topographic relief consisting of steep-sided hills with altitudes ranging from 100 to 240 metres above sea level. The drainage is dominated by the south-flowing Rouge River that runs through the Property, and by Du Calumet River that passes immediately north of the former Miller mine. Some small lakes are found within and in the neighbourhood of the property (e.g., Ogilvy Lake on Figure 2).

Item 6: History

Item 6.1 Miller Mine

A graphite occurrence on Lot 10 of Range V of the Grenville Township was described by Sir William Logan in 1845-1846, and mining operations were subsequently initiated by R.V. Harwood of Vaudreuil (Ells 1904; Cirkel 1907; Ells 1904). This initial period of exploitation may well have been the first graphite operation in Canada (Ells 1904; Spence 1920). Following a 25-year period of inactivity, the site was worked again for a short period of time around 1870 as the Miller mine (Cirkel 1907) and was taken over in 1889 by Messrs. Rae & Co. without extensive work (Spence 1920). The most important episode of mining apparently occurred from 1899 to 1900, as reported in Obalski 1900:

> ***Keystone Graphite Co.***-This company, composed of Americans, began last year to work on lot V, 10 of Grenville (county of Argenteuil) at a distance of 6 miles from Calumet station (C.P.R.). The deposit worked was formerly known under the name of the McVeity Mine. The graphite is found in a pretty pure state, in small veins or masses, in a crystalline rock. It is hand-picked on the spot and put in bags for shipment to the United States where it is treated and concentrated. The lots sent contain an average of from 35 to 55 per cent of pure graphite and it is paid for according to the grade. Since the company has been working, about 25 carloads have been shipped; from 16 to 22 men have been employed throughout the year. The work consists of a cutting about thirty feet deep joining the main deposit where, it is stated, a thickness of 2½ feet of solid graphite have been found at times. The work is done by hand without the aid of machinery. The same company has done some other prospecting on a small scale. *(extract from Obalski 1900)*

Later in his report, Obalski reported that a total of 388 short tons of raw graphite were produced in 1900 in Quebec, while other graphite companies were almost inactive (Obalski 1900, p. 15-16) suggesting that an important part of this total production was derived from the Miller operations.

A database search for “McVeity” yielded several mentions of a prospector actively exploring for iron and mica in the late 1800s in the Ottawa region. One former phosphate mine near Gatineau (Quebec) also bears that same name and it is thus possible that an episode of activity at Miller took place under the name “McVeity”. It is also reported that graphite was mined in 1900 on adjacent Lot 9 of the same range by the National Graphite Co. (Ells 1904) and further south, near the Pacific railroad station by the Calumet Graphite Co. (Obalsky 1900; Ells 1904).

The mine site area was claimed by Glen Blair (independent prospector) in late 1980s who performed limited ground geophysics and found a new occurrence of graphite on the SW corner of Lot 10 as well as some graphite boulders, about 100 m to the east (Blair 1988, 1989).

Item 7: Geological Setting

The Project occurs in the same locality where observations by Sir William Logan (1863) led to the recognition of the "Grenville Series", which was later extended and redefined as a geological province. Today, the Grenville Province is recognized as a deeply exhumed Mesoproterozoic Himalayan-type collision orogenic belt that extends over thousands of kilometres and interpreted as a collage of gneissic terranes that were subjected to high-grade metamorphism (Martignole and Friedman 1998; Corriveau and van Breemen 2000; Corriveau et al. 2007). High-grade metamorphic terrane stacking occurred along deep-level ductile shear zones and resulted in the main crustal build-up. The study area is included in the south portion of the Morin Terrane, composed of supracrustal rocks, commonly at granulite facies, intruded by several bodies of granitic to anorthositic composition (1.14 Ga) grouped into the Morin AMCG Suite (Corriveau et al 1998), as depicted in Figure 4. To the west, the Morin Terrane is bounded to the Central Metasedimentary Belt along the Labelle deformation zone (Martignole *et al*. 2000).

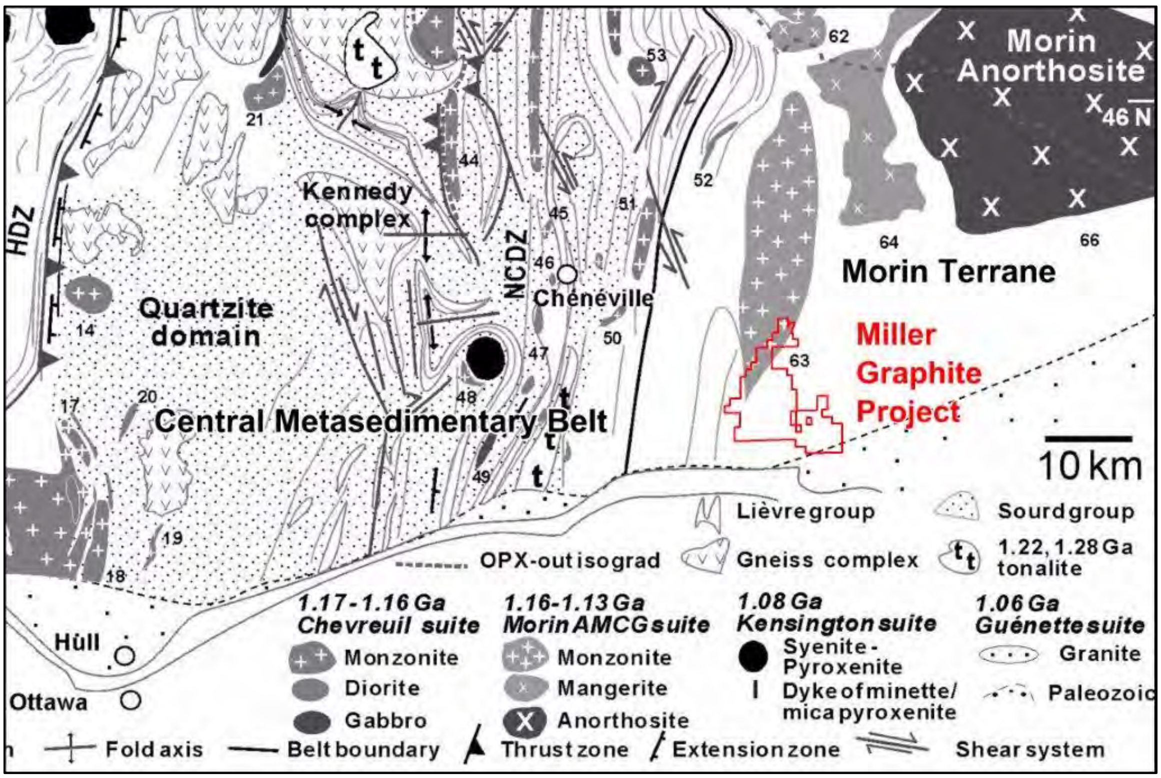


Figure 4 Regional geology (Corriveau et al. 1998).

Item 7.1: Local geology

The southern part of the Grenville Township was mapped by Philpotts (1961) who detailed the folded sequence of quartzo-feldspathic gneiss, quartzite and crystalline limestone (marble); this sequence is characteristic of the Grenville Series of Logan (1863). The well-banded quartzo-feldspathic gneisses were divided into two groups on the basis of whether they contain biotite or pyroxene, which rarely occur together in the area. Philpotts determined that gneisses are not the dominant lithology, occurring as remnants between the various intrusive of the Morin Series, which includes gabbro, monzonite, mangerite, granite and syenite (Figure 5). Quartzite was documented as very massive, well jointed, white or pinkish rocks. Crystalline limestone appeared to be limited to two large beds. Microscope examination revealed twinned calcite, sphene, zircon, diopside, serpentine (after olivine), graphite, quartz, microcline and grossularite. Wollastonite was only noted near igneous contacts. Various pegmatites were observed to be affected by scapolite alteration of feldspar where the pegmatites intrude crystalline limestone. Finally, Philpotts also noted younger diabase and lamprophyre dykes.

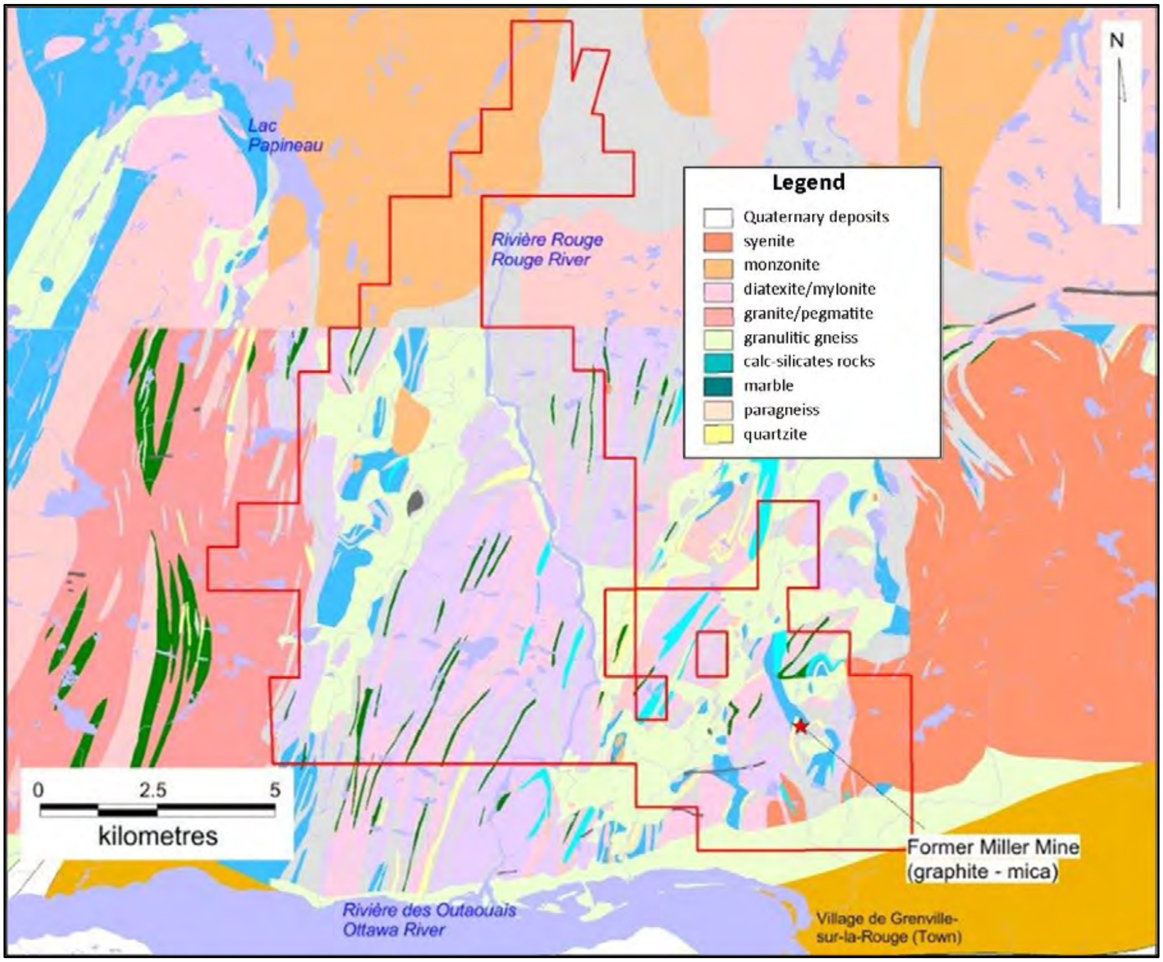


Figure 5 Local geology

Item 7.2: Mineralization

Graphite has been found as disseminations in marble or sulphide-bearing paragneiss elsewhere on the Miller Mine Property (Philpotts 1976) but its presence as veins or pods represents the best potential for the more valued form of crystalline graphite. In known occurrences, graphite can be alone or in association with other minerals, including pyroxene, scapolite, titanite and wollastonite (Spence 1920). Through trenching, Canada Carbon has identified many examples of graphite vein mineralization associated with graphite-wollastonite pods. Smaller vein systems and graphite-wollastonite pods were also found all around the property.

7.2.1 VN1 showing

The VN1 showing is characterized by an irregular vein of semi-massive coarse graphite. The graphite vein is exposed along a strike length of 12.8 m, oriented NW-SE (148°) with a subvertical dip. From SE to NW, the vein ranges in width from 1 to 1.7 m over a distance of 7.9 m, and of that length, the vein maintains a width of 1.6 m over 2.5 m. Toward the NW, the vein is truncated where it encounters a 1.2-m zone of more competent host rocks. The width of the vein on the other side of the competent zone ranges from 10 cm to 1 m over a strike length of 3.7 m. Smaller graphite veins can be observed on both sides of the main vein, on available exposures. Finer grained graphite is locally present in the surrounding carbonate host rocks. The VN1 showing was covered by 1 to 3 m of glacial till.

Semi-massive coarse-grained graphite occurs within a pegmatitic skarn-mineral envelope, which includes large crystals of white feldspar, diopside and wollastonite. Local geology consists of a complex intermixing of banded paragneiss and medium-grained carbonate rock (historically referred to as a marble unit), where contorted fragments of gneiss appear to float within an equigranular carbonate matrix.

A detailed map of the VN1 showing is presented in Figure 6, and photographs of VN1 are provided in Appendix 2.

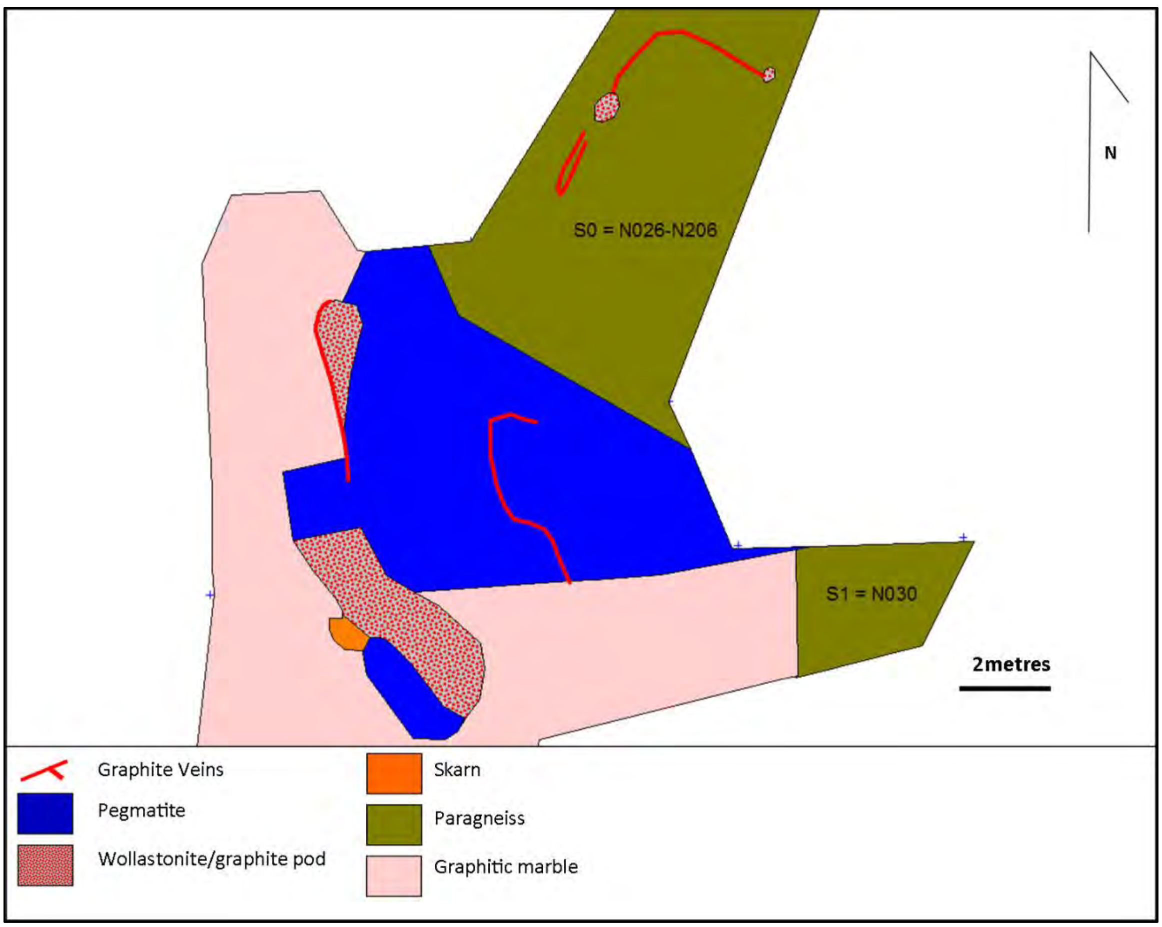


Figure 6 Detailed map of VN1 showing.

7.2.2 VN2 showing

The VN2 showing is characterized by a massive graphite vein up to 1.5 m thick that can be followed for more than 3 m at surface, several graphite pods, and multiple secondary graphite veins. The high-grade graphite veins and pods are aligned NE-SW and follow the contact between marble and paragneiss.

From the southern border of the trench, the contact can be followed at surface for more than 50 m and becomes folded toward the east. At depth, the mineralized contact was encountered 39.3 m below the VN2 showing.

A detailed map of the VN2 showing is presented in Figure 7 and photographs of VN2 are provided in Appendix 3.

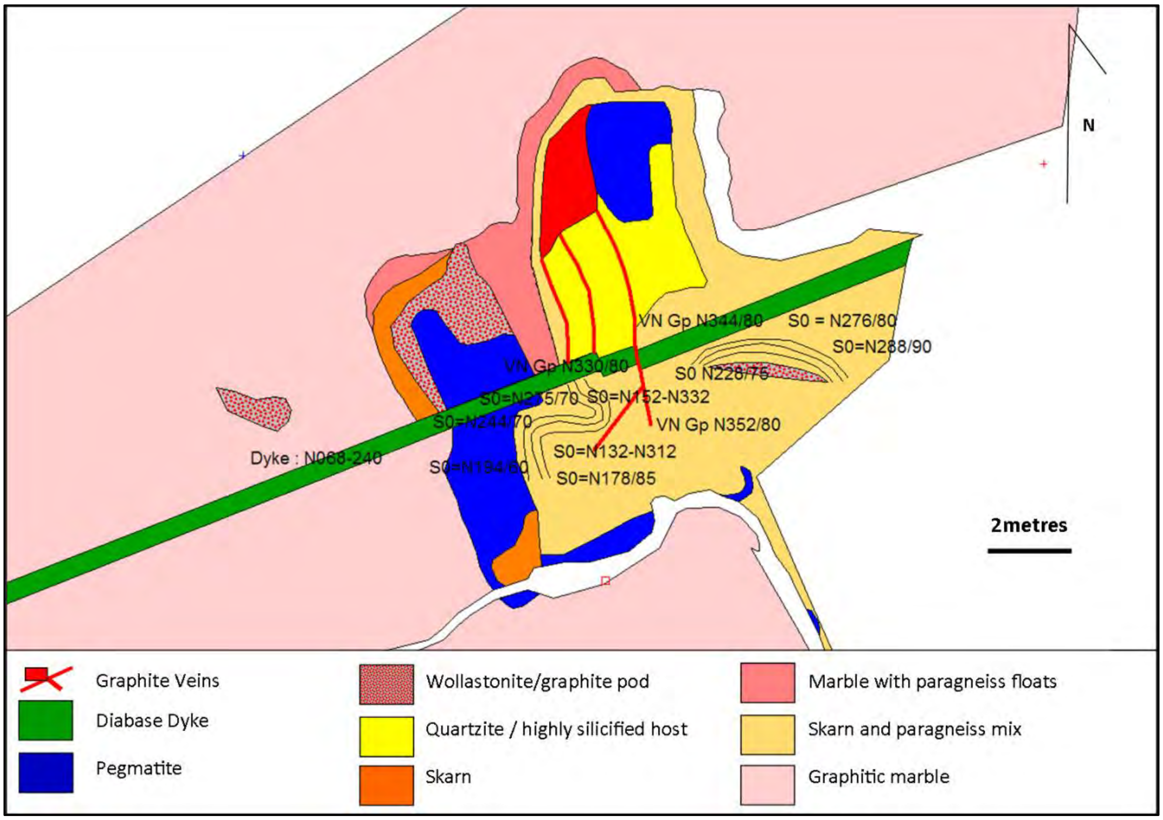


Figure 7 Detailed map of the VN2 showing

7.2.3 VN3 showing

The VN3 showing is a massive graphite vein 2 m thick by 5 m long, hosted in unaltered marble. The VN3 discovery was investigated by six (6) shallow drill holes that targeted the vein at depth and along its projected strike and depth extensions.

Snow cover prevented extensive observation of this showing. Photographs of VN3 are provided in Appendix 4.

7.2.4 Other mineralization

Many graphite and wollastonite pods were exposed by the trenches. The pods are metre-scale and composed of calcite, diopside, feldspar, wollastonite and graphite. They display a pegmatitic texture and are primarily located along the contact between marble and paragneiss. Graphite veins are found in many places on the property and in many different contexts. The veins vary in width from a few millimeters to 1.7 m.

Item 8: Deposit Types

Canada Carbon is actively exploring for metamorphic-hosted vein-type graphite deposits, long known to occur in the Outaouais region of southern Quebec (Cirkel 1907; Simandl and Kenan 1997). Other typical examples, mostly in granulitic terrain, are found in Sri-Lanka (Weis et al. 1981, Glassley 1982, Katz87), south India (Radhika *et al.* 1995, Baiju *et al.* 2005) and Spain (Rodas *et al*. 2000), among others. Vein graphite is characterized by coarse flakes with a high degree of crystallinity, which is required for new technological applications (Luque *et al*. 2013).

Deposits of vein graphite originate from the remobilization of carbon as carbon dioxide and methane in metamorphic fluids at the base of the crust or deeper within the mantle (Glassley 1982, Katz 1987, Skippen and Marshall 1991, Simandl and Kenan 1997). These are channelled upward along major fractures where deposition as graphite is triggered by chemical changes in the fluids in response to cooling and dewatering (Luque *et al*. 2013). Fluid transport and graphite deposition imply that structures played a major role in the location and shape of the resulting deposit. The precipitation of carbon in veins takes place at high temperatures, from 700°C to 800°C, which favor the formation of large and well crystallized graphite flakes, as revealed by the crystallite size, graphitization and Raman spectra of samples from south India (Baiju *et al*. 2005).

Within the Outaouais region of Quebec (Tremblay and Cummings 1987), and particularly at Miller (Ells 1904, Spence 1920), the mineralogical association of graphite and calcsilicates suggests a proximal source of carbon-rich fluids generated by silicification of nearby carbonate-rich rocks. Many studies have recognized that metasomatism, or more specifically skarnification, is an efficient way to produce carbon-rich fluids through the following reaction (Rodas *et al,* 2000, Pope 2004):

carbonate + silica => calcsilicate + carbon dioxide

This also corresponds to a variety of the "decarbonation" of crustal rocks invoked by Luque *et al*. (2013). A description of this process is found in Ells (1904) who cites an older field investigation of the Miller Mine site presented by Professor Osann of Germany in 1899, which is included here because it is specific to the property and mentions the quartzite-like appearance of the altered marble:

> Along the contacts of the graphite veins, the neighbouring rocks have suffered alteration with scapolite, apatite, etc. and in places the granular limestone has been converted into a mixture of pyroxene, wollastonite and titanite [...] that minerals have been formed which are essentially the same as one is accustomed to observe in limestones which have undergone contact metamorphism. This portion of the limestone has been penetrated by gases and vapours from the neighbouring eruptive magmas, upon further cooling, perhaps also by solutions, and that in this way the materials foreign to the limestone, especially the silica, have been introduced. Sometimes the rock is so strongly impregnated with silica as to form a rock somewhat similar to quartzite.

The Miller Project represents a key example of the granulite-hosted graphite vein model by presenting the basal part of the metamorphic system where fluid generation takes place in close proximity to graphite deposition. In addition, the pegmatitic texture observed in some of the graphite occurrences displays particularly coarse crystals of the minerals associated with graphite generation (wollastonite, diopside), indicating that condensation was from pneumatolytic carbon-rich fluids. This process can generate large and well-ordered graphite crystals, such as those in the Miller samples submitted by Canada Carbon (confirmed by Raman spectroscopy; Appendix 5). Thus, the graphite from the Miller Mine Property is particularly well suited for high-tech applications as would be expected from a granulite-hosted vein-type occurrence.

Item 9: Exploration

Canada Carbon carried out initial prospecting to verify historical data and a later prospecting phase to verify ground (MaxMin, VLF, IP, ground TDEM) and airborne (TDEM) geophysical anomalies. The geophysical surveys were performed by different geophysics companies for the Issuer. Following the prospecting phase on the known anomalies, Canada Carbon proceeded to trench the ground anomalies and test some of them by performing two drilling campaigns. Trenching and drilling on a coincident IP – IMAGEM anomaly detected two graphite veins (named VN1 and VN2) along a contact zone. The main focus of the Issuer's exploration work then became the investigation of these showings and the contact zone.

A local ground EM survey and follow-up drilling on the most interesting EM anomalies led to the discovery of the VN3 showing. Both holes of this second phase of drilling encountered two graphitic horizons that explained the anomalies. Additional ground EM surveying led to the identification of five (5) high-priority anomalies.

9.1 Initial prospecting work

After acquiring the Miller Mine Property in February 2013, Canada Carbon hired SL Exploration Inc. to perform prospecting work. The objective was to locate the old mine site and proceed with an initial assessment of property access and the historical mineralization. The field crew located the mine site approximately 150 m north of the position reported in the MNR database. Field observations in the old mine pit revealed that graphite veins occur in a marble unit near pegmatite and paragneiss. The larger graphite vein appears to have been mined in the past because its orientation corresponds to the mine pit's north-south orientation. The field crew collected seven (7) grab samples.

Mineralization consists of two small but massive unnamed veins, 4 to 15 cm thick, in a graphitic marble unit. This zone is a few metres away from the contact between pegmatite and marble, which is consistent with historical data. Sample A41170 (49.4% Cg) is a grab sample that includes material from both veins and the mineralized marble host rock, whereas sample A41171 (32.4% Cg) is a grab sample of mineralized marble. The vein strikes N240° and dips steeply (80°) to the northwest.

A smaller 2 cm vein was discovered a few metres north of the mineralized zone with a NNW-SSE orientation and a vertical dip. Sample A41172 (10.7% Cg) is a grab sample of the vein material and its graphitic marble host. Other grab samples of paragneiss all around the pit yielded 0.22% Cg to 1.2% Cg. Certificates of assays are presented in Appendix 6. Results are summarized in Table 2.

Table 2 Significant results from initial lithogeochemical sampling.

Graphite vein samples from the mine pit	Cg (%)
A43178	78.4
A43179	65.1
A43190	79.8
A43191	70.6
A43192	74.6
A43193	80.1
A43194	24.5

The objective of the follow-up prospecting work in March and April 2013 was to obtain samples from the graphite veins for metallurgical testing (See Item 13) and to better characterize the grade of the vein material. The melted snow cover allowed additional geological mapping in the mine pit and structural measurements were also taken. Veins exposed in the east part of the mine pit were sampled. Sample A41269, consisting of vein material with some pod material, was collected from the VN5 showing in the Miller mine pit and sent to SGS for the metallurgical tests as discussed in Item 13. Sample A41179, collected from the west part of the mine pit, was sent to Actlabs for testing but could not be used due to laboratory contamination. Structural measurements are presented in Table 3. Photographs of the mine pit are presented in Appendix 7. Certificates of analysis are presented in Appendix 6. Figure 8 provides a map of sample locations.

Table 3 Structural measurements in the mine pit.

Name	Northing (UTM NAD 83 Z18) (mN)	Easting (UTM NAD 83 Z18) (mE)	Structure	Description	Cg (%)
VN1	530 696	5 057 993	VN = N147/52 VN = N322/76	Two veins, 1 cm wide.	
VN2	530 700	5 058 001	VN = N192/78	Samples A41178 and A41179. 2 cm wide vein and 50 cm wide vein.	29.0 (A41178)
VN3	530 707	5 058 000	VN = N191/75	1 cm wide vein	
VN4	530 740	5 057 995	VN = N042/72 VN = 266/82	2-5 cm wide vein and 40 cm wide vein.	
VN5	530 747	5 057 993	Intrusion = N160/82	Graphite pods next to pegmatite.	13.5 (A41184)

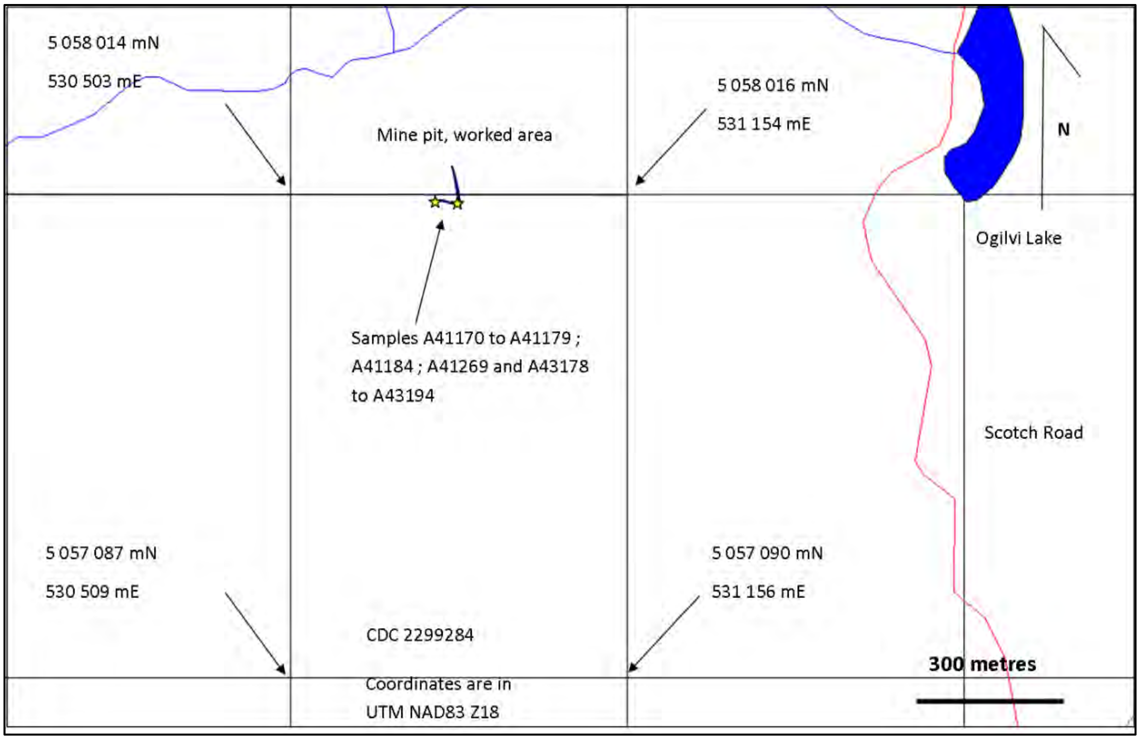


Figure 8 Locations of samples collected from the sampling program at the Miller mine pit.

9.2 Initial geophysics phase

Géosig Inc. of Quebec City was contracted to perform a ground electromagnetic (EM) survey to test the immediate area of the historical mine pit using different methods, including Max-Min, IMAGEM, induced polarization (IP) and Beep Mat, to test their ability to detect graphite veins (Simoneau and Boivin 2013). The methods were tested over various parts of the 500 x 400 m grid consisting of eleven (11) east-west lines spaced 50 m apart, centered over the Miller pit. The various surveys were carried out during the last two weeks of May 2013 by various teams of 2 to 3 persons that included experienced geophysicists, one of whom was the creator of the IMAGEM detector. Details of the detector models used at Miller are included in Géosig's Simoneau and Boivin 2013 report included herein as Appendix 8. This initial orientation study revealed several small anomalies, most of them overlapping two or more of the applied EM methods. In particular, the MaxMin returned only weak anomalies since this method typically targets deep-seated conductors. In contrast, the IMAGEM method detected near-surface anomalies where follow-up by Beep Mat allowed individual graphite veins to be pinpointed and exposed after removing the thin cover of glacial till. The most significant results from this initial EM survey are a series of anomalies located about 200 m west of the pit where subsequent mechanical trenching revealed new graphite occurrences (VN-1 and VN-2), as detailed under Item 9.3.2.

9.3 Anomaly follow-up

Based on the IP, IMAGEM and Max-Min results provided by the initial geophysics survey, the Issuer trenched the most easily accessible anomalies to expose the bedrock. Two trenches were excavated on IP anomalies 4 and 5 located near the former mine pit, and 4 trenches were excavated further west to test IP-1 to -3 along with a coincident IMAGEM anomaly on IP-1. One of the trenches investigating IP-1 was expanded following the discovery of graphite mineralization. Trenching consisted of tree removal, mechanical stripping, and pressure washing of the bedrock; sampling consisted of grab samples or channel samples collected using a rock saw. Trenching occurred in several phases between June and October 2013.

9.3.1 Old mine pit trenches

Two trenches were dug over anomalies IP-4 and -5, close to the Miller mine pit. Many Beep-Mat signals had also been recorded in the area, along with EM anomalies. Further inspection revealed that many graphitic blocks were also present in the area. Overburden was 50 cm thick.

Trench #1 covered both geophysical targets in the mine pit area. The mineralized portion of the trench reveals several graphite veins 2.5-5 cm wide at the contact between marble and paragneiss. The marble unit also contains many approximately 30 cm-long pods of skarn with 10-20% graphite, along with graphite veining. Similar pods were observed in the mine pit and seem to be common throughout the marble unit.

Trench #2, a little further to the north, also covered both geophysical targets. This trench did not reveal the pod zone, but a 5-cm graphite vein could be followed for 8 m from the east end of the trench, initially striking westward and then southward toward an historically mined prospecting pit.

Table 4 presents the most significant results for the samples from both trenches, and Figure 9 displays the sample location map. Certificates of analysis are provided in Appendix 6.

Table 4 Results from the Trench #1 and Trench #2 sampling programs.

Sample	Description	Cg (%)
C17070	Trench #1: 50cm channel sample. Diopside, actinolite, calcite, biotite Skarn. 1-2%Gp 2-3mm + local clusters. Skarn float in the marble. Many 30-40cm floats in that area.	1.82
C17071	Trench#1: 50cm channel sample, similar to C17070, 0.5cm graphite vein	0.23
C17072	Trench#1: 1m channel sample. Same as C17070. 2-3%Gp. Vn coarse Gp 3-4cm.	2.27
C17073	Trench#1: 1m channel sample. Same as C17070. 10%Gp. Vn coarse Gp 1cm.	2.13
C17074	Trench#1: 1m channel sample. White marble, CC, Diopside, Bo, Gp. 1-2% mm graphite. 5m unit. Half of the trench.	1.27
C17076	Trench#2: 0.5m channel sample. Paragneiss. 1-2%Cg	1.58
C17077	Trench#2: Same as sample C17078	15.10
C17078	Trench#2: 15-20% Cg. 0.5m channel sample in a 10cm graphite vein.	24.60

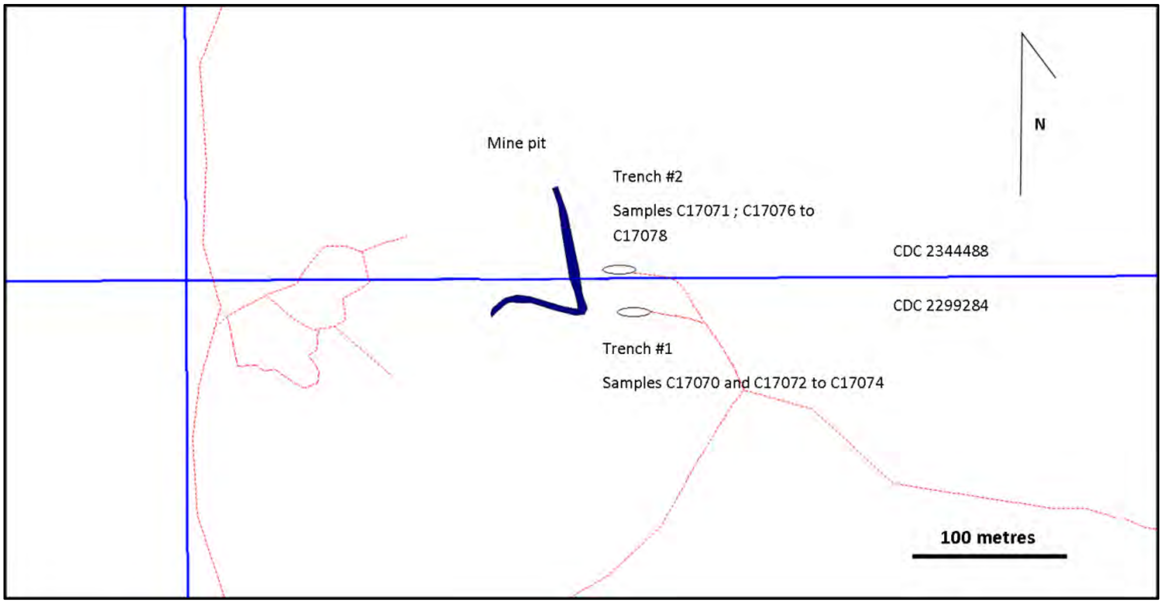


Figure 9 Location of sampling from Trench #1 & #2.

9.3.2 Main Trench area

Trench #3 (the "main trench") on the combined IMAGEM, Beep-Mat and IP-1 anomalies yielded the most interesting mineralization on the property. Graphite vein mineralization was exposed by mechanical stripping, revealing two high-grade showings (VN1 and VN2) located 200 m west of the Miller mine pit. Item 7.2 describes the mineralization in detail. One of the two smaller initial trenches was extended to reveal the bedrock between the VN2 and the VN1 showings. A total of 700 m^2 was exposed in the trench, for a total of 900m^3 of displaced overburden.

9.3.2.1 Geology

Trench #3 exposes the contact between marble and a paragneiss unit in the northeast part of the trench and between marble and a banded marble-paragneiss unit in the central and southeast parts. Pegmatites mark the contact and are spatially associated with mineralization: wide graphite veins and metre-scale graphite-wollastonite pods. The distinction between marble and skarn was based on diopside content. The marble displays variable degrees of silicification, increasing in intensity closer to the pegmatite, to the point where marble at the contact forms a zone of "quartzite". In the banded marble-paragneiss unit, the marble is visibly altered whereas the paragneiss does not show signs of alteration at the macroscopic scale. The paragneiss unit at the northeast end of the trench also does not show visible signs of alteration.

A diabase dyke cuts across the other rock units. The diabase dyke is locally cut by graphite-filled faults. Pegmatite completely fills the contact zone in the northeast part. The contact zone in the southeast part displays intense alteration and could not be described in detail because it corresponds to a depression filled with soil and calcite grains resulting from surface weathering.

Other metre-scale pods were also found scattered in the marble unit away from any contact. Figure 10 shows a map of the general features of the trench. Close-ups of the geology of the VN1 and VN2 showings can be found in Item 7.2. Photographs of the lithologies encountered in the trench are presented in Appendix 9.

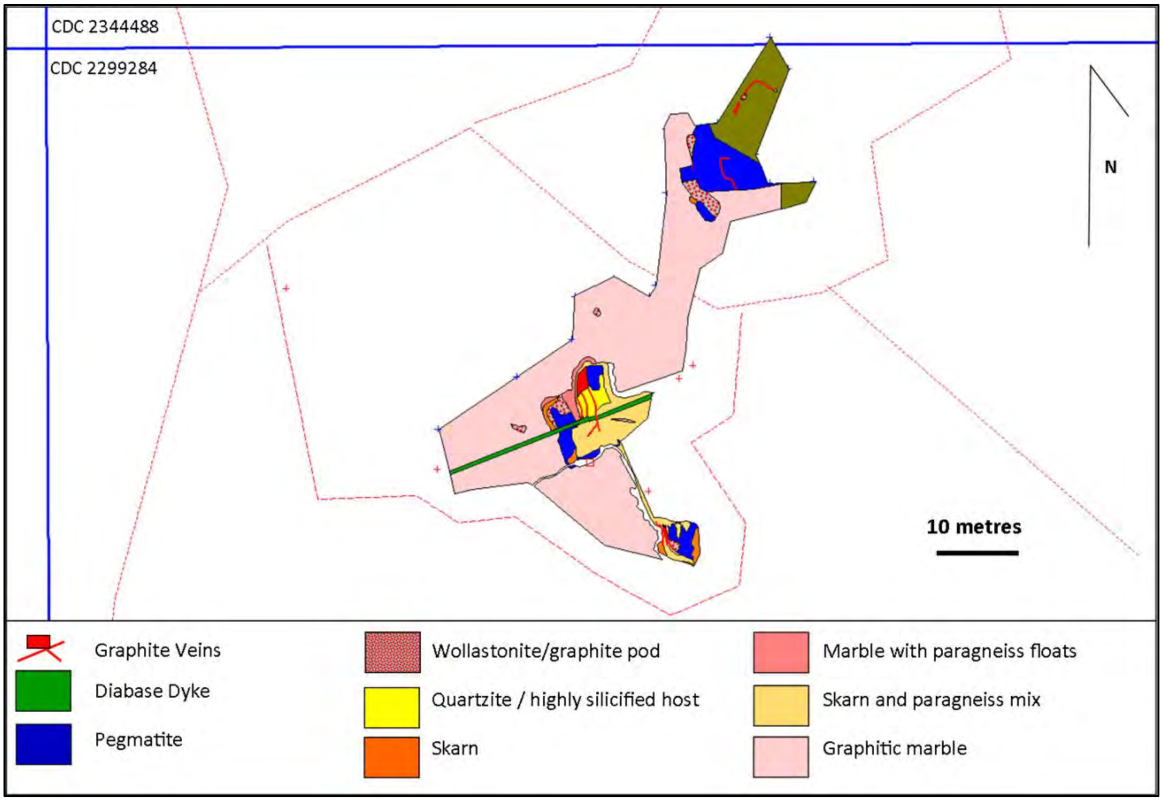


Figure 10 Detailed map of Trench # 3 (the"main trench") showing lithologies and the VN1 & VN2 showings.

9.3.2.2 Structural geology

The pegmatite in the east area of the trench is cut by many faults trending N080. The main and secondary graphite veins trend N310 to N340. They occur at the contact between marble and paragneiss, and local folding often acts as a focus of mineralization. The paragneiss bands trend N030 to N040. Fractures oriented N080 were observed in the northeast part of the trench. The diabase dyke in the south part trends N070.

9.3.2.3 Sampling

Channel samples were collected to better characterize the graphite mineralization. The most significant results were obtained at the VN2 showing. Assays yielded 28.2% Cg over 1.3 m in a channel sample, including 49.7% Cg over 0.25 m. A graphite-wollastonite pod assayed 24.4% Cg over 0.5 m and 17.7% Cg over 0.5 m in channel samples.

Channel samples were also collected from other graphite-wollastonite pods found during trenching. Six (6) graphite pods were sampled in Trench #3 over a distance of 55 m. The best assays were: 10.1% Cg over 0.6 m; 18.6% Cg over 1 m and 22.2% Cg over 1.3 m (VN1 showing); 42% Cg over 0.44 m; 24.4% over 0.5 m (pod near the VN2 showing); and 33% Cg over 0.5 m. Table 5 presents the most significant results from the sampling program in Trench #3 and Figure 11 shows the sample location map. The certificate of analysis is presented in Appendix 6.

Table 5 Significant results from the sampling program on the VN1 & AN2 showings. Trench #3.

Name	Sample#	Channel width (cm)	Channel length (m)	%Cg
Pod #1	C18835	2.5	0.60	10.1
Pod VN1	C18836	2.5	1.00	18.6
	C18837	2.5	1.30	22.2
	C18838	2.5	0.58	6.6
Pod #2	C18839	2.5	0.44	42.0
VN2	C18841	2.5	1.30	28.2
Including	*C18840*	*2.5*	*0.25*	*49.7*
Pod #3 (VN2)	C18842	2.5	0.65	12.5
	C18843	2.5	0.50	24.4
	C18844	2.5	0.50	17.7
Pod #4	C18845	2.5	0.50	33.0

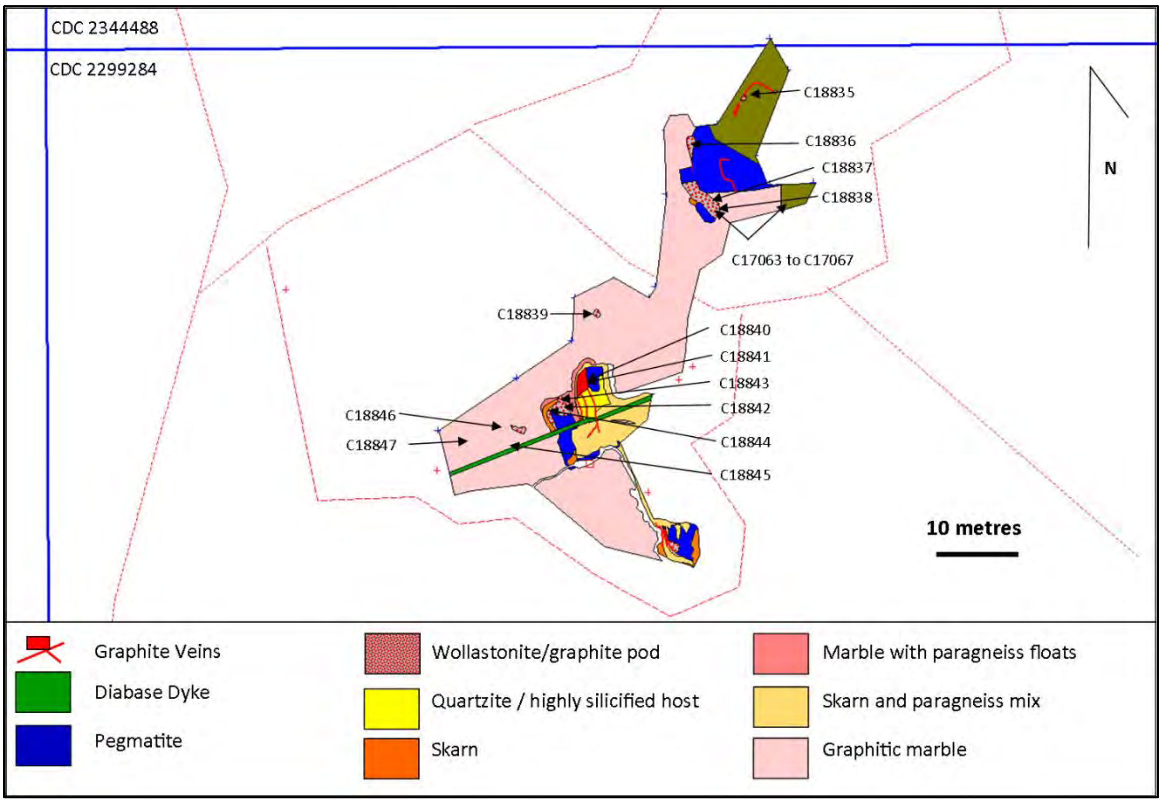


Figure 11 Channel sample locations in Trench #3 (VN1 - VN2 showings).

9.3.3 Other trenches

Trenches #4 and #5 tested anomalies IP-1 and IP-2. Both trenches revealed a marble unit in contact with paragneiss. Small graphite veins were found within the marble and inside a pegmatite body. Two folds were observed in Trench #5. The first fold had a vertical limb striking N080 and a subvertical limb oriented N340. A second series of tight folds was characterized by a hinge line plunging 50° toward N350 and limbs trending N340/80 and N160/80. Figure 12 show the location of the trenches. After making the above observations, the trenches were backfilled without further inspection.

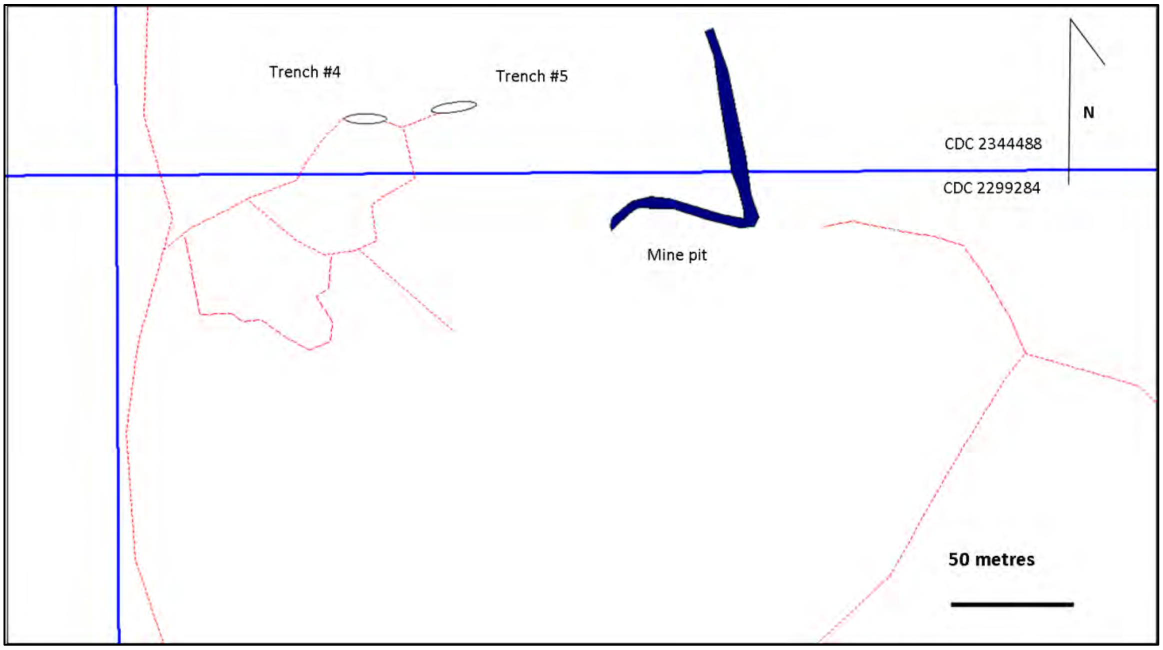


Figure 12 Locations of Trenches #4 & #5.

9.4 Airborne VTEM survey

Geotech Ltd of Aurora, Ontario, was commissioned by the Issuer in the spring of 2013 to complete a helicopter-borne Versatile Time Domain Electromagnetic survey (VTEM Plus) and a Horizontal Magnetic Gradiometer (HGrad) geophysical survey over the two claim blocks of the Miller Mine Property (Figure 2). The survey was flown on June 13, 2013 over an area of 25 km², yielding a total of 336 line-km of geophysical data. Positioning was provided by a GPS navigation system and radar altimeter. The survey lines were oriented NE-SW and generally spaced 100 m apart, with a tighter spacing of 50 m in the central part of the East Block over the areas of historical mining and recent graphite discoveries. The survey lines were flown with an Astar 350 B3 helicopter at an elevation of 91 m above ground at an average speed of 80 km per hour, producing an average terrain clearance of 60 m for the EM bird and a magnetic sensor clearance of 67 m. Details of the detector models and measurement parameters are provided in the Geotech report (Vender and Orta 2013) provided in Appendix 10.

Geotech identified six (6) conductors (3 on the East Block and 3 on the West Block) based mainly on the Tau decay parameter evaluated from time domain EM data and vertical magnetic gradient contours (see Figure 7 of Vender and Orta 2013; Appendix 10) (see also Canada Carbon press releases of September 12 and October 8, 2013). All anomalies were later subjected to detailed modelling to determine the orientation and depth of the associated conductors (Han and Prikhodko 2013a, 2013b; Appendix 10) (see Canada Carbon press release of November 14, 2013).

The East Block contains three major anomalies, E1 to E3. Anomaly E1 is located 800 m north of the mine pit, with an approximate diameter of 400 m; E2 is 280 m southeast of the mine pit and 150 m south of Trench #3; E3 is located 545 m southeast of the Miller pit. Anomalies E1 and E3 and the north part of E2 are on land covered by Canada Carbon's access agreement for exploration work. Based on the modelling work, anomalies E1 and E2 respectively occur at depths of 100 m and 80-100 m. Anomalies E1 and E2 occur in marble units that are known to contain graphite elsewhere on the property. Magnetic maps show that E1 is located at the contact of two magnetic anomalies which may correspond to the contact between two geological units, suggesting a potentially similar context to that of the Miller mineralization.

The West Block contains three major anomalies, W1 to W3. According to the modelling results, anomaly W1 is located in marble and is subvertical at a depth of 100 m, whereas W2 and W3 are near-surface anomalies and W2 is located at a contact zone between marble and intrusive rocks.

In addition to these six (6) main conductors, many clusters of smaller sized EM anomalies can be observed on time-constant images generated by Geotech for the two blocks of the property. The clusters correspond to one or more closely spaced EM anomalies or EM anomalies that show a relationship between their EM signals. The East Block contains 40 such clusters made of one or more EM anomaly. The average size of the clusters is approximately 100 m. Among the anomalies is a cluster found in the vicinity of the Miller mine pit. Southeast of the Miller mine pit, an anomaly is also present and its extent and pattern suggest continuity or near-continuity between the mine site anomaly and conductor E3. Many small historical trenches are found at surface and the Issuer's geologists consider it very likely that graphite causes both of those anomalies. The West Block hosts 46 clusters with an average size of approximately 200 m; these clusters will be investigated by prospecting and Beep-Mat survey to better resolve their potential. This will also include detailed resistivity depth imaging and 3D Maxwell plate modelling. In conclusion, the VTEM survey identified many anomalies that are highly prospective for graphite. Some returned positive results during follow-up work (E2 and E3) whereas many others still need to be tested by prospecting, trenching or drilling, as required, particularly on the West Block.

9.4.1 Follow-up on airborne anomalies E1 and E2

Following the airborne VTEM survey, a field crew was sent in September and October to investigate some of the anomalies through prospecting, Beep-Mat surveying and hand digging. The objective of the program was to determine if any surface mineralization could explain the anomalies.

Although few outcrops are found on the property, numerous graphite veins were uncovered during this prospecting phase to the southeast of the mine pit, in the vicinity of the VN3 showing, and within the outline of the E3 anomaly. Numerous closely-spaced graphite veins ranging in width from several centimetres to tens of centimetres were discovered under 40 cm of overburden. Some veins occur at the marble-paragneiss contact, in an identical geological context to that of the Miller mine site and trench area. Several exploration pits were also located, with graphite-bearing blocks adjacent to them, apparently sourced from the pits.

Selected grab samples collected from these veins returned assays of 29.9% Cg, 23.4% Cg, 29.8% Cg, 29.9% Cg, 24.5% Cg and 33.3% Cg. The Issuer also found multiple stockpiles of graphite-bearing material, some of which were discovered near the historical Miller mine pit. The total piled material contains 640 tonnes of graphite-rich vein mineralization in marble, paragneiss and wollastonite, as well as five tonnes (5 t) of high-grade lump graphite. Wollastonite is present in the stockpiled material and occurs with graphite as acicular crystals up to tens of centimetres in size. Table 6 summarizes the results of the prospecting work. Figure 13 shows the locations of the prospected zones on the Property and the grab sample locations. Certificates of analysis are provided in Appendix 6

Table 6 Results of the folllow up prospecting worl on the VTEM anomaly.

Sample	Description	Cg (%)
A41270	Graphitic paragneiss. 1m of overburden. Hematization+++	4.4
A41271	Close to a VTEM anomaly. Graphite veins in marbles.	4.0
A41272	Graphite veins in marble.	29.9
A41273	Graphite veins in marble. Strong Beep-Mat signal.	23.4
A41274	Graphite veins in marble. Strong Beep-Mat signal.	29.8
A41275	Graphite veins in marble. Strong Beep-Mat signal.	5.3
A41276	Graphite veins in marble.	29.9
A41277	Graphite veins in marble. Strong Beep-Mat signal.	14.7
C18575	Coarse-grained marble. 1-2% disseminated coarse graphite. 5x5cm clusters of graphite. Iron oxides+. Strong Beep-Mat signal.	24.5
C18576	Medium-grained paragneiss. Traces of fine-grained to medium-grained Pyrite. 2% disseminated Gp + veins of medium- to coarse-grained Gp.	33.3
A41283	From a stockpile of material high-grade	44.9
A18811	From a stockpile of material high-grade	53.6
A41284	From a stockpile of low-grade material. ¾ of the stockpile is made of this.	10.8
A41285	From a stockpile of low-grade material. ¼ of the stockpile is made of this.	3.4

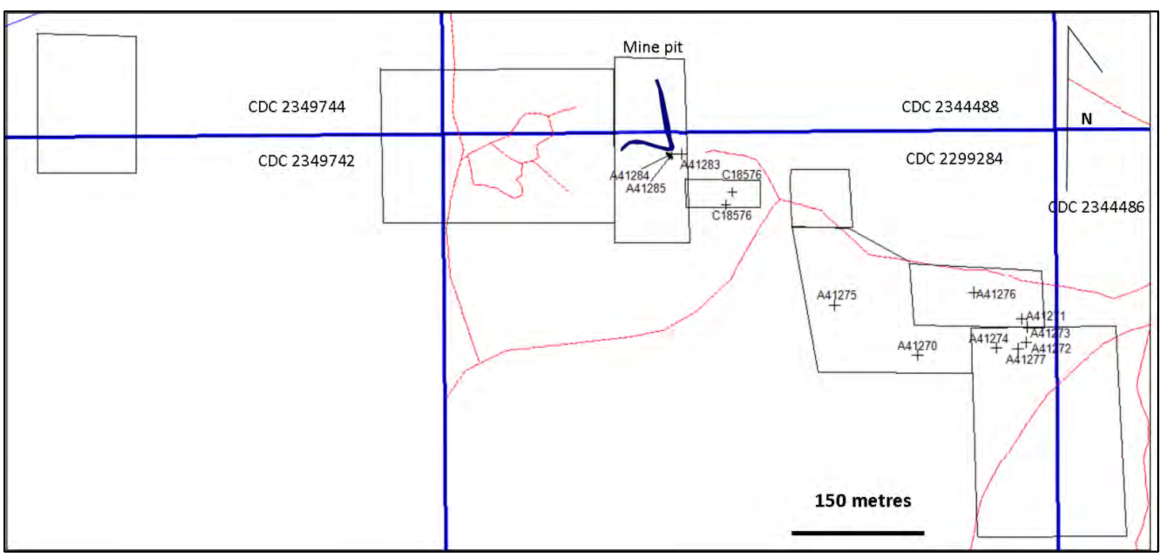


Figure 13 Prospected areas over VTEM anomalies.

9.5 Second IMAGEM survey

In September 2013, Géosig was contracted to perform a second IMAGEM survey in the vicinity of Trench #3. The detailed mobile TDEM geophysical survey was completed from September 18 to 22, 2013, to investigate in greater detail the previously identified EM anomalies associated with graphite occurrences (Boivin 2013; Appendix 11). The survey operators could not follow the grid lines due to the presence of the trench, and instead followed a meandering path that was precisely recorded by a GPS unit integrated with the IMAGEM detector. This provided complete coverage of the planned area (300x150 m) with an irregular spacing of 50 to 200 m. This method increased the density of readings near positive responses, resulting in a better definition of the anomalies. A total of 9.55 line-km were completed with an average spacing of 20 readings per metre. The survey was successful in delineating well-defined anomalies over the known graphite occurrence and revealed new anomalies that will require further investigation. Although under development, the IMAGEM method appears very promising for the detection of near-surface conductors and seems particularly efficient for graphite vein mineralization.

9.6 Trenching on VN3 showing

A make-shift trench (Trench #6) was excavated at the VN3 showing in the southern area of the property, close to a targeted VTEM anomaly. The showing was discovered when a vein was exposed while moving the rig to the E3 drill site during the second drilling campaign (see Item 10.2). The bedrock was subsequently stripped to reveal a vein over 2 m wide that could be followed along strike for 5 m before pinching out. A channel sample (A18912) from the vein graded 45.35 over 1.46 m. Certificates of analysis are presented in Appendix 6. The location of the VN3 showing is shown on Figure 14 and photographs are presented in Appendix 4.

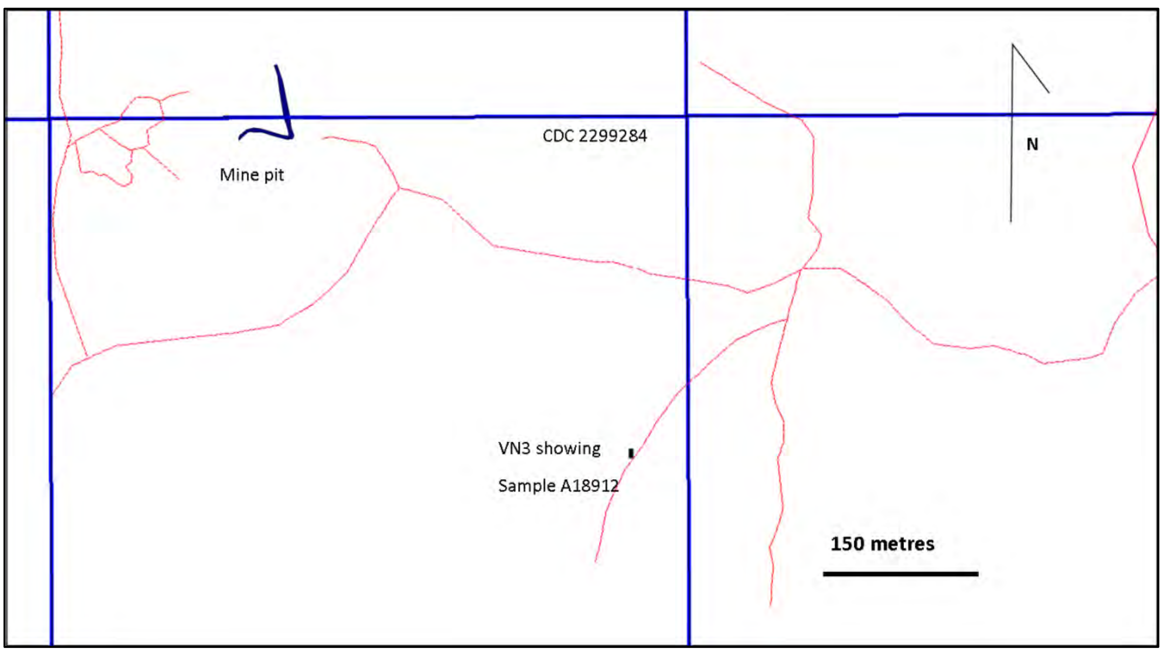


Figure 14 Location of the VN3 showings.

9.7 PhiSpy Surveys

After the second drilling campaign (see Item 10.2) and the trenching of the VN3 showing, a PhiSpy survey was performed in December 2013 and March 2014 over the vicinity of the VN3 showing, the E3 anomaly, the mine pit and the Trench #3 area.

The PhiSpy system is a versatile exploration tool similar to the IMAGEM method used in the past by Géosig. Contrary to large loop configurations requiring significant material and staff, the PhiSpy unit can be deployed rapidly and at low cost. It weighs about 40 kg and is operated by two people. Its small size and its ability to record the location with a coupled GPS system makes it practical for use in sparse forests, without the absolute necessity of cut line. This is not the case with other TDEM systems or co-planar horizontal loop frequency EM systems (Max-Min). The large screen of the unit displays a map of the current location of the unit and other geoscientific information (such as targets from an airborne geophysical survey), thereby enabling easy navigation to, and proper coverage of, areas of interest. In addition, the large screen enables real-time display of TDEM profiles, providing on-the-spot anomaly detection. Shallow anomalies can then be dug out, investigated and sampled right away. Unlike small EM devices such as the Beep-Mat, which are usually limited to an investigation depth of about 1 m, PhiSpy can reach much deeper conductors and records full TDEM decay curves that can be post-processed and analyzed to retrieve information about the conductance and geometry of the conductors.

No report on the PhiSpy work has been produced. The Issuer will request a report once the current geophysics phase is complete. Since the PhiSpy equipment is similar to the Beep-mat, the authors are comfortable using the interpretation maps provided by the geophysicists without further interpretation from them, for the purposes of the present Report.

The PhiSpy survey performed between December 2013 and March 2014 revealed fourteen (14) anomalies of varying size. Beep-Mat prospecting was carried out on each anomaly. Five (5) anomalies of significant size were detected. Two of the anomalies are related to the VN1 and VN2 showings, while another corresponds to the target of the third drill program (Item 10.3) that revealed two graphitic horizons. Two bigger anomalies still require additional testing. The results of the survey on Trench #3 detected the southern and eastern extensions to the VN1 and VN2 showings.

Item 10: Drilling

Canada Carbon performed three drilling campaigns. The aim of the first campaign was to determine the depth extension of surface mineralization in the Trench #3 area (VN1 and VN2 showings). Drilling at this site extended the mineralized contact to a depth of at least 39 m below the VN2 showing. The aim of the second campaign was to extend the showings laterally and at depth. The drill holes extended the mineralized contact by finding another graphite pod along the depth extension of the contact. The second campaign also tested VTEM anomaly E2, which was explained by sulphide mineralization, and anomaly E3, although the latter could not be explained. The third campaign was a 2-hole survey intended to further test the E3 anomaly, this time encountering two conductive horizons consisting of graphitic marbles.

Item 10.1 First drilling campaign

Canada Carbon's first drilling campaign of 12 holes for 594.9 m was carried out from late July to early August 2013. The objective was to test the depth and lateral extent of the various veins. Downing Drilling was contracted to drill the VN1 and VN2 showings in August 2013. The firm used a Boart Longyear LF70 with Interlock system. This rig was used for DDH13-01 to DDH13-08 and produced NQ diameter core. One hole was attempted using a small portable drill (VN1-01) but was stopped in the first metre of drilling due to the hardness of the pegmatite. A CME 850 on track drill was then used to perform the other 3 planed short holes (VN1-02; VN2-01; VN2-02).

The results of the drilling campaign demonstrate that the graphitic vein system extends to a depth of at least 39 m beneath the VN2 surface occurrences. Drilling intersected a graphite-wollastonite pod at 39.3 m (vertically) beneath the VN2 showing in hole DDH13-03, returning assays similar to the surface results, with 15.14% Cg over 0.9 m. Drill hole DDH13-04 laterally extended the graphite-wollastonite mineralization 14 m toward the east, and intersected 14.5% Cg over 0.5 m at 33.8 m (vertically) underground.

Some drill holes also tested the VN2 showing near surface. Drill hole VN02-01 encountered 32.45% Cg over 2m from 1 to 3 m downhole, including two veins respectively assaying 53.6% Cg over 0.3 m and 51.7% Cg over 0.9m.

Many lower grade intersections were also encountered. Some of the lower grade mineralization includes graphitic marble or paragneiss grading between 0.46% and 5.27% Cg. Many rock units were crosscut by thin veins (2-5cm).

Table 7 provides technical information on the holes drilled during the first campaign and Figure 15 shows the location of the holes. Highlights of the drilling results are presented in Table 8. Certificates of analysis are provided in Appendix 6. Detailed logs are found in Appendix 12.

Table 7 Technical details of the first drill program.

Hole	Target	Location (UTM NAD83 Z18) Easting	Northing	Azimuth	Dip	Length (m)	Samples
DDH13-01	VN1	530609	5058004	240	55	57.0	3
DDH13-02	VN1	530620	5057999	240	55	66.0	8
DDH13-03	VN1-VN2	530596	5057988	240	55	60.0	10
DDH13-04	VN2	530584	5057979	240	55	50.1	10
DDH13-05	VN2	530586	5057966	250	55	42.3	5
DDH13-06	VN2	530602	5057973	240	55	64.0	4
DDH13-07	VN2	530532	5057952	60	55	132.0	14
DDH13-08	VN2	530631	5057937	240	55	81.0	8
VN01-01	VN1	530584	5057996	-	90	2.0	0
VN01-02	VN1	530583	5057996	-	90	15.0	5
VN02-01	VN2	530571	5057974	-	90	15.0	13
VN02-02	VN2	530569	5057968	60	45	10.5	5

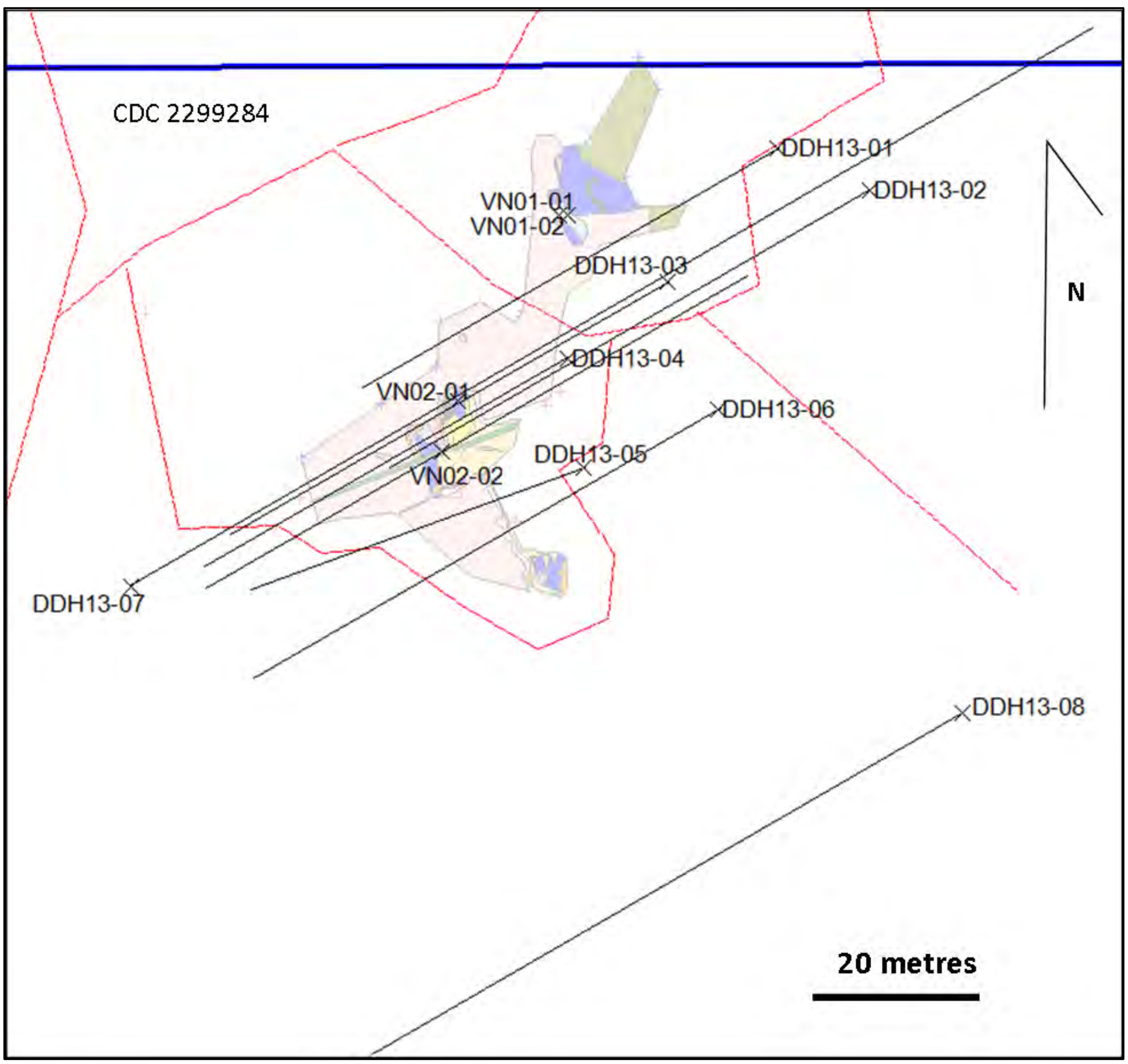


Figure 15 Location of holes drilled durning the first campaign.

Table 8 Significant results from the first drilling program.

VN1

Hole	Lithology	From (m)	To (m)	Interval (m)	Cg (%)
VN01-01	0-1 m: graphite pod 1-2 m: silicified marble				
VN01-02	0.2-1.8 m: graphite pod 1.8-15 m: silicified marble	0.00	1.35	1.35	7.22
DDH13-01	4.5-5.2 m: silicified marble 5.2-8.9 m: paragneiss 8.9-37.7 m: silicified marble 37.7-40.9 m: pegmatite 40.9-52.7 m: paragneiss and pegmatite mix 52.7-57 m: silicified marble				
DDH13-02	0.2-18.1 m: marble 18.1-28.9 m: mixed paragneiss and silicified marble 28.9-51 m: silicified marble 51-63 m: pegmatite 63-66 m: quartzite				

vn2

Hole	Lithology	From (m)	To (m)	Interval (m)	Cg (%)
VN02-01	0.8-2.70 m: graphite pod 2.70-3 m: wollastonite pod 3-5 m: silicified marble 5-5.6 m: pegmatite 5.6-15 m: silicified marble	1.00 *Including 1.00* *Including 1.70* 3.00 7.50 *Including 8.50*	3.00 *1.30* *2.60* 7.50 9.60 *8.90*	2.00 *0.30* *0.90* 4.50 2.10 *0.40*	32.45 *53.60* *51.70* 2.51 9.65 *11.50*
VN02-02	0-1.7 m: paragneiss 1.7-5 m: silicified marble 5-10.5 m: quartzite	0.00	4.00	4.00	2.32
DDH13-03	0-9 m: paragneiss 9-12.7 m: pegmatite 12.7-17.7 m: paragneiss 17.7-20.9 m: quartzite 20.9-22.5 m: pegmatite 22.5-28.3 m: quartzite 28.3-36.4 m: marble 36.4-42 m: paragneiss 42-47 m: silicified paragneiss 47-51.5 m: pegmatite 51.5-60 m: silicified marble	0.00 *Including 0.80* 46.70 *Including 47.50*	2.00 *1.10* 48.70 *48.40*	2.00 *0.30* 2.00 *0.90*	1.61 *6.33* 6.14 *15.14*
DDH13-04	1.3-16.2 m: white marble 16.2-19.6 m: paragneiss 19.6-28.7 m: quartzite 28.7-38.6 m: diabase dykes 38.6-40.1 m: quartzite 40.1-41.8 m: wollastonite-graphite pod 41.8-48 m : quartzite 48-50.1 m : paragneiss	27.00 *Including 27.60* 39.50 *Including 41.30* 48.00 *Including 48.05*	28.00 *27.75* 42.00 *41.80* 49.50 *48.20*	1.00 *0.15* 2.50 *0.50* 1.50 *0.15*	4.70 *11.90* 8.12 *14.50* 4.20 *8.59*

	50.1-51.2 m : pegmatite				
DDH13-05	0-26 m: silicified marble and quartzite 26-32.7 m: white marble 32.7-40 m: alternating white marble and chloritized pegmatite 40-42.3 m: pegmatite	2.30	2.60	0.30	22.70
DDH13-06	0.5-23.8 m: paragneiss 23.8-30.2 m: quartzite 30.2-42.5 m: paragneiss 42.5-48.6 m: serpentinized and chloritized paragneiss 48.6-59 m: silicified marble and white marble 59-64 m: quartzite				
DDH13-07	2.8-28.8 m: white marble 28.8-48 m: diabase and pegmatite intrusions 48-69.1 m: mixed quartzite and silicified marble 69.1-74 m: diabase and chloritized marble alternating 74-80.5 m: silicified marble and quartzite 80.5-84.5 m: pegmatite 84.5-94.8 m: silicified marble 94.8-103.4 m: quartzite 103.4-118 m: marble and pegmatite alternating 118-132 m: marble and silicified marble	47.00	48.00	1.00	6.51
DDH13-08	5.8–11.5 m: marble and silicified marble 11.5-38.5 m: mixed silicified marble and pegmatite 38.5-41.5 m: diabase dyke 41.5-63.7 m: white marble 63.7-66.5 m: paragneiss 66.5-69.3 m: quartzite 69.3-72.5 m: paragneiss 72.5-81 m: quartzite				

Two holes, VN01-01 and VN01-02, were drilled vertically over the VN1 showing to test the depth of the vein. Hole VN01-01 was drilled using a small portable drill which was could not penetrate the pegmatite unit and so the hole ended at 2 m after drilling 1 m of graphite and wollastonite mineralization and 1 m of marble. Hole VN01-02 was drilled using a track drill and encountered 1.6 m of graphite and wollastonite pod followed by silicified marble down to 15 m. The cores show bedding of the marble at 20° to 35° to core axis. The contact between the marble and pegmatite veins and pods are at 30° to 45° to core axis and is therefore oblique to bedding. Surface observations show that the formations dip eastward.

Two holes tested the VN2 showing near surface. Drill hole VN02-01 yielded in 32.45% Cg over 2 m from 1 to 3 m downhole, including two veins assaying 53.6% Cg over 0.3 m and 51.7% Cg over 0.9 m. Drill hole VN02-02 started in paragneiss but missed the contact with marble at depth.

DDH13-01 targeted a SE extension to the VN1 showing and encountered highly altered marble carrying minor graphite on both sides of a pegmatite intrusion in paragneiss. Smaller pegmatite intrusions have a wollastonite content (visual estimate) varying between 30 and 40%. Those intrusions range from 10 to 50 cm wide. Contacts and bedding between sedimentary units are at 30° to 45° to core axis. The pegmatite cuts across the units at an angle of 15°, 30° or 60° to core axis and is therefore oblique to bedding.

DDH13-02 targeted a further SE extension to VN1 and met highly altered marble carrying minor graphite on both sides of a pegmatite intrusion in paragneiss. Serpentine veins were found on both sides of a pegmatite vein. Serpentine alteration in the form of diffuse patches was observed in the paragneiss close to the pegmatite vein. The paragneiss unit is located between 18.3 m and 20.6 m and displays variations in schistosity, with 15°, 30°, 70° or 80° to core axis across the interval. The overall core displays contacts dipping from 40° to 60° to core axis, which change to 20° to 25° after 26.6 m. The pegmatite horizons contain 45 to 52% wollastonite. Below the pegmatite horizon, the bedding in silicified marble presents an angle of 60° to core axis.

DDH13-03 targeted the VN2 surface showing as well as an extension to VN1. A graphite-wollastonite pod grading 15.14% Cg over 0.9 m was found at 47.40 m along the core, which corresponds to a vertical depth of 39.3 m below the VN2 showing. The mineralization occurs in a pegmatite along the contact between paragneiss and silicified marble.

DDH13-04 targeted the depth extension of the VN2 surface showing. The hole revealed two graphite veins, the largest 2cm thick with an orientation of 55° to core axis, and the second 1-2mm thick at the contact of white marble and paragneiss, oriented 25° to core axis. The hole encountered a wollastonite-graphite pod between 40.1 and 40.8 m grading 14.5% over 0.5 m. This mineralization laterally extends the mineralized contact toward the east by 14 m and corresponds to a vertical depth of 33.8 m. Most of the contacts and bedding planes are at 50° to core axis, but vary between 25 and 75°. The diabase is almost 9 m thick, with contacts at 90° (top) and 15° (bottom) to core axis.

DDH13-05 targeted the southeast extension to the VN2 showing and contact zone. The hole went through 10 cm of serpentinized breccia before entering a silicified body made of altered marble and quartzite, ending at 26 m downhole. The drilling then encountered white marble and pegmatite with chloritized contact zones. The white marble contains disseminated graphite and graphite veinlets. A 30 cm horizon in a silicified marble assayed 22.70% Cg. The hole ended with 2.3 m of wollastonite-rich pegmatite.

DDH13-06 further tested the southeast extension of the VN2 showing and contact zone. The hole encountered mainly paragneiss with local silica alteration and veins. This unit show a variation in schistosity from 3° to 40° at depth. At the bottom of the paragneiss, some contacts are intensely altered and the paragneiss is serpentinized over 1.6 m. Unaltered marble and silica-rich marble are also observed along core. Contacts and bedding in the silicified marble interval shows variable orientations between 30° and 70° to core axis. Disseminated graphite can be found along the drill hole.

DDH13-07 was drilled in the opposite direction compared to the other holes. The goal was to further test the VN2 showing at depth. The hole mostly encountered unaltered marble. Silicification locally altered the marble to silicified marble or quartzite. Some serpentinization and chloritization of the marble was also observed. The chloritized marble was found adjacent to a diabase dyke. Pegmatite intrusions and diabase dykes were also found along the core. The pegmatite contains between 25 and 60% wollastonite. In interval containing disseminated graphite associated with small graphite veinlets graded 8% over 0.9 m. The veins are oriented 20° to 30° or 65° to 75° to core axis.

DDH13-08 was collared 80 m southeast from the inferred extension of the contact to inspect the general geology of the area. This hole contained mostly marble intruded by pegmatite bodies and diabase dykes. Paragneiss is encountered near the bottom of the hole where it is intensely altered to quartzite. A graphite veinlet was found at the contact between altered marble and a pegmatite body. Most of the bedding planes are 20° to core axis, although a few are at 40° and 60°.

10.2 Second drilling campaign

The Issuer contracted George Downing Estate Drilling Ltd in mid-November 2013 (Grenville-sur-la-Rouge, Quebec) to complete a 10-hole (551 m) NQ-sized diamond drilling program. The firm used a Boart Longyear LF70 rig with Interlock system. The objective was to extend the VN2 graphite mineralization at depth and along strike, and to drill-test three (3) VTEM anomalies identified by the VTEM anomaly modelling. This hole would sample below the graphite veins and pods observed in the trench area since previous drilling had already tested the continuity of the graphite veins. The winter campaign encountered bad weather, which slowed down drilling production.

DDH13-09 explained the E2 VTEM anomaly when it encountered a sulphide-rich intersection with minor disseminated graphite. DDH13-10 targeted the E3 anomaly and encountered a wide intersection of minor and disseminated graphite in marble.

While moving the rig to the E3 drill site, a graphite-rich vein (VN3) was exposed over a width 2 m and a strike length of 5 m before pinching out. The VN3 discovery was drilled during the third campaign with six (6) shallow drill holes that targeted the projected strike and depth extensions of the vein (see next section for details).

The most significant results were from the new vein discovery VN3 with 48.60% C graphite (Cg) over 1.8 m in DDH13-15, including 63.20% Cg over 0.5 m. This intersection of graphite mineralization occurs 4.6 m (vertically) below the VN3 showing. In turn, DDH13-14 intersected a graphite vein grading 50.50% over 0.30 m within a 3.50 m interval grading 6.80% Cg between the surface and the DDH13-15 graphite mineralization. The VN3 showing remains open at depth.

The other hole of interest is DDH13-11, which targeted the depth extension of a wollastonite-graphite pod located 22.5 m southeast of the VN2 showing in the trench area. The hole encountered another pod, thereby extending the mineralized contact hosting the pods to a vertical depth of 8.19 m below the surface showing. The hole yielded grades similar to other wollastonite-graphite pods, specifically 8.10% Cg over 2.3 m including 11.00% Cg over 0.90 m. The pod southeast of the VN2 showing is suspected to be within the same mineralized contact that extends to at least 39.3 m (vertically) beneath the VN2 showing. The mineralized contact also remains open at depth.

Many lower grade intersections were also sampled during drilling. The best results were graphitic marble grading 2.00% over 10.50 m including 4.50 m at 3.50% Cg, and 1.00% over 13.00 m including 4.30 m at 1.6% Cg. Isolated values range between trace amounts of graphite and 4.00% Cg. No significant gold or base metal assays were obtained. The Issuer will use the lithogeochemistry data to establish alteration patterns and to better interpret the lithologies.

Table 9 provides technical information on the holes drilled during the campaign. Figure 16 shows the location of the holes in the VN1-VN2 area and Figure 17 shows the location of the holes in the VN3 area. Highlights of the drilling results are presented in Table 10. Certificates of analysis are provided in Appendix 6. Detailed logs are found in Appendix 12.

Table 9 Technical details of the second drilling campaign.

Hole	Target	Location (UTM NAD83 Z18) Easting	Northing	Azimuth	Dip	Length (m)	Samples
DDH13-09	VTEM E2	530546	5057969	225	60	182	62
DDH13-10	VTEM E3	531120	5057679	095	45	129	21
DDH13-11	VN2	530584	5057958	240	55	36	5
DDH13-12	VN2	530623	5058001	245	45	81	28
DDH13-13	VN3	531098	5057688	100	45	21	0
DDH13-14	VN3	531106	5057687	275	45	17	4
DDH13-15	VN3	531106	5057687	275	50	20	18
DDH13-16	VN3	531106	5057687	275	45	20	11
DDH13-17	VN3	531106	5057687	280	45	15	13
DDH13-18	VN3	531097	5057686	100	45	30	19

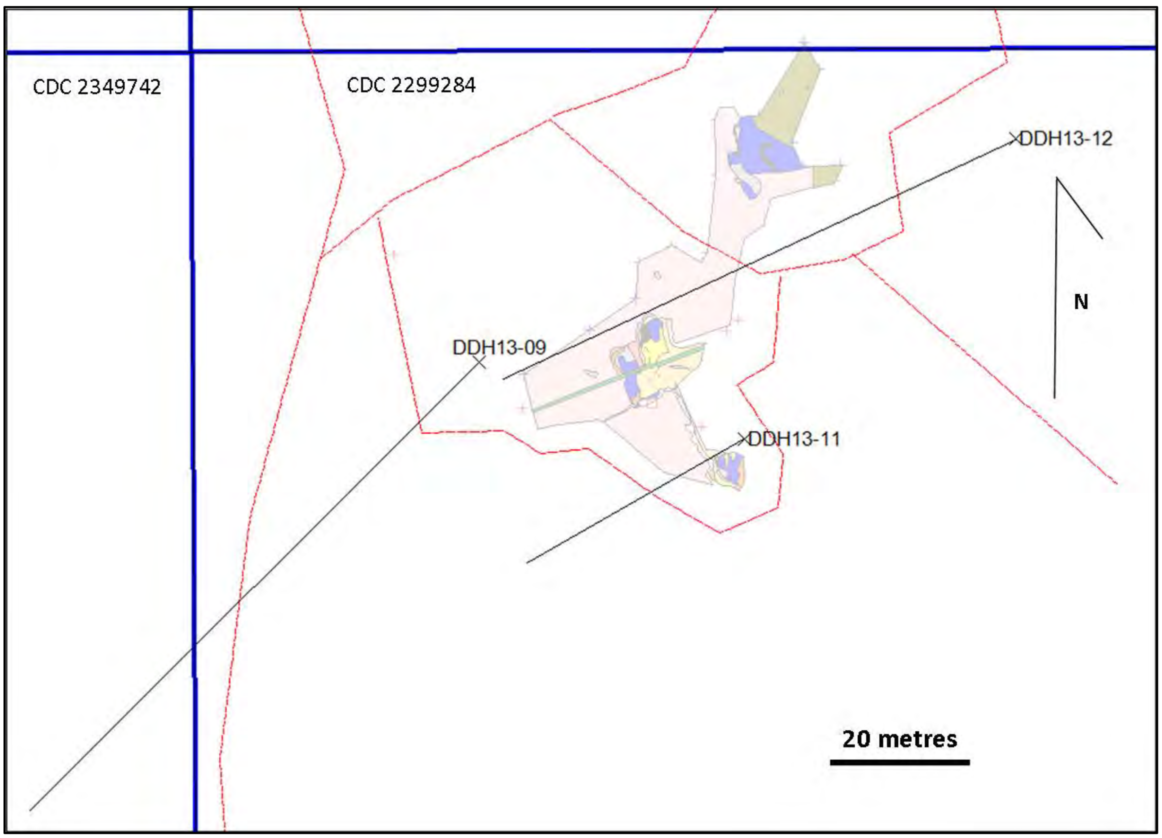


Figure 16 Holes drilled during the second campaign in the VN1 - VN2 area.

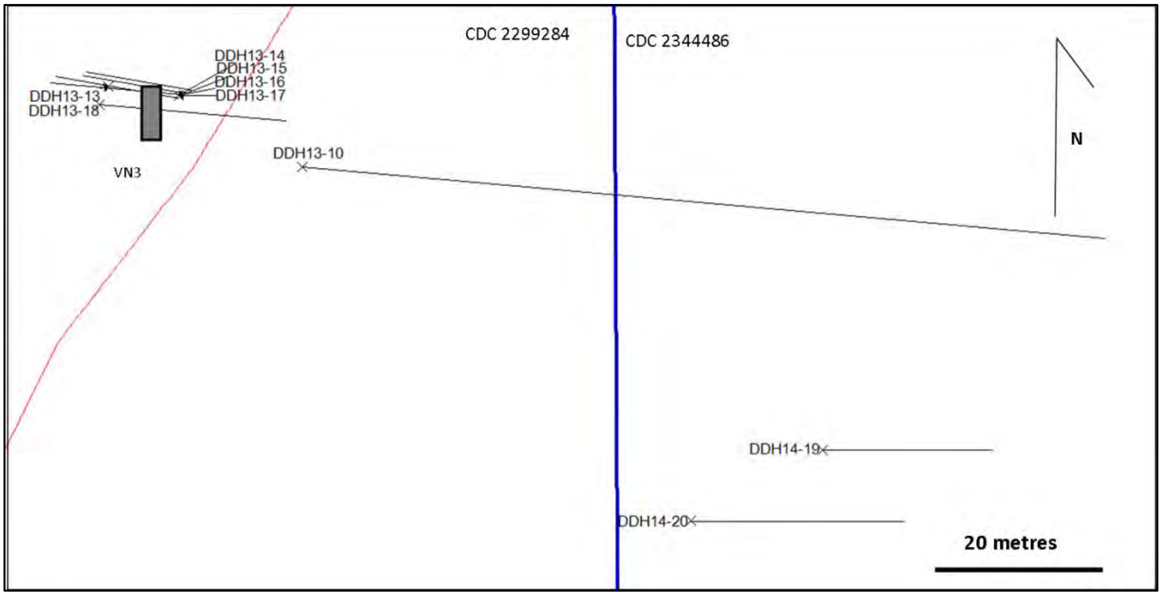


Figure 17 Location of the holes drilled during the second and third drilling campaigns on the VN2 area.

Table 10 Significant results from the second drilling program.

Hole	Lithology	From (m)	To (m)	Interval (m)	Cg (%)
VTEM anomalies					
DDH13-09	4.5-35.4 m: marble with diabase intrusions 35.4-49.2 m: silicified marble and quartzite 49.2-52.4 m: alternating marble and paragneiss. 52.4-67.6 m: shear zone 67.6-140 m: white marble and silicified marble 140-182 m: very silicified marble and quartzite				
DDH13-10	2.5-41 m: marble 41-48.3 m: marble with pegmatite intrusion and silicified zone 48.3-53 m: opal 53-69.2 m: marble 69.2-129 m: white marble				
VN2					
Hole	Lithology	From (m)	To (m)	Interval (m)	Cg (%)
DDH13-11	0.4-10 m: paragneiss 10-10.9 m: paragneiss with graphite 10.9-13.3 m: silicified marble with graphite 13.3-17.6 m: silicified marble with a pegmatite intrusion 17.6-36 m: white marble with	10.00 *Including 10.00*	12.30 *10.90*	2.3m *.90m*	8.1 *11.0*

	pegmatite intrusion				
DDH13-12	1.5-18.6 m: marble with a diabase intrusion 18.6-22.1 m: paragneiss 22.1-31.7 m: marble with pegmatite intrusions 31.7-38 m: paragneiss 38-51 m: alternating paragneiss, quartzite and pegmatite intrusions 51-81 m: quartzite	11.50 *Including 16.50*	22.00 *21.00*	10.50 *4.50*	2.00 *3.50*
VN3					
Hole	Lithology	From (m)	To (m)	Interval (m)	Cg (%)
DDH13-13	1.9-21 m: white marble				
DDH13-14	2-4 m: white marble 4-4.3 m: massive graphite 4.3-8 m: silicified marble with beddings of graphite 8-17 m: marble	4.00 *Including 4.00*	7.50 *4.30*	3.5 *0.3*	6.80 *50.50*
DDH13-15	2-6 m: marble 6-7.8 m: graphite veins 7.8-20 m : marble	6.00 *Including 6.00*	7.80 *6.50*	1.80 *0.50*	48.6 *63.2*
DDH13-16	2.25-12.4 m: marble 12.4-13.2 m: paragneiss 13.2-20 m: marble				
DDH13-17	1.3-4.8 m: marble 4.8-6.5 m: paragneiss 6.5-10.2 m: marble with a pegmatite intrusion 10.2-11.1 m: alternating marble and paragneiss 11.1-15 m: marble	2.00 *Including 4.80*	15.00 *9.10*	13.00 *4.30*	1.00 *1.60*
DDH13-18	3.3-17.8 m: marble with two pegmatite intrusions 17.8-19.4 m: paragneiss 19.4-25.5 m: marble 25.5-28.3 m: paragneiss 28.3-30 m: marble				

DDH13-09 targeted the VTEM airborne geophysical anomaly E2. Most of the hole encountered marble or silicified marble. A 15 m thick shear zone was encountered, marked by quartz veining, silicification and potassic alteration. Traces of disseminated graphite are visible throughout the marble units. From 130 m to the end of the hole, the pyrrhotite and pyrite content of the rock is greater than in the rest of the core. The pyrrhotite content varies from trace amounts to 7% whereas pyrite is present in trace amounts to 1%. Graphite veinlets are observed in the same rock units. The sulphides are either disseminated or in veinlets. The sulphide-graphite mineralization is likely the source of the VTEM anomaly. The schistosity in the hole varies between 20° and 70° relative to core axis.

DDH13-10 is located close to the VN3 showing and targeted the VTEM anomaly E3. The entire hole passed through marble and pegmatite intrusions. Disseminated graphite occurs in trace amounts up to 3%. Wollastonite and graphite-rich zones are visible over small intervals. Most of the schistosity and bedding planes are between 30° and 90° core axis.

DDH13-11 was collared southeast of VN2 and targeted the depth extension of surface pods found 22.5 m south east of VN2. The hole passed through graphite mineralization in an altered marble unit at a downhole depth of 10 m. The mineralization consists of 0.9 m grading 11%, followed by a few mineralized zones resulting in a composite interval of 2.3 m grading 8.1%. This mineralization is 8.19 m (vertically) beneath the surface pod. The rest of the core is made of marble with few pegmatite bodies. Bands with the marble ("bedding") are mostly about 40° to core axis and the schistosity is between 10° and 80° to core axis.

DDH13-12 targeted the VN2 showing at depth. This hole met marble with some paragneiss and pegmatite units. A quartzite unit is found at the end of the hole. Bedding and schistosity are oriented between 10° and 80° to core axis. This hole likely passed right next to the VN2 vein.

DDH13-13, DDH13-14, DDH13-15, DDH13-16, DDH13-17 and DDH13-18 targeted the VN3 showing with shallow holes. All holes passed through silicified marbles. Holes 16, 17 and 18 encountered some pegmatite and paragneiss units. Holes 14 and 15 encountered the graphite showings under VN3 at a vertical depth of 2.3 m in DDH13-14 with an intersection of 6.80% Cg over 3.5 m including 50.50% Cg over 0.3 m, and at a vertical depth of 4.6 m in DDH13-15 with an intersection grading 48.60% Cg over 1.8 m including 63.20% Cg over 0.5 m. The other holes did not test deeper, focusing instead on lateral extensions of the mineralization. Graphite concentrations observed along bands ("bedding") in the paragneiss and marble are oriented between 25° and 55° to core axis. Disseminated graphite was encountered throughout the marble units and varies between trace amounts and 5%.

Item 10.3 Third drilling campaign

Drilling of the new target revealed by the PhiSpy survey and the Geotech E3 target was done using a small portable drill (Gopher drill) from Downing Drilling because the intended drill site occurs in a swampy area. Two (2) holes were drilled for a total of 64.5 m, targeting two anomalies provided by the PhiSpy survey. The anomalies are parallel, oriented north-south. The holes were drilled with a dip of 48° to the east. The core will be sampled at a later date to better characterize the grade of the graphitic horizons. Table 11 provides technical information on the holes drilled during the campaign. The location of the drill holes is shown in Figure 16. Highlights of the drilling results are presented below in Table 12. Detailed logs are found in Appendix 12.

Table 11 Technical details of the holes drilled in the third drilling campaign.

Hole	Location (UTM NAD83 Z18) Easting	Northing	Azimuth	Dip	Length (m)	Target	Samples
DDH14-19	531179	5057647	090	48	28.5	Ground E3	
DDH14-20	531164	5057639	090	48	36	Ground E3	

Table 12 Significant results from the third drilling campaign.

E3 target

Hole	Lithology	Cg (%)	From (m)	To (m)
DDH14-19	3-8 m: marble and silicified marble 8-8.5 m: bedded graphite inside the silicified marble 8.5-20.3 m: silicified marble 20.3-28.5 m: silicified marble with pegmatite and calcite pegmatitic intrusions	NA		
DDH14-20	2.5-12.9 m: silicified marble and small pegmatite intrusions 12.9-26.4 m: white marble 26.4-28 m: silicified marble 28-28.6 m: bedded graphite in silicified marble 28.6-36 m: silicified marble	NA		

DDH14-19 targeted the eastern anomaly. Most of the hole passed through silicified marble. Graphite concentrations were observed along bands ("bedding") in the marble between 7.9 m downhole (vertical depth of 8 to 8.5 m below the anomaly/surface), which likely explains the anomaly. Bedding is oriented 65° to core axis and schistosity in the marble varies between 55° and 70° to core axis.

DDH14-20 targeted the western anomaly as well as the first anomaly targeted by DDH14-19. Marble, altered marble and a few pegmatite intrusions were encountered in this hole. A 0.7 m interval of bedded and disseminated graphite mineralization was met at a downhole depth of 9.3 m and could explain the second geophysical anomaly. The graphite bedding observed in hole DDH14-19 was encountered between 27.8 and 28.6 m in DDH14-20, indicating very good depth continuity.

DDH14-20 initially encountered only silicified marble with a few pegmatite intrusions. In the middle of the hole, a 13.5 m zone of white marble was followed by silicified marble again that continues to the end of the hole. Minor graphite is observed from 9.3 to 10 m, which may explain the second anomaly. Bedding is oriented at 65° to core axis, similar to the schistosity of the marble that varies between 60 and 65° to core axis.

Item 11: Sample Preparation, Analyses and Security

Item 11.1 Prospecting sample protocol

The prospecting work followed a protocol determined by the Issuer's technical team. To ensure samples and data are collected properly, a clear chain of custody of samples is established from the collection site to the laboratory. Samples weighing approximately 2 kg each were bagged onsite and placed into larger bags of 10 to 15 samples that were then shipped in batches by courier for analysis at the Actlabs facility in Ancaster, Ontario. Actlabs is an accredited laboratory meeting international standards ISO 9001:2000 with certification No. CERT-0032482 and the Canadian Association for Laboratory Accreditation Inc. Standard ISO/IFC170252005 accreditation No. A3200. At the laboratory, samples are prepared by drying, crushing (<7 kg) up to 90% passing 10 mesh, riffle splitting (250 g) and pulverizing (mild steel) to 95% passing 105µ. Graphitic carbon assaying was by multistage furnace treatment and infrared absorption. A suite of 49 elements were also analyzed for some of the samples by aqua regia digestion and Varian ICP analysis. The multi-element package comprised Ag, Cd, Cu, Mn, Mo, Ni, Pb, Zn, Al, As, B, Ba, Be, Bi, Ca, Co, Cr, Fe, Ga, Hg, K, La, Mg, Na, P, S, Sb, Sc, Sr, Ti, Te, Tl, U, V, W, Y and Zr. Duplicate analyses were performed at the laboratory for the purposes of quality assurance and quality control. No other quality assurance or quality control program was established.

Item 11.2 Channel sampling protocol

All channel samples were taken perpendicular to the orientation of the veins or pods. Channel samples were sent to Actlabs. Actlabs' results are reported using protocol 5D-C in which the samples underwent drying, crushing with up to 90% passing through a #10 square-mesh screen, riffle splitting (250 gram) and pulverizing to 95% passing a 105 micron square-mesh screen. Graphitic carbon (Cg) was determined by multistage furnace treatment and infrared absorption, with a 0.05% detection limit.

Item 11.3 Drill core sampling protocol

Core samples were split in half on site and sent to Actlabs. Richer intersections were subdivided into vein and non-vein material. Quarter-splits of the non-vein material were sent to SGS Minerals Services Canada ("SGS") in Lakefield, Ontario, for additional assaying and quarter-splits of the rest (vein material) were sent to Actlabs. Actlabs results are reported using protocol 5D-C in which the samples underwent drying, crushing with up to 90% passing through a #10 square-mesh screen, riffle splitting (250 gram) and pulverizing to 95% passing a 105 micron square-mesh screen. Graphitic carbon (Cg) was determined by multistage furnace treatment and infrared absorption, with a 0.05% detection limit. SGS Canada prepared the samples by crushing to 75% passing 2mm, splitting (250 gram) and pulverizing to 85% passing 75 micron square-mesh screen. Graphitic carbon was determined by calculating the difference from the carbon assay (after ashing) by tube furnace/coulometer minus the carbonate carbon (after ashing) by coulometry. The remainder of the core was tagged and stored on site.

Item 12: Data Verification

The exploration work discussed herein did not involve the systematic introduction of standard materials or duplicates in the sample series. Assay results recorded in the certificates of analysis were verified multiple times. Analytical results were compared to visual observations to provide a general assessment.

Item 13: Mineral Processing and Metallurgical testing

Graphite vein samples from the initial prospecting work (Item 9.1) were sent to SGS Minerals Services Canada ("SGS") in Lakefield, Ontario, for preliminary metallurgical testing and to evaluate possible uses for the graphite vein material. The graphite-rich vein material was submitted to flotation tests for different size fractions, as well as purification tests, Boron Equivalent Content evaluation, and crystallinity determination by Raman spectroscopy, as described in the following subsections. The demonstrated ability to produce a high purity graphite concentrate suggests the Miller occurrence has economically interesting grades.

13.1 Initial purity tests

A 2 kg surface sample taken from an exposed vein with a grade of 61.2% Cg (65.1% C) was concentrated by grinding and flotation to 79.2% Cg (84.1% C). The +48 mesh size (jumbo size) fraction represented 34.3% of the flotation concentrate and was assayed at 93.5% Cg (94.4% C). This represents 40.5% of the graphitic carbon in the concentrate. The result was obtained in a single flotation test without process optimization.

The +48 mesh fraction of the concentrate was subjected to two (2) different hydrometallurgical purification processes. A traditional leach process yielded a concentrate that assayed 99.2% Cg (100 % C). A report on the testing is found in Appendix 13. A two-stage hydrometallurgical purification process treated the +48 mesh concentrate with an alkaline roast followed by a conventional acid leach. The alkaline roast stage increased the purity from 93.5% Cg (94.4% C) to 99.1% Cg (100% C). The acid leach stage resulted in an exceptional product grade of 100% Cg (100% C). A Loss on Ignition (LOI) test was also performed resulting in 100% loss. All carbon analyses were performed by SGS Canada Inc. (Lakefield) and are reported as total carbon (Ct) by LECO or graphitic carbon (Cg) employing a roast to burn off any organic carbon, followed by a leach to remove any carbonates and LECO assay of the leach residue. A report on the testing is provided in Appendix 13.

13.2 Grinding and flotation tests

Milling and flotation test work was conducted by SGS at the Lakefield facility. The objective of this test work was to determine the effects of repeated grind and flotation in order to achieve a higher graphitic carbon ("Cg") grade in the concentrate prior to purification. The modified protocol yielded a +48 mesh flotation concentrate of 99.1% Cg and 100% Total Carbon ("Ct"). The process subjected a -6 mesh sample to various grinding times and media, each one followed by three to four stages of cleaner flotation. The final cleaner concentrate represented 70.0% of the original feed and contained 93.2% Ct, which is a substantial improvement from the previous test at 84.1% Ct. The concentrate grade of the +200 mesh size fractions was exceptionally high at 98.1% Ct and increased further to 98.7% Ct in the +100 mesh size fractions. Further, the carbon recovery into the final flotation concentrate was increased from 73.4% to 97.2%. A particle size distribution was conducted on this final cleaner concentrate and sieve fractions assayed for Ct and Cg. All carbon analyses were performed by SGS at the Lakefield facility and are reported as total carbon (Ct) by LECO or graphitic carbon (Cg) employing a roast to burn off any organic carbon, followed by a leach to remove any carbonates and LECO assay of the leach residue. The results of the testing are provided in Appendix 13.

13.3 GDMS Analysis and Equivalent Boron Content

The Issuer applied further testing to the graphite concentrate with the objective of quantifying the impurities present in the Miller graphite concentrate and to provide analytical results with lower relative errors than those achieved using conventional combustion infrared detection techniques.

A sample of graphite concentrate that had been purified by SGS at Lakefield was submitted for glow discharge mass spectrometer (GDMS) analysis by Evans Analytical in Liverpool, New York. The results of the GDMS analysis are presented in Appendix 14. The primary advantages of GDMS are its ability to quantify impurities at trace concentrations in high-purity inorganic solids, and to quantify concentrations of up to 73 contaminant chemical elements in a single analysis. The majority of the contaminant elements in the purified Miller graphite concentrate yielded concentrations that were below the analytical detection limit for each, typically at 0.5 ppm (0.5 g/t) or less. The sum of the concentrations of all elements yielded a concentration of less than 350 ppm (350 g/t), which by difference translates to an exceptional concentrate grade of 99.965% total carbon ("Ct").

Only 34% (116 ppm) of the total reported impurity content (approximately 350 ppm) arises from actual measured values. The concentrations of 56 elements were included in the total contaminant level calculation by using their limit of detection concentrations, as the measured value was less than the limit of detection, but could not be assumed to be zero. In this way, 200 ppm of the reported net contaminant level was contributed by just two elements with the highest detection limits, fluorine and tantalum, whose detection limits are 100 ppm each, but which may be present at much lower concentrations than their detection limits. The total contaminant level of 350 ppm therefore represents the estimated upper limit for the total contaminant concentration, and the true value may be less than 350 ppm.

13.3.1 Equivalent Boron Content

The impurity concentrations obtained by GDMS were used to calculate the Equivalent Boron Content (EBC) of the graphite, as defined in ASTM Method C1233-09, "Standard Practice for Determining Equivalent Boron Contents of Nuclear Materials", in conjunction with ASTM Standard D7219-08, "Standard Specification for Isotropic and Near-isotropic Nuclear Graphites", which lists the 16 elements of concern with respect to the EBC criterion. EBC is a means of estimating the potential for the impurities contained in the graphite to absorb neutrons when exposed to the controlled neutron flux within a nuclear reactor. Any impurities absorbing neutrons would adversely affect the rate and the control of the nuclear chain reaction.

EBC is calculated as the sum of the EBC of each impurity, such that EBC (impurity) = (EBC factor for impurity) (concentration of impurity (ppm)). Each EBC factor was obtained from Table 1 of ASTM Method C1233-09. A number of contaminants of concern were below the detection limit of the GDMS assay procedure, so the concentration associated with each respective detection limit was submitted for the calculation of the EBC of those contaminants, as discussed in paragraph 3.3 of the method. Desired maximum EBC levels are typically between 1 and 3 ppm, depending on the specifications of end-users. The calculated EBC for this graphite sample was 0.94 ppm, a value indicating higher purity than is required by the noted thresholds.

Indium is contained in the binder material that is required to mount the sample for GDMS analysis. Hence, the EBC calculation based on the GDMS assay must disregard this chemical element. Indium has a small EBC factor, and was not expected to be present in any significant amount in this graphite, so this departure from ASTM method C1233-09 is not considered to be significant. Reports of the testing are found in Appendix 14.

13.4 Thermal Upgrading

The objective of this additional chemical characterization was to measure the levels of impurities within the graphite much more sensitively than can be accomplished using conventional infrared techniques. The graphite concentrate was also subjected to rapid thermal treatment, an upgrading technique commonly employed in the commercial graphite industry, to determine the responsiveness of the Miller graphite to this process.

A sample of the Miller vein graphite was subjected to a two-stage caustic roast/acid leaching process by SGS Canada Ltd, which was then submitted to Evans Analytical Group ("EAG") of Liverpool, New York, for full survey chemical analysis by GDMS. The sample was analyzed both as received, and also subsequent to rapid high temperature heat treatment in an inert atmosphere, to provide comparison of the total contaminants before and after heat treatment. Total measured elemental impurities before heat treatment were greater than 246 ppm by weight. Total measured impurities after heat treatment were less than 23 ppm. Thus, more than 90% of the contaminants were removed from this graphite by rapid thermal upgrading, yielding graphite of 99.9978% purity. It should be noted that industry standard assay methods used by graphite exploration companies are unable to determine graphite purity beyond 99.9%. The techniques used here make possible a much more precise measurement of overall purity.

Specific elements which were found in the pre-treated sample, but no longer detectable after thermal treatment include: chromium, copper, iron, lead, magnesium, manganese, phosphorus, strontium, titanium, yttrium, zinc, and zirconium. In addition, aluminum, boron, calcium, chlorine, silicon, sodium, and sulphur were also reduced significantly (decreased by 50% or more). Heat treatment conditions were: flowing helium atmosphere (100 mL/min); temperature 2000-2200 C.; duration 10 minutes.

The thermally upgraded graphite (99.9978% Cg) easily exceeds the overall purity threshold for nuclear grade graphite (99.97% Cg). Results of the testing are found in Appendix 15.

13.5 Raman Spectroscopy

EAG performed laboratory characterization tests on samples of Miller graphite provided by the Issuer. The crystallinity results were obtained using Raman spectroscopy, which definitively determines the degree of crystallinity of certain materials, including graphite.

Raman spectroscopy is the collection of light inelastically scattered by a material or compound. When a light of known wavelength strikes a material, the light is shifted according to the chemical functionalities of the material. The intensity of this shifted light depends on both molecular structure and macrostructure. As a result of these phenomena, the collection of the shifted light gives a Raman spectrum that can provide direct information regarding the molecular vibrations of the compound or material. We can then interpret this information to determine chemical structure, organization, and in some cases, non-covalent intermolecular interactions. The Raman spectrum of graphite is very well characterized, which permits clear interpretations of the Raman spectra of graphite test materials, based on the component peak intensities and positions of the spectral features.

A sample of the Miller high-purity graphite was submitted to a “LabRam” J-Y Spectrometer. An Ar+ ion laser (514.5 nm wavelength) with an 1800 gr/mm grating were used for the measurements. The Raman spectra were collected in the backscattering geometry (180°) under an Olympus BX40 microscope. The key spectral features collected were the G-band (1579 cm^{-1}) and D-band (1350 cm^{-1}), where the G-band is theoretically the only permitted band arising from a single crystal of graphite, and the D-band is a measure of the disorder within the crystal. The sharp, high-intensity, narrow-shouldered G-band peak strongly suggests that the sample is a single crystal of graphite. The proportionally very small D-band peak indicates extremely low disorder in that crystal, and may be due to minor mechanical damage experienced by the crystal during earlier processing. Reports of the testing and SEM pictures with comments are found in Appendix 5. Two pictures are of the same large (greater than 1mm) graphite crystal, at two different magnifications. The other five images are an edge-on view of one graphite crystal, under progressively increasing magnification.

Item 14: Mineral Resource Estimates

No mineral resource estimates has been carried out by the issuer.

Item 15: Mineral Reserve Estimates

No mineral reserve estimates has been carried out by the issuer.

Item 16: Mining Methods

No mining methods analysis has been carried out by the issuer.

Item 17: Recovery Methods

No recovery method tests have been carried out by the issuer. Historical recovery tests are discussed under item 6.

Item 18: Project Infrastructure

No project infrastructure has been planned by the issuer at this time. The Report discusses available infrastructures under items 4, 5, and 6.

Item 19: Market Studies and Contracts

No market studies and contracts have been carried out by the issuer.

Item 20: Environmental Studies, Permitting and Social or Community

No environmental studies, permitting and social or community impact studies have been carried out by the issuer.

Item 21: Capital and Operating Costs

No capital and operating cost estimates have been carried out by the issuer.

Item 22: Economic Analysis

No economic analysis has been carried out by the issuer.

Item 23: Adjacent Properties

Canada Carbon acquired all claims from adjacent properties with the exception to Marcy Kiesman's claim and Durango Resources' claim located east of the Property, some 3 km from the Miller mine pit (Figure 2). No work has been reported by those two claim holders.

Item 24: Other Relevant Data and Information

There is no other relevant data or information with respect to the Miller Mine Property at this time.

Item 25: Interpretation and Conclusions

The limited exploration performed to date at Miller, consisting of EM geophysics followed by trenching, was successful in discovering new graphite occurrences.

The mineralized contact in the trench area follows a marble/paragneiss contact, where pegmatite intruded into a low pressure zone and caused alteration of the marble by the addition of silica (silicification). This alteration released CO_2 that was transported by pneumatolytic and/or hydrothermal fluids to precipitate graphite and wollastonite as pods along the mineralized contact. The drilling confirmed the presence of the mineralization at depth below the VN2 surface showing, supporting the assumption that pod and vein mineralization continues at depth.

The scattered nature of graphite-wollastonite-rich pockets along the contact render them difficult to target by drilling. IP surveys may help locate these graphite-rich pockets and graphite veins. Bulk sampling of surface mineralization will better define the quantity of graphite material and pods along the mineralized contact once the at-surface mineralization is removed. Statistical methods could be used to estimate the quantity of material in the contact zone.

The treatment of the graphite vein material achieved the highest purity standards. Obtaining such high purity levels using a non-optimized flotation and purification process further supports indications that graphite from the Miller deposit may be suitable for applications requiring ultra-pure grades, such as some core components of nuclear reactors. The Equivalent Boron Content also makes it suitable for nuclear-grade graphite. With this in mind, a small-scale mining operation may be economic and warrants further testing with additional treatment and metallurgical tests on a bulk sample.

The geophysical anomalies provided by the PhiSpy surveys should be individually inspected since they are more affected by the depth of the body than by its size. In fact, sizeable bodies buried at depth could generate a small anomaly. Thus although the new occurrences appear relatively small and sparsely distributed, they nonetheless present high-quality targets and further supports testing the viability of a small operation through bulk sampling, the authorization for which has already been granted. In addition, many areas of anomalous VTEM responses remain to be investigated on both claim blocks.

Item 26: Recommendations and Budget

Phase I should consist of ground IP surveys on the trench area and the large VTEM anomalies on both claim blocks. Following this, local PhiSpy surveys over the IP and VTEM anomalies could pinpoint exploration targets for prospecting, trenching and drilling. This systematic exploration method would maximize the obtained data and limit expenditures.

An IP survey in the trench area could help locate graphite pods at the contact of the marble and the paragneiss. This recommendation is not contingent upon the results of the other Phase I work. The trench area should also be extended by focusing on the contact between the marble and the paragneiss and where the previous ground TDEM surveys identified anomalies.

Again, not contingent on the results of other Phase I work, the Issuer should proceed with bulk sampling of graphite-rich material to better evaluate the economics of a small-scale operation for high-grade graphite production.

Phase II is contingent upon the results of Phase I and should consist of a drilling program over interesting targets identified during Phase I.

Item 26.1 Budget

Phase 1	
IP survey and PhiSpy surveys over VTEM anomalies and trench #3	$125,000
Prospecting, Beep-Mat survey and trenching over IP, VTEM anomalies and trench #3	$50,000
Bulk sample	$125,000
Phase 2	
Drilling over selected anomalies and in trench #3	$200,000
	Total: $500,000

Item 27: References

Baiju, K.R., Satish-Kumar, M., Kagi, H., Nambiar, C.G. et Ravisankar, M., 2005, Mineralogical Characterization of Graphite Deposits from Thodupuzha-Kanjirappally Belt, Madurai Granulite Block, Southern India; Gondwana Research, v . 9, p. 223-230.

Blair, G.A., 1988a, Preliminary geological-geophysical report, central area claimblock; GM 47899, 3 p. 1 map.

Blair, G.A., 1988b, Preliminary geological-geophysical report, "east-central" area claimblock; GM 47971, 4 p. 1 map.

Boivin, M., 2013, Detailed mobile TDEM survey on Miller-Graphite Property - East Block, Grenville Township, Québec, Hawkesbury area, 31G/10; Geosig Inc for Canada Carbon Inc., internal report, 14 p. 2 maps.

Cirkel, Fritz, M. E., 1907, Graphite : its properties, occurrence, refining and uses; Department of Mines (Mines Branch), Ottawa, Canada, 307 p. 7 maps

Corriveau, L. and van Breemen, O., 2000, Docking of the Central Metasedimentary Belt to Laurentia in geon 12: evidence from the 1.17–1.16 Ga Chevreuil intrusive suite and host gneisses, Quebec; Canadian Journal of Earth Sciences, v. 37 p. 253-269.

Corriveau, L. Perreault, S. and Davidson, A., 2007 Prospective metallogenic settings of the Grenville Province, in Goodfellow, W.D., ed., Mineral Deposits of Canada: A Synthesis of Major Deposit-Types, District Metallogeny, the Evolution of Geological Provinces, and Exploration Methods: Geological Association of Canada, Mineral Deposits Division, Special Publication No. 5, P. 819-847.

Corriveau, L., Rivard, B., and van Breemen, O. 1998; Rheological controls on Grenvillian intrusive suites: implications for tectonic analysis; Journal of Structural Geology, vol. 20, p. 1191–1204.

Ells R.W., 1904, Graphite in Canada; in Mineral resources of Canada, Bulletin 1904; Geological Survey of Canada, 213 p.

Glassley, W., 1982, Fluid evolution and graphite genesis in the deep continental crust; Nature, 295, 229 31.

Han, Z. and Prikhodko, A., 2013a (September), The results of EMIT Maxwell Plate Modelling of selected VTEM anomaly from East Block, Grenville, Quebec; Geotech Ltd. for Canada Carbon Inc., internal report, 24 p.

Han, Z. And Prikhodko, A., 2013b (September), The results of EMIT Maxwell Plate Modelling of selected VTEM anomaly from West Block, Grenville, Quebec; Geotech Ltd. for Canada Carbon Inc., internal report, 22 p.

Katz, M.B., 1987, Graphite deposits of Sri Lanka: a consequence of granulite facies metamorphism; Mineralium Deposita, vol. 22, p. 18-25.

Lachance, L., 1954, Miller Graphite Mine Map; GM 05774, 1 map

Logan, W.E., 1863, Geology of Canada; Geological Survey of Canada, report of progress to 1963, 983 p.

Longuépée, H. 2008. Nouveaux modèles d'exploration dans le Grenville : Opportunités de gisements de type skarn, for Groupe Consorem, 28 pages.

Luque, F.J., Huizenga, J.-M., Crespo-Feo, E., Wada, H., Ortega, L. And Barrenechea, J.F., 2013, Vein graphite deposits: geological setting, origin, and economic significance; Mineralium Deposita, published online, Sept. 2013.

Martignole, J., and Friedman, R. 1998, Geochronological constraints on the last stages of terrane assembly in the central part of the Grenville Province; Precambrian Research, vol. 92, p. 145–164.

Martignole, J., Calvert, A.J., Friedman, R., and Reynolds, P. 2000. Crustal evolution along a seismic section across the GrenvilleProvince (western Quebec); Canadian Journal of Earth Sciences, vol. 37: p. 291–306.

Maurice, O.D., 1973, Annotated list of occurrences of Industrial Minerals and Building Materials in Quebec; MRN, DP 184, 580 pages.

Ministry of Natural Resources, 2012. *GESTIM, Mining Rights Management*. https://gestim.mines.gouv.qc.ca. Quebec claim maps.

Obalski, J., 1900, Mining Operations in the Province of Québec during the year 1900; Department of colonization and mines, 37 p. (http://sigeom.mrn.gouv.qc.ca/signet/classes/I1102_index : report number "OM 1900").

Obalski, J., 1901, Opération minière dans la province de Québec pour l'année 1901; Département des Terres, Mines et Pêcherie, OM 1901, 50 p.

Paré, C., 1982, Développement Graphite; Ministère de l'Énergie et des Ressources, S.I.S.E.M., GM 51689, 59 p. 1 map.

Philpotts, A.R., 1961, Geological report on the southeastern part of Grenville Township, Argenteuil County; Ministère de l'Énergie et des Ressources du Québec; DP-12, 46 p.

Philpotts, A.R., 1976, Grenville Township (SE part); *Ministère des Richesses Naturelles*, Geological Report, RG-156, 51 p. 1 map.

Pope, E., 2004, Calcite-graphite and calcite-dolomite thermometry of high pressure marbles and calcsilicates: Syros, Cyclades, Greece; 17th Keck Symposium Volume, 4 p.

Radhika, U. P., Santosh, M. and Wada, H., 1995, Graphite occurrences in Southern Kerala: Characteristics and genesis; Journal of the Geological Society of India, vol. 45, p. 653-666.

Rodas, M., Luque, F.J., Barrenechea, J.F., Fernàndez-Caliani, J.C., Miras, A. And Fernandez-Rodriguez, C., 2000, Graphite occurrence in the low-pressure/high-temperature metamorphic belt of the Sirra de Aracena (soutern Iberia Massif); Mineralogical Magazine, v. 64, p. 801-814.

Simandl, G.J. and Kenan, W.M., 1997, Vein graphite in metamorphic terrains; BC Geological Survey, geological fieldwork for 1997, 3 p.

Simoneau, Pierre and Boivin, Marc, 2013, HLEM-MaxMin, TDEM, Beep Mat and Induced Polarization Surveys on Miller-Graphite Property – East Block Grenville Township, Québec, Hawkesbury area, 31G/10, report; Geosig Inc. for Canada Carbon Inc., internal report, 21 p., 6 maps

Skippen, G. B and Marshall, D.D., 1991, The metamorphism of granulites and devolatilization of the lithosphere; Canadian Mineralogist, v. 29, p. 693-705.

Spence, H.S., 1920, Graphite in Canada; Canada Mines Branch, Publication No 511, 240 p.

Tremblay, A., et Cummings, J.G., 1987, *Programme d'exploration 1986-87 pour le graphite dans l'Outaouais; Roche Groupe Conseil inc. pour Stratmin inc*., GM 45932, 375 p. 27 maps

Vender, N., and Orta, M., 2013, Report on a helicopter-borne versatile time domain electromagnetic (VTEM+) and horizontal magnetic gradiometer geophysical survey, East and West block, Grenville, Quebec, Canada; Geotech inc pour Canada Carbon Inc., project GL130281, internal report, 67 p. 6 maps

Weis L, Friedman I, Gleason J., 1981, The origin of epigenetic graphite: evidence from isotopes; Geochimica Cosmochimica Acta, v. 45, p. 2325–2332.

Appendix 1. Bulk sample authorization

Ministère
des Ressources
naturelles
Québec

Direction des titres miniers et des systèmes

Québec, le 13 février 2014

M. Bruce R. Duncan
Président-directeur général
Canada Carbon inc.
1166, rue Alberni, bureau 605
Vancouver (Colombie-Britannique) V6E 3Z3

Objet : Autorisation d'échantillonnage en vrac, propriété Miller Mine
Claim : CDC2299284

Monsieur le Président-directeur général,

Nous avons reçu votre demande d'autorisation pour extraire un échantillon de substances minérales en quantité supérieure à 50 tonnes métriques.

Conformément à l'article 69 de la Loi sur les mines (chapitre M-13.1) et en vertu des pouvoirs qui me sont délégués par l'arrêté ministériel 2009-006 en date du 20 février 2009, publié à la gazette officielle du Québec le 11 mars 2009, j'autorise la compagnie Canada Carbone inc. (n° interne 91295) à procéder aux travaux d'échantillonnage en vrac de substances minérales sur le claim CDC2299284, localisé dans le feuillet S.N.R.C. 31G/10.

Ces travaux pourront être entrepris et devront respecter les conditions suivantes :

1. Extraire du claim mentionné ci-dessus, un poids maximum de 480 tonnes métriques de substances minérales à des fins d'essais métallurgiques et de distribution d'échantillons auprès de manufacturiers;
2. Le prélèvement de l'échantillon devra être effectué dans la période du 15 mars 2014 au 15 septembre 2014. Le traitement en usine devra être réalisé dans la période du 15 mars 2014 au 15 septembre 2014;
3. Faire rapport au Ministère de la quantité de substances minérales extraite et du résultat des essais effectués avant le 15 septembre 2015;
4. Pendant la période d'échantillonnage, vous devrez vous assurer de la sécurisation des sites et empêcher l'accès à ceux-ci durant l'extraction de l'échantillon. Au besoin, disposer des clôtures pour limiter le passage de marcheurs ou d'animaux tel le cerf de Virginie;
5. Après les travaux d'échantillonnage, remblayer les fausses produites ou adoucir les pentes avec les surplus de roc dynamité et le sol déplacé. Remblayer les zones décapées.

...2

5700, 4e Avenue Ouest, local C-320
Québec (Québec) G1H 6R1
Téléphone : 418 627-6292, poste 5467
Sans frais : 1 800 363-7233
Télécopieur : 418 643-4264
Courriel : roch.gaudreau@mrn.gouv.qc.ca

Prenez note que le claim CDC2299284 est localisé dans une aire de confinement du cerf de Virginie. Pour des précisions sur la réglementation entourant les travaux d'exploration minière dans un habitat faunique, vous êtes prié de contacter M. Michel Hénault du ministère du Développement durable, de l'Environnement, de la Faune et des Parcs au numéro suivant : 819 623-1981, poste 223.

Si vous désirez obtenir des précisions additionnelles sur votre dossier, nous vous prions de communiquer avec M. Laurent Ouellet, ingénieur, au numéro suivant : 1 800 363-7233, poste 5348.

Veuillez agréer, Monsieur le Président-directeur général, l'expression de mes sentiments les meilleurs.

Le directeur
des titres miniers et des systèmes,

Roch Gaudreau

Appendix 2. VN1 photographs

Appendix 3. VN2 photographs

Appendix 4. VN3 photographs

Appendix 5. Raman report and SEM images

ISO 17025

Testing Cert. #2797.01

RAMAN ANALYSIS REPORT
Jan 14, 2014

JOB NUMBER S0DKM997
PO NUMBER

for

Canada Carbon Inc.
1166 Alberni St. Suite 605
Vancouver, British Columbia V6E 3Z3
Canada

Prepared by:

Vasil Pajcini

Vasil Pajcini, Ph.D.
Sr. Scientist, Raman Services
(Tel. 408-530-3852; vpajcini@eag.com)

Reviewed by:

Angela G. Craig

Angela Craig, Ph.D.
Manager, FTIR, Raman, GC-MS Services
(Tel. 408-530-3642; acraig@eag.com)

RAMAN ANALYSIS REPORT

Requester:	Canada Carbon Inc.
Job Number:	S0DKM997
Analysis Date:	14 Jan 2014

Purpose:

To acquire a Raman spectrum from flakes of high purity graphite sample.

Summary:

The Raman spectrum was that of a single crystal of graphite. The crystalline quality of the graphite was better than any other industrial graphite sample we at EAG have analyzed to date.

Experimental:

The measurements were performed using a "LabRam" J-Y Spectrometer. An Ar^+ ion laser (514.5 nm wavelength) an 1800 gr/mm grating were used for the measurements. The Raman spectra were collected in the backscattering geometry (180^0) under an Olympus BX40 microscope.

Results and Interpretations:

Spectrum 1 is the raw spectrum as acquired from a flake of the sample. Its baseline corrected spectrum is shown in Spectrum 2. Spectrum 2 also shows band-fitting of the major bands. The main peak in the spectrum is the G band (E_{2G2} symmetry) at 1579 cm^{-1}, theoretically the only allowed Raman band of a single crystal of graphite.

The D band, which characterizes the disorder in a graphite sample was barely detected at 1350 cm^{-1}.The intensity of the D band is a good indicator of the quality of graphite. A stronger D band indicates greater disorder in the *sp2* bonded carbon compared to pure graphite. Spectrum 2 is overlaid with a reference spectrum of industrial graphite of high quality in Spectrum 3. It is important to note that the D band of the industrial graphite is very strong compared to the D band of this sample, which demonstrates that the quality of the graphite of this sample is superior of the other samples of industrial graphite we have measured. Another indicator is the width of the G band (at 1579 cm^{-1}), which is much smaller in the sample than in a typical industrial graphite sample (see Spectrum 3). The Raman spectrum clearly demonstrates that the graphite in this sample is very high quality single crystal graphite.

Note: The unsymmetrical band at 2700 cm^{-1} (which is shown decomposed as a doublet: 2682 & 2725 cm^{-1}) is the so-called G' band (often called also 2D band, since it s wavenumber is twice the D band wavenumber).

Raman spectroscopy is often used for the qualitative identification of functional groups or for the identification of entire organic compounds, typically with the aid of spectral databases.

Canada Carbon Inc.

Assignment of spectral features to functional groups or the identification of a compound can be made with relative certainty, in some instances. However in many cases the presence of spectral features and functional groups cannot be traced unambiguously to one specific compound, especially in the analysis of mixtures.

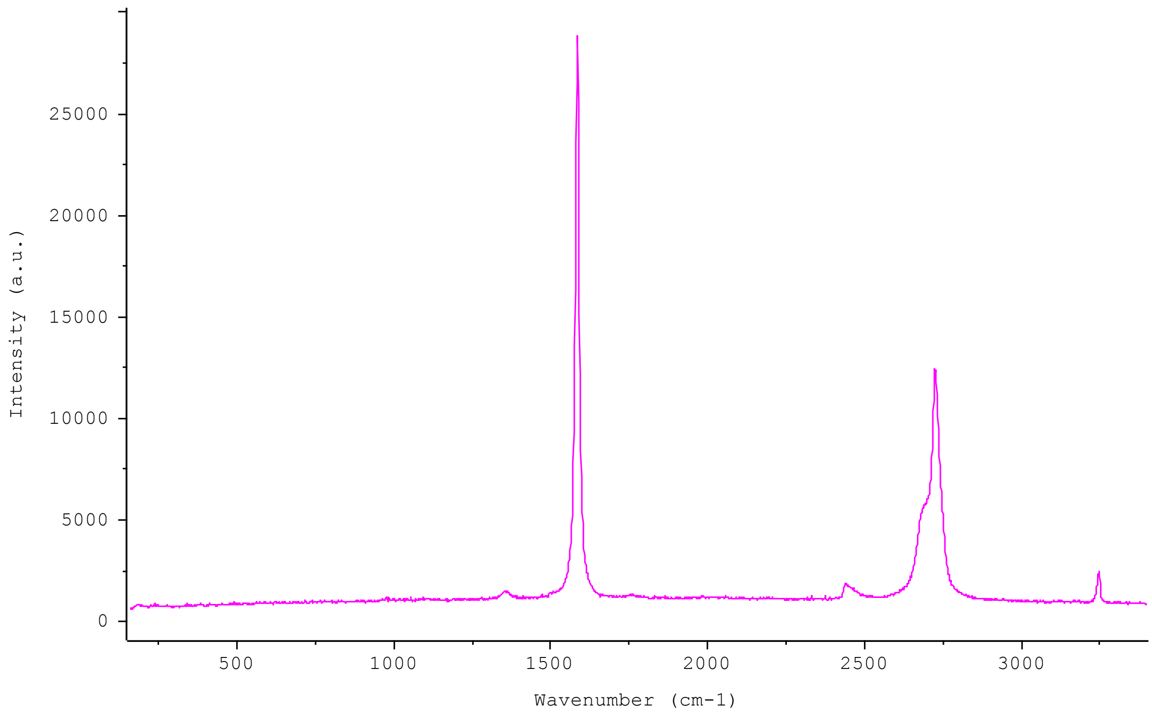
If any questions arise as you review the results of this analysis, principal analyst Vasil Pajcini or any other member of our technical staff will be available for consultation.

After reviewing this report, you may assess our services using an electronic service evaluation form. This can be done by clicking on the link below, or by pasting it into your internet browser. Your comments and suggestions allow us to determine how to better serve you in the future.
http://www.eaglabs.com/main-survey.html?job=S0DKM997Ra

Appendix 1

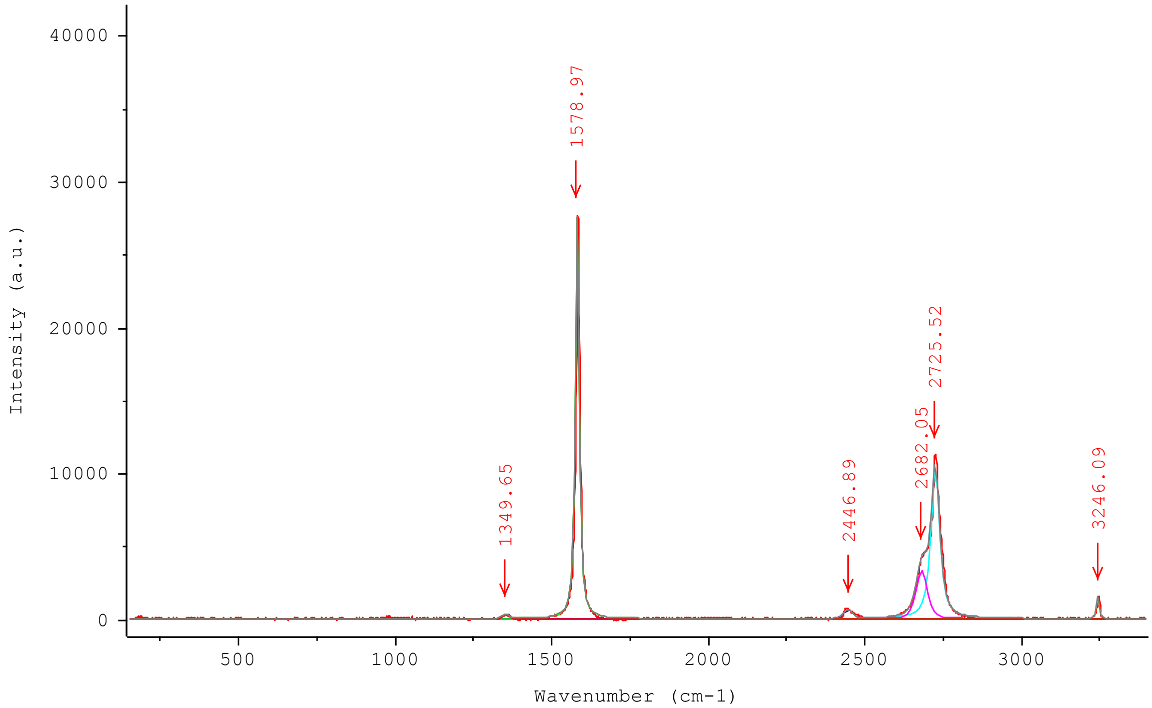
Raman spectroscopy is the collection of light inelastically scattered by a material or compound. When a light of known wavelength strikes a material, the light is shifted according to the chemical functionalities of the material. The intensity of this shifted light depends on both molecular structure and macrostructure. As a result of these phenomena, the collection of the shifted light gives a Raman spectrum that can provide direct information regarding the molecular vibrations of the compound or material. We can then interpret this information to determine chemical structure, organization, and in some cases, non-covalent intermolecular interactions.

Canada Carbon Inc.



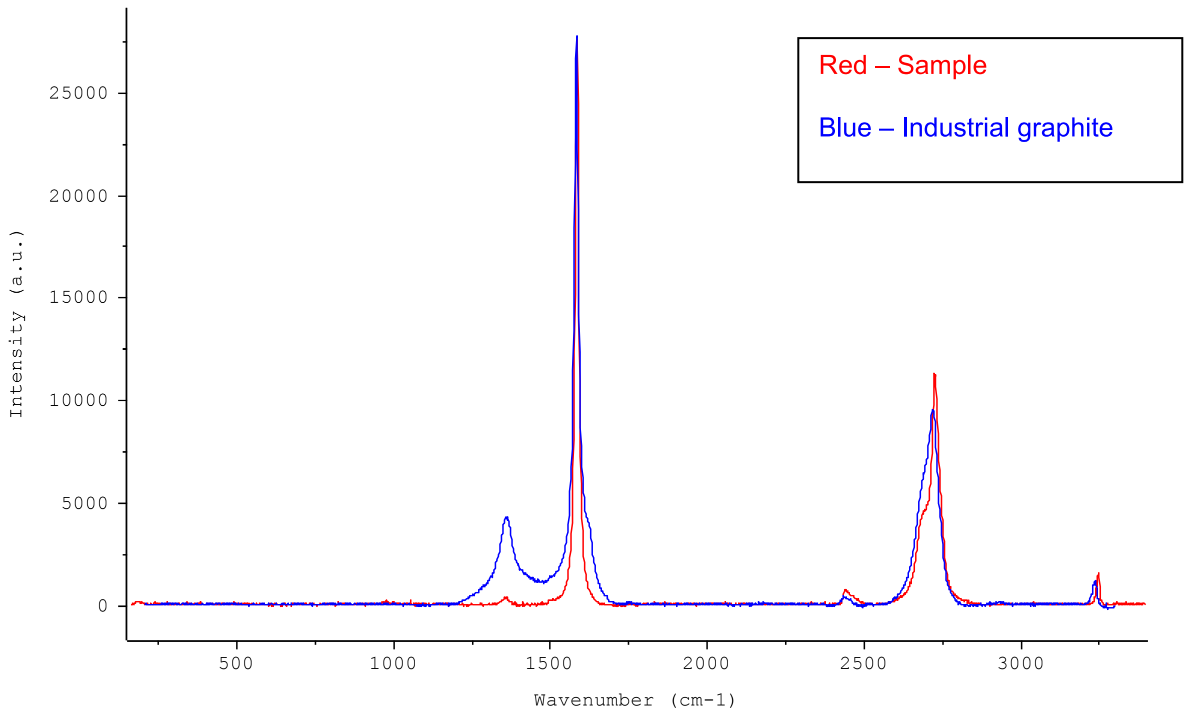
Spectrum 1

Canada Carbon Inc.

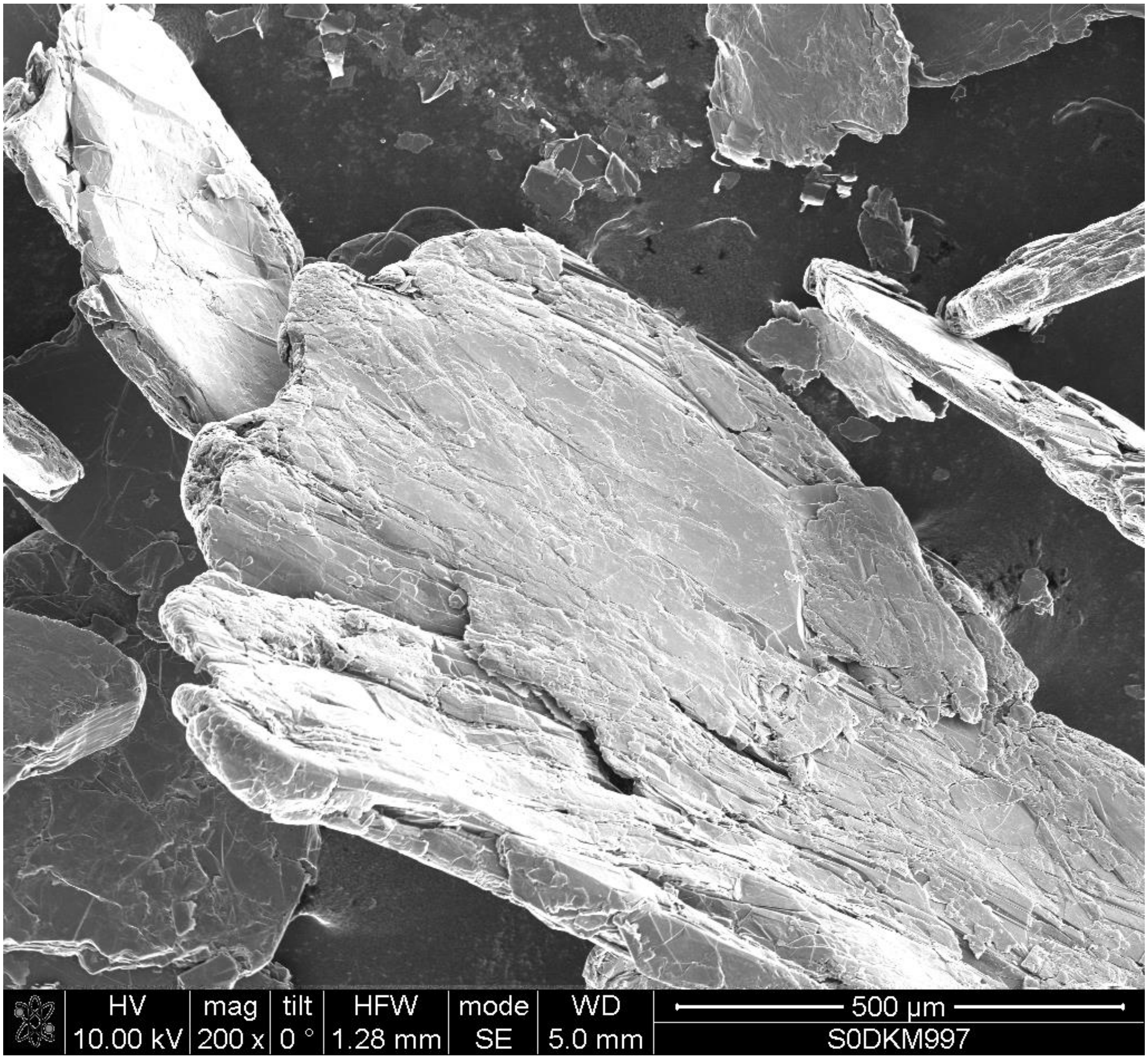


Spectrum 2

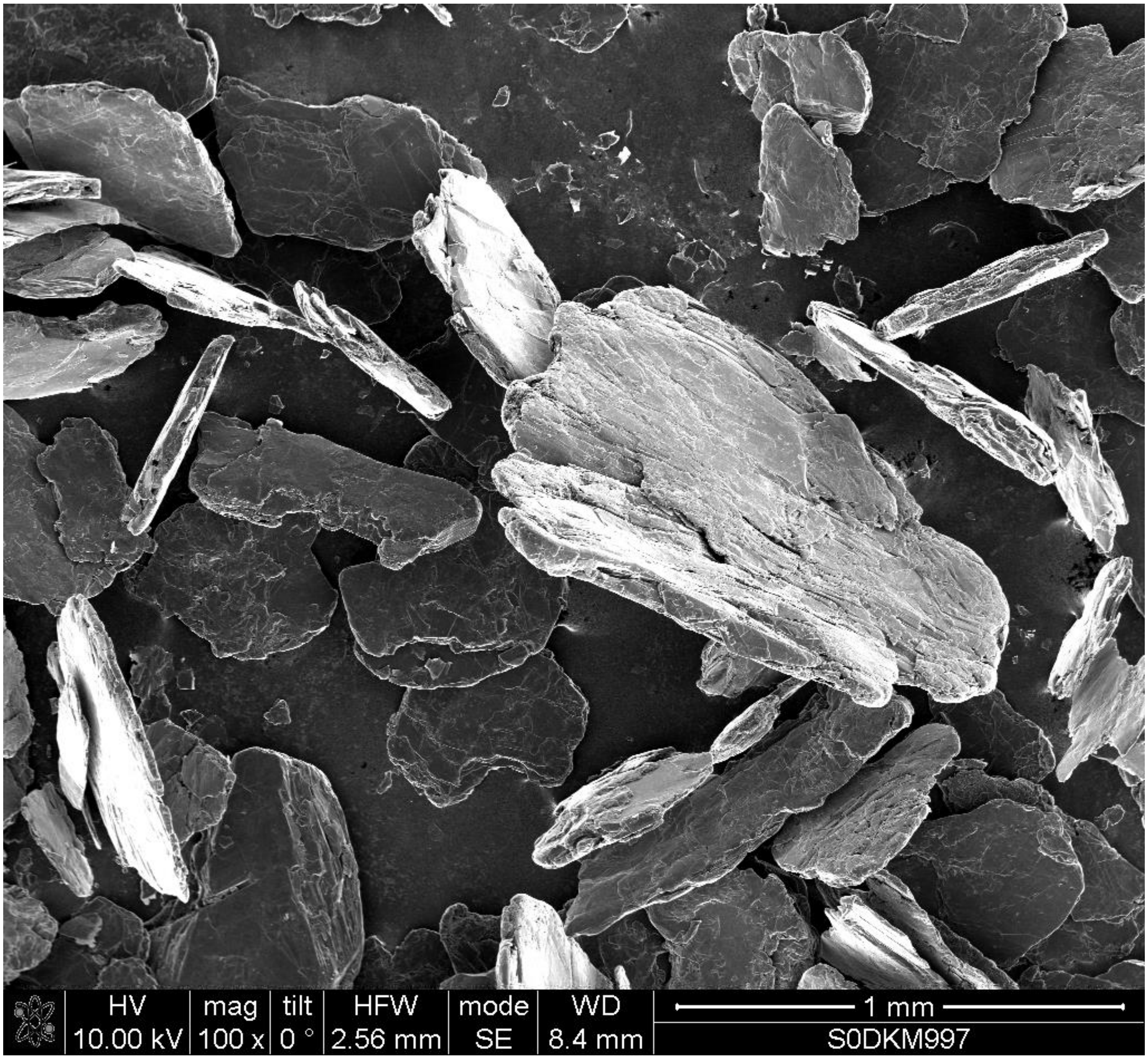
Canada Carbon Inc.



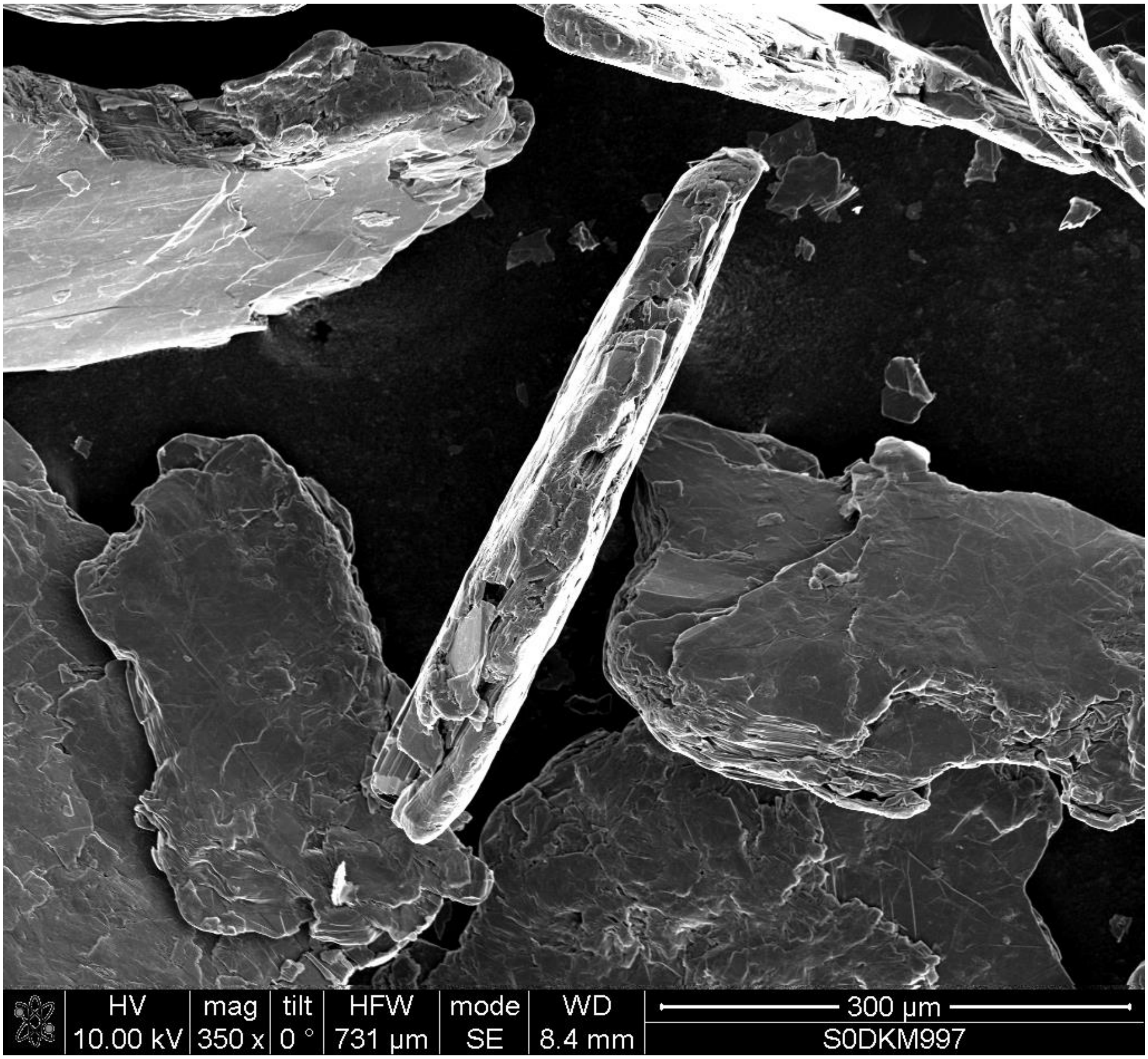
Spectrum 3



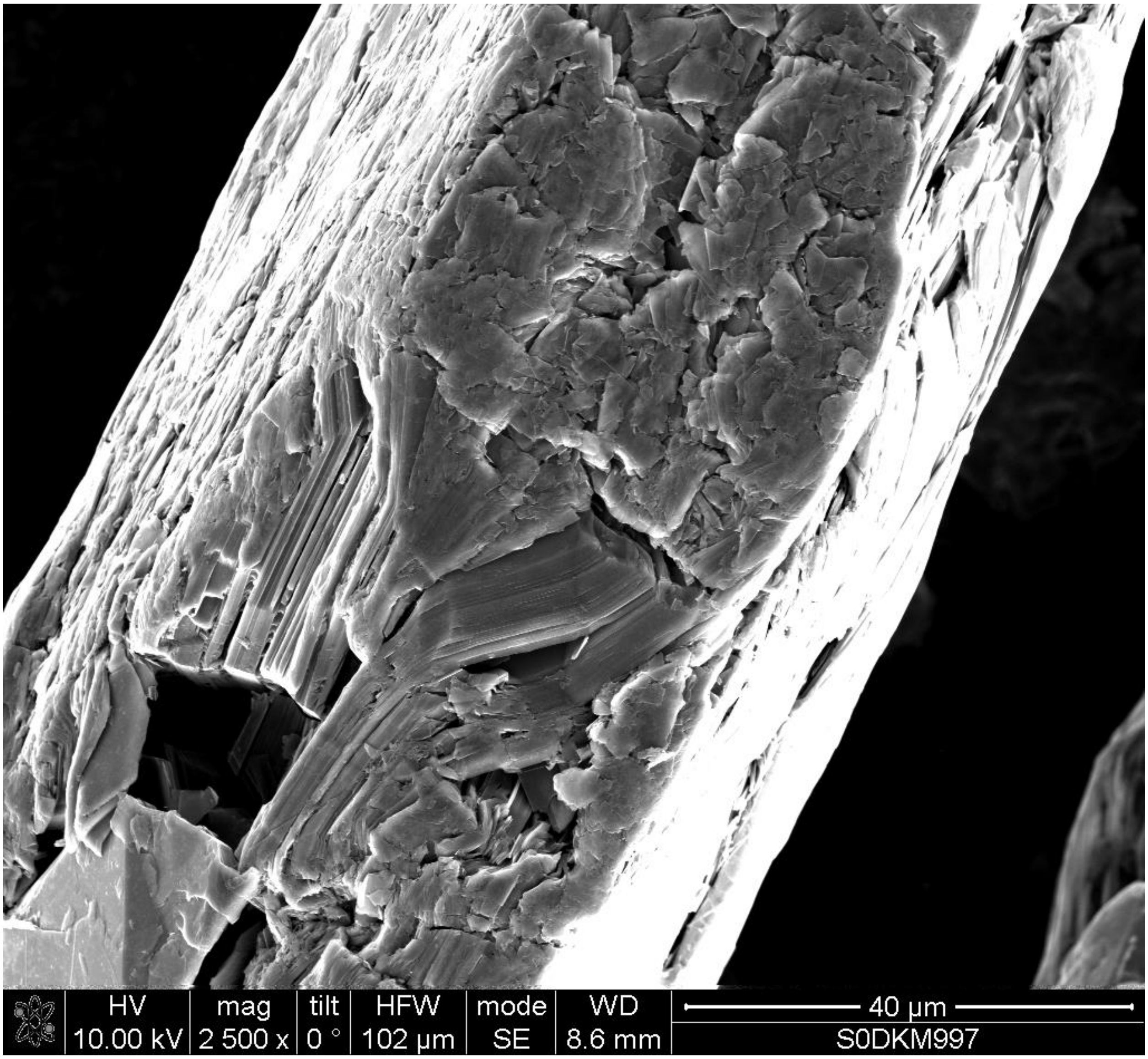
(200 X magnification) Same super-jumbo crystal seen at higher magnification.



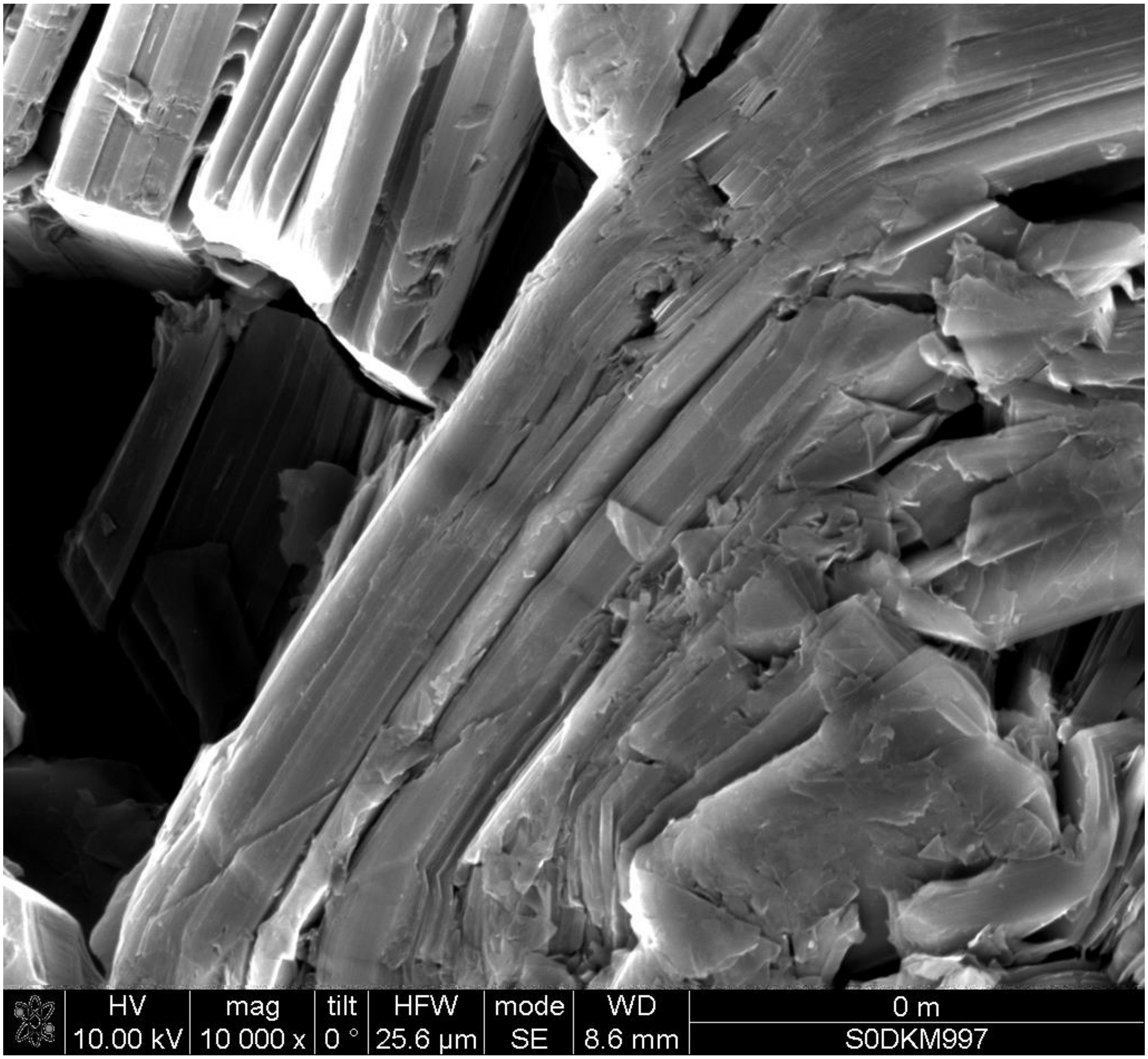
(100 X magnification) Large, platy graphite crystals, up to 1mm size, or more (+16 mesh).



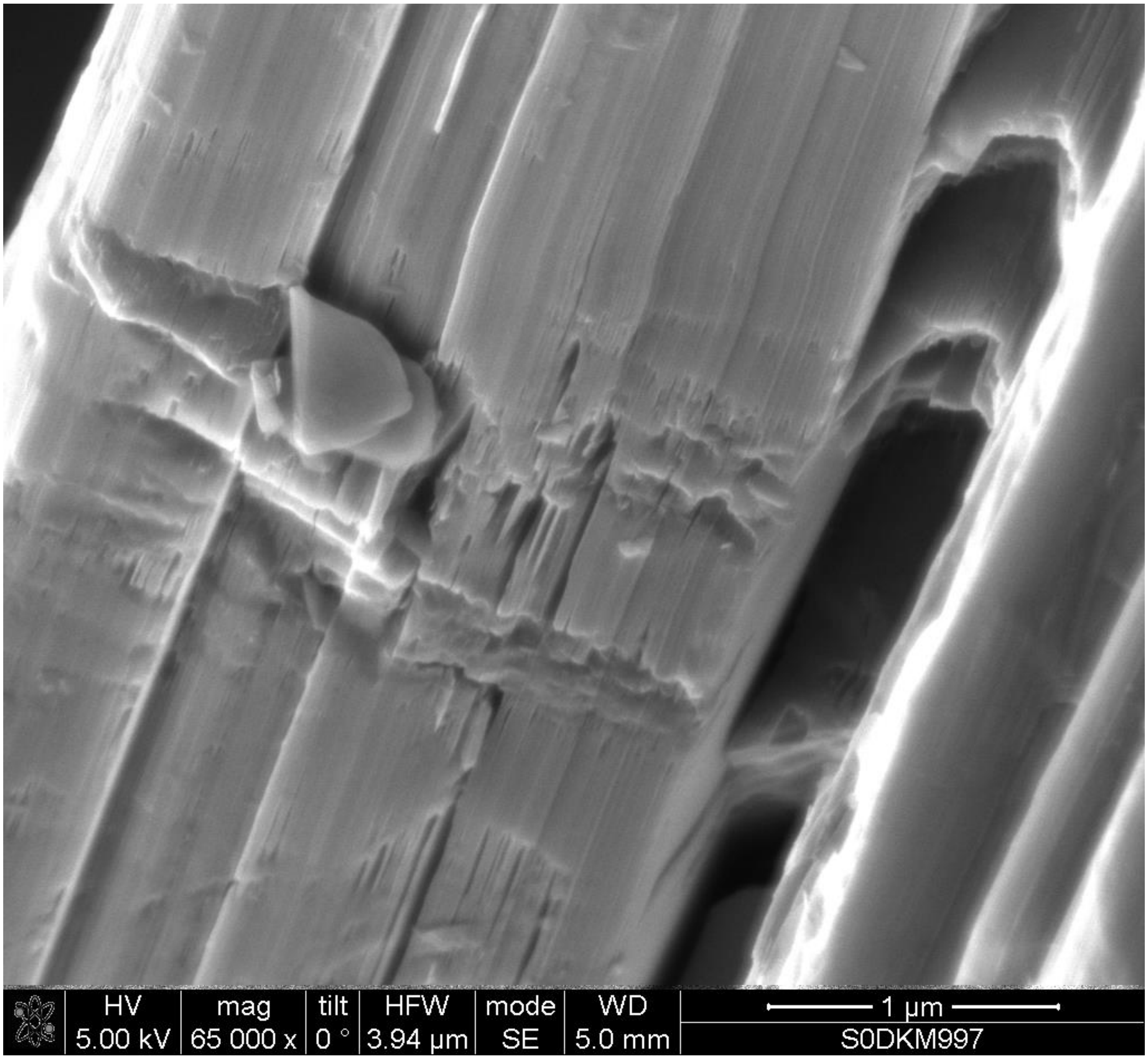
(350 X magnification) Edge view of a large graphite crystal.



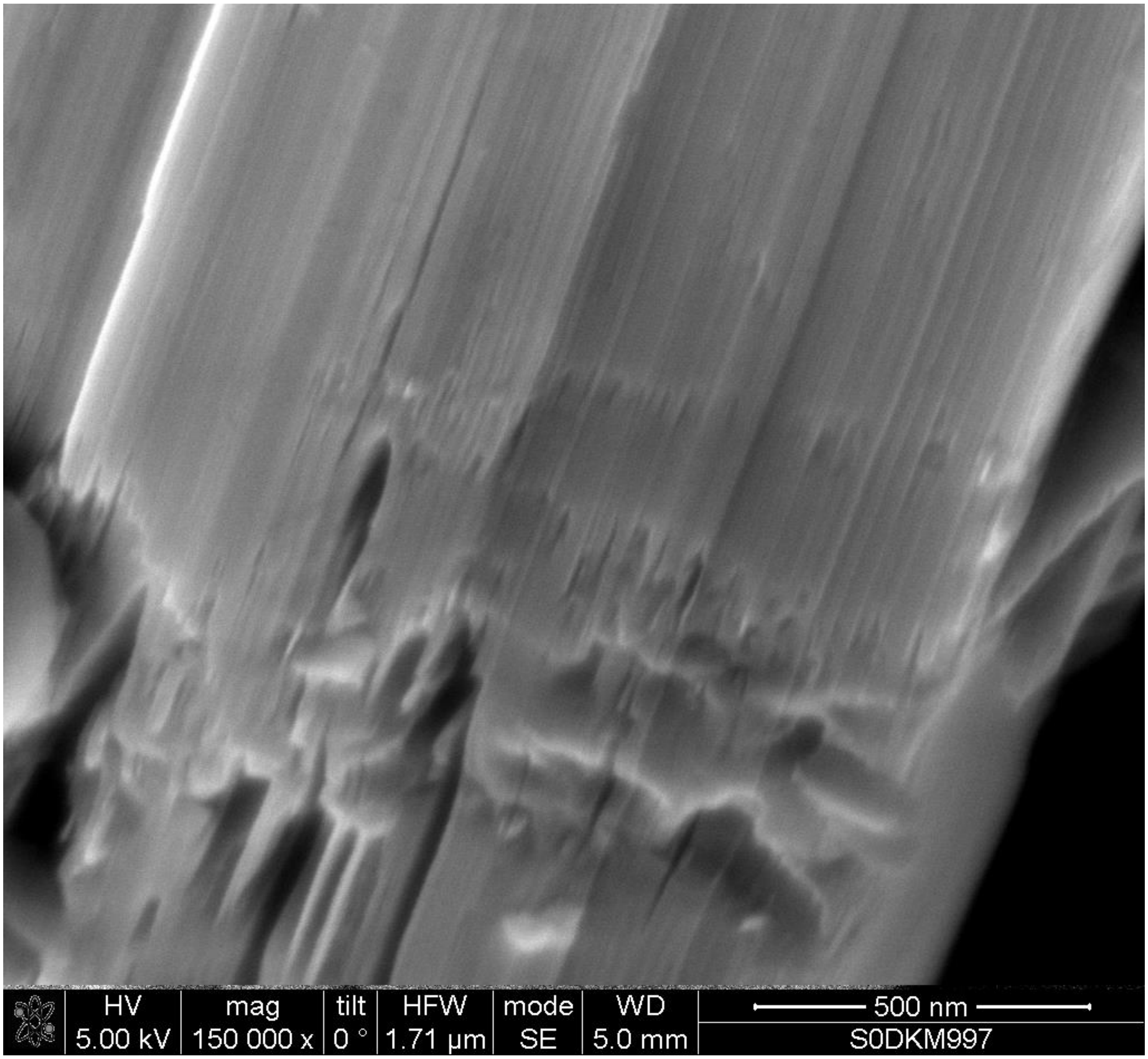
(2500 X magnification) Magnified view of the same crystal, revealing highly ordered layering (left side of image), with minor mechanical damage (right side of image).



(10,000 X magnification) Higher magnification view of the same crystal, revealing sharp crystal edges.



(65,000 X magnification) Still higher magnification view of the same crystal



(150,000 X magnification) Even higher magnification view of the same crystal.

Appendix 6. Certificates of Analysis

Quality Analysis ... Actlabs *Innovative Technologies*

Date Submitted:	16-Feb-13
Invoice No.:	A13-01622
Invoice Date:	18-Feb-13
Your Reference:	

Canada Carbon
83 Wilson Street
Oakville ON L6K 3G5
Canada

ATTN: Paul Ogilvie

CERTIFICATE OF ANALYSIS

8 Rock samples were submitted for analysis.

The following analytical packages were requested: Code 5D-C-Graphitic Infrared
Code 1E3 Aqua Regia ICP

REPORT **A13-01622**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:

CERTIFIED BY :

Eric Hoffman Ph.D.
President/General Manager

SCC Accredited LAB 266
LAB 266 Accrédité CCN

ACTIVATION LABORATORIES LTD.

1336 Sandhill Drive, Ancaster, Ontario Canada L9G 4V5 TELEPHONE +1.905.648.9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg	Na
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%	%
Detection Limit	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01	0.001
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
A41170	< 0.2	< 0.5	9	37	< 1	3	< 2	13	0.66	< 2	< 10	11	< 0.5	< 2	2.38	1	3	0.66	< 10	< 1	0.04	< 10	0.13	0.031
A41171	< 0.2	< 0.5	4	60	< 1	7	< 2	11	0.62	< 2	< 10	17	< 0.5	< 2	2.66	2	15	0.59	< 10	< 1	0.07	< 10	0.34	0.049
A41172	< 0.2	< 0.5	14	51	< 1	1	3	6	0.59	< 2	< 10	19	< 0.5	< 2	5.02	3	3	1.42	< 10	< 1	0.09	16	0.04	0.043
A41173	< 0.2	< 0.5	7	46	< 1	2	4	7	0.06	8	< 10	< 10	< 0.5	< 2	19.8	2	< 1	0.28	< 10	< 1	< 0.01	< 10	0.06	0.012
A41174	< 0.2	< 0.5	16	67	< 1	1	2	5	0.86	< 2	< 10	26	0.5	< 2	7.34	< 1	2	0.37	< 10	< 1	0.25	< 10	0.11	0.063
A41175	< 0.2	< 0.5	15	121	< 1	2	48	95	0.40	< 2	< 10	19	< 0.5	< 2	3.26	< 1	3	0.76	< 10	< 1	0.04	11	0.53	0.041
A41176	< 0.2	< 0.5	5	41	< 1	3	14	3	0.23	< 2	< 10	17	< 0.5	< 2	3.80	2	3	0.34	< 10	< 1	0.09	12	0.05	0.069
A41177	< 0.2	< 0.5	14	38	< 1	12	< 2	< 2	0.70	< 2	24	12	< 0.5	< 2	6.46	7	5	0.80	< 10	< 1	0.07	12	0.08	0.057

Analyte Symbol	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
A41170	0.020	< 0.01	< 2	< 1	140	< 0.01	< 1	< 2	< 10	7	< 10	5	< 1	49.4
A41171	0.013	< 0.01	< 2	< 1	108	0.02	< 1	< 2	< 10	10	< 10	5	2	32.4
A41172	0.049	0.44	< 2	1	227	0.12	< 1	< 2	< 10	8	< 10	19	18	10.7
A41173	0.003	0.03	< 2	< 1	1590	0.01	< 1	< 2	< 10	< 1	< 10	7	2	0.43
A41174	0.137	0.07	< 2	< 1	174	0.05	1	< 2	< 10	3	< 10	5	6	0.32
A41175	0.049	0.07	< 2	< 1	96	0.04	< 1	< 2	< 10	3	< 10	11	11	0.95
A41176	0.035	0.12	< 2	< 1	93	0.08	< 1	< 2	< 10	2	< 10	9	14	0.22
A41177	0.030	0.27	< 2	< 1	285	0.27	< 1	< 2	< 10	12	< 10	12	57	1.20

Quality Control

Analyte Symbol	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg	Na
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%	%
Detection Limit	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01	0.001
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GXR-1 Meas	29.0	1.0	1110	777	14	28	605	705	0.35	348	11	383	0.8	1360	0.74	< 1	6	21.6	< 10	3	0.03	< 10	0.13	0.079
GXR-1 Cert	31.0	3.30	1110	852	18.0	41.0	730	760	3.52	427	15.0	750	1.22	1380	0.960	8.20	12.0	23.6	13.8	3.90	0.050	7.50	0.217	0.0520
GXR-4 Meas	3.5	< 0.5	6550	138	323	35	39	74	2.95	98	< 10	75	1.4	13	0.88	13	56	3.06	10	< 1	1.74	47	1.62	0.133
GXR-4 Cert	4.00	0.860	6520	155	310	42.0	52.0	73.0	7.20	98.0	4.50	1640	1.90	19.0	1.01	14.6	64.0	3.09	20.0	0.110	4.01	64.5	1.66	0.564
GXR-6 Meas	0.3	< 0.5	68	1030	1	18	88	130	7.25	235	< 10	927	0.9	< 2	0.15	12	83	5.42	20	< 1	1.12	11	0.39	0.159
GXR-6 Cert	1.30	1.00	66.0	1010	2.40	27.0	101	118	17.7	330	9.80	1300	1.40	0.290	0.180	13.8	96.0	5.58	35.0	0.0680	1.87	13.9	0.609	0.104
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
SAR-M (U.S.G.S.) Meas	3.5	5.3	363	4540	13	39	1020	1100	1.17	38		199	1.1	< 2	0.33	10	98	2.95	< 10		0.28	53	0.37	0.048
SAR-M (U.S.G.S.) Cert	3.64	5.27	331	5220	13.10	41.50	982	930.0	6.30	38.8		801	2.20	1.94	0.61	10.70	79.7	2.99	16.8		2.94	57.4	0.50	1.140
Oreas 94 (Aqua Regia) Control Meas	3.5		> 10000				27	176						< 2		23								
Oreas 94 (Aqua Regia) Control Cert	3.42		11300				30.9	167						8.77		22.9								
A41177 Orig	< 0.2	< 0.5	14	38	< 1	12	2	< 2	0.70	< 2	24	11	< 0.5	< 2	6.45	7	5	0.80	< 10	< 1	0.07	12	0.08	0.056
A41177 Dup	< 0.2	< 0.5	14	39	< 1	11	< 2	< 2	0.71	< 2	25	12	< 0.5	< 2	6.47	7	5	0.80	< 10	< 1	0.07	12	0.08	0.057
Method Blank	< 0.2	< 0.5	< 1	< 5	< 1	< 1	< 2	< 2	< 0.01	< 2	< 10	< 10	< 0.5	< 2	< 0.01	< 1	< 1	< 0.01	< 10	< 1	< 0.01	< 10	< 0.01	0.005
Method Blank																								

Quality Control

Analyte Symbol	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
GXR-1 Meas	0.037	0.20	83	1	167		4	< 2	29	78	132	24	14	
GXR-1 Cert	0.0650	0.257	122	1.58	275		13.0	0.390	34.9	80.0	164	32.0	38.0	
GXR-4 Meas	0.115	1.75	4	8	71		< 1	< 2	< 10	86	11	12	9	
GXR-4 Cert	0.120	1.77	4.80	7.70	221		0.970	3.20	6.20	87.0	30.8	14.0	186	
GXR-6 Meas	0.031	0.01	4	26	29		< 1	< 2	< 10	175	< 10	7	13	
GXR-6 Cert	0.0350	0.0160	3.60	27.6	35.0		0.0180	2.20	1.54	186	1.90	14.0	110	
Graphite Powder Meas														95.8
Graphite Powder Cert														99.99
Graphite Powder Meas														97.6
Graphite Powder Cert														99.99
SAR-M (U.S.G.S.) Meas	0.064		6	4	31	0.05	< 1	< 2	< 10	37	< 10	23		
SAR-M (U.S.G.S.) Cert	0.070		6.00	7.83	151.0	2.7	0.96	2.88	3.57	67.20	9.78	28.00		
Oreas 94 (Aqua Regia) Control Meas		1.29	2											
Oreas 94 (Aqua Regia) Control Cert		1.35	1.64											
A41177 Orig	0.029	0.27	< 2	< 1	285	0.26	< 1	< 2	< 10	12	< 10	11	56	
A41177 Dup	0.030	0.28	< 2	< 1	286	0.27	1	< 2	< 10	13	< 10	12	59	
Method Blank	< 0.001	< 0.01	< 2	< 1	< 1	< 0.01	< 1	< 2	< 10	< 1	< 10	< 1	< 1	
Method Blank														< 0.05

Quality Analysis ... *Innovative Technologies*

Date Submitted: 14-Mar-13
Invoice No.: A13-02829
Invoice Date: 15-Mar-13
Your Reference:

Canada Carbon
86 Wilson Street
Oakville ON
Canada

ATTN: John Carter

CERTIFICATE OF ANALYSIS

7 Rock samples were submitted for analysis.

The following analytical package was requested: Code 5D-C-Graphitic Infrared

REPORT **A13-02829**

Notes:

CERTIFIED BY :

Emmanuel Eseme , Ph.D.
Quality Control

SCC Accredited LAB 266
LAB 266 Accrédité CCN

ACTIVATION LABORATORIES LTD.

1336 Sandhill Drive, Ancaster, Ontario Canada L9G 4V5 TELEPHONE +1.905.648.9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	C-Graph
Unit Symbol	%
Detection Limit	0.05
Analysis Method	IR
A43178	78.4
A43179	65.1
A43190	79.8
A43191	70.6
A43192	74.6
A43193	80.1
A43194	24.5

Quality Control

Analyte Symbol	C-Graph
Unit Symbol	%
Detection Limit	0.05
Analysis Method	IR
Graphite Powder Meas	100.0
Graphite Powder Cert	99.99
Graphite Powder Meas	99.6
Graphite Powder Cert	99.99
A43194 Orig	24.6
A43194 Dup	24.5
Method Blank	< 0.05

Quality Analysis ... *Innovative Technologies*

Date Submitted: 14-May-13
Invoice No.: A13-05420
Invoice Date: 07-Jun-13
Your Reference:

Canada Carbon
86 Wilson Street
Oakville ON
Canada

ATTN: Metallurgy Manager Jennifer Steyn

CERTIFICATE OF ANALYSIS

1 Pulp and Rock sample and 1 Rock sample were submitted for analysis.

The following analytical package was requested: Code 5D-C-Graphitic Infrared

REPORT **A13-05420**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:

CERTIFIED BY :

Emmanuel Eseme , Ph.D.
Quality Control

SCC Accredited LAB 266
LAB 266 Accrédité CCN

ACTIVATION LABORATORIES LTD.

1336 Sandhill Drive, Ancaster, Ontario Canada L9G 4V5 TELEPHONE +1.905.648.9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	C-Graph
Unit Symbol	%
Detection Limit	0.05
Analysis Method	IR
A41180	50.0
Purified Graphite	88.0

Quality Control

Analyte Symbol	C-Graph
Unit Symbol	%
Detection Limit	0.05
Analysis Method	IR
Graphite Powder Meas	100
Graphite Powder Cert	99.99
Graphite Powder Meas	99.3
Graphite Powder Cert	99.99
Method Blank	< 0.05

Quality Analysis ... *Innovative Technologies*

Date Submitted: 28-Aug-13
Invoice No.: A13-10478
Invoice Date: 13-Sep-13
Your Reference: MILLER

Canada Carbon
5213 Duric Road
Mississauga ON L5M 2C6
Canada

ATTN: Bruce Duncan

CERTIFICATE OF ANALYSIS

28 Rock samples were submitted for analysis.

The following analytical packages were requested:

Code 1A2 Au - Fire Assay AA
Code 1E3 Aqua Regia ICP(AQUAGEO)
Code 5D-C-Graphitic Infrared

REPORT **A13-10478**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:
If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3
Values which exceed the upper limit should be assayed for accurate numbers.

CERTIFIED BY :

Emmanuel Eseme , Ph.D.
Quality Control

ISO/IEC 17025
SCC Accredited
LAB 266
LAB 266
Accrédité CCN

ACTIVATION LABORATORIES LTD.

1336 Sandhill Drive, Ancaster, Ontario Canada L9G 4V5 TELEPHONE +1.905.648.9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
18801																								
18802																								
18803																								
18804																								
18805																								
18806																								
18807																								
18808																								
18809																								
18810	7	< 0.2	< 0.5	48	228	2	59	< 2	14	1.04	4	346	17	< 0.5	< 2	4.06	43	29	5.13	< 10	< 1	0.07	18	0.64
18811	< 5	< 0.2	< 0.5	51	204	2	49	< 2	11	0.92	< 2	< 10	11	< 0.5	< 2	3.68	41	26	4.95	< 10	< 1	0.03	15	0.64
18812	5	0.2	< 0.5	145	172	2	129	3	13	0.59	3	< 10	< 10	< 0.5	< 2	2.87	86	24	8.97	< 10	< 1	< 0.01	11	0.46
18813																								
18814																								
18815																								
18816	< 5	< 0.2	< 0.5	6	67	2	< 1	< 2	16	0.34	< 2	< 10	36	< 0.5	< 2	1.28	2	10	1.30	< 10	< 1	0.17	24	0.11
18817																								
18818																								
18819																								
18820																								
18821																								
18822																								
18823																								
18824	< 5	< 0.2	< 0.5	11	44	2	14	< 2	6	0.48	< 2	< 10	19	< 0.5	< 2	1.40	6	10	1.27	< 10	< 1	0.18	62	0.17
18825																								
18826																								
18827																								
18828																								

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
18801															28.6
18802															36.3
18803															4.26
18804															1.69
18805															1.17
18806															1.59
18807															4.73
18808															9.16
18809															10.1
18810	0.070	0.065	2.59	< 2	2	75	0.25	4	< 2	< 10	24	< 10	18	31	
18811	0.089	0.059	2.15	< 2	2	45	0.31	4	< 2	< 10	28	< 10	15	29	
18812	0.050	0.034	4.79	2	< 1	50	0.11	2	< 2	< 10	9	< 10	12	26	
18813															7.27
18814															0.68
18815															0.46
18816	0.141	0.079	0.57	< 2	< 1	33	0.11	2	< 2	< 10	4	< 10	21	13	
18817															2.73
18818															4.31
18819															0.48
18820															3.49
18821															1.86
18822															2.26
18823															0.95
18824	0.139	0.086	0.57	< 2	< 1	27	0.38	4	< 2	< 10	21	< 10	40	30	
18825															1.58
18826															10.7
18827															0.99
18828															1.67

Quality Control

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GXR-1 Meas		27.7	1.4	1000	759	13	26	642	656	0.43	361	< 10	268	0.8	1320	0.77	6	6	22.5	< 10	3	0.02	< 10	0.14
GXR-1 Cert		31.0	3.30	1110	852	18.0	41.0	730	760	3.52	427	15.0	750	1.22	1380	0.960	8.20	12.0	23.6	13.8	3.90	0.050	7.50	0.217
GXR-1 Meas		27.0	1.3	970	754	12	25	633	653	0.41	362	< 10	145	0.8	1290	0.75	7	7	21.9	< 10	4	0.02	< 10	0.14
GXR-1 Cert		31.0	3.30	1110	852	18.0	41.0	730	760	3.52	427	15.0	750	1.22	1380	0.960	8.20	12.0	23.6	13.8	3.90	0.050	7.50	0.217
DH-1a Meas																								
DH-1a Cert																								
DH-1a Meas																								
DH-1a Cert																								
GXR-4 Meas		3.2	< 0.5	6150	136	302	31	40	68	3.13	97	< 10	45	1.4	12	0.89	12	56	3.04	< 10	< 1	1.68	51	1.70
GXR-4 Cert		4.00	0.860	6520	155	310	42.0	52.0	73.0	7.20	98.0	4.50	1640	1.90	19.0	1.01	14.6	64.0	3.09	20.0	0.110	4.01	64.5	1.66
GXR-4 Meas		3.2	< 0.5	6080	136	302	31	40	69	3.10	95	< 10	31	1.4	14	0.90	12	56	3.01	< 10	< 1	1.66	52	1.69
GXR-4 Cert		4.00	0.860	6520	155	310	42.0	52.0	73.0	7.20	98.0	4.50	1640	1.90	19.0	1.01	14.6	64.0	3.09	20.0	0.110	4.01	64.5	1.66
GXR-6 Meas		< 0.2	< 0.5	60	1020	1	18	91	118	7.91	225	< 10	887	0.9	< 2	0.15	12	78	5.51	10	< 1	1.10	11	0.42
GXR-6 Cert		1.30	1.00	66.0	1010	2.40	27.0	101	118	17.7	330	9.80	1300	1.40	0.290	0.180	13.8	96.0	5.58	35.0	0.0680	1.87	13.9	0.609
GXR-6 Meas		0.3	< 0.5	60	1030	2	18	91	119	8.00	225	< 10	902	0.9	< 2	0.15	12	79	5.59	10	< 1	1.12	11	0.42
GXR-6 Cert		1.30	1.00	66.0	1010	2.40	27.0	101	118	17.7	330	9.80	1300	1.40	0.290	0.180	13.8	96.0	5.58	35.0	0.0680	1.87	13.9	0.609
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
SAR-M (U.S.G.S.) Meas		3.2	4.0	316	4260	12	40	1010	889	1.47	36		201	1.1	< 2	0.36	10	101	3.27	< 10		0.34	60	0.43
SAR-M (U.S.G.S.) Cert		3.64	5.27	331	5220	13.1	41.5	982	930.0	6.30	38.8		801	2.20	1.94	0.61	10.70	79.7	2.99	17		2.94	57.4	0.50
SAR-M (U.S.G.S.) Meas		3.2	4.0	318	4190	12	38	986	913	1.50	35		202	1.1	< 2	0.35	9	98	3.19	< 10		0.36	59	0.42
SAR-M (U.S.G.S.) Cert		3.64	5.27	331	5220	13.1	41.5	982	930.0	6.30	38.8		801	2.20	1.94	0.61	10.70	79.7	2.99	17		2.94	57.4	0.50
OxD108 Meas	420																							
OxD108 Cert	414.000																							
18809 Orig																								
18809 Dup																								
18823 Orig																								
18823 Dup																								
18824 Orig	< 5																							
18824 Dup	< 5																							
18828 Orig																								
18828 Split																								
Method Blank		< 0.2	< 0.5	4	< 5	< 1	< 1	< 2	2	< 0.01	< 2	< 10	< 10	< 0.5	< 2	< 0.01	< 1	< 1	< 0.01	< 10	< 1	< 0.01	< 10	< 0.01
Method Blank		< 0.2	< 0.5	1	< 5	< 1	< 1	< 2	2	0.02	< 2	< 10	< 10	< 0.5	< 2	< 0.01	< 1	< 1	< 0.01	< 10	< 1	< 0.01	< 10	< 0.01
Method Blank		< 0.2	< 0.5	2	< 5	< 1	< 1	< 2	< 2	< 0.01	< 2	< 10	< 10	< 0.5	< 2	< 0.01	< 1	< 1	< 0.01	< 10	< 1	< 0.01	< 10	< 0.01
Method Blank																								

Quality Control

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
GXR-1 Meas	0.079	0.039	0.18	79	1	156		11	< 2	26	75	121	24	15	
GXR-1 Cert	0.0520	0.0650	0.257	122	1.58	275		13.0	0.390	34.9	80.0	164	32.0	38.0	
GXR-1 Meas	0.067	0.038	0.17	70	1	148		11	< 2	24	74	118	23	14	
GXR-1 Cert	0.0520	0.0650	0.257	122	1.58	275		13.0	0.390	34.9	80.0	164	32.0	38.0	
DH-1a Meas										2540					
DH-1a Cert										2629					
DH-1a Meas										2370					
DH-1a Cert										2629					
GXR-4 Meas	0.153	0.116	1.53	2	7	71		1	< 2	< 10	81	11	12	10	
GXR-4 Cert	0.564	0.120	1.77	4.80	7.70	221		0.970	3.20	6.20	87.0	30.8	14.0	186	
GXR-4 Meas	0.148	0.116	1.53	3	6	70		1	< 2	< 10	81	10	12	9	
GXR-4 Cert	0.564	0.120	1.77	4.80	7.70	221		0.970	3.20	6.20	87.0	30.8	14.0	186	
GXR-6 Meas	0.170	0.032	0.01	3	22	29		< 1	< 2	< 10	172	< 10	6	13	
GXR-6 Cert	0.104	0.0350	0.0160	3.60	27.6	35.0		0.0180	2.20	1.54	186	1.90	14.0	110	
GXR-6 Meas	0.178	0.032	0.01	3	22	28		< 1	< 2	< 10	175	< 10	6	12	
GXR-6 Cert	0.104	0.0350	0.0160	3.60	27.6	35.0		0.0180	2.20	1.54	186	1.90	14.0	110	
Graphite Powder Meas															100
Graphite Powder Cert															99.99
Graphite Powder Meas															100
Graphite Powder Cert															99.99
Graphite Powder Meas															99.7
Graphite Powder Cert															99.99
Graphite Powder Meas															101
Graphite Powder Cert															99.99
SAR-M (U.S.G.S.) Meas	0.064	0.067		4	4	31	0.07	< 1	< 2	< 10	40	< 10	26		
SAR-M (U.S.G.S.) Cert	1.140	0.07		6.0	7.83	151	0.38	0.96	2.7	3.57	67.2	9.78	28.00		
SAR-M (U.S.G.S.) Meas	0.065	0.064		5	4	31	0.07	1	< 2	< 10	40	< 10	26		
SAR-M (U.S.G.S.) Cert	1.140	0.07		6.0	7.83	151	0.38	0.96	2.7	3.57	67.2	9.78	28.00		
OxD108 Meas															
OxD108 Cert															
18809 Orig															10.1
18809 Dup															10.1
18823 Orig															0.93
18823 Dup															0.96
18824 Orig															
18824 Dup															
18828 Orig															1.67
18828 Split															1.66
Method Blank	0.016	< 0.001	< 0.01	< 2	< 1	< 1	< 0.01	< 1	< 2	< 10	< 1	< 10	< 1	< 1	
Method Blank	0.016	< 0.001	< 0.01	< 2	< 1	< 1	< 0.01	< 1	< 2	< 10	< 1	< 10	< 1	< 1	
Method Blank	0.014	< 0.001	< 0.01	< 2	< 1	< 1	< 0.01	< 1	< 2	< 10	< 1	< 10	< 1	< 1	
Method Blank															< 0.05

Quality Analysis ... **Actlabs** *Innovative Technologies*

Date Submitted:	25-Sep-13
Invoice No.:	A13-11616
Invoice Date:	03-Oct-13
Your Reference:	MILLER

Canada Carbon
86 Wilson Street
Oakville ON
Canada

ATTN: John Carter

CERTIFICATE OF ANALYSIS

13 Rock samples were submitted for analysis.

The following analytical package was requested: Code 4F-C-Graphitic Infrared

REPORT **A13-11616**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:

CERTIFIED BY :

Emmanuel Eseme , Ph.D.
Quality Control

SCC Accredited LAB 266
LAB 266 Accrédité CCN

ACTIVATION LABORATORIES LTD.

1336 Sandhill Drive, Ancaster, Ontario Canada L9G 4V5 TELEPHONE +1.905.648.9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	C-Graph
Unit Symbol	%
Detection Limit	0.05
Analysis Method	IR
18835	10.1
18836	18.6
18837	22.2
18838	6.57
18839	42.0
18840	49.7
18841	28.2
18842	12.5
18843	24.4
18844	17.7
18845	33.0
18846	5.59
18847	2.84

Quality Control

Analyte Symbol	C-Graph
Unit Symbol	%
Detection Limit	0.05
Analysis Method	IR
Graphite Powder Meas	101
Graphite Powder Cert	99.99
Graphite Powder Meas	100
Graphite Powder Cert	99.99
18841 Orig	28.4
18841 Dup	28.0
Method Blank	< 0.05

Quality Analysis ... **Innovative Technologies**

Date Submitted:	24-Oct-13
Invoice No.:	A13-12889 (i)
Invoice Date:	07-Nov-13
Your Reference:	MILLER

Canada Carbon
5213 Duric Road
Mississauga ON L5M 2C6
Canada

ATTN: Bruce Duncan

CERTIFICATE OF ANALYSIS

13 Rock samples were submitted for analysis.

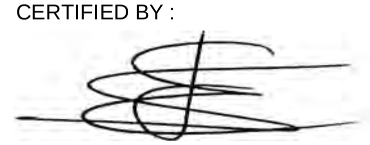
The following analytical packages were requested: Code 1A2 Au - Fire Assay AA
Code 4F-C-Graphitic Infrared

REPORT **A13-12889 (i)**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:
If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3

CERTIFIED BY :



Emmanuel Eseme , Ph.D.
Quality Control

ISO/IEC 17025
SCC Accredited
LAB 266
LAB 266
Accrédité CCN

ACTIVATION LABORATORIES LTD.

1336 Sandhill Drive, Ancaster, Ontario Canada L9G 4V5 TELEPHONE +1.905.648.9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Au	C-Graph
Unit Symbol	ppb	%
Detection Limit	5	0.05
Analysis Method	FA-AA	IR
A41270	< 5	4.38
A41271	< 5	4.04
A41272	< 5	29.9
A41273	< 5	23.4
A41274	< 5	29.8
A41275	< 5	5.31
A41276	< 5	29.9
A41277	< 5	14.7
C18575	< 5	24.5
C18576	< 5	33.3
A41283	< 5	44.9
A41284	< 5	10.8
A41285	< 5	3.39

Quality Control

Analyte Symbol	Au	C-Graph
Unit Symbol	ppb	%
Detection Limit	5	0.05
Analysis Method	FA-AA	IR
Graphite Powder Meas		101
Graphite Powder Cert		99.99
OxD108 Meas	405	
OxD108 Cert	414.000	
C18576 Orig	< 5	33.1
C18576 Dup	< 5	33.5
Method Blank		< 0.05

Quality Analysis ... *Innovative Technologies*

Date Submitted: 06-Nov-13
Invoice No.: A13-13408
Invoice Date: 08-Nov-13
Your Reference: MILLER

Canada Carbon
5213 Duric Road
Mississauga ON L5M 2C6
Canada

ATTN: Bruce Duncan

CERTIFICATE OF ANALYSIS

4 Rock samples were submitted for analysis.

The following analytical package was requested: Code 4F-C-Graphitic Infrared

REPORT **A13-13408**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:

CERTIFIED BY :

Emmanuel Eseme , Ph.D.
Quality Control

SCC Accredited LAB 266
LAB 266 Accrédité CCN

ACTIVATION LABORATORIES LTD.

1336 Sandhill Drive, Ancaster, Ontario Canada L9G 4V5 TELEPHONE +1.905.648.9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	C-Graph
Unit Symbol	%
Detection Limit	0.05
Analysis Method	IR
41455	15.7
41456	15.7
41457	53.6
41458	51.7

Quality Control

Analyte Symbol	C-Graph
Unit Symbol	%
Detection Limit	0.05
Analysis Method	IR
Graphite Powder Meas	101
Graphite Powder Cert	99.99
Graphite Powder Meas	102
Graphite Powder Cert	99.99
41458 Orig	51.8
41458 Dup	51.6

Quality Analysis ... *Innovative Technologies*

Date Submitted:	21-Nov-13
Invoice No.:	A13-14024
Invoice Date:	06-Dec-13
Your Reference:	MILLER

Canada Carbon
86 Wilson Street
Oakville ON
Canada

ATTN: John Carter

CERTIFICATE OF ANALYSIS

76 Rock samples were submitted for analysis.

The following analytical packages were requested:

Code 1A2 Au - Fire Assay AA
Code 1E3 Aqua Regia ICP(AQUAGEO)
Code 4F-C-Graphitic Infrared

REPORT **A13-14024**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:
If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3
Values which exceed the upper limit should be assayed for accurate numbers.

CERTIFIED BY :

Emmanuel Eseme , Ph.D.
Quality Control

ISO/IEC 17025
SCC Accredited LAB 266
LAB 266 Accrédité CCN

ACTIVATION LABORATORIES LTD.

1336 Sandhill Drive, Ancaster, Ontario Canada L9G 4V5 TELEPHONE +1.905.648.9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
41178																								
41184																								
18811(Rece. 18911)																								
17071(Rece. 17075)	< 5	0.2	< 0.5	23	83	2	18	3	6	0.51	5	< 10	17	< 0.5	< 2	8.72	10	2	2.87	< 10	< 1	0.08	< 10	0.12
18851																								
18852																								
18853																								
18854																								
18855																								
18856																								
18857																								
18858																								
18859																								
18860																								
18861																								
18862																								
18863																								
18864																								
18865																								
18866																								
18867																								
18868																								
18869																								
18870																								
18871																								
18872																								
18873																								
18874																								
18875																								
18876																								
18877																								
18878																								
18879																								
18880																								
18881																								
18882																								
18883																								
18884																								
18885																								
18886																								
18887																								
18888																								
18889																								
18890																								
18891																								
18892																								
18893																								
18894																								
18895																								
18896																								
18897																								
18898																								

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
18899																								
18900																								
18902																								
18903																								
18904																								
18905																								
18906																								
18907																								
18908																								
18909																								
18910																								
17070																								
17072																								
17073																								
17074																								
17076																								
17077																								
17078																								
17079																								
17063																								
17064																								
17065																								
17066																								
17067																								

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
41178															29.0
41184															13.5
18811(Rece. 18911)															53.6
17071(Rece. 17075)	0.037	0.027	1.31	< 2	< 1	300	0.15	2	< 2	< 10	5	< 10	8	37	0.23
18851															2.38
18852															< 0.05
18853															0.29
18854															0.32
18855															0.82
18856															0.69
18857															0.70
18858															0.61
18859															0.60
18860															0.14
18861															0.51
18862															0.93
18863															0.19
18864															0.46
18865															0.44
18866															0.38
18867															0.12
18868															0.19
18869															0.10
18870															0.81
18871															0.26
18872															0.68
18873															0.15
18874															1.27
18875															< 0.05
18876															0.12
18877															0.15
18878															0.15
18879															< 0.05
18880															1.39
18881															0.31
18882															0.32
18883															< 0.05
18884															0.06
18885															0.08
18886															< 0.05
18887															< 0.05
18888															< 0.05
18889															< 0.05
18890															0.84
18891															0.59
18892															1.08
18893															1.09
18894															1.23
18895															0.83
18896															0.90
18897															0.88
18898															1.32

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
18899															0.89
18900															0.92
18902															0.52
18903															0.74
18904															0.66
18905															1.16
18906															0.63
18907															0.79
18908															0.74
18909															1.10
18910															1.41
17070															1.82
17072															2.27
17073															2.13
17074															1.27
17076															1.58
17077															15.1
17078															24.6
17079															1.22
17063															38.9
17064															7.39
17065															5.87
17066															3.55
17067															12.7

Quality Control

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GXR-1 Meas		25.3	2.7	929	778	14	33	634	690	0.40	346	< 10	488	0.8	1260	0.79	5	6	21.5	< 10	5	0.03	< 10	0.14
GXR-1 Cert		31.0	3.30	1110	852	18.0	41.0	730	760	3.52	427	15.0	750	1.22	1380	0.960	8.20	12.0	23.6	13.8	3.90	0.050	7.50	0.217
GXR-4 Meas		3.0	< 0.5	6350	140	333	37	47	74	3.00	96	< 10	29	1.5	16	0.94	12	61	3.04	10	< 1	1.80	49	1.72
GXR-4 Cert		4.00	0.860	6520	155	310	42.0	52.0	73.0	7.20	98.0	4.50	1640	1.90	19.0	1.01	14.6	64.0	3.09	20.0	0.110	4.01	64.5	1.66
GXR-6 Meas		0.4	< 0.5	69	1120	3	24	97	135	8.25	220	< 10	993	1.0	< 2	0.16	12	87	5.95	10	< 1	1.25	11	0.46
GXR-6 Cert		1.30	1.00	66.0	1010	2.40	27.0	101	118	17.7	330	9.80	1300	1.40	0.290	0.180	13.8	96.0	5.58	35.0	0.0680	1.87	13.9	0.609
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
SAR-M (U.S.G.S.) Meas		3.2	5.0	330	4570	13	42	1050	1020	1.25	33		195	1.1	< 2	0.33	9	100	2.90	< 10		0.32	54	0.38
SAR-M (U.S.G.S.) Cert		3.64	5.27	331	5220	13.1	41.5	982	930.0	6.30	38.8		801	2.20	1.94	0.61	10.70	79.7	2.99	17		2.94	57.4	0.50
CDN-GS-1L Meas	1250																							
CDN-GS-1L Cert	1160.00																							
OxD108 Meas	430																							
OxD108 Cert	414.000																							
17071(Rece. 17075) Orig	< 5																							
17071(Rece. 17075) Dup	< 5																							
18866 Orig																								
18866 Dup																								
18867 Orig																								
18867 Dup																								
18876 Orig																								
18876 Split																								
18886 Orig																								
18886 Dup																								
18896 Orig																								
18896 Split																								
18896 Orig																								
18896 Dup																								
18907 Orig																								
18907 Split																								
18907 Orig																								
18907 Dup																								
17078 Orig																								
17078 Dup																								
Method Blank																								
Method Blank																								
Method Blank																								
Method Blank																								

Quality Control

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
Method Blank	< 5																							
Method Blank		< 0.2	< 0.5	< 1	< 5	< 1	< 1	< 2	< 2	< 0.01	< 2	< 10	< 10	< 0.5	< 2	< 0.01	< 1	< 1	< 0.01	< 10	< 1	< 0.01	< 10	< 0.01
Method Blank		< 0.2	< 0.5	< 1	< 5	< 1	2	< 2	< 2	< 0.01	< 2	< 10	< 10	< 0.5	< 2	< 0.01	< 1	< 1	< 0.01	< 10	< 1	< 0.01	< 10	< 0.01
Method Blank																								
Method Blank																								

Quality Control

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
GXR-1 Meas	0.056	0.042	0.19	86	1	175		10	< 2	27	69	144	22	13	
GXR-1 Cert	0.0520	0.0650	0.257	122	1.58	275		13.0	0.390	34.9	80.0	164	32.0	38.0	
GXR-4 Meas	0.132	0.125	1.71	4	7	72		1	2	< 10	76	14	11	9	
GXR-4 Cert	0.564	0.120	1.77	4.80	7.70	221		0.970	3.20	6.20	87.0	30.8	14.0	186	
GXR-6 Meas	0.086	0.035	0.01	7	26	33		< 1	< 2	< 10	177	< 10	6	9	
GXR-6 Cert	0.104	0.0350	0.0160	3.60	27.6	35.0		0.0180	2.20	1.54	186	1.90	14.0	110	
Graphite Powder Meas															99.9
Graphite Powder Cert															99.99
Graphite Powder Meas															97.6
Graphite Powder Cert															99.99
Graphite Powder Meas															100
Graphite Powder Cert															99.99
Graphite Powder Meas															97.0
Graphite Powder Cert															99.99
Graphite Powder Meas															99.8
Graphite Powder Cert															99.99
Graphite Powder Meas															96.8
Graphite Powder Cert															99.99
Graphite Powder Meas															102
Graphite Powder Cert															99.99
Graphite Powder Meas															98.0
Graphite Powder Cert															99.99
Graphite Powder Meas															99.0
Graphite Powder Cert															99.99
Graphite Powder Meas															99.0
Graphite Powder Cert															99.99
SAR-M (U.S.G.S.) Meas	0.037	0.064		5	4	31	0.05	2	< 2	< 10	33	< 10	20		
SAR-M (U.S.G.S.) Cert	1.140	0.07		6.0	7.83	151	0.38	0.96	2.7	3.57	67.2	9.78	28.00		
CDN-GS-1L Meas															
CDN-GS-1L Cert															
OxD108 Meas															
OxD108 Cert															
17071(Rece. 17075) Orig															
17071(Rece. 17075) Dup															
18866 Orig															0.37
18866 Dup															0.39
18867 Orig															0.12
18867 Dup															0.11
18876 Orig															0.12
18876 Split															0.13
18886 Orig															< 0.05
18886 Dup															< 0.05
18896 Orig															0.90
18896 Split															0.90
18896 Orig															0.90
18896 Dup															0.89
18907 Orig															0.79
18907 Split															0.82
18907 Orig															0.79
18907 Dup															0.79
17078 Orig															24.5
17078 Dup															24.6
Method Blank															< 0.05
Method Blank															< 0.05
Method Blank															< 0.05
Method Blank															< 0.05

Quality Control

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
Method Blank															
Method Blank	0.013	< 0.001	< 0.01	< 2	< 1	< 1	< 0.01	< 1	< 2	< 10	< 1	< 10	< 1	< 1	
Method Blank	0.014	< 0.001	< 0.01	< 2	< 1	< 1	< 0.01	1	< 2	< 10	< 1	< 10	< 1	< 1	
Method Blank															< 0.05
Method Blank															< 0.05

Date Submitted:	10-Jan-14
Invoice No.:	A14-00193
Invoice Date:	22-Jan-14
Your Reference:	34047

Techni-Lab Abitibi Inc.(Actlabs)
184 Rue Principale
Ste-Germaine-Boule Quebec J0Z 1M0
Canada

ATTN: Andre Caouette

CERTIFICATE OF ANALYSIS

63 Pulp samples were submitted for analysis.

The following analytical packages were requested:

Code 1A2 Au - Fire Assay AA
Code 1E3 Aqua Regia ICP(AQUAGEO)
Code 4F-C-Graphitic Infrared
Code 8-Graphite-C-Graphitic Infrared

REPORT **A14-00193**

Notes:
If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3
Values which exceed the upper limit should be assayed for accurate numbers.

CERTIFIED BY :

Emmanuel Eseme , Ph.D.
Quality Control

SCC Accredited LAB 266
LAB 266 Accrédité CCN

ACTIVATION LABORATORIES LTD.
1336 Sandhill Drive, Ancaster, Ontario Canada L9G 4V5 TELEPHONE +1.905.648.9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
41501																								
41502																								
41503																								
41504																								
41505																								
41506																								
41507																								
41508																								
41509																								
41510																								
41511																								
41512																								
41513																								
41514																								
41515																								
41516																								
41517																								
41518																								
41519																								
41520																								
41521																								
41522																								
41523	< 5	< 0.2	< 0.5	13	616	2	8	5	32	1.01	10	< 10	29	0.7	< 2	13.0	4	7	1.02	< 10	< 1	0.39	< 10	0.36
41524																								
41525																								
41526																								
41527																								
41528	< 5	0.5	< 0.5	4	280	< 1	2	< 2	25	1.51	< 2	< 10	28	1.2	< 2	13.9	1	7	1.05	< 10	< 1	0.55	< 10	0.71
41529																								
41530																								
41531																								
41532																								
41533																								
41534																								
41535	< 5	< 0.2	< 0.5	18	58	2	12	3	9	0.86	< 2	15	13	2.1	< 2	10.1	6	4	1.43	< 10	< 1	0.11	21	0.05
41536	< 5	< 0.2	< 0.5	13	171	3	4	< 2	16	1.39	< 2	14	19	8.6	< 2	7.07	4	2	2.00	< 10	< 1	0.13	14	0.09
41584	< 5	< 0.2	< 0.5	1	390	< 1	< 1	12	27	0.69	< 2	307	< 10	0.6	< 2	11.2	< 1	5	0.66	< 10	< 1	0.12	19	0.44
41585	< 5	< 0.2	< 0.5	5	105	1	3	< 2	7	0.40	< 2	< 10	26	< 0.5	< 2	3.32	2	8	0.69	< 10	< 1	0.18	< 10	0.23
41586																								
41587																								
41588	< 5	< 0.2	< 0.5	5	115	< 1	2	3	11	0.56	< 2	< 10	28	< 0.5	< 2	5.79	2	6	0.76	< 10	< 1	0.15	14	0.76
41589																								
41590	< 5	< 0.2	< 0.5	6	28	< 1	8	< 2	5	0.65	< 2	< 10	20	< 0.5	< 2	3.56	2	5	0.53	< 10	< 1	0.13	< 10	0.03
41591	< 5	0.3	< 0.5	15	33	< 1	13	2	5	0.65	< 2	22	< 10	0.7	< 2	16.1	5	2	1.05	< 10	< 1	0.03	< 10	0.04
41592	< 5	< 0.2	< 0.5	22	62	1	18	< 2	8	1.30	< 2	69	13	1.8	< 2	9.56	8	7	1.98	< 10	< 1	0.05	< 10	0.12
41599	< 5	0.2	< 0.5	62	119	4	38	2	10	2.59	2	14	< 10	3.4	< 2	5.65	22	4	4.76	< 10	< 1	0.05	< 10	0.46
41600	< 5	< 0.2	< 0.5	55	129	5	35	3	5	1.04	< 2	11	18	1.0	< 2	3.22	22	6	3.98	< 10	< 1	0.09	37	0.28
41601	< 5	< 0.2	< 0.5	35	101	3	20	< 2	12	1.74	< 2	< 10	< 10	1.6	< 2	5.60	13	4	2.77	< 10	< 1	0.04	12	0.45
41609	< 5	< 0.2	< 0.5	36	103	4	22	< 2	8	1.05	< 2	< 10	21	1.2	< 2	2.11	14	7	3.01	< 10	< 1	0.16	63	0.51
41610																								
41611	< 5	< 0.2	< 0.5	11	191	< 1	13	< 2	20	1.49	< 2	< 10	53	0.9	< 2	2.85	9	33	2.69	< 10	< 1	1.16	57	2.38
41616	< 5	< 0.2	< 0.5	8	522	< 1	7	5	15	0.85	< 2	167	32	< 0.5	< 2	10.3	5	7	3.10	< 10	< 1	0.40	23	1.06

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
41629																								
41630																								
41652																								
41653	< 5	0.2	< 0.5	30	41	1	23	< 2	12	2.39	< 2	29	19	2.6	< 2	8.28	10	7	2.30	< 10	< 1	0.12	< 10	0.12
41654																								
41655																								
41657	< 5	< 0.2	< 0.5	13	50	< 1	9	3	5	0.20	< 2	18	< 10	< 0.5	< 2	16.0	4	2	0.94	< 10	< 1	0.02	21	0.03
41625																								
41626																								
41627																								
41628																								

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
41501															1.88
41502															0.70
41503															0.32
41504															0.58
41505															0.36
41506															1.01
41507															1.04
41508															1.11
41509															0.70
41510															0.28
41511															0.54
41512															0.43
41513															0.65
41514															0.49
41515															0.57
41516															0.68
41517															0.55
41518															0.40
41519															0.54
41520															0.66
41521															0.26
41522															0.29
41523	0.036	0.014	0.05	< 2	2	402	0.01	2	< 2	< 10	13	< 10	10	8	0.22
41524															0.31
41525															0.55
41526															0.41
41527															0.31
41528	0.025	0.016	0.05	< 2	2	1170	< 0.01	< 1	< 2	< 10	12	< 10	9	6	0.18
41529															0.47
41530															0.46
41531															0.63
41532															0.14
41533															0.92
41534															0.30
41535	0.116	0.048	0.76	< 2	< 1	422	0.18	1	< 2	< 10	8	< 10	18	30	0.69
41536	0.268	0.007	0.95	< 2	< 1	179	0.27	1	< 2	< 10	4	< 10	24	45	0.08
41584	0.066	0.073	0.03	< 2	1	65	0.05	2	< 2	< 10	5	< 10	38	12	1.51
41585	0.106	0.009	0.15	< 2	< 1	66	0.11	< 1	< 2	< 10	6	< 10	9	24	0.89
41586															11.0
41587															6.29
41588	0.117	0.020	0.07	< 2	1	199	0.24	2	< 2	< 10	8	< 10	12	53	0.22
41589															50.5
41590	0.107	0.043	0.24	< 2	< 1	119	0.10	1	< 2	< 10	4	< 10	5	16	4.60
41591	0.123	0.035	0.56	< 2	< 1	829	0.07	< 1	< 2	< 10	1	< 10	10	12	1.20
41592	0.058	0.085	1.03	< 2	< 1	447	0.21	< 1	< 2	< 10	15	< 10	7	30	1.16
41599	0.283	0.006	2.25	< 2	< 1	164	0.13	< 1	< 2	< 10	10	< 10	6	42	5.57
41600	0.106	0.138	2.71	< 2	< 1	68	0.19	< 1	< 2	< 10	14	< 10	23	29	2.84
41601	0.072	0.017	1.77	< 2	< 1	140	0.20	3	< 2	< 10	10	< 10	10	58	3.95
41609	0.101	0.083	1.81	< 2	< 1	53	0.32	2	< 2	< 10	15	< 10	30	53	4.00
41610															1.41
41611	0.254	0.082	0.60	< 2	7	20	0.59	6	2	< 10	72	< 10	43	56	0.73
41616	0.299	0.095	1.28	< 2	2	69	0.22	3	< 2	< 10	14	< 10	33	56	0.21

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
41629															0.82
41630															2.96
41652															0.69
41653	0.388	0.064	1.17	< 2	< 1	466	0.23	2	< 2	< 10	14	< 10	4	36	1.63
41654															0.93
41655															3.69
41657	0.034	0.052	0.50	< 2	< 1	737	0.08	< 1	< 2	< 10	2	< 10	24	16	1.36
41625															63.2
41626															54.5
41627															43.5
41628															28.0

Quality Control

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GXR-1 Meas		27.8	2.4	1140	933	14	28	539	647	0.35	394	10	397	1.0	1350	0.83	4	8	23.0	< 10	3	0.03	< 10	0.14
GXR-1 Cert		31.0	3.30	1110	852	18.0	41.0	730	760	3.52	427	15.0	750	1.22	1380	0.960	8.20	12.0	23.6	13.8	3.90	0.050	7.50	0.217
GXR-4 Meas		3.5	< 0.5	6500	145	323	35	41	83	2.88	101	< 10	31	1.5	20	0.89	13	49	3.14	10	< 1	1.75	48	1.69
GXR-4 Cert		4.00	0.860	6520	155	310	42.0	52.0	73.0	7.20	98.0	4.50	1640	1.90	19.0	1.01	14.6	64.0	3.09	20.0	0.110	4.01	64.5	1.66
GXR-6 Meas		0.3	< 0.5	69	1070	1	19	79	116	7.33	240	< 10	907	1.0	< 2	0.17	12	69	5.74	20	3	1.13	11	0.41
GXR-6 Cert		1.30	1.00	66.0	1010	2.40	27.0	101	118	17.7	330	9.80	1300	1.40	0.290	0.180	13.8	96.0	5.58	35.0	0.0680	1.87	13.9	0.609
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
SAR-M (U.S.G.S.) Meas		3.5	5.5	351	4980	14	41	967	1000	1.23	37		205	1.2	< 2	0.33	11	82	2.97	< 10		0.29	54	0.39
SAR-M (U.S.G.S.) Cert		3.64	5.27	331	5220	13.1	41.5	982	930.0	6.30	38.8		801	2.20	1.94	0.61	10.70	79.7	2.99	17		2.94	57.4	0.50
CDN-GS-1L Meas	1250																							
CDN-GS-1L Cert	1160.00																							
41510 Orig																								
41510 Dup																								
41520 Orig																								
41520 Dup																								
41530 Orig																								
41530 Dup																								
41587 Orig																								
41587 Dup																								
41592 Orig	< 5																							
41592 Dup	< 5																							
41601 Orig		< 0.2	< 0.5	35	101	3	20	< 2	12	1.75	< 2	< 10	10	1.6	< 2	5.65	13	4	2.78	< 10	< 1	0.04	12	0.46
41601 Dup		< 0.2	< 0.5	35	100	3	19	< 2	11	1.72	< 2	< 10	< 10	1.6	< 2	5.54	13	4	2.76	< 10	< 1	0.04	12	0.45
41610 Orig																								
41610 Dup																								
41657 Orig	< 5	< 0.2	< 0.5	13	50	< 1	9	3	5	0.20	< 2	18	< 10	< 0.5	< 2	16.0	4	2	0.94	< 10	< 1	0.02	21	0.03
41657 Split	< 5	< 0.2	< 0.5	12	43	< 1	9	< 2	3	0.19	< 2	17	< 10	< 0.5	< 2	15.3	3	1	0.87	< 10	< 1	0.02	20	0.03
Method Blank	< 5																							
Method Blank		< 0.2	< 0.5	< 1	< 5	< 1	< 1	< 2	< 2	< 0.01	< 2	< 10	< 10	< 0.5	< 2	< 0.01	< 1	< 1	< 0.01	< 10	< 1	< 0.01	< 10	< 0.01

Quality Control

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
GXR-1 Meas	0.064	0.042	0.19	83	1	194	< 0.01	14	< 2	27	75	196	23	13	
GXR-1 Cert	0.0520	0.0650	0.257	122	1.58	275	0.036	13.0	0.390	34.9	80.0	164	32.0	38.0	
GXR-4 Meas	0.140	0.125	1.73	5	7	75	0.14	2	3	< 10	78	10	12	10	
GXR-4 Cert	0.564	0.120	1.77	4.80	7.70	221	0.29	0.970	3.20	6.20	87.0	30.8	14.0	186	
GXR-6 Meas	0.104	0.033	0.01	3	22	34		< 1	< 2	< 10	167	< 10	6	16	
GXR-6 Cert	0.104	0.0350	0.0160	3.60	27.6	35.0		0.0180	2.20	1.54	186	1.90	14.0	110	
Graphite Powder Meas															99.2
Graphite Powder Cert															99.99
Graphite Powder Meas															97.3
Graphite Powder Cert															99.99
Graphite Powder Meas															99.7
Graphite Powder Cert															99.99
Graphite Powder Meas															98.4
Graphite Powder Cert															99.99
Graphite Powder Meas															101
Graphite Powder Cert															99.99
Graphite Powder Meas															99.7
Graphite Powder Cert															99.99
Graphite Powder Meas															99.7
Graphite Powder Cert															99.99
Graphite Powder Meas															99.2
Graphite Powder Cert															99.99
SAR-M (U.S.G.S.) Meas	0.043	0.068		6	3	33	0.06	< 1	< 2	< 10	35	< 10	22		
SAR-M (U.S.G.S.) Cert	1.140	0.07		6.0	7.83	151	0.38	0.96	2.7	3.57	67.2	9.78	28.00		
CDN-GS-1L Meas															
CDN-GS-1L Cert															
41510 Orig															0.29
41510 Dup															0.27
41520 Orig															0.67
41520 Dup															0.64
41530 Orig															0.45
41530 Dup															0.46
41587 Orig															6.37
41587 Dup															6.21
41592 Orig															
41592 Dup															
41601 Orig	0.073	0.017	1.78	< 2	< 1	140	0.20	4	< 2	< 10	10	< 10	10	58	
41601 Dup	0.071	0.017	1.77	< 2	< 1	140	0.20	2	< 2	< 10	10	< 10	10	57	
41610 Orig															1.41
41610 Dup															1.40
41657 Orig	0.034	0.052	0.50	< 2	< 1	737	0.08	< 1	< 2	< 10	2	< 10	24	16	1.36
41657 Split	0.033	0.049	0.45	< 2	< 1	700	0.08	< 1	< 2	< 10	2	< 10	23	15	1.28
Method Blank															
Method Blank	0.012	< 0.001	< 0.01	< 2	< 1	< 1	< 0.01	1	< 2	< 10	< 1	< 10	< 1	< 1	

Date Submitted: 13-Jan-14
Invoice No.: A14-00196
Invoice Date: 24-Jan-14
Your Reference: MILLER

Canada Carbon
5213 Duric Road
Mississauga ON L5M 2C6
Canada

ATTN: Bruce Duncan

CERTIFICATE OF ANALYSIS

118 Rock samples were submitted for analysis.

The following analytical packages were requested:

Code 1A2 Au - Fire Assay AA
Code 1E3 Aqua Regia ICP(AQUAGEO)
Code 4F-C-Graphitic Infrared

REPORT **A14-00196**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:
If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3
Values which exceed the upper limit should be assayed for accurate numbers.

CERTIFIED BY :

Elitsa Hrischeva, Ph.D.
Quality Control

SCC Accredited LAB 266
LAB 266 Accrédité CCN

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
41537	< 5	0.2	< 0.5	11	82	1	9	< 2	6	0.59	< 2	19	12	< 0.5	< 2	10.2	4	4	0.97	< 10	< 1	0.05	13	0.07
41538	< 5	< 0.2	< 0.5	6	91	5	4	< 2	8	0.17	< 2	< 10	22	< 0.5	< 2	1.09	2	35	1.07	< 10	< 1	0.07	16	0.04
41539	< 5	< 0.2	< 0.5	5	255	4	4	< 2	26	0.41	< 2	< 10	46	< 0.5	< 2	1.67	3	31	2.07	< 10	< 1	0.18	17	0.20
41540	< 5	< 0.2	< 0.5	4	168	4	3	< 2	14	0.27	< 2	< 10	31	< 0.5	< 2	1.47	2	47	1.46	< 10	< 1	0.13	18	0.09
41541	< 5	< 0.2	< 0.5	3	143	< 1	4	< 2	10	0.34	< 2	11	14	< 0.5	< 2	11.1	1	6	0.46	< 10	< 1	0.08	21	0.08
41542	< 5	< 0.2	< 0.5	34	1420	4	16	2	48	1.85	28	< 10	25	2.1	< 2	7.40	10	28	3.12	< 10	< 1	0.55	26	0.88
41543	< 5	0.2	< 0.5	29	82	3	22	4	12	1.00	< 2	11	25	1.2	< 2	7.11	12	9	2.22	< 10	< 1	0.16	19	0.07
41544	< 5	0.3	< 0.5	23	73	2	16	3	17	1.79	< 2	13	31	2.1	< 2	5.26	9	6	1.77	< 10	< 1	0.19	< 10	0.11
41545	< 5	0.3	< 0.5	55	59	5	42	3	18	2.03	< 2	13	31	3.2	< 2	3.65	22	9	4.01	< 10	< 1	0.19	14	0.09
41546	< 5	0.3	< 0.5	10	115	1	7	4	18	2.09	< 2	17	44	4.2	< 2	7.17	4	7	0.92	< 10	< 1	0.22	< 10	0.09
41547	< 5	< 0.2	< 0.5	6	178	1	2	8	20	1.02	< 2	27	66	1.5	< 2	6.97	2	7	0.76	< 10	< 1	0.29	49	0.10
41548	< 5	< 0.2	< 0.5	12	101	1	2	< 2	9	0.46	< 2	< 10	85	< 0.5	< 2	1.13	2	9	0.82	< 10	< 1	0.34	28	0.04
41549	< 5	< 0.2	< 0.5	3	301	3	1	3	63	0.69	< 2	< 10	116	< 0.5	< 2	1.32	5	9	2.13	< 10	< 1	0.41	47	0.22
41550	< 5	< 0.2	< 0.5	3	231	2	< 1	2	41	0.59	< 2	< 10	98	< 0.5	< 2	1.33	3	9	1.42	< 10	< 1	0.34	45	0.16
41551	< 5	< 0.2	< 0.5	3	257	3	< 1	< 2	28	0.64	< 2	< 10	96	< 0.5	< 2	1.60	3	10	1.46	< 10	< 1	0.32	53	0.20
41552	< 5	< 0.2	< 0.5	8	242	5	3	< 2	23	0.52	< 2	< 10	46	< 0.5	< 2	1.62	4	22	1.79	< 10	< 1	0.22	40	0.25
41553	< 5	< 0.2	< 0.5	2	301	4	< 1	< 2	40	0.61	< 2	< 10	79	< 0.5	< 2	1.48	3	12	1.77	< 10	< 1	0.31	58	0.24
41554	< 5	< 0.2	< 0.5	12	317	5	13	< 2	32	0.45	< 2	< 10	31	< 0.5	< 2	1.83	9	19	2.69	< 10	< 1	0.13	50	0.35
41555	< 5	< 0.2	< 0.5	2	312	5	3	< 2	26	0.37	< 2	< 10	23	< 0.5	< 2	1.39	2	42	1.79	< 10	< 1	0.15	22	0.37
41556	< 5	< 0.2	< 0.5	11	143	4	5	3	11	0.97	< 2	32	25	4.5	< 2	8.65	4	5	2.02	< 10	< 1	0.18	20	0.10
41557	< 5	< 0.2	< 0.5	8	141	5	2	< 2	20	1.17	< 2	11	32	6.3	< 2	3.21	3	4	2.29	< 10	< 1	0.26	33	0.27
41558	< 5	< 0.2	< 0.5	7	427	5	2	2	44	1.40	< 2	27	82	2.4	< 2	6.38	2	7	2.69	< 10	< 1	1.09	41	5.34
41559	< 5	< 0.2	< 0.5	11	121	5	2	< 2	18	1.36	< 2	11	38	6.4	< 2	1.98	4	4	2.40	< 10	< 1	0.37	13	0.31
41560																								
41561	< 5	< 0.2	< 0.5	4	320	2	2	< 2	37	0.91	< 2	17	51	2.8	< 2	5.17	2	3	1.90	< 10	< 1	0.29	26	2.47
41562	< 5	< 0.2	< 0.5	4	122	3	2	< 2	20	1.84	< 2	14	58	7.9	< 2	2.50	2	4	1.36	< 10	< 1	0.42	< 10	0.24
41563																								
41564																								
41565																								
41566																								
41567																								
41568																								
41569																								
41570																								
41571																								
41572																								
41573																								
41574																								
41575																								
41576																								
41577																								
41578																								
41579																								
41580																								
41581																								
41582																								
41583	< 5	0.2	< 0.5	6	180	2	2	3	31	0.67	< 2	34	16	1.1	< 2	11.3	2	4	1.35	< 10	< 1	0.13	27	0.10
41593																								
41594																								
41595																								
41596																								
41597																								

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
41598	< 5	< 0.2	< 0.5	30	63	3	26	< 2	5	1.31	< 2	< 10	17	1.7	< 2	7.63	12	5	2.44	< 10	< 1	0.14	16	0.25
41602																								
41603																								
41604																								
41605																								
41606																								
41607																								
41608																								
41612	< 5	< 0.2	< 0.5	5	159	2	4	< 2	3	0.26	< 2	< 10	< 10	< 0.5	< 2	2.63	3	18	1.10	< 10	< 1	0.03	11	0.47
41613	< 5	< 0.2	< 0.5	16	252	2	11	< 2	23	0.67	< 2	27	31	0.5	< 2	5.99	7	14	2.65	< 10	< 1	0.22	27	0.87
41614																								
41615																								
41617																								
41618																								
41619																								
41620																								
41621																								
41622																								
41623																								
41624																								
41631																								
41632																								
41633																								
41634																								
41635																								
41636																								
41637																								
41638																								
41639																								
41640																								
41641																								
41642																								
41643																								
41644																								
41645																								
41646																								
41647																								
41648																								
41649																								
41650																								
41651																								
41656																								
41658																								
41659																								
41660																								
41661																								
41662																								
41663																								
41664																								
41665																								
41666																								
41667																								

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
41668																								
41669																								
41670																								
41671																								
41672																								
41673																								
41674																								
41675																								
41676																								
41677																								
41678																								
41679																								
41680																								
41681																								

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
41537	0.076	0.011	0.46	< 2	< 1	248	0.32	< 1	< 2	< 10	5	< 10	18	65	0.83
41538	0.059	0.048	0.38	< 2	< 1	21	0.23	3	< 2	< 10	4	< 10	21	24	0.21
41539	0.118	0.030	0.41	< 2	< 1	39	0.22	2	< 2	< 10	8	< 10	22	17	0.11
41540	0.101	0.047	0.30	< 2	< 1	31	0.28	4	< 2	< 10	6	< 10	25	20	0.16
41541	0.066	0.052	0.11	< 2	< 1	206	0.17	3	< 2	< 10	2	< 10	25	20	1.01
41542	0.032	0.057	0.20	< 2	5	135	0.06	2	< 2	< 10	36	< 10	18	13	0.45
41543	0.169	0.051	1.19	< 2	< 1	193	0.29	2	< 2	< 10	16	< 10	20	55	1.27
41544	0.367	< 0.001	0.82	< 2	< 1	158	0.31	2	< 2	< 10	11	< 10	12	85	0.41
41545	0.427	0.072	2.15	< 2	< 1	129	0.37	3	< 2	< 10	21	< 10	21	66	2.36
41546	0.498	< 0.001	0.35	< 2	< 1	186	0.31	2	< 2	< 10	10	< 10	13	79	0.63
41547	0.126	0.075	0.14	< 2	< 1	149	0.25	2	< 2	< 10	7	< 10	27	42	0.24
41548	0.187	0.089	0.20	< 2	< 1	54	0.28	4	< 2	< 10	8	< 10	39	12	0.15
41549	0.227	0.144	0.23	< 2	1	56	0.24	4	< 2	< 10	17	< 10	51	5	< 0.05
41550	0.215	0.110	0.15	< 2	< 1	51	0.27	6	< 2	< 10	13	< 10	41	10	< 0.05
41551	0.229	0.088	0.14	< 2	< 1	55	0.34	4	< 2	< 10	13	< 10	55	18	< 0.05
41552	0.188	0.069	0.44	< 2	1	44	0.24	3	< 2	< 10	12	< 10	42	22	0.11
41553	0.198	0.092	0.19	< 2	< 1	54	0.34	6	< 2	< 10	11	< 10	65	19	< 0.05
41554	0.129	0.087	0.74	< 2	1	51	0.33	5	< 2	< 10	15	< 10	59	31	< 0.05
41555	0.085	0.028	0.11	< 2	< 1	37	0.13	2	< 2	< 10	8	< 10	23	11	< 0.05
41556	0.149	0.015	1.02	< 2	< 1	331	0.20	1	< 2	< 10	3	< 10	20	30	< 0.05
41557	0.322	0.066	1.12	< 2	< 1	156	0.19	1	< 2	< 10	3	< 10	29	24	0.12
41558	0.178	0.049	0.79	< 2	2	95	0.20	< 1	< 2	< 10	11	< 10	38	27	0.06
41559	0.450	0.006	1.18	< 2	< 1	128	0.12	< 1	< 2	< 10	3	< 10	12	14	0.12
41560															0.07
41561	0.178	0.049	0.48	< 2	1	96	0.05	< 1	< 2	< 10	6	< 10	23	9	< 0.05
41562	0.524	0.004	0.54	< 2	< 1	173	0.11	1	< 2	< 10	3	< 10	9	14	0.13
41563															0.89
41564															0.64
41565															0.48
41566															0.39
41567															0.76
41568															0.59
41569															0.69
41570															0.42
41571															1.17
41572															0.47
41573															0.51
41574															0.47
41575															0.34
41576															0.39
41577															0.61
41578															0.67
41579															0.76
41580															0.72
41581															0.58
41582															0.63
41583	0.087	0.036	0.24	< 2	< 1	656	0.12	2	< 2	< 10	2	< 10	15	9	0.63
41593															0.64
41594															0.37
41595															0.58
41596															1.19
41597															0.85

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
41598	0.172	0.040	1.36	< 2	< 1	142	0.24	< 1	< 2	< 10	13	< 10	10	54	1.14
41602															2.16
41603															0.50
41604															0.37
41605															0.34
41606															0.44
41607															2.02
41608															2.17
41612	0.134	0.026	0.17	< 2	< 1	44	0.17	2	< 2	< 10	6	< 10	10	21	0.18
41613	0.168	0.130	0.71	< 2	4	107	0.37	6	< 2	< 10	31	< 10	24	25	< 0.05
41614															0.57
41615															0.32
41617															< 0.05
41618															0.36
41619															0.24
41620															0.28
41621															0.80
41622															0.76
41623															0.77
41624															0.78
41631															0.56
41632															0.42
41633															0.67
41634															0.61
41635															0.28
41636															0.45
41637															0.32
41638															0.57
41639															1.04
41640															1.01
41641															0.87
41642															0.62
41643															0.61
41644															0.82
41645															0.75
41646															0.61
41647															0.59
41648															0.71
41649															0.82
41650															0.78
41651															0.84
41656															0.70
41658															0.60
41659															0.91
41660															0.55
41661															0.56
41662															0.69
41663															0.64
41664															0.68
41665															0.44
41666															0.68
41667															0.60

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
41668															0.68
41669															0.62
41670															0.47
41671															0.42
41672															1.04
41673															0.84
41674															0.99
41675															1.29
41676															0.97
41677															0.82
41678															1.94
41679															0.90
41680															0.84
41681															0.62

Quality Control

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GXR-1 Meas		27.8	2.3	1110	837	14	28	530	650	0.38	369	< 10	386	0.9	1340	0.78	6	5	22.6	< 10	5	0.03	< 10	0.14
GXR-1 Cert		31.0	3.30	1110	852	18.0	41.0	730	760	3.52	427	15.0	750	1.22	1380	0.960	8.20	12.0	23.6	13.8	3.90	0.050	7.50	0.217
GXR-4 Meas		3.5	< 0.5	6600	150	328	35	39	75	2.90	101	< 10	39	1.6	13	0.91	13	50	3.17	10	< 1	1.77	52	1.70
GXR-4 Cert		4.00	0.860	6520	155	310	42.0	52.0	73.0	7.20	98.0	4.50	1640	1.90	19.0	1.01	14.6	64.0	3.09	20.0	0.110	4.01	64.5	1.66
GXR-6 Meas		0.3	< 0.5	68	1070	1	19	78	115	7.27	238	< 10	899	1.0	< 2	0.17	12	68	5.69	20	3	1.12	11	0.41
GXR-6 Cert		1.30	1.00	66.0	1010	2.40	27.0	101	118	17.7	330	9.80	1300	1.40	0.290	0.180	13.8	96.0	5.58	35.0	0.0680	1.87	13.9	0.609
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
Graphite Powder Meas																								
Graphite Powder Cert																								
SAR-M (U.S.G.S.) Meas		3.3	4.9	318	4440	13	44	902	914	1.30	36		214	1.2	< 2	0.36	10	87	3.17	< 10		0.33	58	0.41
SAR-M (U.S.G.S.) Cert		3.64	5.27	331	5220	13.1	41.5	982	930.0	6.30	38.8		801	2.20	1.94	0.61	10.70	79.7	2.99	17		2.94	57.4	0.50
CDN-GS-1L Meas	1080																							
CDN-GS-1L Cert	1160.00																							
CDN-GS-1L Meas	1240																							
CDN-GS-1L Cert	1160.00																							
OxD108 Meas	430																							
OxD108 Cert	414.000																							
OxD108 Meas	434																							
OxD108 Cert	414.000																							
41546 Orig	< 5																							
41546 Dup	< 5																							
41549 Orig		< 0.2	< 0.5	3	306	3	1	2	63	0.70	< 2	< 10	118	< 0.5	< 2	1.33	5	9	2.16	< 10	< 1	0.41	48	0.22
41549 Dup		< 0.2	< 0.5	4	296	3	1	3	63	0.68	< 2	< 10	114	< 0.5	< 2	1.31	5	9	2.10	< 10	< 1	0.40	47	0.22
41556 Orig	< 5																							
41556 Dup																								
41566 Split																								
41566 Orig																								
41566 Dup																								
41576 Orig																								
41576 Dup																								
41595 Split																								
41595 Orig																								

Quality Control

Analyte Symbol	Au	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K	La	Mg
Unit Symbol	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	%
Detection Limit	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01	10	0.01
Analysis Method	FA-AA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
41595 Dup																								
41595 Split																								
41598 Orig		< 0.2	< 0.5	30	61	3	26	< 2	4	1.28	< 2	< 10	16	1.6	< 2	7.44	12	5	2.38	< 10	< 1	0.14	15	0.25
41598 Dup		< 0.2	< 0.5	30	64	3	26	< 2	6	1.34	< 2	< 10	17	1.7	< 2	7.82	13	5	2.50	< 10	< 1	0.15	16	0.25
41608 Split																								
41608 Orig																								
41608 Dup																								
41622 Orig																								
41622 Dup																								
41648 Orig																								
41648 Split																								
41648 Orig																								
41648 Dup																								
41659 Orig																								
41659 Split																								
41663 Orig																								
41663 Dup																								
41673 Orig																								
41673 Dup																								
41681 Orig																								
41681 Split																								
Method Blank	< 5																							
Method Blank	< 5																							
Method Blank																								
Method Blank		< 0.2	< 0.5	1	< 5	< 1	< 1	< 2	< 2	< 0.01	< 2	< 10	< 10	< 0.5	< 2	< 0.01	< 1	< 1	< 0.01	< 10	< 1	< 0.01	< 10	< 0.01

Quality Control

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
GXR-1 Meas	0.065	0.039	0.18	74	1	180	< 0.01	12	< 2	27	74	141	23	14	
GXR-1 Cert	0.0520	0.0650	0.257	122	1.58	275	0.036	13.0	0.390	34.9	80.0	164	32.0	38.0	
GXR-4 Meas	0.141	0.129	1.73	4	7	77	0.14	1	< 2	< 10	79	10	12	10	
GXR-4 Cert	0.564	0.120	1.77	4.80	7.70	221	0.29	0.970	3.20	6.20	87.0	30.8	14.0	186	
GXR-6 Meas	0.104	0.033	0.01	3	22	33		< 1	< 2	< 10	166	< 10	6	16	
GXR-6 Cert	0.104	0.0350	0.0160	3.60	27.6	35.0		0.0180	2.20	1.54	186	1.90	14.0	110	
Graphite Powder Meas															98.0
Graphite Powder Cert															99.99
Graphite Powder Meas															101
Graphite Powder Cert															99.99
Graphite Powder Meas															99.9
Graphite Powder Cert															99.99
Graphite Powder Meas															98.4
Graphite Powder Cert															99.99
Graphite Powder Meas															99.6
Graphite Powder Cert															99.99
Graphite Powder Meas															97.1
Graphite Powder Cert															99.99
Graphite Powder Meas															100
Graphite Powder Cert															99.99
Graphite Powder Meas															97.7
Graphite Powder Cert															99.99
Graphite Powder Meas															99.2
Graphite Powder Cert															99.99
Graphite Powder Meas															96.9
Graphite Powder Cert															99.99
Graphite Powder Meas															92.9
Graphite Powder Cert															99.99
Graphite Powder Meas															95.8
Graphite Powder Cert															99.99
Graphite Powder Meas															101
Graphite Powder Cert															99.99
Graphite Powder Meas															98.4
Graphite Powder Cert															99.99
SAR-M (U.S.G.S.) Meas	0.048	0.069		5	4	34	0.07	< 1	< 2	< 10	37	< 10	25		
SAR-M (U.S.G.S.) Cert	1.140	0.07		6.0	7.83	151	0.38	0.96	2.7	3.57	67.2	9.78	28.00		
CDN-GS-1L Meas															
CDN-GS-1L Cert															
CDN-GS-1L Meas															
CDN-GS-1L Cert															
OxD108 Meas															
OxD108 Cert															
OxD108 Meas															
OxD108 Cert															
41546 Orig															0.63
41546 Dup															0.64
41549 Orig	0.229	0.146	0.24	< 2	1	57	0.25	7	< 2	< 10	17	< 10	51	5	
41549 Dup	0.224	0.142	0.23	< 2	1	56	0.23	1	< 2	< 10	17	< 10	51	5	
41556 Orig															< 0.05
41556 Dup															< 0.05
41566 Split															0.57
41566 Orig															0.41
41566 Dup															0.36
41576 Orig															0.40
41576 Dup															0.38
41595 Split															0.57
41595 Orig															0.57

Quality Control

Analyte Symbol	Na	P	S	Sb	Sc	Sr	Ti	Te	Tl	U	V	W	Y	Zr	C-Graph
Unit Symbol	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.001	0.001	0.01	2	1	1	0.01	1	2	10	1	10	1	1	0.05
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	IR
41595 Dup															0.58
41595 Split															0.57
41598 Orig	0.166	0.040	1.33	< 2	< 1	139	0.24	< 1	< 2	< 10	13	< 10	10	53	
41598 Dup	0.178	0.041	1.39	< 2	< 1	146	0.25	< 1	< 2	< 10	13	< 10	11	55	
41608 Split															2.15
41608 Orig															2.16
41608 Dup															2.19
41622 Orig															0.77
41622 Dup															0.75
41648 Orig															0.71
41648 Split															0.53
41648 Orig															0.70
41648 Dup															0.72
41659 Orig															0.91
41659 Split															0.84
41663 Orig															0.58
41663 Dup															0.70
41673 Orig															0.85
41673 Dup															0.83
41681 Orig															0.62
41681 Split															0.61
Method Blank															
Method Blank															
Method Blank															< 0.05
Method Blank	0.012	< 0.001	< 0.01	< 2	< 1	< 1	< 0.01	< 1	< 2	< 10	< 1	< 10	< 1	< 1	

SGS

Certificate of Analysis

Work Order : LD130686A

[Report File No.: 0000002587]

To: **Steven Lauzier**
Canada Carbon Inc.
5213 Durie Road
Mississauga
ONTARIO L5M 2C6

Date: Nov 05, 2013

P.O. No.	:	-
Project No.	:	-
No. Of Samples	:	16
Date Submitted	:	Nov 04, 2013
Report Comprises	:	Pages 1 to 9 (Inclusive of Cover Sheet)

Distribution of unused material:
Discard samples:

Certified By :

Chris Bates
Operations Manager

SGS Minerals Services (Toronto) is accredited by Standards Council of Canada (SCC) and conforms to the requirements of ISO/IEC 17025 for specific tests as indicated on the scope of accreditation to be found at http://www.scc.ca/en/programs/lab/mineral.shtml

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted
Elements marked with the @ symbol (e.g. @Cu) denote assays performed using accredited test methods

SGS

Element	Al@	Ba@	Be@	Ca@	Cr@	Cu@	Fe@	K@
Method	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A
Det.Lim.	0.01	0.5	5	0.1	10	5	0.01	0.1
Units	%	ppm	ppm	%	ppm	ppm	%	%
18829	4.09	143	<5	7.3	30	24	4.15	1.3
18830	2.14	29.7	<5	19.9	20	<5	1.79	0.5
18831	4.03	84.8	<5	11.9	20	<5	2.11	1.1
18832	1.94	21.7	<5	15.6	20	<5	2.22	0.5
18833	5.10	149	<5	11.2	50	47	5.02	1.2
18834	5.83	235	<5	9.9	50	26	3.70	2.4
18565	4.89	106	<5	11.4	50	24	4.01	0.7
18566	1.62	45.7	<5	10.8	20	<5	5.01	0.6
18567	5.59	51.2	<5	13.4	<10	<5	0.72	0.8
18568	2.36	33.2	<5	21.2	<10	<5	1.41	0.9
18569	5.01	90.6	<5	8.3	20	<5	2.37	1.3
18570	5.11	168	<5	8.2	40	<5	3.40	1.4
18571	5.86	258	<5	9.7	30	76	6.98	0.7
18572	4.60	141	<5	9.4	40	8	2.49	1.5
18573	4.15	118	<5	6.7	30	<5	2.25	1.3
18574	5.07	112	<5	8.8	50	37	4.87	1.2
*Rep 18574	5.13	112	<5	8.7	40	36	4.82	1.2

Element	Li@	Mg@	Mn@	Ni@	P@	Sc@	Sr@	Ti@
Method	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A
Det.Lim.	10	0.01	10	5	0.01	5	0.1	0.01
Units	ppm	%	ppm	ppm	%	ppm	ppm	%
18829	20	2.73	470	29	<0.01	8	492	0.31
18830	<10	1.58	660	<5	0.12	7	146	0.24
18831	<10	1.71	450	<5	0.05	7	252	0.23
18832	<10	2.31	570	<5	0.06	8	131	0.10
18833	40	3.77	430	50	<0.01	12	541	0.47
18834	30	3.00	360	25	<0.01	13	596	0.50
18565	40	3.99	460	28	<0.01	15	388	0.47
18566	30	4.44	910	9	0.02	13	104	0.10
18567	<10	0.35	260	<5	<0.01	<5	164	0.02
18568	<10	0.50	720	<5	0.02	<5	110	0.03
18569	10	1.86	410	<5	0.06	7	295	0.23
18570	20	2.79	530	<5	0.02	10	453	0.31
18571	50	4.20	470	52	<0.01	9	251	0.25
18572	10	2.10	380	11	0.02	9	483	0.26
18573	10	1.97	360	8	0.01	8	510	0.23
18574	20	2.74	500	28	0.03	11	524	0.46
*Rep 18574	20	2.67	490	28	0.03	11	529	0.47

Element	V@	Zn@	B	Ag@	As@	Bi@	Cd@	Ce@
Method	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A
Det.Lim.	5	5	10	1	5	0.1	0.2	0.1
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
18829	71	52	30	<1	<5	<0.1	<0.2	19.2
18830	43	21	30	<1	<5	<0.1	<0.2	67.0
18831	47	26	40	<1	<5	<0.1	<0.2	55.6
18832	58	34	30	<1	<5	<0.1	<0.2	41.8
18833	110	21	110	<1	<5	0.2	<0.2	41.6
18834	109	27	40	<1	<5	<0.1	<0.2	34.6
18565	119	19	50	<1	<5	0.1	<0.2	19.4
18566	89	79	50	<1	<5	<0.1	<0.2	37.5
18567	12	5	<10	<1	<5	<0.1	<0.2	12.6
18568	15	35	20	<1	<5	<0.1	<0.2	72.2
18569	50	36	30	<1	<5	<0.1	<0.2	63.0
18570	77	66	30	<1	<5	<0.1	<0.2	24.0
18571	99	10	40	<1	<5	0.2	<0.2	22.4
18572	74	37	260	<1	<5	<0.1	<0.2	33.6
18573	66	24	40	<1	<5	<0.1	<0.2	18.2
18574	104	44	90	<1	<5	0.1	<0.2	42.6
*Rep 18574	102	39	90	<1	<5	0.1	<0.2	41.5

Element	Co@	Cs@	Dy@	Er@	Eu@	Ga@	Gd@	Ge@
Method	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A
Det.Lim.	0.5	0.1	0.05	0.05	0.05	1	0.05	1
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
18829	17.5	0.5	1.79	1.00	0.56	14	1.94	2
18830	3.6	<0.1	7.83	5.69	0.95	8	6.42	2
18831	4.0	0.2	5.02	3.46	0.97	15	4.73	2
18832	5.5	0.1	5.14	3.69	0.70	9	4.13	2
18833	25.1	0.5	3.43	1.80	0.78	16	3.51	2
18834	17.0	1.3	2.65	1.47	0.63	17	3.00	2
18565	18.6	0.4	2.04	1.22	0.52	16	2.13	2
18566	10.9	0.3	2.62	1.71	0.49	8	2.58	2
18567	1.4	0.1	2.74	2.35	0.49	17	1.76	3
18568	2.1	0.2	9.53	7.56	1.17	9	7.40	2
18569	3.9	0.3	3.94	2.25	0.86	18	4.09	2
18570	8.8	0.5	2.14	1.16	0.63	16	2.29	2
18571	36.6	0.6	1.74	1.02	0.45	16	2.05	1
18572	8.4	0.6	3.27	2.13	0.67	15	3.04	2
18573	5.8	0.6	1.42	0.95	0.42	13	1.59	1
18574	23.3	0.6	4.10	2.39	0.83	18	4.03	2
*Rep 18574	22.3	0.5	4.00	2.27	0.90	17	4.12	2

Element	Hf@	Ho@	In@	La@	Lu@	Mo@	Nb@	Nd@
Method	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A
Det.Lim.	1	0.05	0.2	0.1	0.05	2	1	0.1
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
18829	9	0.36	<0.2	7.0	0.15	<2	10	10.5
18830	5	1.81	<0.2	28.4	1.05	<2	8	28.3
18831	14	1.14	<0.2	24.4	0.62	<2	8	23.4
18832	19	1.21	<0.2	18.1	0.72	<2	4	17.7
18833	10	0.67	<0.2	17.4	0.28	3	11	19.3
18834	7	0.56	<0.2	15.8	0.21	2	12	15.2
18565	8	0.43	<0.2	7.7	0.18	<2	11	10.3
18566	9	0.57	<0.2	17.1	0.42	<2	3	15.3
18567	<1	0.68	<0.2	5.5	0.51	<2	<1	5.9
18568	3	2.30	<0.2	32.9	1.41	<2	2	30.6
18569	10	0.81	<0.2	28.3	0.36	<2	9	24.4
18570	8	0.40	<0.2	9.6	0.20	<2	10	11.5
18571	8	0.35	<0.2	9.8	0.16	6	5	10.1
18572	5	0.71	<0.2	14.7	0.35	<2	7	14.3
18573	8	0.32	<0.2	7.8	0.16	<2	6	8.2
18574	8	0.81	<0.2	16.9	0.38	5	14	20.6
*Rep 18574	7	0.84	<0.2	16.5	0.37	4	14	20.1

Element	Pb@	Pr@	Rb@	Sb@	Sm@	Sn@	Ta@	Tb@
Method	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A
Det.Lim.	5	0.05	0.2	0.1	0.1	1	0.5	0.05
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
18829	<5	2.64	35.1	0.2	2.2	1	0.9	0.34
18830	<5	7.71	13.8	0.1	6.0	1	0.5	1.18
18831	<5	6.44	35.5	0.2	4.8	<1	0.5	0.80
18832	<5	4.83	17.4	0.3	3.9	<1	<0.5	0.78
18833	<5	5.12	42.5	0.2	3.8	2	0.9	0.58
18834	<5	4.16	95.9	0.2	3.2	3	1.0	0.46
18565	<5	2.56	29.6	0.2	2.4	1	0.8	0.36
18566	<5	4.44	19.5	0.1	3.0	<1	<0.5	0.42
18567	<5	1.52	20.0	0.2	1.4	<1	<0.5	0.38
18568	<5	8.56	26.0	0.2	6.5	<1	<0.5	1.43
18569	<5	7.08	39.8	0.2	4.6	2	<0.5	0.68
18570	<5	3.09	37.9	0.2	2.5	1	0.7	0.36
18571	8	2.73	20.2	0.2	2.2	1	<0.5	0.30
18572	<5	3.96	55.2	0.2	2.9	<1	<0.5	0.54
18573	<5	2.23	40.4	0.1	1.7	1	<0.5	0.24
18574	<5	5.48	42.1	0.2	4.3	3	0.8	0.69
*Rep 18574	<5	5.39	41.9	0.2	4.2	2	0.8	0.64

Element	Th@	Tl@	Tm@	U@	W@	Y@	Yb@	Zr@
Method	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A	GE_ICM90A
Det.Lim.	0.1	0.5	0.05	0.05	1	0.5	0.1	0.5
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
18829	2.5	<0.5	0.14	1.09	<1	9.6	1.1	342
18830	11.2	<0.5	0.92	2.78	1	54.1	6.5	213
18831	10.1	<0.5	0.52	3.14	1	33.1	3.7	597
18832	7.6	<0.5	0.61	1.95	<1	36.3	4.3	900
18833	3.6	<0.5	0.27	1.26	<1	18.3	1.8	395
18834	2.4	<0.5	0.20	1.04	<1	15.1	1.4	219
18565	1.7	<0.5	0.17	0.77	<1	11.2	1.1	270
18566	3.5	<0.5	0.29	0.97	<1	16.6	2.4	452
18567	1.1	<0.5	0.39	0.30	<1	20.0	2.9	14.3
18568	6.0	<0.5	1.25	1.66	<1	70.4	8.4	127
18569	10.8	<0.5	0.35	3.44	<1	24.2	2.2	391
18570	3.2	<0.5	0.17	1.19	<1	11.2	1.3	318
18571	2.9	<0.5	0.13	0.95	<1	9.7	1.1	419
18572	3.3	<0.5	0.34	1.14	<1	21.3	2.4	207
18573	2.3	<0.5	0.14	0.91	<1	9.2	1.0	374
18574	5.8	<0.5	0.37	2.06	<1	23.8	2.2	305
*Rep 18574	5.9	<0.5	0.36	2.05	<1	23.0	2.3	262

Element	C_graphitic
Method	CSB05V
Det.Lim.	0.01
Units	%
18829	4.70
18830	5.19
18831	10.7
18832	8.81
18833	5.27
18834	2.18
18565	6.51
18566	22.7
18567	14.7
18568	7.07
18569	14.5
18570	11.9
18571	8.59
18572	11.5
18573	30.8
18574	6.33
*Rep 18833	5.22

Appendix 7. Miller mine pit photographs

Appendix 8. Initial geophysics survey report

CANADA CARBON INC.

HLEM-MaxMin, TDEM, Beep Mat and Induced Polarization Surveys
on
Miller-Graphite Property – East Block

Grenville Township, Québec

Hawkesbury area, 31G/10

REPORT

(electronic signature)

June 8th, 2013 **Pierre Simoneau, M.Sc. P.Geo.**

Project 326.01 **Marc Boivin, P.Geo.**

TABLE OF CONTENTS

1. INTRODUCTION

At the request of Mr. Bruce Duncan, Executive Chairman & CEO for ***Canada Carbon Inc***., several geophysical surveys were completed on the Miller-Graphite property between May 17^{th} and June 4^{th} 2013. These surveys included MaxMin (HLEM), IMAGEM (mobile TDEM), Beep Mat and Induced Polarization (IP). The objective of the surveys was the characterization of graphite occurrences including the Miller graphite mine. This report presents the results of the geophysical surveys over the property and proposes a basic interpretation.

2. PROPERTY, LOCATION AND ACCESS

The Miller-Graphite Property is located about 80 km west of Montreal or 89 km east of Gatineau and 5 km north of Grenville, QC. The Highway 50 passes a few kilometres south of the property and the Scotch road (from Grenville) passes 800m east of the deposit. A bush road links to the deposit and across the property, which allows a very easy access. A power line also crosses the property 500m south of the deposit.

The property is on a hilly area. South of the old pit, the ground is relatively flat, toward a high plateau. The north area of the pit is going down toward a creek with a 20% to 40% slope. The creek is large and has lots of water.

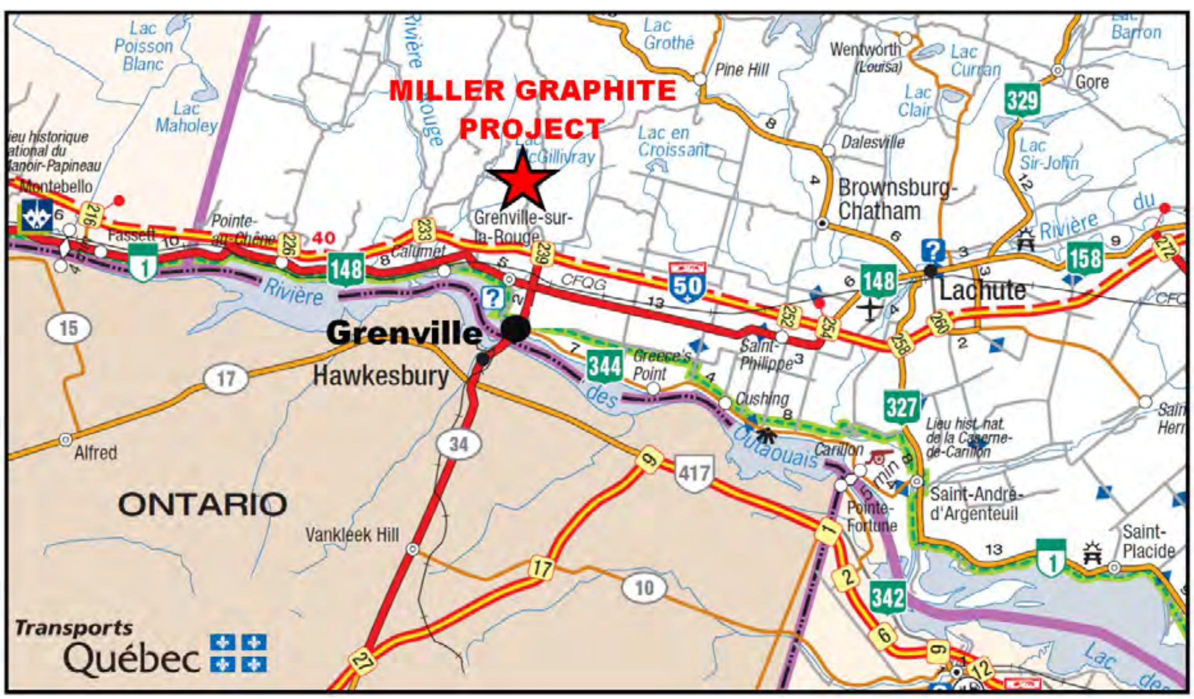


Figure 1. Localization of the Miller-Graphite Property

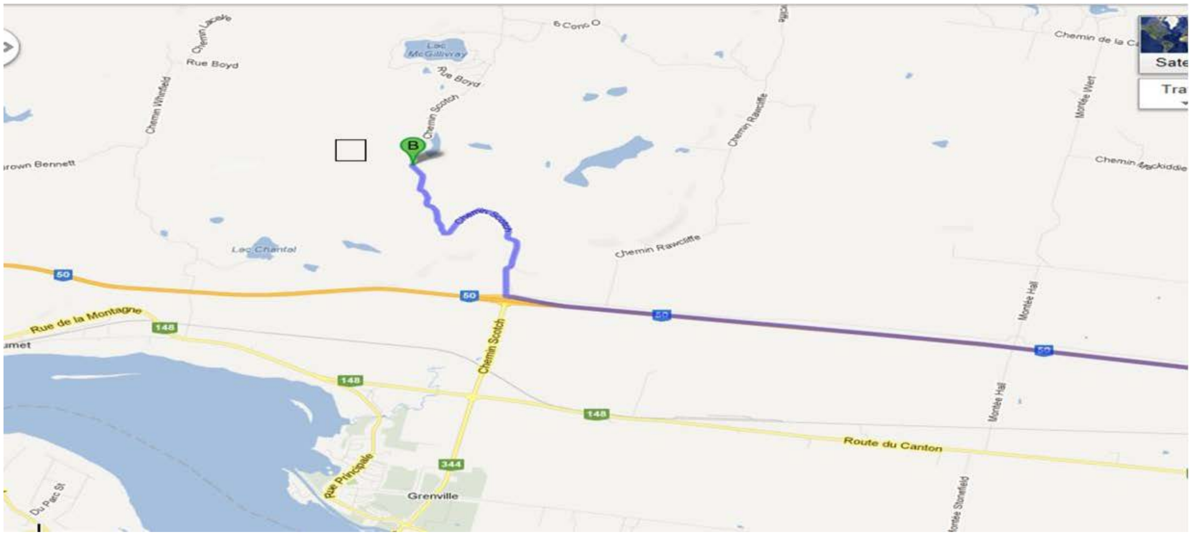


Figure 2. Localization of the Miller-Graphite Property (East Block)

3. CLAIMS

The Miller-Graphite Property East Block consists of 14 claims. The geophysical surveys covered a partial section of the property (2 claims). The portion of the claim map (coming from the Canada Carbon Inc. web site) which covers the Miller-Graphite Property is illustrated in Figure 3 on the next page.

The 2 claims covered are 2299284 2344488

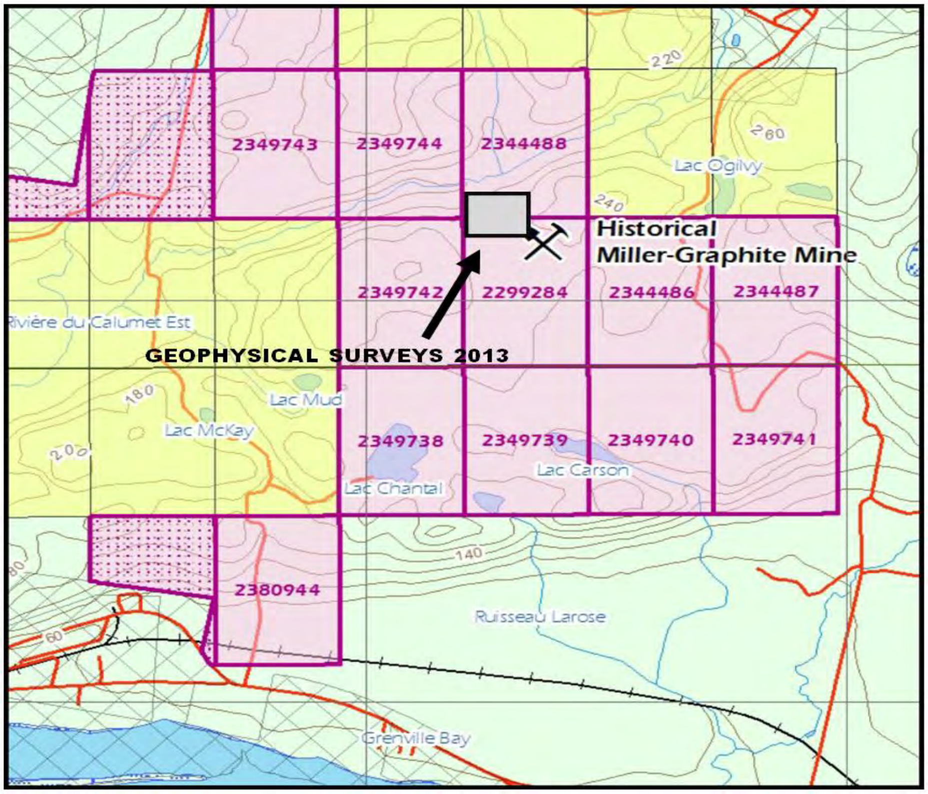


Figure 3. Claim map of the Miller-Graphite Property (East Block).
Source : Canada Carbon Inc. web site

4. PERSONNEL AND INSTRUMENTATION

The MaxMin team was composed of :

- Pierre Simoneau, geophysicist, chief party of *Géosig Inc.*
- Murray Hutchins, technician for *Geosig Inc.*

The following instruments were used for the surveys :

MaxMin survey :

- Receiver : MaxMin II-5 made by Apex Parametrics (Toronto) n/s 808
- Transmitter : MaxMin II-5 made by Apex Parametrics (Toronto) n/s 809

The IMAGEM was carried out by Devbrio Geophysics. The IMAGEM crew was composed of :

- Jean-Christophe Ricard, EIT, conceptor of IMAGEM
- Jason Marcil, technician for Devbrio Geophysics
- Murray Hutchins, technician for Devbrio Geophysics

The instrument used was IMAGEM prototype #2

The Beep Mat survey was carried out by Frédéric Ladouceur and Jason Marcil from Devbrio Geophysique Inc. under the supervision of Pierre Simoneau.

The IP survey was carried out by Géosig Inc.

The IP team was composed of:

Pierre Simoneau,	chief party
Patrick Boivin	technician
Jean Jubinville Jr.,	technician
Frédéric Ladouceur,	technician

The following instruments were used for this I. P. survey :

- receiver:	ELREC-6 from IRIS (Terraplus, Toronto)	n/s 126
- transmitter:	Tx-II 1800 W by GDD Instrumentation (Quebec)	n/s 236

The report was written by Pierre Simoneau, P. Geo. M.Sc. and Marc Boivin P. Geo., consulting geophysicist.

The maps were finalized by Donald Saindon, geomatician.

5. PREVIOUS WORK

The beginning of the graphite extraction in the area started in 1845 and the Miller-Graphite Mine was probably the first graphite operation in Canada.

The other mining operation was in the Buckingham area (Mine Walker – 1876-1896, 1906) west of Grenville.

Around 1930, the extraction of graphite declined and was abandoned. The industry could not support the competition with the graphite from Madagascar and Ceylon (now Sri Lanka). The only graphite mine in operation in Canada started in 1989, 25km south of Mont-Laurier. They are extracting crucible graphite in marble, like the Miller-Graphite deposit.

A 2013 sampling program was initiated on the property.

6. REGIONAL GEOLOGY

Mésoprotérozoïque (1600-1000 Ma*)

The Ottawa River territory extends in major part on the Grenville Province, a division of the Canadian Shield that was formed between 1300 and 1000 Ma at the side of a large continent, Laurentia. The Grenville orogeny with subduction of oceanic crust and continent collision created a large chain of hills that were eroded deep over time.

Mineralogically, the most interesting rocks belong to the Grenville Group. In the present area, the Central belt of metasediments is composed of marbles, paragneiss and quartzites, and amphibolites of volcanic origin. The marbles extend along the Gatineau valley up to the Baskatong Reservoir and up to Buckingham. East of that, there is still some marble but gneiss and quartzites are dominant.

Deposits of zinc-lead and Graphite are in relation with marbles.

7. PROPERTY GEOLOGY *(Extract from MRNW and ESIGEOM, 2012)*

The mineralization at Miller-Graphite Mine consists of unknown quantity of graphite in five (5) graphite veins 10 to 60 cm wide. Such graphite veins usually consist of high grade mineralization, between 30 to 90% graphite. The size of the flake can vary between 0,5mm to many centimetres and would correspond to coarse flake size. Contact metamorphisms minerals are also present (Apatite, garnet, diopside, sphene, vesuvianite, wollastonite, a lithium mineral, and zircon). The graphite veins are hosted in a marble unit and a pegmatite, close to the contact of the two units. Their direction is unknown.

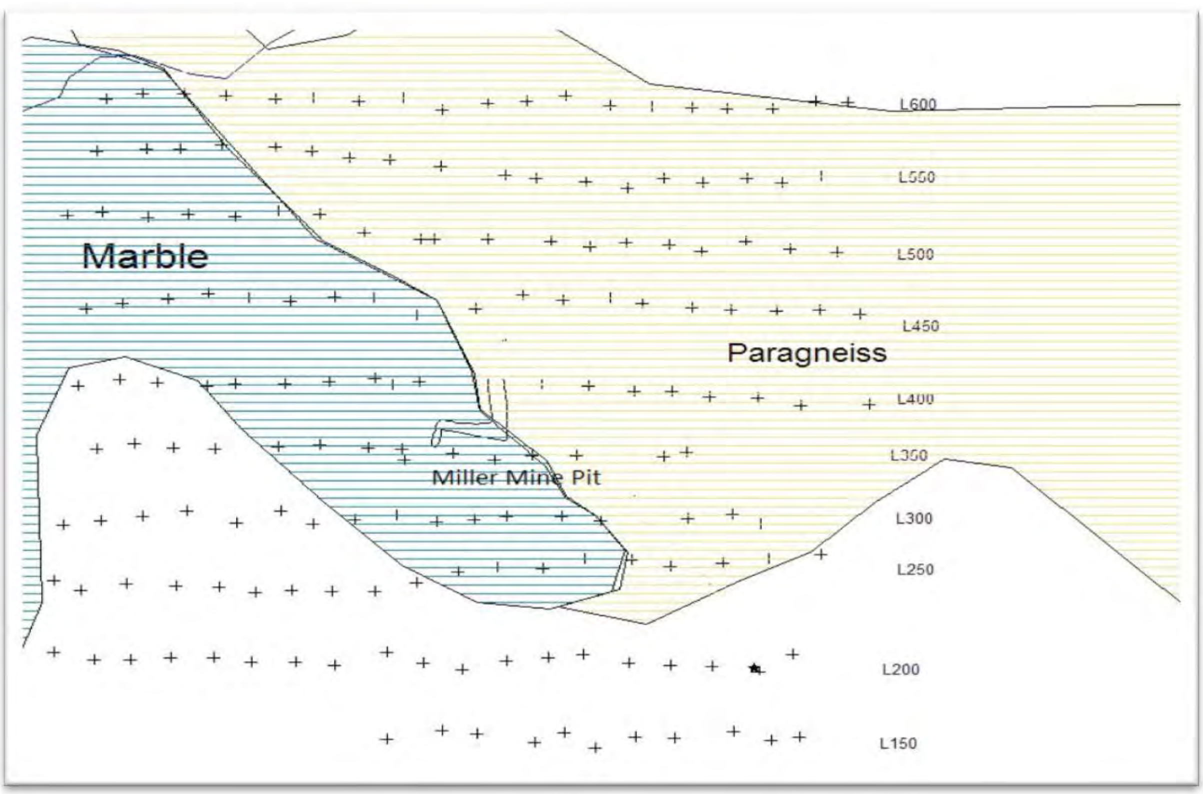


Figure 4. Geology map of the Miller-Graphite Property.

Note from the author: With the Beep Mat and the GPS, the main vein at the southeast corner of the pit was followed. It starts toward southeast but curves toward east to hit a brecciated area with several conductive veins.

The Miller-Graphite Mine is classified as a skarn deposit. The contact between a pegmatite intrusion and a marble unit has been mineralized by fluids coming out of the intrusive body.

Coming from the Canada Carbon Inc. web site which covers the Miller-Graphite Property

8. FIELD WORK AND PROCEDURE

The geophysical work was contracted to *GEOSIG INC*. The IMAGEM survey was sub-contracted to Devbrio Geophysics.

The grid extends in a N-S direction with E-W lines from 1+50N to 6+00N with 50 metres between each lines from 2+00W to 2+50E.

The original grid was established by SL Exploration Inc. (Steven Lauzier) for the first MaxMin survey. The grid was flagged and chained with hand-GPS and chaining was more or less precise due to the bad reception of satellites in the bush. For the IP survey at 12.5m stations, the chaining must be precise and therefore, lines 4+00N, 3+50N, and 3+00N were rechained.

At first, a MaxMin survey was run over all the lines for a total of 4.3 km. The stations were read every 12.5m.

An IMAGEM survey totalling 2.5 km was completed in second. Continuous readings were recorded with an average spacing of 20 readings per meter. Grid lines covered by the survey were: 1+50N, 2+00N, 2+50N, 3+00N, 3+50N and 4+00N.

A third survey was run with a Beep Mat to follow-up IMAGEM anomalies and finally, an IP survey was completed over 3 lines around the Pit, L 4+00N, 3+50N and 3+00N. The IP stations were read at 12.5 m separation.

9. HLEM MAXMIN SURVEY

9.1 Methodology

A MaxMin II-5 portable unit was used in the maximum coupled mode (horizontal loop) with a 50-metre reference cable. The parameters (in phase and quadrature components of the secondary field) were read and recorded for three frequencies: 444, 1 777 and 3 555 Hz. All readings were automatically recorded with a MMC electronic notebook (serial no. 392) assuring an accuracy of more or less 0,1 %. Readings were taken every 12.5 metres on all the lines.

MaxMin Receiver

MaxMin Transmitter

9.2 Presentation of the results

All the results are presented on 1 map at a 1 : 1 250 scale . The map (no 9380) shows the profiles of the three frequencies with the interpretation of the MaxMin survey with the profiles of both components of the three frequencies (scale : 1 cm for 10 %). In phase profiles are in full lines while out of phase profiles are in dashed lines.

The MaxMin survey with a 50m cable was conducted to confirm the presence as well as the extension of graphite veins observed during the previous prospecting campaign.

No real MaxMin anomalies were revealed. There is only some sort of positive shoulder west of the pit (L 3+50N and L 4+00N). If the MaxMin did not react with the known graphite veins it is because the veins are brecciated. Each fragments of graphite are separated from each other in the marble, cutting off the conductivity that the MaxMin need to react.

10. IMAGEM SURVEY

10.1 Methodology

IMAGEM is a new mobile Time Domain EM (TDEM) technology actually in development. It consists to a very small system similar to the helicopter-borne TDEM system. This survey is recommended to detect conductive materials, such as sulfides or graphite. Because of the sensibility and the high spatial resolution of the technique, the technique can detect very small amount of conductive materials or multiple sub-parallel features.

The equipment consists to a rectangular frame, used to transmitting and receiving. The configuration is a moving IN-LOOP geometry.

Transmitter and receiver is fully digital and can be configured to different needs. The system is taking continious reading and is equipped of a GPS and inclinometer.

Transmitter is powered by a battery pack. Receiver records the full wave-form EM field along variable size receiving Z coils (3m^2, 6m^2, 9m^2 and 90m^2).

<u>Transmitter</u>

- Effective surface : 4.41 m^2
- Peak current: 700A
- Base frequency: 30 Hz
- Pulse width: 486 µs
- Wave form : Half-sine
- Magnetic moment: 3087 NIA
- Terrain clearance : 0.8 m

<u>Receiver</u>

- Main sensor : air coil
- Surface : 0.04 m^2
- Number of turn : 298
- Effective surface :11.92 m^2

The acquisition system records the full wave-form. Extracted data include 110 time channels (25 windows ON-TIME and 85 OFF-TIME windows). Table 1 show the time windows distribution.

10.2 Presentation of the results

The results of the IMAGEM survey are presented on the 1:1250 scale map no. 9379, on which we plotted OFF-TIME channels #10 to 33.

Canal	Début (ms)	Impulsion	Canal	Début (ms)	Impulsion	Canal	Début (ms)	Impulsion
1	0.000	ON	**38**	0.610	OFF	**75**	2.067	OFF
2	0.019	ON	**39**	0.619	OFF	**76**	2.171	OFF
3	0.038	ON	**40**	0.629	OFF	**77**	2.286	OFF
4	0.057	ON	**41**	0.638	OFF	**78**	2.410	OFF
5	0.076	ON	**42**	0.648	OFF	**79**	2.543	OFF
6	0.095	ON	**43**	0.667	OFF	**80**	2.686	OFF
7	0.114	ON	**44**	0.676	OFF	**81**	2.838	OFF
8	0.133	ON	**45**	0.695	OFF	**82**	3.000	OFF
9	0.152	ON	**46**	0.705	OFF	**83**	3.171	OFF
10	0.171	ON	**47**	0.724	OFF	**84**	3.352	OFF
11	0.190	ON	**48**	0.743	OFF	**85**	3.552	OFF
12	0.210	ON	**49**	0.762	OFF	**86**	3.762	OFF
13	0.229	ON	**50**	0.781	OFF	**87**	3.981	OFF
14	0.248	ON	**51**	0.800	OFF	**88**	4.229	OFF
15	0.267	ON	**52**	0.819	OFF	**89**	4.476	OFF
16	0.286	ON	**53**	0.848	OFF	**90**	4.752	OFF
17	0.305	ON	**54**	0.867	OFF	**91**	5.048	OFF
18	0.324	ON	**55**	0.895	OFF	**92**	5.352	OFF
19	0.343	ON	**56**	0.924	OFF	**93**	5.686	OFF
20	0.362	ON	**57**	0.962	OFF	**94**	6.048	OFF
21	0.381	ON	**58**	0.990	OFF	**95**	6.429	OFF
22	0.400	ON	**59**	1.029	OFF	**96**	6.829	OFF
23	0.419	ON	**60**	1.067	OFF	**97**	7.267	OFF
24	0.438	ON	**61**	1.105	OFF	**98**	7.724	OFF
25	0.486	RAMPE	**62**	1.143	OFF	**99**	8.219	OFF
26	0.495	OFF	**63**	1.190	OFF	**100**	8.752	OFF
27	0.505	OFF	**64**	1.248	OFF	**101**	9.314	OFF
28	0.514	OFF	**65**	1.295	OFF	**102**	9.914	OFF
29	0.524	OFF	**66**	1.352	OFF	**103**	10.562	OFF
30	0.533	OFF	**67**	1.410	OFF	**104**	11.248	OFF
31	0.543	OFF	**68**	1.476	OFF	**105**	11.981	OFF
32	0.552	OFF	**69**	1.543	OFF	**106**	12.762	OFF
33	0.562	OFF	**70**	1.619	OFF	**107**	13.600	OFF
34	0.571	OFF	**71**	1.695	OFF	**108**	14.495	OFF
35	0.581	OFF	**72**	1.781	OFF	**109**	15.448	OFF
36	0.590	OFF	**73**	1.867	OFF	**110**	16.476	OFF
37	0.600	OFF	**74**	1.962	OFF			

Table 1 : Location of the time windows

10.3 Description of the IMAGEM results

10.3.1 Z coil – Secondary EM field

TDEM responses measured over the survey lines generally show high resistive background. Strong anomalous peaks are visible on line 3+50N and 4+00N and weaker but well defined anomalous peaks are visible on lines 2+00N, 2+50N and 3+00N. No anomaly was detected on line 1+50N. All the IMAGEM anomalies detected are relatively sharp and show shallow depth.

10.3.2 Description of the IMAGEM anomalies

Seventeen (17) anomalies have been detected. They are listed at the end of the report.

Some anomalous areas are characterized by 2 or 3 closely spaced anomalies. These are probably related to the same source as shown on figure 5.

Correlation line to line is possible for several IMAGEM anomalies. It generates a NW-SE conductive axis.

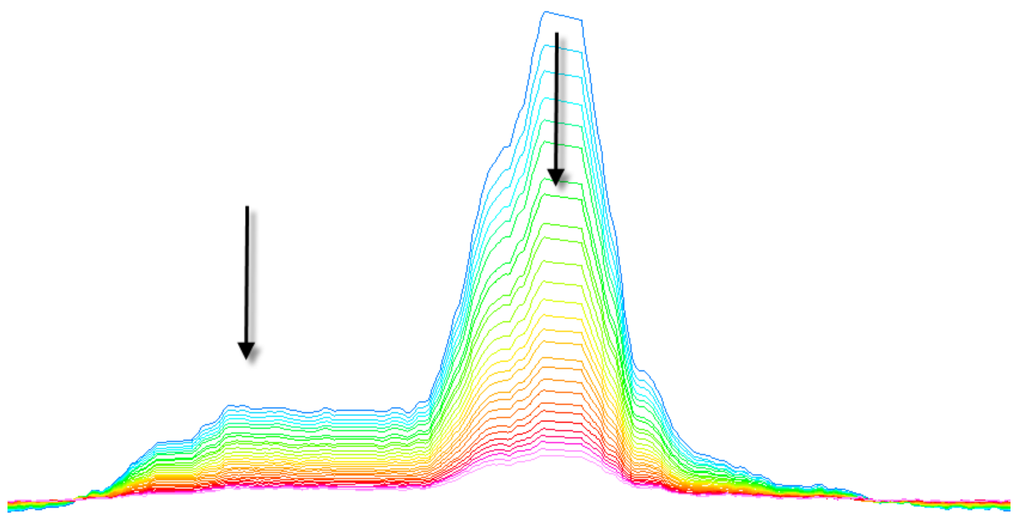


Figure 5. IMAGEM profiles over Line 3

11. BEEP MAT SURVEY

11.1 Methodology

A Beep Mat unit was used to verify the source of the IMAGEM anomalies near or at the surface.

11.2 Presentation of the results

The traverses are presented on all maps at a 1 : 1 250 scale . The maps show the area where we followed some veins from Line 1+50N to L 4+00N. Essentially east of the main pit where Canada Carbon wanted us to look.

11.3 Description of the Beep Mat results

The veins southeast of the road are only beeping near the old trenches. Not between the trenches. Perhaps that the overburden is too thick and the veins too small to be detected.

Near line 3+00N, around 1+25 E, beside isolated spots and boulders, a small vein of 0.3m wide oriented west-northwest, starting from the roots of a tree and over the ground by a few centimeters could be followed over a 25 meters.

Picture 1 Small vein oriented west-northwest starting from the roots of a tree
Miller-Graphite Property.

The main area where the Beep Mat found the most conductive veins is east of the pit, around the line 3+50N. The main vein starting from the SE corner was followed but the vein turned east toward a major brecciated area where the Beep Mat beeps almost everywhere. The zone might be beeping all over but not too strong on the IP survey, meaning that the veins might be small but numerous.

The Beep Mat can surely follow the veins. Some are easy to see. They show as a dyke coming out a few centimeter higher from the ground with a trace of boulders (Picture 2). Grey in color, with surrounding paragneiss that are so altered that the rock can fall apart with your hand.

Picture 2. Trace of boulders - Miller-Graphite Property.

The background graphite content of the paragneiss seems to show no results on the Beep Mat survey except near the pit and the paragneiss contact area that correspond to a graphite rich area, mainly brecciated.

A message mentionned that there could be pyrrhotite in the area. Despite the fact that the Beep Mat react negatively in some isolated areas, indicating something magnetic, we were not looking for sulphides. We pass the magnet over some blocks with mineralization and did not get anything magnetic. Pyrrhotite might not be associated with the graphite but that is just a comment. No sphalerite or galene or pyrrhotite were seen on the zones or boulders that were checked, only graphite. This was a very fast check up with the Beep Mat.

12. INDUCED POLARIZATION SURVEY

12.1 Purpose of the IP survey

An IP survey is usually done in order to detect conductive and/or polarizable materials, such as sulfides or graphite. Therefore, the survey consists in measuring the chargeability (M) and the apparent resistivity (R) along the lines studied.

Theoretically, the resistivity map should pinpoint conductive sulfides or graphite bodies. In reality, resistivity maps usually reflect variations in the conductivity and thickness of the overburden. The chargeability (M) measurements do allow the detection of sulfides or graphite bodies, either massive or disseminated, as the overburden seldom if ever shows any chargeability.

In areas of variable overburden conductivity, chargeability "anomalies", even over massive sulfide bodies, are subdued where the surface conductivities are high. Readings may be lower over sulfide bodies covered by clays (as low as 3 msec) than over non-mineralized but highly resistive volcanic outcrops (10 to 20 msec). To interpret an IP survey with such variations, both sets of measurements, chargeability and resistivity, must therefore be studied together. This is why we prepared normalized chargeability (NC) maps, as they reflect better the actual distribution of sulfides and other polarizable materials. Resistivity and raw chargeability maps are also drawn.

12.2 Usefulness of the Normalized Chargeability

An IP survey consists in measuring the primary voltage and chargeability between four electrodes, in order to predict the distribution of sulfides and other polarizable materials, such as graphite. From those two parameters, we calculate the apparent resistivity and the normalized chargeability (NC), using the formulas mentioned above. In areas of variable overburden conductivity, the application of the NC filter compensates for the high background chargeability observed in areas of high resistivity (outcrops or outcrops covered by very thin overburden) or the extremely low background chargeability observed in areas of swamps and conductive overburden.

The purpose of the exercise is to refine the NC, so that a given mass of sulfides is represented by an anomaly of, at least, very approximately the same amplitude, whatever the nature and depth of the surface overburden.

12.3 Presentation of the results

The results of the survey are presented on the 1 : 1 250 scale map no. 9381, on which we plotted the three profiles of the first separation at the following scales:

Chargeability (M)	20 msec/cm
Surface resistivity (R) Logarithmic scale :	 1 to 1 000 000 m, 2 decades per cm 1000 Ω-meters centered on the line
Normalized chargeability (NC)	10 mhosec/cm

The localization of IP conductors is mostly based on the shape of the NC profiles which were calculated from M and R with the following formula :

$$R = \pi a * n\,(n+1) * (n+2) * Vp/I$$

$$NC = 9.58 * M/\sqrt{R}$$

where	NC	=	Normalized chargeability in mhosec
	R	=	Apparent resistivity in Ω-metres
	M	=	Chargeability in msec
	Vp	=	Primary voltage between receiver electrodes (mV)
	I	=	Current transmitted, in mA
	a	=	Electrode spacing, metres
	n	=	number of separations
	9.58	=	normalization factor

We gave the name of mhosec to the normalized chargeability as it is obtained by multiplying the conductivity (I/R) measured in mhos by the chargeability (milliseconds), or mhosec. By combining those two parameters, we created the new name, mhosec.

The resistivity, chargeability and the normalized chargeability, also at the first separation, have been contoured and they respectively appear on maps no. 9382 to 9384.

The six separations are also presented as colour contoured pseudo-sections at the 1 : 1 250 scale.

12.4 Description of the IP results

12.4.1 Resistivity

The apparent resistivity on this area varies from less than 126 Ω-m to almost 28 000 Ω-m on the first separation. Most of the time, the variation of the resistivity on an IP survey is associated to the thickness and the type of the overburden.

The polychrome contoured map of resistivity shows that almost all the high resistivity areas are representative of outcrops or outcrops covered by very thin overburden. On the property, the top of the hill (plateau) near line 3+00N has a high resistivity signature.

The high resistivity areas are surrounded by low resistivity ones, with resistivity lower than 1000 Ω-m, which usually is representative of areas of deeper overburden (ex: swamps, or valley, base of hills).

12.4.2 Chargeability

On this property, the background chargeability varies with the resistivity. It generally ranges between 4 and 6 milliseconds in area with no mineralization.

Most of the anomalies stand out of their respective background, but so do some of the areas of high resistivity.

12.4.3 Normalized Chargeability

The background NC value is generally near 1.5 mhosec in high resistivity areas and around 1.0 mhosec in low resistivity areas. The application of the normalized chargeability filter shows its utility here. Indeed, the NC filter compensates for the high background chargeability observed in areas of high resistivity (outcrops or outcrops covered by very thin overburden).

With the NC value, the increase of the chargeability across the property is softened and the anomalies observed on the chargeability weaken.

12.4.4 Description of the I.P. anomalies

Ten (10) anomalies have been detected and have been numbered IP-1 to IP-10. Some anomalies are related from one line to another but it might not be like that since the Beep Mat shows that some veins are curving and changing directions.

The west vein IP-1 could be correct but the others might be doubtful. If the anomaly IP-4 (from Line 3+50N) is following the pit going north, therefore, the anomaly IP-4 on line 4+00N is correct. But on the south side, IP-4 curves toward east and never reach line 3+00N. East of the pit, the anomalies don't follow exactly the same vein but a brecciated contact, a mineralized zone that can be followed with the IMAGEM from line 2+00N to 4+00N and also with the Beep Mat from line 1+50N to 4+00N. That's why the resistivity is higher and the chargeability can't pinpoint a specific vein. But the high chargeability means that there is good graphite potential.

The individual anomalies are described in a table at the end of the report.

13. DISCUSSION OF THE RESULTS

The geophysical campaign covers a very limited area on the property. The target was mainly east of the old pit, a contact between the marble and the paragneiss. Half the grid is underlain by marble rocks (west) in contact with a paragneiss (east).

The MaxMin survey did not detect any evident conductive feature.

The IMAGEM survey has generated several discrete TDEM anomalies but cultural sources are possibly involved in these responses.

The Beep-Mat survey has detected several conductive sites. These sites match very well with IMAGEM anomalies and graphite occurrences has been linked with these responses.

The IP survey test has detected numerous anomalies. None of these IP anomalies are highly conductive. This confirms the lack of MaxMin anomalies.

The western anomaly IP-1 seems to follow the western contact of the marble where an IMAGEM anomaly was located. But the strongest IP anomaly (IP-3) didn't give an IMAGEM anomaly. IP-3 is at the western end of the pit. The main zone that we were looking was east of the pit. IP-4, IP-5 and IP-6 are in the area of the main conductive area that we surveyed with the Beep Mat. IP-4 is strong near the pit but turns toward east and disappears in the brecciated zone. The anomaly IP-9 seems alone and is located at the end of line 3+50N, not on any of the other lines.

On some previous works (1989), a mineralized zone was found 100m east of the deposit and could correspond to the anomalies IP-7 and IP-8 that we have on Line 4+00N. The anomalies extend over 50m wide but do not show on line 3+50N.

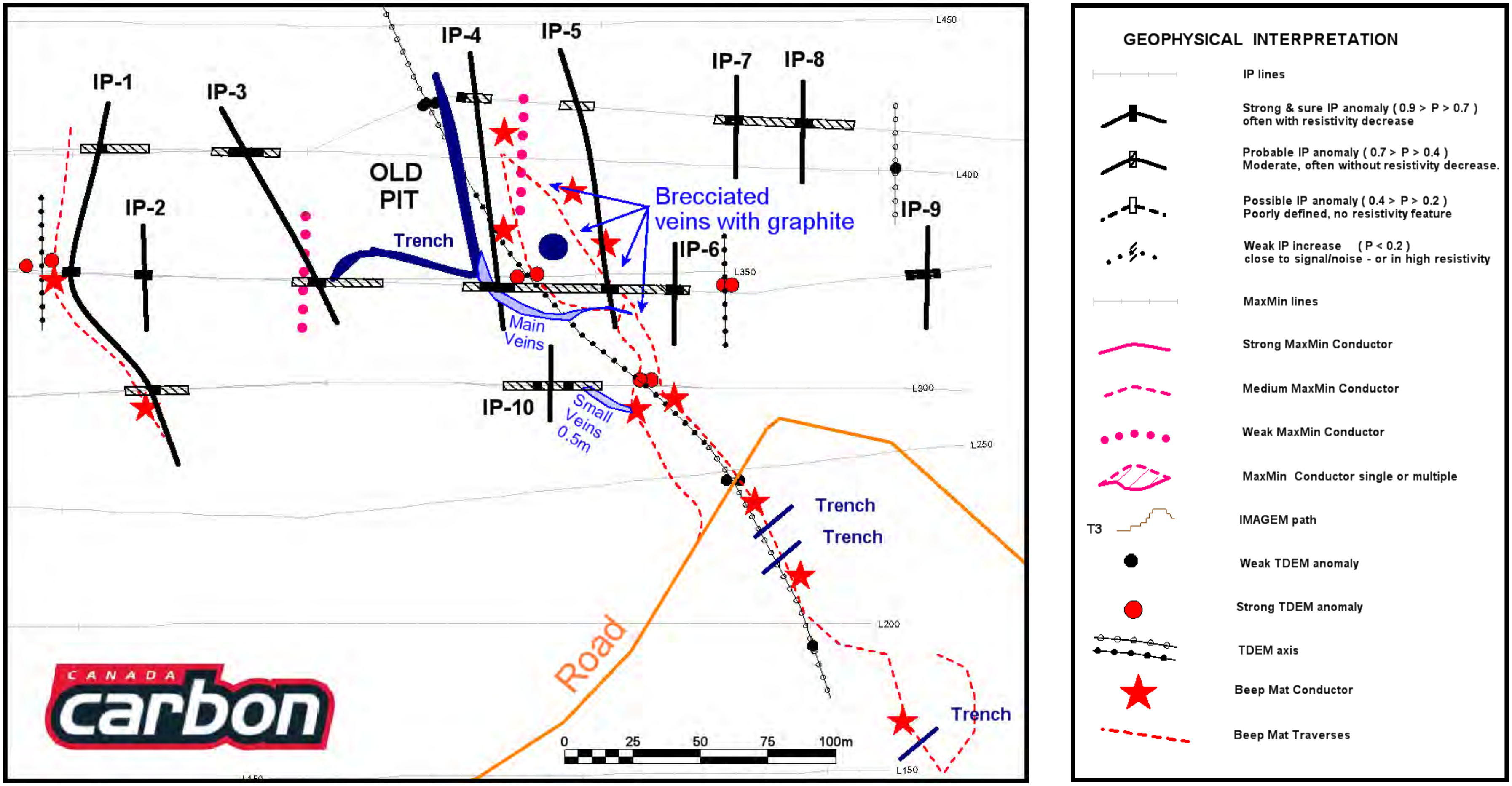


Figure 6. Geophysical interpretation.

In a nutshell, graphite flakes are not "electrically" connected over a reasonable length to generate something detectable by the MaxMin or to generate highly conductive features on DC resistivity surveys. IMAGEM (TDEM) survey has probably detected limited extent graphite-rich conductive veins. Beep-Mat has confirmed the IMAGEM survey. Several anomalous IP axes have been traced. Some match with IMAGEM anomalies or axis.

14. CONCLUSIONS

The geophysical campaign gave interesting information about this property.

Indeed, 10 IP anomalies were identified across the grid and some TDEM trends have been drawn. There is good outcrop exposure. Some of the veins are visible on surface, meaning that the overburden is not deep. IMAGEM anomalies may reflect limited graphite-rich veins but IMAGEM axis has possibly point-out a trend of interest.

None conductive IP anomalies should reflect disseminated graphite environment.

IP-4/IP-5 and IP-1 anomalous axis match fairly well with IMAGEM axis. These axes should be prioritized to found graphite-rich veins.

15. RECOMMENDATIONS

Recommendations include backhoe trenching and sampling program in order to expose the recently discovered zones. Further geological mapping and prospecting is also required.

Covering the rest of the grid with an IP survey could help mapping the mineralized zone and see where the most concentrated areas are. The forest is open enough to run an IP survey without having to cut lines but the flagging-chaining must be precise.

Considering the deeper penetration of the IMAGEM, detailed IMAGEM lines should be completed to follow areas of interest.

Marc Boivin, Senior Geophysicist

860, boul. de la Chaudière, bureau 202, Québec (Québec) G1X 4B7
Téléphone : (418) 877-7382 Télécopieur : (418) 877-4054
GEOSIG Inc.

LIST OF MAPS

Scale : 1 : 1 250

Map #	Title
9379	Profiles TDEM (IMAGEM) Survey
9380	Profiles and Posting HLEM-MaxMin Survey
9381	Profiles and Posting n=1 Induced Polarization Survey
9382	Resistivity Contours n=1 Induced Polarization Survey
9383	Chargeability Contours n=1 Induced Polarization Survey
9384	Normalized Chargeability Contours n=1 Induced Polarization Survey

DESCRIPTION TABLE OF IMAGEM ANOMALIES

LINE	UtmX	UtmY	Type	Comments
T2	530815	5057956	Strong anomaly	Strong amplitude
T2	530810	5057956	Strong anomaly	Narrow signature
T3	530584	5057998	Strong anomaly	Narrow and weaker anomaly
T3	530593	5058000	Strong anomaly	Very strong amplitude
T3	530765	5057994	Strong anomaly	Weaker anomaly
T3	530772	5057995	Strong anomaly	Very strong amplitude
T3	530841	5057991	Strong anomaly	Strong amplitude
T3	530844	5057991	Strong anomaly	weaker peak
T4	530905	5058034	Weak anomaly	Possible cultural source
T4	530735	5058058	Weak anomaly	Weak amplitude
T4	530732	5058058	Weak anomaly	Very weak amplitude
T4	530730	5058057	Weak anomaly	Weak and sharp anomaly
T4	530528	5058039	Weak anomaly	Weak amplitude
T6	530865	5057918	Weak anomaly	Possible cultural source
T6	530847	5057919	Strong anomaly	Very weak amplitude
T6	530842	5057919	Strong anomaly	Very weak amplitude
T6	530874	5057858	Weak anomaly	Weak amplitude

DESCRIPTION OF INDUCED POLARIZATION ANOMALIES

Project: Miller-Graphite – East Block

Anom No.	From LINE STATION	To LINE STATION	LENGTH (m)	MAIN TARGET ZONE LINE STATION	IP msec	NC mho-s	Res Ohm-m	Width (m)	ASSOCIATION	COMMENTS
IP-1	L 3+00N 0+68W	L 4+00N 0+81W	> 100	L 3+50N 0+93W	42.0	13.0	949 ↓	5	IMAGEM Beep Mat	Open N-S
IP-2	L 3+50N 0+68W	L 3+50N 0+68W	-	L 3+50N 0+68W	37.0	8.5	1674 ↓	5		
IP-3	L 3+50N 0+06W	L 4+00N 0+25W	> 50	L 3+50N 0+06W	55.0	14.0	1462 ↓	5	MaxMin?	Open North
IP-4	L 3+50N 0+62E	L 4+00N 0+56E	> 50	L 3+50N 0+62E	35.0	7.4	2066 ↓	10	IMAGEM Beep Mat	Open North
IP-5	L 3+50N 1+06E	L 4+00N 1+00E	> 50	L 3+50N 1+06E	30.0	6.3	2040 ↓	5	Beep Mat MaxMin?	Open North
IP-6	L 3+50N 1+31E	L 3+50N 1+31E	-	L 3+50N 1+31E	24.0	3.8	3603 ↓	5	IMAGEM?	
IP-7	L 4+00N 1+56E	L 4+00N 1+56E	-	L 4+00N 1+56E	24.0	4.0	3120	5		Open North
IP-8	L 4+00N 1+81E	L 4+00N 1+81E	-	L 4+00N 1+56E	25.0	2.7	7725↑	5		Open North
IP-9	L 3+50N 2+25E	L 3+50N 2+25E	-	L 3+50N 2+25E	21.0	7.4	762 ↓	10		Not totally covered
IP-10	L 3+00N 0+93E	L 3+00N 0+93E	-	L 3+00N 0+93E	22.0	2.4	7391 ↓	2	IMAGEM? Beep Mat?	Near brecciated contact Toward WNW

IP : chargeability   NC : normalized chargeability   Res: Resistivity   ↑↓ : Increasing or lowering from the background.

IP-1
IP-2
IP-3
IP-4
IP-5
IP-6
IP-7
IP-8
IP-9
IP-10
OLD
PIT
Trench
Brecciated
veins with graphite
Main
Veins
Small
Veins
0.5m
Trench
Trench
L 400 N
L 350 N
L 300 N
L 250
T2
T3
T4
T6
-100
-50
0
50
100
150
200
250

IP-1
IP-2
IP-3
IP-4
IP-5
IP-6
IP-7
IP-8
IP-9
IP-10
OLD PIT
Trench
Brecciated veins with graphite
Main Veins
Small Veins 0.5m
Trench
Trench
L 400 N
L 350 N
L 300 N
L 250
T4
T3
T2
T6
-100
-50
0
50
100
150
200
250


IP-1
IP-2
IP-3
IP-4
IP-5
IP-6
IP-7
IP-8
IP-9
IP-10
OLD PIT
Trench
Breccia
veins w graphite
Main Veins
Small Veins 0.5m
Trench
Trench
T2
T3
T4
T6
L 350 N
L 300 N
-100
-50
0
50
100
150
200
250

IP-1
IP-2
IP-3
IP-4
IP-5
IP-6
IP-7
IP-8
IP-9
IP-10
OLD
PIT
Trench
Brecciated
veins with graphite
Main
Veins
Small
Veins
0.5m
Trench
Trench
L 400 N
L 350 N
L 300 N
T4
T3
T2
T6
-100
-50
0
50
100
150
200
250

IP-1
IP-2
IP-3
IP-4
IP-5
IP-6
IP-7
IP-8
IP-9
IP-10
OLD PIT
Trench
Brecciated veins with graphite
Main Veins
Small Veins 0.5m
Trench
Trench
L 400 N
L 350 N
L 300 N
L 250
T2
T3
T4
T6
-100
-50
0
50
100
150
200
250

IP-1
IP-2
IP-3
IP-4
IP-5
IP-6
IP-7
IP-8
IP-9
IP-10
OLD PIT
Trench
Brecciated veins with graphite
Main Veins
Small Veins 0.5m
Trench
Trench
L 400 N
L 350 N
L 300 N
T4
T3
T2
T6
-100
-50
0
50
100
150
200
250


IP-1
IP-2
IP-3
IP-4
IP-5
IP-6
IP-7
IP-8
IP-9
IP-10
OLD PIT
Trench
Brecciated veins with graphite
Main Veins
Small Veins 0.5m
Trench
Trench
L 400 N
L 350 N
L 300 N
L 250
L 300 N
T2
T3
T4
T6
-100
-50
0
50
100
150
200
250

Appendix 9. Trench geology photographs

18835 : NE graphitic pod ; 0.6m channel sample

10% fine grained Gp in pegmatitic wollastonite(calcite and diopside)

18836 : VN1 North ; 1m channel sample

5-10% fine grained Gp in pegmatite (feldspar, calcite, wollastonite and diopside)

18837 : VN1 South (1/2) ; 1.3m channel sample

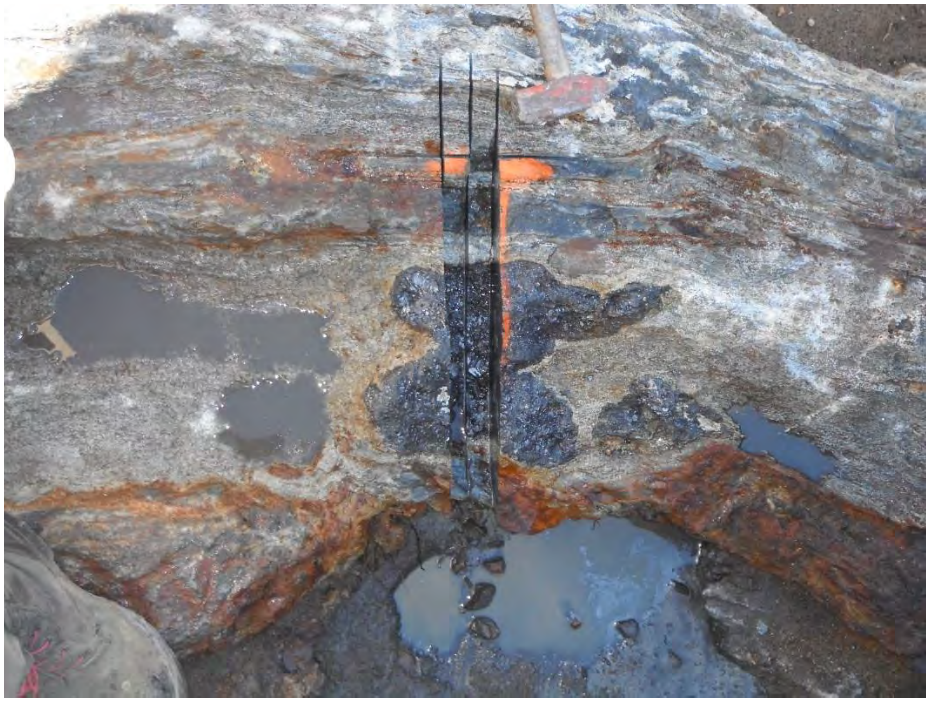
15-20% fine grained Gp in pegmatitic wollastonite(calcite and diopside)

18838 : VN1 South (2/2) ; 0.58m channel sample

5-10% fine grained Gp in pegmatite (feldspar, calcite, wollastonite and diopside)

18839 : Pod between VN1 and VN2 ; 0.44m channel sample

60% coarse (some crystals >2cm) gp in marble in contact with 20% disseminated gp in marble.



18840 : VN2 Highgrade ; grab sample with rock saw

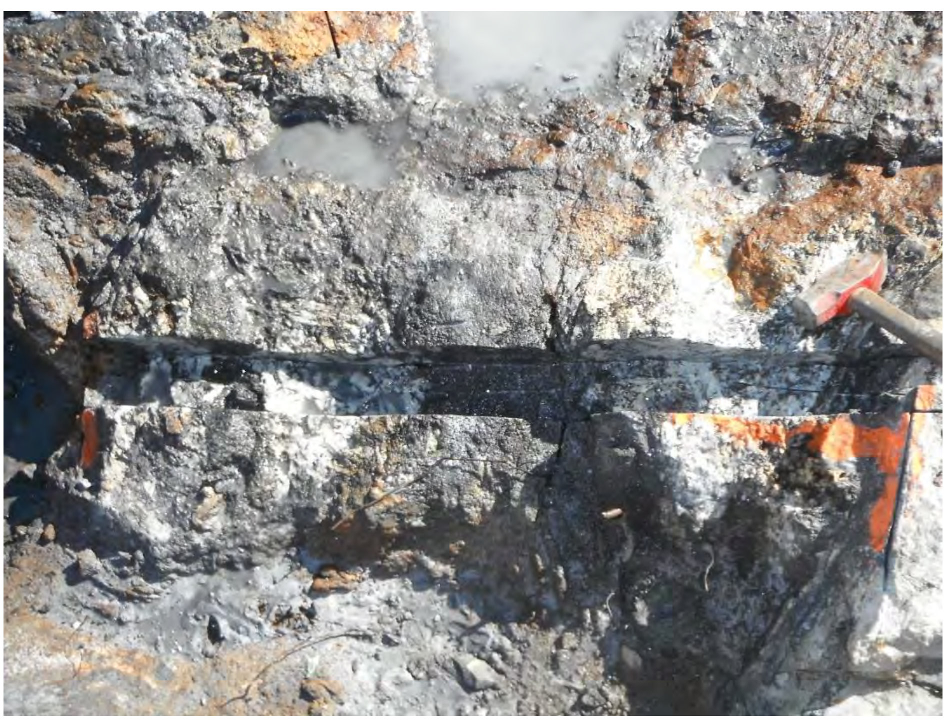
80% fine grained gp vein in marble.

18841 : VN2 ; 1.3m channel sample

40% medium grained gp, including the same vein as 18840. In a diopside marble.

18842 : Pod VN2 (1/3) North ; 0.65m channel sample

15%to 50% coarse to fine Gp in pegmatitic wollastonite.



18843 : Pod VN2 (2/3) Central ; 0.5m channel sample

20% coarse grained gp in pegmatitic wollastonite

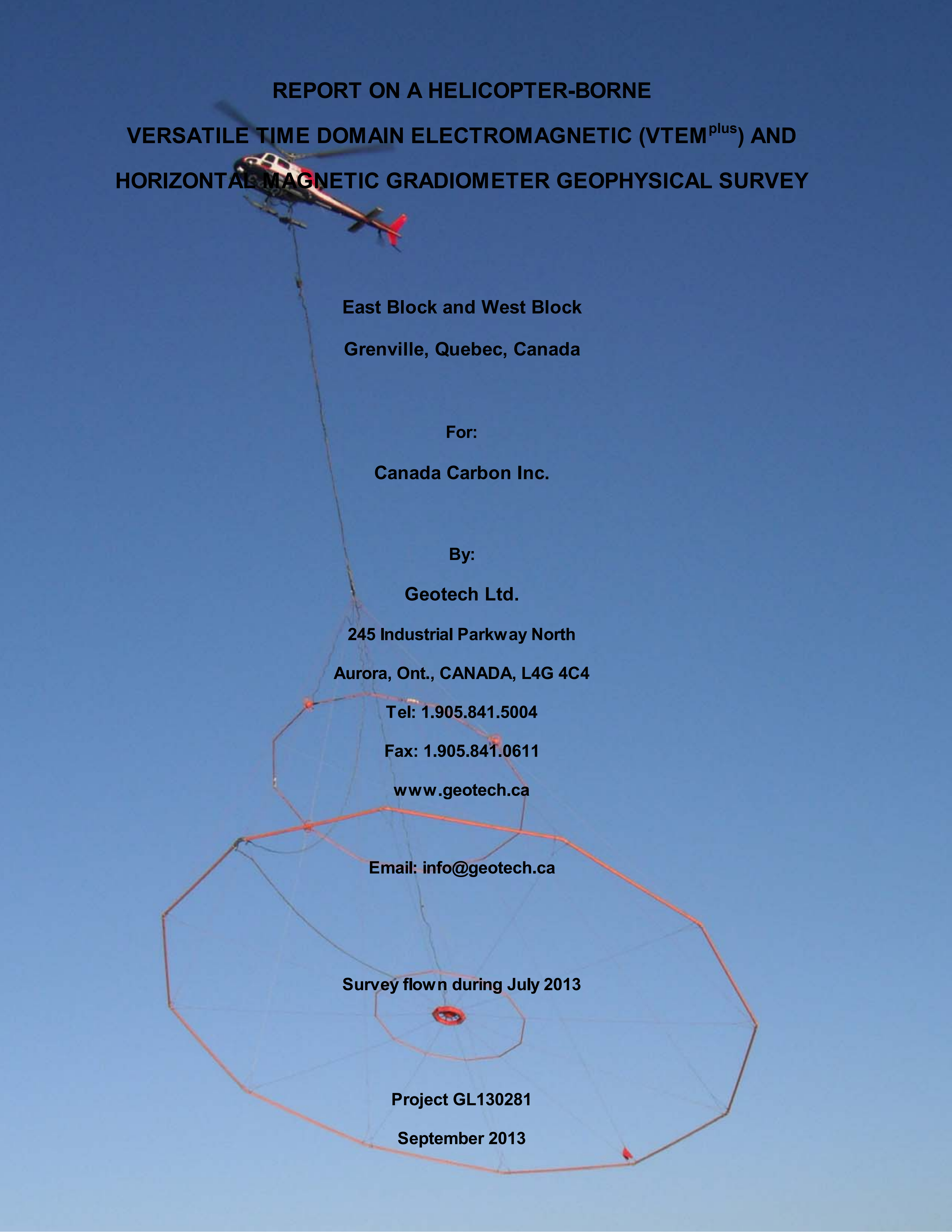
18844 : Pod VN2 (3/3) South ; 0.5m channel sample

15% coarse grained gp in pegmatitic wollastonite and in marble

18845 : Pod after VN2 ; 0.5m channel sample

30% coarse gp in marble. Trace sulfides, oxidation of the marble.

Appendix 10. Airborne survey report



REPORT ON A HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM^{plus}) AND HORIZONTAL MAGNETIC GRADIOMETER GEOPHYSICAL SURVEY

East Block and West Block

Grenville, Quebec, Canada

For:

Canada Carbon Inc.

By:

Geotech Ltd.

245 Industrial Parkway North

Aurora, Ont., CANADA, L4G 4C4

Tel: 1.905.841.5004

Fax: 1.905.841.0611

www.geotech.ca

Email: info@geotech.ca

Survey flown during July 2013

Project GL130281

September 2013

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

REPORT ON A HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM^{plus}) and HORIZONTAL MAGNETIC GRADIOMETER GEOPHYSICAL SURVEY

East Block and West Block
Grenville, Quebec, Canada

EXECUTIVE SUMMARY

On July 13th, 2013 Geotech Ltd. carried out a helicopter-borne geophysical survey over the East Block and West Block project areas situated near Grenville, Quebec, Canada.

Principal geophysical sensors included a versatile time domain electromagnetic (VTEM^{plus}) system, and horizontal magnetic gradiometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 336 line-kilometres of geophysical data were acquired during the survey.

In-field data quality assurance and preliminary processing were carried out on a daily basis during the acquisition phase. Preliminary and final data processing, including generation of final digital data and map products were undertaken from the office of Geotech Ltd. in Aurora, Ontario.

The processed survey results are presented as the following maps:

- Electromagnetic stacked B-Field Z Component profiles
- Electromagnetic stacked dB/dt Z Component profiles
- B-Field Z Component Channel grid
- Total Magnetic Intensity (TMI)
- Magnetic Total Horizontal Gradient
- Magnetic Tilt-Angle Derivative
- dB/dt Calculated Time Constant (Tau) with contours of anomaly areas of the Calculated Vertical Derivative of TMI
- RDI sections of selected lines

Digital data includes all electromagnetic and magnetic products, plus ancillary data including the waveform.

The survey report describes the procedures for data acquisition, processing, final image presentation and the specifications for the digital data set.

1. INTRODUCTION

1.1 General Considerations

Geotech Ltd. performed a helicopter-borne geophysical survey over East Block and West Block project areas located near Grenville, Quebec, Canada (Figure 2).

Bruce Duncan represented Canada Carbon Inc. during the data acquisition and data processing phases of this project.

The geophysical surveys consisted of helicopter borne EM using the versatile time-domain electromagnetic (VTEM^{plus}) system with Z component measurements and horizontal magnetic gradiometer using two cesium magnetometers. A total of 336 line-km of geophysical data were acquired during the survey.

The crew was based out of Hawkesbury (Figure 2) in Ontario for the acquisition phase of the survey. Survey flying started on July 13th and was completed on July 22nd, 2013.

Data quality control and quality assurance, and preliminary data processing were carried out on a daily basis during the acquisition phase of the project. Final data processing followed immediately after the end of the survey. Final reporting, data presentation and archiving were completed from the Aurora office of Geotech Ltd. in September, 2013.

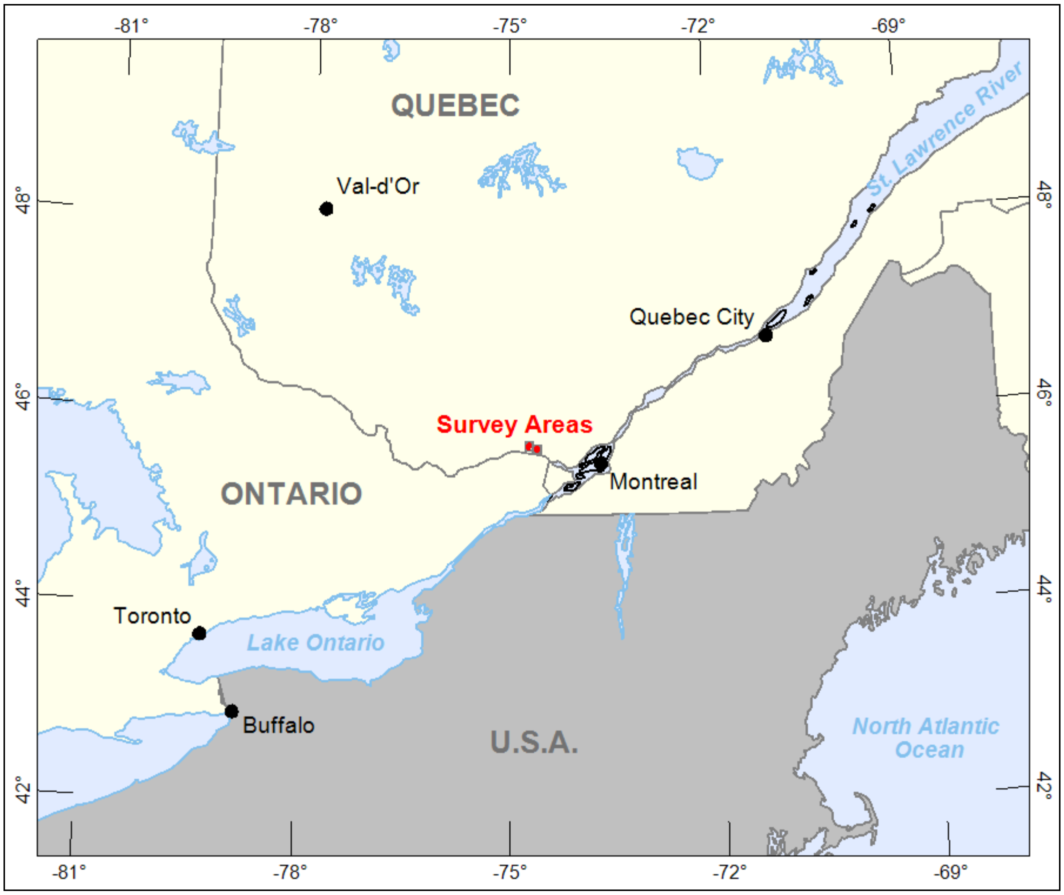


Figure 1: Property Location.

1.2 Survey and System Specifications

The survey area is located north of Grenville, Quebec, Canada (Figure 2).

Figure 2: Survey area location on Google Earth.

The east block was flown in a northeast to southwest (N 45° E azimuth) direction with traverse line spacing of 50 and 100 metres as depicted in Figure 3. Tie lines were flown perpendicular to the traverse lines at a spacing of 1000 metres. The west block was flown in a northwest to southeast (N 135° E azimuth) direction with traverse line spacing of 100 metres as depicted in Figure 4. Tie lines were flown perpendicular to the traverse lines at a spacing of 1000 metres respectively. For more detailed information on the flight spacing and direction see Table 1.

1.3 Topographic Relief and Cultural Features

East Block

Topographically, the block exhibits a shallow relief with an elevation ranging from 77 to 295 metres above mean sea level over an area of 13 square kilometres (Figure 3).

There are various rivers and streams running through the survey area which connect various lakes and wetlands. There are visible signs of culture such as roads, trails, power lines, buildings, and other structures which can be found throughout the survey area.

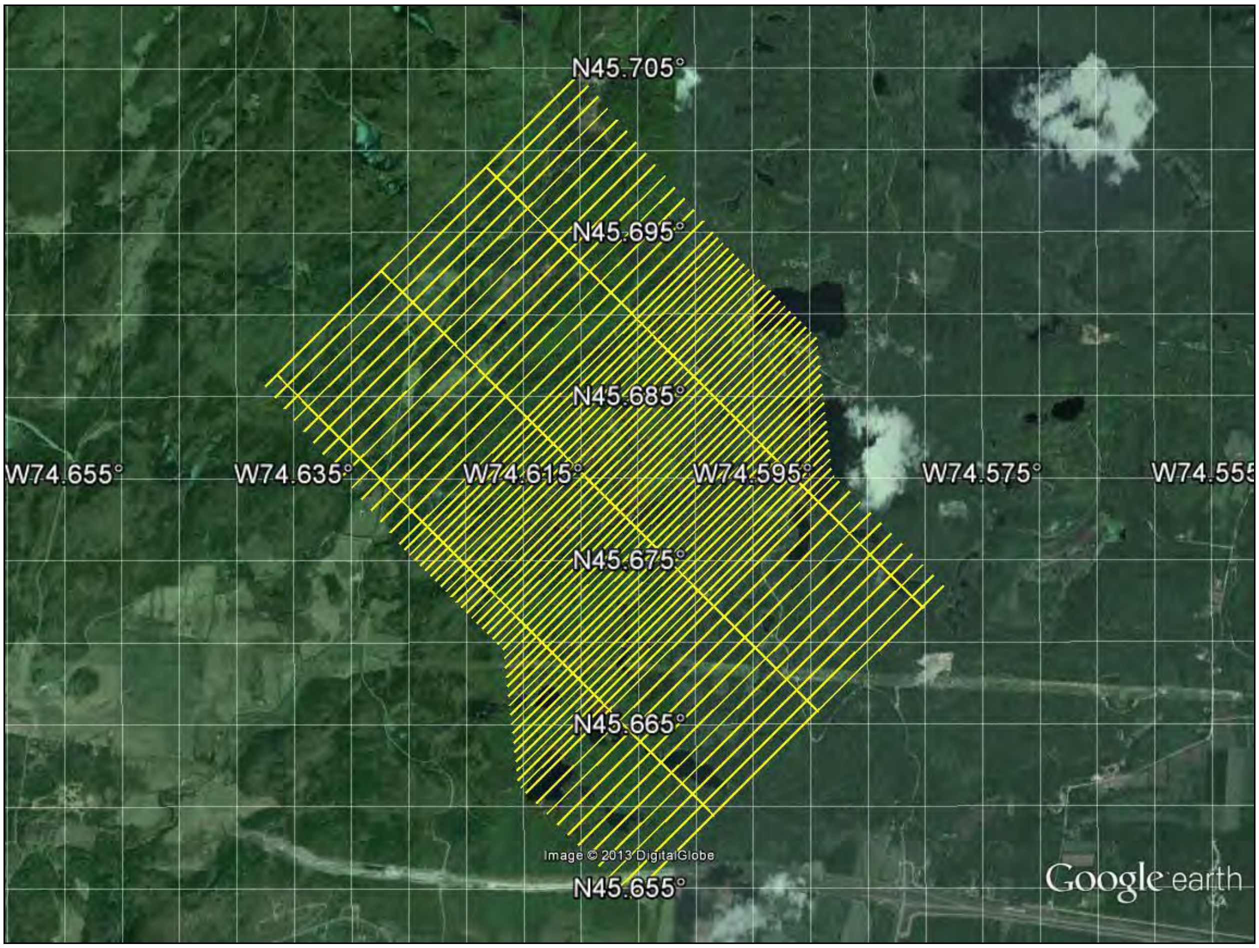


Figure 3: East Block flight path over a Google Earth Image.

The survey area is covered by numerous mining claims which are plotted on all maps. The survey area is covered by NTS (National Topographic Survey) of Canada sheets 031G10.

West Block

Topographically, the block exhibits a shallow relief with an elevation ranging from 151 to 282 metres above mean sea level over an area of 13 square kilometres (Figure 4).

There are various rivers and streams running through the survey area which connect various lakes and wetlands. There are visible signs of culture such as roads, trails, and buildings which can be found throughout the survey area.

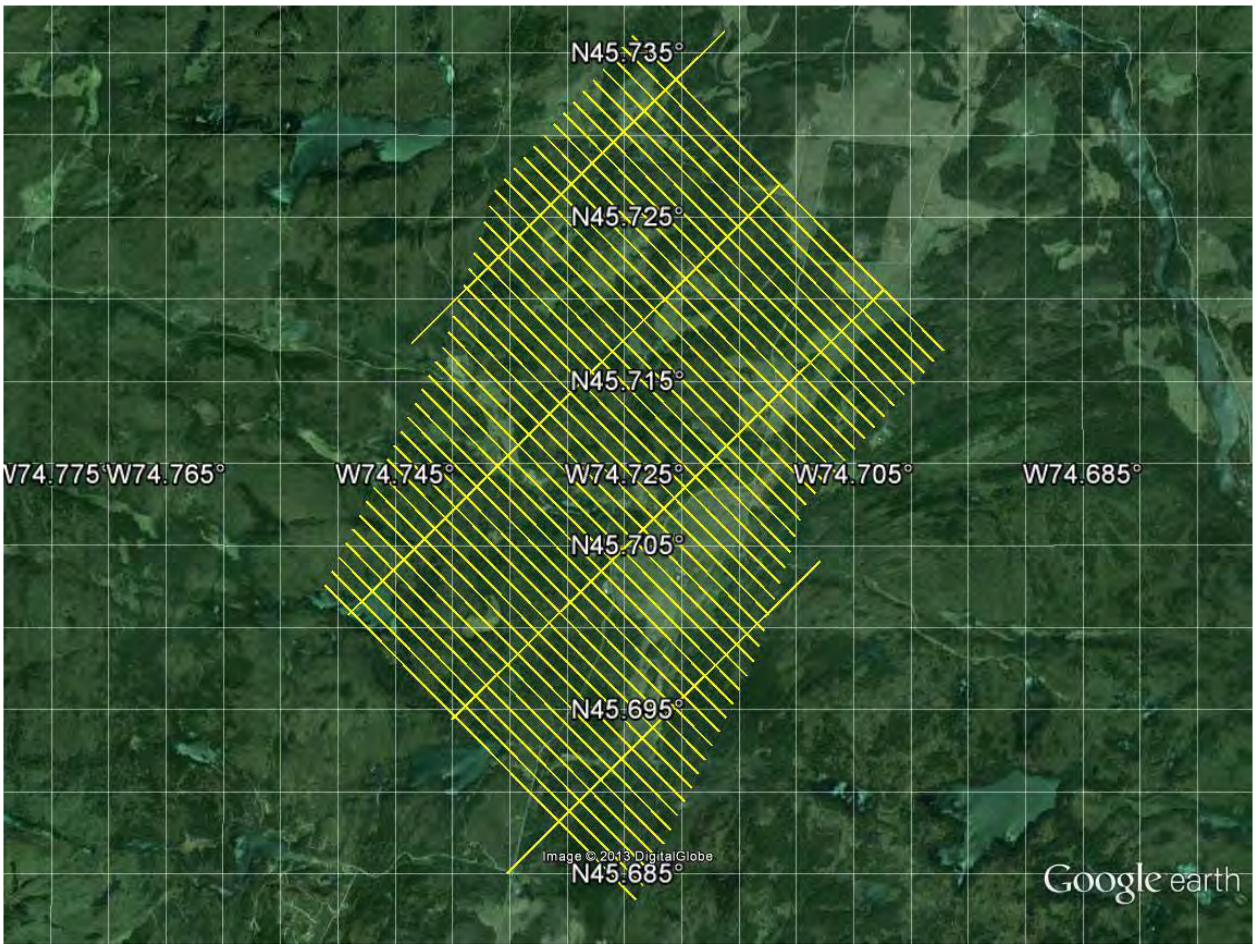


Figure 4: West Block flight path over a Google Earth Image.

The survey area is covered by numerous mining claims which are plotted on all maps. The survey area is covered by NTS (National Topographic Survey) of Canada sheets 031G10.

2. DATA ACQUISITION

2.1 Survey Area

The survey block (see Figure 3, Figure 4 and Appendix A) and general flight specifications are as follows:

Table 1: Survey Specifications

Survey block	Traverse Line Spacing (m)	Area (Km^2)	Planned[1] Line-km	Actual Line-km	Flight Direction	Line Numbers
East Block	Traverse: 50 & 100	13	196	206	N 45° E / N 225° E	L1000-L1420
	Tie: 1000				N 135° E / N 315° E	T2000-T2020
West Block	Traverse: 100	13	140	147	N 135° E / N 315° E	L5000-L5410
	Tie: 1000				N 45° E / N 225° E	T6000-T6030
		26	**336**	**353**		

Survey block boundaries co-ordinates are provided in Appendix B.

2.2 Survey Operations

Survey operations were based out of Hawkesbury in Ontario on July 13th until July 22nd, 2013. The following table shows the timing of the flying.

Table 2: Survey schedule

Date	Flight #	Flown km	Block	Crew location	Comments
13-Jul-2013				Hawkesbury, ON	Crew arrived
14-Jul-2013				Hawkesbury, ON	System assembly & Logistics
15-Jul-2013				Hawkesbury, ON	System assembly
16-Jul-2013				Hawkesbury, ON	System assembly
17-Jul-2013				Hawkesbury, ON	Testing
18-Jul-2013				Hawkesbury, ON	Helicopter arrived
19-Jul-2013				Hawkesbury, ON	Testing limited due to weather
20-Jul-2013	1			Hawkesbury, ON	testing limited due to weather
21-Jul-2013	2,3	165	East / West	Hawkesbury, ON	165km flown
22-Jul-2013	4,5	171	East	Hawkesbury, ON	Remaining kms were flown

[1] Note: Actual Line kilometres represent the total line kilometres in the final database. These line-km normally exceed the planned line-km, as indicated in the survey NAV files.

2.3 Flight Specifications

During the survey the helicopter was maintained at a mean altitude of 91 metres above the ground with an average survey speed of 80 km/hour. This allowed for an actual average EM bird terrain clearance of 60 metres and a magnetic sensor clearance of 67 metres.

The on board operator was responsible for monitoring the system integrity. He also maintained a detailed flight log during the survey, tracking the times of the flight as well as any unusual geophysical or topographic features.

On return of the aircrew to the base camp the survey data was transferred from a compact flash card (PCMCIA) to the data processing computer. The data were then uploaded via ftp to the Geotech office in Aurora for daily quality assurance and quality control by qualified personnel.

2.4 Aircraft and Equipment

2.4.1 Survey Aircraft

The survey was flown using a Eurocopter Aerospatiale (Astar) 350 B3 helicopter, registration C-FKOI. The helicopter is owned and operated by Geotech Aviation. Installation of the geophysical and ancillary equipment was carried out by a Geotech Ltd crew.

2.4.2 Electromagnetic System

The electromagnetic system was a Geotech Time Domain EM (VTEM^{plus}) system. VTEM with the Serial number 22 had been used for the survey. The configuration is as indicated in Figure 5.

The VTEM Receiver and transmitter coil were in concentric-coplanar and Z-direction oriented configuration. The EM bird was towed at a mean distance of 34 metres below the aircraft as shown in Figure 5. The VTEM transmitter current waveform is shown diagrammatically in Figure 4.

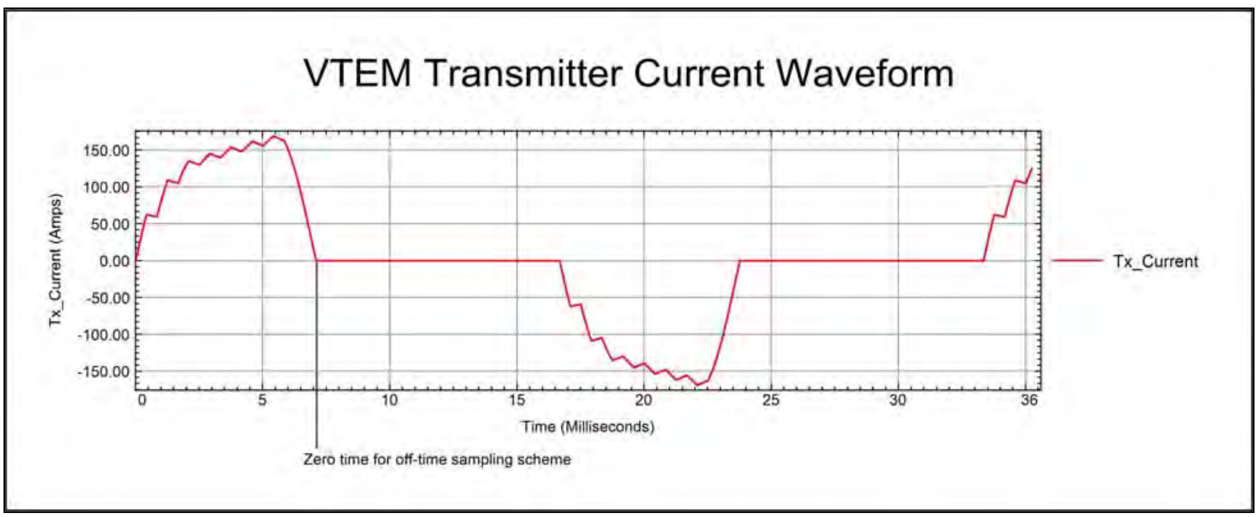


Figure 5: VTEM Transmitter Current Waveform

The VTEM decay sampling scheme is shown in Table 3 below. Thirty-two time measurement gates were used for the final data processing in the range from 0.096 to 7.036 msec. Zero time for off-time sampling scheme is equal to current pulse width and defined as the time near the end of the turn-off ramp where the dI/dt waveform falls to 1/2 of its peak value.

Table 3: Off-Time Decay Sampling Scheme

VTEM Decay Sampling Scheme			
Index	**Middle**	**Start**	**End**
Milliseconds			
14	0.096	0.090	0.103
15	0.110	0.103	0.118
16	0.126	0.118	0.136
17	0.145	0.136	0.156
18	0.167	0.156	0.179
19	0.192	0.179	0.206
20	0.220	0.206	0.236
21	0.253	0.236	0.271
22	0.290	0.271	0.312
23	0.333	0.312	0.358
24	0.383	0.358	0.411
25	0.440	0.411	0.472
26	0.505	0.472	0.543
27	0.580	0.543	0.623
28	0.667	0.623	0.716
29	0.766	0.716	0.823
30	0.880	0.823	0.945
31	1.010	0.945	1.086
32	1.161	1.086	1.247
33	1.333	1.247	1.432
34	1.531	1.432	1.646
35	1.760	1.646	1.891
36	2.021	1.891	2.172
37	2.323	2.172	2.495
38	2.667	2.495	2.865
39	3.063	2.865	3.292
40	3.521	3.292	3.781
41	4.042	3.781	4.341
42	4.641	4.341	4.987
43	5.333	4.987	5.729
44	6.125	5.729	6.581
45	7.036	6.581	7.560

VTEM system specifications:

<u>Transmitter</u>

- Transmitter loop diameter: 26 m
- Number of turns: 4
- Effective Transmitter loop area: 2123.7 m^2
- Transmitter base frequency: 30 Hz
- Peak current: 169 A
- Pulse width: 7.10 ms
- Wave form shape: Bi-polar trapezoid
- Peak dipole moment: 358,905 nIA
- Actual average EM Bird terrain clearance: 60 metres above the ground

<u>Receiver</u>

- Z-Coil diameter: 1.2 m
- Number of turns: 100
- Effective Z coil area: 113.04 m^2

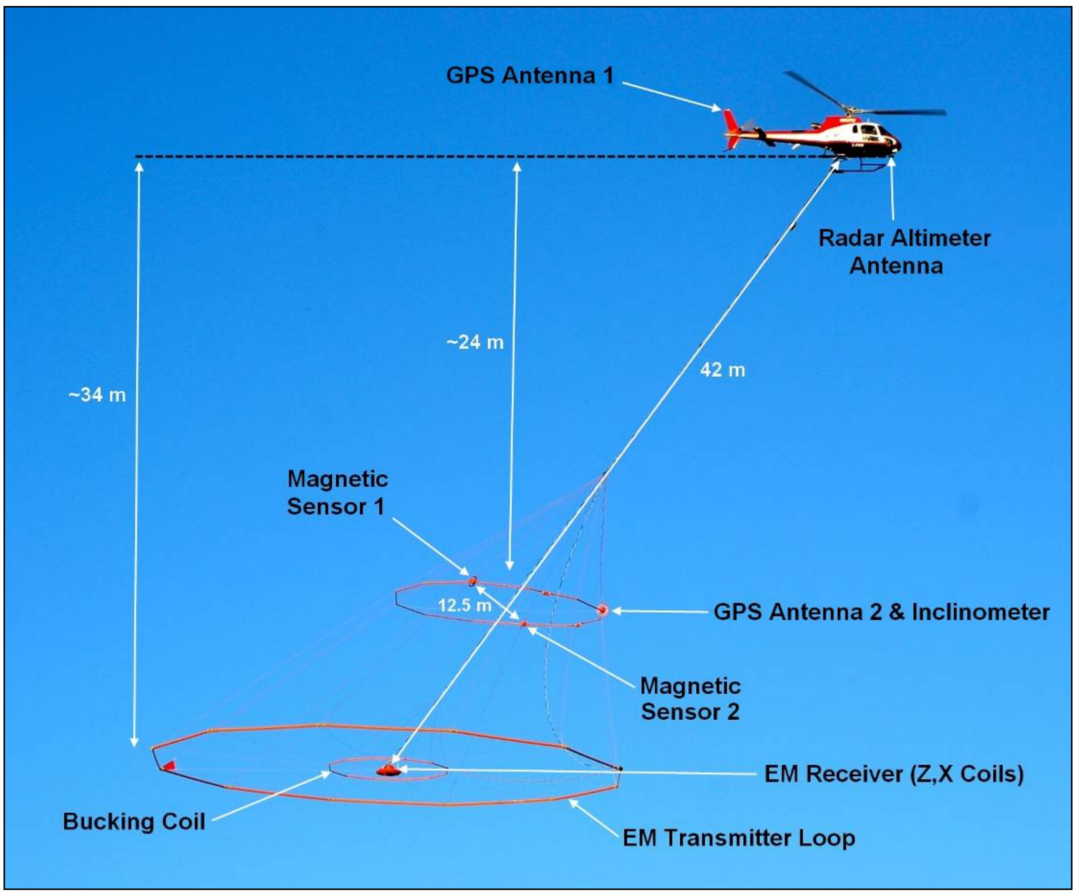


Figure 6: VTEM^{plus} System Configuration.

2.4.3 Horizontal Magnetic Gradiometer

The horizontal magnetic gradiometer consists of two Geometrics split-beam field magnetic sensors with a sampling interval of 0.1 seconds. These sensors are mounted 12.5 metres apart on a separate loop, 10 metres above the EM bird. A GPS antenna and Gyro Inclinometer is installed on the separate loop to accurately record the tilt and position of the magnetic gradiomag bird.

2.4.4 Radar Altimeter

A Terra TRA 3000/TRI 40 radar altimeter was used to record terrain clearance. The antenna was mounted beneath the bubble of the helicopter cockpit (Figure 6).

2.4.5 GPS Navigation System

The navigation system used was a Geotech PC104 based navigation system utilizing a NovAtel's WAAS (Wide Area Augmentation System) enabled GPS receiver, Geotech navigate software, a full screen display with controls in front of the pilot to direct the flight and a NovAtel GPS antenna mounted on the helicopter tail (Figure 6). As many as 11 GPS and two WAAS satellites may be monitored at any one time. The positional accuracy or circular error probability (CEP) is 1.8 m, with WAAS active, it is 1.0 m. The co-ordinates of the block were set-up prior to the survey and the information was fed into the airborne navigation system. The second GPS antenna is installed on the additional magnetic loop together with Gyro Inclinometer.

2.4.6 Digital Acquisition System

A Geotech data acquisition system recorded the digital survey data on an internal compact flash card. Data is displayed on an LCD screen as traces to allow the operator to monitor the integrity of the system. The data type and sampling interval as provided in Table 4.

Table 4: Acquisition Sampling Rates

Data Type	Sampling
TDEM	0.1 sec
Magnetometer	0.1 sec
GPS Position	0.2 sec
Radar Altimeter	0.2 sec
Inclinometer	0.1 sec

2.5 Base Station

A combined magnetometer/GPS base station was utilized on this project. A Geometrics Cesium vapour magnetometer was used as a magnetic sensor with a sensitivity of 0.001 nT. The base station was recording the magnetic field together with the GPS time at 1 Hz on a base station computer.

The base station magnetometer sensor was installed (45º 34.9194'N, 74º 33.2483'W); away from electric transmission lines and moving ferrous objects such as motor vehicles. The base station data were backed-up to the data processing computer at the end of each survey day.

3. PERSONNEL

The following Geotech Ltd. personnel were involved in the project.

Field:	
Project Manager:	Scott Trew (Office)
Data QC:	Rafael Coyoli (Office)
Crew chief:	Jan Dabrowski
Operator:	Ben Bruder

The survey pilot and the mechanical engineer were employed directly by the helicopter operator – Geotech Aviation.

Pilot:	Andre Vandrier
Office:	
Preliminary Data Processing:	Rafael Coyoli Nick Venter
Final Data Processing:	Marta Orta
Final Data QA/QC:	Alexander Prikhodko
Reporting/Mapping:	Karl Monje

Data acquisition phase was carried out under the supervision of Andrei Bagrianski, P. Geo, Chief Operating Officer. The processing phase was carried out under the supervision of Alexander Prikhodko, P. Geo, Senior Geophysicist, VTEM Interpretation Supervisor. The customer relations were looked after by Blair Walker.

4. DATA PROCESSING AND PRESENTATION

Data compilation and processing were carried out by the application of Geosoft OASIS Montaj and programs proprietary to Geotech Ltd.

4.1 Flight Path

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the NAD83 Datum, UTM Zone 18 North coordinate system in Oasis Montaj.

The flight path was drawn using linear interpolation between x, y positions from the navigation system. Positions are updated every second and expressed as UTM easting's (x) and UTM northing's (y).

4.2 Electromagnetic Data

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

The signal to noise ratio was further 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 1 second or 15 metres. This filter is a symmetrical 1 sec linear filter.

The results are presented as stacked profiles of EM voltages for the time gates, in linear - logarithmic scale for the B-field Z component and dB/dt responses in the Z components. B-field Z component time channel recorded at 0.505 milliseconds after the termination of the impulse is also presented as a colour image. Calculated Time Constant (TAU) with anomaly contours of Calculated Vertical Derivative of TMI is presented in Appendix C and E. Resistivity Depth Image (RDI) is also presented in Appendix E and F.

Z-axis coil is oriented parallel to the transmitter coil axis and are horizontal to the ground. This configuration provides information on the position, depth, dip and thickness of a conductor. Generalized modeling results of VTEM data, are shown in Appendix D.

In general Z component data produce double peak type anomalies for "thin" sub vertical targets and single peak for "thick" targets.

The limits and change-over of "thin-thick" depends on dimensions of a TEM system (Appendix D, Figure D-16).

4.3 Horizontal Magnetic Gradiometer Data

The horizontal gradients data from the VTEM^{plus} are measured by two magnetometers 12.5 m apart on an independent bird mounted10m above the VTEM loop. A GPS and a Gyro Inclinometer help to determine the positions and orientations of the magnetometers. The data from the two magnetometers are corrected for position and orientation variations, as well as for the diurnal variations using the base station data.

The position of the centre of the horizontal magnetic gradiometer bird is calculated form the GPS utilizing in-house processing tool in Geosoft. Following that total magnetic intensity is calculated at the center of the bird by calculating the mean values from both sensors. In addition to the total intensity advanced processing is done to calculate the in-line and cross-line (or lateral) horizontal gradient which enhance the understanding of magnetic targets. The in-line (longitudinal) horizontal gradient is calculated from the difference of two consecutive total magnetic field readings divided by the distance along the flight line direction, while the cross-line (lateral) horizontal magnetic gradient is calculated from the difference in the magnetic readings from both magnetic sensors divided by their horizontal separation.

Two advanced magnetic derivative products, the total horizontal derivative (THDR), and tilt angle derivative and are also created. The total horizontal derivative or gradient is also called the analytic signal, is defined as:

THDR = sqrt(Hx*Hx+Hy*Hy), where Hx and Hy are cross-line and in-line horizontal gradients.

The tilt angle derivative (TDR) is defined as:

TDR = arctan(Vz/THDR), where THDR is the total horizontal derivative, and Vz is the vertical derivative.

Measured cross-line gradients can help to enhance cross-line linear features during gridding.

5. DELIVERABLES

5.1 Survey Report

The survey report describes the data acquisition, processing, and final presentation of the survey results. The survey report is provided in two paper copies and digitally in PDF format.

5.2 Digital Data

Two copies of the data and maps on DVD were prepared to accompany the report. Each DVD contains a digital file of the line data in GDB Geosoft Montaj format as well as the maps in Geosoft Montaj Map and PDF format.

- DVD structure.

Data	contains databases, grids and maps, as described below.
Report	contains a copy of the report and appendices in PDF format.

Databases in Geosoft GDB format, containing the channels listed in Table 5.

Table 5: Geosoft GDB Data Format

Channel name	Units	Description
X:	metres	UTM Easting NAD83 Zone 18 North
Y:	metres	UTM Northing NAD83 Zone 18 North
Longitude:	Decimal Degrees	WGS 84 Longitude data
Latitude:	Decimal Degrees	WGS 84 Latitude data
Z:	metres	GPS antenna elevation (above Geoid)
Radar:	metres	helicopter terrain clearance from radar altimeter
Radarb:	metres	Calculated EM bird terrain clearance from radar altimeter
DEM:	metres	Digital Elevation Model
Gtime:	Seconds of the day	GPS time
Mag1L:	nT	Measured Total Magnetic field data (left sensor)
Mag1R:	nT	Measured Total Magnetic field data (right sensor)
Basemag:	nT	Magnetic diurnal variation data
Mag2LZ	nT	Z corrected (w.r.t. loop center) and diurnal corrected magnetic field left mag
Mag2RZ	nT	Z corrected (w.r.t. loop center) and diurnal corrected magnetic field right mag
TMI2	nT	Calculated from diurnal corrected total magnetic field intensity of the centre of the loop
TMI3	nT	Microleveled total magnetic field intensity of the centre of the loop
Hgcxline		measured cross-line gradient
Hginline		Calculated in-line gradient
CVG	nT/m	Calculated Magnetic Vertical Gradient
SFz[14]:	$pV/(A*m^4)$	Z dB/dt 0.096 millisecond time channel
SFz[15]:	$pV/(A*m^4)$	Z dB/dt 0.110 millisecond time channel
SFz[16]:	$pV/(A*m^4)$	Z dB/dt 0.126 millisecond time channel
SFz[17]:	$pV/(A*m^4)$	Z dB/dt 0.145 millisecond time channel
SFz[18]:	$pV/(A*m^4)$	Z dB/dt 0.167 millisecond time channel
SFz[19]:	$pV/(A*m^4)$	Z dB/dt 0.192 millisecond time channel
SFz[20]:	$pV/(A*m^4)$	Z dB/dt 0.220 millisecond time channel
SFz[21]:	$pV/(A*m^4)$	Z dB/dt 0.253 millisecond time channel
SFz[22]:	$pV/(A*m^4)$	Z dB/dt 0.290 millisecond time channel
SFz[23]:	$pV/(A*m^4)$	Z dB/dt 0.333 millisecond time channel
SFz[24]:	$pV/(A*m^4)$	Z dB/dt 0.383 millisecond time channel
SFz[25]:	$pV/(A*m^4)$	Z dB/dt 0.440 millisecond time channel
SFz[26]:	$pV/(A*m^4)$	Z dB/dt 0.505 millisecond time channel
SFz[27]:	$pV/(A*m^4)$	Z dB/dt 0.580 millisecond time channel
SFz[28]:	$pV/(A*m^4)$	Z dB/dt 0.667 millisecond time channel
SFz[29]:	$pV/(A*m^4)$	Z dB/dt 0.766 millisecond time channel
SFz[30]:	$pV/(A*m^4)$	Z dB/dt 0.880 millisecond time channel
SFz[31]:	$pV/(A*m^4)$	Z dB/dt 1.010 millisecond time channel
SFz[32]:	$pV/(A*m^4)$	Z dB/dt 1.161 millisecond time channel
SFz[33]:	$pV/(A*m^4)$	Z dB/dt 1.333 millisecond time channel
SFz[34]:	$pV/(A*m^4)$	Z dB/dt 1.531 millisecond time channel
SFz[35]:	$pV/(A*m^4)$	Z dB/dt 1.760 millisecond time channel
SFz[36]:	$pV/(A*m^4)$	Z dB/dt 2.021 millisecond time channel
SFz[37]:	$pV/(A*m^4)$	Z dB/dt 2.323 millisecond time channel

Channel name	Units	Description
SFz[38]:	pV/(A*m^4)	Z dB/dt 2.667 millisecond time channel
SFz[39]:	pV/(A*m^4)	Z dB/dt 3.063 millisecond time channel
SFz[40]:	pV/(A*m^4)	Z dB/dt 3.521 millisecond time channel
SFz[41]:	pV/(A*m^4)	Z dB/dt 4.042 millisecond time channel
SFz[42]:	pV/(A*m^4)	Z dB/dt 4.641 millisecond time channel
SFz[43]:	pV/(A*m^4)	Z dB/dt 5.333 millisecond time channel
SFz[44]:	pV/(A*m^4)	Z dB/dt 6.125 millisecond time channel
SFz[45]:	pV/(A*m^4)	Z dB/dt 7.036 millisecond time channel
BFz	(pV*ms)/(A*m^4)	Z B-Field data for time channels 14 to 45
Nchan_BF		Latest time channels of TAU calculation
Nchan_SF		Latest time channels of TAU calculation
Tau_BF	ms	Time constant B-Field
Tau_SF	ms	Time constant dB/dt
PLM:		60 Hz power line monitor

Electromagnetic B-field and dB/dt Z component data is found in array channel format between indexes 14 – 45 as described above.

- Database of the Resistivity Depth Images in Geosoft GDB format, containing the following channels:

Table 6: Geosoft Resistivity Depth Image GDB Data Format

Channel name	Units	Description
Xg:	Metres	UTM Easting NAD83 Zone 18 North
Yg:	Metres	UTM Northing NAD83 Zone 18 North
Dist:	Meters	Distance from the beginning of the line
Depth:	Meters	array channel, depth from the surface
Z:	Metres	array channel, depth from sea level
AppRes:	Ohm-m	array channel, Apparent Resistivity
TR:	Meters	EM system height from sea level
Topo:	Meters	digital elevation model
Radarb:	Metres	Calculated EM bird terrain clearance from radar altimeter
CVG:	nT or nT/m	CVG data
SF:	pV/(A*m^4)	array channel, dB/dT
DOI:	Metres	Depth of Investigation; a measure of VTEM depth effectiveness
PLM		60 Hz power line monitor
Mag		Total Magnetic Intensity

- Database of the VTEM Waveform “GL130281_Waveform_Final.gdb” in Geosoft GDB format, containing the following channels:

Time:	Sampling rate interval, 5.2083 milliseconds
Tx_Current:	Output current of the transmitter (Amp)
Rx_Volt:	Output voltage of the receiver coil (Volt)

- Grids in Geosoft GRD and GeoTIFF format, as follows:

BFz26:	B-Field Z Component Channel 26 (Time Gate 0.505 ms)

CVG: Calculated Magnetic Vertical Gradient (nT/m)
DEM: Digital Elevation Model (metres)
PLM: Power Line Monitor
Hgcxline: Measured Cross-Line Gradient (nT/m)
Hginline: Measured In-Line Gradient (nT/m)
SFz15: dB/dt Z Component Channel 15 (Time Gate 0.110 ms)
SFz25: dB/dt Z Component Channel 25 (Time Gate 0.440 ms)
SFz35: dB/dt Z Component Channel 35 (Time Gate 1.760 ms)
TauBF: B-Field Z Component, Calculated Time Constant (ms)
TauSF: dB/dt Z Component, Calculated Time Constant (ms)
TMI: Total Magnetic Intensity (nT)
TotalHGrad: Magnetic Total Horizontal Gradient (nT/m)
TiltDrv: Magnetic Tilt derivative (radians)

A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information. A grid cell size of 25 metres was used.

- Final maps were produced at a scale of 1:10,000 for best representation of the survey size and line spacing. The coordinate/projection system used was NAD83 Datum, UTM Zone 18 North. All maps show the mining claims, flight path trace and topographic data; latitude and longitude are also noted on maps. Maps at 1:10,000 in Geosoft MAP format, as follows:

GL130281_10k_BB_dBdt: dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
GL130281_10k_BB_BField: B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
GL130281_10k_BB_BFz26: B-field late time Z Component Channel 26, Time Gate 0.505 ms colour image.
GL130281_10k_BB_TMI: Total magnetic intensity (TMI) colour image and contours.
GL130281_10k_BB_TauSF: dB/dt Calculated Time Constant (Tau) with contours of anomaly areas of the Calculated Vertical Derivative of TMI
GL130281_10k_BB_TotHGrad: Magnetic Total Horizontal Gradient colour image.
GL130281_10k_BB_TiltDrv: Magnetic Tilt-Angle Derivative colour image.

BB represents block name (East and West block)
Maps are also presented in PDF format.

- 1:50,000 topographic vectors were taken from the NRCAN Geogratis database at; http://geogratis.gc.ca/geogratis/en/index.html.

- A Google Earth file *GL130281_FP.kml* showing the flight path of the block is included. Free versions of Google Earth software from: http://earth.google.com/download-earth.html

6. CONCLUSIONS AND RECOMMENDATIONS

A helicopter-borne versatile time domain electromagnetic (VTEM^{Plus}) geophysical survey has been completed over the East and West blocks, located in southern Quebec, Canada.

The total area coverage is 25 km^2. Total survey line coverage is 336 line kilometers. Principal sensors included a Time Domain EM system and two magnetometers to measure horizontal gradient. Results have been presented as stacked profiles, and contour color images at a scale of 1:20,000. A formal interpretation is not included neither requested.

Based on the geophysical results obtained, a number of local TEM anomalies are identified in the two blocks. These conductors are highlighted in the Tau decay parameter image with calculated vertical magnetic gradient (CVG) contours, presented in Figure 7 below. Resistivity-depth images (RDIs are presented in Appendix C) of selected lines per block are also highlighted.

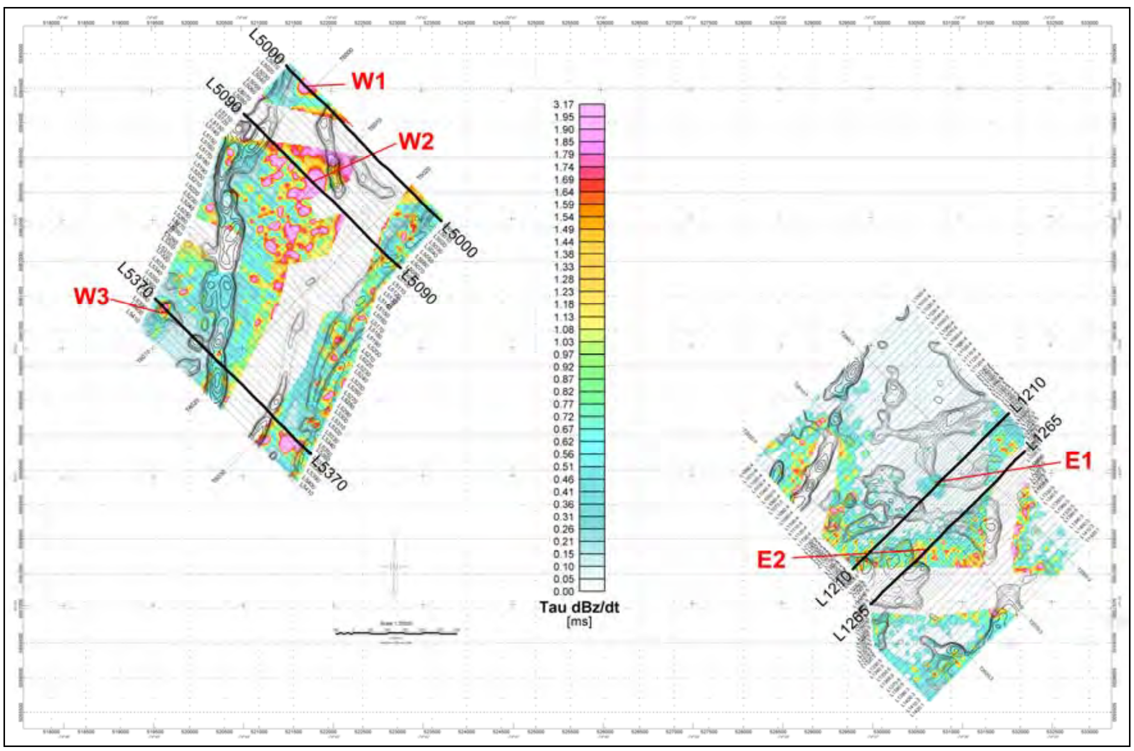


Figure 7 – Time Constant (Tau dBz/dt) image with Calculated Vertical Gradient (CVG) of TMI, highlighting flight path of selected RDIs in the East and West blocks

East block

A conductive zone (anomaly E1) is observed between lines L1195 to L1220. Highest values of Tau up to 1.2ms are observed on L1210, positioning 530,797m easting. Resistivity-depth image of L1210 (RDIs are presented in Appendix C) exhibits a vertically extended response beginning from around 100 m depth.

Between lines L1250 to L1270, a conductive zone (anomaly E2) is observed. Highest values of Tau are observed on line L1265 (Tau < 3.1 ms), positioning 530,602m easting. According to the RDI of L1265 top of the conductor at about 80-100m depth.

West block

A sub-vertical conductor (anomaly W1) is observed on line L5000 as well as T6000. As per geology (provided by the client), this conductor is located in marble rocks. Resistivity depth image (RDIs are presented in Appendix C) of L5000 shows top of the conductor at about 100m depth (positioning 521,730m easting).

A conductor is observed between lines L5080 to L5110 as well as tie-line T6010 (anomaly W2) is close to the powerline influence. The top of this conductor is close to the surface, as indicated in RDI of L5090. As per geology, this conductor is located in a contact with marble rocks.

A conductor is observed between lines L5360 to L5390 (anomaly W3), with association to magnetic anomalies. Highest response is observed on line L5370 (Tau < 2.1ms). According to RDI of L5370 the conductor is close to the surface.

Power line activity and local cultural components are detected in both survey blocks. Power line effect was removed from Tau images (see Figure 7 in previous page) to enhance the response from geology. Caution is recommended during further interpretation as cultural components might affect the geological response inherent in the data.

If the conductors correspond to the exploration model, it is recommended picking anomalies with conductance grading and center localization of the conductors, detail resistivity depth imaging, plate Maxwell modelling prior to ground follow up and drill testing. If magnetic anomalies are of interest, 3D inversion and/or modeling of magnetic field are recommended as well.

Respectfully submitted[2],

Nick Venter
Geotech Ltd.

Marta Orta
Geotech Ltd.

Jean M Legault, P.Geo., P.Eng. (OGQ#1147)
Geotech Ltd.

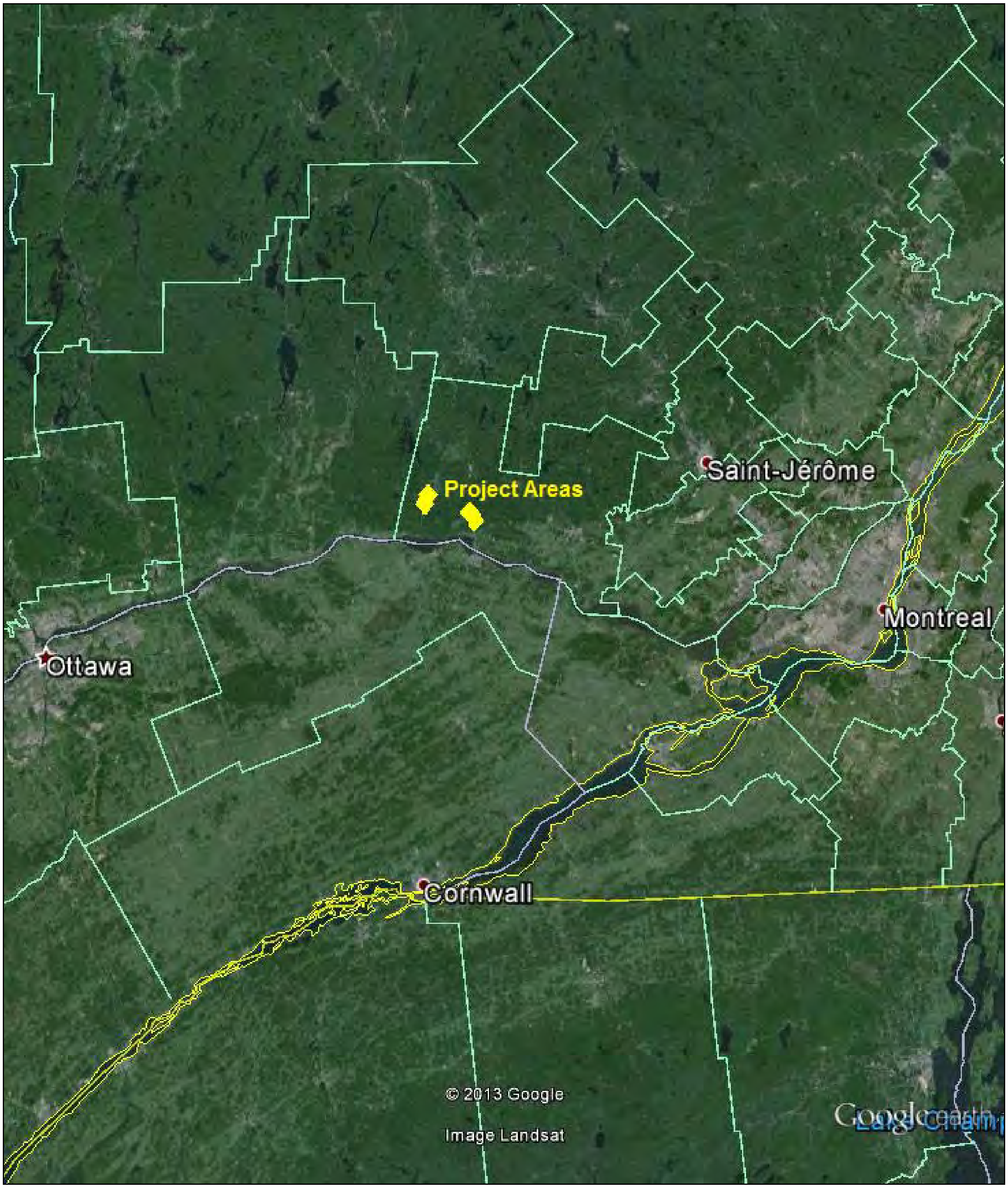
PROFESSIONAL GEOSCIENTIST
JEAN M. LEGAULT
PRACTISING MEMBER
0948
ONTARIO

September 2013

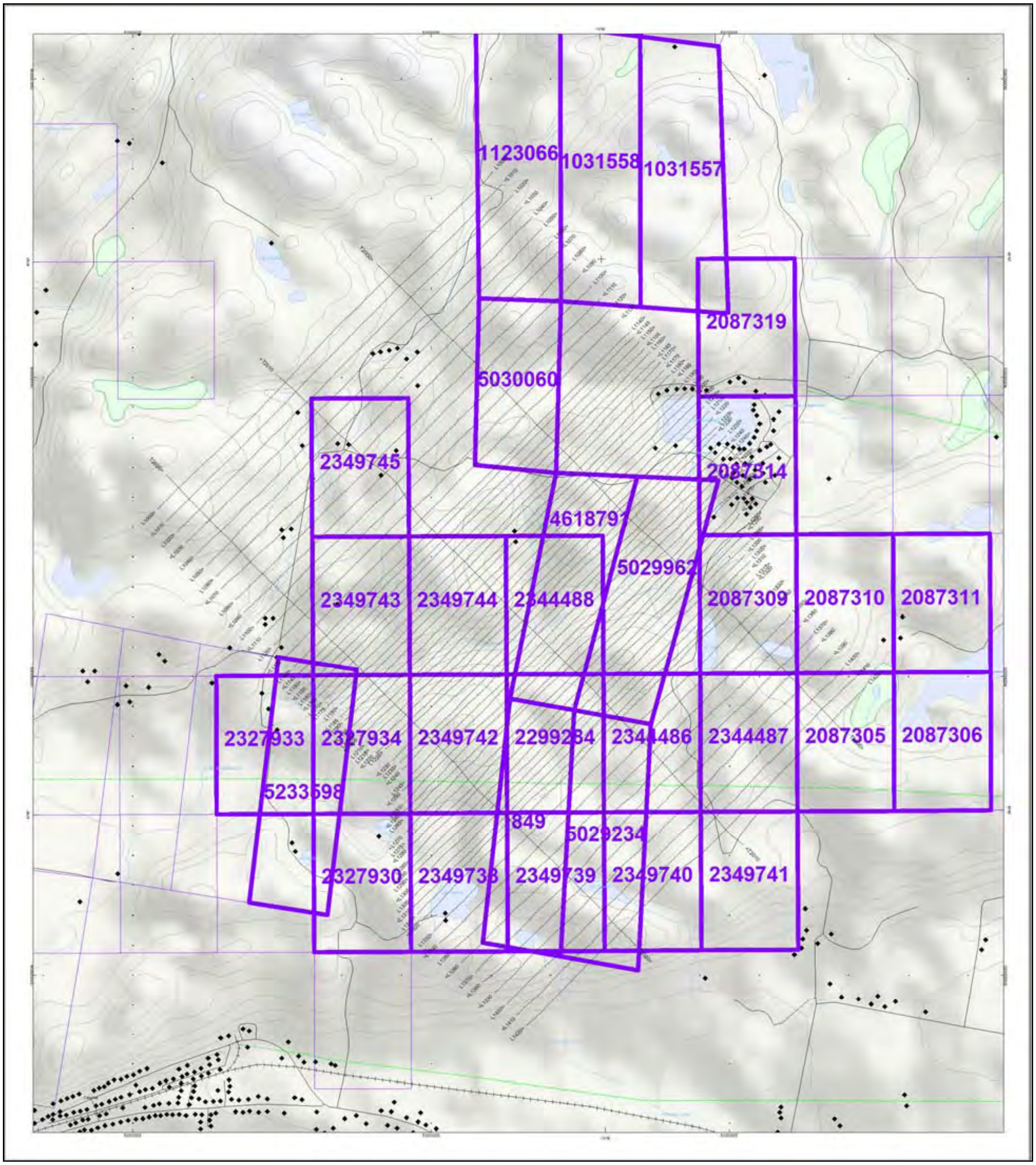
[2] Final data processing of the EM and magnetic data were carried out by Marta Orta, from the office of Geotech Ltd. in Aurora, Ontario, under the supervision of Alexander Prikhodko, P.Geo., PhD, Senior Geophysicist, VTEM Interpretation Supervisor.

APPENDIX A

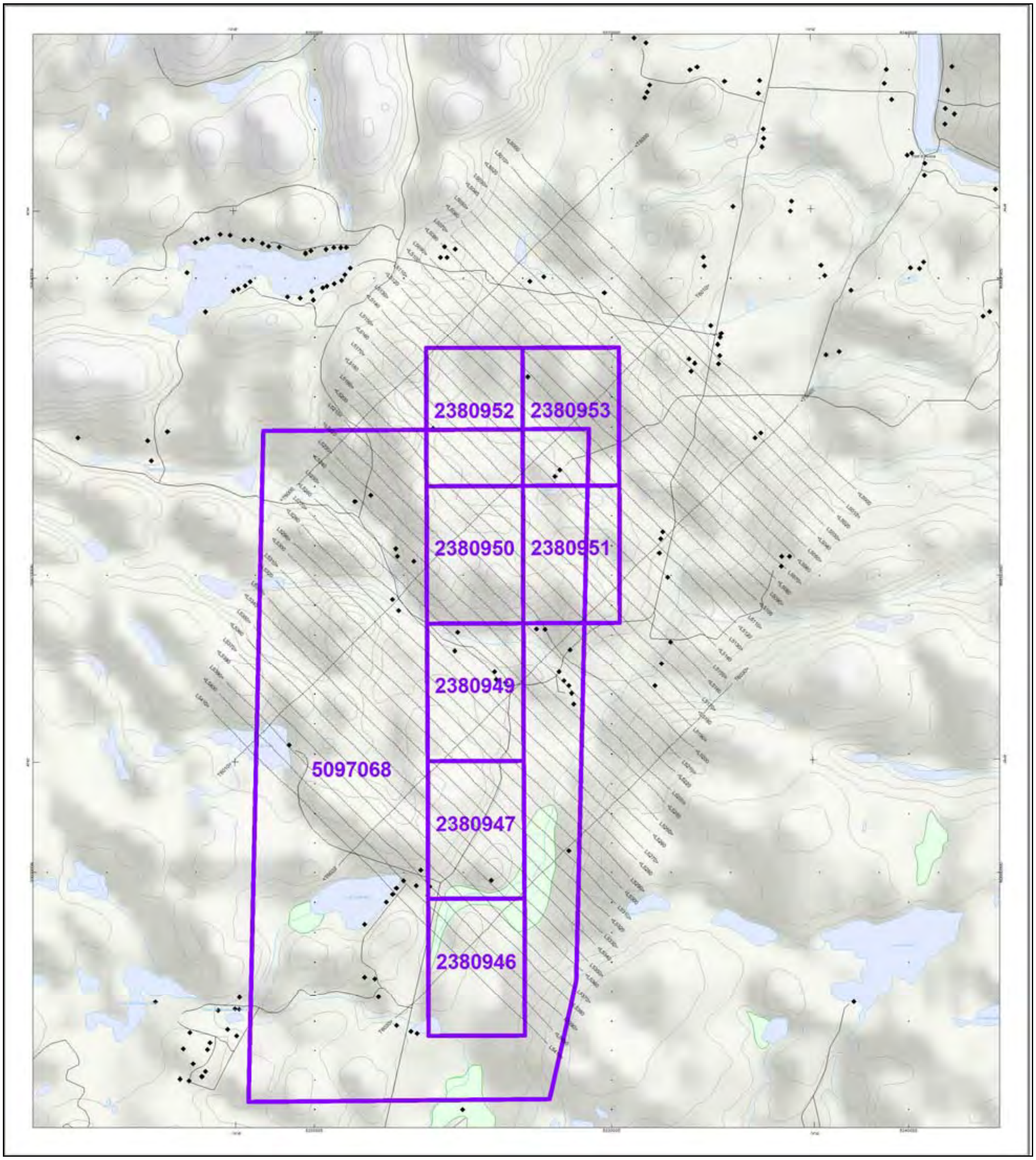
SURVEY BLOCK LOCATION MAP



Survey Overview of the Survey Area



East Block Mining Claims



West Block Mining Claims

APPENDIX B

SURVEY EAST BLOCK COORDINATES

(WGS 84, UTM Zone 18 North)

X	Y
528230	5059184.4
530351.3	5061305.7
531300.1	5060198.8
531970.5	5059528.3
532078	5058604.9
532845.8	5057843.5
530724.5	5055722.1
529956.7	5056483.6
529849.2	5057407
529178.7	5058077.5

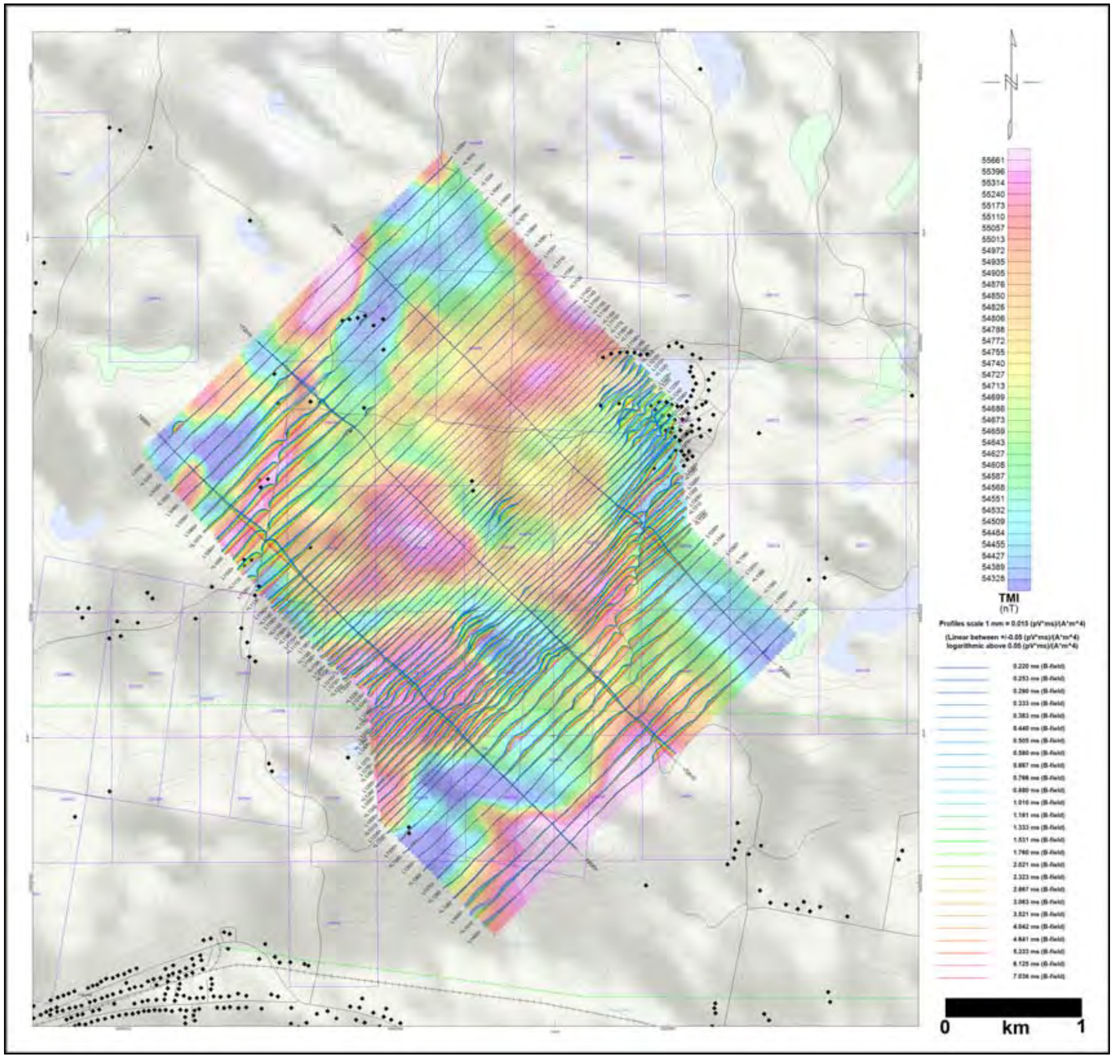
SURVEY WEST BLOCK COORDINATES

(WGS 84, UTM Zone 18 North)

X	Y
523570.4	5062635.9
521449.1	5064757.2
520519.4	5063715.8
520170	5062653.7
519359.5	5061004.8
521480.8	5058883.5
522291.3	5060532.4
522640.7	5061594.5

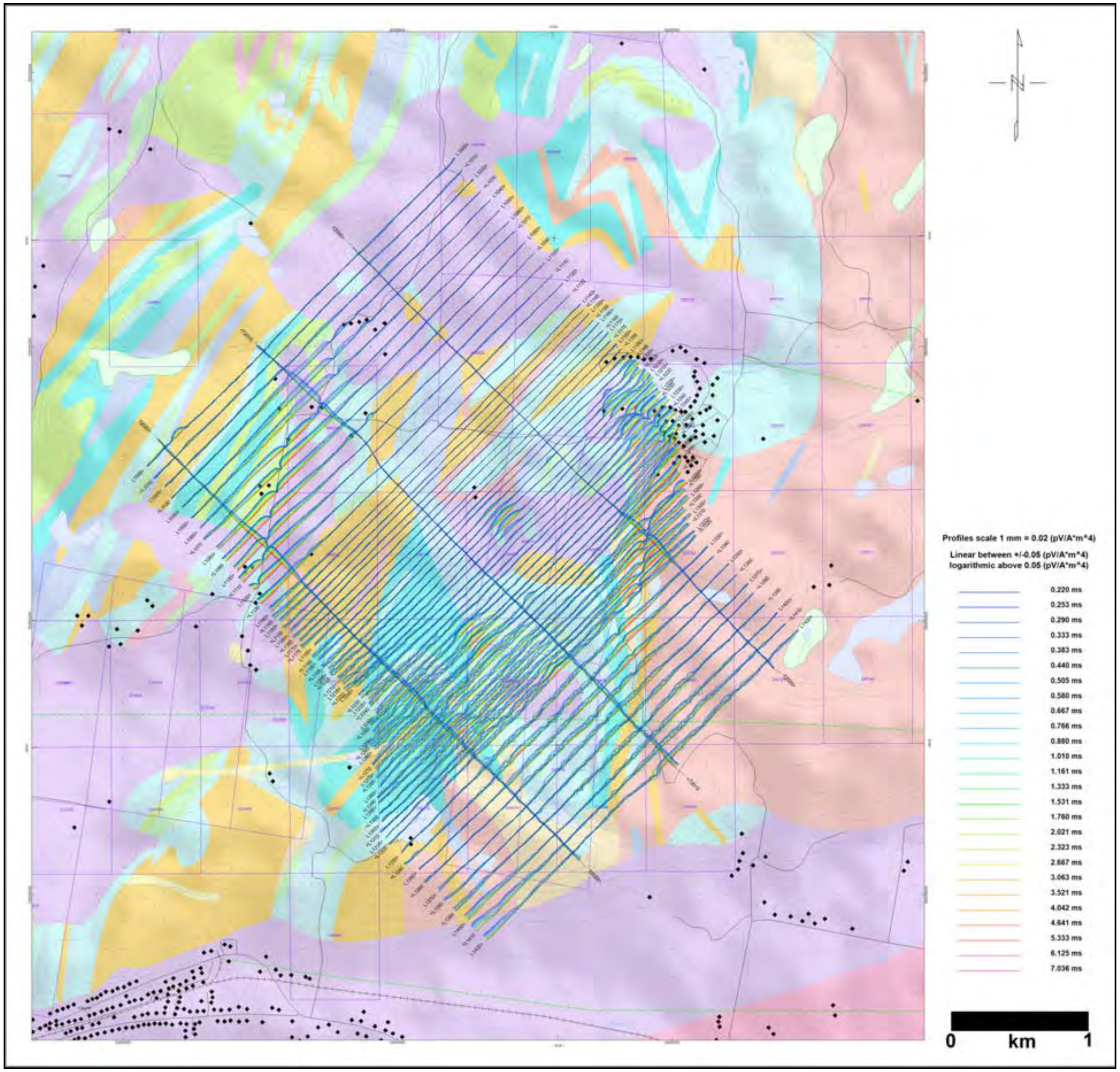
APPENDIX C

GEOPHYSICAL MAPS[1]

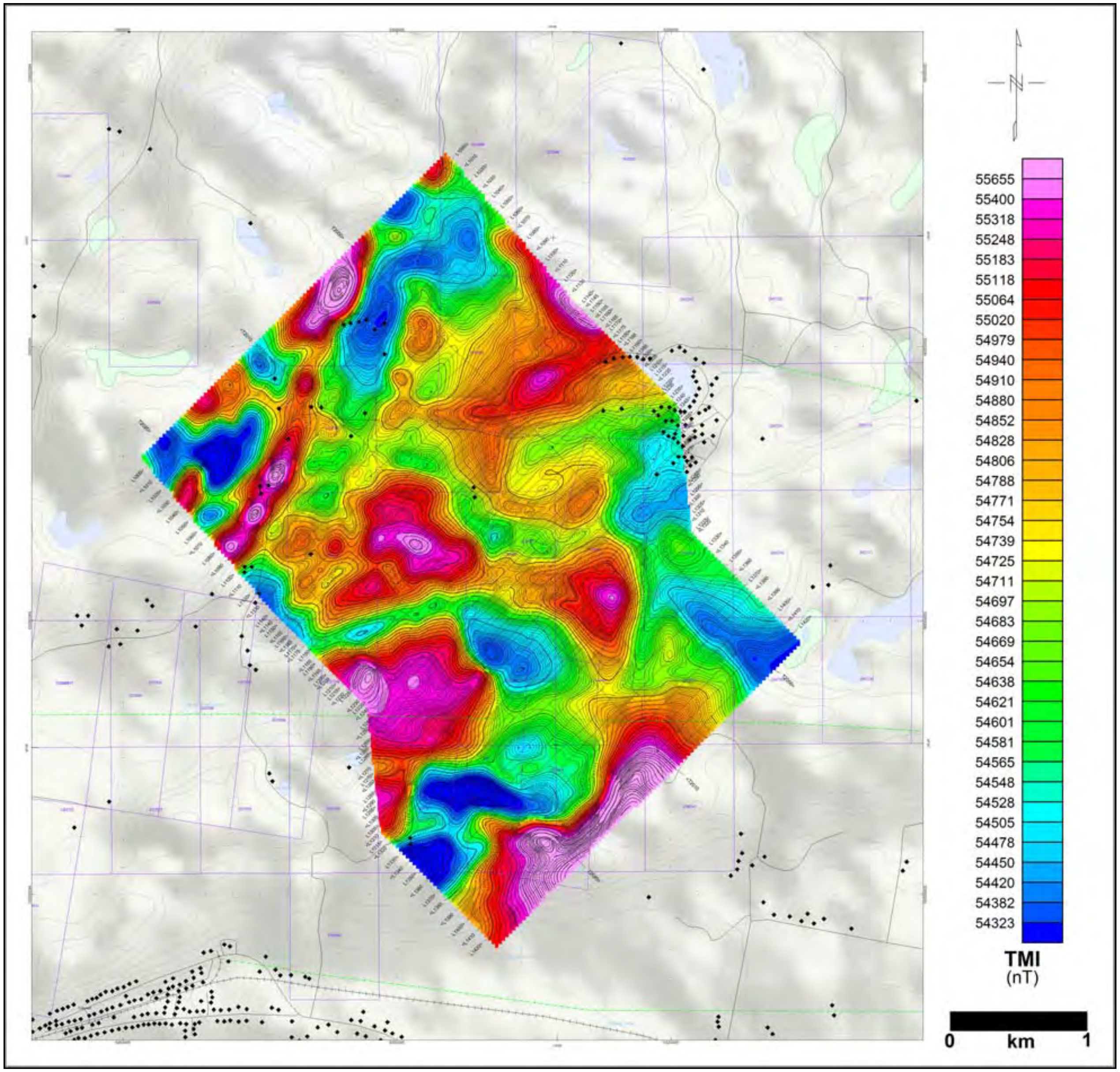


East Block – VTEM B-Field Z Component Profiles – Time Gates 0.220 – 7.036 ms – Over Total Magnetic Intensity Grid

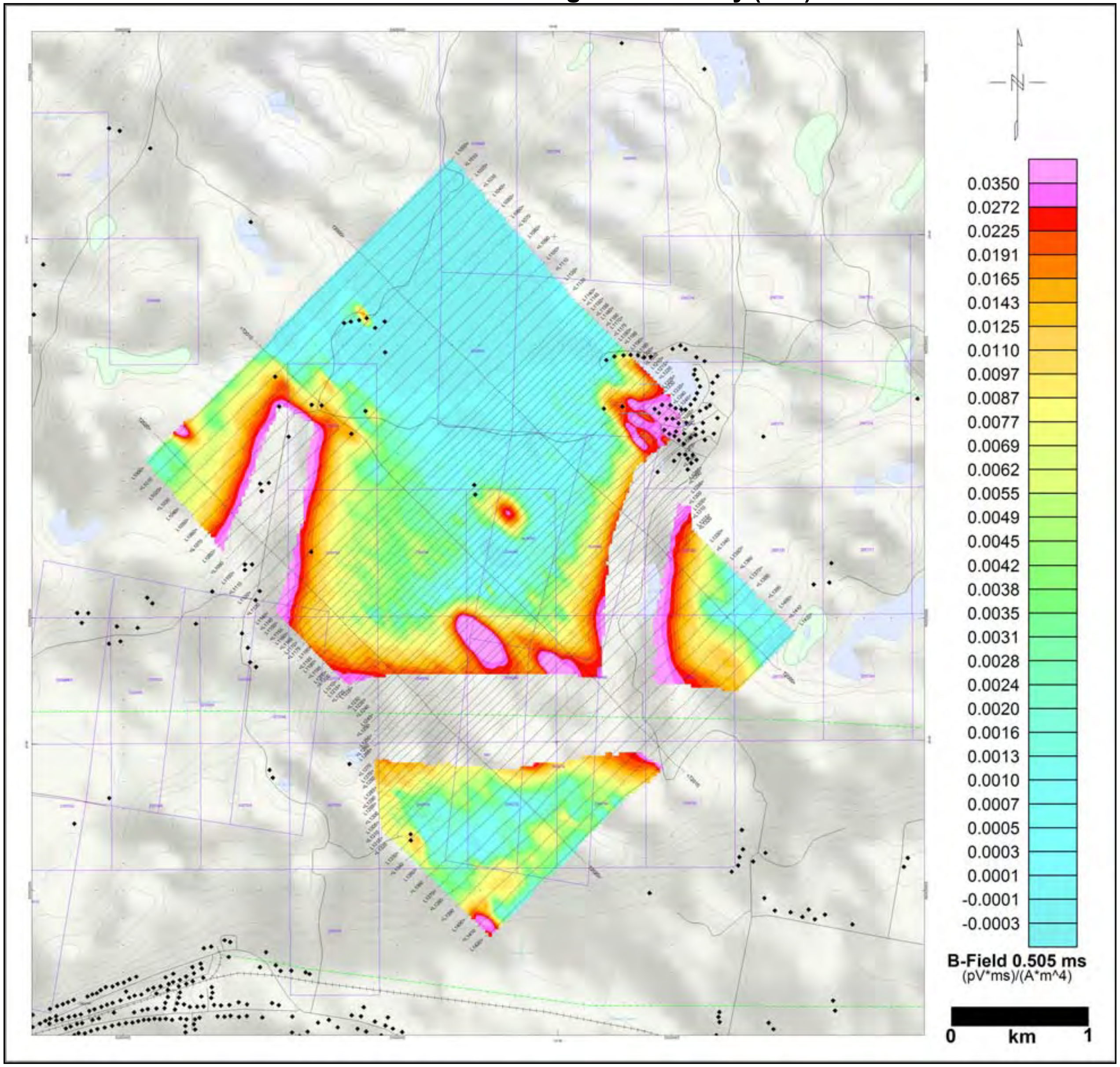
[1] Full size geophysical maps are also available in PDF format on the final DVD



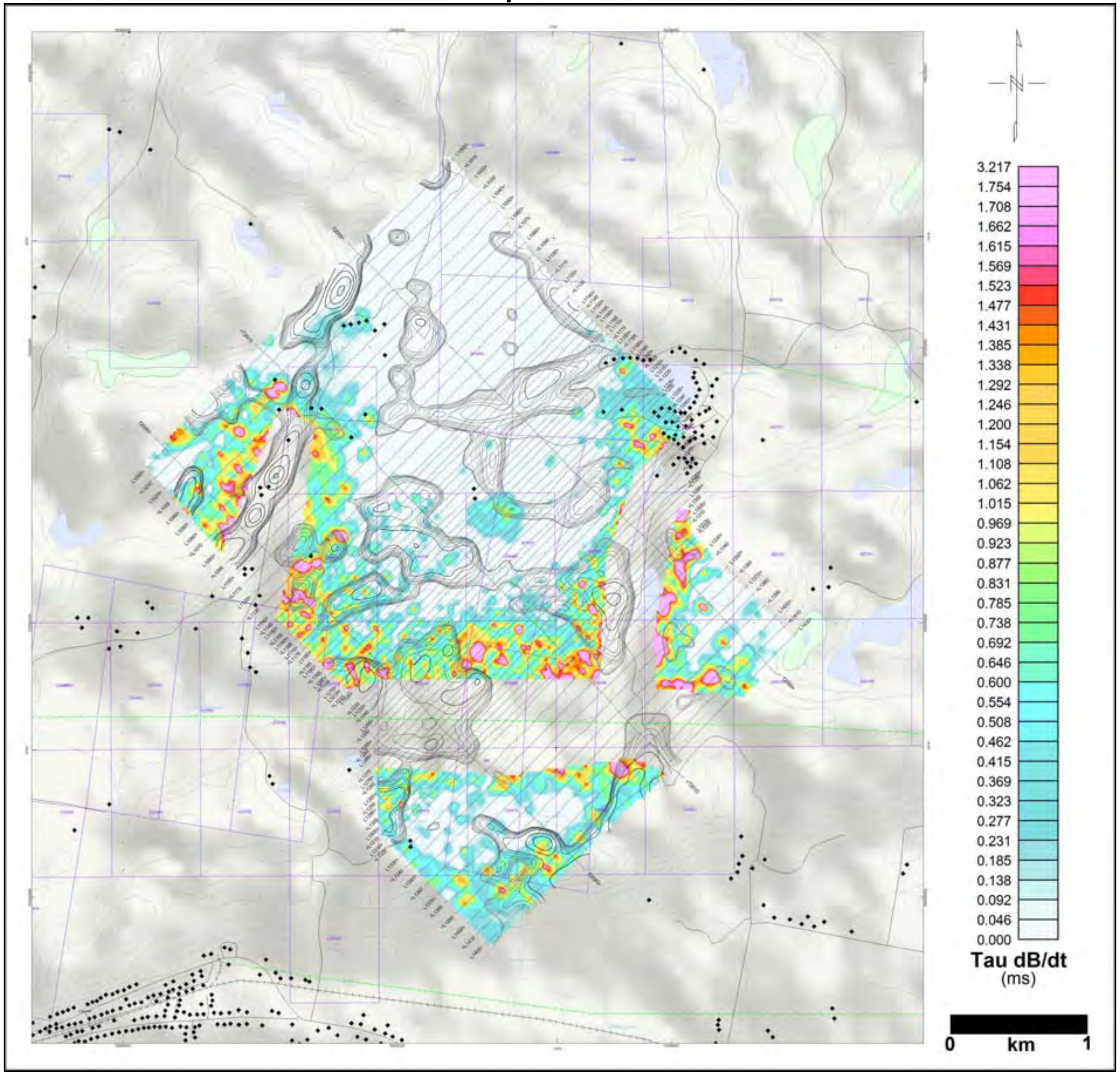
East Block –VTEM dB/dt Z Component Profiles – Time Gates 0.220 – 7.036 ms – Over Regional Geology Map


N
55655
55400
55318
55248
55183
55118
55064
55020
54979
54940
54910
54880
54852
54828
54806
54788
54771
54754
54739
54725
54711
54697
54683
54669
54654
54638
54621
54601
54581
54565
54548
54528
54505
54478
54450
54420
54382
54323
TMI
(nT)
0
km
1

East Block – Total Magnetic Intensity (TMI)

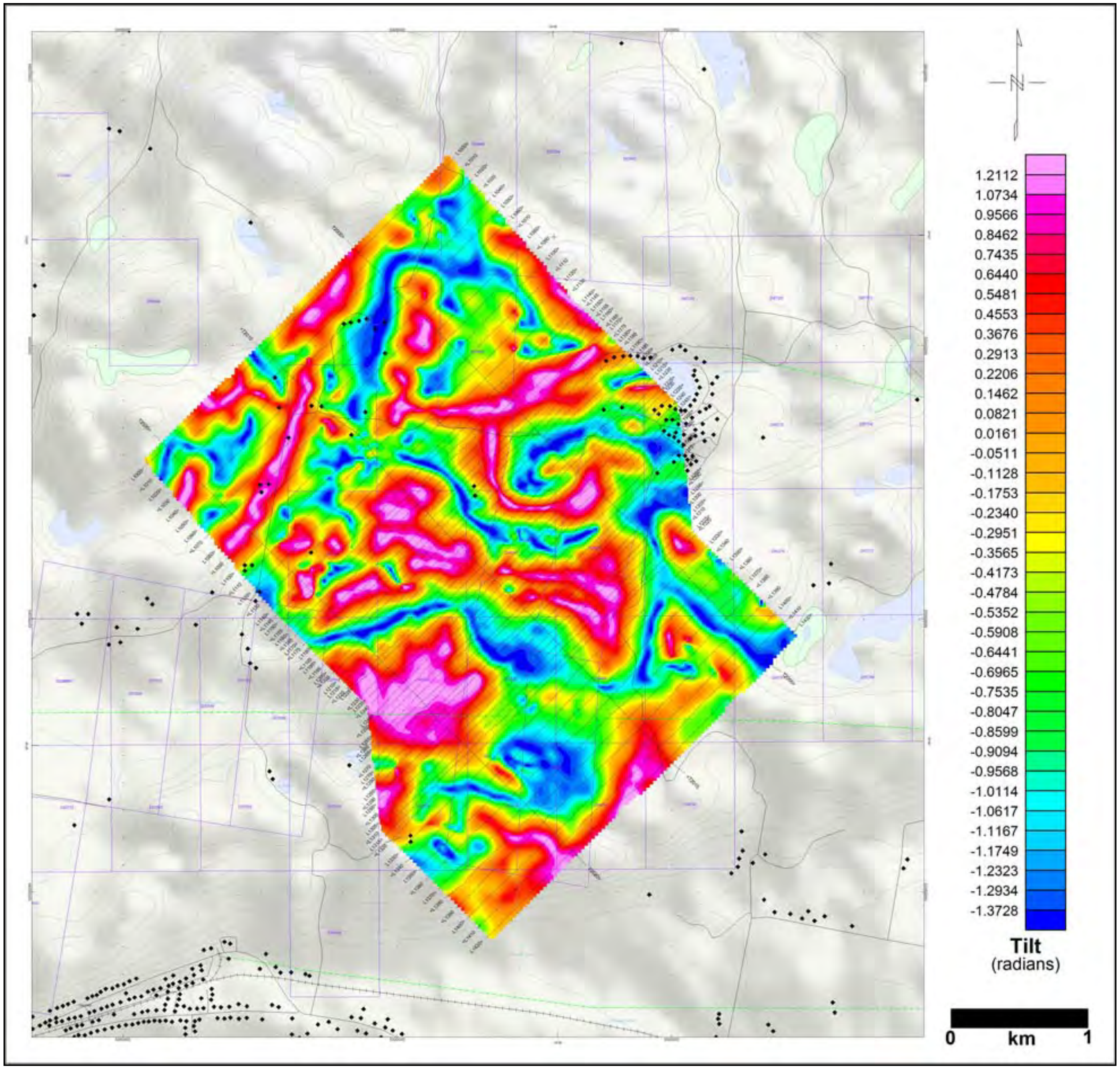


East Block – VTEM B-Field Z Component – Channel 26 – Time Gate 0.505 ms

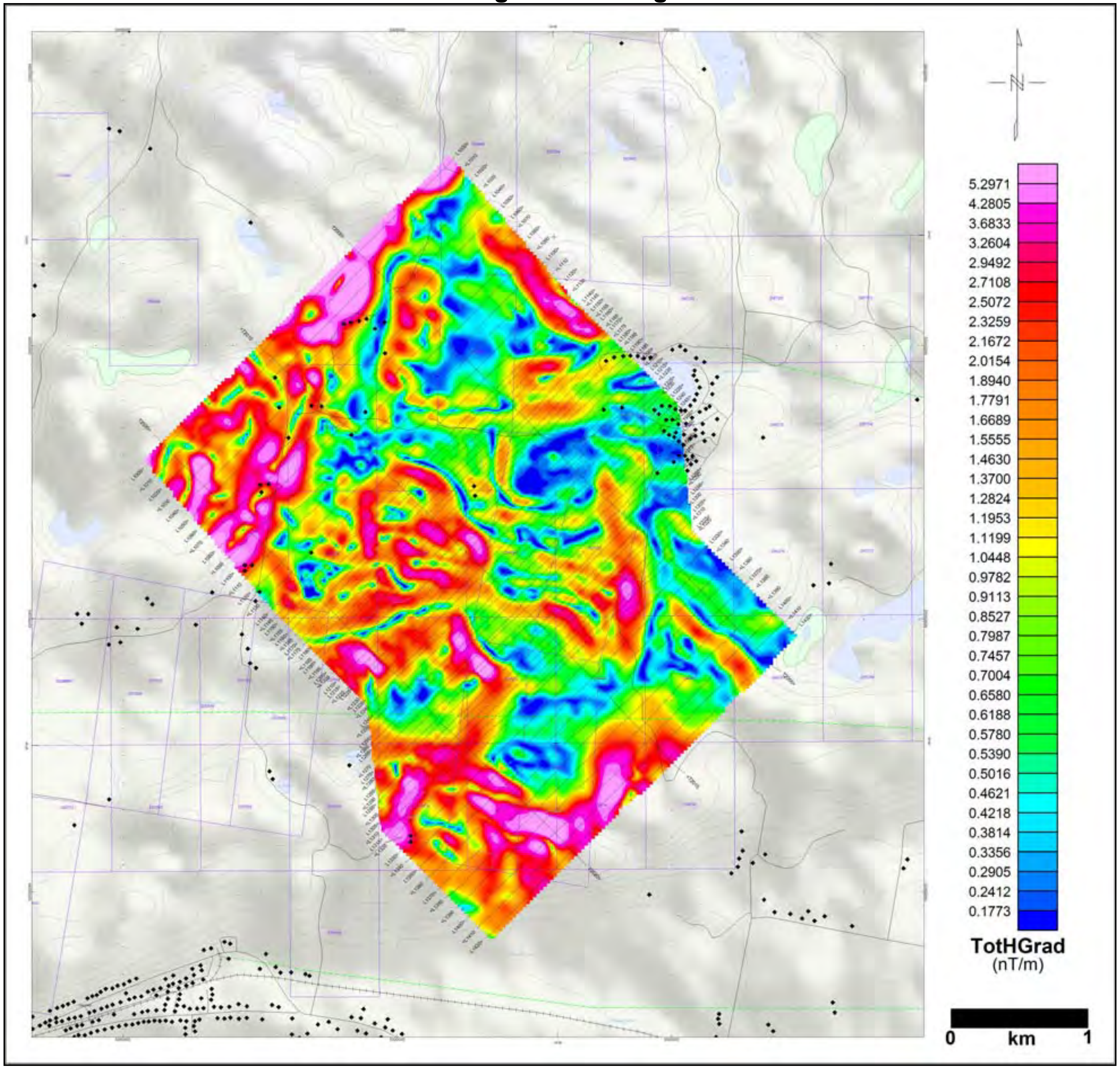


East Block – dB/dt Calculated Time Constant (Tau) with contours of anomaly areas of the

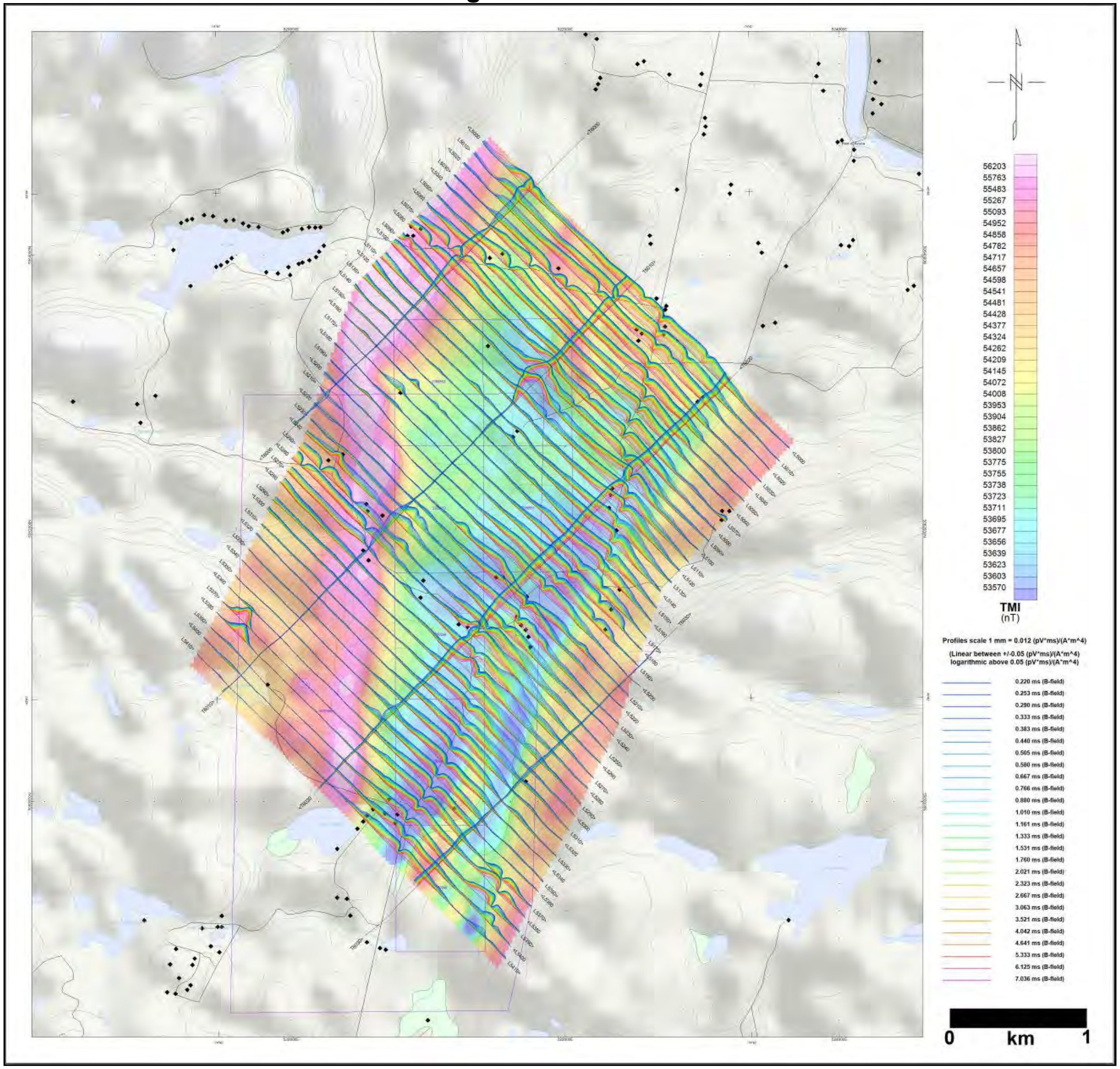
Calculated Vertical Derivative of TMI



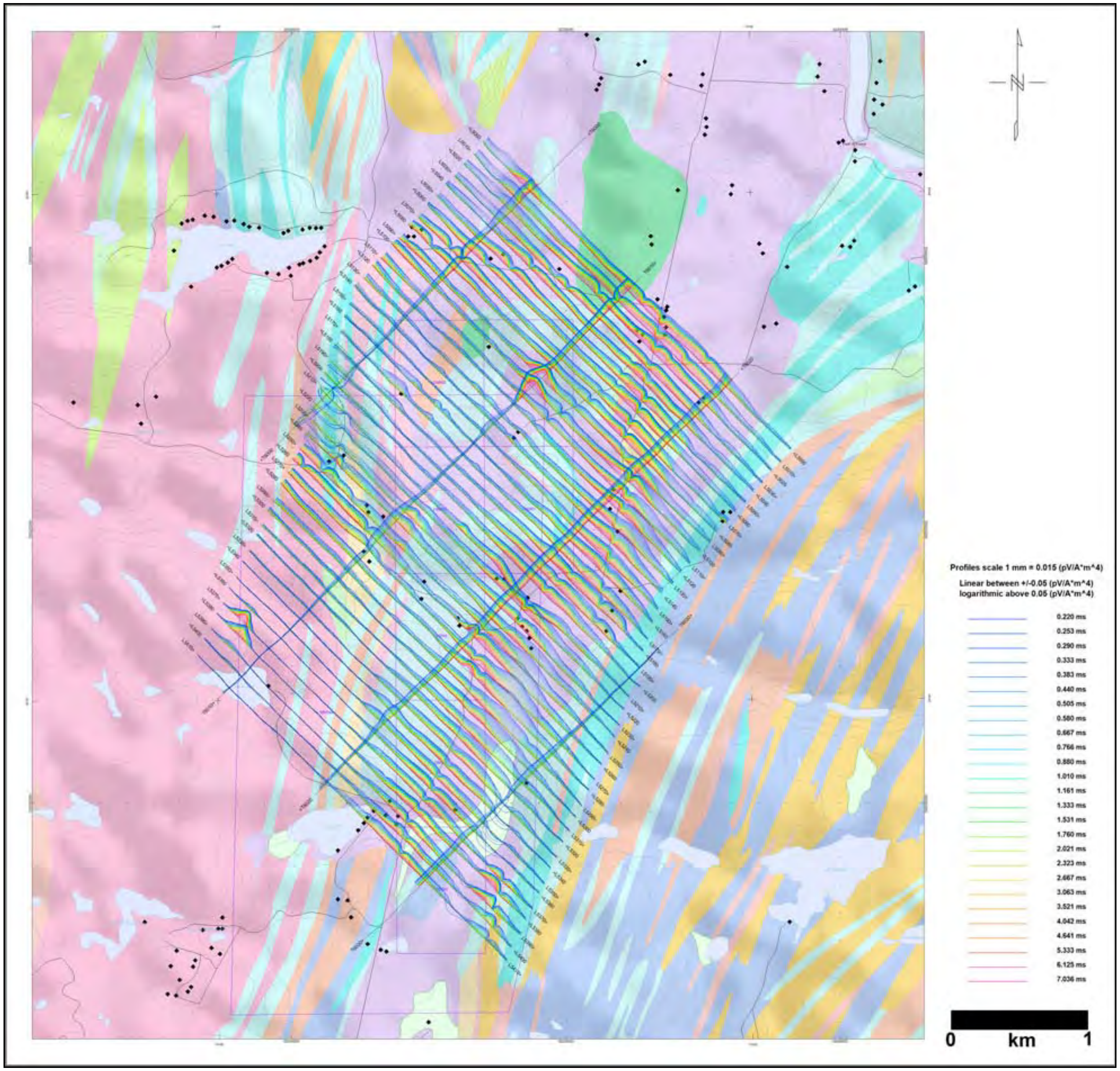
East Block – Magnetic Tilt-Angle Derivative



East Block – Magnetic Total Horizontal Gradient

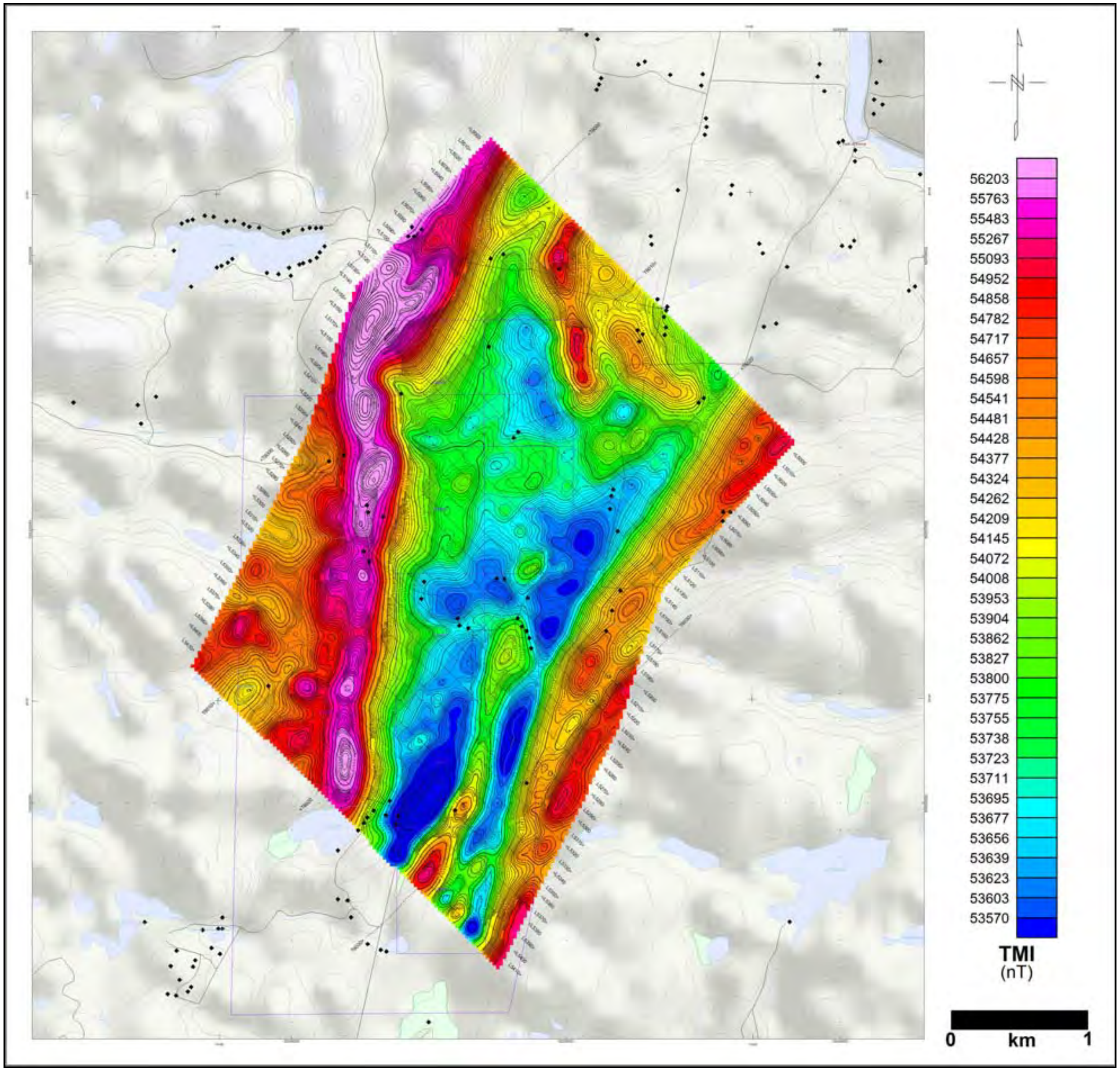


West Block – VTEM B-Field Z Component Profiles – Time Gates 0.220 – 7.036 ms – Over Total Magnetic Intensity Grid

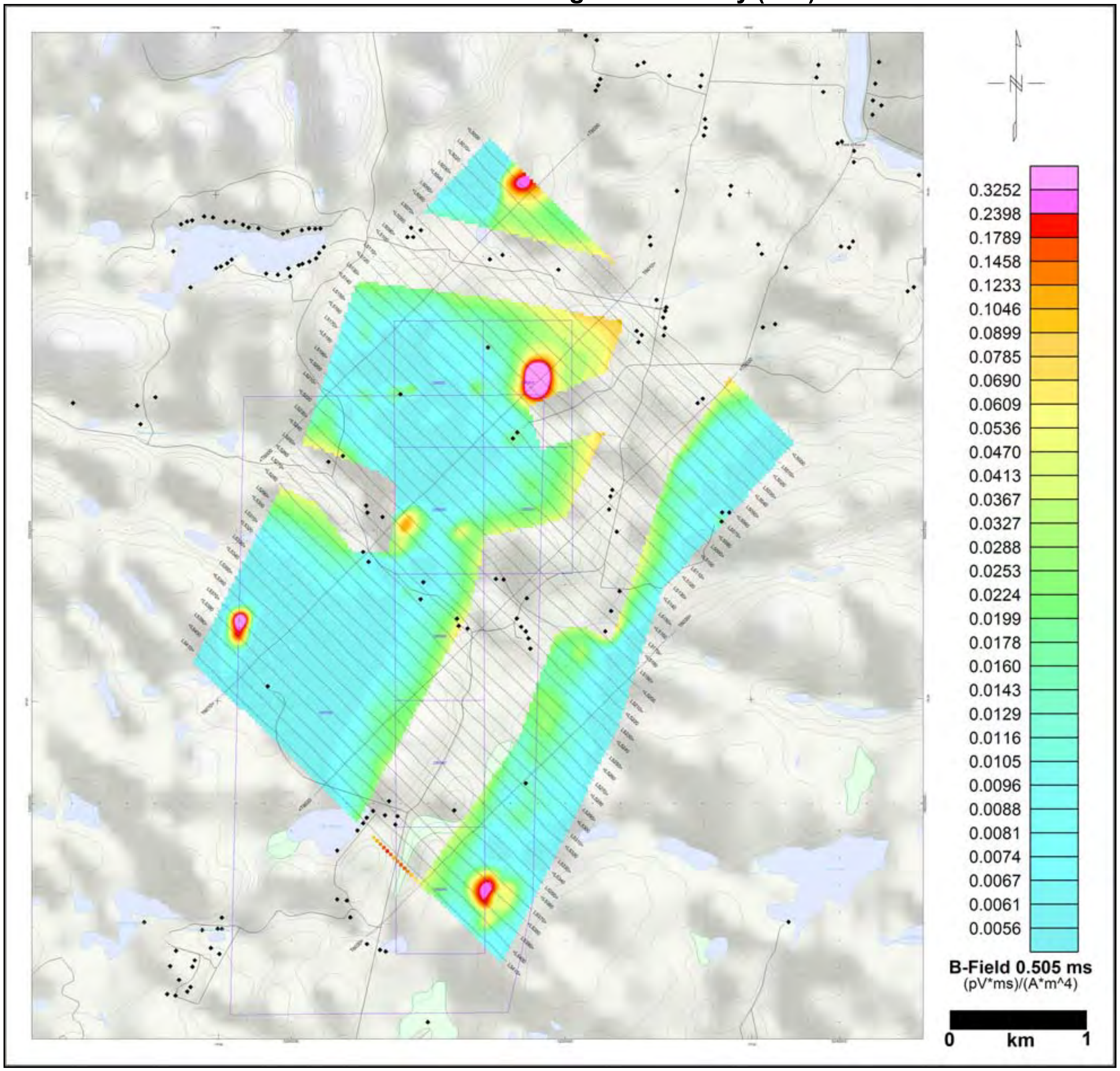


N
Profiles scale 1 mm = 0.015 (pV/A*m^4)
Linear between +/-0.05 (pV/A*m^4)
logarithmic above 0.05 (pV/A*m^4)
0.220 ms
0.253 ms
0.290 ms
0.333 ms
0.383 ms
0.440 ms
0.505 ms
0.580 ms
0.667 ms
0.766 ms
0.880 ms
1.010 ms
1.161 ms
1.333 ms
1.531 ms
1.760 ms
2.021 ms
2.323 ms
2.667 ms
3.063 ms
3.521 ms
4.042 ms
4.641 ms
5.333 ms
6.125 ms
7.036 ms
0
km
1

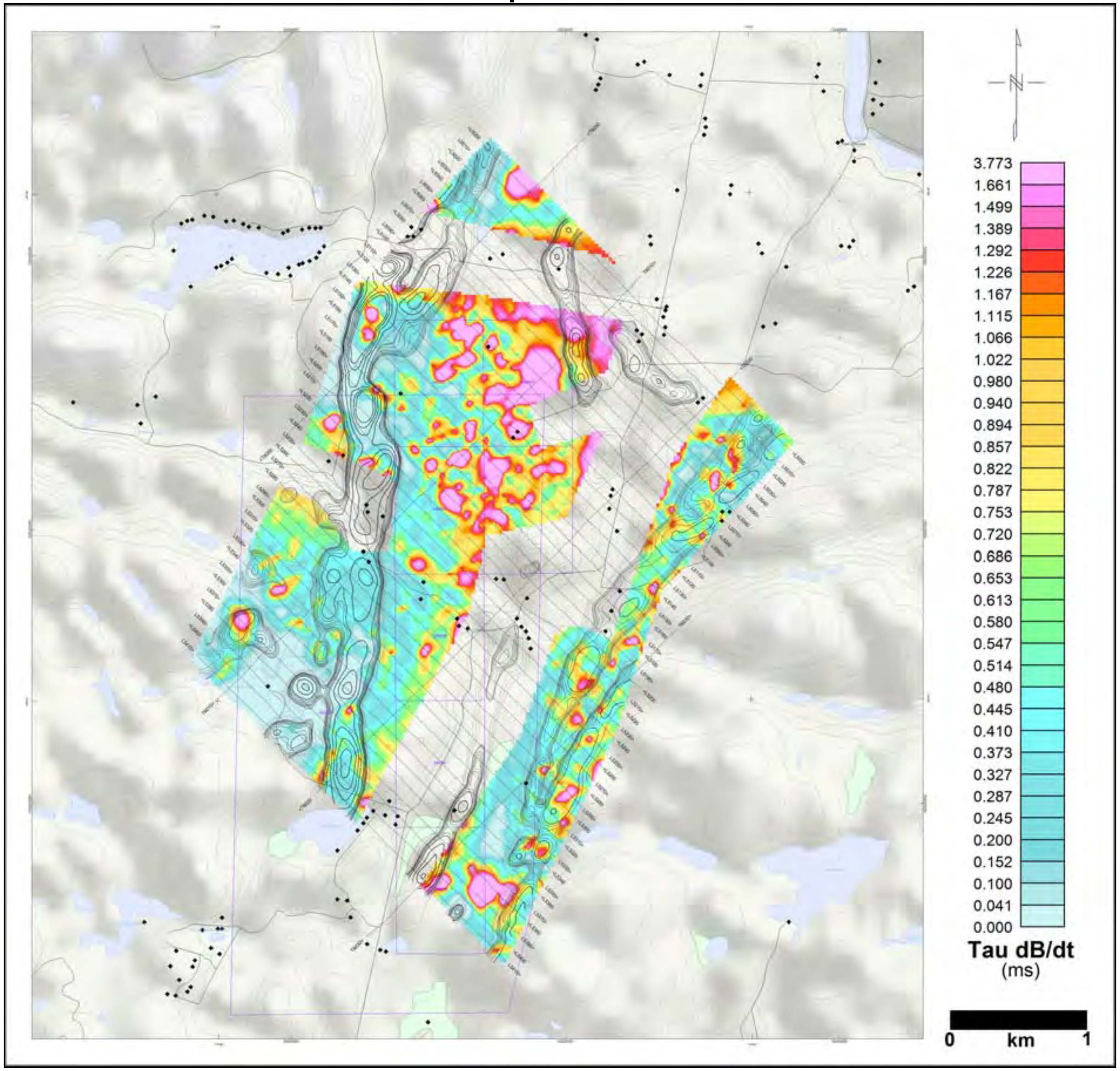
West Block – VTEM dB/dt Z Component Profiles – Time Gates 0.220 – 7.036 ms – Over Regional Geology Map


56203
55763
55483
55267
55093
54952
54858
54782
54717
54657
54598
54541
54481
54428
54377
54324
54262
54209
54145
54072
54008
53953
53904
53862
53827
53800
53775
53755
53738
53723
53711
53695
53677
53656
53639
53623
53603
53570
TMI
(nT)
0
km
1

West Block – Total Magnetic Intensity (TMI)

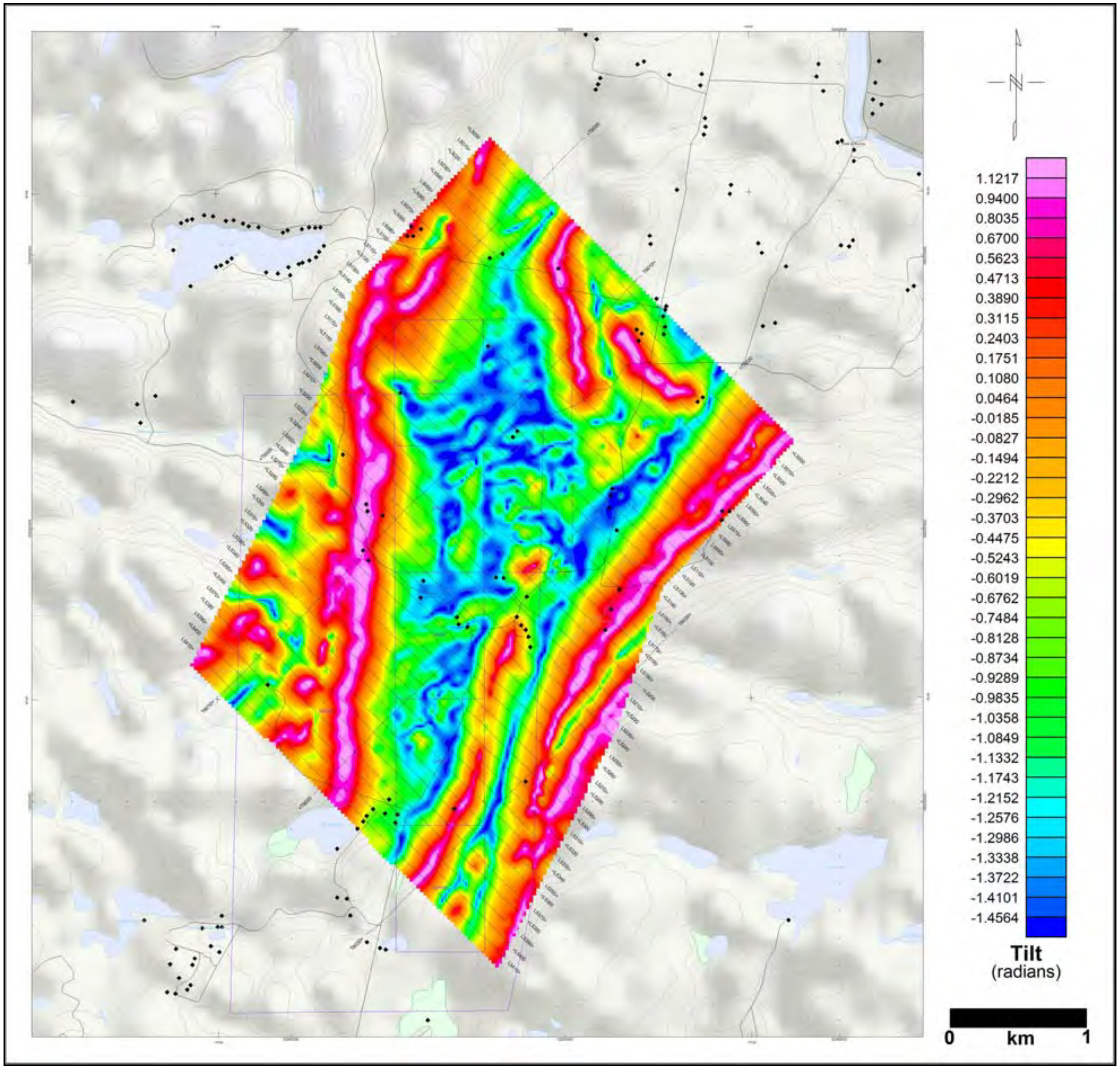


West Block – VTEM B-Field Z Component – Channel 26 – Time Gate 0.505 ms

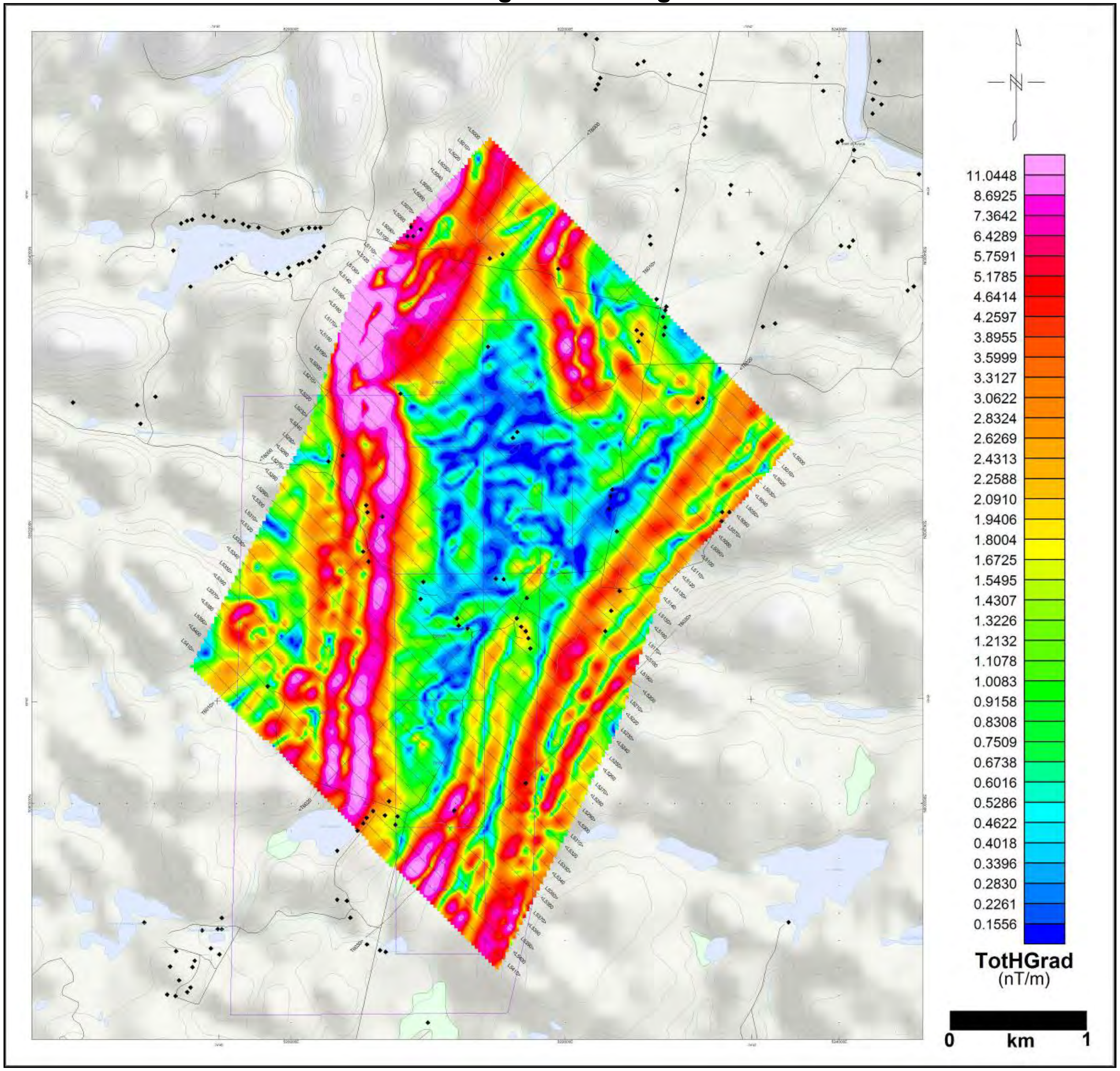


West Block – dB/dt Calculated Time Constant (Tau) with contours of anomaly areas of the

Calculated Vertical Derivative of TMI

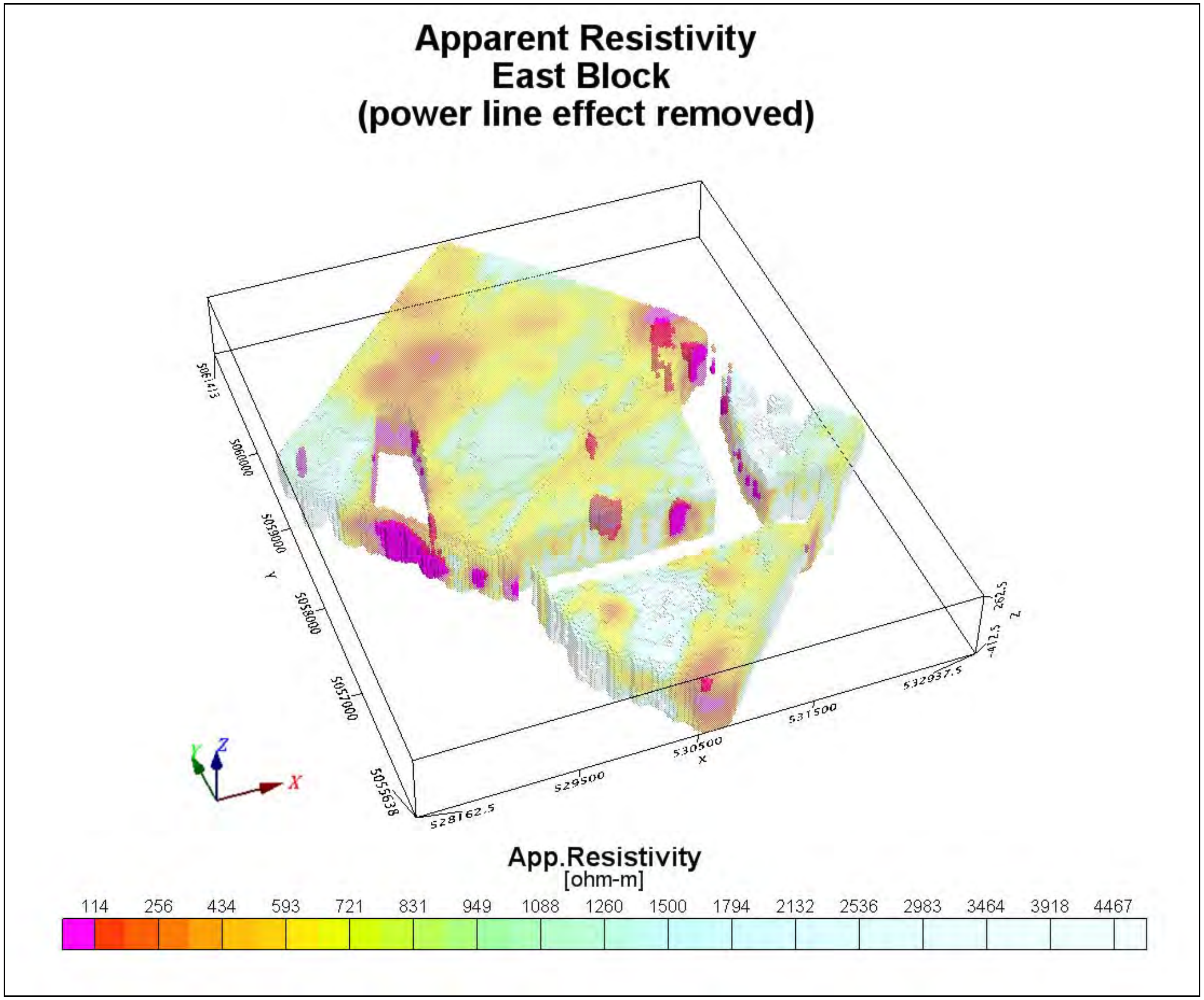


West Block – Magnetic Tilt-Angle Derivative

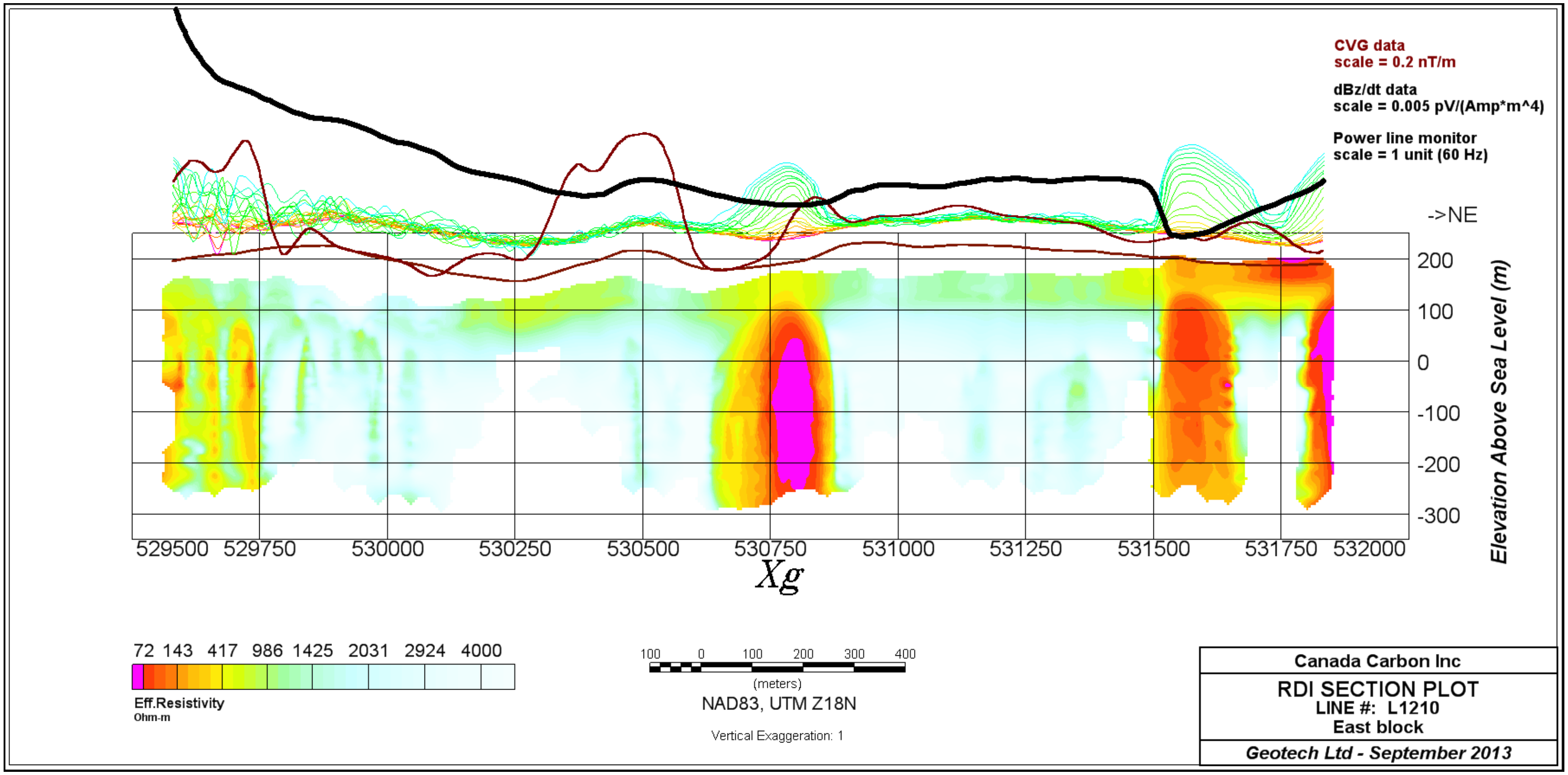


West Block – Magnetic Total Horizontal Gradient

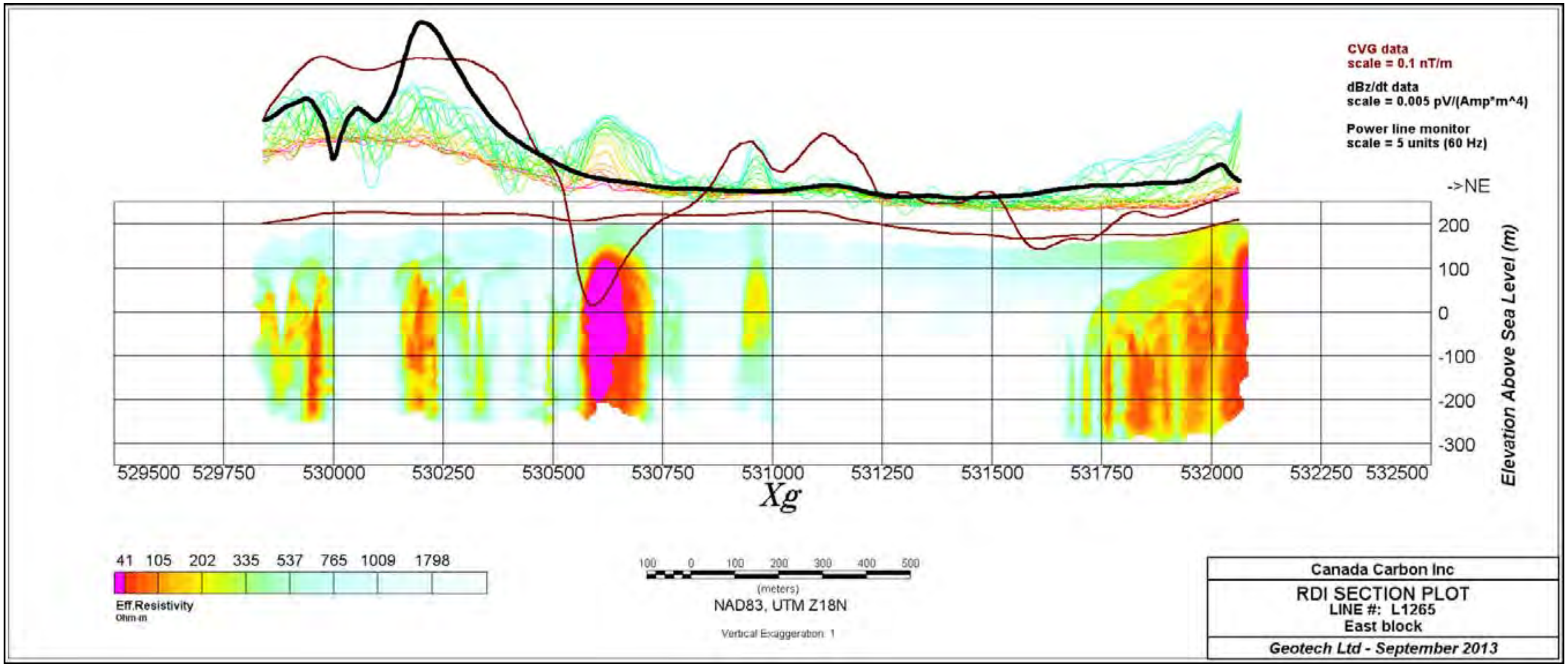
RESISTIVITY DEPTH IMAGE (RDI) MAPS



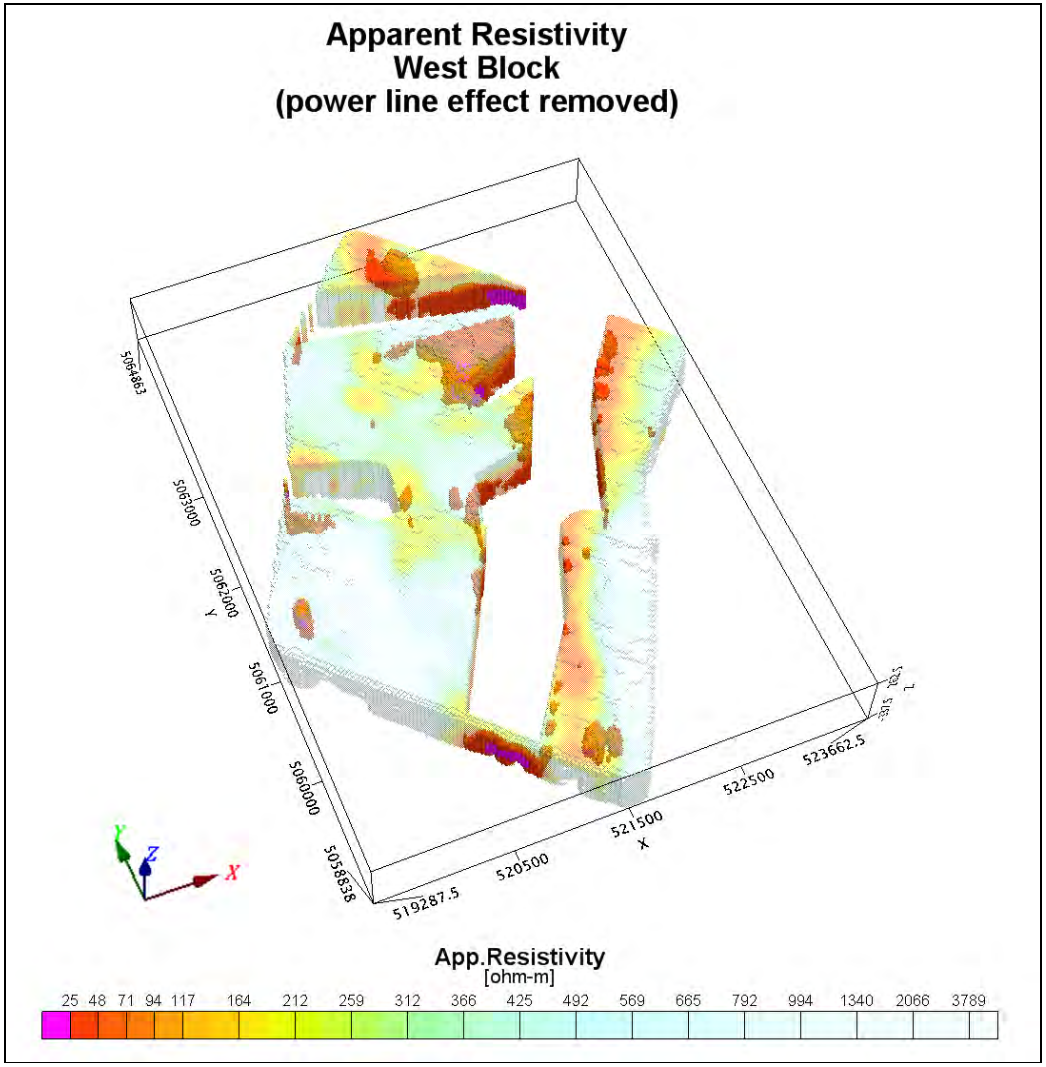
East Block – 3D Resistivity-Depth Image (RDI)



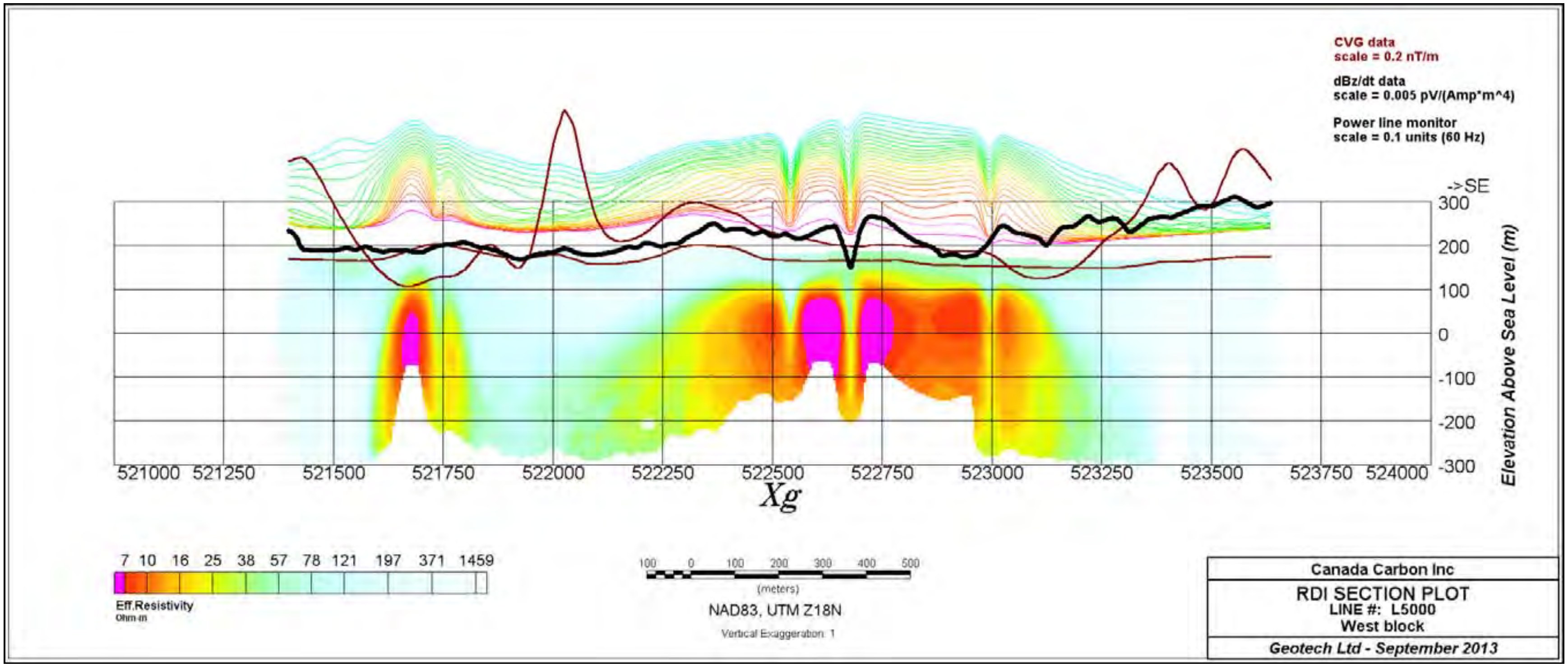
East Block – RDI Section – L1210



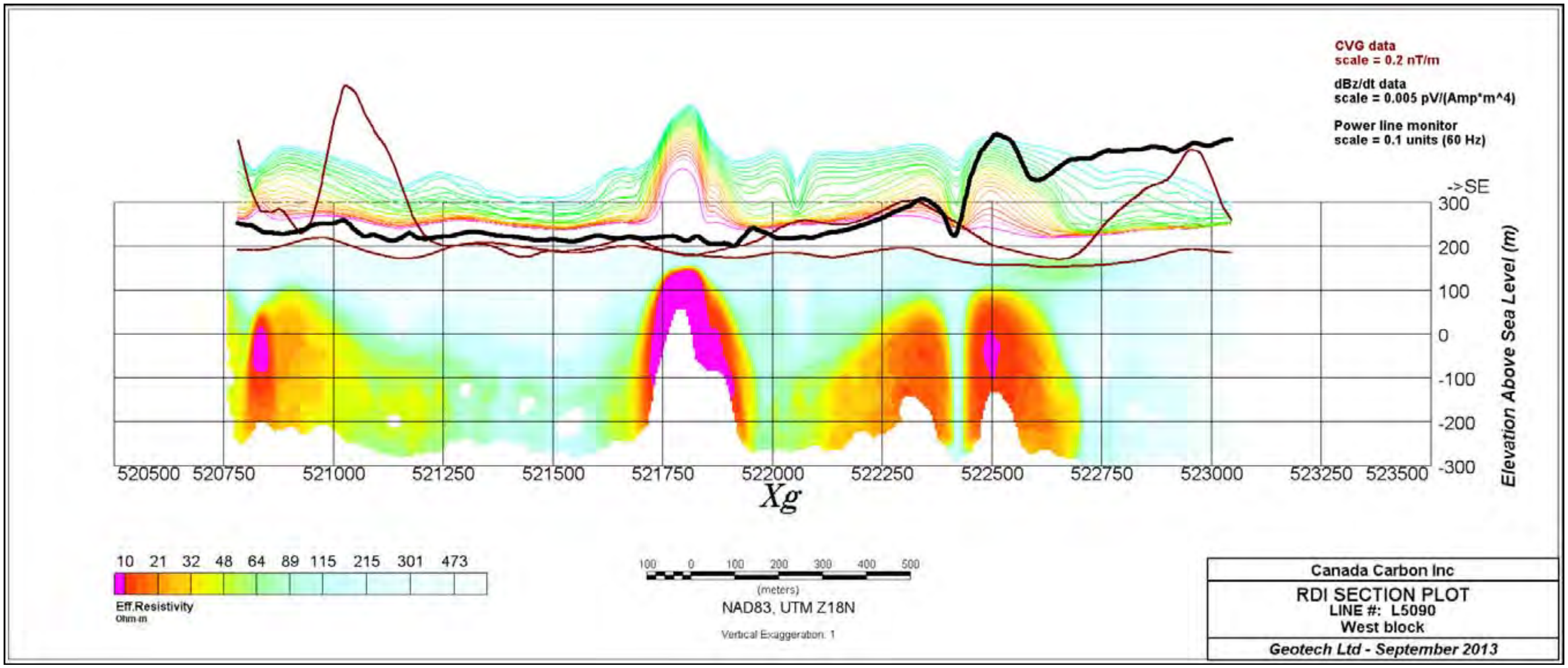
East Block – RDI Section L1265



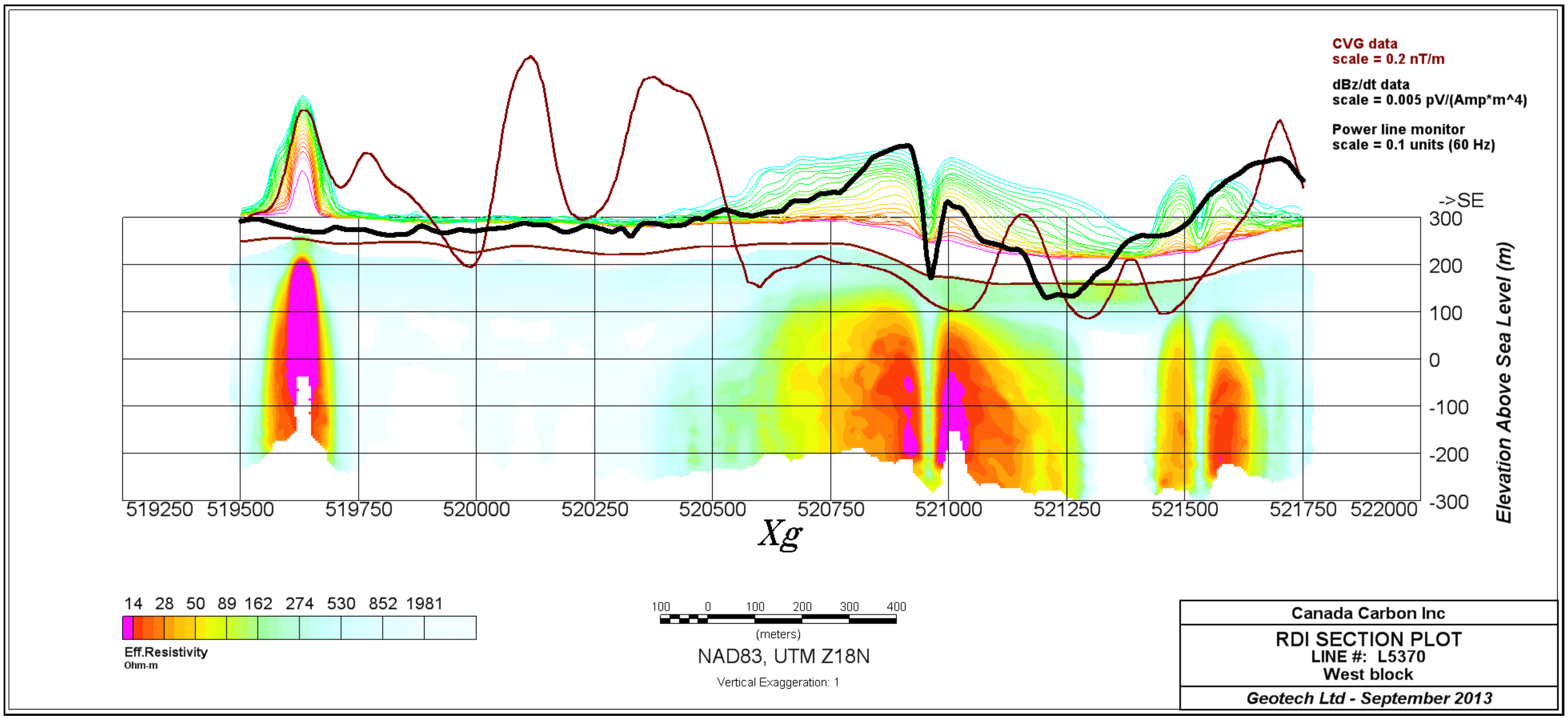
West Block – 3D Resistivity-Depth Image (RDI)



West Block – RDI Section – L5000



West Block – RDI Section – L5090



West Block – RDI Section – L5370

APPENDIX D

GENERALIZED MODELING RESULTS OF THE VTEM SYSTEM

Introduction

The VTEM system is based on a concentric or central loop design, whereby, the receiver is positioned at the centre of a transmitter loop that produces a primary field. The wave form is a bi-polar, modified square wave with a turn-on and turn-off at each end.

During turn-on and turn-off, a time varying field is produced (dB/dt) and an electro-motive force (emf) is created as a finite impulse response. A current ring around the transmitter loop moves outward and downward as time progresses. When conductive rocks and mineralization are encountered, a secondary field is created by mutual induction and measured by the receiver at the centre of the transmitter loop.

Efficient modeling of the results can be carried out on regularly shaped geometries, thus yielding close approximations to the parameters of the measured targets. The following is a description of a series of common models made for the purpose of promoting a general understanding of the measured results.

A set of models has been produced for the Geotech VTEM® system dB/dT Z and X components (see models D1 to D15). The Maxwell TM modeling program (EMIT Technology Pty. Ltd. Midland, WA, AU) used to generate the following responses assumes a resistive half-space. The reader is encouraged to review these models, so as to get a general understanding of the responses as they apply to survey results. While these models do not begin to cover all possibilities, they give a general perspective on the simple and most commonly encountered anomalies.

As the plate dips and departs from the vertical position, the peaks become asymmetrical.

As the dip increases, the aspect ratio (Min/Max) decreases and this aspect ratio can be used as an empirical guide to dip angles from near 90º to about 30º. The method is not sensitive enough where dips are less than about 30º.

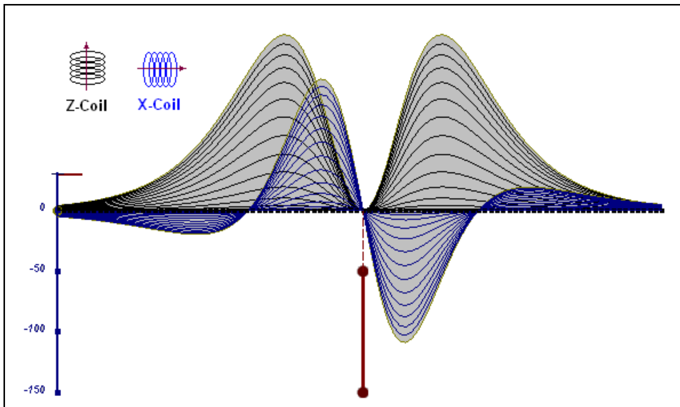


Figure D-1: vertical thin plate

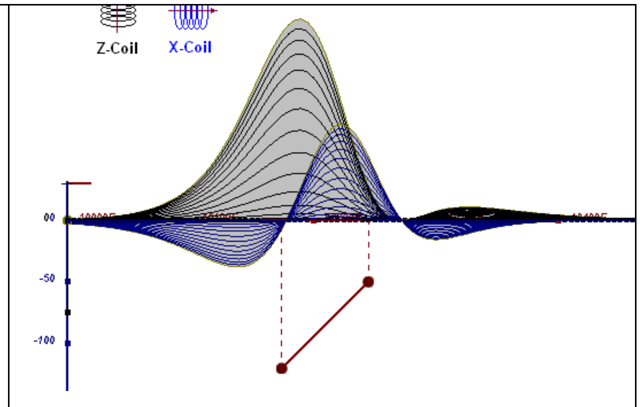


Figure D-2: inclined thin plate

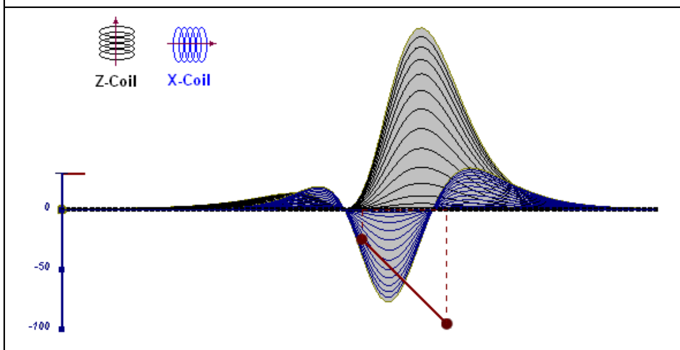


Figure D-3: inclined thin plate

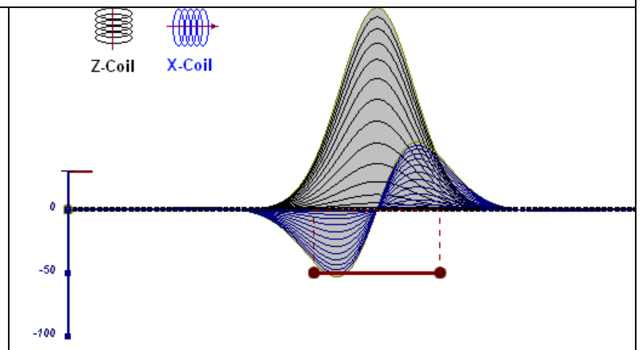


Figure D-4: horizontal thin plate

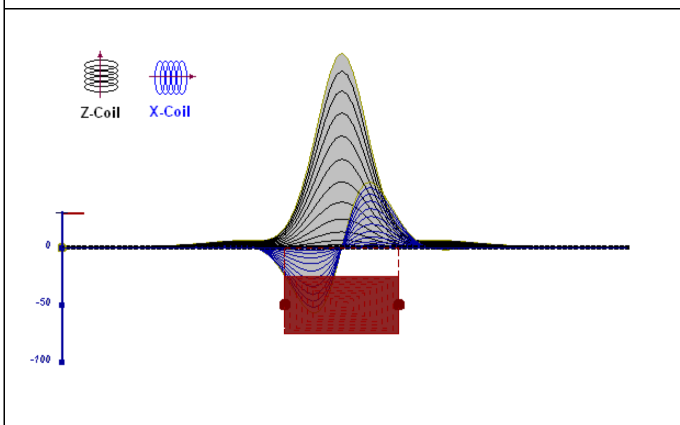


Figure D-5: horizontal thick plate (linear scale of the response)

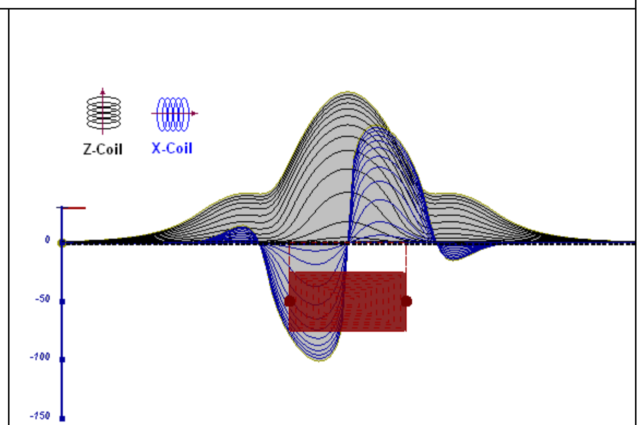


Figure D-6: horizontal thick plate (log scale of the response)

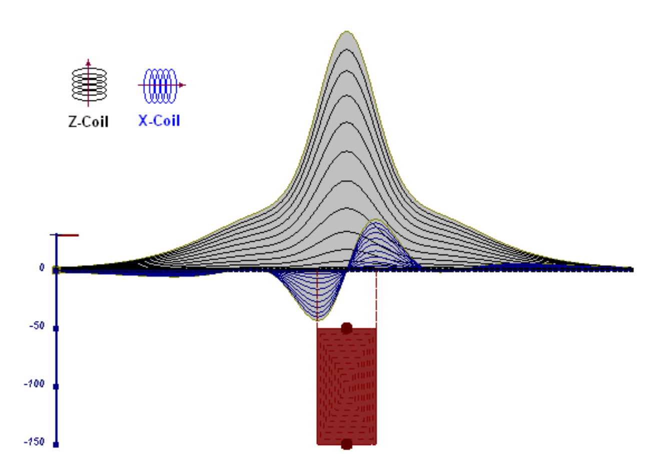


Figure D-7: vertical thick plate (linear scale of the response). 50 m depth

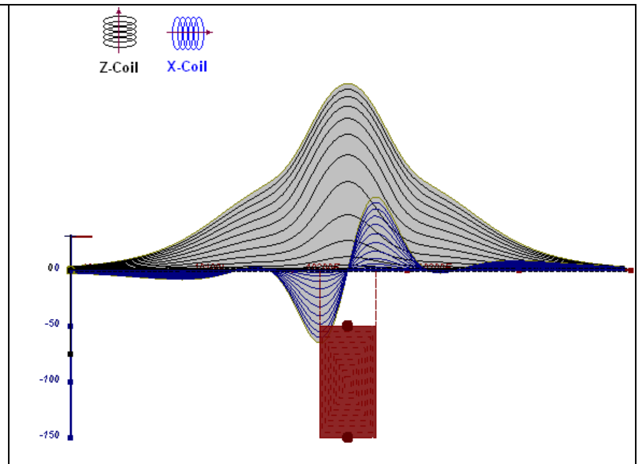


Figure D-8: vertical thick plate (log scale of the response). 50 m depth

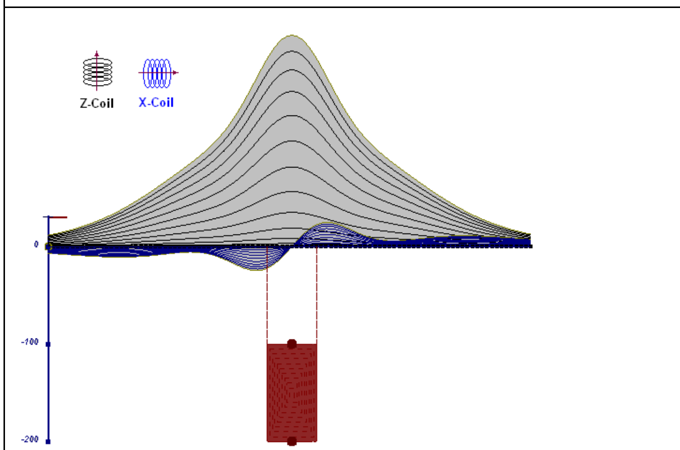


Figure D-9: vertical thick plate (linear scale of the response). 100 m depth

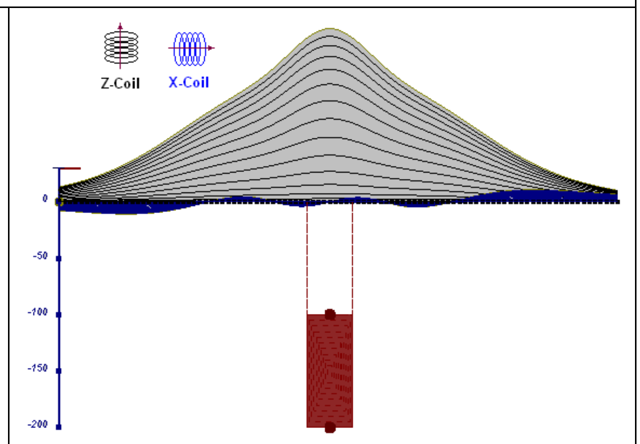


Figure D-10: vertical thick plate (linear scale of the response). Depth/hor.thickness=2.5

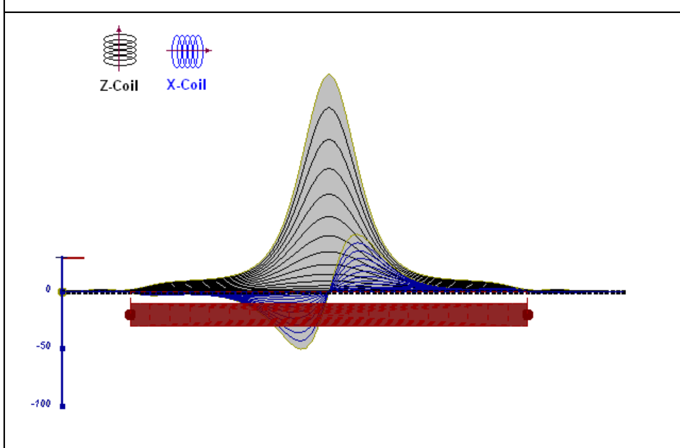


Figure D-10: horizontal thick plate (linear scale of the response)

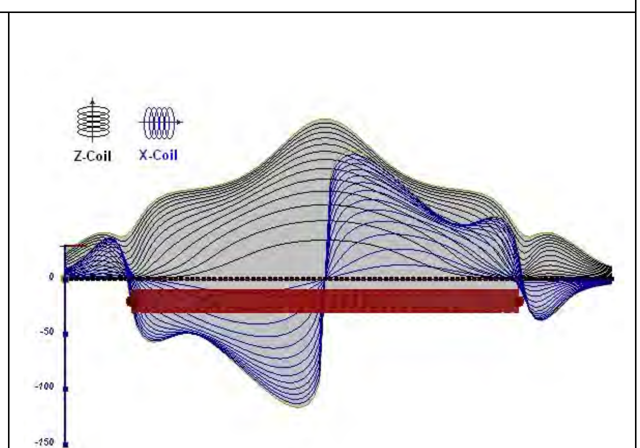


Figure D-11: horizontal thick plate (log scale of the response)

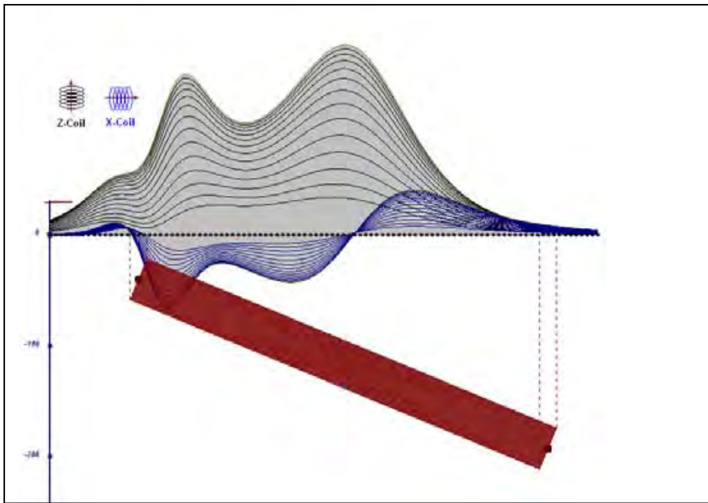


Figure D-12: inclined long thick plate

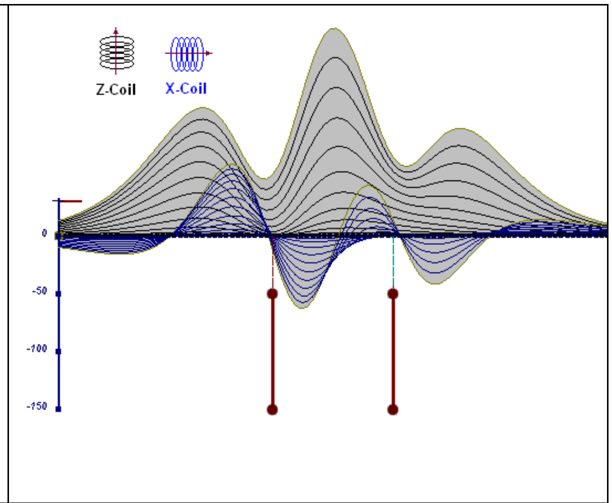


Figure D-13: two vertical thin plates

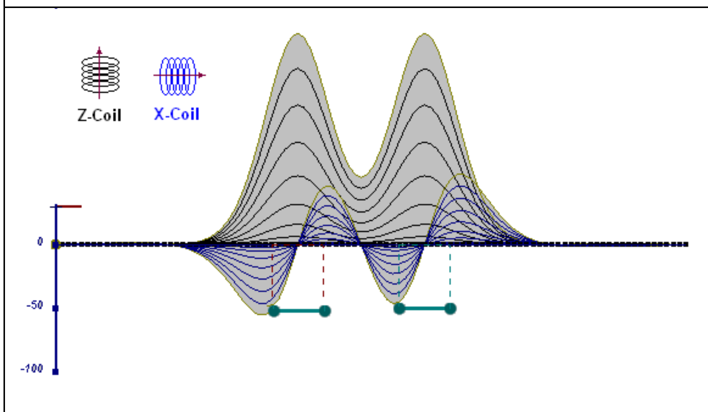


Figure D-14: two horizontal thin plates

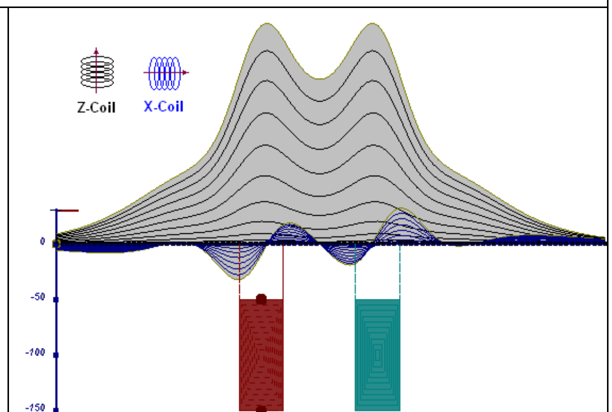


Figure D-15: two vertical thick plates

The same type of target but with different thickness, for example, creates different form of the response:

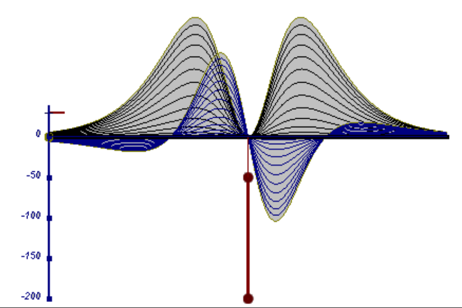
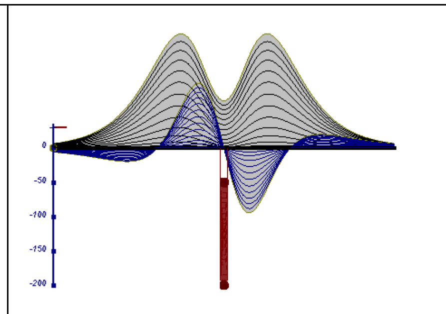
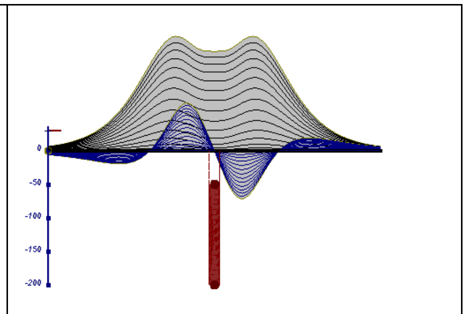
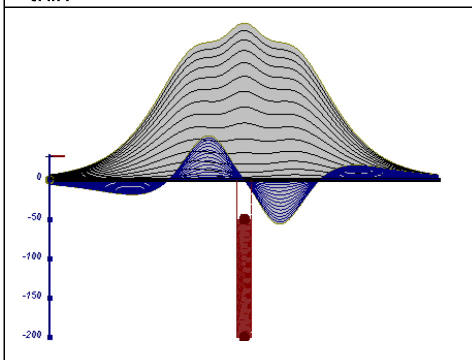
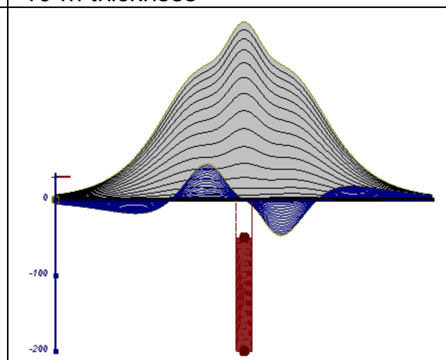
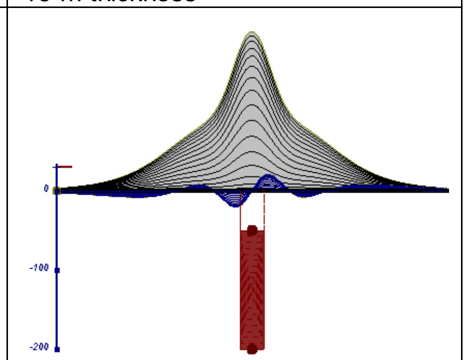
		
"thin"	10 m thickness	15 m thickness
		
18 m thickness	20 m thickness	30 m thickness

Figure D-16: Conductive vertical plate, depth 50 m, strike length 200 m, depth extends 150 m.

Alexander Prikhodko, PhD, P.Geo
Geotech Ltd.

September 2010

APPENDIX E

EM TIME CONSTANT (TAU) ANALYSIS

Estimation of time constant parameter[1] in transient electromagnetic method is one of the steps toward the extraction of the information about conductances beneath the surface from TEM measurements.

The most reliable method to discriminate or rank conductors from overburden, background or one and other is by calculating the EM field decay time constant (TAU parameter), which directly depends on conductance despite their depth and accordingly amplitude of the response.

Theory

As established in electromagnetic theory, the magnitude of the electro-motive force (emf) induced is proportional to the time rate of change of primary magnetic field at the conductor. This emf causes eddy currents to flow in the conductor with a characteristic transient decay, whose Time Constant (Tau) is a function of the conductance of the survey target or conductivity and geometry (including dimensions) of the target. The decaying currents generate a proportional secondary magnetic field, the time rate of change of which is measured by the receiver coil as induced voltage during the Off time.

The receiver coil output voltage (**e_0**) is proportional to the time rate of change of the secondary magnetic field and has the form,

$$e_0 \,\alpha\, (1 / \tau)\, e^{-(t / \tau)}$$

Where,
τ = L/R is the characteristic time constant of the target (TAU)
R = resistance
L = inductance

From the expression, conductive targets that have small value of resistance and hence large value of τ yield signals with small initial amplitude that decays relatively slowly with progress of time. Conversely, signals from poorly conducting targets that have large resistance value and small τ, have high initial amplitude but decay rapidly with time[1] (Fig. E1).

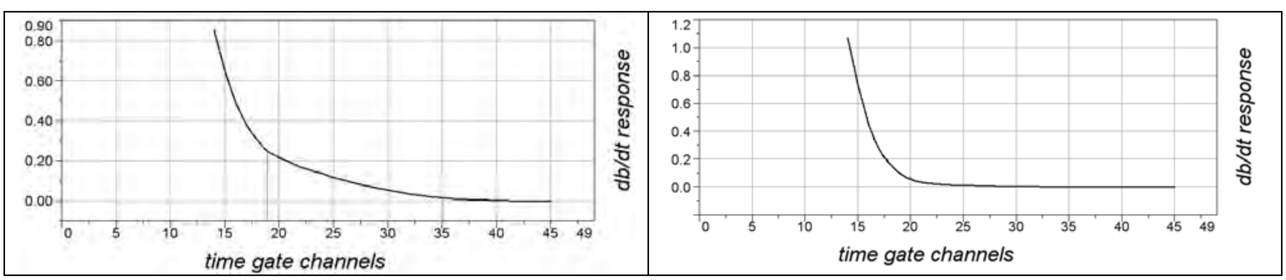


Figure E-1: Left – presence of good conductor, right – poor conductor.

[1] McNeill, JD, 1980, "Applications of Transient Electromagnetic Techniques", Technical Note TN-7 page 5, Geonics Limited, Mississauga, Ontario.

EM Time Constant (Tau) Calculation

The EM Time-Constant (TAU) is a general measure of the speed of decay of the electromagnetic response and indicates the presence of eddy currents in conductive sources as well as reflecting the "conductance quality" of a source. Although TAU can be calculated using either the measured dB/dt decay or the calculated B-field decay, dB/dt is commonly preferred due to better stability (S/N) relating to signal noise. Generally, TAU calculated on base of early time response reflects both near surface overburden and poor conductors whereas, in the late ranges of time, deep and more conductive sources, respectively. For example early time TAU distribution in an area that indicates conductive overburden is shown in Figure 2.

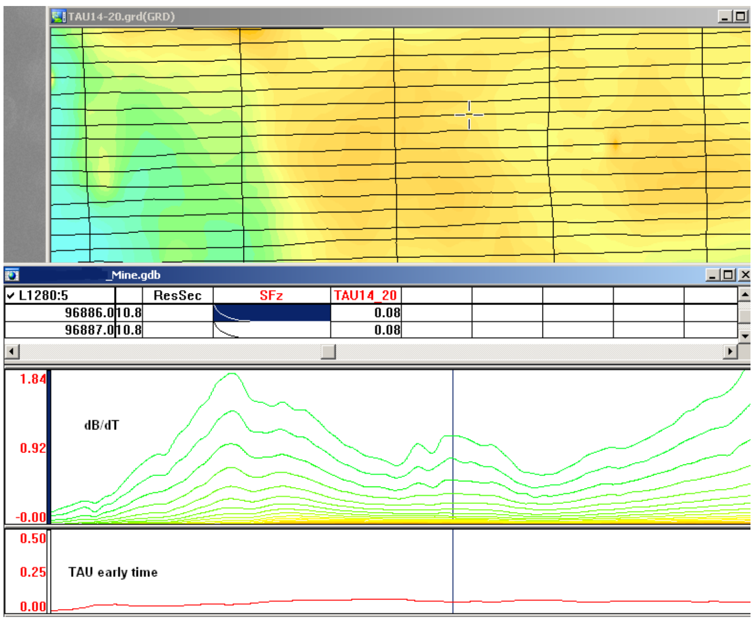


Figure E-2: Map of early time TAU. Area with overburden conductive layer and local sources.

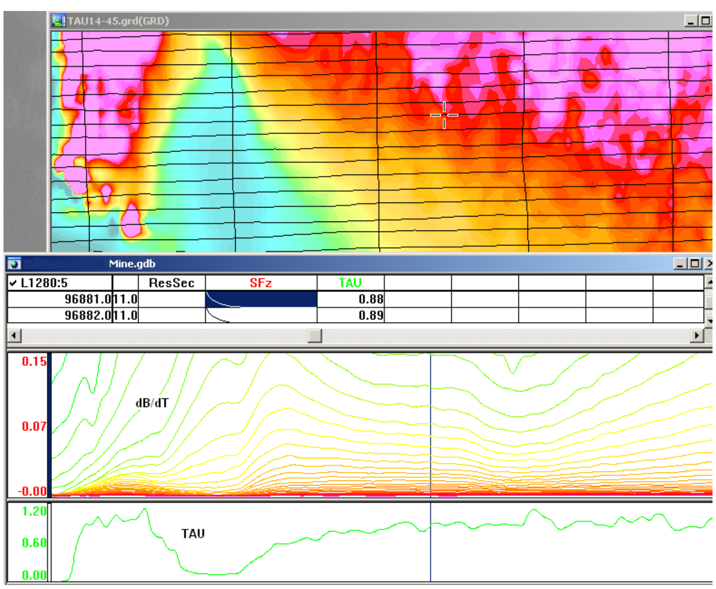


Figure E-3: Map of full time range TAU with EM anomaly due to deep highly conductive target.

There are many advantages of TAU maps:

- TAU depends only on one parameter (conductance) in contrast to response magnitude;
- TAU is integral parameter, which covers time range and all conductive zones and targets are displayed independently of their depth and conductivity on a single map.
- Very good differential resolution in complex conductive places with many sources with different conductivity.
- Signs of the presence of good conductive targets are amplified and emphasized independently of their depth and level of response accordingly.

In the example shown in Figure 4 and 5, three local targets are defined, each of them with a different depth of burial, as indicated on the resistivity depth image (RDI). All are very good conductors but the deeper target (number 2) has a relatively weak dB/dt signal yet also features the strongest total TAU (Figure 4). This example highlights the benefit of TAU analysis in terms of an additional target discrimination tool.

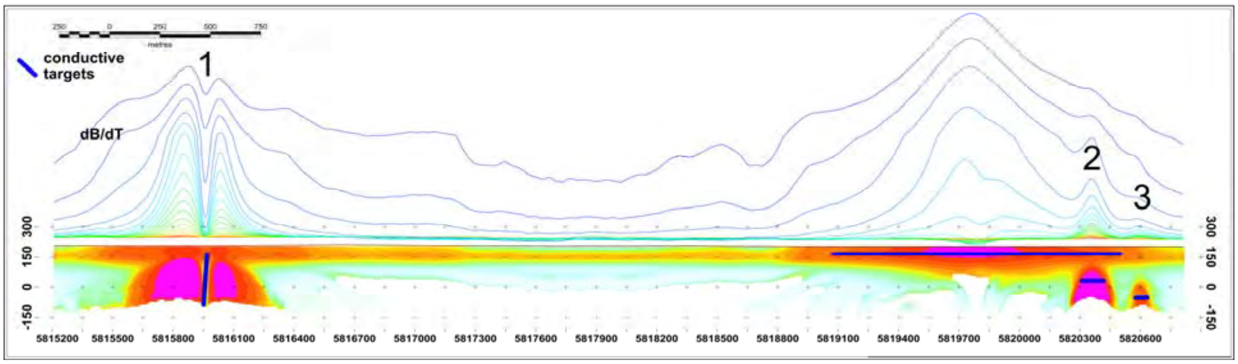


Figure E-4: dB/dt profile and RDI with different depths of targets.

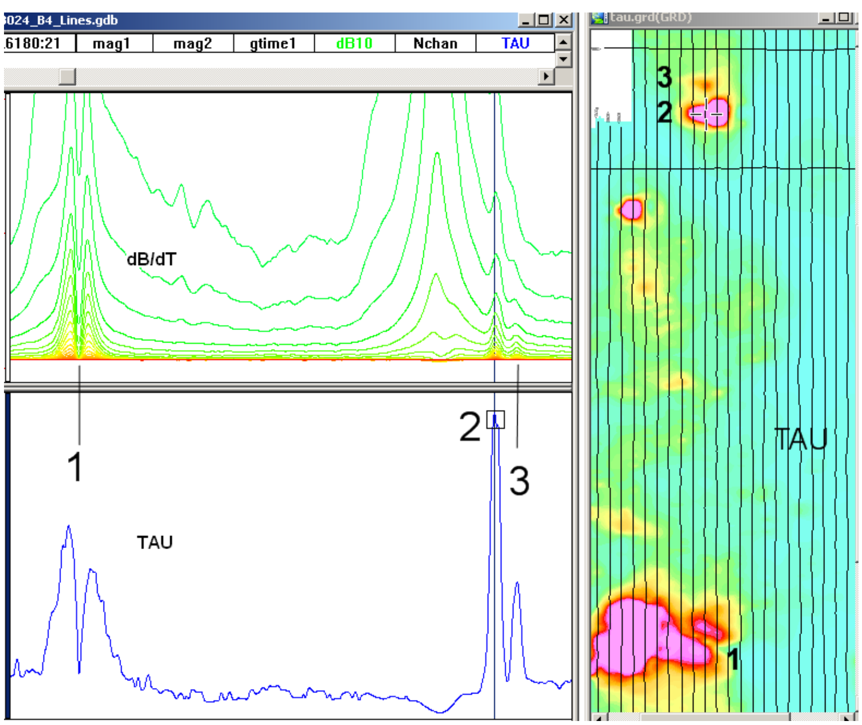


Figure E-5: Map of total TAU and dB/dt profile.

The EM Time Constants for dB/dt and B-field were calculated using the "sliding Tau" in-house program developed at Geotech[2]. The principle of the calculation is based on using of time window (4 time channels) which is sliding along the curve decay and looking for latest time channels which have a response above the level of noise and decay. The EM decays are obtained from all available decay channels, starting at the latest channel. Time constants are taken from a least square fit of a straight-line (log/linear space) over the last 4 gates above a pre-set signal threshold level (Figure F6). Threshold settings are pointed in the "label" property of TAU database channels. The sliding Tau method determines that, as the amplitudes increase, the time-constant is taken at progressively later times in the EM decay. Conversely, as the amplitudes decrease, Tau is taken at progressively earlier times in the decay. If the maximum signal amplitude falls below the threshold, or becomes negative for any of the 4 time gates, then Tau is not calculated and is assigned a value of "dummy" by default.

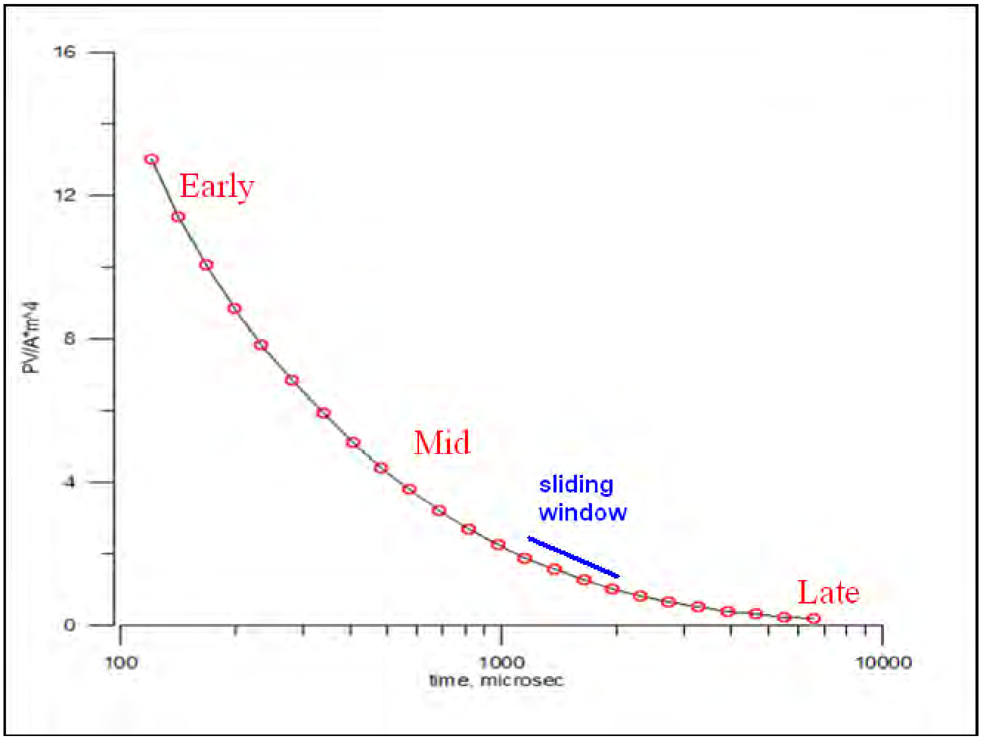


Figure E-6: Typical dB/dt decays of Vtem data

Alexander Prikhodko, PhD, P.Geo
Geotech Ltd.

September 2010

[2] by A.Prikhodko

APPENDIX F

TEM RESISTIVITY DEPTH IMAGING (RDI)

Resistivity depth imaging (RDI) is technique used to rapidly convert EM profile decay data into an equivalent resistivity versus depth cross-section, by deconvolving the measured TEM data.
The used RDI algorithm of Resistivity-Depth transformation is based on scheme of the apparent resistivity transform of Maxwell A.Meju (1998)[1] and TEM response from conductive half-space. The program is developed by Alexander Prikhodko and depth calibrated based on forward plate modeling for VTEM system configuration (Fig. 1-10).

RDIs provide reasonable indications of conductor relative depth and vertical extent, as well as accurate 1D layered-earth apparent conductivity/resistivity structure across VTEM flight lines. Approximate depth of investigation of a TEM system, image of secondary field distribution in half space, effective resistivity, initial geometry and position of conductive targets is the information obtained on base of the RDIs.

Maxwell forward modeling with RDI sections from the synthetic responses (VTEM system)

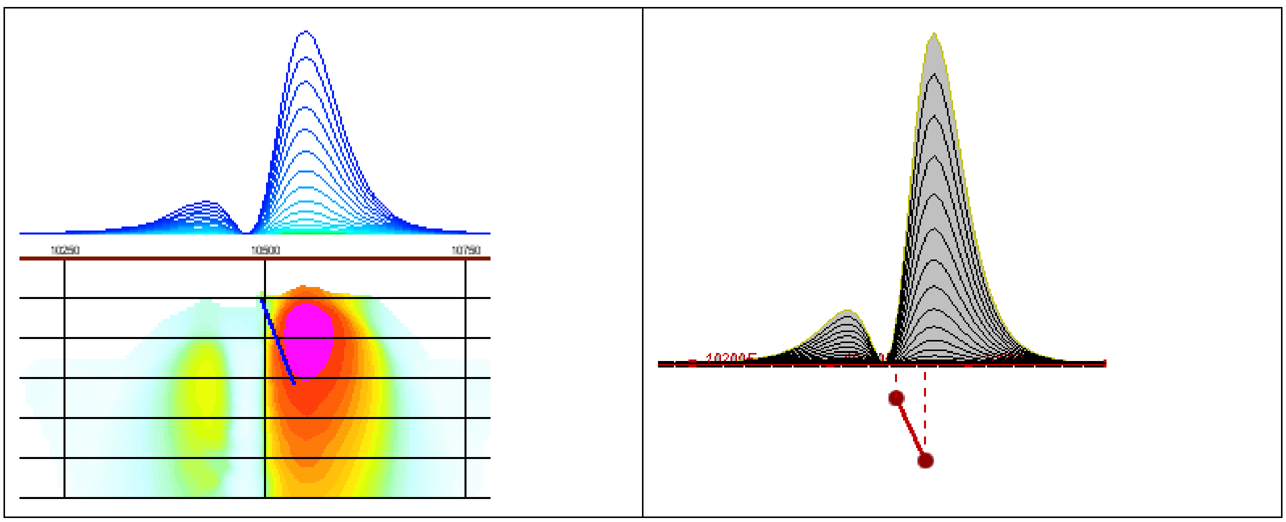


Figure F-1: Maxwell plate model and RDI from the calculated response for conductive “thin” plate (depth 50 m, dip 65 degree, depth extend 100 m).

[1] Maxwell A.Meju, 1998, Short Note: A simple method of transient electromagnetic data analysis, Geophysics, **63**, 405–410.

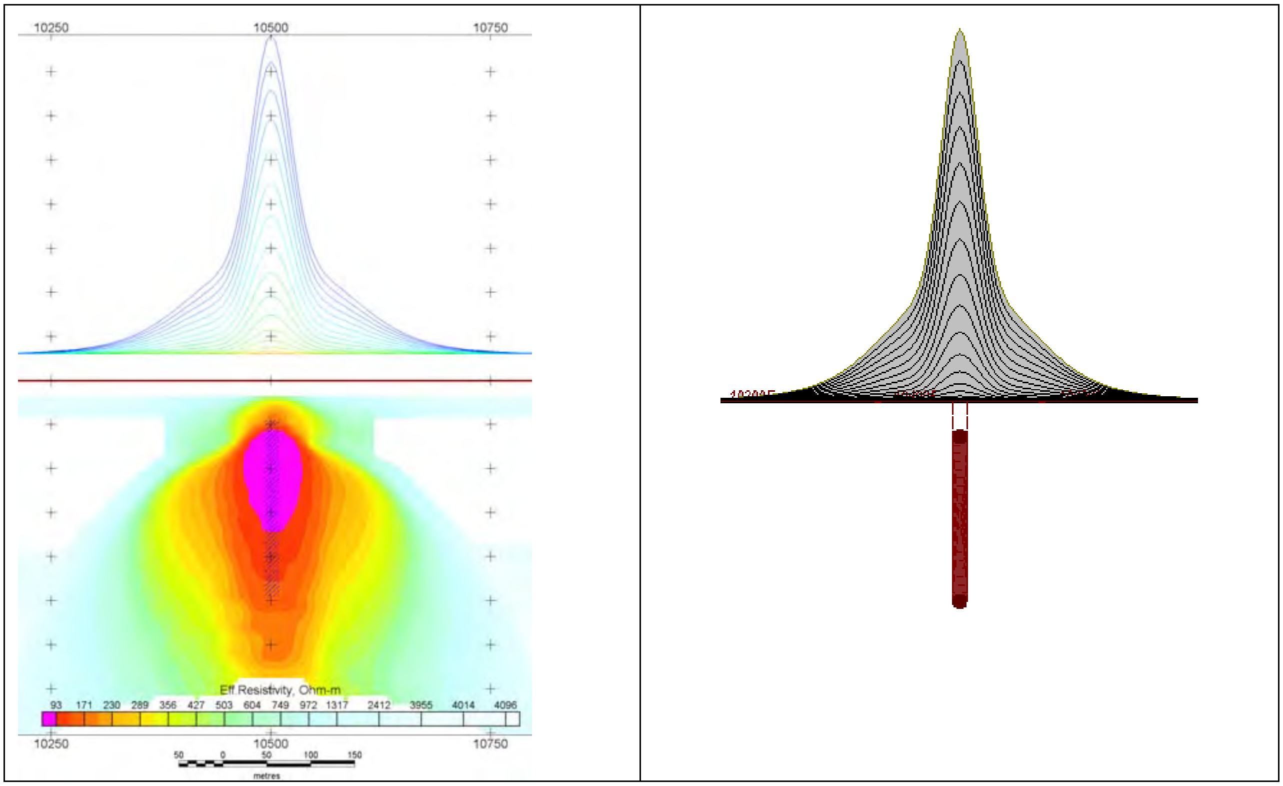


Figure F-2: Maxwell plate model and RDI from the calculated response for "thick" plate 18 m thickness, depth 50 m, depth extend 200 m).

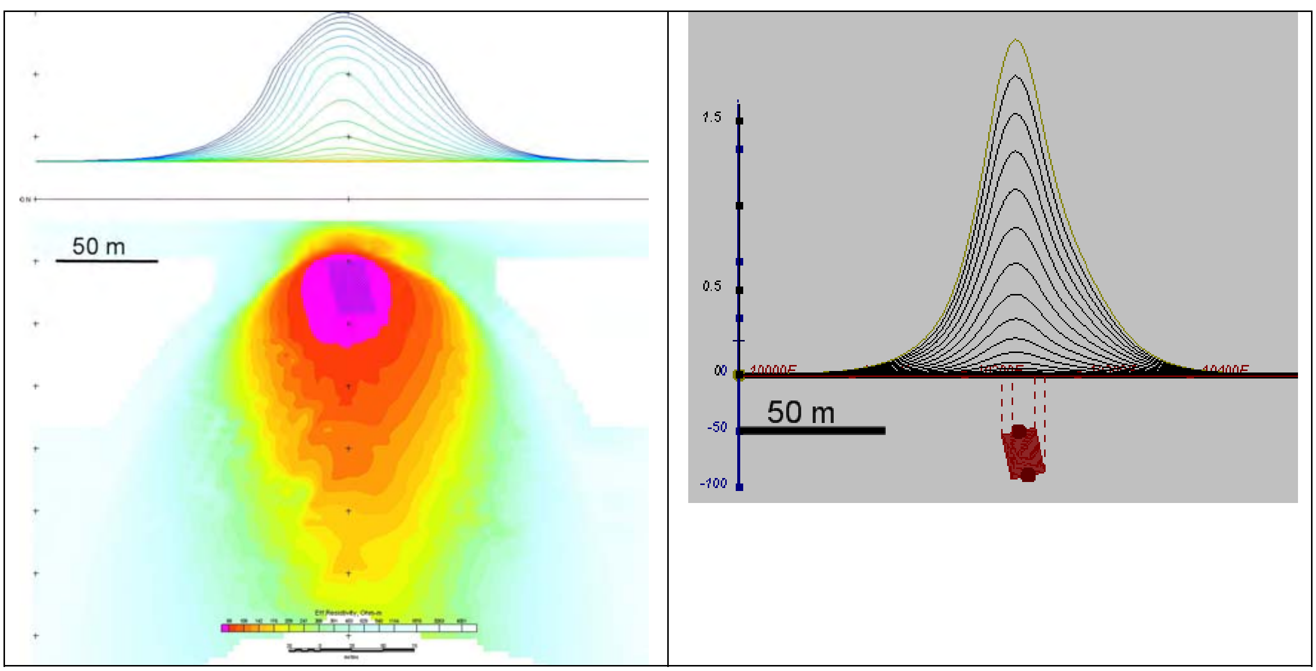


Figure F-3: Maxwell plate model and RDI from the calculated response for bulk ("thick") 100 m length, 40 m depth extend, 30 m thickness

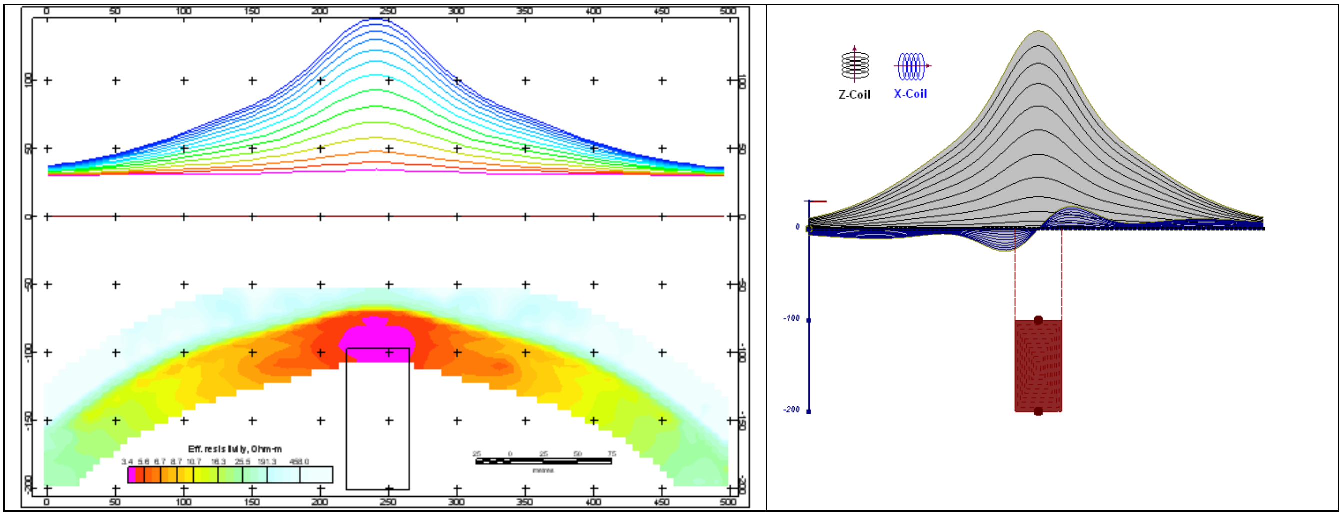


Figure F-4: Maxwell plate model and RDI from the calculated response for “thick” vertical target (depth 100 m, depth extend 100 m). 19-44 chan.

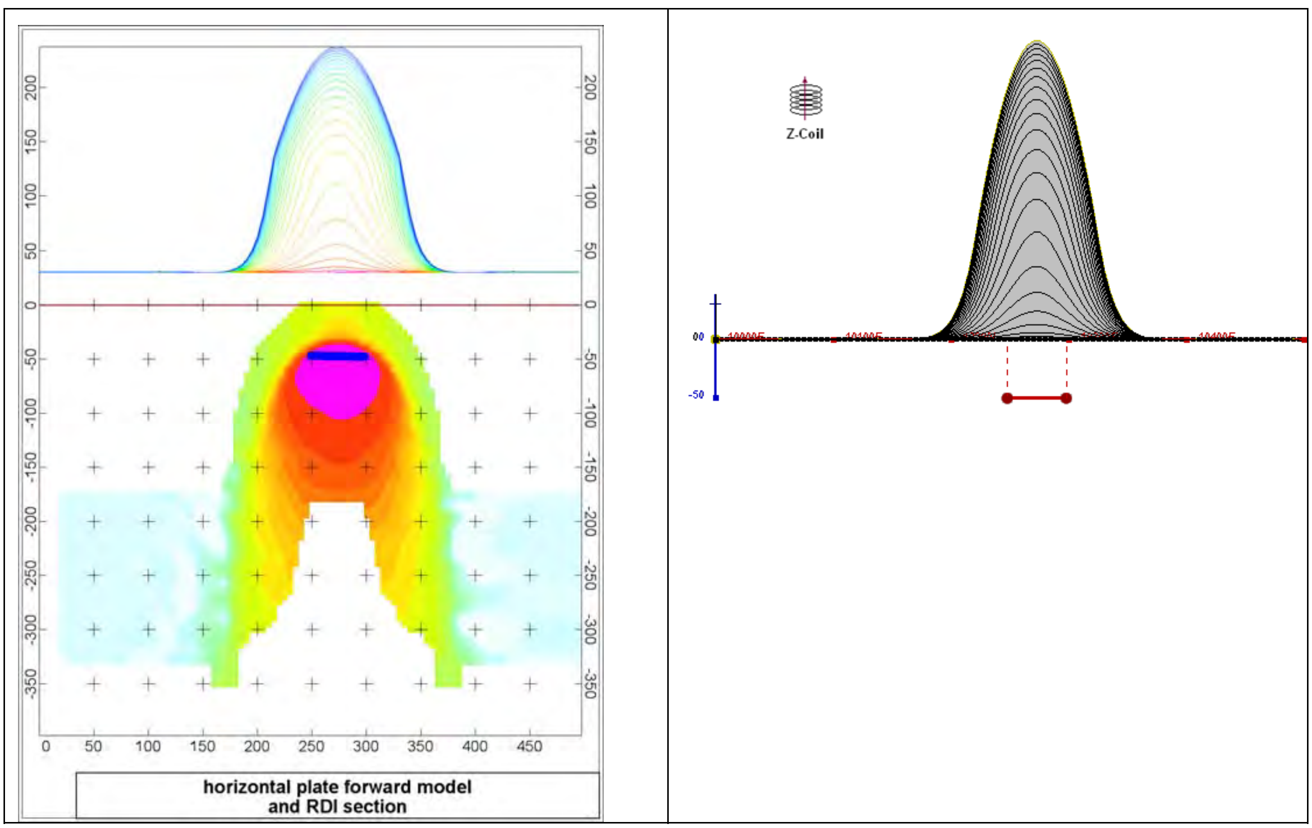
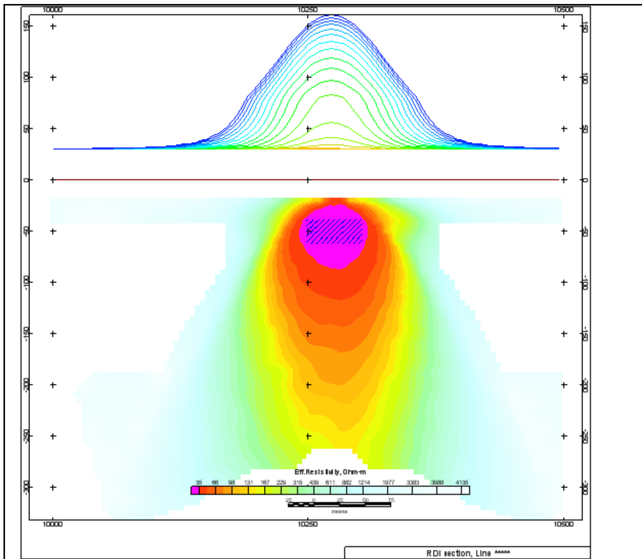


Figure F-5: Maxwell plate model and RDI from the calculated response for horizontal thin plate (depth 50 m, dim 50x100 m). 15-44 chan.



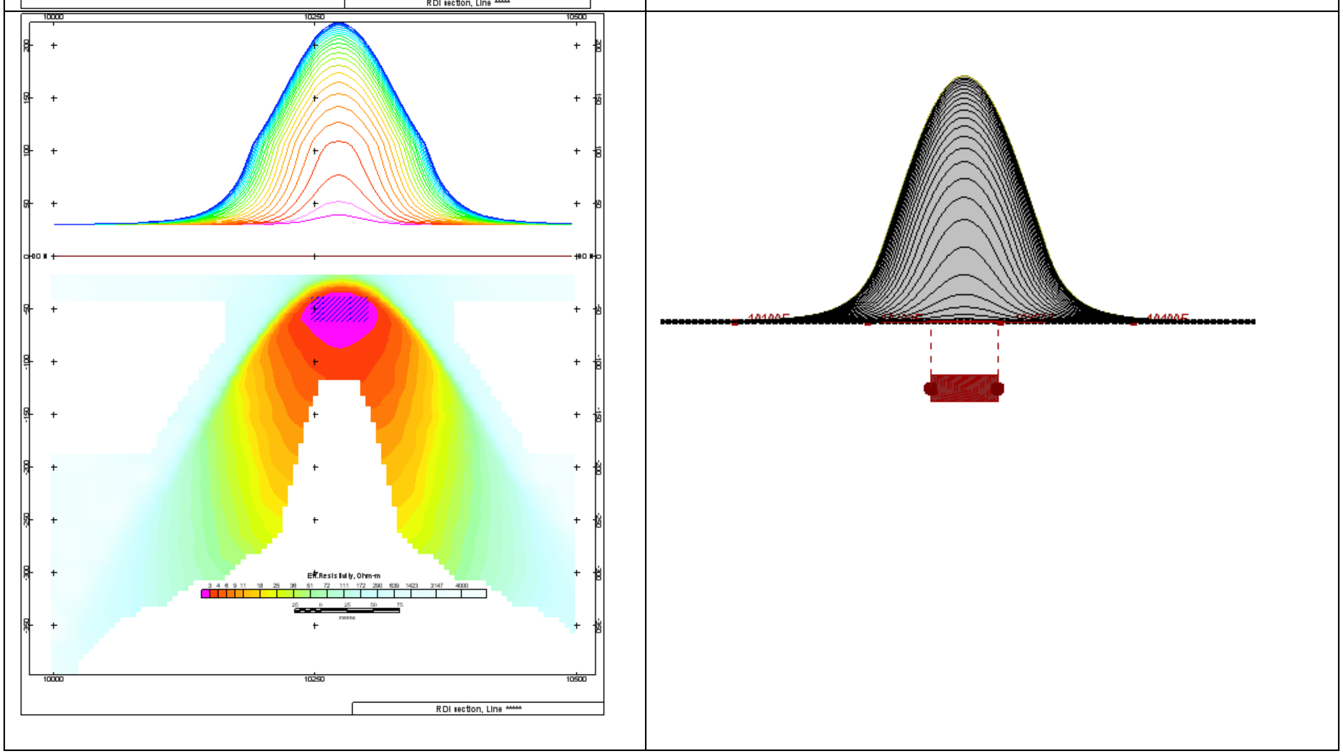


Figure F-6: Maxwell plate model and RDI from the calculated response for horizontal thick (20m) plate – less conductive (on the top), more conductive (below)

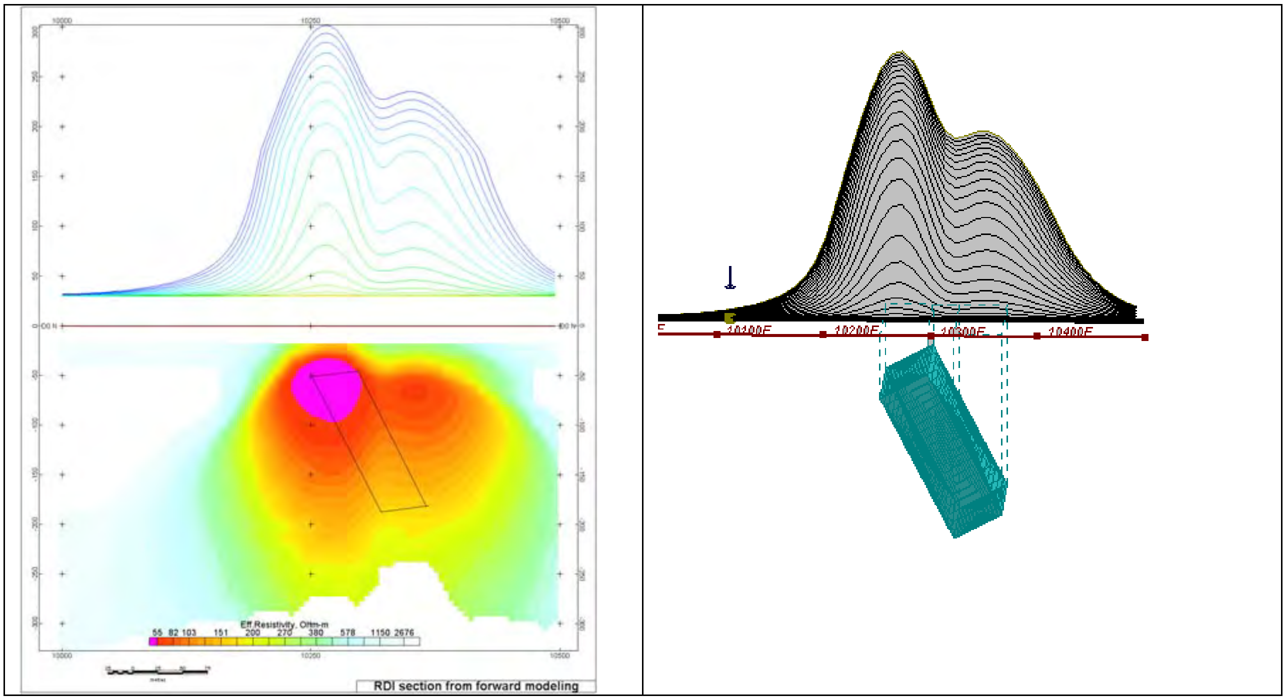


Figure F-7: Maxwell plate model and RDI from the calculated response for inclined thick (50m) plate. Depth extends 150 m, depth to the target 50 m.

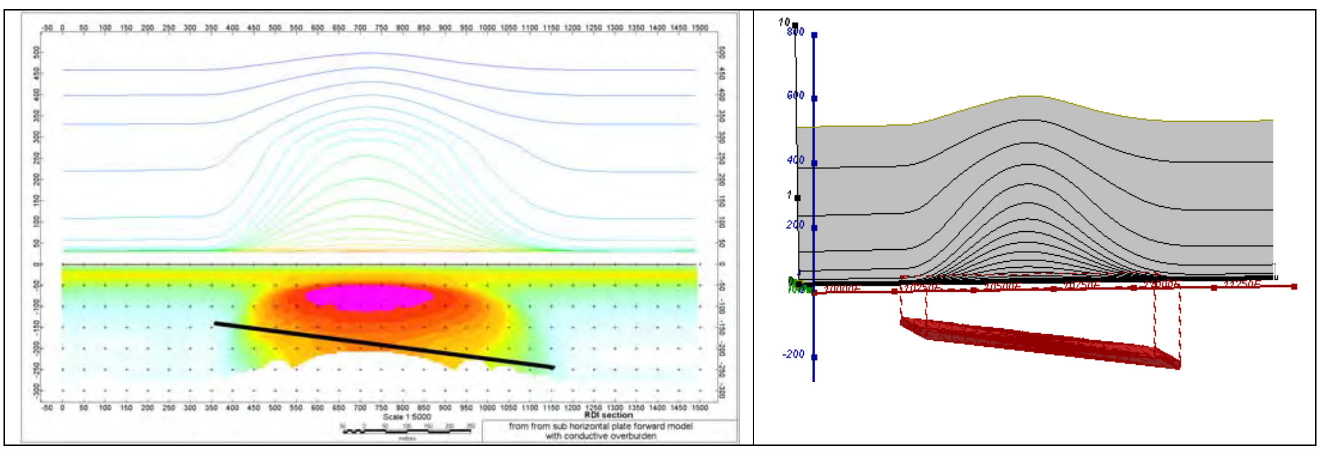


Figure F-8: Maxwell plate model and RDI from the calculated response for the long, wide and deep subhorizontal plate (depth 140 m, dim 25x500x800 m) with conductive overburden.

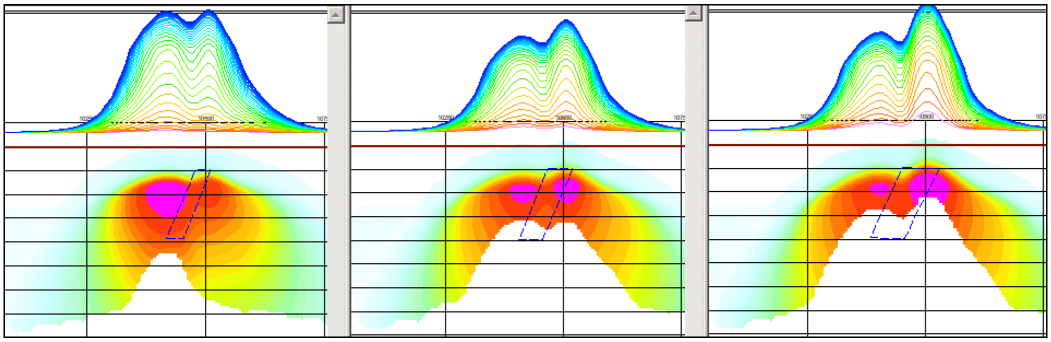


Figure F-9: Maxwell plate models and RDIs from the calculated response for “thick” dipping plates (35, 50, 75 m thickness), depth 50 m, conductivity 2.5 S/m.

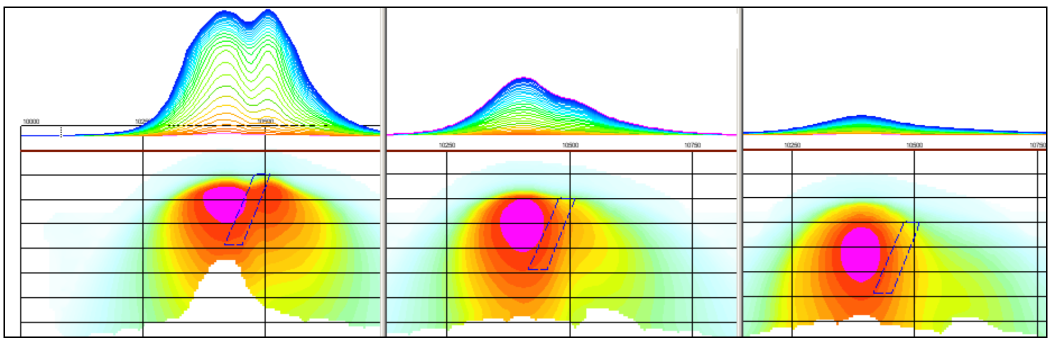


Figure F-10: Maxwell plate models and RDIs from the calculated response for “thick” (35 m thickness) dipping plate on different depth (50, 100, 150 m), conductivity 2.5 S/m.

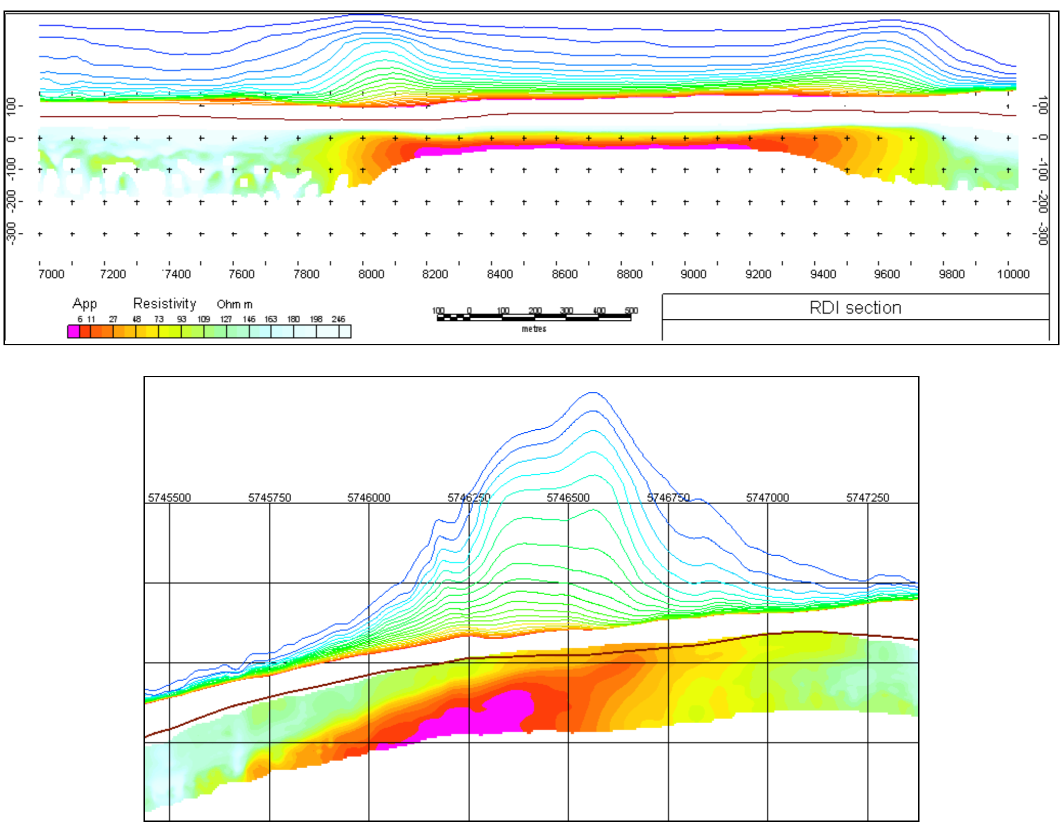
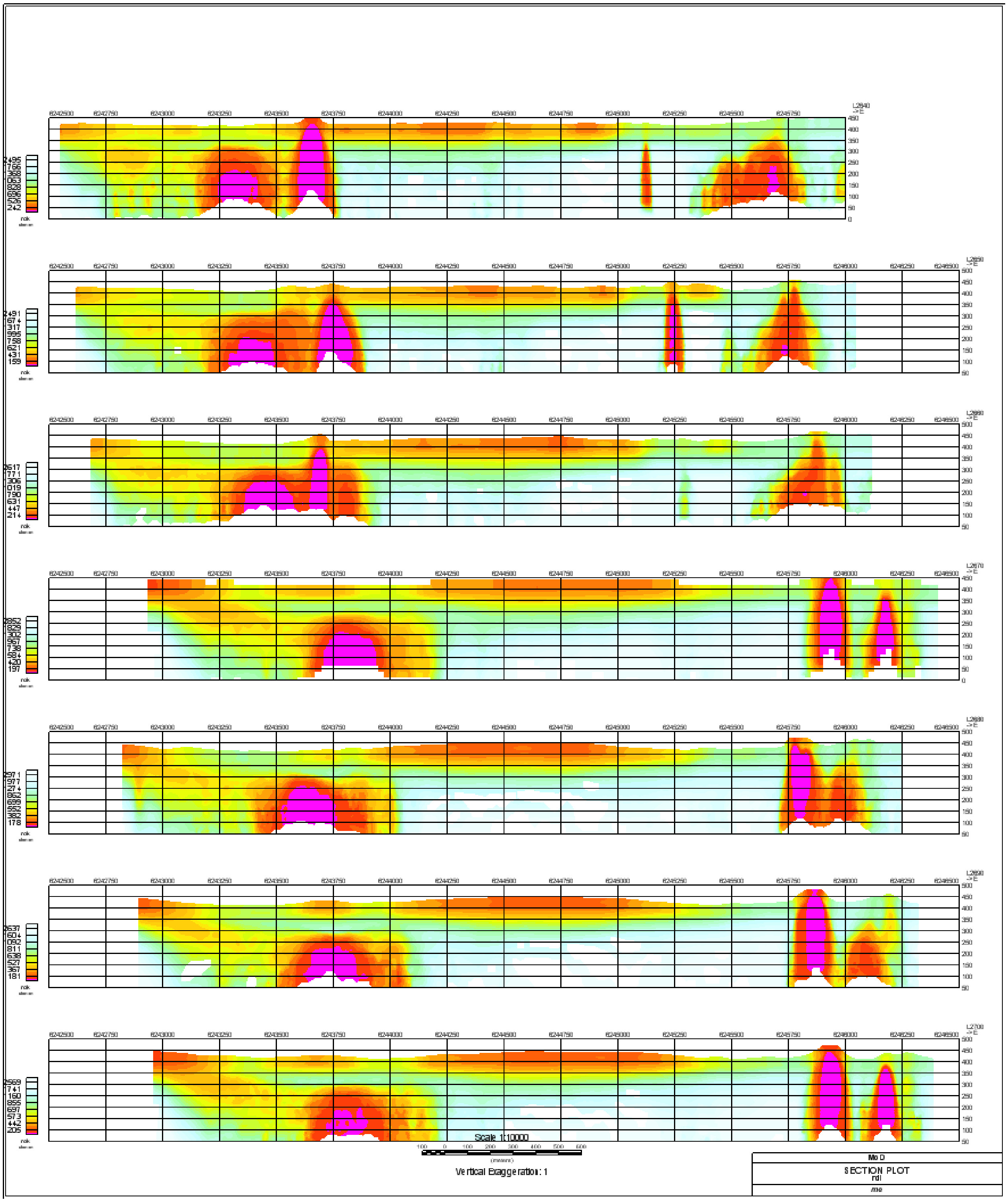


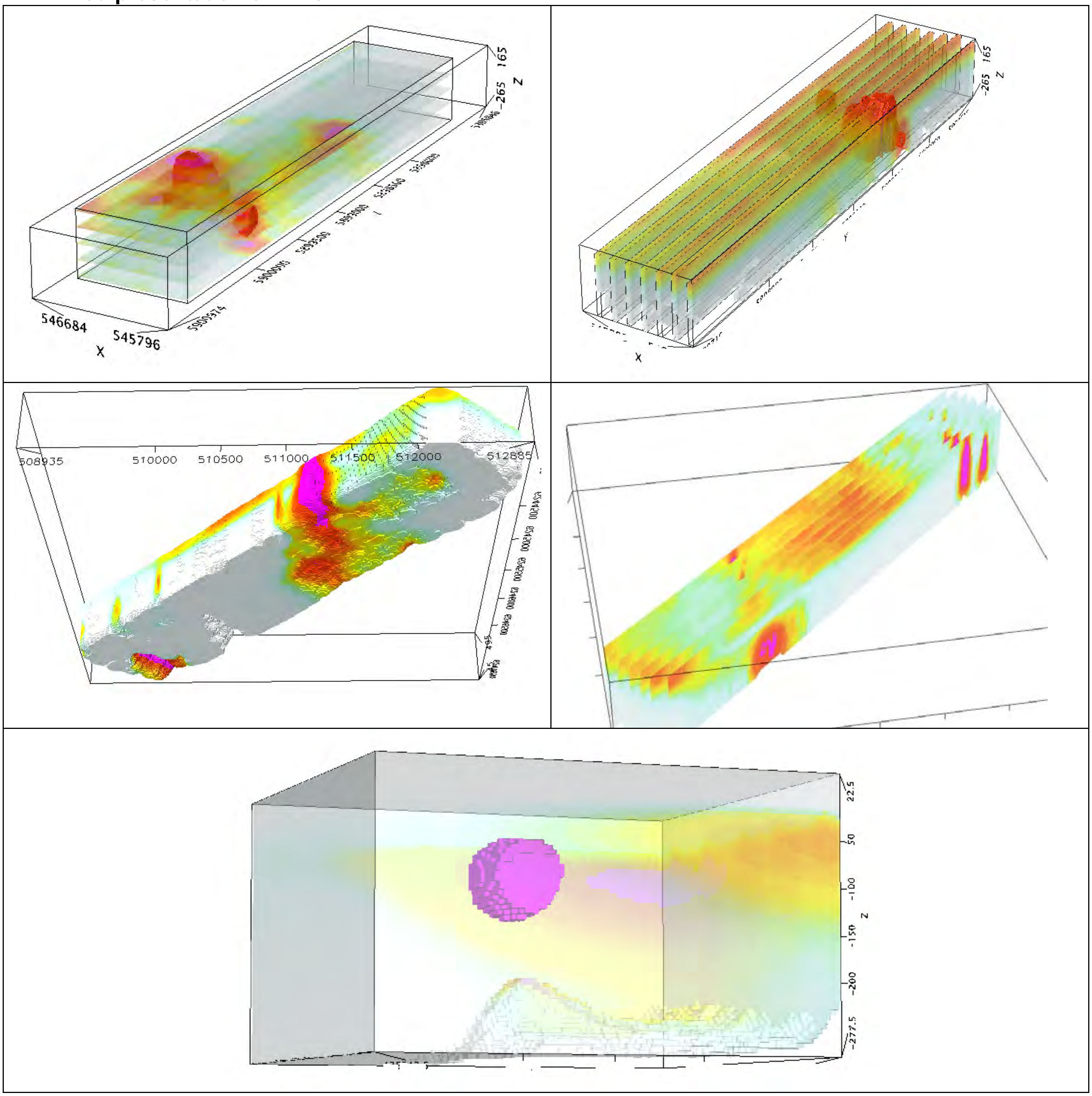
Figure F-11: RDI section for the real horizontal and slightly dipping conductive layers

FORMS OF RDI PRESENTATION

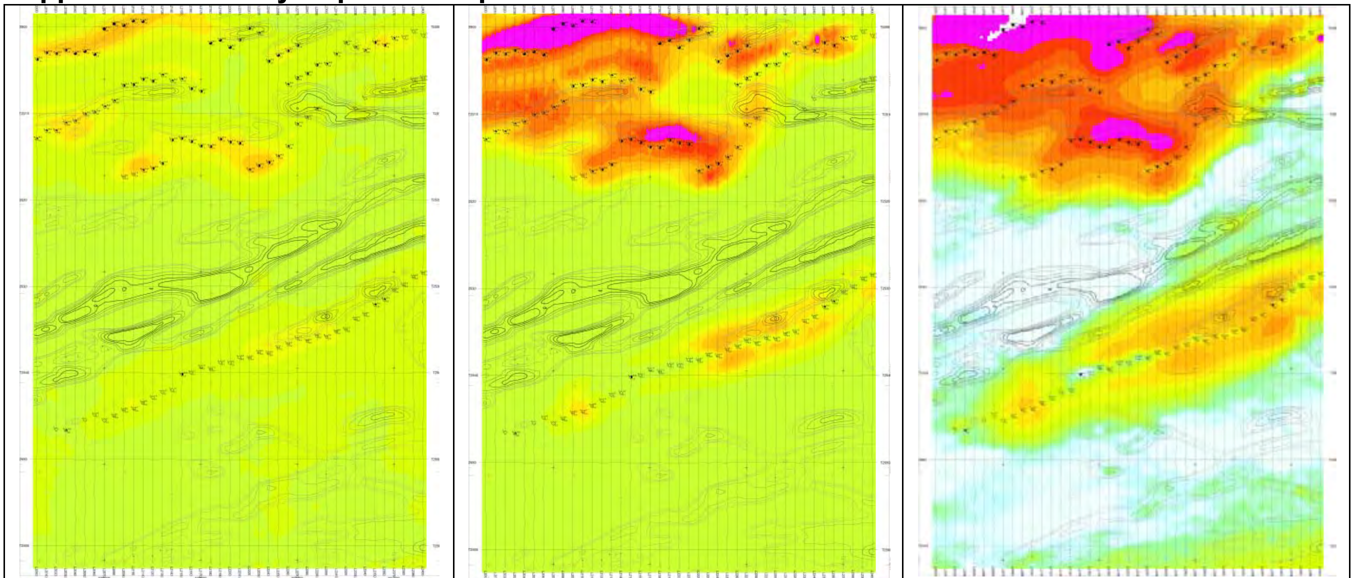
Presentation of series of lines



3d presentation of RDIs

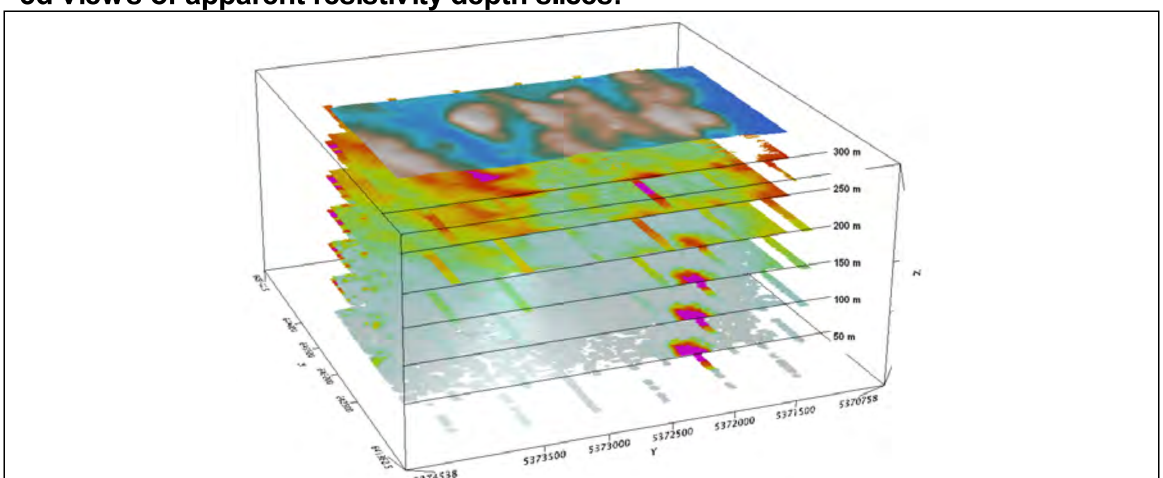


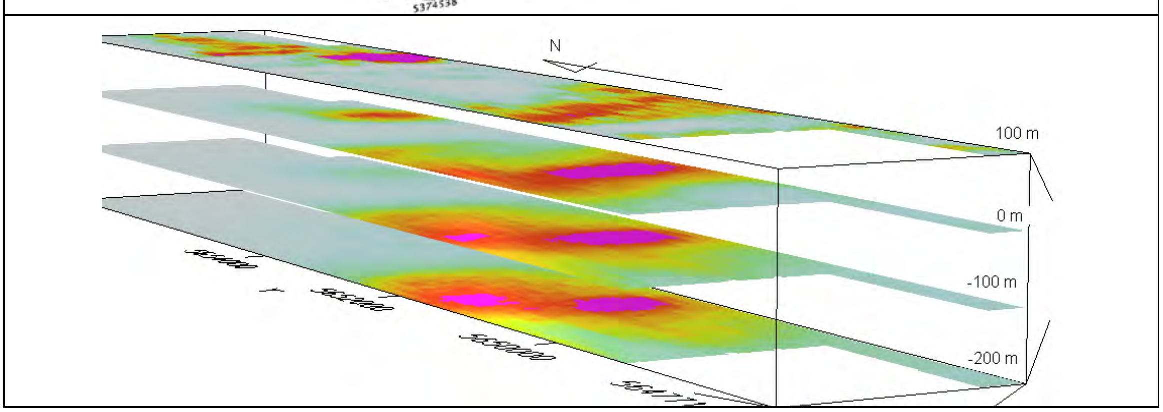
Apparent Resistivity Depth Slices plans:



0 m (surface)	-100 m	-200 m

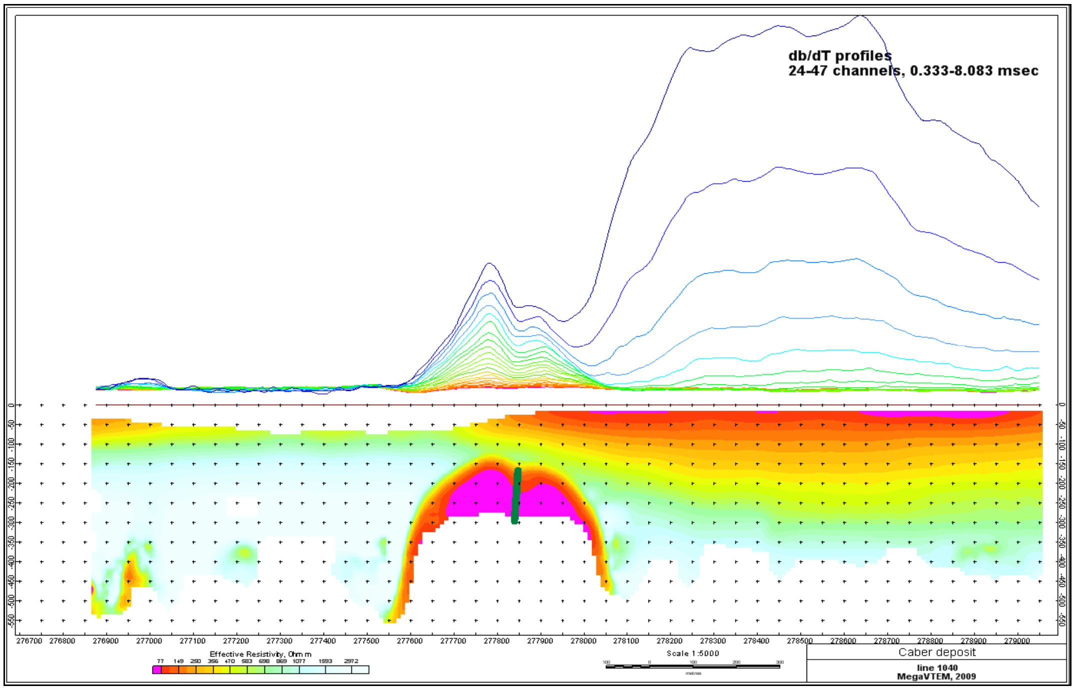
3d views of apparent resistivity depth slices:



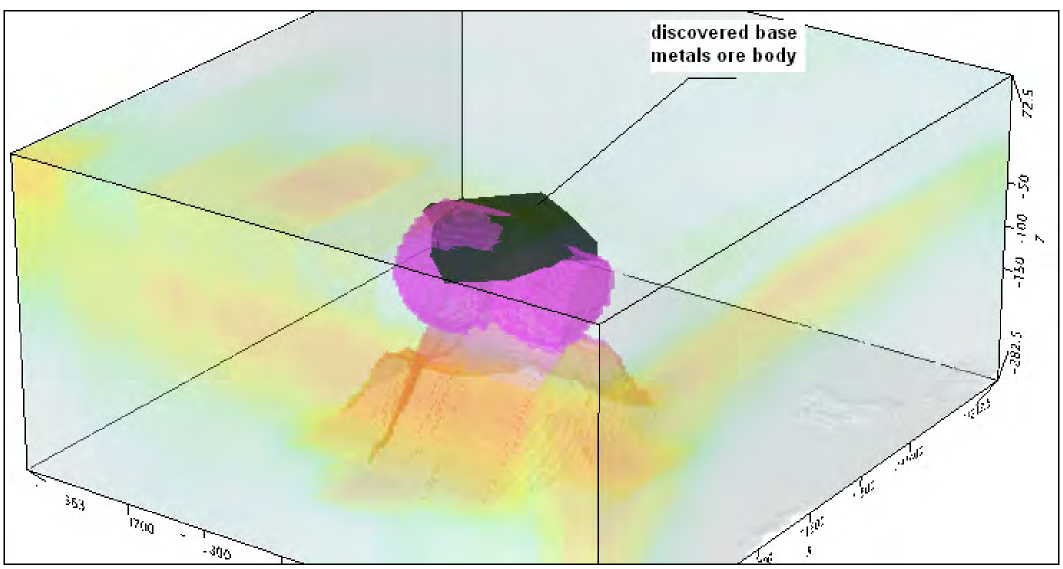


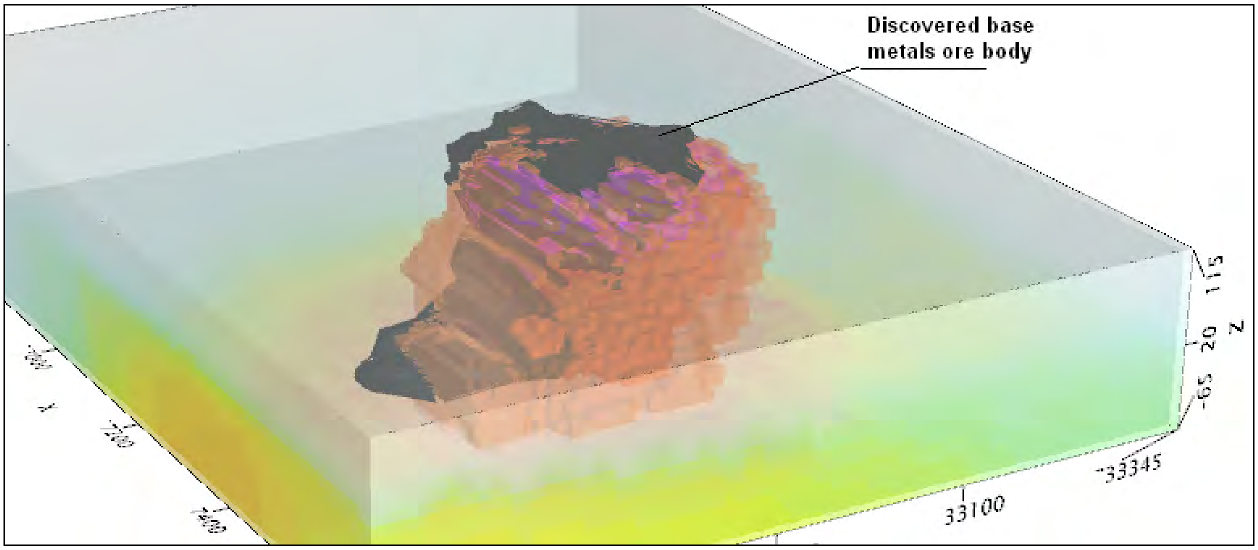
Real base metal targets in comparison with RDIs:

RDI section of the line over Caber deposit ("thin" subvertical plate target and conductive overburden.



3d RDI voxels with base metals ore bodies (Middle East):





Alexander Prikhodko, PhD, P.Geo
Geotech Ltd.
April 2011

GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

GEOPHYSICAL SURVEYS

The results of EMIT Maxwell® Plate Modeling of selected VTEM anomaly

From

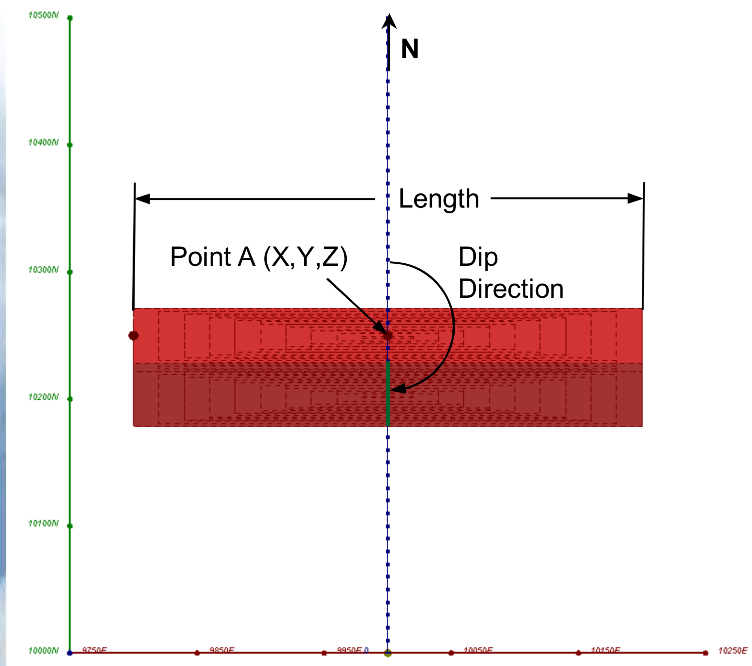
East Block, Grenville, Quebec

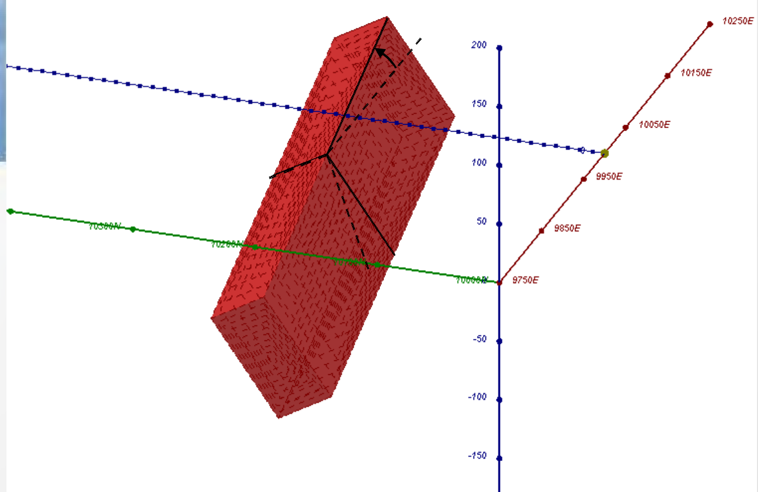
for

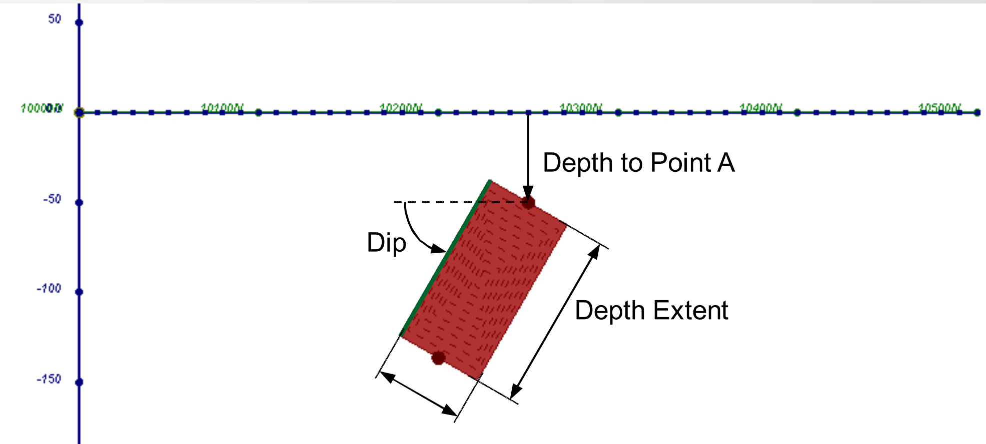
Canada Carbon Inc.

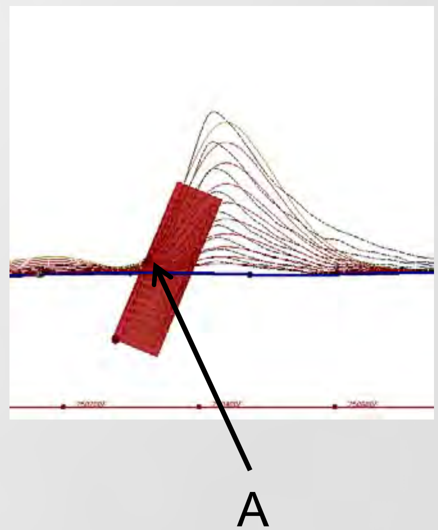
VTEM survey 2013, Job GL130281

Maxwell Model Parameters conventional terms







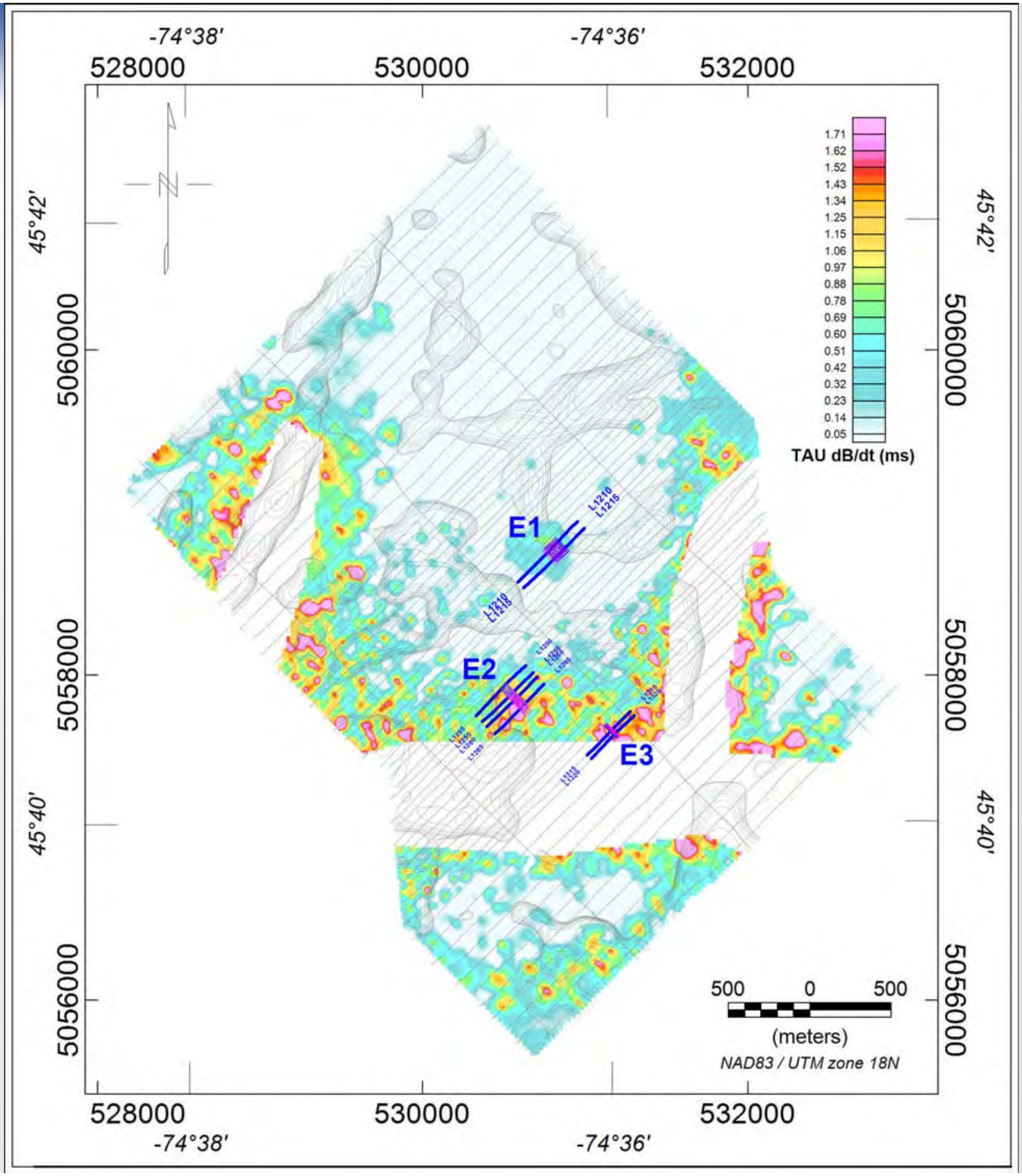


(X, Y) refers to Center Top of the Plate projected to surface, i.e. point A.

Target Plate Parameters

Parameter		Units
X		Meters
Y		Meters
Z		Meters
Depth to Point A		Meters
Dip		Degrees
Dip Direction		Degrees
Rotation		Degrees
Length		Meters
Depth Extent		Meters
Conductivity-Thickness		Siemens
Conductivity		Siemens/Meter
Thickness		Meters

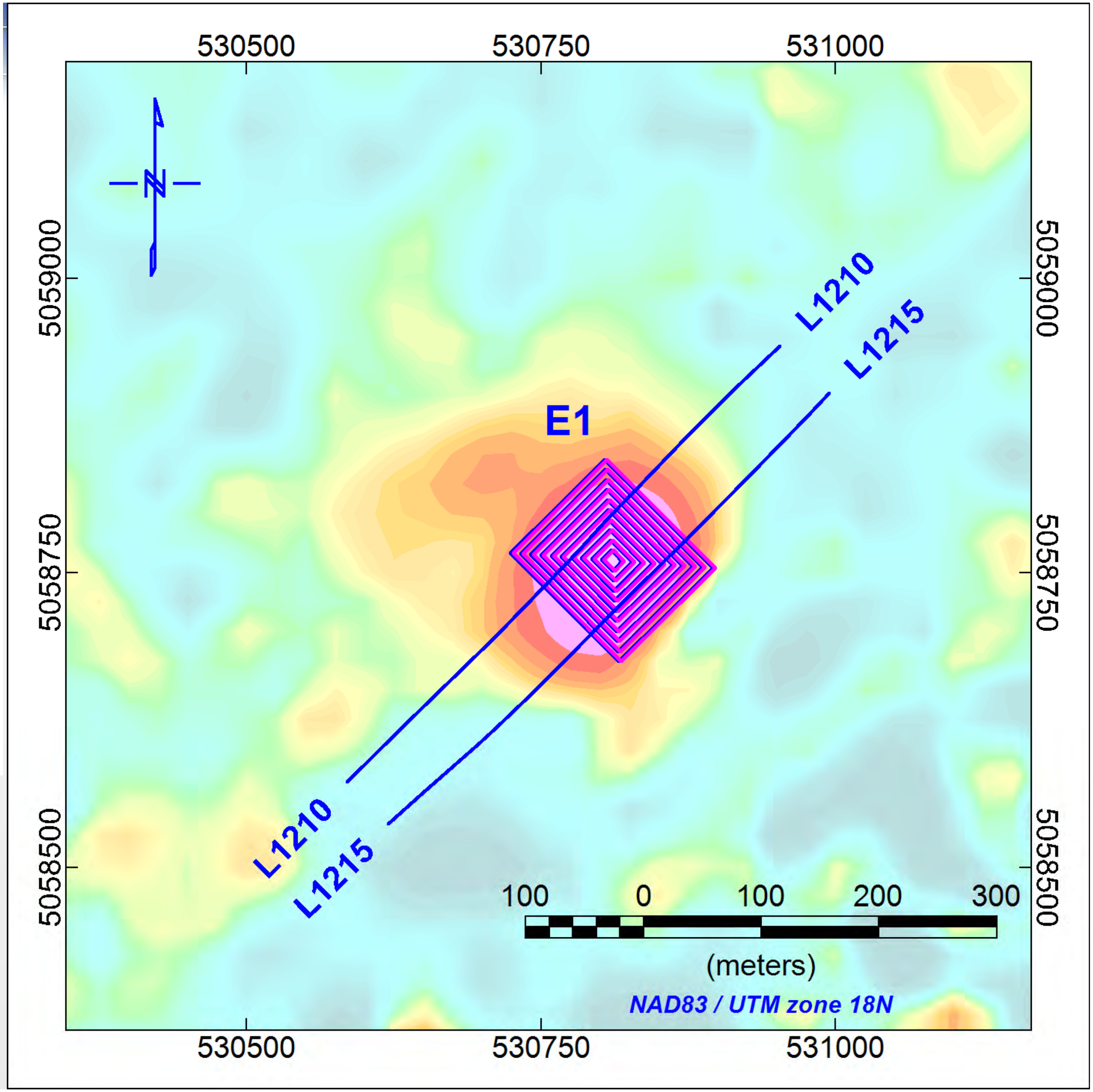
All X and Y Coordinates are projected using **NAD83 / UTM zone 18N**

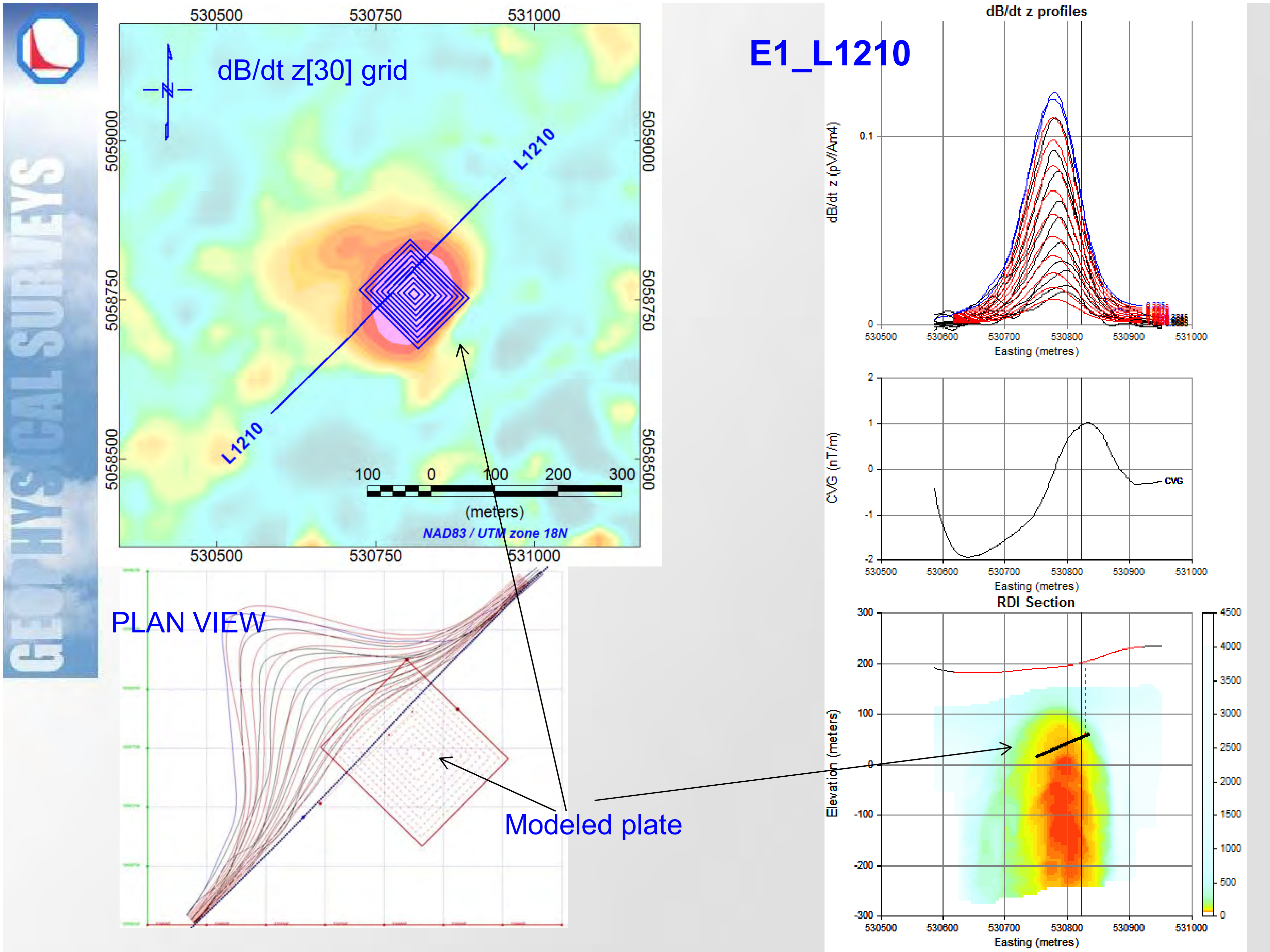


Modeled survey lines and targets projected on TAU-CVG map. 8 lines over 3 targets were selected for modeling

Two lines were modeled for target "E1". The results show that the target is a 130*120 m^2 plate similar conductor dips to SW at 20 degrees angle, with depth to surface about 140 meters.

Middle time channels (CH23-33) used for modeling. Modeled response fits measured data very well.





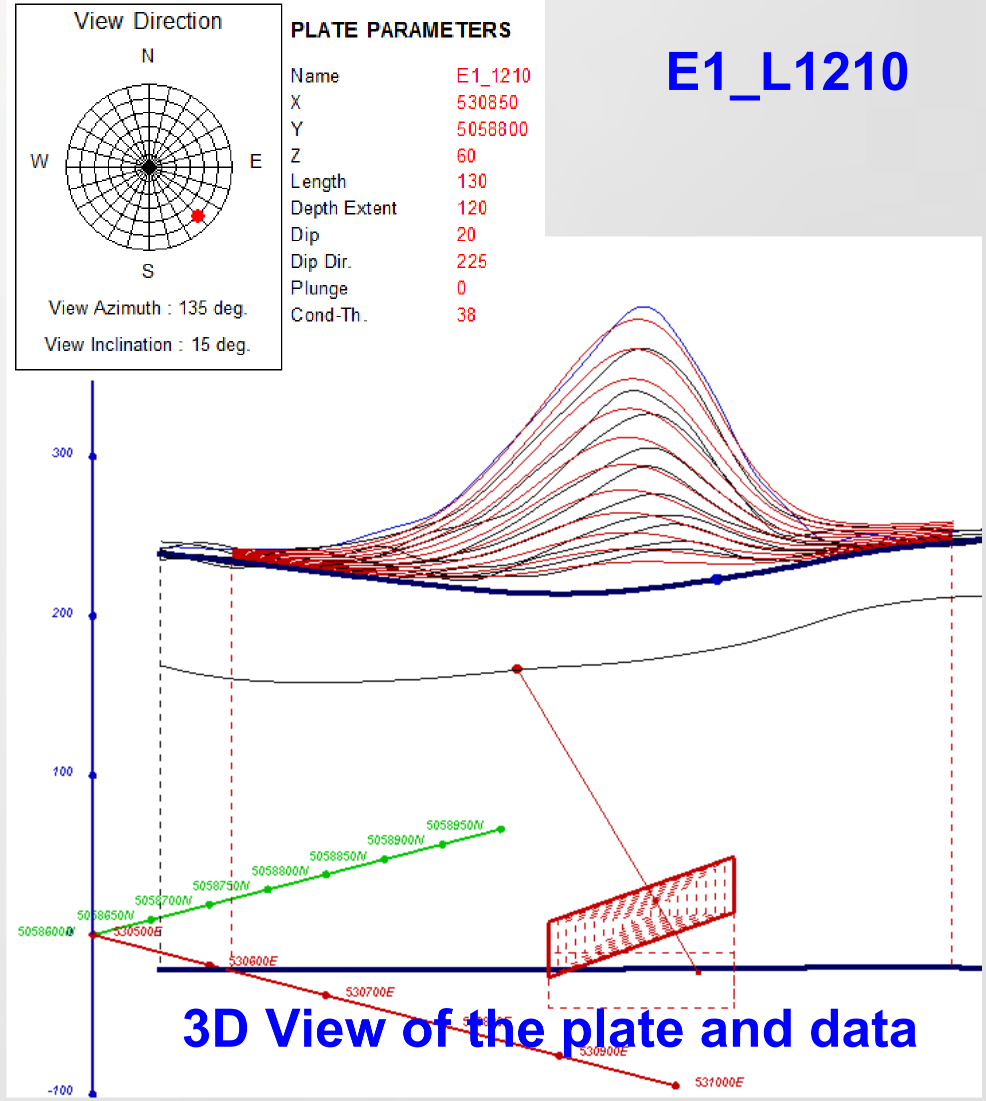
E1_L1210
dB/dt z[30] grid
L1210
L1210
530500
530750
531000
5059000
5058750
5058500
100
0
100
200
300
(meters)
NAD83 / UTM zone 18N
PLAN VIEW
Modeled plate
dB/dt z profiles
dB/dt z (pV/Am4)
Easting (metres)
CVG (nT/m)
CVG
RDI Section
Elevation (meters)
GEOPHYSICAL SURVEYS

GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

E1_L1210

Target Plate Parameters		
Parameter	E1_1210	**Units**
X	530850	Meters
Y	5058800	Meters
Z	60	Meters
Depth	-142.3	Meters
Dip	20	Degrees
Dip Direction	225	Degrees
Rotation	0	Degrees
Length	130	Meters
Depth Extent	120	Meters
Conductivity-Thickness	38	Siemens
Conductivity	-	Siemens/Meter
Thickness	-	Meters

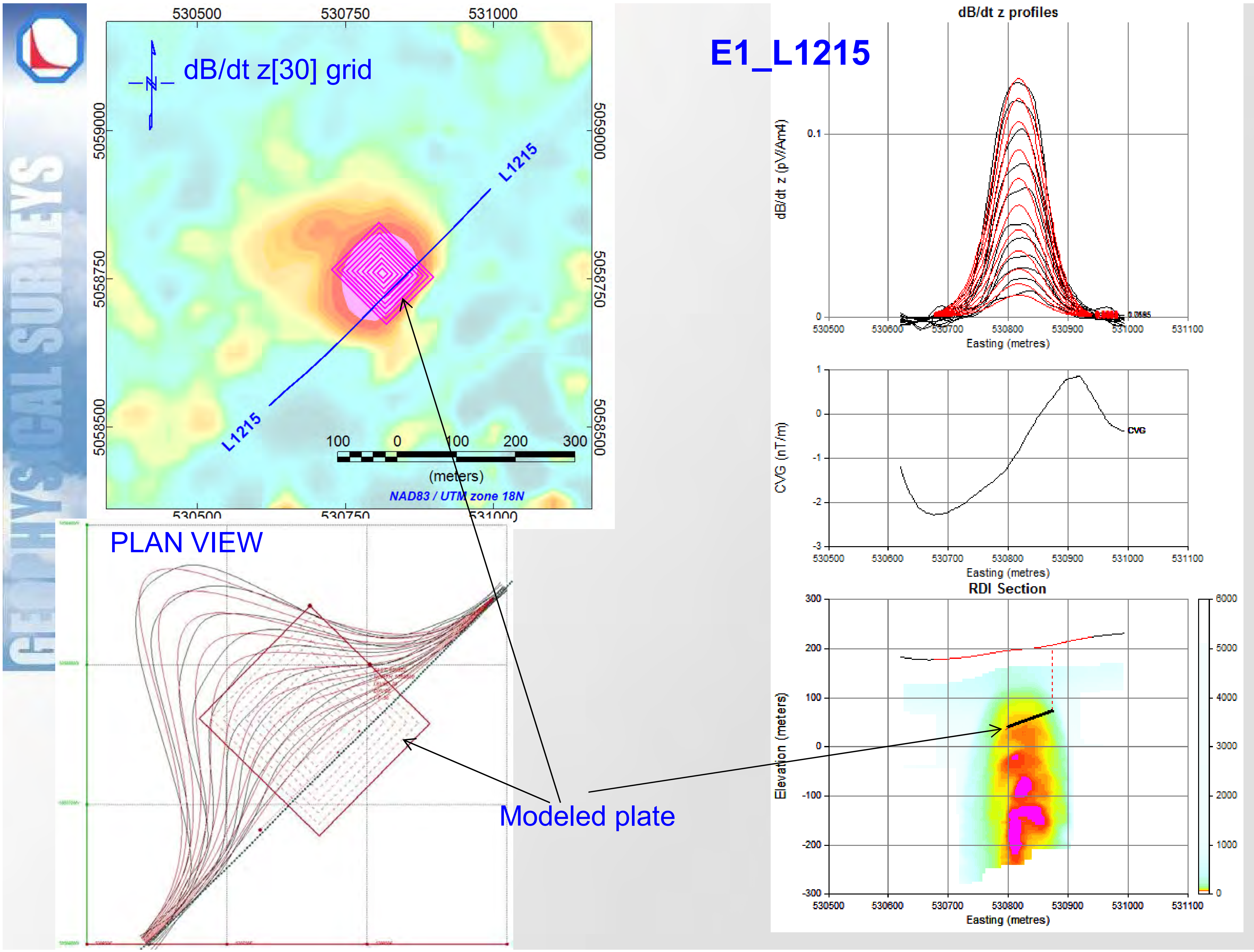
x,y,z— coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate



3D View of the plate and data

Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
530738.0	5058726.0	188.0	60	45	220

GEOPHYSICAL SURVEYS


E1_L1215
dB/dt z[30] grid
530500
530750
531000
5059000
5058750
5058500
L1215
L1215
100
0
100
200
300
(meters)
NAD83 / UTM zone 18N
PLAN VIEW
Modeled plate
dB/dt z profiles
dB/dt z (pV/Am4)
0.1
0
Easting (metres)
CVG (nT/m)
CVG
RDI Section
Elevation (meters)
300
200
100
0
-100
-200
-300
6000
5000
4000
3000
2000
1000
530500
530600
530700
530800
530900
531000
531100

GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

E1_L1215

Target Plate Parameters		
Parameter	E1_1215	**Units**
X	530852	Meters
Y	5058800	Meters
Z	70	Meters
Depth	-135.7	Meters
Dip	20	Degrees
Dip Direction	225	Degrees
Rotation	0	Degrees
Length	130	Meters
Depth Extent	120	Meters
Conductivity-Thickness	38	Siemens
Conductivity	-	Siemens/Meter
Thickness	-	Meters

x,y,z—- coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate

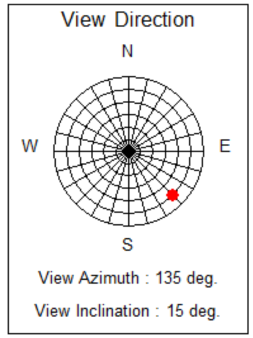
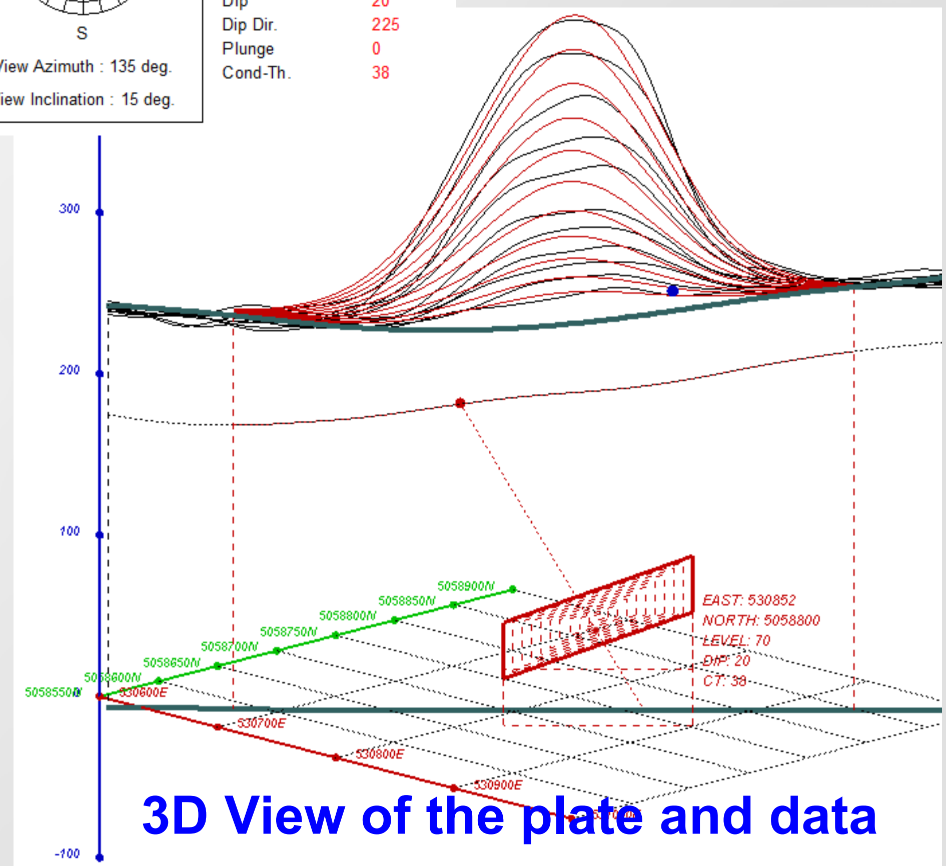


PLATE PARAMETERS

Name	E1_1215
X	530852
Y	5058800
Z	70
Length	130
Depth Extent	120
Dip	20
Dip Dir.	225
Plunge	0
Cond-Th.	38

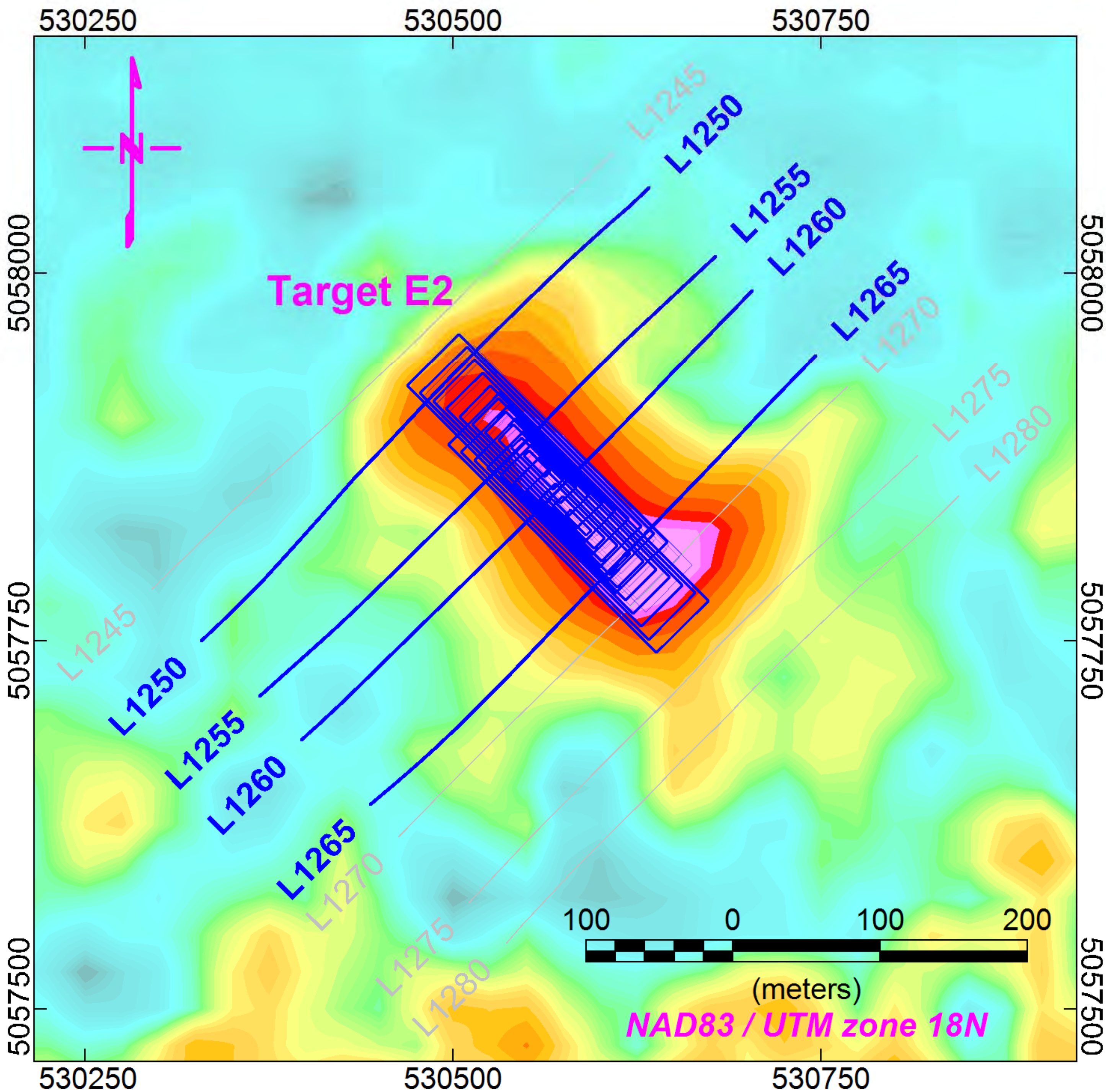


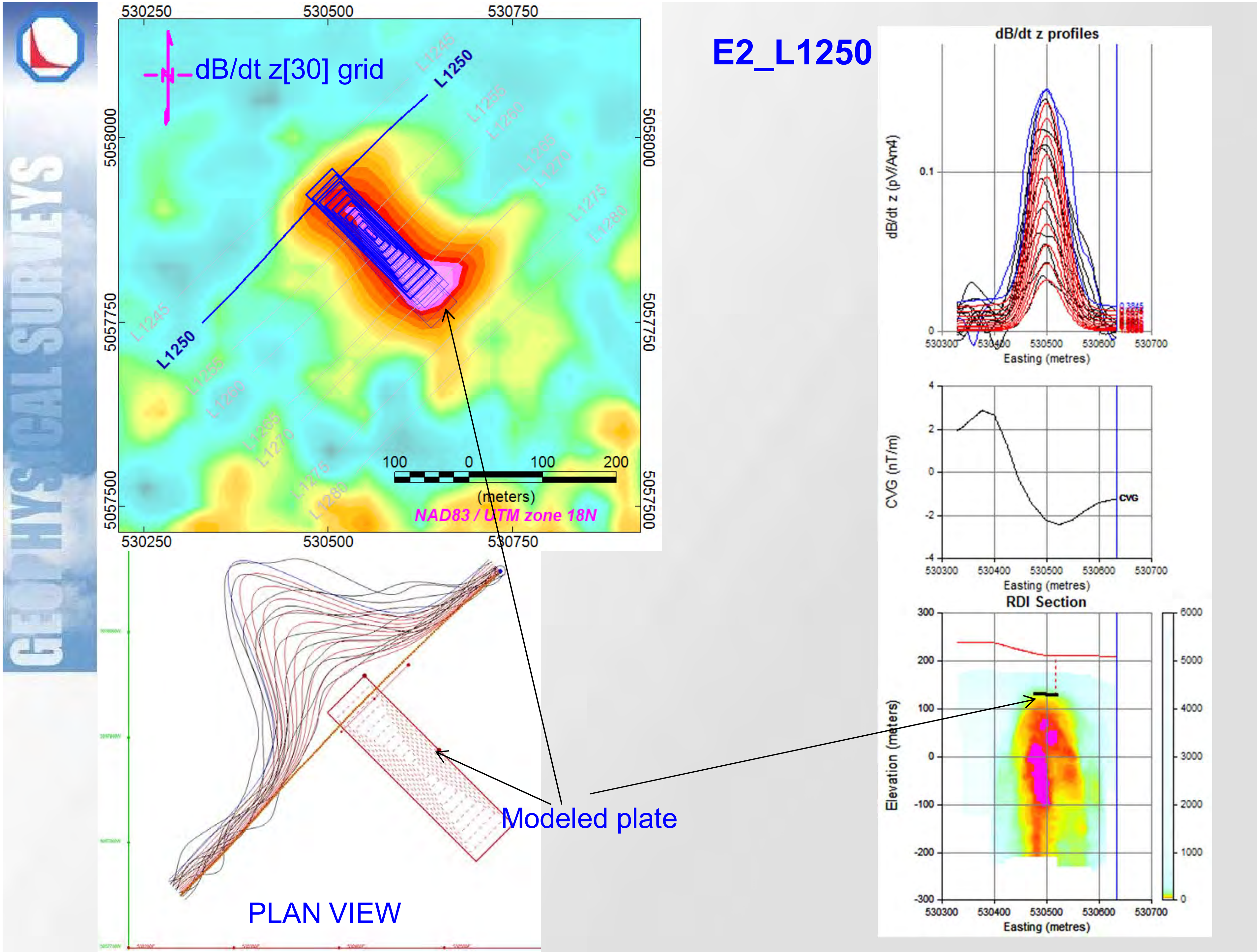
3D View of the plate and data

Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
530773.7	5058681.8	190.0	60	45	220

Four lines were modeled for target "E2". The results show that the target strikes NW for about 250 m. The top surface of the conductor is near horizontal with 45-50 m wide in NE direction, and 90m depth to ground surface.

Middle time channels (CH24-34) used for modeling. Modeled response fits measured data well.





GEOPHYSICAL SURVEYS
E2_L1250
dB/dt z[30] grid
L1250
NAD83 / UTM zone 18N
(meters)
dB/dt z profiles
dB/dt z (pV/Am4)
Easting (metres)
CVG (nT/m)
CVG
RDI Section
Elevation (meters)
Modeled plate
PLAN VIEW

GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

E2_L1250

Target Plate Parameters		
Parameter	L1250_E2	**Units**
X	530575	Meters
Y	5057888	Meters
Z	130	Meters
Depth	-80.2	Meters
Dip	-5	Degrees
Dip Direction	225	Degrees
Rotation	0	Degrees
Length	200	Meters
Depth Extent	50	Meters
Conductivity-Thickness	120	Siemens
Conductivity	-	Siemens/Meter
Thickness	-	Meters

x,y,z— coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate

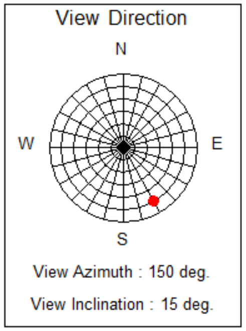
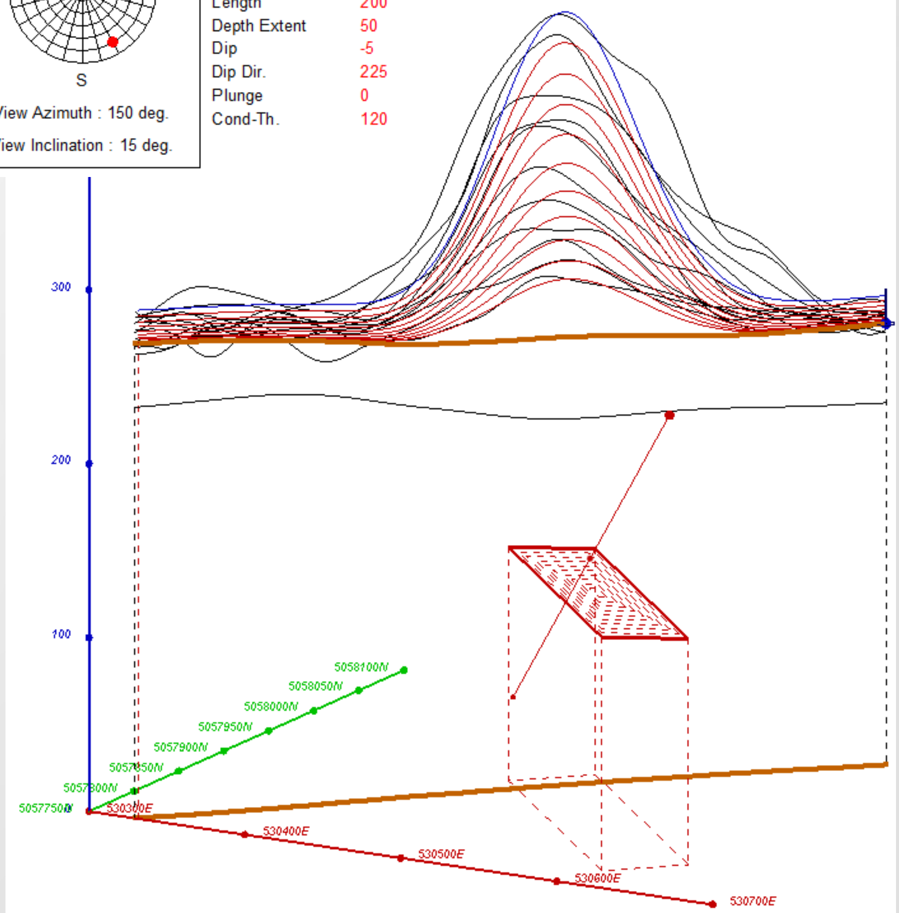


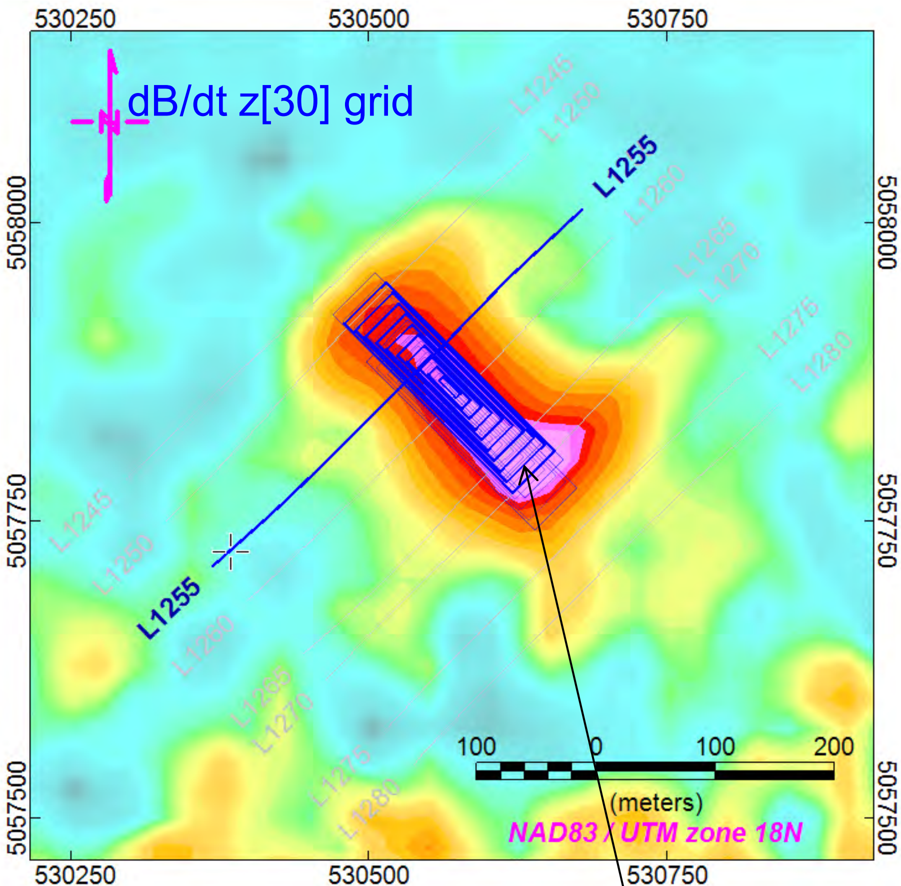
PLATE PARAMETERS

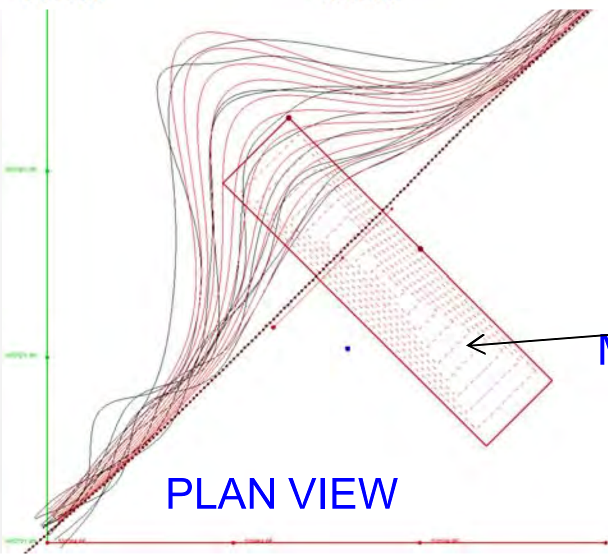
Name	L1250_E2
X	530575
Y	5057888
Z	130
Length	200
Depth Extent	50
Dip	-5
Dip Dir.	225
Plunge	0
Cond-Th.	120



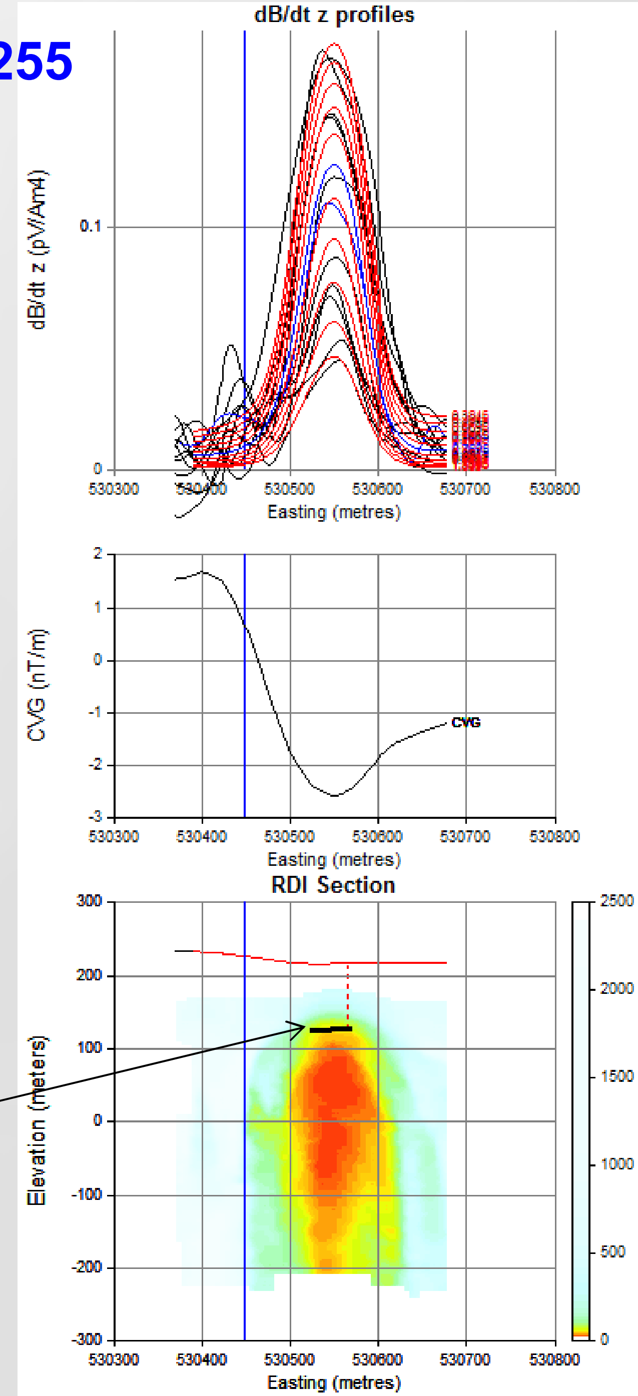
Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
530546	5057969	210	60	225	180

E2_L1255





Modeled plate



GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

GEOPHYSICAL SURVEYS

E2_L1255

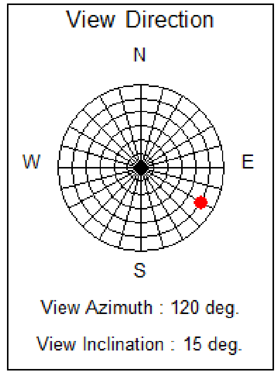


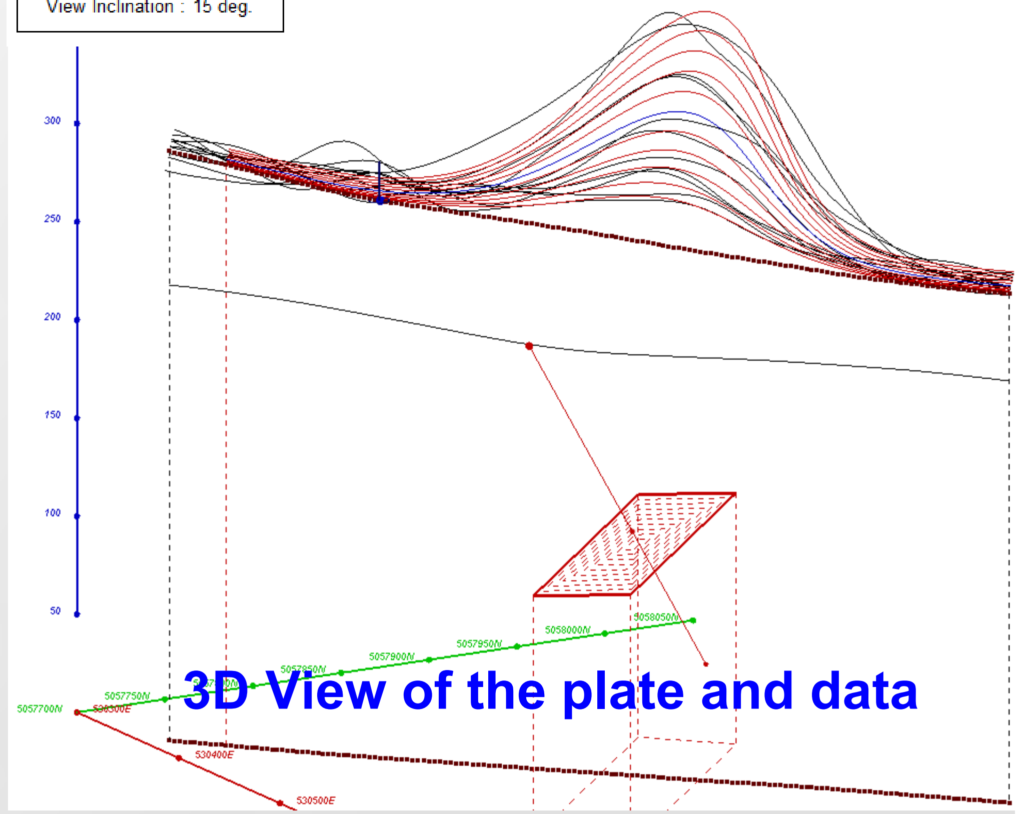
PLATE PARAMETERS

Name	L1255_E2
X	530585
Y	5057880
Z	128
Length	200
Depth Extent	50
Dip	5
Dip Dir.	225
Plunge	0
Cond-Th.	120

Target Plate Parameters

Parameter	L1255_E2	Units
X	530585	Meters
Y	5057880	Meters
Z	128	Meters
Depth	-87.4	Meters
Dip	5	Degrees
Dip Direction	225	Degrees
Rotation	0	Degrees
Length	200	Meters
Depth Extent	50	Meters
Conductivity-Thickness	120	Siemens
Conductivity	-	Siemens/Meter
Thickness	-	Meters

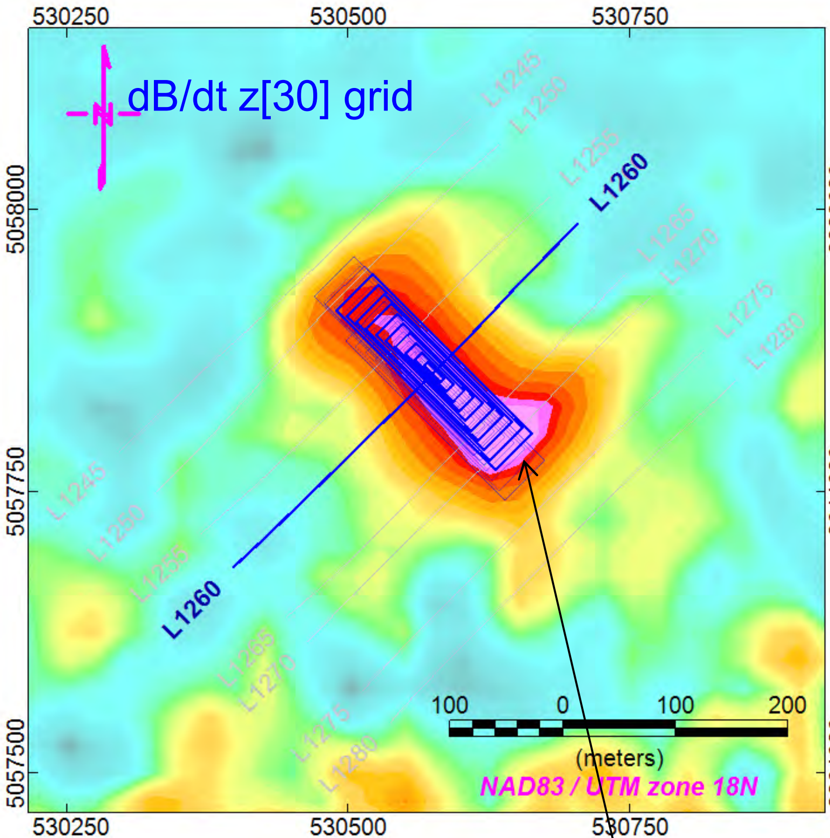
x,y,z–- coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate



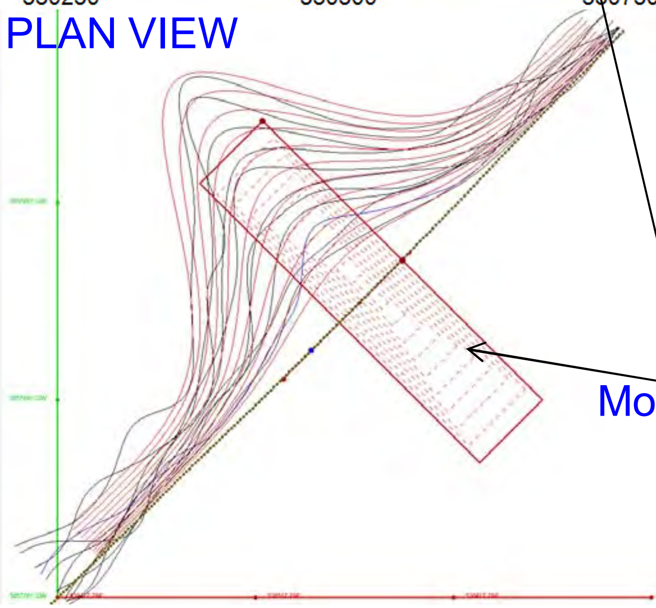
3D View of the plate and data

Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
530506	5057838	216	60	45	180

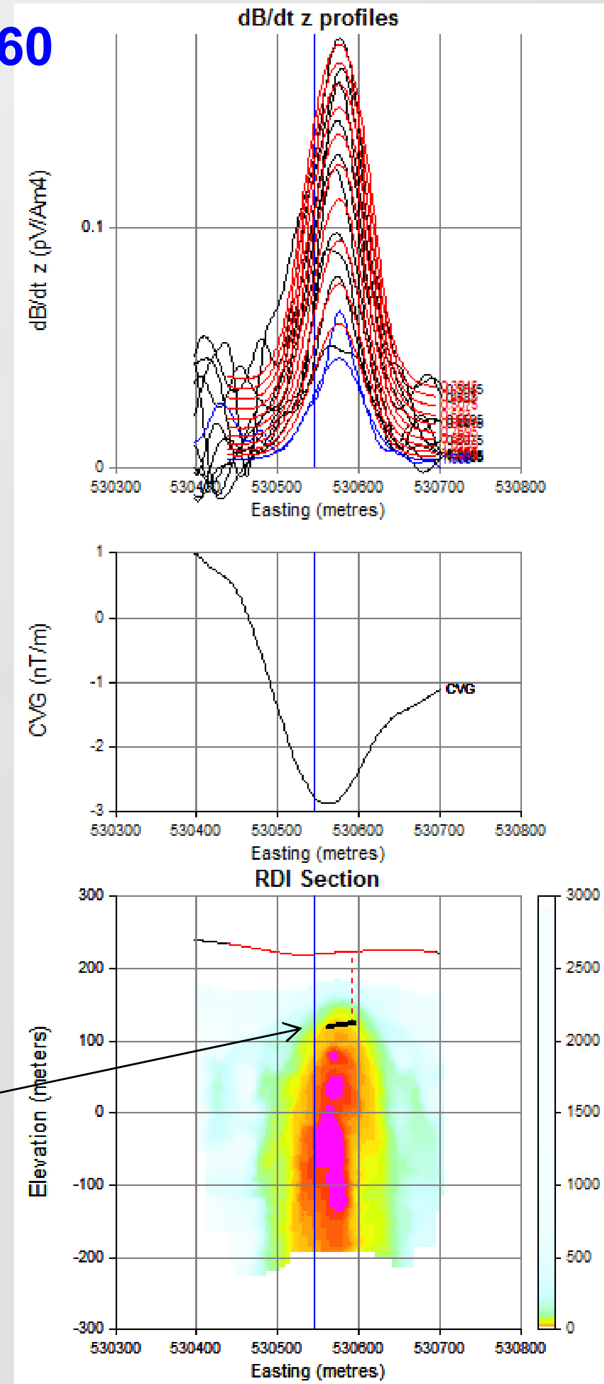
E2_L1260



PLAN VIEW



Modeled plate



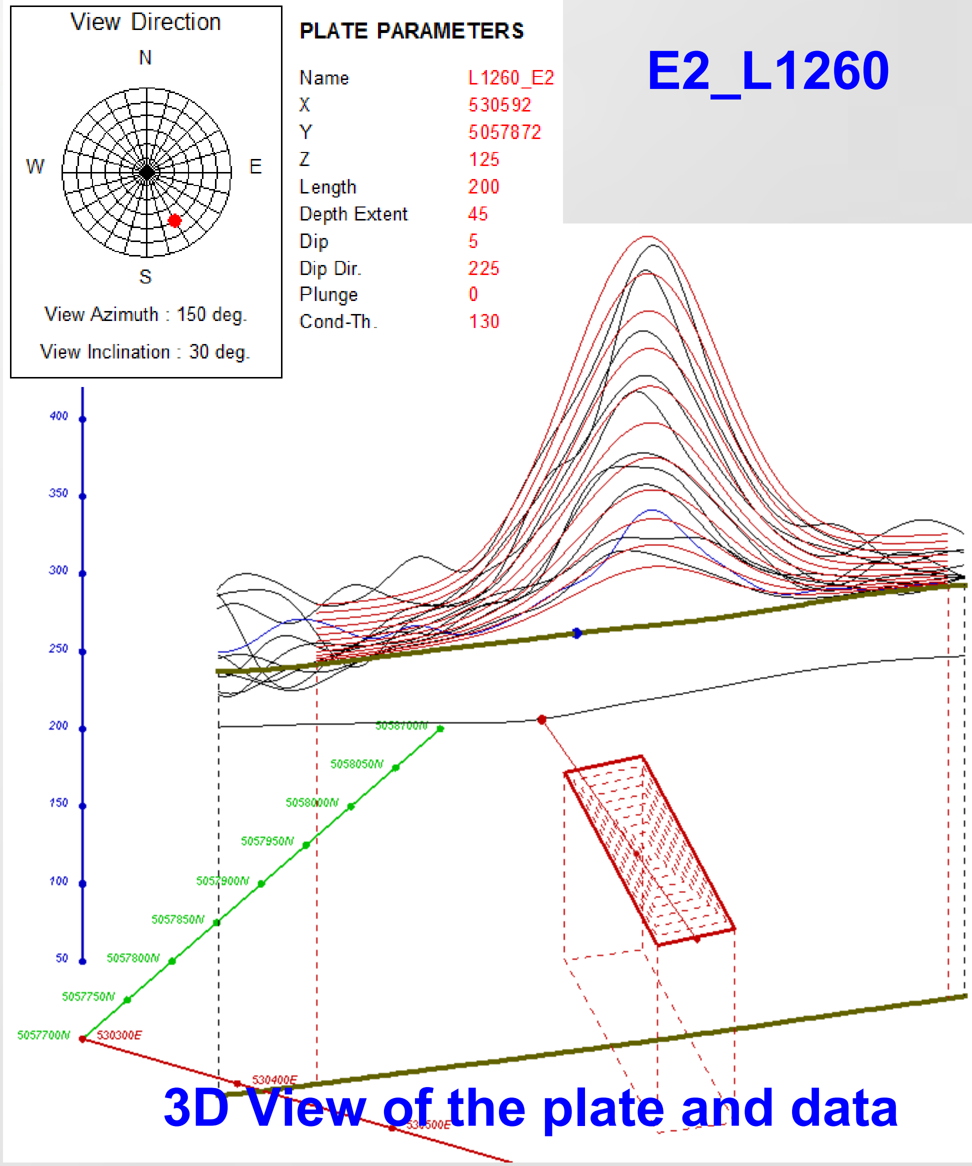
GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

GEOPHYSICAL SURVEYS

E2_L1260

Target Plate Parameters		
Parameter	L1260_E2	**Units**
X	530592	Meters
Y	5057872	Meters
Z	125	Meters
Depth	-96.5	Meters
Dip	5	Degrees
Dip Direction	225	Degrees
Rotation	0	Degrees
Length	200	Meters
Depth Extent	45	Meters
Conductivity-Thickness	130	Siemens
Conductivity	-	Siemens/Meter
Thickness	-	Meters

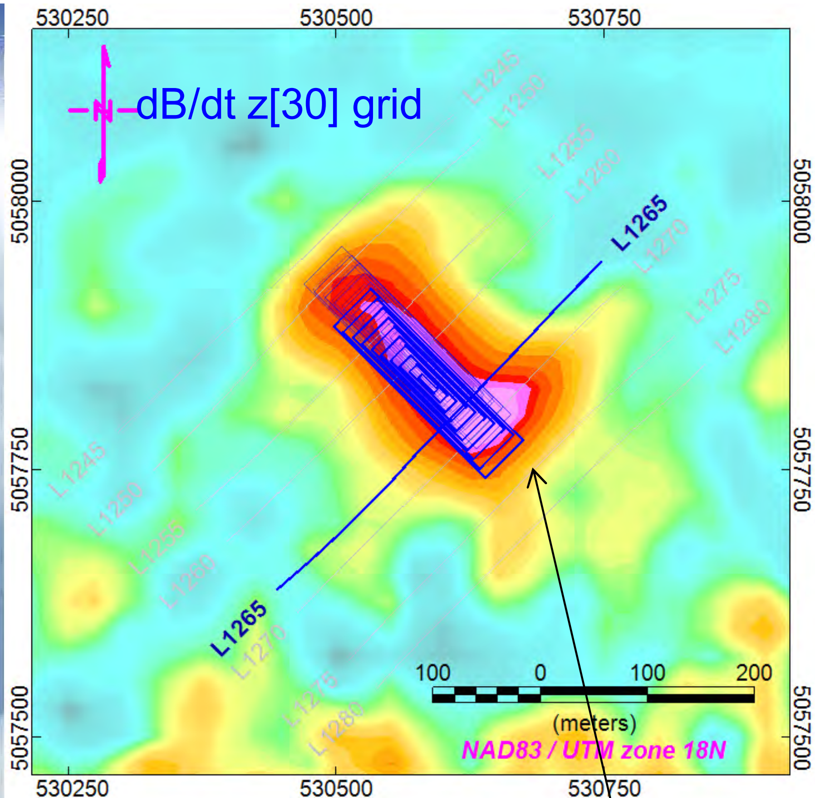
x,y,z— coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate

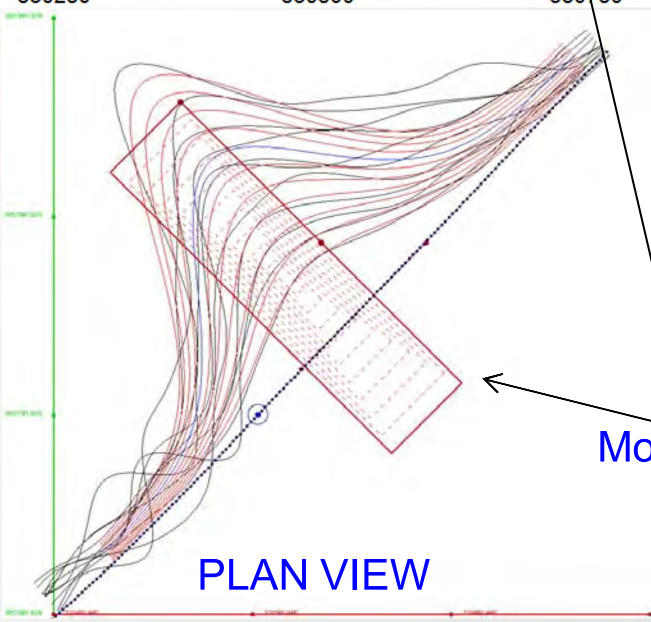


3D View of the plate and data

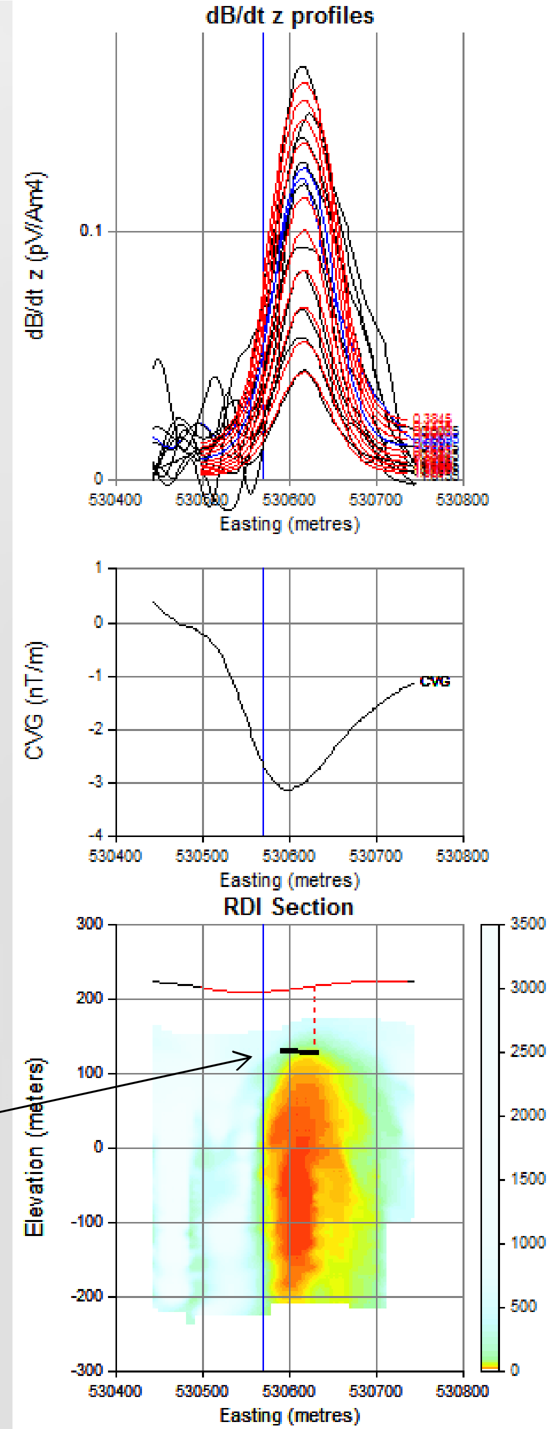
Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
530532	5057812	217	60	45	180

E2_L1265





Modeled plate

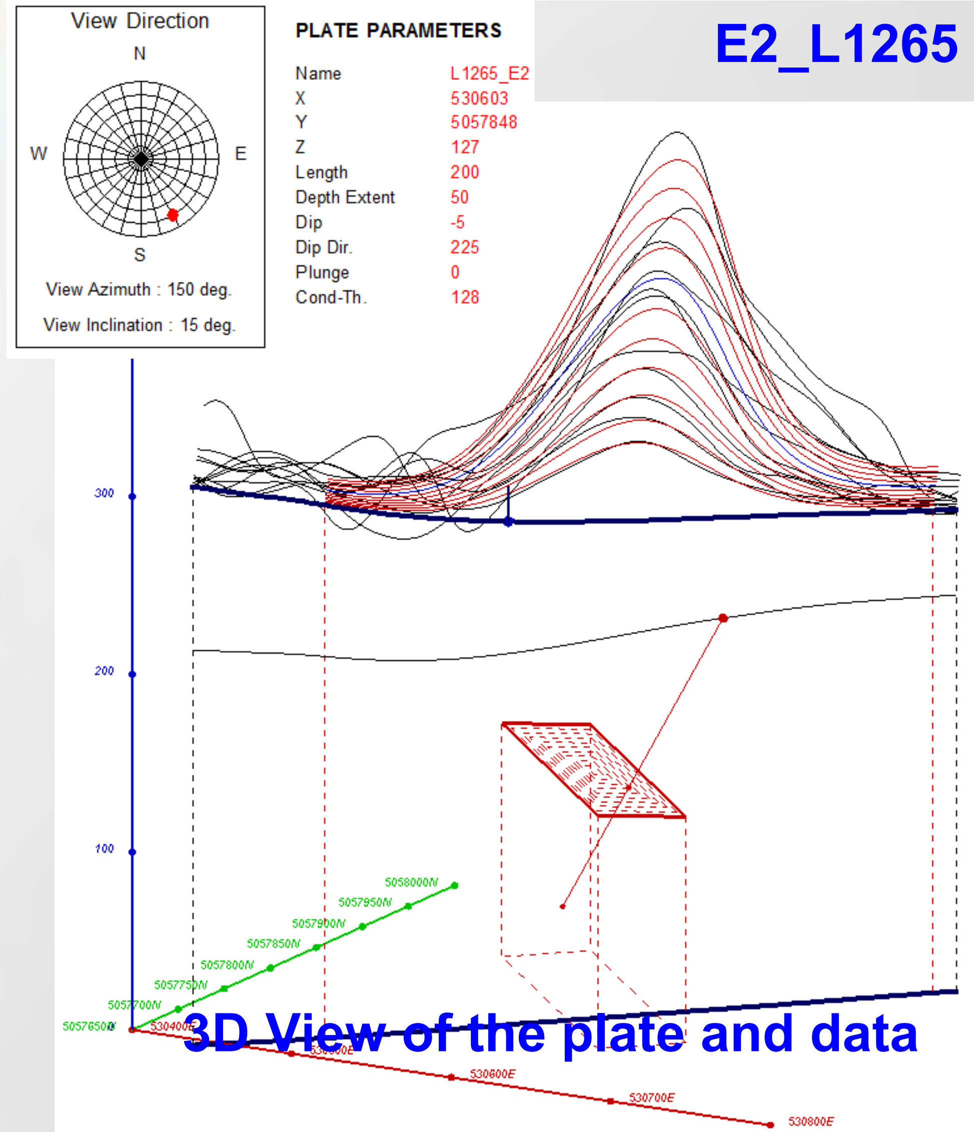


GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

E2_L1265

Target Plate Parameters		
Parameter	L1265_E2	**Units**
X	530603	Meters
Y	5057848	Meters
Z	127	Meters
Depth	-89.5	Meters
Dip	-5	Degrees
Dip Direction	225	Degrees
Rotation	0	Degrees
Length	200	Meters
Depth Extent	50	Meters
Conductivity-Thickness	128	Siemens
Conductivity	-	Siemens/Meter
Thickness	-	Meters

x,y,z— coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate

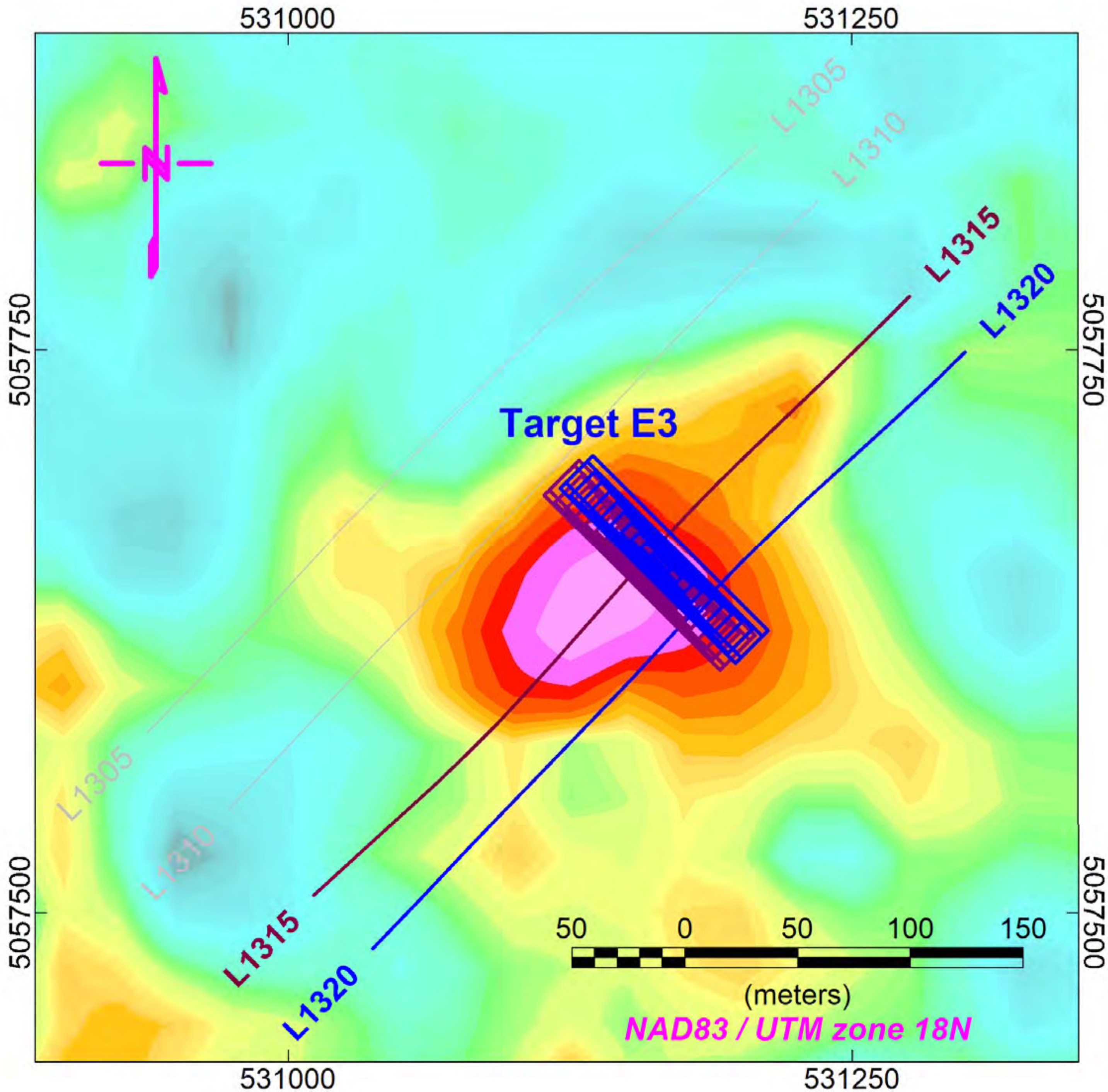


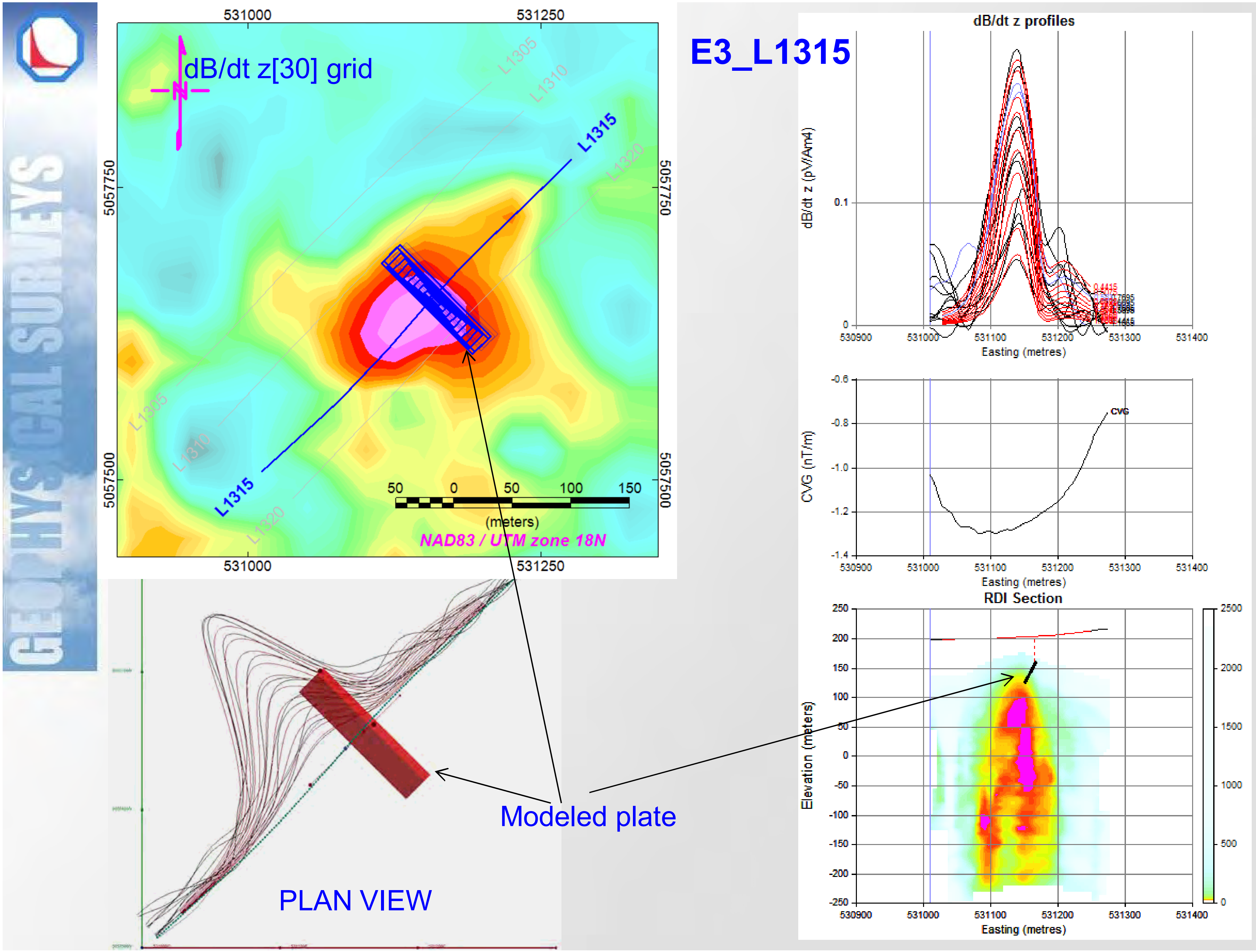
3D View of the plate and data

Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
530656	5057848	220	60	225	180

Two lines were modeled for target "E3". Based on the modeling results, it is a very conductive, steeply dipping conductor. The depth form ground surface to the top of the target is about 40 meters.

Middle time channels (CH24-34) used for modeling. Modeled response fits measured data well.




E3_L1315
GEOPHYSICAL SURVEYS
dB/dt z[30] grid
531000
531250
5057750
5057500
L1305
L1310
L1315
L1320
50 0 50 100 150
(meters)
NAD83 / UTM zone 18N
Modeled plate
PLAN VIEW
dB/dt z profiles
dB/dt z (pV/Am4)
Easting (metres)
CVG
CVG (nT/m)
RDI Section
Elevation (meters)

E3_L1315

Target Plate Parameters		
Parameter	L1315_E3	**Units**
X	531168	Meters
Y	5057662	Meters
Z	162	Meters
Depth	-40.7	Meters
Dip	62	Degrees
Dip Direction	225	Degrees
Rotation	0	Degrees
Length	110	Meters
Depth Extent	40	Meters
Conductivity-Thickness	189	Siemens
Conductivity	27	Siemens/Meter
Thickness	7	Meters

x,y,z— coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate

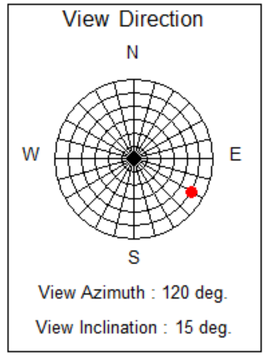
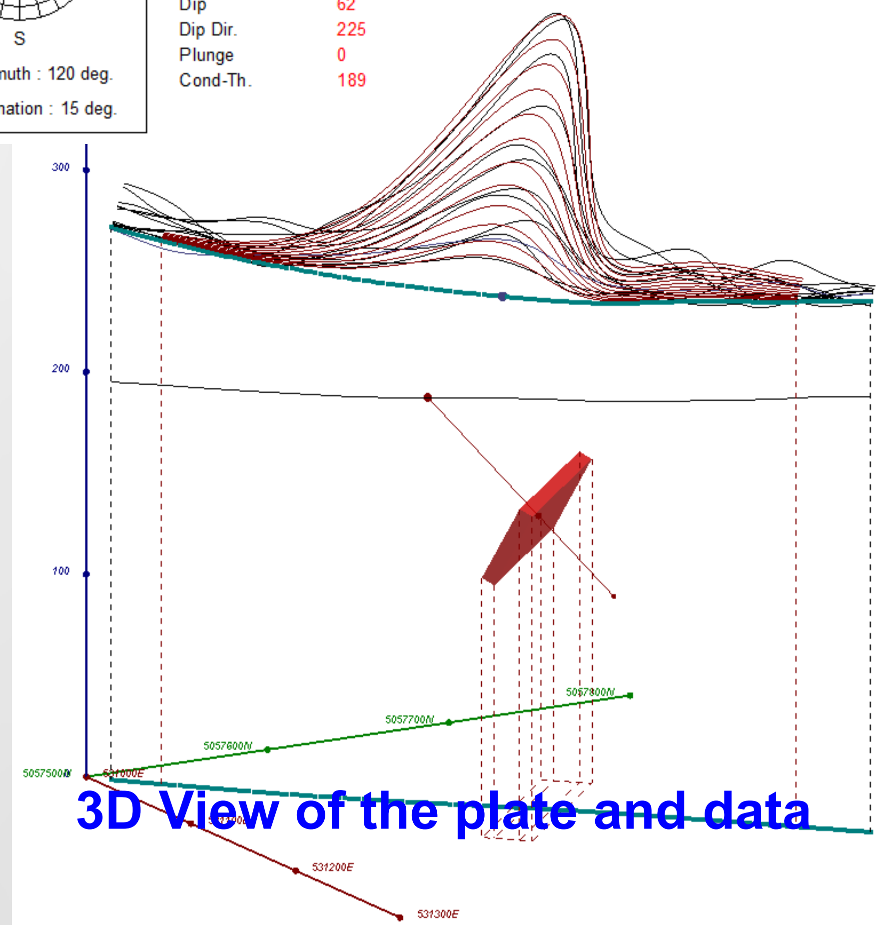


PLATE PARAMETERS

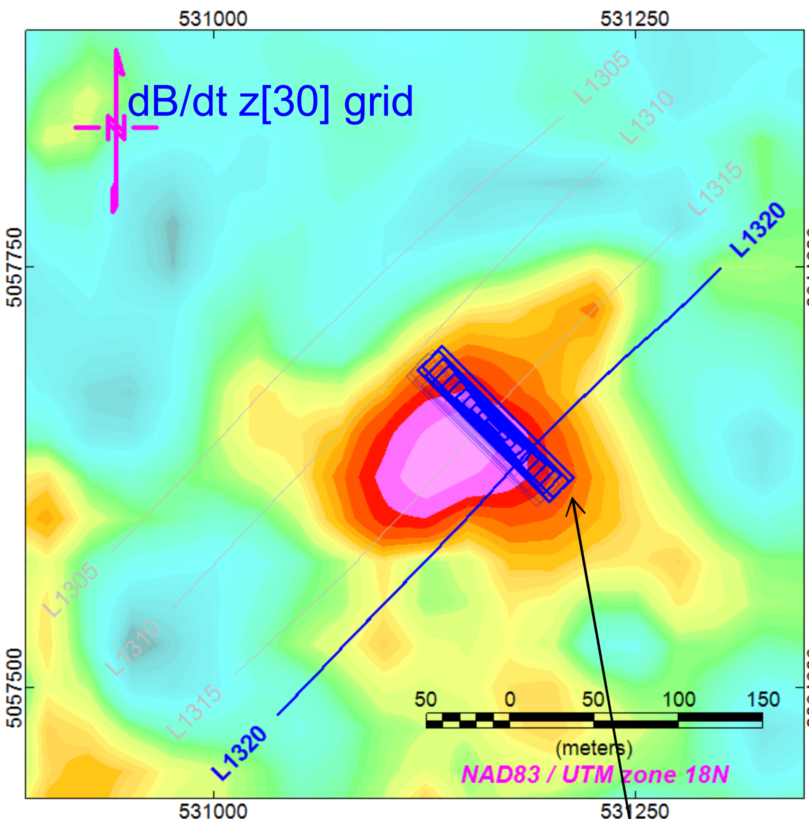
Name	L1315_E3
X	531168
Y	5057662
Z	162
Length	110
Depth Extent	40
Dip	62
Dip Dir.	225
Plunge	0
Cond-Th.	189



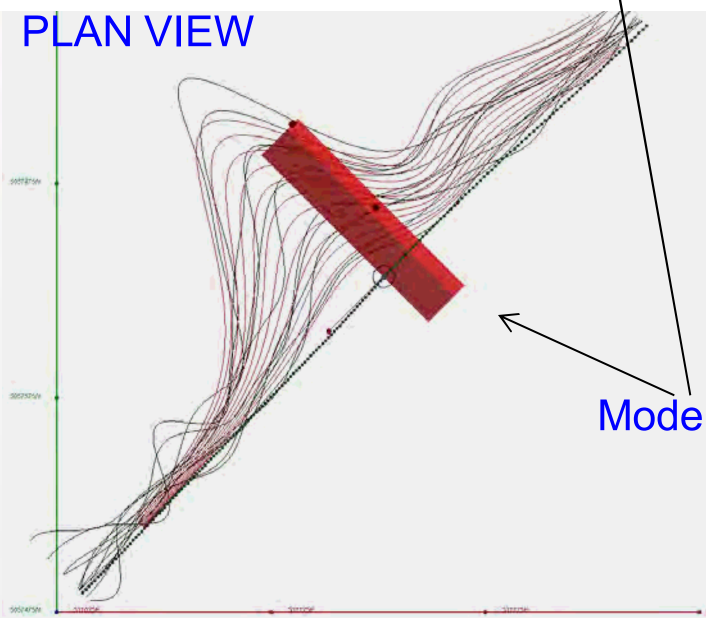
3D View of the plate and data

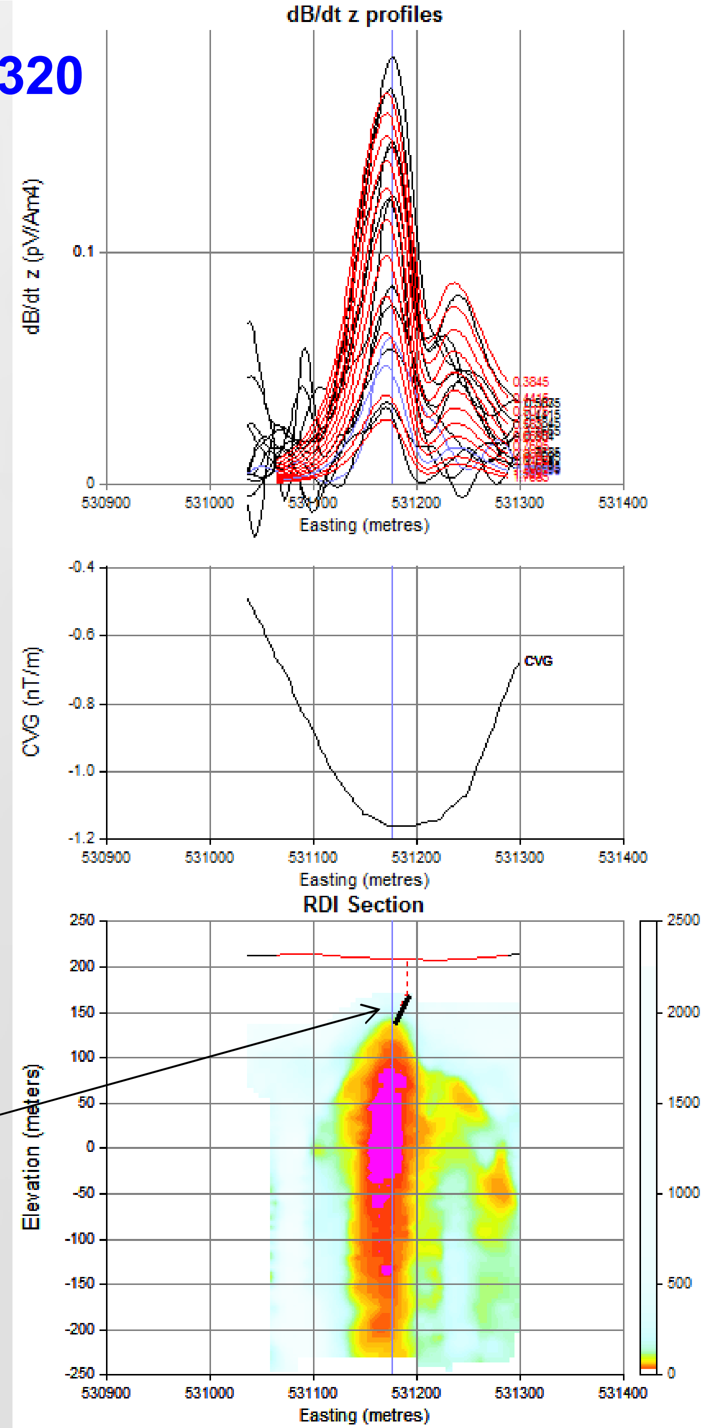
Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
531122	5057618	200	45	45	130

E3_L1320



PLAN VIEW





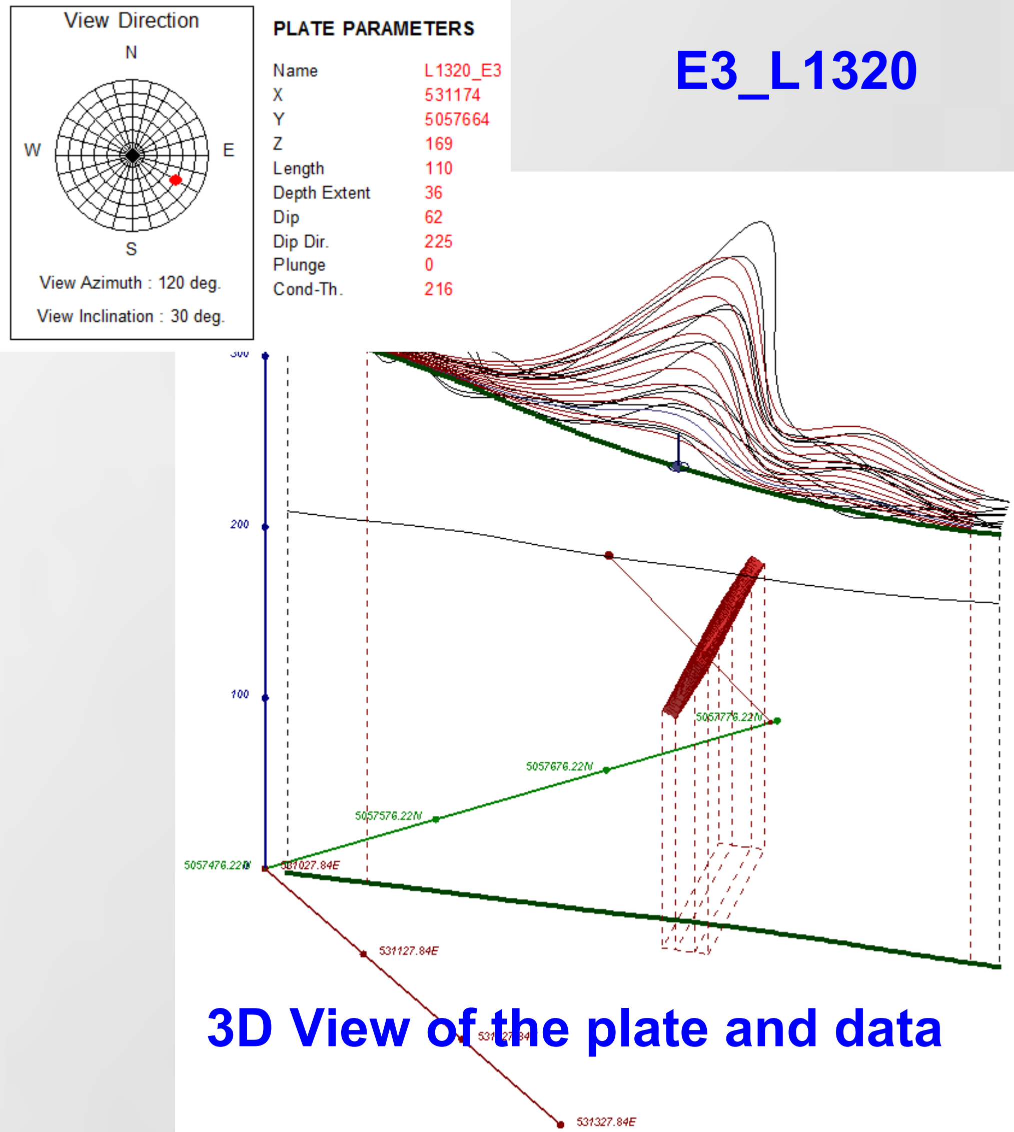
Modeled plate

GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

E3_L1320

Target Plate Parameters		
Parameter	L1320_E3	**Units**
X	531174	Meters
Y	5057664	Meters
Z	169	Meters
Depth	-38.2	Meters
Dip	62	Degrees
Dip Direction	225	Degrees
Rotation	0	Degrees
Length	110	Meters
Depth Extent	36	Meters
Conductivity-Thickness	216	Siemens
Conductivity	27	Siemens/Meter
Thickness	8	Meters

x,y,z— coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate



3D View of the plate and data

Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
531152	5057606	208	45	45	120

GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

Summary Table of All Recommended Drillholes

Line-Target	X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
L1210_E1	530738.0	5058726.0	188	60	45	220
L1215_E1	530773.7	5058681.8	190	60	45	220
L1250_E2	530546.0	5057969.0	210	60	225	180
L1255_E2	530506.0	5057838.0	216	60	45	180
L1260_E2	530532.0	5057812.0	217	60	45	180
L1265_E2	530656.0	5057848.0	220	60	225	180
L1315_E3	***531122.0***	***5057618.0***	***200***	***45***	***45***	***130***
L1320_E3	***531152.0***	***5057606.0***	***208***	***45***	***45***	***120***

Note:

1. Target E2 and E3 are situated in an area with strong EM noise, the data have high noise level. This affects the accuracy of the modeling results. Especially for target E3, the results are not very reliable.
2. If any additional geological information for the targets is available, the models can be revised or constrained, yield more accurate results.

Zihao Han
PhD, Interpreter/Data processing
Geotech Ltd.
245 Industrial Parkway North
Aurora, ON, L4G 4C4, Canada
Tel: (905) 841 5004 (ext 106)
Fax: (905) 841 0611
Zihao.han@geotech.ca
www.geotech.ca

under the supervision of

Alexander Prikhodko
P.Geo., PhD,
Manager of Data Interpretation
Geotech Ltd.
245 Industrial Parkway North
Aurora, ON, L4G 4C4, Canada
Tel: (905) 841 5004 (ext 223)
Fax: (905) 841 0611
Alexander.prikhodko@geotech.ca
www.geotech.ca

Jean M Legault, P.GEO., P.Eng. (OGQ#1147)

GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

GEOPHYSICAL SURVEYS

The results of EMIT Maxwell® Plate Modeling of selected VTEM anomaly

From

West Block, Grenville, Quebec

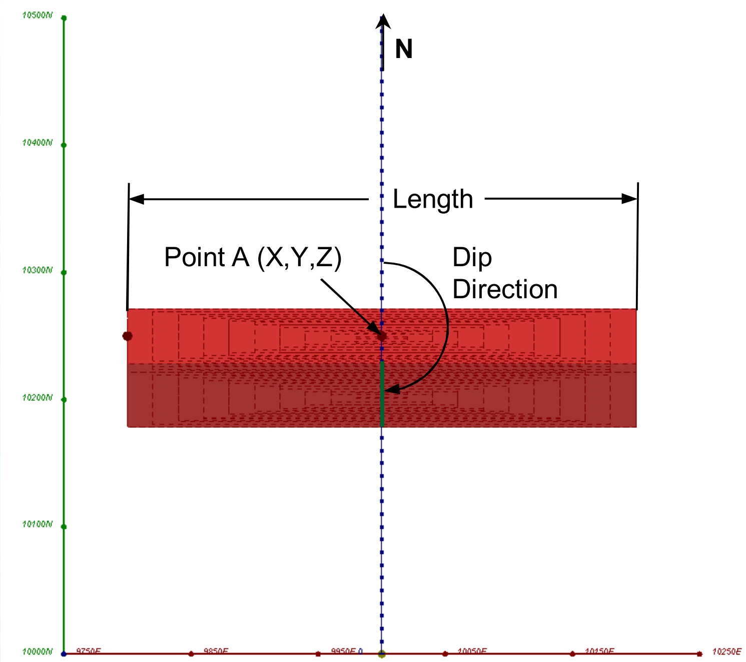
for

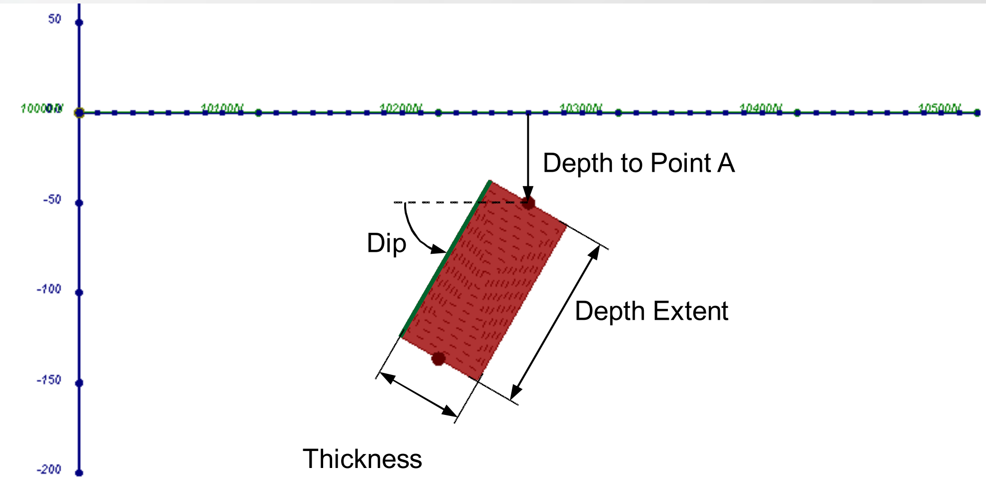
Canada Carbon Inc.

VTEM survey 2013, Job GL130281

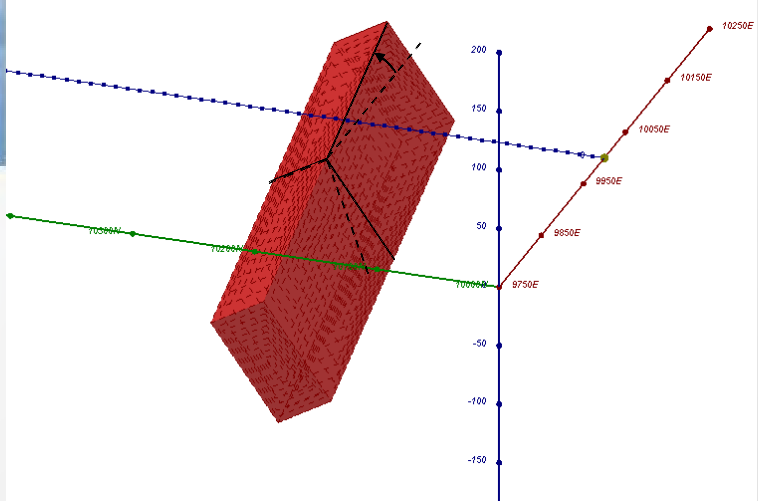
GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

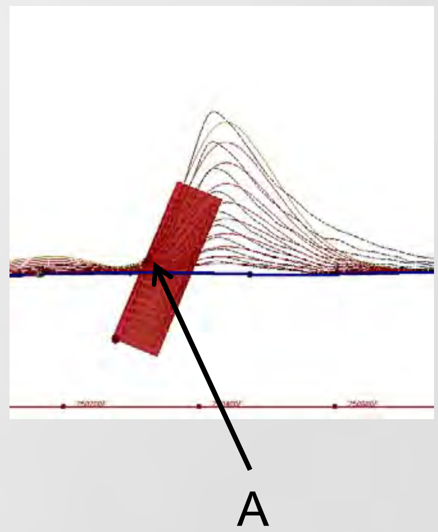
Maxwell Model Parameters conventional terms





Rotation





(X, Y) refers to Center Top of the Plate projected to surface, i.e. point A.

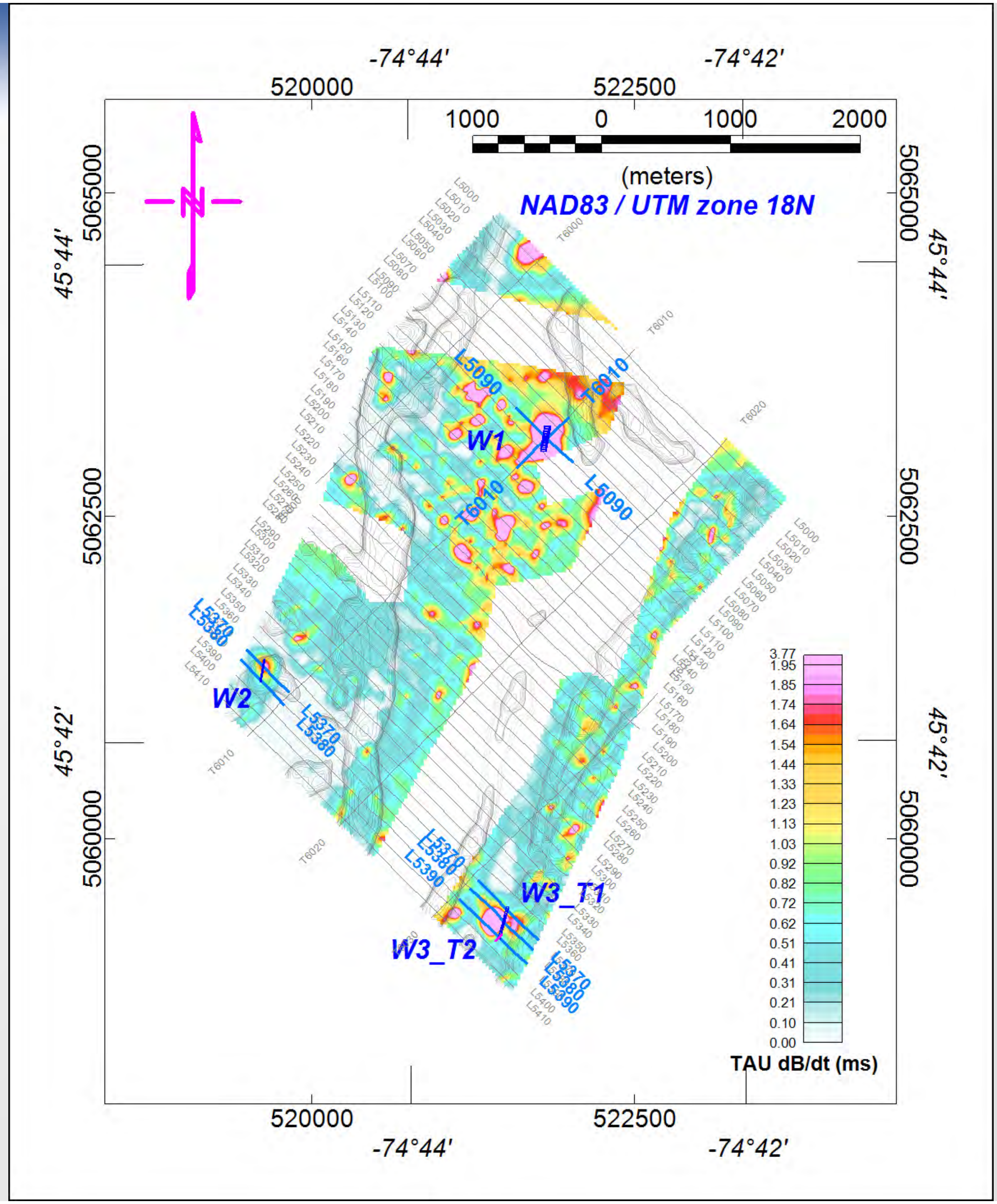
Target Plate Parameters

Parameter		Units
X		Meters
Y		Meters
Z		Meters
Depth to Point A		Meters
Dip		Degrees
Dip Direction		Degrees
Rotation		Degrees
Length		Meters
Depth Extent		Meters
Conductivity-Thickness		Siemens
Conductivity		Siemens/Meter
Thickness		Meters

All X and Y Coordinates are projected using **NAD83 / UTM zone 18N**

GEOTECH LTD.

GEOPHYSICAL SURVEYS



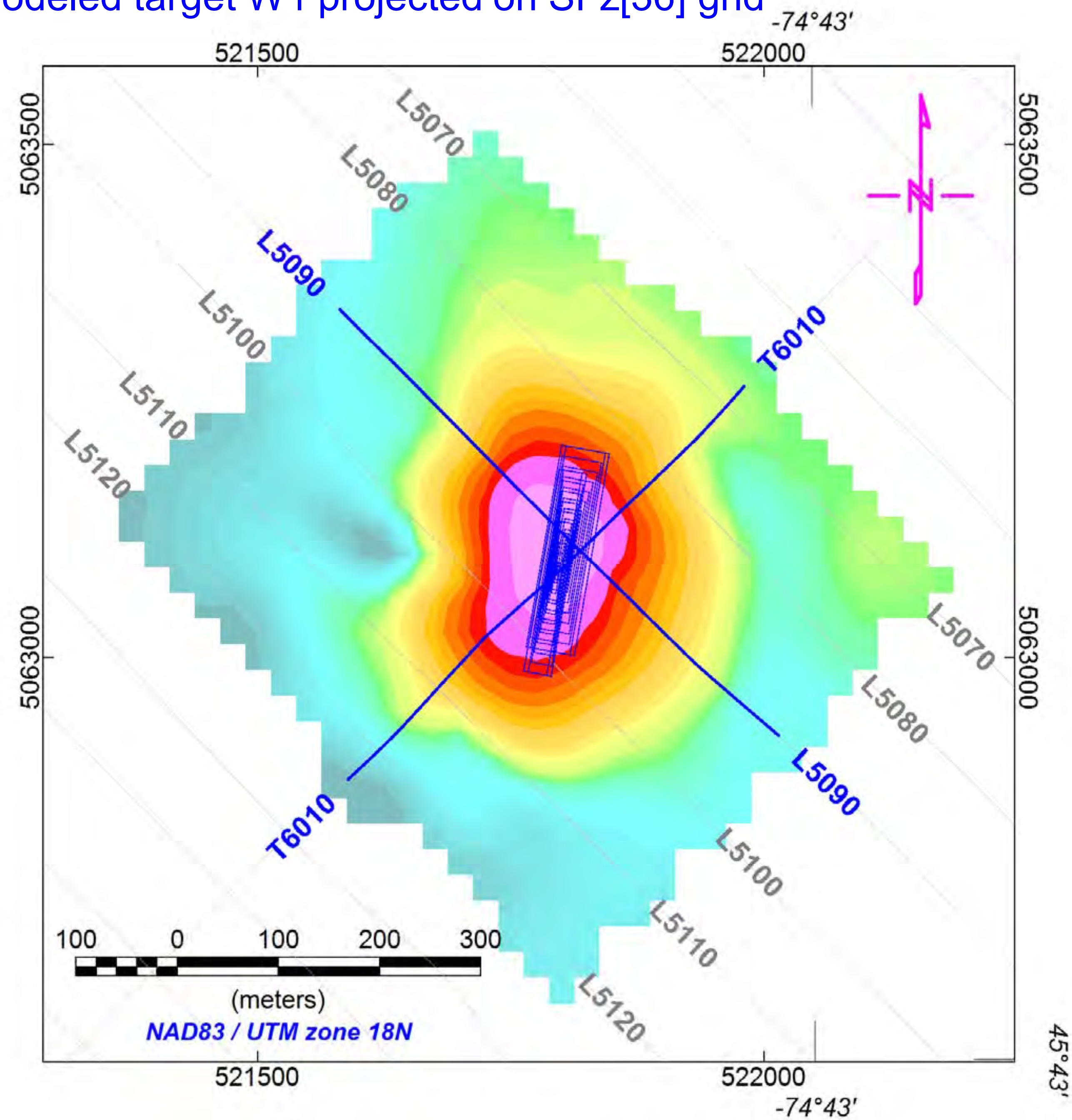
Modeled survey lines and targets projected on TAU-CVG map. 7 lines in 3 target areas were selected for modeling.

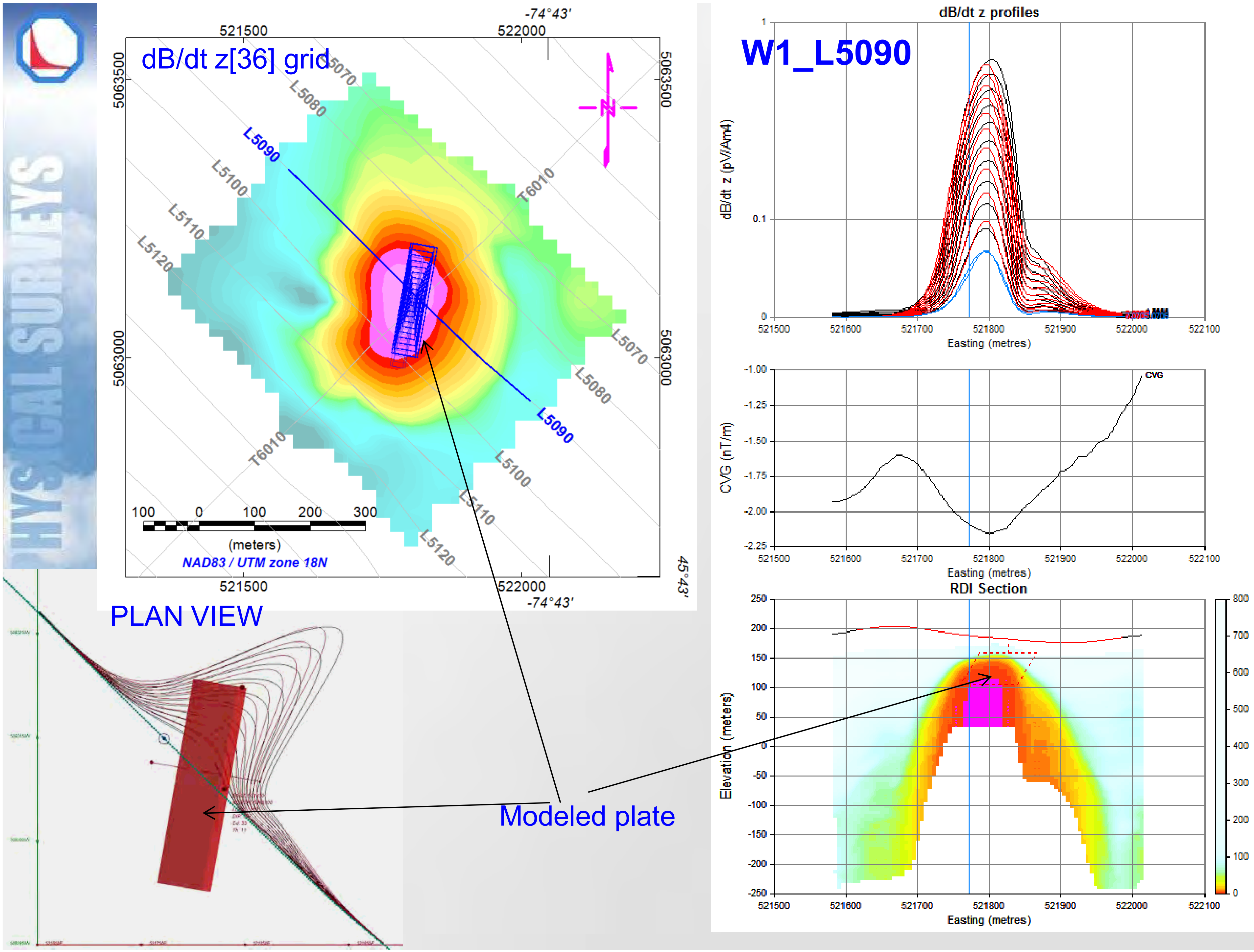
GEOTECH

Modeled target W1 projected on SFz[36] grid

Two lines were modeled for target "W1". According to the modeling results, it is a steep dipping, high conductive, shallow conductor. It is 200m long, 50~70m wide, about 10m thick.

Latest time channels (CH35-45) used for modeling. Modeled response fits measured data very well.



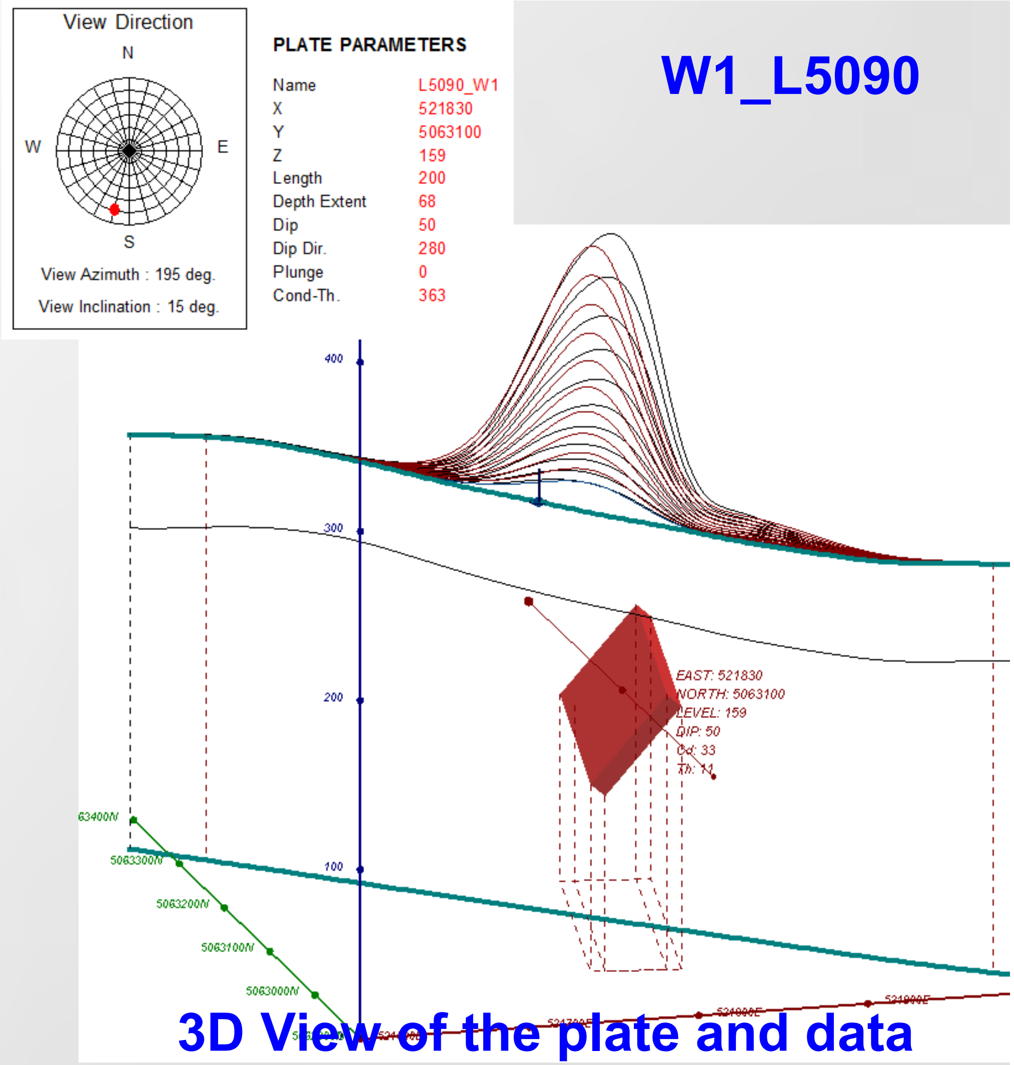


dB/dt z[36] grid
521500
522000
-74°43'
5063500
5063000
L5070
L5080
L5090
L5100
L5110
L5120
T6010
100 0 100 200 300
(meters)
NAD83 / UTM zone 18N
45°43'
PLAN VIEW
Modeled plate
W1_L5090
dB/dt z profiles
dB/dt z (pV/Am4)
Easting (metres)
CVG
CVG (nT/m)
RDI Section
Elevation (meters)

W1_L5090

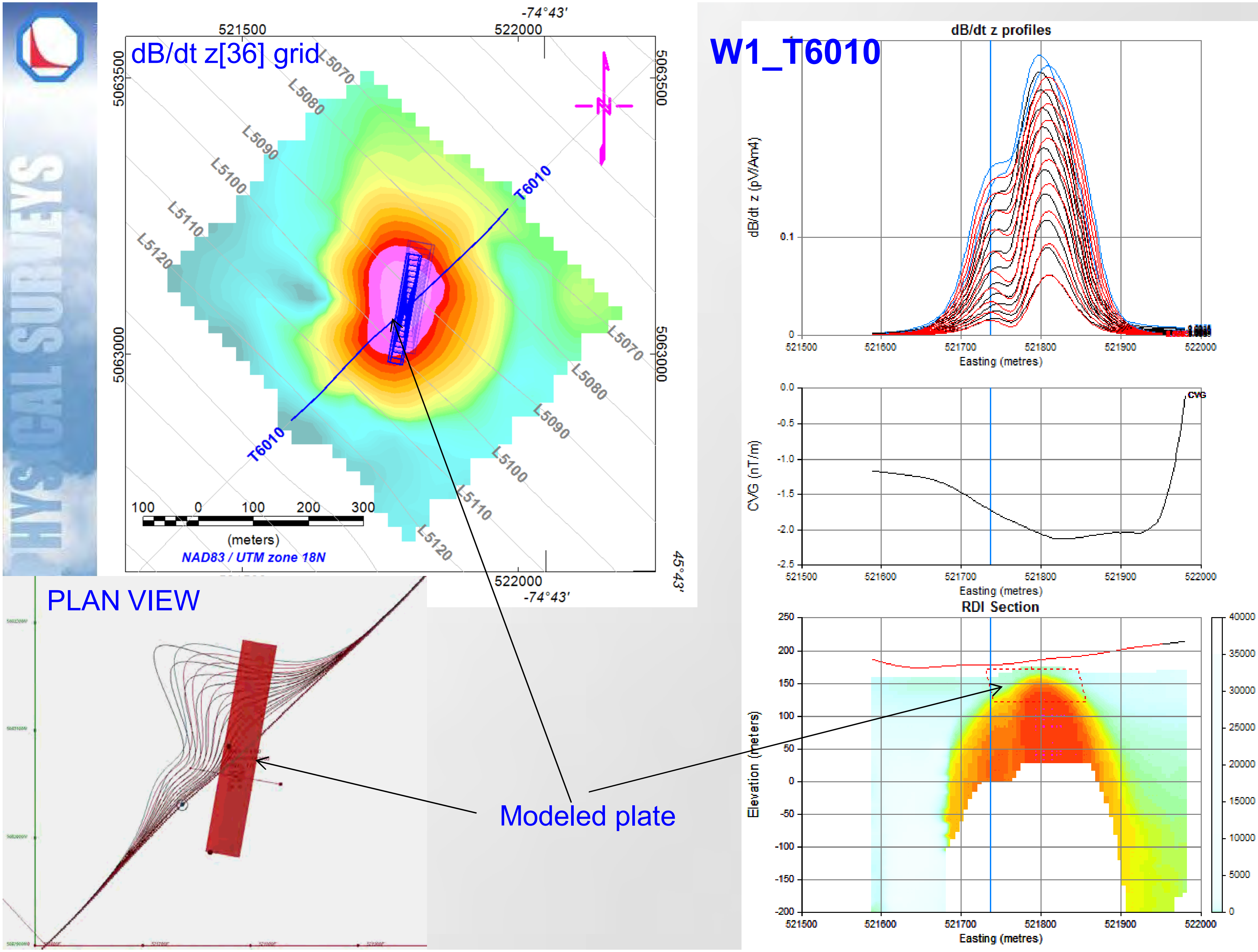
Target Plate Parameters		
Parameter	L5090_W1	**Units**
X	521830	Meters
Y	5063100	Meters
Z	159	Meters
Depth	-23.0	Meters
Dip	50	Degrees
Dip Direction	280	Degrees
Rotation	0	Degrees
Length	200	Meters
Depth Extent	68	Meters
Conductivity-Thickness	363	Siemens
Conductivity	33	Siemens/Meter
Thickness	11	Meters

x,y,z— coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate



3D View of the plate and data

Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
521760	5063126	189	45	100	150



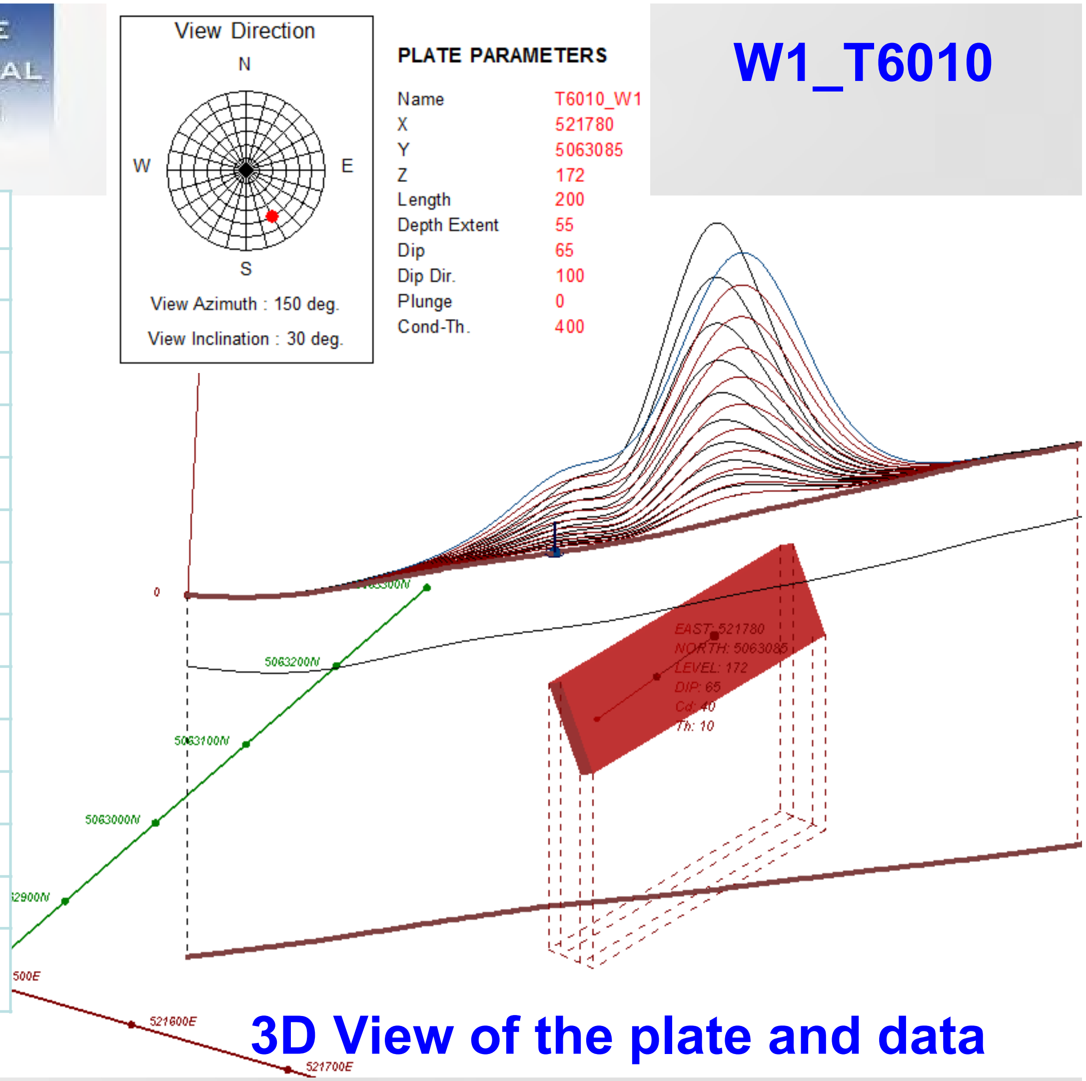
dB/dt z[36] grid
W1_T6010
dB/dt z profiles
RDI Section
PLAN VIEW
Modeled plate
NAD83 / UTM zone 18N
(meters)
T6010
dB/dt z (pV/Am4)
CVG (nT/m)
Elevation (meters)
Easting (metres)

GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

W1_T6010

Target Plate Parameters		
Parameter	T6010_W1	**Units**
X	521780	Meters
Y	5063085	Meters
Z	172	Meters
Depth	-11.1	Meters
Dip	65	Degrees
Dip Direction	100	Degrees
Rotation	0	Degrees
Length	200	Meters
Depth Extent	55	Meters
Conductivity-Thickness	400	Siemens
Conductivity	40	Siemens/Meter
Thickness	10	Meters

x,y,z–- coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate



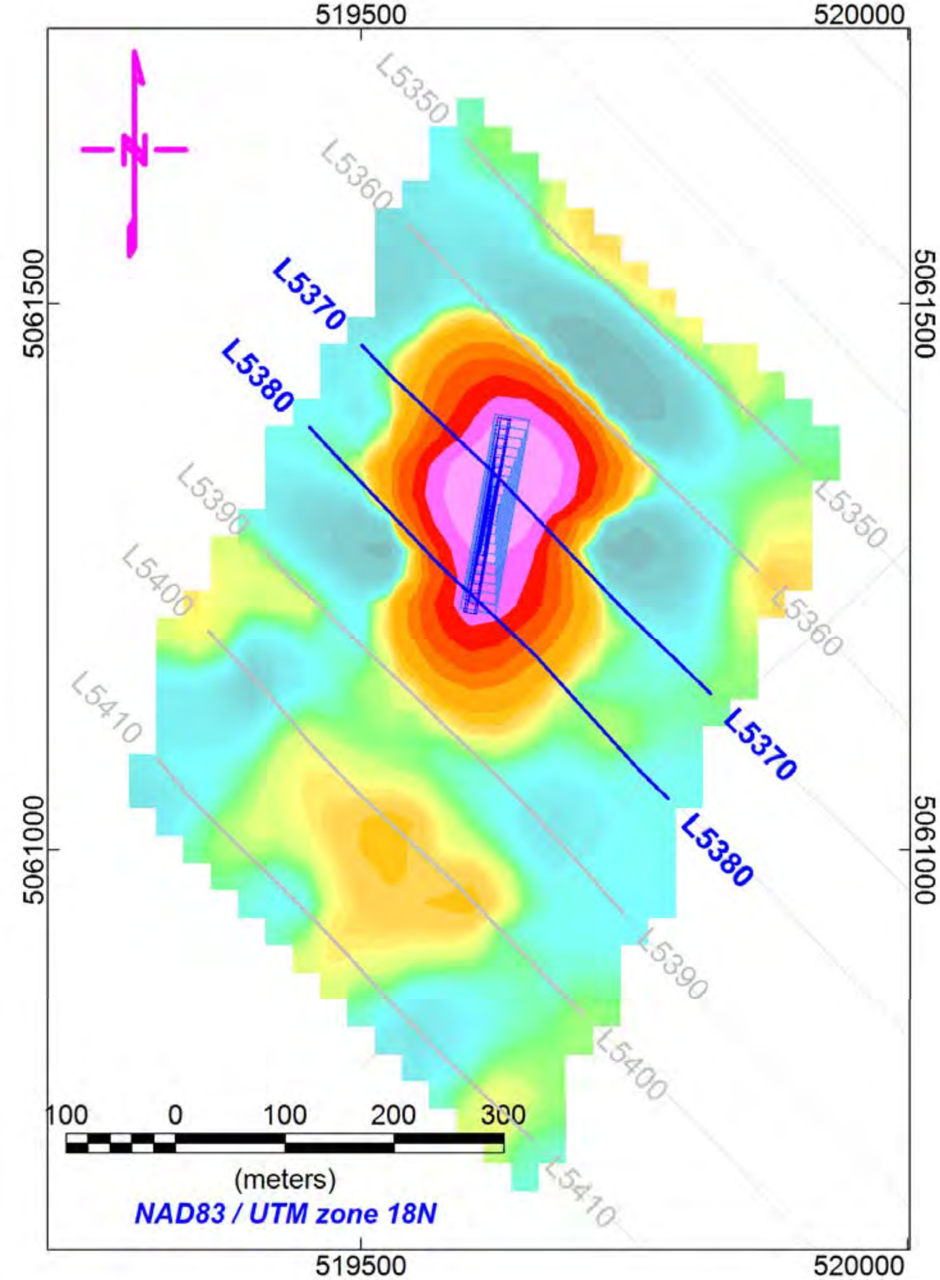
3D View of the plate and data

Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
521828	5063050	189	45	280	120

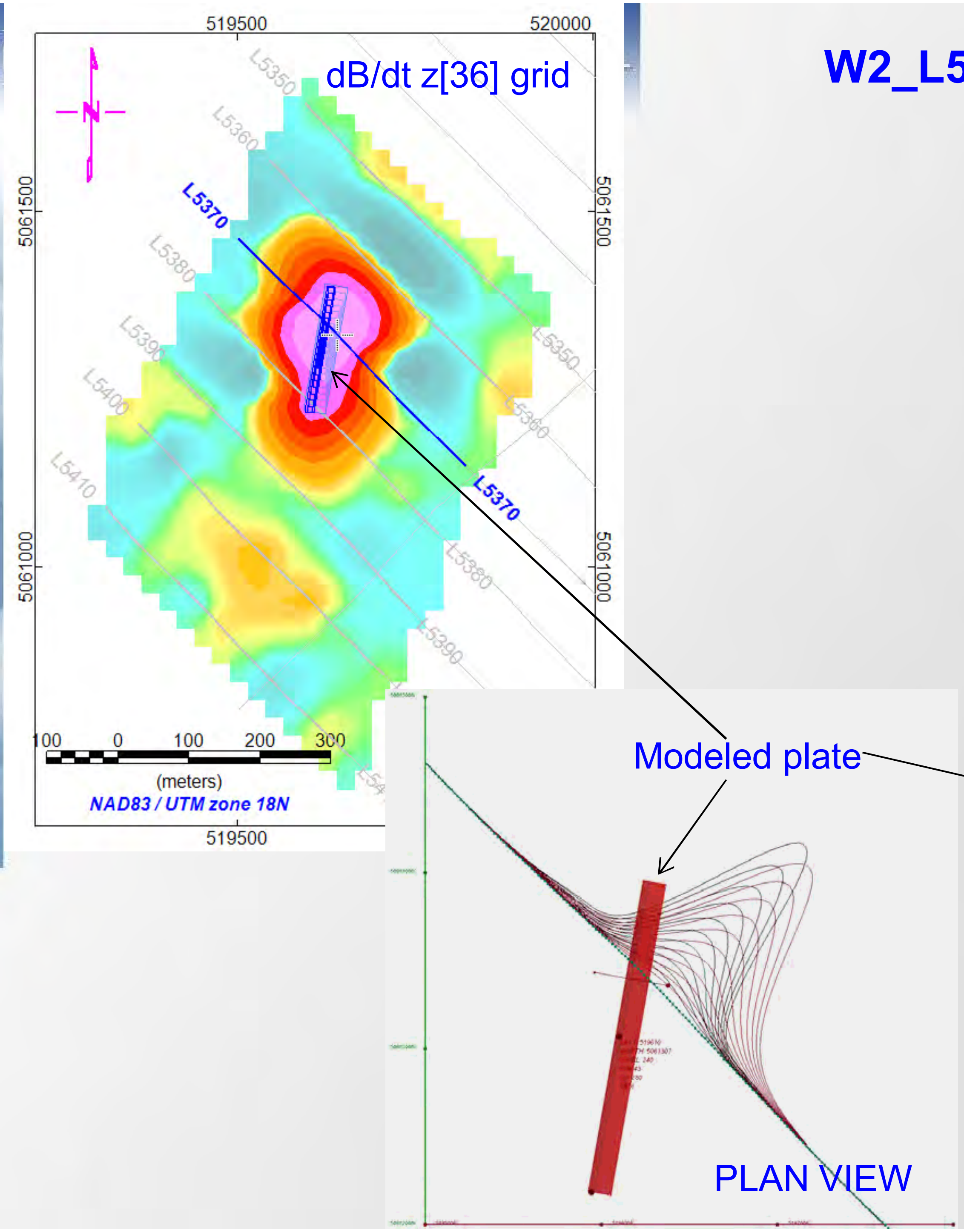
Modeled target W2 projected on SFz[36] grid

Two lines were modeled for target "W2". The results show that the target is about 180m long, 10~35m wide, and dipping to azimuth 100º at 25~43º angle. It is a high conductive, shallow conductor.

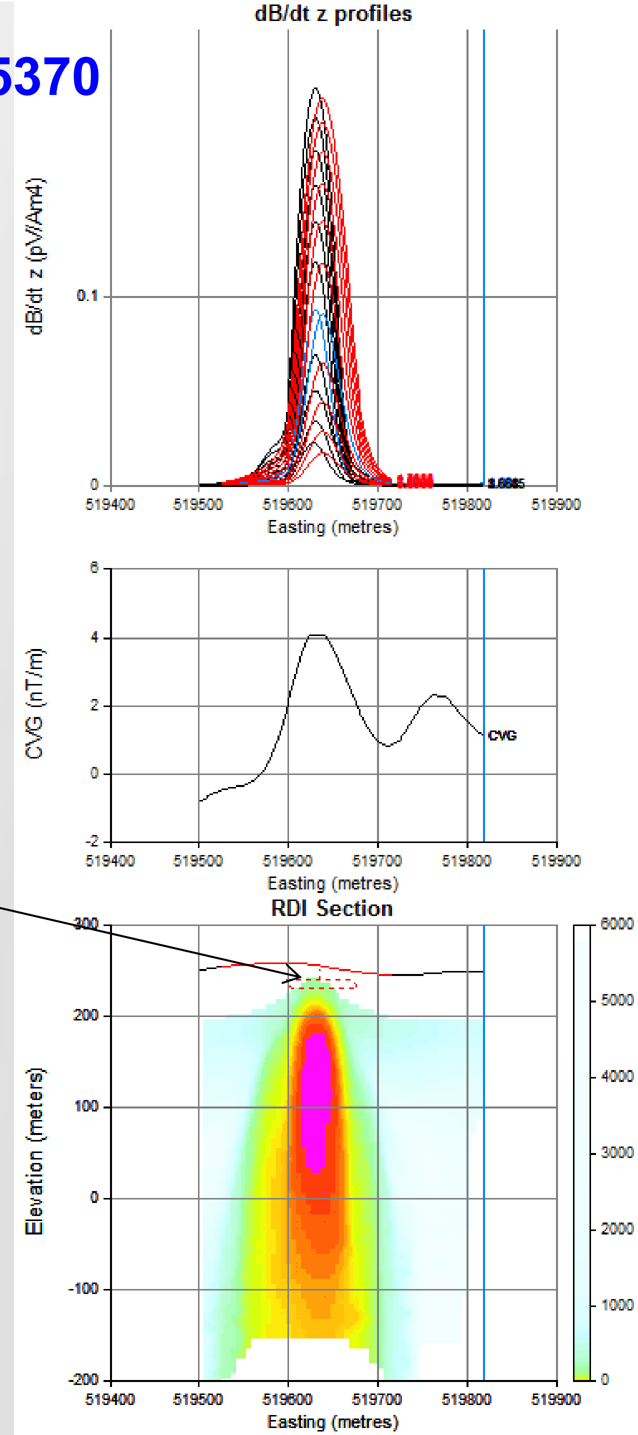
Late time channels (CH33-43) used for modeling. Modeled response fits measured data well.




GEOPHYSICAL SURVEYS


dB/dt z[36] grid
519500
520000
5061500
5061000
L5350
L5360
L5370
L5380
L5390
L5400
L5410
100 0 100 200 300
(meters)
NAD83 / UTM zone 18N
Modeled plate
PLAN VIEW

W2_L5370


dB/dt z profiles
dB/dt z (pV/(Am4)
0.1
0
519400 519500 519600 519700 519800 519900
Easting (metres)
CVG (nT/m)
CVG
6
4
2
0
-2
RDI Section
Elevation (meters)
300
200
100
0
-100
-200
6000
5000
4000
3000
2000
1000
0

GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

GEOPHYSICAL SURVEYS

W2_L5370

Target Plate Parameters		
Parameter	L5370_W2	**Units**
X	519610	Meters
Y	5061307	Meters
Z	240	Meters
Depth	-14.5	Meters
Dip	43	Degrees
Dip Direction	100	Degrees
Rotation	0	Degrees
Length	180	Meters
Depth Extent	13	Meters
Conductivity-Thickness	1680	Siemens
Conductivity	280	Siemens/Meter
Thickness	6	Meters

x,y,z–- coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate

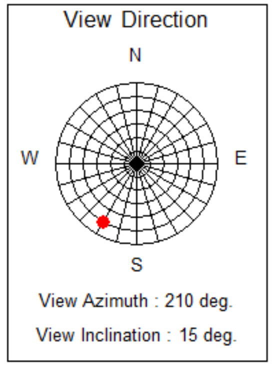
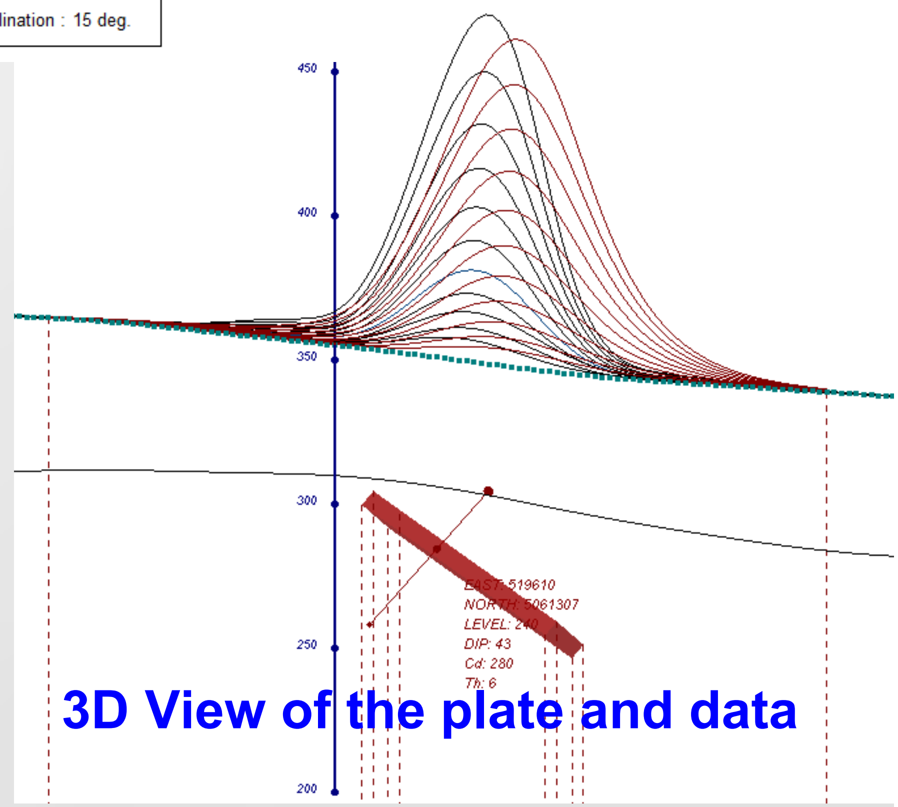


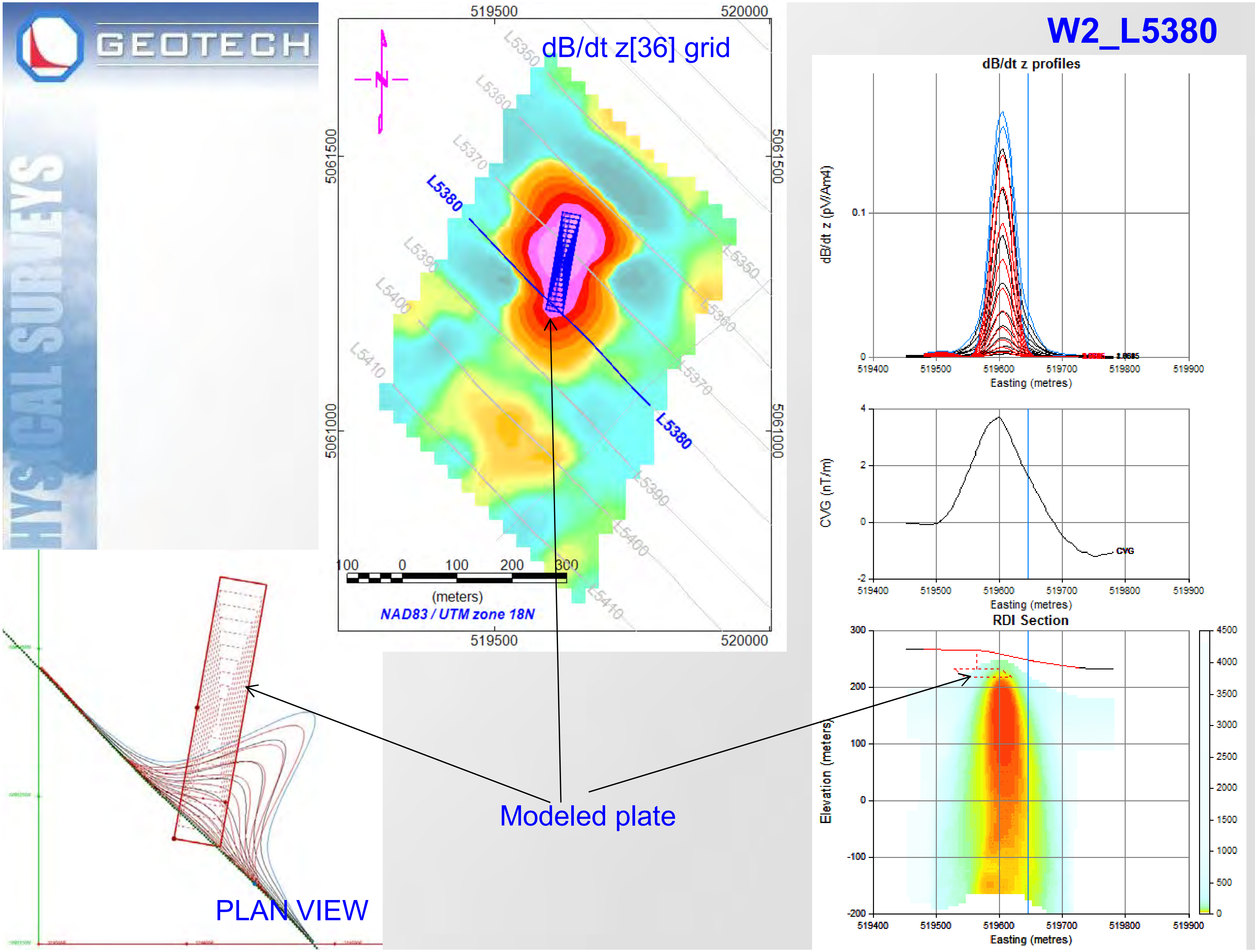
PLATE PARAMETERS

Name	L5370_W2
X	519610
Y	5061307
Z	240
Length	180
Depth Extent	13
Dip	43
Dip Dir.	100
Plunge	0
Cond-Th.	1680



3D View of the plate and data

Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
519638	5061336	254.5	45	280	60


GEOTECH
PHYSICAL SURVEYS
W2_L5380
dB/dt z[36] grid
519500
520000
5061500
5061000
L5350
L5360
L5370
L5380
L5390
L5400
L5410
N
100
0
100
200
300
(meters)
NAD83 / UTM zone 18N
dB/dt z profiles
dB/dt z (pV/Am4)
Easting (metres)
CVG (nT/m)
CVG
RDI Section
Elevation (meters)
Modeled plate
PLAN VIEW

GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

W2_L5380

Target Plate Parameters

Parameter	L5380_W2	Units
X	519607	Meters
Y	5061310	Meters
Z	234	Meters
Depth	-30.2	Meters
Dip	25	Degrees
Dip Direction	100	Degrees
Rotation	0	Degrees
Length	180	Meters
Depth Extent	35	Meters
Conductivity-Thickness	200	Siemens
Conductivity	-	Siemens/Meter
Thickness	-	Meters

x,y,z— coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate

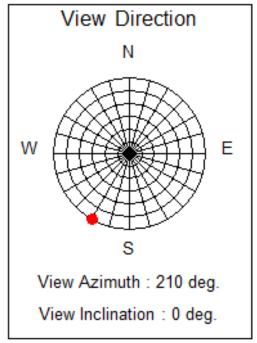
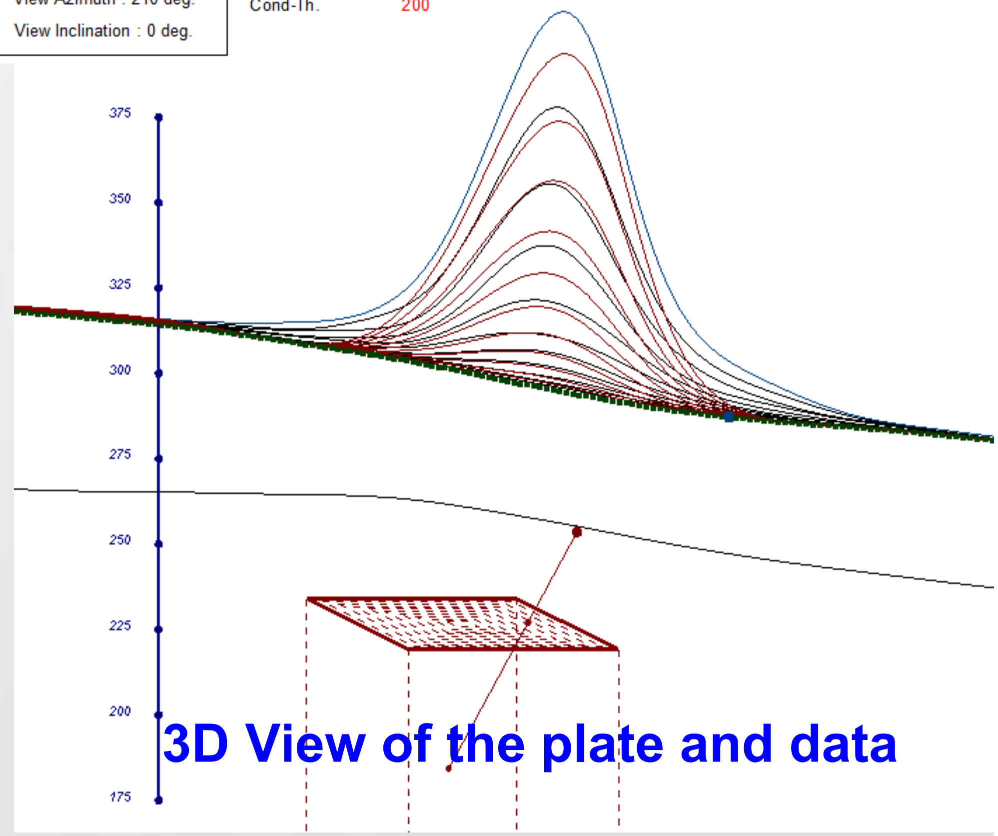


PLATE PARAMETERS

Name	L5380_W2
X	519607
Y	5061310
Z	234
Length	180
Depth Extent	35
Dip	25
Dip Dir.	100
Plunge	0
Cond-Th.	200



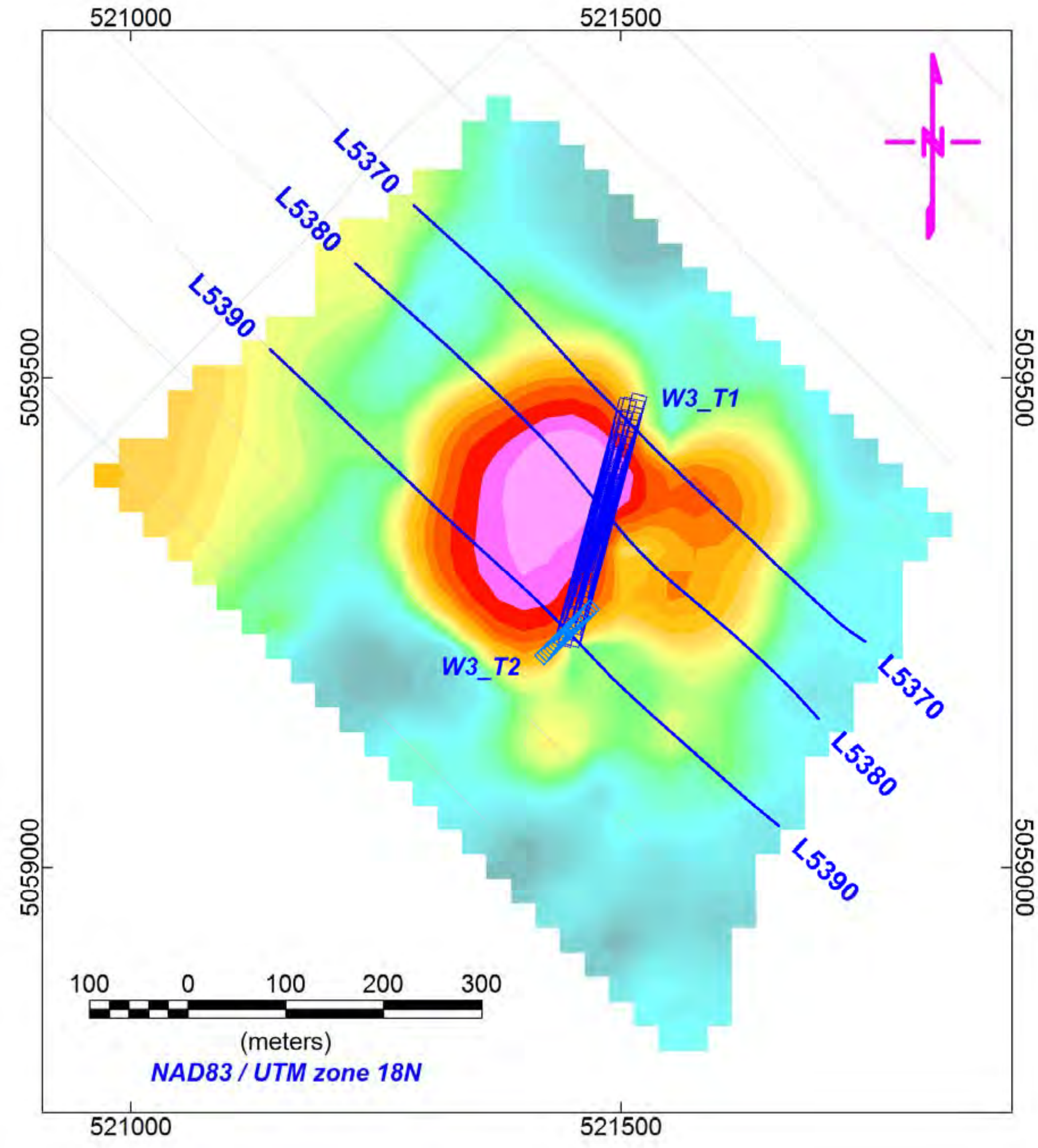
3D View of the plate and data

Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
519626	5061246	253.6	60	280	80

Three lines were modeled for area “W3”. Based on the modeling results, the source of the EM anomaly are two separate conductors, named “T1” and “T2”.
T1 is about 260m long, 60m wide, dipping to azimuth 285° at 70~75° angle, with top depth to surface around 50m. T2 is smaller and shallower.
Both T1 and T2 are steeply dipping, thin conductors.

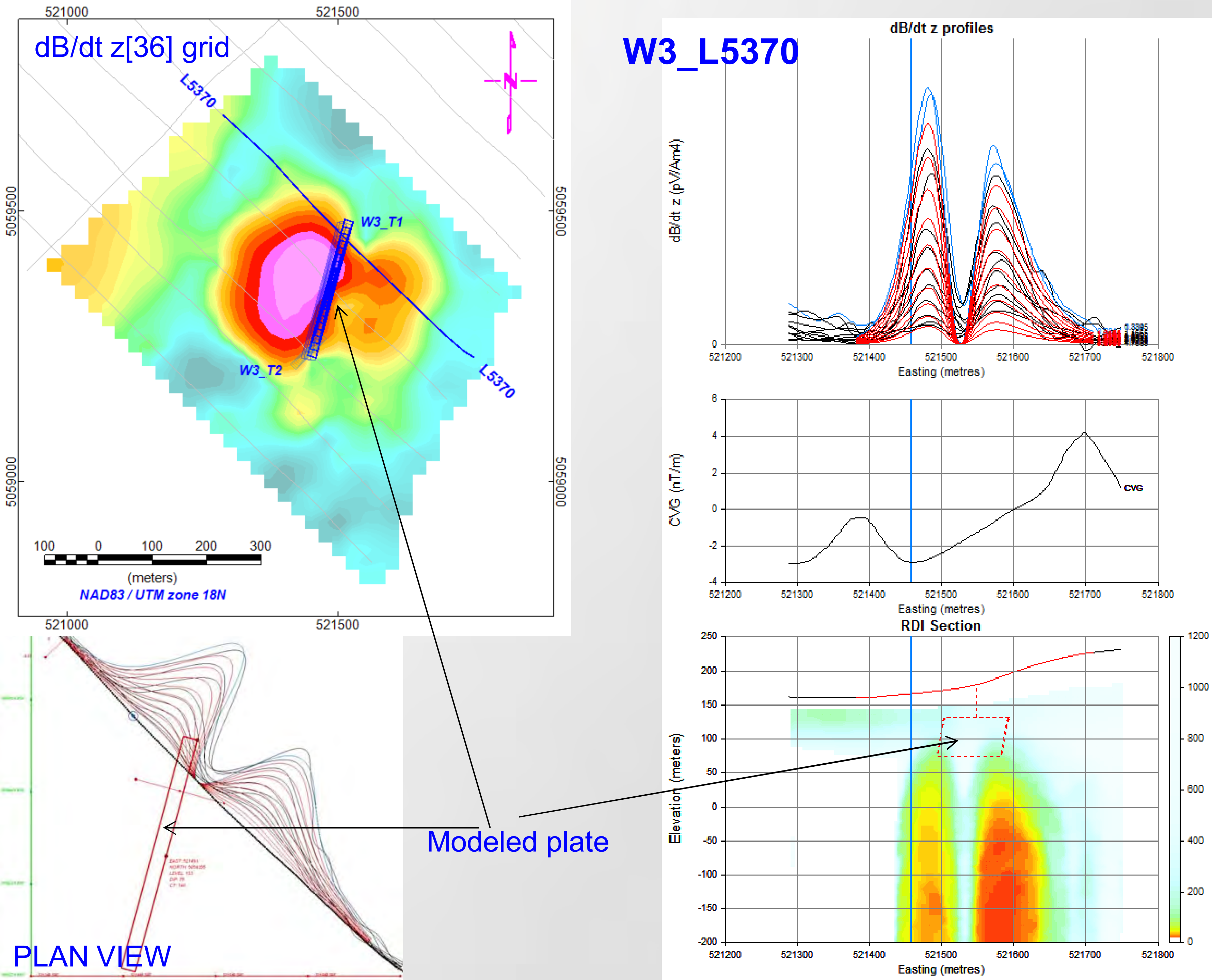
Late time channels (CH30-40) used for modeling. Modeled response fits measured data very well.

Modeled target W3 projected on SFz[36] grid



GEOPHYSICAL SURVEYS

W3_L5370



GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

W3_L5370

Target Plate Parameters		
Parameter	W3_T1	**Units**
X	521493	Meters
Y	5059355	Meters
Z	133	Meters
Depth	-45.9	Meters
Dip	75	Degrees
Dip Direction	285	Degrees
Rotation	0	Degrees
Length	260	Meters
Depth Extent	60	Meters
Conductivity-Thickness	140	Siemens
Conductivity	-	Siemens/Meter
Thickness	-	Meters

x,y,z— coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate

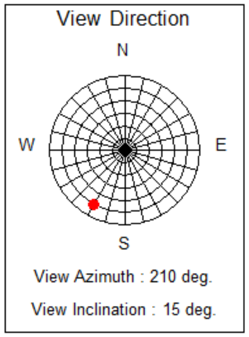
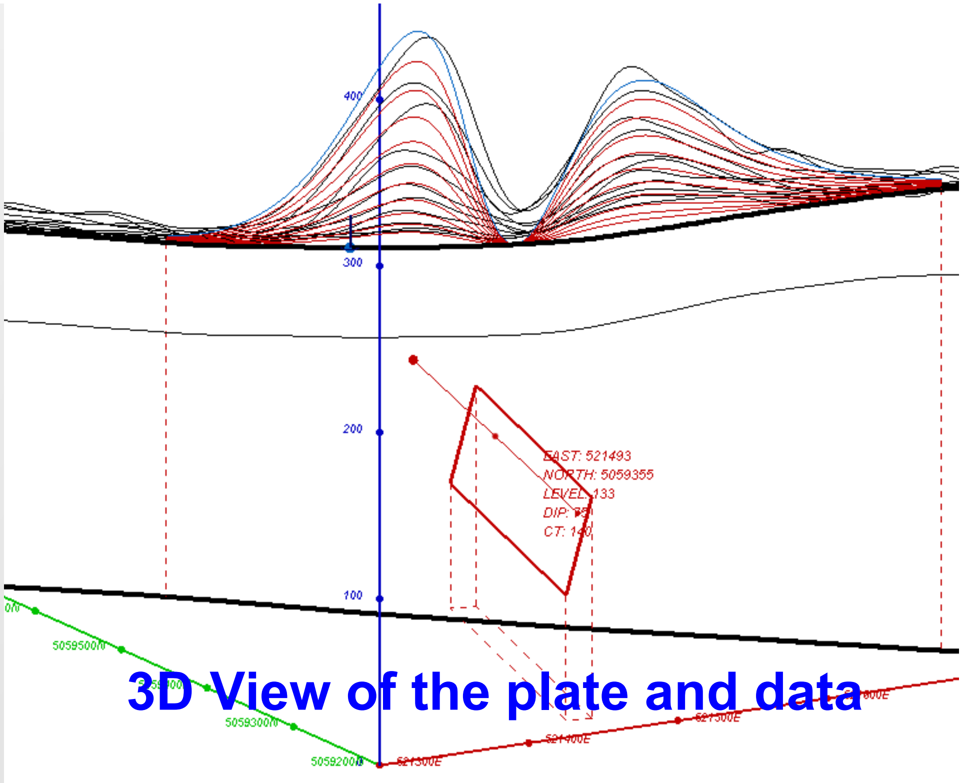


PLATE PARAMETERS

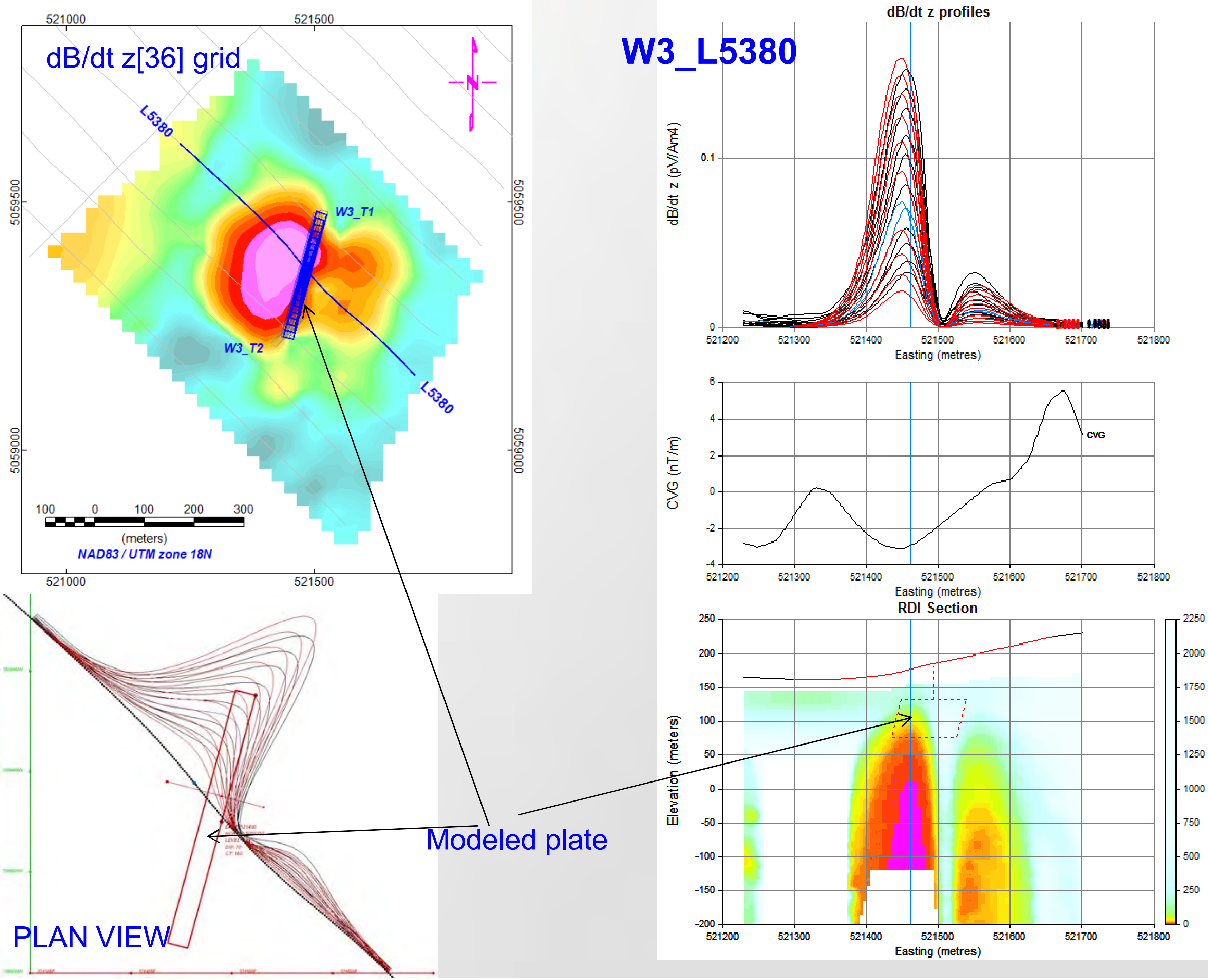
Name	L5370_W3_T1
X	521493
Y	5059355
Z	133
Length	260
Depth Extent	60
Dip	75
Dip Dir.	285
Plunge	0
Cond-Th.	140



3D View of the plate and data

Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
521460	5059438	167	45	105	140

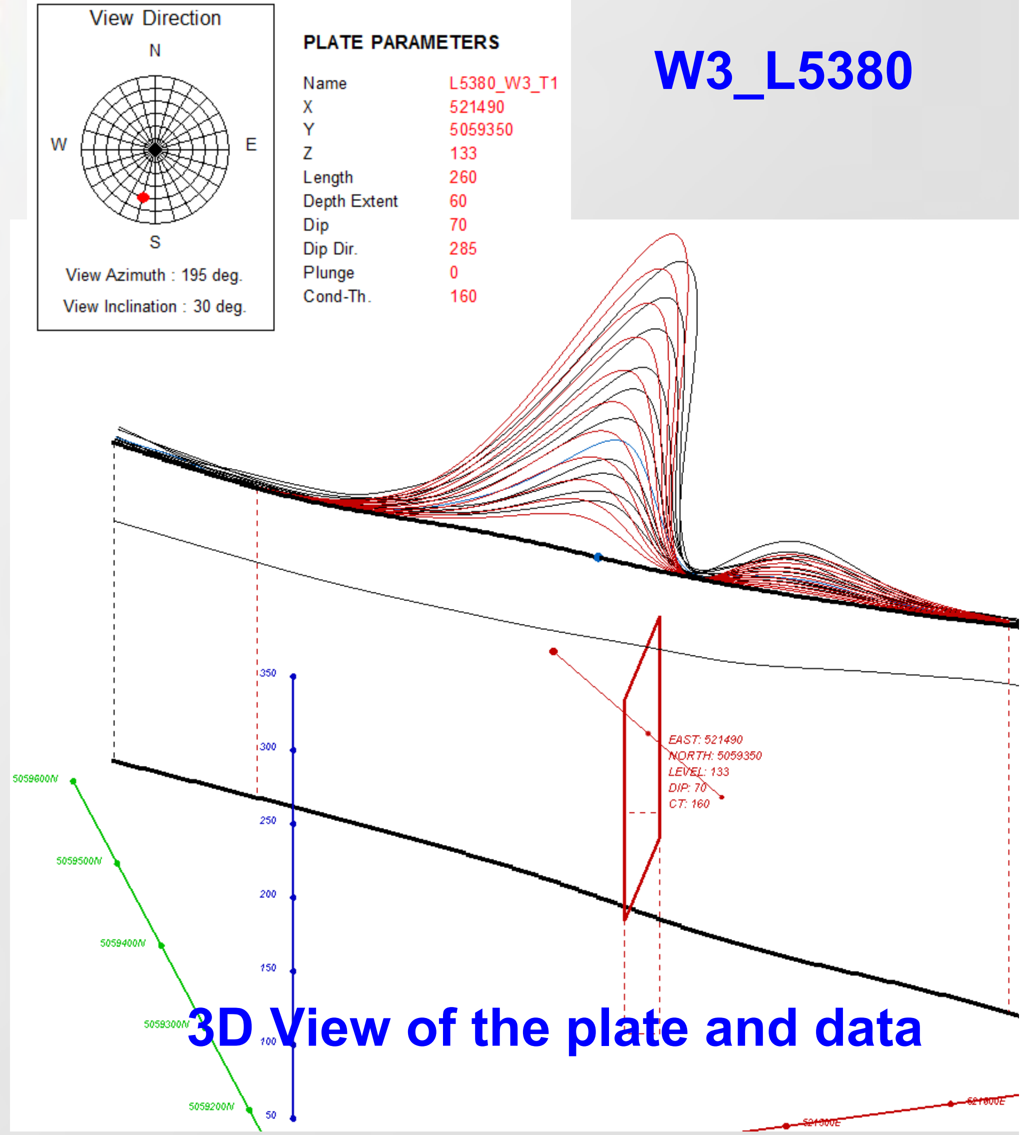
GEOPHYSICAL SURVEYS



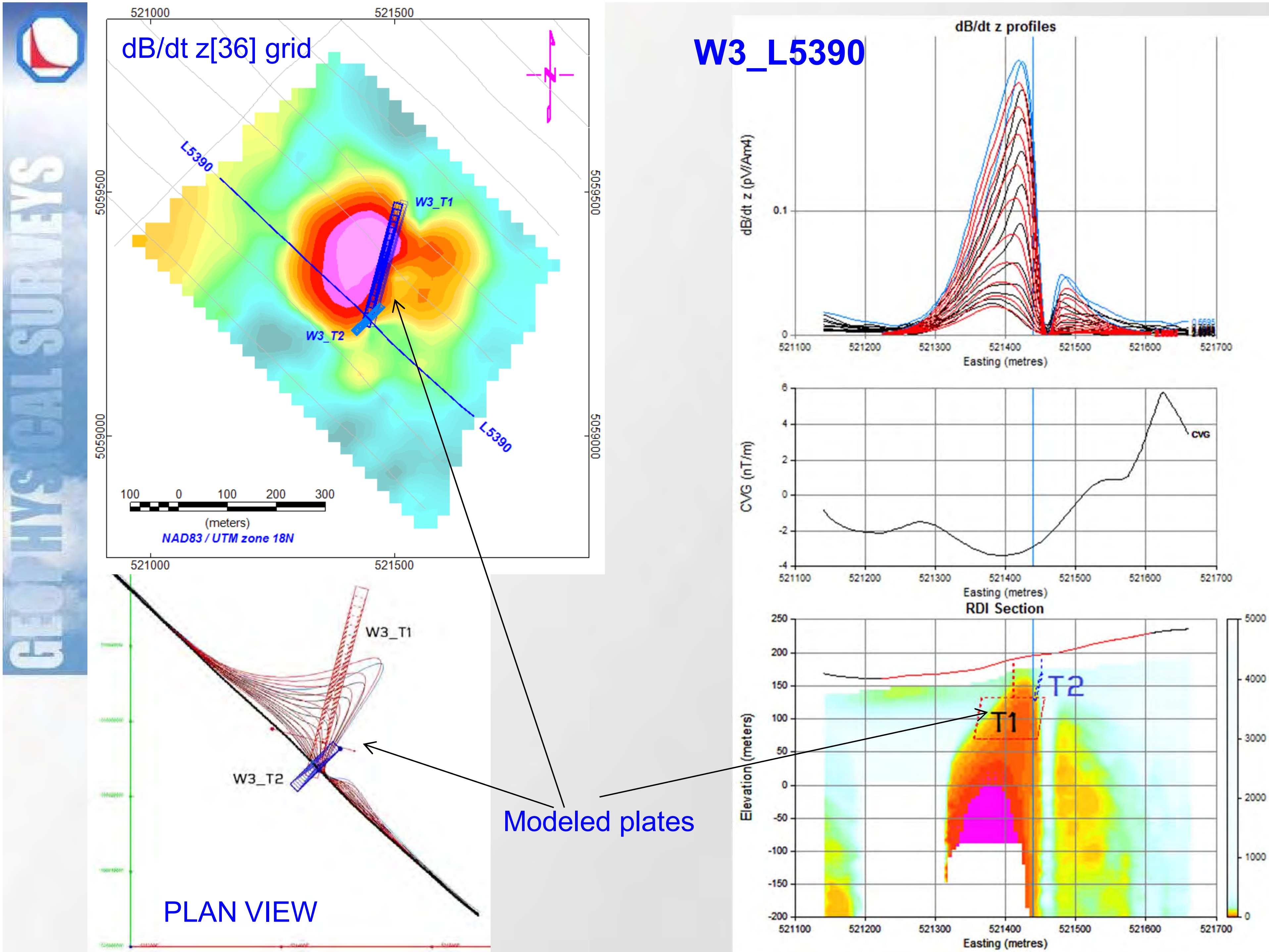
W3_L5380

Target Plate Parameters		
Parameter	W3_T1	**Units**
X	521490	Meters
Y	5059350	Meters
Z	133	Meters
Depth	-50.7	Meters
Dip	70	Degrees
Dip Direction	285	Degrees
Rotation	0	Degrees
Length	260	Meters
Depth Extent	60	Meters
Conductivity-Thickness	160	Siemens
Conductivity	-	Siemens/Meter
Thickness	-	Meters

x,y,z— coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate



Drill-hole Parameters Appropriate for the Model					
X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
521436	5059390	170	45	105	140



W3_L5390
dB/dt z[36] grid
521000
521500
5059500
5059000
L5390
W3_T1
W3_T2
100 0 100 200 300
(meters)
NAD83 / UTM zone 18N
W3_T1
W3_T2
PLAN VIEW
Modeled plates
dB/dt z profiles
dB/dt z (pV/Am4)
Easting (metres)
CVG (nT/m)
CVG
RDI Section
Elevation (meters)
T1
T2

GEOTECH LTD. AIRBORNE GEOPHYSICAL SURVEYS

W3_L5390

Target Plate Parameters

Parameter	W3_T1	W3_T2	Units
X	521482	521450	Meters
Y	5059350	5059235	Meters
Z	133	168	Meters
Depth	-55.4	-27.7	Meters
Dip	75	72	Degrees
Dip Direction	285	315	Degrees
Rotation	0	0	Degrees
Length	260	80	Meters
Depth Extent	65	45	Meters
Conductivity-Thickness	150	90	Siemens
Conductivity	-	-	Siemens/Meter
Thickness	-	-	Meters

x,y,z— coordinates of top-center point of the plate
depth—depth from surface to top-center of the plate

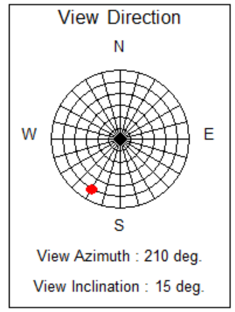
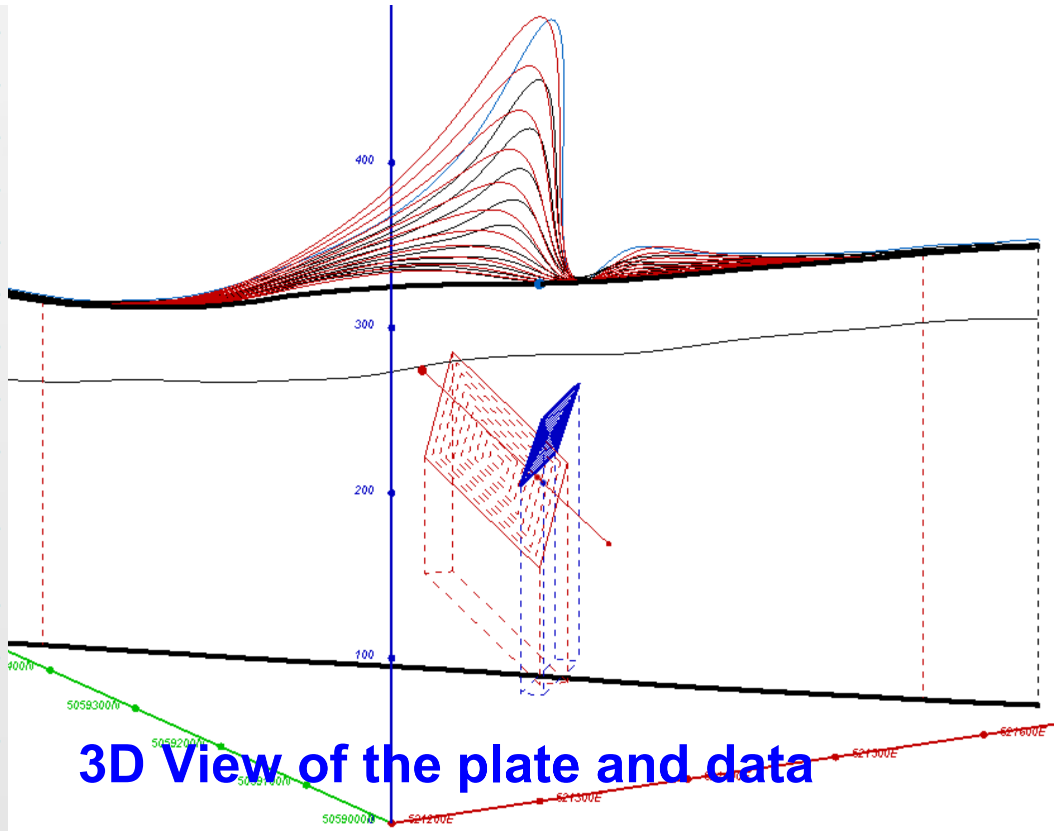


PLATE PARAMETERS

Name	L5390_W3_T1	L5390_W3_T2
X	521482	521450
Y	5059350	5059235
Z	133	168
Length	260	80
Depth Extent	65	45
Dip	75	72
Dip Dir.	285	315
Plunge	0	0
Cond-Th.	150	90



3D View of the plate and data

Drill-hole Parameters Appropriate for the Model						
Line_Target	X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
L5390_W3_T1	521388	5059290	182	45	105	160
L5390_W3_T2	521428	5059268	191	45	135	100

Summary Table of All Recommended Drillholes

Line-Target	X (m)	Y (m)	Z (m)	Dip (deg)	Azimuth (deg)	Length (m)
L5090_W1	521760	5063126	189	45	100	150
T6010_W1	521828	5063050	189	45	280	120
L5370_W2	519638	5061336	254.5	45	280	60
L5380_W2	519626	5061246	253.6	60	280	80
L5370_W3_T1	521460	5059438	167	45	105	140
L5380_W3_T1	521436	5059390	170	45	105	140
L5390_W3_T1	521388	5059290	182	45	105	160
L5390_W3_T2	521428	5059268	191	45	135	100

Note:
1. The modeled plate “W1” from the two lines have different dip directions, ground EM follow-up with dense lines and stations would define the conductor /conductors better.
2. There are many cultural sources in the survey area, field investigation is highly recommended to exclude the man made sources before any drilling test.
3. The modeling is based on the interpreter’s understanding of the data with no geological constrains. If any additional geological information for the targets is available, the models can be revised, yield more accurate results.

Zihao Han
PhD, Interpreter/Data processing
Geotech Ltd.
245 Industrial Parkway North
Aurora, ON, L4G 4C4, Canada
Tel: (905) 841 5004 (ext 106)
Fax: (905) 841 0611
Zihao.han@geotech.ca
www.geotech.ca

under the supervision of

Alexander Prikhodko
P.Geo., PhD,
Manager of Data Interpretation
Geotech Ltd.
245 Industrial Parkway North
Aurora, ON, L4G 4C4, Canada
Tel: (905) 841 5004 (ext 223)
Fax: (905) 841 0611
Alexander.prikhodko@geotech.ca
www.geotech.ca

Jean M Legault, P.GEO., P.Eng.
(OGQ#1147)

Appendix 11. Second geophysics survey report

CANADA CARBON INC.

Detailed mobile TDEM Survey
on
Miller-Graphite Property – East Block

Grenville Township, Québec

Hawkesbury area, 31G/10

REPORT

MARC BOIVIN # 351 GÉOLOGUE / GEOLOGIST QUÉBEC

September 26th, 2013 **Marc Boivin,P.Geo.**

Project 326.02

860, boul. de la Chaudière, bureau 202, Québec (Québec) G1X 4B7
Téléphone : (418) 877-7382 Télécopieur : (418) 877-4054

TABLE OF CONTENTS

PAGE

1. INTRODUCTION

At the request of Mr. Bruce Duncan, Executive Chairman & CEO for ***Canada Carbon Inc.***, a detailed mobile TDEM geophysical survey was completed on the Miller-Graphite property between September 18th and September 22th 2013. The system used was a new system called "IMAGEM" developed by Devbrio Geophysics. This survey was a follow-up of a previous IMAGEM survey carried out in May 2013. The objective of the survey was to detailed previous EM anomalies associated with graphite occurrences.

2. PROPERTY, LOCATION AND ACCESS

The Miller-Graphite Property is located about 80 km west of Montreal or 89 km East of Gatineau and 5 km north of Grenville, QC. The Highway 50 passes a few kilometres south of the property and the Scotch road (from Grenville) passes 800m east of the deposit. A bush road links to the deposit and across the property, which allows a very easy access. A power line also crosses the property 500m south of the deposit.

The property is on a hilly area. South of the old pit, the ground is relatively flat, toward a high plateau. The north area of the pit is going down toward a creek with a 20% to 40% slope. The creek is large and has lots of water.

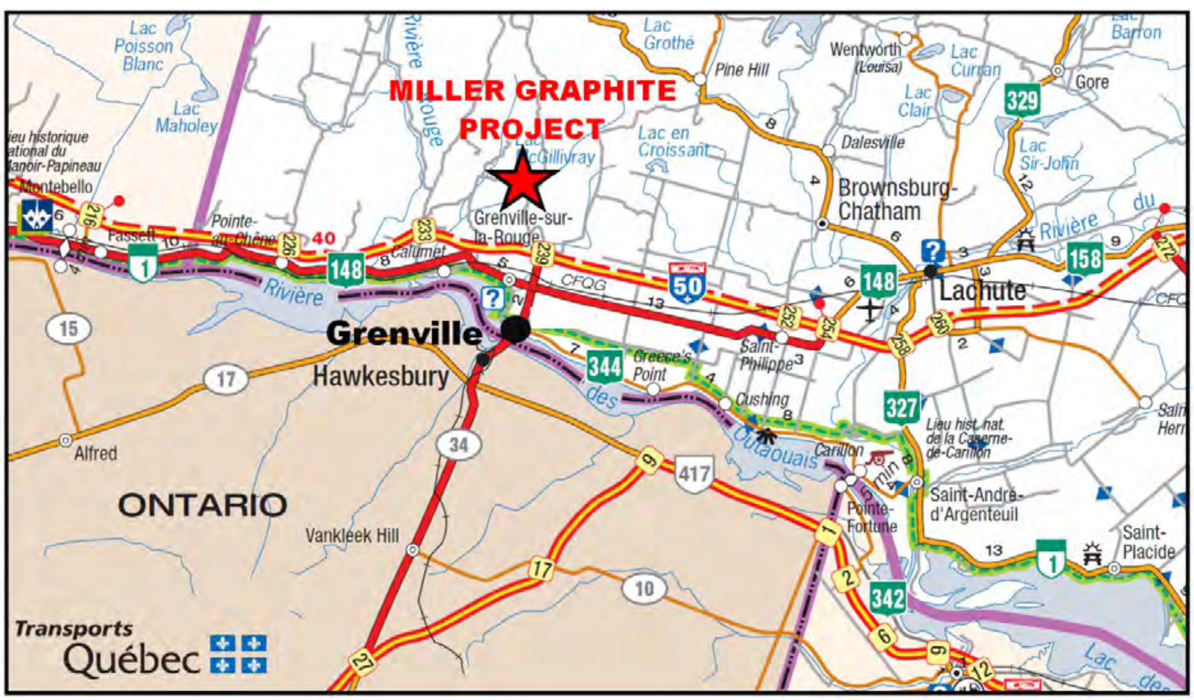


Figure 1. Localization of the Miller-Graphite Property

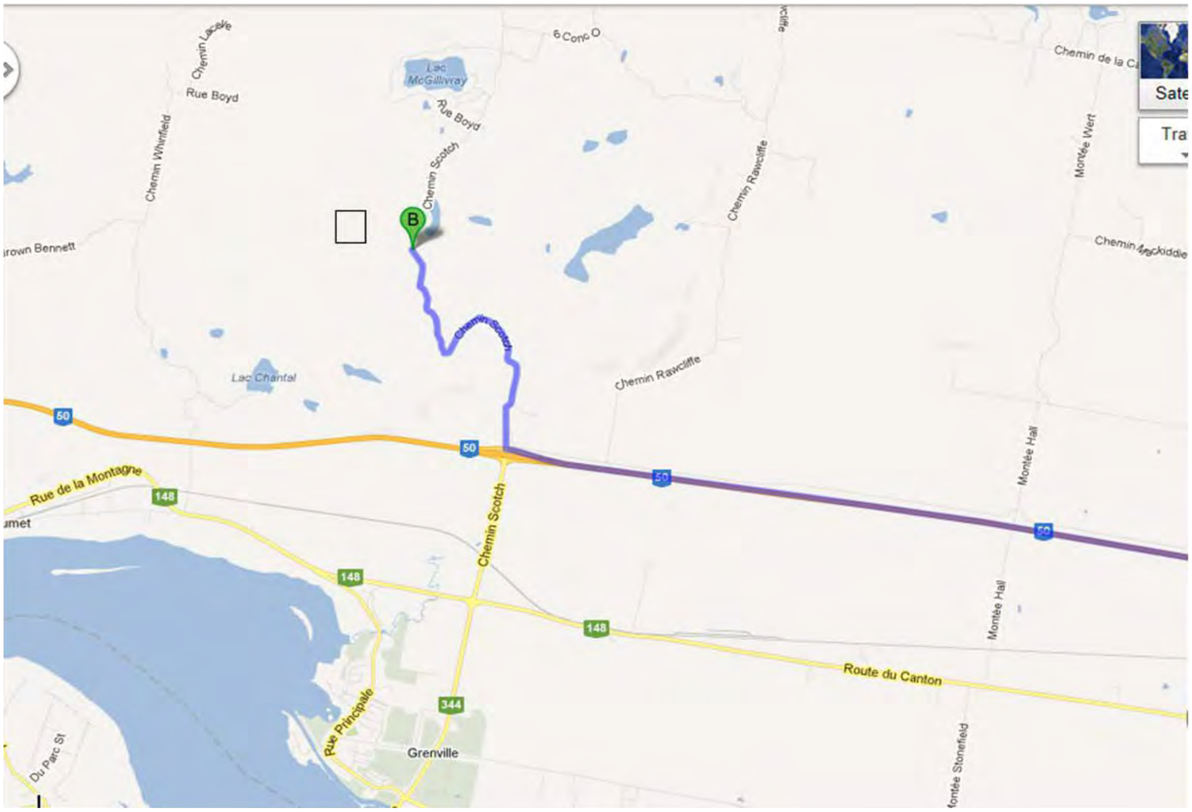


Figure 2. Localization of the Miller-Graphite Property (East Block)

3. CLAIMS

The Miller-Graphite Property East Block consists of 14 claims. The geophysical surveys covered a partial section of the property (4 claims). The portion of the claim map (coming from the Canada Carbon Inc. web site) which covers the Miller-Graphite Property is illustrated in Figure 3 on the next page.

The 4 claims covered are 2299284 2344488 2349742 2349744

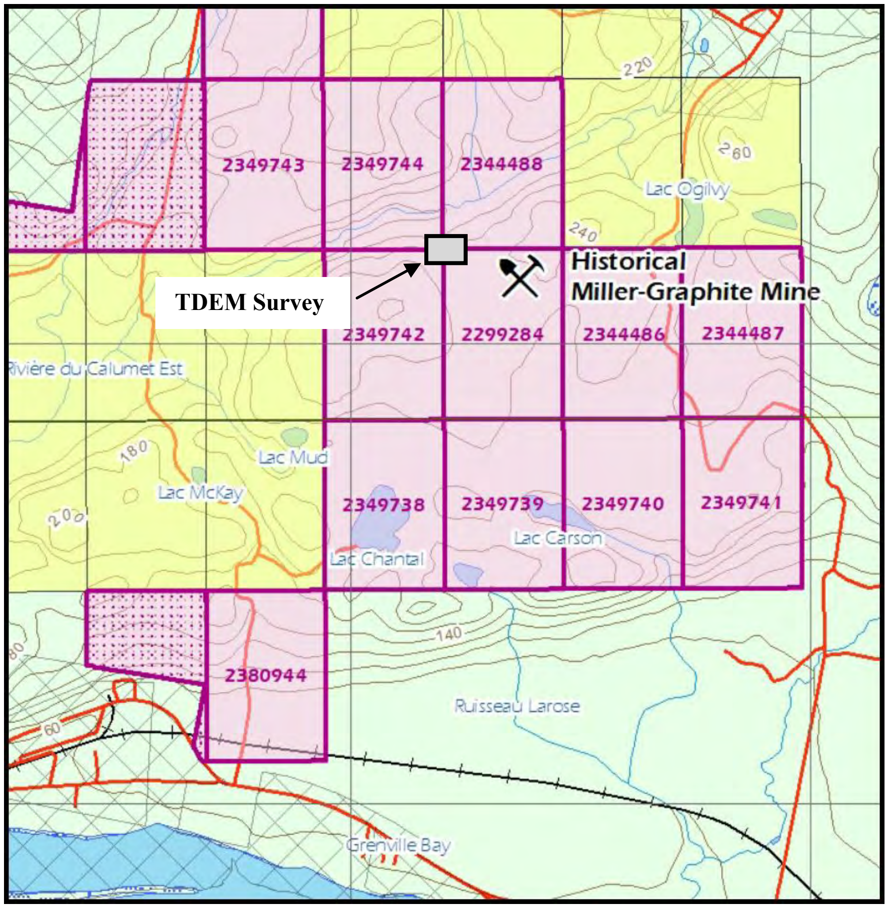


Figure 3. Claim map of the Miller-Graphite Property (East Block).
Source : Canada Carbon Inc. web site

4. PERSONNEL AND INSTRUMENTATION

The IMAGEM was carried out by Devbrio Geophysics. The IMAGEM crew was composed of :

- Andrew Hay, P.Geo.,
- Ian Jaffe, field assistant

The instrument used was IMAGEM prototype #2

The report was written by Marc Boivin P. Geo., consulting geophysicist.

The maps were finalized by Donald Saindon, geomatician.

5. PREVIOUS WORK

The beginning of the graphite extraction in the area started in 1845 and the Miller-Graphite Mine was probably the first graphite operation in Canada.

The other mining operation was in the Buckingham area (Mine Walker – 1876-1896, 1906) west of Grenville.

Around 1930, the extraction of graphite declined and was abandoned. The industry could not support the competition with the graphite from Madagascar and Ceylon (now Sri Lanka).

The only graphite mine in operation in Canada started in 1989, 25km south of Mont-Laurier. They are extracting crucible graphite in marble, like the Miller-Graphite deposit.

A 2013 sampling program was initiated on the property.

In May 2013, a combined HLEM (MaxMin), TDEM (Imagem), IP and Beep-Mat surveys were completed on the Miller-Graphite property. The IP and TDEM surveys have outlined shallow graphite occurrences.

6. REGIONAL GEOLOGY

Mésoprotérozoïque (1600-1000 Ma*)

The Ottawa River territory extends in major part on the Grenville Province, a division of the Canadian Shield that was formed between 1300 and 1000 Ma at the side of a large continent, Laurentia. The Grenville orogeny with subduction of oceanic crust and continent collision created a large chain of hills that were eroded deep over time.

Mineralogically, the most interesting rocks belong to the Grenville Group. In the present area, the Central belt of metasediments is composed of marbles, paragneiss and quartzites, and amphibolites of volcanic origin. The marbles extend along the Gatineau valley up to the Baskatong Reservoir and up to Buckingham. East of that, there is still some marble but gneiss and quartzites are dominant.

Deposits of zinc-lead and Graphite are in relation with marbles.

7. PROPERTY GEOLOGY *(Extract from MRNW and ESIGEOM, 2012)*

The mineralization at Miller-Graphite Mine consists of unknown quantity of graphite in five (5) graphite veins 10 to 60 cm wide. Such graphite veins usually consist of high grade mineralization, between 30 to 90% graphite. The size of the flake can vary between 0,5mm to many centimetres and would correspond to coarse flake size. Contact metamorphisms minerals are also present (Apatite, garnet, diopside, sphene, vesuvianite, wollastonite, a lithium mineral, and zircon). The graphite veins are hosted in a marble unit and a pegmatite, close to the contact of the two units. Their direction is unknown.

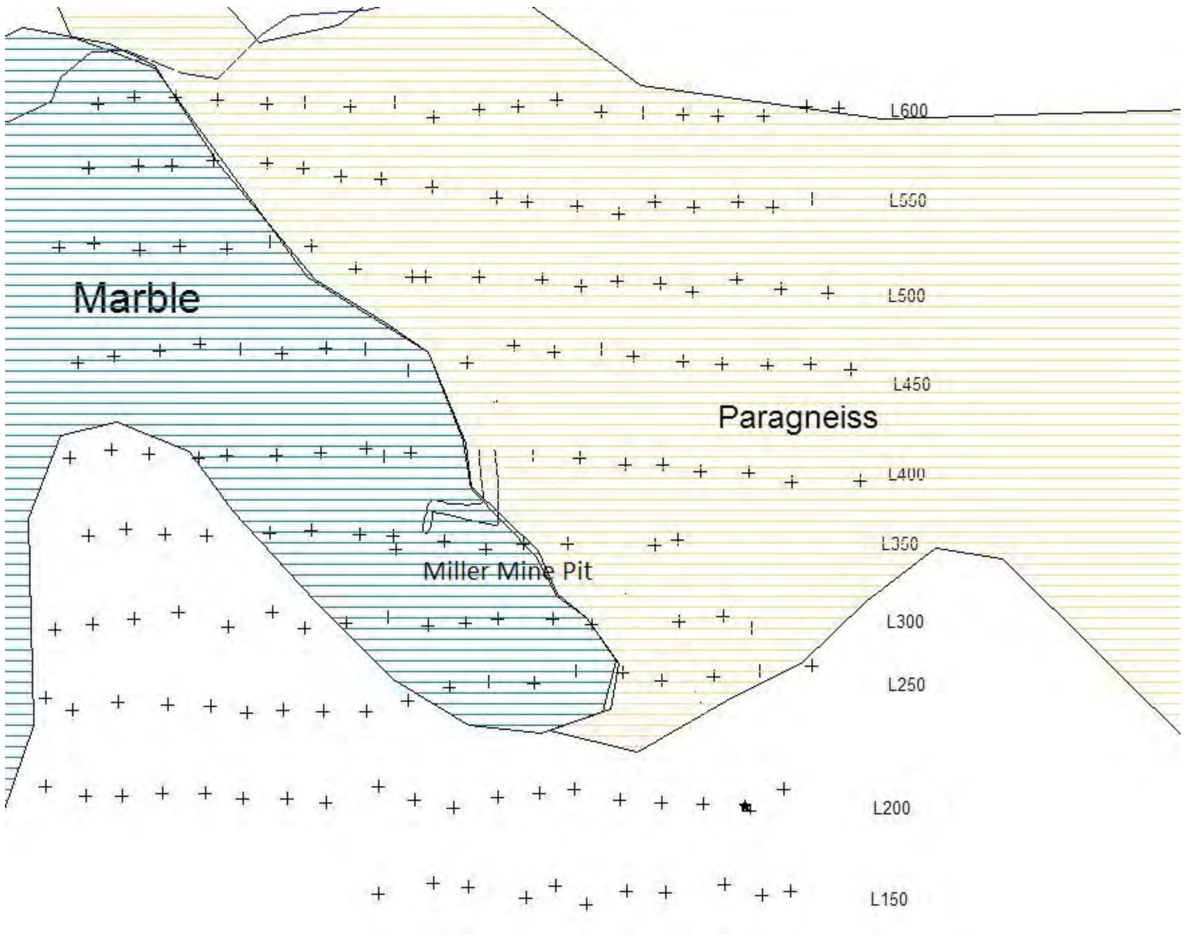


Figure 4. Geology map of the Miller-Graphite Property.

Note from the author: With the Beep Mat and the GPS, the main vein at the southeast corner of the pit was followed. It starts toward southeast but curves toward east to hit a brecciated area with several conductive veins.

The Miller-Graphite Mine is classified as a skarn deposit. The contact between a pegmatite intrusion and a marble unit has been mineralized by fluids coming out of the intrusive body.

Coming from the Canada Carbon Inc. web site which covers the Miller-Graphite Property

8. FIELD WORK AND PROCEDURE

The geophysical work was contracted to Géosig Inc.

The theoretical grid consisted by east-west 5 metres spaced lines over an area of 300 metres X 150 metres.

The real line path was recovered by the GPS unit integrated with the IMAGEM system. The presence of very recent exploration works (pits, fallen trees, ….) has significantly modified the original path. However, the planned surface was covered.

A total of 9.55km of mobile TDEM (IMAGEM) was completed. Continuous readings were recorded with an average spacing of 20 readings per meter.

9. IMAGEM SURVEY

9.1 Methodology

IMAGEM is a new mobile Time Domain EM (TDEM) technology actually in development. It consists to a very small system similar to the helicopter-borne TDEM system. This survey is recommended to detect conductive materials, such as sulfides or graphite. Because of the sensibility and the high spatial resolution of the technique, the technique can detect very small amount of conductive materials or multiple sub-parallel features.

The equipment consists to a rectangular frame, used to transmitting and receiving. The configuration is a moving IN-LOOP geometry.

Transmitter and receiver is fully digital and can be configured to different needs. The system is taking continious reading and is equipped of a GPS and inclinometer.

Transmitter is powered by a battery pack. Receiver records the full wave-form EM field along a $12m^2$ receiving horizontal coil

Transmitter

- Effective surface : 4.41 m^2
- Peak current: 700A
- Base frequency: 30 Hz
- Pulse width: 486 µs
- Wave form : Half-sine
- Magnetic moment: 3087 NIA
- Terrain clearance : 0.8 m

Receiver

- Sensor : air coil
- Surface : 0.04 m^2
- Number of turn : 298
- Effective surface :11.92 m^2

The acquisition system records the full wave-form. Extracted data include 110 time channels (25 windows ON-TIME and 85 OFF-TIME windows). Table 1 show the time windows distribution.

9.2 Presentation of the results

The results of the IMAGEM survey are presented on the 1:500 scale map no. 9417, on which we plotted channels #33 to 54.

Canal	Début (ms)	Impulsion	Canal	Début (ms)	Impulsion	Canal	Début (ms)	Impulsion
1	0.000	ON	**38**	0.610	OFF	**75**	2.067	OFF
2	0.019	ON	**39**	0.619	OFF	**76**	2.171	OFF
3	0.038	ON	**40**	0.629	OFF	**77**	2.286	OFF
4	0.057	ON	**41**	0.638	OFF	**78**	2.410	OFF
5	0.076	ON	**42**	0.648	OFF	**79**	2.543	OFF
6	0.095	ON	**43**	0.667	OFF	**80**	2.686	OFF
7	0.114	ON	**44**	0.676	OFF	**81**	2.838	OFF
8	0.133	ON	**45**	0.695	OFF	**82**	3.000	OFF
9	0.152	ON	**46**	0.705	OFF	**83**	3.171	OFF
10	0.171	ON	**47**	0.724	OFF	**84**	3.352	OFF
11	0.190	ON	**48**	0.743	OFF	**85**	3.552	OFF
12	0.210	ON	**49**	0.762	OFF	**86**	3.762	OFF
13	0.229	ON	**50**	0.781	OFF	**87**	3.981	OFF
14	0.248	ON	**51**	0.800	OFF	**88**	4.229	OFF
15	0.267	ON	**52**	0.819	OFF	**89**	4.476	OFF
16	0.286	ON	**53**	0.848	OFF	**90**	4.752	OFF
17	0.305	ON	**54**	0.867	OFF	**91**	5.048	OFF
18	0.324	ON	**55**	0.895	OFF	**92**	5.352	OFF
19	0.343	ON	**56**	0.924	OFF	**93**	5.686	OFF
20	0.362	ON	**57**	0.962	OFF	**94**	6.048	OFF
21	0.381	ON	**58**	0.990	OFF	**95**	6.429	OFF
22	0.400	ON	**59**	1.029	OFF	**96**	6.829	OFF
23	0.419	ON	**60**	1.067	OFF	**97**	7.267	OFF
24	0.438	ON	**61**	1.105	OFF	**98**	7.724	OFF
25	0.486	RAMPE	**62**	1.143	OFF	**99**	8.219	OFF
26	0.495	OFF	**63**	1.190	OFF	**100**	8.752	OFF
27	0.505	OFF	**64**	1.248	OFF	**101**	9.314	OFF
28	0.514	OFF	**65**	1.295	OFF	**102**	9.914	OFF
29	0.524	OFF	**66**	1.352	OFF	**103**	10.562	OFF
30	0.533	OFF	**67**	1.410	OFF	**104**	11.248	OFF
31	0.543	OFF	**68**	1.476	OFF	**105**	11.981	OFF
32	0.552	OFF	**69**	1.543	OFF	**106**	12.762	OFF
33	0.562	OFF	**70**	1.619	OFF	**107**	13.600	OFF
34	0.571	OFF	**71**	1.695	OFF	**108**	14.495	OFF
35	0.581	OFF	**72**	1.781	OFF	**109**	15.448	OFF
36	0.590	OFF	**73**	1.867	OFF	**110**	16.476	OFF
37	0.600	OFF	**74**	1.962	OFF			

Table 1 : Location of the time windows

10. IMAGEM RESULTS

10.1 Description of the IMAGEM anomalies

Fifty-seven (57) anomalies have been detected. They are listed on table 2.

The anomalies are characterized by signal amplitude and geometrical parameters. Cultural sources were noticed by the IMAGEM crew but some anomalies can by possibly associated with cultural sources.

Easting	Northing	ID	COMMENTS
530576	5057961	Gr11.5	strong amplitude
530568	5057977	Gr14.1	strong amplitude
530566	5057972	Gr14.2	strong amplitude
530566	5057976	Gr14.6	strong amplitude
530677	5057941	Gr22.4	strong amplitude
530588	5058006	Gr23.2	strong amplitude
530575	5058002	Gr23.6	strong amplitude
530583	5058004	Gr23.7	strong amplitude
530587	5058001	Gr23.8	strong amplitude
530578	5057994	Gr23.9	strong amplitude
530665	5057937	Gr10.1	moderate amplitude
530524	5057953	Gr11.1	moderate amplitude
530531	5057956	Gr11.2	moderate amplitude
530570	5057955	Gr11.3	moderate amplitude
530573	5057956	Gr11.4	moderate amplitude
530579	5057958	Gr11.6	moderate amplitude
530582	5057973	Gr12.1	moderate amplitude
530589	5057979	Gr12.2	moderate amplitude
530573	5057961	Gr14.3	moderate amplitude
530581	5057965	Gr14.4	moderate amplitude
530573	5057971	Gr14.5	moderate amplitude
530591	5057996	Gr14.7	moderate amplitude
530507	5057985	Gr15.6	moderate amplitude
530526	5058040	Gr18.3	moderate amplitude
530668	5057935	Gr19.2	moderate amplitude
530677	5057934	Gr20.4	moderate amplitude
530680	5057947	Gr22.5	moderate amplitude
530586	5057995	Gr23.1	moderate amplitude
530518	5057959	Gr23.3	moderate amplitude
530512	5057971	Gr23.4	moderate amplitude
530501	5057992	Gr15.1	possible anomaly
530481	5057989	Gr15.2	possible anomaly
530477	5058028	Gr15.3	possible anomaly
530497	5057899	Gr15.4	possible anomaly
530492	5057913	Gr15.5	possible anomaly
530665	5058011	Gr16.1	possible anomaly
530699	5057999	Gr16.2	possible anomaly
530561	5058060	Gr18.1	possible anomaly
530550	5058048	Gr18.2	possible anomaly
530518	5058044	Gr18.4	possible anomaly
530475	5057965	Gr18.5	possible anomaly
530514	5057923	Gr19.1	possible anomaly

530611	5057893	Gr20.1	possible anomaly
530629	5057897	Gr20.2	possible anomaly
530654	5057915	Gr20.3	possible anomaly
530480	5057928	Gr21.1	possible anomaly
530489	5057908	Gr21.2	possible anomaly
530497	5057902	Gr22.2	possible anomaly
530677	5057943	Gr22.3	possible anomaly
530519	5057998	Gr23.5	possible anomaly
530652	5057934	Gr9.1	possible anomaly
530576	5057949	Gr10.2	cultural or small source
530581	5058021	Gr15.7	cultural or small source
530488	5057909	Gr20.5	Possible anomaly
530472	5057967	Gr20.6	cultural or small source
530533	5057905	Gr22.1	cultural or small source
530540	5057909	Gr7a-1	cultural or small source

Table 2 : IMAGEM anomaly listing

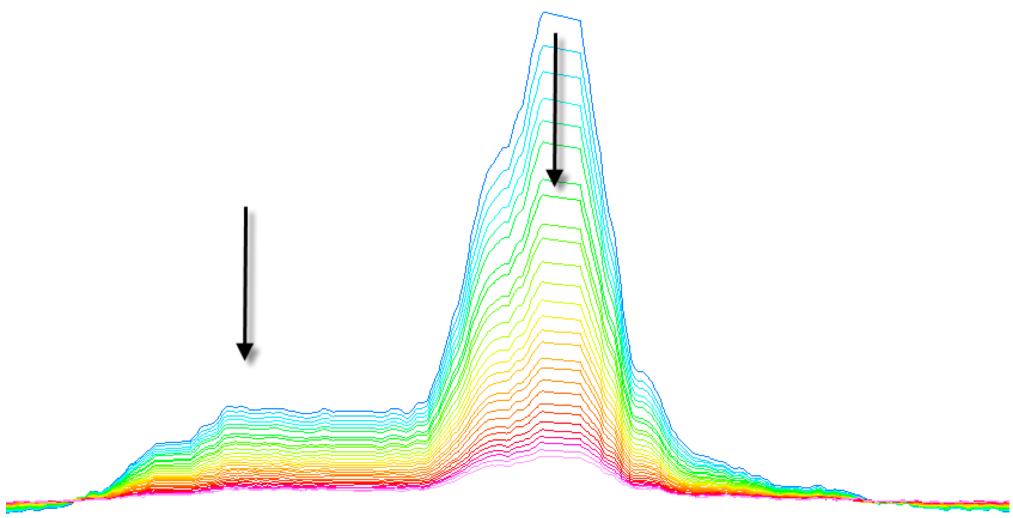


Figure 5. IMAGEM profiles over Line 3

11. INTERPRETATION

The mobile TDEM survey permits to outline 4 anomalous zones (figure 6).

Zone A is sub-divided in 2 sub-areas but it matches with the anomalous zone highlighted by the previous geophysical survey.

Zone B is located along a trail, so cultural interferences are possible.

Zone C have a limited length and was not detected by the previous survey.

Zone D is located on the northern edge of the survey. It matches with a weak IMAGEM anomaly detected in May 2013.

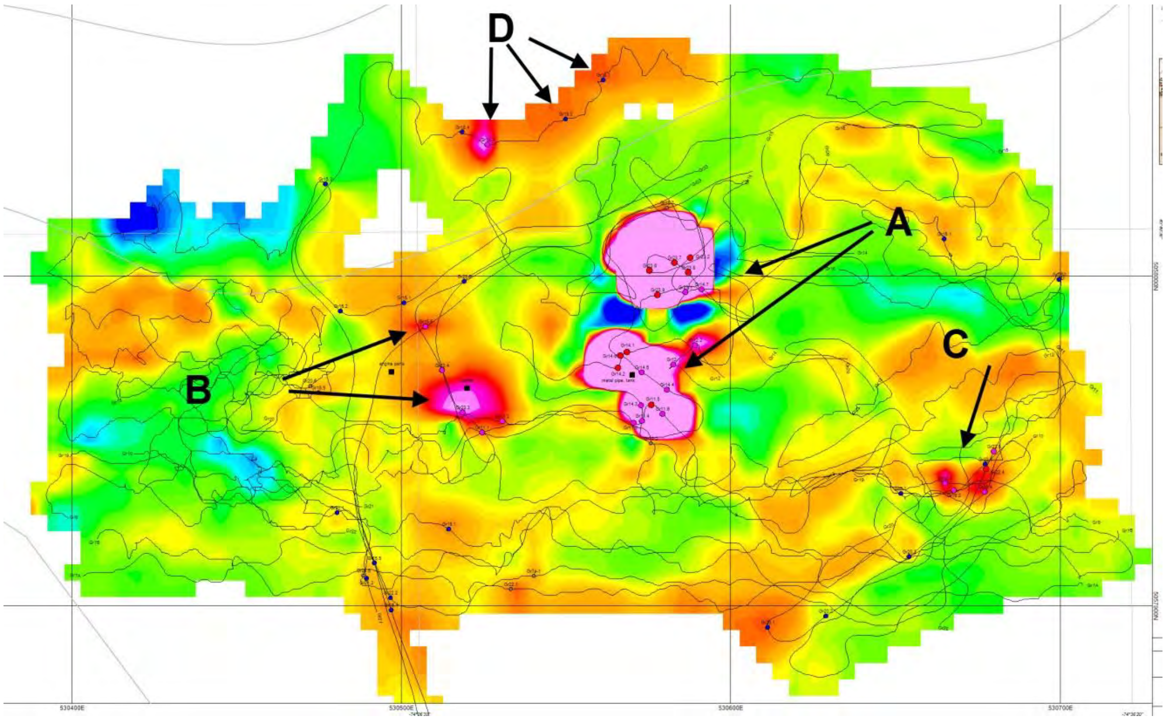


Figure 6. IMAGEM anomalous zones

12. CONCLUSION

The IMAGEM survey has defined several conductive zones. The survey reaches its goal by defining a previously detected conductive zone (zone A). Several smaller conductive zones were also detected. Ground prospecting is highly recommended to confirm presence of graphite.

Marc Boivin, Senior Geophysicist

LIST OF MAPS

Scale : 1 : 500

Map #	Title
9417	Profiles TDEM (IMAGEM) Survey
9418	Interpretation TDEM (IMAGEM) Survey

OTHER GEOPHYSICAL INTERPRETATION
May and June 2013 surveys
IP lines
Strong & sure IP anomaly (0.9 > P > 0.7) often with resistivity decrease
Probable IP anomaly (0.7 > P > 0.4) Moderate, often without resistivity decrease.
Possible IP anomaly (0.4 > P > 0.2) Poorly defined, no resistivity feature
Weak IP increase (P < 0.2) close to signal/noise - or in high resistivity
MaxMin lines
Strong MaxMin Conductor
Medium MaxMin Conductor
Weak MaxMin Conductor
MaxMin Conductor single or multiple
Weak TDEM anomaly
Strong TDEM anomaly
TDEM axis
Beep Mat Conductor
Beep Mat Traverses
- Digital Base Map
© Department of Natural Resources Canada. All rights reserved.
- Geophysics by:
GEOSIG Inc.
Project Localisation Map
MILLER GRAPHITE PROJECT
Grenville
Hawkesbury
ONTARIO
IMAGEM
TDEM Z component
coincident loop geometry
OFF-TIME channels
Profiles scale :
0.0001 volt / cm
GEOPHYSICAL INTERPRETATION
IMAGEM path
strong amplitude
moderate amplitude
possible anomaly
small or cultural source
proven cultural artifact
530400E
530500E
530600E
530700E
5058000N
5057900N
2349744
2344488
2349742
2299284
L 400 N
L 350 N
L 300 N
L 250 N
IP-1
IP-2
IP-3
OLD PIT
Trench
engine parts
loader
metal pipe, tank
Scale 1:500
NAD83 / UTM zone 18N
CANADA carbon
CANADA CARBON INC.
Miller Graphite Project (East Block)
IMAGEM (TDEM) detailed survey
Profile Map
OFF-TIME Z component
NTS 32G/10, Grenville Township
Excuted by Andrew Hay, P.Geo. (September 2013)
Interpeted by Marc Boivin, P.Geo. (September 2013)
Geosig Project # 326.02, Map # 9417

OTHER GEOPHYSICAL INTERPRETATION
May and June 2013 surveys
IP lines
Strong & sure IP anomaly (0.9 > P > 0.7) often with resistivity decrease
Probable IP anomaly (0.7 > P > 0.4) Moderate, often without resistivity decrease.
Possible IP anomaly (0.4 > P > 0.2) Poorly defined, no resistivity feature
Weak IP increase (P < 0.2) close to signal/noise - or in high resistivity
MaxMin lines
Strong MaxMin Conductor
Medium MaxMin Conductor
Weak MaxMin Conductor
MaxMin Conductor single or multiple
Weak TDEM anomaly
Strong TDEM anomaly
TDEM axis
Beep Mat Conductor
Beep Mat Traverses
- Digital Base Map
© Department of Natural Resources Canada. All rights reserved.
- Geophysics by: GEOSIG Inc.
Project Localisation Map
MILLER GRAPHITE PROJECT
Grenville
Hawkesbury
ONTARIO
Transports Québec
Channel #40
(volts)
GEOPHYSICAL INTERPRETATION
Gr7 IMAGEM path
strong amplitude
moderate amplitude
possible anomaly
small or cultural source
proven cultural artifact
IP-1
IP-2
IP-3
OLD PIT
Trench
L 400 N
L 350 N
L 300 N
L 250 N
2349744
2344488
2349742
2299284
530400E
530500E
530600E
530700E
5058000N
5057900N
Scale 1:500
NAD83 / UTM zone 18N
CANADA carbon
CANADA CARBON INC.
Miller Graphite Project (East Block)
IMAGEM (TDEM) detailed survey
Interpretation Map
OFF-TIME Z component
NTS 32G/10, Grenville Township
Excuted by Andrew Hay, P.Geo. (September 2013)
Interpeted by Marc Boivin, P.Geo. (September 2013)
Geosig Project # 326.02, Map # 9418

Appendix 12. Logs from the three drill campaings

Hole # VN-21 (?)	From 0	To 2m	Area	Logged By Steven L

Project	Page ___ of ___
Azi ___ Incl ___ TD ___	Date ___
Easting ___ Northing ___	

Depth	Assay: %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
0–1m			wollastonite GP peed (?)															15	Wollastonite/Graphite and VN1 surface showing 15% GP; 60% Wollastonite 15% PX Pegmatitic texture of Wollastonite GP is fine to coarse
1m–2m			broken core (no contact) Silicified marble	Si-x/15°					1									tr	Silicified marble
2m	End of hole at 2m																		

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals) Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong) Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

QUÉBEC * STEVEN LAUZIER # 1430 * GEOLOGIST / GÉOLOGUE

Steven Lauzier

Hole # UN01-02	From 0	To 10	Project Mi-Clas	Page 1 of 2
Area	Logged By		Azi Incl TD	Date
			Easting Northing	

Depth	Assay %CG	Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
0,2		Overburden																	No measurable contact
		Pegmatite																10	Wollastonite 45%
1,8			contact 45																contact 45° c.a
														2					
		Silicified marble												1					
									3							1	1	1	
														1					
														2					
														2					
															1				
				20°															beddings 20° c.a

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # VN01-02 From 10 To 15
Area ________ Logged By ________

Project Miller | Page 2 of 2
Azi ____ Incl ____ TD ____ | Date ____
Easting ________ Northing ________

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Structure: Fault	Structure: Breccia	Structure: Vn	Structure: Gouge	Alteration: Silica	Alteration: Clay	Alteration: Decalc.	Alteration: Propylitic	Alteration: Potassic	Mineralogy: FeOx	Mineralogy: CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
		Silicified marble													1				
12,2		Pegmatite vein	contact 30° / contact 40°																Wollastonite 30%
12,5		Silicified marble		35°										2	2				beddings 35° c.a.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # VN 02-01	From 0 To 10	Project Miller	Page 1 of 2
Area ____	Logged By M. [illegible]	Azi ____ Incl ____ TD ____	Date ____
		Easting ____ Northing ____	

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Vn	Alteration: Silica	CO3	Carbon %	Comments
		Overburden	contact ?						No mesurable contact.
		Massive Graphite				1		60 to 70 %	
2,70		Wollasto						30	wollastonite 65% (phenocrystals) diopside 5%
		silicified bedded marble	contact 80°	10° / G; 10°	G	3		2	Wollastonite 20%
4,8		Wollastonite Marble				3		5	No mesurable contact wollastonite (phenocrystals) 40%
5		Pegmatite	contact 80°					7	Wollastonite (phenocrystals): 44% diopside 40% No mesurable contact
5,6		Silicified marble		30°		3		8	bedding 30° c.a.
							3	10	
				0-5° / G	G				Graphite vein 0-5° c.a.
							7		
							3		increasing the amount of silica

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1=weak, 2=moderate, 3=strong). Graphic (measured relative to core axis; 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST
S. LAUZIER
1430
QUÉBEC

Hole # VN02-01 From 10 To 15
Area ________ Logged By M. Fannugen

Project Millen | Page 2 of 2
Azi ____ Incl ____ TD ____ | Date ____
Easting ________ Northing ________

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
		Silicified marble							3						5	3		2	slightly bedded: 80° C.a.
		ultra silicified marble							3							1			
		silicified marble							3						3	2			wollastonite 15% diopside 30%
			END																

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # VN 02-02	From 0	To 10	Page 1 of 2
Area	Logged By		Date
Project	Azi	Incl	TD
Easting	Northing		

Depth	Assay % CG	Rock Type	Structure Graphic	Vn	Silica	FeOx	CO_3	Carbon %	Comments
0 – 1,7		Paragneiss			3	3		5	graphite locally at 10% silicified mafic rock
1,7									No measurable contact
1,7 – 5		Silicified marble	45 60		3	2 2 2	1	2	beddings 45° c.a beddings 60° c.a
5									gradual contact
5 – 9,5		Quartzite (Ultra silicified marble)	90 55 G 80 C	G C			1		beddings 90° c.a between 5,8 & 6m Graphite vein 55° c.a ; 8 cm thick at 7,3m calcite vein 80° c.a ; <0,5 cm thick at 7,3m
9,5			contact 45						contact 45° c.a.
9,5 – 9,8		Pegmatite							contact 5?° c.a

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST
STEVEN LAUZIER
1420

Hole # VN02-02 **From** 10 **To** 10.5
Area ______ **Logged By** ______

Project ______ **Page** 2 **of** 2
Azi ____ **Incl** ____ **TD** ____ **Date** ______
Easting ______ **Northing** ______

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic		Mineralogy: FeOx	CO_3	Sulfides: Py %	Sulfides: Pyr %		Carbon %			Comments
		Quartzite (ultra S. ...)	2'	90					3														
		END																					

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH13-01 From 0 To 10				Structure					Alteration					Mineralogy					Project	Page 1 of 6
Area	Logged By M. F[illegible]															Sulfides			Azi Incl TD	Date
Depth	Assay	Lithology		Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Easting Northing	
	% CG	Rock Type	Graphic																Comments	
0 – 4,5		Overburden																	No measurable contact	
4,5 – 5,2		silicified diopside marble	contact 80°						3					2		1		1		
5,2 – 6		Paragneiss												1				1	Coarser minerals (7 to 8mm max)	
6		Serpentinized breccia				Srp													No measurable contact	
																			No measurable contact	
– 8,9		Paragneiss															5	2		
8,9 – 10		Quartzite	contact 70°						3							1		1	contact 70° c.a	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST
STEVEN LAUZIER
1430
QUÉBEC

[signature]

Hole # DDH13-01	From 10	To 20	Project Moller	Page 2 of 6
Area	Logged By		Azi Incl TD	Date
			Easting Northing	

Depth	Assay %CG	Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
		Quartzite							3							1	2	1	
10,5		Paragneiss	contact 30°	30°												2	3		
		Silicified marble	contact 50°						3						5				
															1	2	5	1	
13,5		Quartzite (ultra silicified marble?)														1	2		
				45° G.			G												Graphite vein (< 1 cm thick) 45° C.a.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # IDHD-01 From 20 To 30

Area ______ Logged By ______

Project ______ Page 3 of 6

Azi ____ Incl ____ TD ____ Date ______

Easting ______ Northing ______

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %	Carbon %	Comments
		Quartzite (ultra silicified marble?)																	
		Quartzite														1	1	1	
25,7		Ultra silicified marble													10	1	2		gradual contact ...

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

S C

Hole # DDH13-01 From 30 To 40		Project Miller	Page 4 of 6
Area ______ Logged By ______		Azi ___ Incl ___ TD ___	Date ___
		Easting ______ Northing ______	

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyr %	Carbon %	Comments
30–33		ultra silicified marble													3	1	2		
33–34,5		Quartzite	contact 50°													1	1		
34,5		Quartz Vein	contact 30°				Q												
–37,7		silicified marble							2						3				
									3						1		1		
37,7–40		Pegmatite	contact 45°													1	1		wollastonite 30%

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

5 L

Hole # DDH13-01	From 40	To 50	Project Miller	Page 5 of 6
Area	Logged By		Azi / Incl / TD	Date
			Easting / Northing	

Depth	Assay % CG	Rock Type	Structure Graphic	Silica	Py %	Pyr %	(Sulfides)	Comments
40–40,3		Pegmatite			1	1		wollastonite 30%
40,3–42,5		Pegmatite - paragneiss Mix			1	3	1	wollastonite 3%
42,5–43,9		Dark Paragneiss	50			6		
43,9–44,7		Pegmatite						Wollastonite 60%
44,7–45,2		Paragneiss pegmatite mix				3		Wollastonite 10%
45,2–46		Pegmatite				1		Wollastonite 35%
46–49,2		Paragneiss - pegmatite mix		3		3		wollastonite 20%
49,2–49,7		Pegmatite						gradual contact
49,7								gradual contact

Lithology graphic notes: contact 15° (at 43,9); contact 60° (at 46)

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH13-01 From 50 To 60

Area ________ Logged By ________

Project Millan | Page 6 of 6

Azi ____ Incl ____ TD ____ | Date ____

Easting ________ Northing ________

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
50–50,7		Pegmatite - paragneiss Mix							2										Wollastonite 15%
50,7–51,2		Pegmatite																	gradual contact wollastonite 50% gradual contact
51,2–52,7		Pegmatite silicified marble Mix	contact 30°						3						1				Wollastonite 5% contact 30° C.A
52,7–57		silicified marble							3						2				
															1				
		Pegmatite					X												Pegmatite vein : 55,6 to 55,8m wollastonite 30%.
		Pegmatite					X								1				Pegmatite vein : 56 to 56,1 m wollastonite 40%
															1				
57		END																	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

5C

Hole # DDH13-02 From 0 To 10					Structure					Alteration						Mineralogy								Project Millen	Page 1 of 7
Area ____ Logged By ____																		Sulfides						Azi ___ Incl ___ TD ___	Date ___
Depth	Assay	Lithology		Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic		FeOx	CO_3	Py %	Pyrr %		Carbon %				Easting ___ Northing ___	
	% CG	Rock Type	Graphic																					Comments	
0,2		Overburden																							
		White marble														3	1	1		1				disseminated graphite 1%	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE GEOLOGIST
STEVEN LAUZIER
1430
QUÉBEC

GÉOLOGUE GEOLOGIST
STEVEN LAUZIER
1430
QUÉBEC

Hole # ODH13-02	From 10	To 20	Page 2 of 7
Area	Logged By N. Fannajia	Project	Date
Azi	Incl	TD	
Easting	Northing		

Depth	Assay % CG	Rock Type	Structure Graphic	Vn	Silica	FeOx	CO3	Py %	Pyrr %	Carbon %	Comments
10–14,5		White marble					3	1	1	1	
14,5		Marble	30°		1		3	3		2	alternating between beddings (30° c.a) of: calcite, diopside, serpentine, silica disseminated graphite 2% Most of the beddings are made of calcite but they decrease and serpentine's beddings increase.
			30° Ser.								
			30° Peg	Ser				8			Serpentine vein.
		Pegmatite		Peg							Wollastonite : 20%
			30° Ser.	Ser				10			Serpentine vein
			15°								
		Paragneiss	70 / 30					5	2		serpentine 30% diopside 40%

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH12-08	From 20	To 30	Project Halfen	Page 3 of 7
Area ______	Logged By M. Fanucchi		Azi ____ Incl ____ TD ____	Date ______
			Easting ______ Northing ______	

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic		FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %		Carbon %			Comments
20,6			contact 30°																				
		Quartzite	contact 60°	60					3								2	1					beddings of silica 50° c.a
23,7		Paragneiss	contact 40°	45													4	3					contact 60° c.a
25,7		White and coarse quartzite	contact 50°														2	1					contact 40° c.a
26,6		Paragneiss	contact 80°	25														10 / 3					contact 50° c.a
28,9		ultra silicified marble		20					3							1							contact 80° c.a beddings 20° c.a.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH13-02 From 30 To 40

Area ______ Logged By D. Fannucia

Project Miller | Page 4 of 7

Azi ____ Incl ____ TD ____ | Date ____

Easting ________ Northing ________

Depth	Assay % CG	Lithology – Rock Type	Lithology – Graphic	Structure – Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
30–32,8		ultra silicified marble		20					3						1				
32,8																			gradual contact
32,8–38		Quartzite							3							2			
38–38,6		Paragneiss	contact 80°	20												2	4		bedding 80°
38,6–40		Quartzite	contact 80°						3								3		

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

5C

Hole # DDH13-02 From 40 To 50

Area ________ Logged By M. Eanusia

Project Hiller | Page 5 of 7

Azi ____ Incl ____ TD ____ | Date ______

Easting ________ Northing ________

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
40 – 40,6		Quartzite	contact 20°																
40,6 – 40,8	Silicified	Marble	contact 20°						3						3				Silica 40% calcite 48%.
																2			
				15° Dia			Dia												Diabase dyke oriented 15° C.A. microcrystalline greenish paste between 43,3 and 43,4m
																2	1		
		Quartzite		5° Dia			Dia												Diabase dyke: 45 to 45,1m
																3	3		
				5° Dia			Dia												Diabase dyke: 45,5 to 45,9m
																4	3		
																1	2		

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH13-02 From 50 To 60				Structure	Alteration	Mineralogy	Project Miller	Page 6 of 7
Area ______ Logged By M. Fanwaya							Azi ___ Incl ___ TD ___	Date ___
Depth	Assay %CG	Lithology Rock Type	Graphic	Graphic / Fault / Breccia / Vn / Gouge	Silica / Clay / Decalc. / Propylitic / Potassic	FeOx / CO_3 / Sulfides Py % / Pyrr % / Carbon %	Easting ___ Northing ___	Comments
		Quartzite	contact 30°					
50,5		Pegmatite	contact 30°			Carbon % 1	wollastonite 52%	
50,7		Quartzite				FeOx 1		
		Quartzite - pegmatite contact		contact 80°; contact 0°; contact 30°		Pyrr % 1	contact: up = 80°, middle = 0°, down = 30°	
51,7		Pegmatite				FeOx 1	wollastonite 45%	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # ODH13-02 From 60 To 70				Structure					Alteration					Mineralogy						Project Miller	Page 7 of 7
Area	Logged By M. Fennessy															Sulfides				Azi Incl TD	Date
Depth	Assay	Lithology		Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %		Carbon %	Easting Northing	
	% CG	Rock Type	Graphic																	Comments	
63		Pegmatite	contact 50°																		
66		Quartzite (or ultra silicified diopside marble)		60°					3								2			slightly bedded: 60° Ca.	
		END																			

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-03 From 0 To 10
Area ________ Logged By M. Farrugia

Project Millen
Page 1 of 6
Azi ____ Incl ____ TD ____ Date ______
Easting ________ Northing ________

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO3	Py %	Pyr %	Carbon %	Comments
0–1				30										2		2	1	17	diopside = 30% Silica: 35% FeOx restricted to the upper paragneiss
1–3.7		paragneiss		25												1	1	3	biotite 1% Silica 49% diopside 40% dissiminated graphite 3%
3.7–3.9		Pegmatite	contact 80° / contact 30°														1		upper contact: 80° wollastonite 40% contact 30°
3.9–9		Paragneiss		45° W			W									3	2	3	wollastonite vein. wollastonite 72%: Silica 15% diopside 5% Titanite 1%
																4	6		
9–10		Paragneiss pegmatite contact														1	2		gradual contact Mix between the 2 units: paragneiss 45% (Diopside 20% Silica 25%) pegmatite 55% (" 5% " 39% wollastonite 10% Titanite 1%)

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE GEOLOGIST STEVEN LAUZIER # 1430 QUÉBEC

Hole # DDH13-03	From 10	To 20	Area	Logged By M. Farnaga	Project	Azi	Incl	TD	Easting	Northing	Page 2 of 6	Date

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %	Carbon %	Comments
10 – 10,5		Paragneiss-pegmatite contact																	Mix between the 2 units: paragneiss 45% pegmatite 35%
10,5 – 12,7		Pegmatite	contact 35°													1	1		wollastonite 40%
12,7 – 17,5		Paragneiss		35° W.			W												wollastonite vein: 13,6 to 13,7 m
				15° P			P.												pegmatite vein: 14,8 to 15,1 m
				15° P.			P												pegmatite vein: 15,2 to 15,4 m
17,5 – 17,7		Silica vein		65° S.			S												silica vein
17,7 – 20		Quartzite							3							1			

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH13-03 From 20 To 30 | Area ____ Logged By V. Farrugia

Project Miflex | Page 3 of 6
Azi ____ Incl ____ TD ____ | Date ____
Easting ____ Northing ____

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic		FeOx	CO_3	Py %	Pyrr %		Carbon %			Comments
		Quartzite	contact 10°																				
20.9		Pegmatite	contact 30°														1	2					
22.5		Quartzite																2					
									3								2	3		2			disseminated graphite 2%
			contact 15°														1	5					Biotite 15% disseminated graphite
27.3		white marble														3	1	2		1			Calcite 70% disseminated graphite 1%

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-02	From 30	To 40	Project Millar	Page 4 of 6
Area ______	Logged By M. Fanniuzzi		Azi ___ Incl ___ TD ___	Date ____
			Easting ______ Northing ______	

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
30 – 33,3		White marble							1						3			1	disseminated graphite 1%
33,3 – 34,6		Marble							2						3	1			More silica than in white marble
34,6 – 36,4 (35,8; 36)		White Marble		15° Dia.; 45°			Dia		1						3				diabase dyke greenish paste with 7% of phenocrysts. Dyke oriented 15° c.a. beddings in marble 45° C a. between 36 and 36,2 m.
36,4 – 38,7		paragneiss - pegmatite mix		60°															bedded rock with a significant mixing between the two units beddings: 60° C. a.
38,7 – 40		Paragneiss		40°								1				1	2	1	Epidote 3% graphite, pyrite and pyrrhotite are in the beddings beddings: 40° C a.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

5L

Hole # DDH13-03 From 40 To 50

Area ________ Logged By M. Famuga

Project ________ Page 5 of 6

Azi ____ Incl ____ TD ____ Date ______

Easting ________ Northing ________

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
40–42		Paragneiss		40°												1	2	1	silica 60%. Diopside 30% biotite 3% epidote 3%
42–47		Ultra silicified paragneiss (quartzite?)		35°					3							1	1		silica 77–83% ! beddings 35° C.a. The rock seems to be a paragneiss but the amount of silica is far greater than before.
47–50		Pegmatite	Contact 40°	? G.			G.									3	1	40	graphite vein: wollastonite 30% graphite 40% between 47,9 to 48,3 m. lower and upper contact immeasurable

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-03 From 50 To 60
Area ________ Logged By D. Fonnuario

Project ________ Page 6 of 6
Azi ____ Incl ____ TD ____ Date ____
Easting ________ Northing ________

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOx	CO_3	Sulfides: Py %	Pyrr %	Carbon %	Comments
50		Pegmatite	contact 20°																
50,5		Dark Paragneiss	contact 20											2		10	5		contact 20° c.a
51,5		White marble							1						3	1	2		
53,8		silicified diopside marble							3						1	2	3		
[illegible]		Quartzite	contact	25° Dia			Dia		3							1	2		gradual contact Silica 92 % diabase dyke 58,5 to 58,8 m. greenish purple.
60																			

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

END

SL

Hole # DDH13-04 From 0 To 10	Structure	Alteration	Mineralogy	Project MPG	Page 1 of 6
Area ______ Logged By M. Farnuzra			Sulfides	Azi ___ Incl ___ TD ___	Date ___
				Easting ______ Northing ______	

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
		Overburden																	
			? ?																no measurable contact
		White Marble													3				

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST
STEVEN LAUZIER
1430
QUÉBEC

Hole # DDH13-04 From 10 To 20

Area ______ Logged By ______

Project Miller

Page 2 of 6

Azi ____ Incl ____ TD ____ Date ______

Easting ______ Northing ______

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic		Mineralogy: FeOx	CO_3	Sulfides: Py %	Pyrr %		Carbon %			Comments
		White marble														3							
				60°																			bedding 60° c.a.
				55° S.			S.																silica vein
				25° G			G																contact 25° c.a. graphite vein (1-2 mm thick) in the contact.
		Paragneiss																1					
				50°																			bedding 50°
			contact 40° contact 45°																				

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-04 From 20 To 30

Area ______ Logged By ______

Project ______ Page 3 of 6

Azi ____ Incl ____ TD ____ Date ______

Easting ______ Northing ______

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
			contact 45°				Peg												Pegmatite vein; contact: up and Bot = 45°
									3						1				HCl slightly positive
		Quartzite ([illegible])		55° G.			G.												Graphite vein (1 cm thick)
																	20		abondant pyrrhotite.
				50°					3								5	20	beddings of silicified graphite from 16,8 to 28m.
															1				
			contact 20°																
		Diabase																	microcrystalline greenish paste

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-04 From 30 To 40

Area ______ Logged By ______

Project Millo Page 4 of 6

Azi ____ Incl ____ TD ____ Date ______

Easting ______ Northing ______

Depth	Assay %CG	Rock Type	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %	Carbon %	Comments
		Diabase																No measurable contact
		marble - pegmatite mix																[illegible] 35° c.a.
		Diabase																Microcrystalline greenish paste.
		Quartzite (ultra silicified marble?)	20° 35° Dia					3						1				contact 15° c.a. Beddings 20° c.a. Diabase vein : 35° c.a. (39,4 to 39,5 m)

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

S L

Hole # DDH13-04	From 40	To 50	Page 5 of 6
Area	Logged By		
Project			Date
Azi	Incl	TD	
Easting	Northing		

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
40,1		Pegmatite																40	No measurable contact Graphite 40%, Wollastonite 40%
		Silicified marble																	No measurable contact
		Pegmatite																10	No measurable contact Wollastonite 15% Graphite [illegible]
41,8			contact 50°																contact [illegible]
		Quartzite (locally marble)		15°					3										little spots of white marble [illegible] all the [illegible] seems to be [illegible] The [illegible] carbonated. beddings 45° [illegible] to 44,5m
48		Paragneiss														7	3	15	No measurable contact
																3	4	8	

SL

Hole # DDH13-04 From 50 To 51,2

Area ______ Logged By ______

Project ______ Page 6 of 6

Azi ____ Incl ____ TD ____ Date ______

Easting ______ Northing ______

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOx	CO_3	Sulfides: Py %	Pyrr %	Carbon %	Comments
50,1 – 51,2		Pegmatite	contact 35°																wollastonite 10%
		END																	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH13-05 From 0 To 10

Area ________ Logged By ________

Project Mitton

Page 1 of 5

Azi ____ Incl ____ TD ____ Date ________

Easting ________ Northing ________

Depth	Assay	Lithology		Structure					Alteration						Mineralogy								Comments
	% CG	Rock Type	Graphic	Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic		FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %		Carbon %			
																1	1						
									3														
		Silicified marble (quartzite?)		6			G																
									2											15			
									3														
				15°																			[illegible]
		Pegmatite					Fel													15			Wollastonite 35%
									3								1	1					
		Quartzite																					

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE GEOLOGIST STEVEN LAUZIER # 1430 QUÉBEC

Hole # MM13-05 From 10 To 20

Area ______ Logged By ______

Project Milkin

Page 2 of 5

Azi ___ Incl ___ TD ___ Date ___

Easting ___ Northing ___

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1=weak, 2=moderate, 3=strong). Graphic (measured relative to core axis; 0° is parallel, 90° is perpendicular)

Depth	Assay % CG	Rock Type	Structure Graphic	Vn	Silica	FeOx	CO_3	Py %	Pyrr %	Comments
~11.5		Quartzite (ultra silicified marble)	45° W	W	3	1				wollastonite-silica vein (from 11,5 to 11,6 cm) wollastonite : 40%
~13							1	1	2	
~14			40°							bedding: 40° c.a. between 14 and ~15 m
18,3		silicified marble - pegmatite mix.								gradual contact; wollastonite 15%
19		silicified marble						4	4	gradual contact; Diopside 40%

5C

Hole # DDH13-05 **From** 20 **To** 30 **Area** ____ **Logged By** ____

Project ____ **Page** 3 **of** 5

Azi ____ **Incl** ____ **TD** ____ **Date** ____

Easting ____ **Northing** ____

Depth	Assay % CG	Lithology – Rock Type	Structure – Graphic	Structure	Alteration	Mineralogy	Comments
20–21		Serpentinized Breccia	70° DBA; Serp.	Breccia: Serp			serpentinized breccia, upper and lower contact oriented 70° c.a.
21–21.8		Silicified marble			Silica 3	Py % 2; Pyrr % 3, 2	
21.8–25.8		Ultra silicified marble	75° Sil.	Vn: Sil.	Silica 3	Py % 1; Pyrr % 1	silica vein + ? at 22,5 cm
							Pegmatite vein: 23,1 to 23,? m
						Py % 2; Pyrr % 2	
		contact 50°	50° Dia.	Vn: Dia			Diabase dyke.
						Py % 1; Pyrr % 2	
			45°				from 25,7 to 26: beddings 45° c.a.
25.8–30		White marble			Silica 1	CO_3 3; Py % 1	gradual contact

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

52

Hole # DDH13-05	From 30	To 40	Project	Page 4 of 5
Area	Logged By		Azi / Incl / TD	Date
			Easting / Northing	

Depth	Assay %CG	Lithology – Rock Type	Structure – Graphic	Breccia	Vn	Silica	CO3	Py %	Pyrr %	Carbon %	Comments
30 – 32.7		White marble				1	3	1			
32.7 – 32.9		Breccia	25° / S.	X	S.						gradual contact
32.9 –		chloritized pegmatite (breccia?)				2	1	2	3		gradual contact; [illegible] marble, [illegible] with [illegible] serpentinized matrix (clast-supported) on the top of diopside + silica breccia with a chloritized matrix. The 2 breccia are separated by a 1 cm thick silica vein [illegible] 55° c.a. All minerals are [illegible]. The texture look like a breccia but no evidence of matrix or cement. The chlorite might be the matrix.
[illegible]		White marble					3			1	
[illegible]		chloritized pegmatite breccia									gradual contact; Pegmatite inside a chloritized matrix.
[illegible]		White marble					3			3	gradual contact; graphite locally concentrated
38.5		silicified diopside marble	55° / G		G						graphite vein in the contact : 55° c.a (< 1 cm thick); Dark green rock with thin grains
– 40		White marble					3				gradual contact

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

5 (

Hole # DDH13-05 From 40 To 42.3

Area ______ Logged By ______

Project [illegible] | Page 5 of 5

Azi ___ Incl ___ TD ___ | Date ___

Easting ___ Northing ___

Depth	Assay	Lithology		Structure					Alteration					Mineralogy						Comments
	% CG	Rock Type	Graphic	Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %		
		Pegmatite																		Wollastonite 40%
42.3																				

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-06	From 0	To 10	Project Miller	Page 1 of 7
Area	Logged By		Azi / Incl / TD	Date
			Easting / Northing	

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %	Carbon %	Comments
		Overburden																	
9,5																			No measurable contact
				3°															beddings 3° c.a
		Paragneiss							2					1		3	2	2	
				15°					3								4		beddings 15° c.a

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST
STEVEN LAUZIER
1430
QUÉBEC

Hole # 10HB-06 From 10 To 20

Area ______ Logged By ______

Project ______ Page 2 of 7

Azi ____ Incl ____ TD ____ Date ______

Easting ______ Northing ______

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
10–15,5		Paragneiss							3							1			
15,5–16		Paragneiss -pegmatite mix														1	3		gradual contact wollastonite 30% gradual contact
16–19		Paragneiss							2					1		1	2		
19–19,2		Paragneiss -wollastonite mix														10			gradual contact phenocrystals of pyrite.
19,2–19,6		wollastonite Vein					W												gradual contact
19,6–20		Paragneiss														1	1		

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis; 0° is parallel, 90° is perpendicular)

5 (

Hole # DDH13-06 From 20 To 30

Area ________ Logged By ________

Project ________ Page 3 of 7

Azi ____ Incl ____ TD ____ Date ______

Easting ________ Northing ________

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOx	CO_3	Sulfides: Py %	Pyrr %	Carbon %	Comments
		Paragneiss														1	1		gradual contact
20,4		Paragneiss - pegmatite mix	contact 35°													1	1		wollastonite 35% contact 35° C.a.
21,1		Paragneiss														1	1		
23,7 – 23,8				15															silica - wollastonite vein
23,8		Quartzite														1			
				80°															Pegmatite vein, wollastonite 32% from 26,6 to 26,9 m

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

5C

Hole # 10H13-06 From 30 To 40

Area ______ Logged By ______

Project ______ Page 4 of 7

Azi ____ Incl ____ TD ____ Date ______

Easting ______ Northing ______

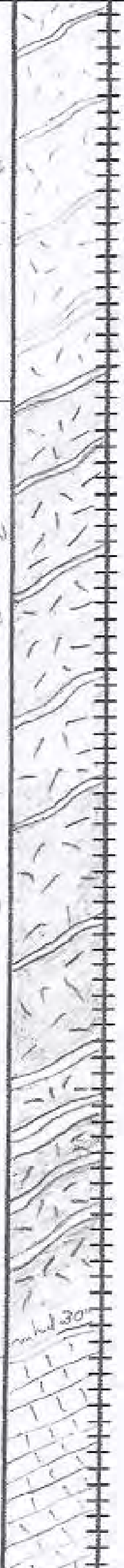
Depth	Assay % CG	Rock Type	Structure Graphic	Vn	Silica	CO_3	Py %	Pyr %	Carbon %	Comments
30		pegmatite	50° peg.	x				2		Pegmatite vein between 30,1 and 30,1 m, wollastonite 12%
		Paragneiss					1	1		
			45° w	w			1	1		silica-wollastonite vein between 32,2 and 32,3 m
							1	2		
			60° peg.	peg.					1	Pegmatite vein 60° c.a, wollastonite 75%
35		Serpentinized paragneiss	contact 40°				1		4	Serpentine: 70%. serpentinized matrix.
36,6		Silica vein	S.	S.	3	1				
37,2		Paragneiss - pegmatite mix								wollastonite 15%
37,9		Pegmatite								gradual contact; phenocrystals bigger than 5 cm! wollastonite 44%
38,7		Paragneiss	contact 40°							Serpentine 35%

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

5 (

Hole # DDH13-06	From 40	To 50	Project	Page 5 of 7
Area	Logged By		Azi Incl TD	Date
			Easting Northing	

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Pyrr %	Carbon %	Comments
40–42,5		Paragneiss																	Serpentine 25%
42,5																			gradual contact
42,5–		Very serpentinized chloritized paragneiss														1			Serpentine 40% chlorite 30%
																			gradual contact
		Serpentinized chloritized [illegible]		50															Serpentine 30% chlorite 15%
																			bedding [illegible]
			mbd 30°																
–50		silicified marble.												1		1			



KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

52

Hole # DDH13-06 From 50 To 60

Area ________ Logged By ________

Project Müller | Page 6 of 7

Azi ____ Incl ____ TD ____ | Date ____

Easting ________ Northing ________

Depth	Assay % CG	Lithology: Rock Type	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
																1		
			40°															beddings 40° c.a at 51m.
		Silicified marble						3						1				
			70°															beddings 70° c.a at 55m.
																		gradual contact
		White marble												3			1	
																		gradual contact
		Silicified marble						2										low
																		silicified
									3										high
																		gradual contact
		Quartzite						3					1					

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

5 L

Hole # DDH13-06 From 60 To 64				Structure						Alteration						Mineralogy								Project M-Blue	Page 7 of 7
Area ____ Logged By ____																		Sulfides						Azi ____ Incl ____ TD ____	Date ____
Depth	Assay	Lithology		Graphic	Fault	Breccia	Vn	Gouge		Silica	Clay	Decalc.	Propylitic	Potassic		FeOx	CO_3	Py %	Pyrr %		Carbon %			Easting ____ Northing ____	
	% CG	Rock Type	Graphic																					Comments	
		Quartzite								3						1									
			END																						

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # 10H13-07 From 0 To 10
Area ______ Logged By M. Fannuaia

Project: Hilton
Page 1 of 14
Azi ____ Incl ____ TD ____
Date ______
Easting ______ Northing ______

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOx	CO_3	Sulfides: Py %	Pyrr %	Carbon %	Comments
0 – 2,8		Overburden																	
2,8		White marble												1	3			1	No measurable contact
6,1		Diabase	contact 20°																contact 20° c.a; microcrystalline greenish partie
8,3		White marble												1	3			1	No measurable contact

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST
STEVEN [illegible]
1430
QUÉBEC

Hole # DDH13-07 From 10 To 20

Area ________ Logged By ____________

Project ____________ Page 2 of 14

Azi ____ Incl ____ TD ____ Date ________

Easting ____________ Northing ____________

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOx	CO3	Sulfides: Py %	Pyrr %	Carbon %	Comments
		White marble												1	3			1	
				40												1	4		bedding: 45° c.a. between 18,9 and 19,1 m
														1					

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-02 From 20 To 30

Area ________ Logged By ________

Project ________ Page 3 of 14

Azi ____ Incl ____ TD ____ Date ________

Easting ________ Northing ________

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
		White marble													3			1	
														1					
															2	1			between 25 and 25,6m, dingrite = 65%
															3			1	
28,8–29		Pegmatite	contact 40°																
29–29,9		Diabase	contact 60																contact 65° c.a. microcrystalline black greenish grain. contact 65° c.a.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-07 From 30 To 40 | Page 4 of 14

Area ______ Logged By ______

Project ______ Date ______

Azi ____ Incl ____ TD ____

Easting ______ Northing ______

Depth	Assay %CG	Rock Type	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
30–32.9		Pegmatite																Wollastonite 20%
32.9																		gradual contact
32.9–33.5		Marble						1						3	1			
33.5																		No mineralization contact
33.5–38.9		Diabase																
38.9			30° C.a.			G												Contact & graphite vein. 30° C.a. graphite vein < 1cm thick
38.9–39.8		White marble	20°					1						3			1	beddings 20° C.a.
39.8–40		Pegmatite																

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH13-07	From 40	To 50	Project	Page 5 of 14
Area	Logged By		Azi / Incl / TD	Date
			Easting / Northing	

Depth	Assay %CG	Lithology: Rock Type	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Pyr %	Carbon %	Comments
		Pegmatite						3									1	Wollastonite = 43%
44,6																		gradual contact
		Paragneiss	40°														8	beddings 40° c.a
45,5																		gradual contact
		Pegmatite						3							1			Wollastonite 35%
48																		gradual contact
		Quartzite						3							2	2	1	presence of blue quartz

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DD13-07	From 50	To 60	Page 6 of 14
Area	Logged By	Project	Date
Azi	Incl	TD	
Easting	Northing		

Depth	Assay %CG	Lithology Rock Type	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
		Quartzite						3							2	2	1	
51,5		Serpentinized silicified marble	45°					3							2			gradual contact serpentine 30% fracture 45° c.a
53,5		Quartzite						3									1	gradual contact
55,5		silicified marble						2						1				contact 15° c.a
		ultra silicified marble	20° G. 20° G.			G. G.		3										gradual contact

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH 13-07 From 60 To 70

Area ______ Logged By M. Fannaraic

Project ______ Az ______ Incl ______ TD ______ Page 7 of 14 Date ______

Easting ______ Northing ______

Depth	Assay %CG	Lithology Rock Type	Structure Graphic	Vn	Silica	CO_3	Comments
		Ultra silicified marble	30° / ?	X			White soft mineral vein, HCl ⊖ maybe altered wollastonite ?...
			60° / ?	X			Same white soft mineral vein
			20° / C.	C	3		calcite vein : 20° C.a
			5° f				fracture 5° C a
			25				bedding 25° C.a around 65,2m
			20° / C.				calcite vein 20° C a
66,4		altered silicified marble			2		gradual contact serpentine 15% Chlorite 25%
67,5		silicified marble			3	1	gradual contact chlorite 5%
69,1		Diabase					No measurable contact
69,5		chloritized marble	70° / G	G			No measurable contact Graphite vein 70° c.a

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

56

Hole # DDH13-07	From 70	To 80	Project	Page 7 of 14
Area	Logged By		Azi Incl TD	Date
			Easting Northing	

Depth	Assay %CG	Lithology: Rock Type	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOX	CO_3	Sulfides: Py %	Sulfides: Pyr %	Carbon %	Comments
70–70,6		chloritized marble (contact 20°)						1						1			r	chlorite 50% graphite locally at 5% contact 20° C.a
70,6–71,1		Diabase																No measurable contact
71,1–71,4		chloritized marble																chlorite 40% gradual contact
71,4–72		Silicified marble	20° C.			C		3						1				calcite vein 20° c.a. gradual contact
72–		chloritized silicified marble	50° C.					2						1	1	2	1	chlorite 20%. Calcite vein 50° c.a gradual contact .
–78,2		silicified marble	45° 60°					3						1		1		beddings 45° c.a beddings 60° c.a gradual contact
78,2–80		Quartzite						3										

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

5C

Hole # DDH13-07 From 80 To 90

Area ________ Logged By ________

Project ________ Page 9 of 14

Azi ____ Incl ____ TD ____ Date ____

Easting ________ Northing ________

Depth	Assay %CG	Lithology: Rock Type	Structure: Graphic	Vn	Silica	CO3	Py %	Pyrr %	Comments
80,5		Quartzite	70°						beddings 70° c.a. contact 70° c.a.
81,5		Pegmatite (contact 60°)				4			Wollastonite 45% contact 60° c.a
81,9		White marble (contact 75°)	75° / G	G		3			contact with graphite vein 75° c.a.
81,5		Pegmatite (contact 15°)					1	1	Wollastonite 30% contact 15° c.a
		Silicified marble	15° / PY; 15° / PY (x3); 20° / C.; 20° / PY	PY; PY; C.; PY	3	1	5		4 pyrite veins oriented 15° c.a. calcite vein 20° c.a pyrite vein 20° c.a

Column headings: Depth; Assay (%CG); Lithology (Rock Type, Graphic); Structure (Graphic, Fault, Breccia, Vn, Gouge); Alteration (Silica, Clay, Decalc., Propylitic, Potassic); Mineralogy (FeOx, CO3, Sulfides: Py %, Pyrr %; Carbon %); Comments.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH12-07 From 90 To 100

Area ______ Logged By ______

Project ______ Page 10 of 14

Azi ____ Incl ____ TD ____ Date ____

Easting ______ Northing ______

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic		FeOX	CO_3	Sulfides: Py %	Sulfides: Pyr %		Carbon %			Comments
		silicified marble																					
90,3		Pegmatite		3° Ch.			Ch																gradual contact wollastonite 25% chlorite vein 3° c.a
91,2		Silicified marble		50° 45 c 45 c 50° s 45			c c s		3						1								gradual contact beddings 50° c.a calcite vein 45° c.a between 93,8 & 93,3m calcite vein 45° c.a between 93 & 93,2m silica vein 50° c.a at 94,3m bedding: 45° c.a contact 15° c.a
95,2		Pegmatite																					wollastonite 20% NO measurable contact
		Quartzite		40° c			c		3						1								
97,7				15° c			C																
9.8																							

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

56

Hole # DDH13-07	From 100	To 110	Area	Logged By	Project	Azi	Incl	TD	Easting	Northing	Page 11 of 14	Date

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOX	CO_3	Sulfides: Py %	Sulfides: Pyr %	Carbon %	Comments
		Quartzite																	
103,4 / 103,5				30° / 5			Si												silica (65%) - Wollast[illegible] (35%) [illegible]
		marble		45												3	6		
105,4		Pegmatite	contact 70																contact 70°
																			Wollastonite 60%
106																			No measurable contact
		Silicified marble							2						1			3	Graphite 3% (locally)
				80° peg			peg												
				3° / c.															
109,3		Pegmatite	contact 60°																

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH13-07	From 110	To 120		Project	Page 12 of 14
Area	Logged By			Azi Incl TD	Date
				Easting	Northing

Depth	Assay %CG	Rock Type	Lithology Graphic	Structure Graphic	Breccia	Silica	CO_3	Py %	Pyrr %	Carbon %	Comments
110–112,5		Pegmatite	contact 60°	5°							Wollastonite 50%
112,5–112,6		Silicified marble	contact 90°			3			2		contact 60° c.a contact 90° c a
112,6–114,3		Pegmatite	contact 65°								Wollastonite 50%
114,3–115,3		Silicified marble	contact 15°			3	1	1 3	1 2	3	contact 65° c a
115,3–116		Pegmatite	contact 65°								contact 15° c.a Wollastonite 45% contact 65° c a
116–118		marble		30°		2	3				
118–118,2		breccia			x						Breccia contact oriented 30° c a (serpentine 30%; chlorite 20%)
118,2–120		marble		20 60		2	2	4	2		

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-07 From 120 To 130

Area ______ Logged By ______

Project ______ Page 13 of 14

Azi ____ Incl ____ TD ____ Date ______

Easting ______ Northing ______

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
																			gradual contact
				15°															beddings 15° c.a
				50° c.a															calcite vein 50° c.a
															2				
		Silicified marble							3										

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH13-07 From 130 To 132

Area ________ Logged By ________

Project ________ Azi ____ Incl ____ TD ____ Date ________ Easting ________ Northing ________

Depth	Assay % OS	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOX	CO_3	Sulfides: Py %	Pyrr %	Carbon %	Comments
		silicified marble							3						2				
		END																	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDHB-08 From 0 To 10
Area ______ Logged By ______
Project ______ Page 1 of 9
Azi ____ Incl ____ TD ____ Date ____
Easting ______ Northing ______

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %	Carbon %	Comments
0–5,7		Overburden																	
5,7		White marble													2		1		No measurable contact.
7		Silicified marble							3						1	1			gradual contact

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO_3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST STEVEN LAUZIER QUÉBEC

Hole # DDH13-02 From 10 To 20 | Area ____ Logged By ____

Project ____ Page 2 of 3 | Azi ____ Incl ____ TD ____ Date ____ | Easting ____ Northing ____

Depth	Assay % CG	Rock Type	Lithology Graphic	Structure Graphic	Vn	Silica	CO_3	Py %	Pyrr %	Carbon %	Comments
10–11,5		Silicified marble		65° G		3	1	1			
11,5–12,2		Pegmatite	contact 60°		6			1	3	3	Wollastonite 15%
12,2–13,9		Diopside marble	contact 40°	60°		1		3	2	1	beddings 60° c.a
13,9–14,2		Pegmatite	contact 15°								contact 40° c.a Wollastonite 45%
14,2–14,6		diopside marble	contact 15°			2	1				contact 15° c.a
14,6–15		Pegmatite	contact 10°								contact 15° c.a Wollastonite 50% contact 10° c.a
15–15,4		diopside marble	contact 60°			3	1	2			contact 60° c.a
15,4–15,6		Pegmatite	contact 50								Wollastonite 50% contact 50° c.a
15,6–16,4		Diopside marble				3	1	1			No measurable contact
16,4–16,6		Pegmatite	contact 40°								Wollastonite 50% contact 40° c.a
16,6–20		Silicified marble						1	2		
				25° S.	S.	3		5	4		Silica vein : 25° c.a

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH13-08 From 20 To 30

Area ________ Logged By ________

Project ________ Page 3 of 3

Azi ____ Incl ____ TD ____ Date ____

Easting ________ Northing ________

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Detalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
20.8		Pegmatite	contact 45°																contact 45° c.a. wollastonite 50%
21.2		Silicified marble	contact 15°													1			contact 15° c.a.
22		Pegmatite	contact 25°																contact 25° Wollastonite 45%
22.5		Silicified marble	contact 15°																contact 15° c.a.
23.2		Pegmatite	contact 10°															1	contact 10° c.a. wollastonite 40%
23.9		Silicified marble	contact 15°													1	1		contact 15° c.a.
24.8		Silicified marble – pegmatite mix.	contact 15°, contact 15°	15° Dia			Dia		2							1			gradual contact Diabase dyke oriented 15° c.a. between 26 and 26.2 m. Wollastonite 20%
27.7		Pegmatite	contact 60°																contact 60°
28		Silicified marble – pegmatite mix	contact 60°																contact 60°
28.3		Pegmatite	contact 90°													2	5		contact 90° wollastonite 70% phenocrystals of pyrite and pyrrhotite.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH13-02 From 30 To 40
Area ______ Logged By ______
Project ______ Page 4 of 9
Azi ____ Incl ____ TD ____ Date ______
Easting ______ Northing ______

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
		Pegmatite	contact 90°																contact 90° c.a
30.2		silicified marble	contact 50°						3							1	1		contact 50° c.a
31		Pegmatite														1	1		wollastonite 65 % gradual contact
31,5		silicified marble	contact 85°	60°					3							2	4		bedding 60° c.a. contact 85° c.a
33		Pegmatite																	wollastonite 25% gradual contact
36.3		marble - pegmatite mix	contact 20°						3							1			wollastonite 10% contact 20° c.a
		Diabase																	microcrystalline dark paste.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-08 From 40 To 50

Area ______ Logged By ______

Project ______ Page 5 of 9

Azi ____ Incl ____ TD ____ Date ______

Easting ______ Northing ______

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %	Carbon %	Comments
		Diabase																	
41.5																			Contact 40° c.a.
		White marble													3	1			
									1										
				80 S.			S.												
				80 S.			S.												

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

5 (

Hole # 9DH 13-07 From 50 To 60

Area ______ Logged By ______

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyr %	Carbon %	Comments
		White marble		25°					1						3	1			bedding 25 ca around 56 m.

Project ______ Page 6 of 9

Azi ____ Incl ____ TD ____ Date ______

Easting ______ Northing ______

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-08 From 60 To 70

Area ______ Logged By ______

Project ______ Page 7 of 9

Azi ___ Incl ___ TD ___ Date ______

Easting ______ Northing ______

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
60–63,7		white marble		40; 20; 20											3	1; 2	4		beddings 40° c.a at 61m. beddings 20° C.a at 62m and 63m.
63,7		Paragneiss	contact 20°	25°												1	5		contact 20° c.a; beddings 25° c.a
66,5		silica vein	contact 40°	40° S.			S.									1			
66,8		Quartzite	contact 40°; contact 15°						3										contact 15° c.a
69,3		Paragneiss		40°															beddings 40° c.a

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH13-08 From 70 To 80

Area ______ Logged By ______

Project ______ Page 8 of 9

Azi ___ Incl ___ TD ___ Date ______

Easting ______ Northing ______

Structure: Graphic, Fault, Breccia, Vn, Gouge

Alteration: Silica, Clay, Detalc, Propylitic, Potassic

Mineralogy: FeOx, CO_3, Sulfides (Py %, Pyrr %), Carbon %

Depth	Assay (% CG)	Lithology – Rock Type	Lithology – Graphic	Structure – Graphic	Structure – Vn	Mineralogy – Sulfides	Comments
		Paragneiss		40		3 5	beddings 40° c.a at 71m.
				40			beddings 40° c.a at 72 m
72,5			contact 30°				contact 30° c/a
		Quartzite		80			beddings 80° c.a at 73.5m
				20° S.	S.		silica vein 20° c.a at 76,7 m
				80° S.	S.		silica vein 80° c.a at 79m
				20			beddings 20° c.a at 79,4m

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH13-02 From 80 To 81

Area ________ Logged By ____________

Project ____________ Page 1 of 1

Azi ____ Incl ____ TD ____ Date ______

Easting ________ Northing ________

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Alteration Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Pyrr %	%	Carbon %		Comments
		Quartzite		25 / 5			S														silica vein 25°
		END																			

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH13-05	From 4,5 To 10 m	Structure	Alteration	Mineralogy	Project Miller	Page 1 of
Area	Logged By Pierre				Azi Incl TD	Date [illegible]
					Easting Northing	

Depth	Assay % CG	Rock Type	Lithology Graphic	Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %	Carbon %	Comments
1																			
2	Sed. up.																		
3																			
4		?	?																sharp contact 150°, disseminated (fine) sulfide (Py, Tr) = magnetism low, small size, black, Tr, olivine, small fleck 0–1 mm
4,5		diabase	∠ 50°						2					2		Tr		Tr	4,85 – 5,80 [illegible] Tr, [illegible] small flek, [illegible] 10% [illegible]
4,85		marble	∠ 45°						2						2			Tr	5,80 – 7,4 Dark, siliceous [illegible], 5,70 – 7,40 = [illegible] fracturation fault?
5,80									1					2		Tr			7,60 – 10 = long [illegible] (5% [illegible]) [illegible] black, [illegible] 5% – 10%
		Diabase																	
7,40																			

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST
STEVEN LAUZIER
1430
QUÉBEC

DDH-13-02.

Hole # ______ From 10 To 20 | Area ______ Logged By ______

Project ______ | Page 2 of ___ | Azi ___ Incl ___ TD ___ | Date ______ | Easting ______ Northing ______

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
		diabase	60°																
11.4									1						2			3?	11.4–16. [illegible] contact altered? [illegible] 10–15% Graphite: 1–2%. [illegible]
12.2		marble	40° 40°	45 15			X X												[illegible] < [illegible] (all calcite) [illegible] < [illegible] (all calcite)
14		diabase	30° 40°											2					14–15. [illegible] aphanitic [illegible] FX: 5% [illegible] [illegible]: 5% [illegible]
15		marble												1	2			X	15–16.2 large black minerals. [illegible]: 15–20%. [illegible]: 4%. Graphite: 3–6% more [illegible]: 5% [illegible] (< 3 mm)
16.2		silicated marble		30°					2					3				X	16.2–17.6 white-grey [illegible] [illegible]: 5% graphite 2–10% [illegible] [illegible]: 5% [illegible]
17.6									1 1							3 1		2	17.6–30.4 white slightly grey large flake. [illegible]: 5% [illegible] 10–15%
		marble		60°			/									1			[illegible] (graphite) [illegible]
		marble																	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

DDH-13-09.

Hole #	From 20 To 30		Structure	Alteration	Mineralogy	Project	Page 3 of
Area	Logged By				Sulfides	Azi Incl TD	Date
Depth	Assay	Lithology				Easting Northing	
	% CG	Rock Type / Graphic	Graphic / Fault / Breccia / Vn / Gouge	Silica / Clay / Decalc. / Propylitic / Potassic	FeOx / CO_3 / Py % / Pyrr % / Carbon %	Comments	

Depth marks: 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30

Rock Type: marble.

Comments:

slightly altered (rusty) + crackled [illegible] [illegible]. veinlets: 20. 75 qtz: 60%

24-31.8
[illegible] 3mm [illegible] rusty alteration marble [illegible].

Altered (rusty: M) [illegible] [illegible]

Altered (H) rusty, [illegible] [illegible]

Altered (H), crumbled [illegible] (chlorite) [illegible]

Lithology depths: 26.6, 26.8

rusty brown marble [illegible]

Altered (H) [illegible] rusty + green [illegible] chlorite, [illegible]

Lithology depths: 29.2, 29.3, 29.9

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

51

DDH-13-09

Hole #	From 30 To 40	Structure	Alteration	Mineralogy	Project	Page 6 of
Area	Logged By				Azi Incl TD	Date
					Easting Northing	

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
31		marble		75															[illegible] grey rocky.
31.8									1									x	31.8 – 33.4. [illegible] <10% max [illegible] qtz 30% 32.2 – 33.7 graphite 2–4%.
		marble		80															[illegible] rocky.
33.4		marble altered skarn		15 / 125										2	2			2	33.4 – 37.5 – [illegible] gouge [illegible] light [illegible] (CA) calcite, FK. [illegible] quartz [illegible]
37.5		skarn		50					2										37.5 – 38.6. highly [illegible] fault? carbonate has been [illegible] [illegible] 38.6 – 41.2. [illegible] breccia [illegible] (CA)
38.6		marble ? breccia		65		x			2					2				2	[illegible] graphite [illegible] [illegible] scheelite? [illegible] alteration [illegible]

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

S C

DDH-12-02

Hole # ________ From 40 To 50

Area ________ Logged By ________

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %
40		marble																
		skarn																
41				25														
				15					3						1			
42		silicated marble		65														
		quartzite							2						1			x
43					x	x												
		shear zone		2														
44		marble		60					3						2			
45																		
		marble																
46																		
47				50					3									
47.2																		
		quartzite		65					3						3			
48																		
		marble																
49				70					3						1			
49.2									2						3			
		Brecciated marble																
50																		

Project ________ Page 5 of ___

Azi ____ Incl ____ TD ____ Date ____

Easting ________ Northing ________

Comments

not much clastic.

... sharp contact: 50m
gray slightly green
alteration; ... (m)

42.8: 43.18
Dark gray slightly green
... 42.8 - 43.2 m
Graphite ...% minor ...
Alteration: Potassic: M.

CO_3: Very low (V.L)

44.05 - ... sharp contact
white gray.
minerals: Diopside: 5-6%
... : 3-4%
... Trace.
... : heterogeneous

... 43.3 - 48.3
... (... 5 - ...)
other minerals: ... garnet?
wollastonite ... (not there).
graphite: Tr - ø
48.3 - 50.3
graphite: 1-2% ... thin

... : 3%
graphite: very thin, 1-3%.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

52

[illegible]

Hole # ________ From 50 To 60 | Area ________ Logged By [illegible]

Project ________ Page 5 of ___ | Azi ____ Incl ____ TD ____ | Date ____ | Easting ________ Northing ________

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Pyrr %	Carbon %	Comments
50 – 51.5		marble		30, 15°, 50					2					1	1			X	highly laminated (mm); graphite: 2-3%, [illegible]; [illegible]: 70%; graphite: Tr.
51.5 – 52.5		[illegible] / marble		15, 45, 40					1						3			X	graphite: 4% [illegible]; [illegible]: 70%; [illegible]
52.5 – 52.0		marble		60		X			3					1	1	X			Alteration: [illegible]
																			[illegible]: [illegible]; [illegible]: 3-5%; wollastonite: [illegible] %; [illegible]: 5%; Photo 63.
		skarn [illegible] with quartz V (40%) [illegible] (30%) (main skarn [illegible])																	
				0															[illegible]
54.2		[illegible] skarn [illegible] quartz V (70%) + [illegible]												1					[illegible]: 2-3% ([illegible]). Biotization: [illegible]; Alteration ([illegible]); [illegible]: 4-5%; [illegible]; [illegible]: 2-3% [illegible]; Wollastonite: [illegible]; [illegible] Alteration
55.5		Skarn 2- Vein 3 [illegible] [illegible] 5%																	
59.5																			

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

60 [illegible] litho.

51

Hole # ______ From 60 To ~~[illegible]~~ 70 | Structure | Alteration | Mineralogy | Project ______ | Page __ of __

Area ______ Logged By ______ | Azi ____ Incl ____ TD ____ | Date ____

Easting ______ Northing ______

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Dessic	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrrh %	Carbon %	Comments
																			Gradual contact
		White marble												1	3		1		8-10% diopside
		marble											1		3		2 / 1		Gradual contact 7% wollastonite 5% diopside

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

56

Hole # DDH13-02 From 20 To 20 | Project Millar | Page 2 of ___
Area ______ Logged By Fannura | Azi ___ Incl ___ TD ___ | Date ___
Easting ___ Northing ___

Depth	Assay % CS	Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %		Carbon %		Comments
		marble											1								wollastonite Parallel at 33% Contact : 85° c.a
		Diopside marble		85° Pyrr			Pyrr						1				3				Diopside · 80% Silica 5%
																					gradual contact
		Silicified ... marble							2				1				1				Trace of titanite in ... ... Silica 43-55%
				30° Ca			Ca		3							2	4				Calcite veins (3mm thick) : 30° c.a
									1								1				
									3												
									4				2								

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

51

Hole # WHI-02	From 80 To 90	Project	Page 3 of 10
Area	Logged By Fernanda [illegible]	Az Incl TD	Date
		Easting	Northing

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Alteration Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Pyr %	Carbon %	Comments
									1				2				4		
		silicified [illegible]							2				1				1		
									1				1						
									2				1				tr		
									1										gradual contact
													2						
													3						
		Hinley silicified [illegible] [illegible]		15°											1				[illegible]
									1						2				Between 55,6 and 87,1 m it's mainly a mix between [illegible] and [illegible]
													3						
																			contact 35° ca
		silicified [illegible]															1		disseminated pyr 2% (locally [illegible])

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

JL

Hole # [illegible] From 98 To 100 | Page [illegible] of [illegible]

Area ______ Logged By [illegible]

Project ______ | Date ______

Azi ______ Incl ______ TD ______

Easting ______ Northing ______

Depth	Assay: %CS	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Structure: Fault	Structure: Breccia	Structure: Vn	Structure: Gouge	Alteration: Silica	Alteration: Clay	Alteration: Decalc.	Alteration: Propylitic	Alteration: Potassic	Mineralogy: FeOx	Mineralogy: CO_3	Mineralogy: Sulfides: Py %	Mineralogy: Sulfides: Pyr %	Mineralogy: Carbon %	Comments
									2										
																			gradual contact [illegible]
									2								1		[illegible]
															3			1	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH13-03	From 100	To 110	Page 11 of 14
Area	Logged By [illegible]	Project	Date
Azi	Incl	TD	
Easting	Northing		

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	OX	Sulfides Py %	Pyrr %	Carbon %	Comments
		white marble													3			1	
			contact	35°				2											contact is sharp ...
		silicified marble																	presence of [illegible]
																			calcite ... (3mm thick)
		white marble																	calcite vein ... at 105.5m (8mm thick)
																			calcite vein ... at ... (1mm thick)
																		1	
				55°															contact = calcite vein ~ 55° ... (8mm thick)
		silicified marble						2				2			2			2	
												1							gradual contact
		white marble													3			4	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, OX (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis; 0° is parallel, 90° is perpendicular)

SL

Hole # YWH5-08	From 110	To 120	Project	Page 12 of 14
Area	Logged By		Az / Incl / TD / Easting / Northing	Date

Depth	Assay %OG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOX	CO_3	Sulfides: Py %	Sulfides: Pyr %	Carbon %	Comments
		White marble													3			1	
																			gradual ...
									2								1		
																	2	2	
		silicified marble							3				2				1		diopside ≈ 10%?
																		1	
																	3		
															2				
									2								1	3	
																		1	
																		3	
																		1	
																			gradual? contact
		White marble													3			1	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOX, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH13-03 From 120 To 130

Area ______ Logged By [illegible]

Project [illegible] Page 13 of 18

Azi ____ Incl ____ TD ____ Date ____

Easting ______ Northing ______

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
		White marble												3				1	diopside 3 - 10%
				35° Ch.			Ch.	1										tr.	chlorite vein 35° cm (Barren Host)
													1						gradual contact

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # [illegible] From 130 To 160	Structure					Alteration					Mineralogy						Project ____ Page _ of _
Area ____ Logged By [illegible]													Sulfides				Azi ____ Incl ____ TD ____ Date ____
Depth / Assay %CG / Lithology: Rock Type, Graphic	Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %		Easting ____ Northing ____ / Comments

Silicified marble

Structure graphic	Silica	Potassic	Pyrr %	Carbon %	Comments
11	2	1	7	3	[illegible] (4mm thick)
5 / 30					sub-bedding [illegible] / sub-bedding [illegible]
				6	
			5		diopside 5-15%
			3		
40		1			sub-bedding [illegible]

160

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH13-03 From 140 To 150

Area ______ Logged By Fanuzzin

Project Hn4hn Page 15 of 19

Azi ____ Incl ____ TD ____ Date ______

Easting ______ Northing ______

Depth	Assay % CG	Rock Type	Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
																	3		
																	1		
																		tr	
									2				1				3		diopside 10-20%
		Silicified marble																	
																	tr		
				40°													7	3	graphite inside a sub-bedding oriented 40° c.a
									3							tr	1		
									2										
		Weakly silicified marble (graphitic)							3							tr	1		gradual contact
																			gradual contact
													1				2		
																	4		
		Silicified marble							2								tr		
													1						
																	1		
													1				4		

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-007 From 150 To 160

Area ________ Logged By Francisca

Project Mollo

Page 16 of 19

Azi ____ Incl ____ TD ____ Date ____

Easting ____ Northing ____

Depth	Assay % CG	Lithology: Rock Type	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyr %	Carbon %	Comments
		Silicified marble	30°									1				4		beddings : 90° c.a
								2										
			90°													1		beddings : 20° c.a
												1						
																		gradual contact
												1						
		Ultra silicified marble (quartzite)	45° 42° S,42			S										6		2 silica veins oriented 45° c.a at 154,2m
			2x			S.												4 silica veins oriented 45° c.a at 15?,?m
			45° S,54			S												4 silica veins oriented 45° c.a at 154,7 m (2mm thick)
			90°															beddings 90° c.a.
								3										
			65° S.			S						1						silica vein 65° c.a (2mm thick)
			S. 65°			S										5		silica vein 65° c.a (1cm thick)
			S. 60°															silica vein 60° c.a (1cm thick)
			S. 50°															silica vein 50° c.a (1,3 cm thick)
			30° S.															silica vein 30° c.a (2mm thick)
																3		
			60° S.															silica vein 60° c.a

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH13-02 From 160 To 170

Area ______ Logged By Francois

Project Villa

Page 12 of 14

Azi ____ Incl ____ TD ____

Date ____

Easting ____ Northing ____

Depth	Assay (% CG)	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
		ultra silicified marble (quartzite?)		40° S, 40° S			S., S.		3				1, 1, 1			1	3, 4, 3		silica vein 40° c.a; silica vein 40° c.a
				C 0°			C.												calcite vein 0° c.a
				90°															beddings 90° c.a
				90°															beddings 90° c.a
				90°															beddings 90° c.a
				90°															beddings 90° c.a
				45° S, 45° S			S., S.												silica vein 45° c.a; silica vein 45° c.a.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # [illegible] From [illegible] To [illegible]	Structure	Alteration	Mineralogy	Project [illegible]	Page 12 of 12
Area ____ Logged By [illegible]				Azi ____ Incl ____ TD ____	Date ____
				Easting ____ Northing ____	

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic		FeOx	CO_3	Py %	Pyrr %		Carbon %			Comments
				60° S.			S.											3					silica vein 60° C.a (5mm thick)
				10° S.			S.																silica vein 10° C.a (1mm thick)
		Ultra silicified marble (quartzite?)																					
				S. 35°			S.																silica vein 35° C.a
				35°			S.		3														silica vein 35° C.a
																							" "
																	1	5					
																	[illegible]	3					
													4										

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

52

Hole # DDH13-09 From 180 To 182

Area ______ Logged By [illegible]

Project [illegible] | Page 12 of 12

Azi ____ Incl ____ TD ____ | Date ______

Easting ______ Northing ______

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic		Mineralogy: FeOx	CO_3	Sulfides: Py %	Pyrr %		Carbon %			Comments
		Ultra silicified mafic (granite?)	END	85					3				2				tr	3					sub-bedding: 85° C.A

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

n° éch : 01563 (Boffin)   DDH-13-10

Hole #	From 0 To 10.	Structure	Alteration	Mineralogy	Project	Page 2 of
Area	Logged By Pierre				Azi Incl TD	Date
					Easting Northing	

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic		FeOx	CO_3	Py %	Pyrr %		Carbon %			Comments
0 – 2.5		Overburden																					
1																							
2																							
2.5 – 9		marble		15° (6.6); 15° (7.3)												3							2.5 – . grey to white ↓ (20% Diop.) graphite: Tr – 1% – Cuit(s) crystal size (calcite) in (≤ 1 mm).
6.6																							
7.3																							
9 – 10.2		marble.														3							– 9 – 10.2 – white. crystal size (calcite) (≥ 5 mm) (L) graphite: Tr (5%)

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST
STEVEN LAUZIER
1430
QUÉBEC

DDH-13-10.

Hole # ________ From 10 To 20

Area ________ Logged By ________

Project ________ Page 2 of ___

Azi ____ Incl ____ TD ____ Date ______

Easting ________ Northing ________

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
10.3				40													x		10.3 - 17.9 Diopside: 5 %. graph: Tr (Diss). Pyrr: Tr.
11																			
12																			graph Diss: 5 %.
13				55															graph Diss: 3% + Pyrr: Tr.
14																			graph Diss: 30 %
15		marble		45															
16																			16.3: (wollastonite).
17				40 / 55															sharp transition. Bedding.
17.9		marble		60															gradual contact 17.9 - 19.8. grey - green. diopside: 10-15 % graph: Tr - 5 % (Diss) grain size (calcit): 1 - 2 mm → Apatite (small cristal) 1 mm

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

DDH-13-10

Hole #	From 20 To 30	Structure	Alteration	Mineralogy	Project	Page 3 of
Area	Logged By				Azi Incl TD	Date
					Easting Northing	

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
		marble		55											2		×		wollastonite, graphite: Tr. Pyrrh: Tr.
21																			
22																			
22.8															2				gradual contact 23.8-28.1 grey-white grain size: L (large) Diopside: 5% - 2% Graphite: Tr (less).
28.1				60											3				28.1-35.30. white-grey. grain size: M-S (1mm - <5mm). Diopside: 0.5% Graph. Tr (less) - Tr.
				30															

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

DDH-13-10.

Hole #	From 30 To 40	Project	Page 4 of
Area	Logged By	Azi Incl TD	Date
		Easting Northing	

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %	Carbon %	Comments
31.7m		marble																2	31.3 – 33.8. white. slightly grey. graphi: 1–2 % (Dues) diopside < 3 %. grain size L
33		marble.																	
		marble.		45					2						3				33.8 – 35.85. grey. quartz vein (1 %). Potassic Alteration (Loose). sericite. graphite: 1–2 % diopside: 4–7 %
				50															chlorite Fe ? (very low)
35.85																			35.85 –
																		1	
																			diopside 5–10%
															3			3	
		pink							1									1	
																		4	
																		2	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # 385113-10	From 40	To 50	Area	Logged By Faranzia	Page 5 of	Project	Azi	Incl	TD	Date	Easting	Northing

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
		Marble							1						3			2	contact 55° ca
		silicified marble	contact 55°; contact 35°	55°			[illegible]		2						1		5	1	diopside 20% sub-bedding – vein [illegible]; contact 35° ca
		Marble													3			1	contact 45° ca
		pegmatite	contact 45°						3									5	wollastonite 10% diopside 4-5%; No measurable contact
		Marble							1					3				1	diopside 3%
		Opal	contact 50°	50°										3					contact 50° ca; bedding 50° ca; Silicified grey-brown paste

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, COB (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

S L

Hole # DDH13-10 From 50 To 60

Area ________ Logged By [illegible]

Project ________ Page 6 of ___

Azi ____ Incl ____ TD ____ Date ________

Easting ________ Northing ________

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
		Opal							3										
			contact 45°																contact 45° ~ ca
		Dark silicified marble							3								2		
			contact 75°																contact 75° ~ ca
		Opal																	silicified gray-brown pods.
			contact 30°																contact 30° ~ ca
		Marble											1					8	
															3				
																	1		disseminated pyrrhotite tr-1%
																		1	[illegible]: tr (1% locally)
				45															bedding 45° ~ ca

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

56

Hole # DDH13-10 From 60 To 70

Area ________ Logged By [illegible]

Project ________ Page 1 of ___

Azi ____ Incl ____ TD ____ Date ____

Easting ________ Northing ________

Columns: Depth | Assay (% CG) | Lithology (Rock Type, Graphic) | Structure (Graphic, Fault, Breccia, Vn, Gouge) | Alteration (Silica, Clay, Decalc., Propylitic, Potassic) | Mineralogy (FeOx, CO_3, Sulfides: Py %, Pyrr %; Carbon %) | Comments

- Rock Type: Marble
  - Carbon %: 1
  - Carbon %: tr
  - CO_3: 3; Pyrr %: tr
  - Carbon %: 1
- Lithology graphic: contact 15°
  - Comments: contact 15° ca surrounded by pyrrhotite
- Rock Type: silicified marble
  - Silica: 3; Pyrr %: 2
  - Structure graphic: 30° pyrr; Vn: pyrr
  - Comments: pyrrhotite vein 30° c a. (5mm thick)
  - Comments: Gradual contact
- Rock Type: White marble
  - CO_3: 3; Pyrr %: tr; Carbon %: tr
  - Comments: graphite: tr à 1%

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-40 From 70 To 80

Area ________ Logged By [illegible]

Project ________	Page 8 of __
Azi ____ Incl ____ TD ____	Date ________
Easting ________ Northing ________	

Depth	Assay: % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOx	CO_3	Sulfides: Py %	Pyrr %	Carbon %	Comments
		white marble													3			6	[illegible] [illegible] [illegible]
																			no structure

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

5C

Hole # 20112-10	From 60	To 80	Structure					Alteration					Mineralogy						Project	Page 3 of
Area	Logged By [illegible]														Sulfides				Azi Incl TD	Date
Depth	Assay	Lithology		Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Easting Northing	
	% CG	Rock Type	Graphic																Comments	
		White Marble													3			tr	disseminated pyrite tr - 1%	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # [illegible] From [illegible] To [illegible]	Structure					Alteration					Mineralogy						Project ____	Page [illegible] of ___
Area ____ Logged By [illegible]													Sulfides				Azi ___ Incl ___ TD ___	Date ___
Depth / Assay (% CG) / Lithology (Rock Type, Graphic)	Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %		Easting ____ Northing ____	
																	Comments	

[illegible]

[illegible]

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH13-10 From 100 To 110

Area ________ Logged By Fanmalin

Project ________ Page 11 of 13

Azi ____ Incl ____ TD ____ Date ________

Easting ________ Northing ________

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOx	CO_3	Sulfides: Py %	Pyrr %	Carbon %	Comments
		white marble													3			tr	disseminated graphite trace - 1%
																			no structure, no mineralization

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # [illegible] From [illegible] To [illegible]

Area ________ Logged By [illegible]

Project [illegible] | Page 12 of 13 | Date ______

Azi ____ Incl ____ TD ____

Easting ________ Northing ________

Depth	Assay % CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic		Mineralogy: FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %		Carbon %			Comments
		White marble														3				tr			disseminated graphite tr - 1% no structures no variations ...

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # [illegible] From 120 To [illegible] | Area ______ | Logged By [illegible]

Project [illegible] | Page 13 of 13 | Azi ____ Incl ____ TD ____ | Date ______ | Easting ______ Northing ______

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %	Carbon %	Comments
		white marble													3			tr	disseminated graphite to ~1%

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

51

Hole # BDH13-14 From 0 To 10

Area ________ Logged By Fannagian

Project ____________ Page 1 of 4

Azi ____ Incl ____ TD ____ Date ______

Easting ________ Northing ________

Depth	Assay % CG	Lithology – Rock Type	Lithology – Graphic	Structure – Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
		Overburden																	no measurable contact
		Paragneiss?							3				1	2					The rock is essentially made of diopside and silica. diopside 45%
																			no measurable contact
		Shear zone ?							3				1					3 / 7	Wollastonite 5-10% Diopside 15-20%
																			no measurable contact
		Paragneiss (or silicified marble ?)		75°										2		1	5		The rock is composed with diopside (40-50%) and silica (50-60%). fracture 75° c.a, oxyded sulfides in both side.
																	1		
				40°					3					4 / 3 / 2			5		fracture 40° c.a, oxyded sulfides inside.
				40° S.			S.												silica vein 40° c.a.
				80° C			C								3				calcite vein with diopside (5-10%) the upper contact is not measurable the lower contact is oriented 80° c.a
			contact 30°																contact 30° c.a
		silica vein																4	White silica with diopside (5%) and wollastonite 3% with graphite (trace, 4%)

KEY. Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST * STEVEN LAUZIER # 1430 * QUÉBEC

Hole # DDH13-11	From 10	To 20	Project Millen	Page 2 of 4
Area	Logged By Famunzia		Azi ___ Ind ___ TD ___	Date
			Easting ___ Northing ___	

Rock Type	Structure Graphic	Vn	Silica	Potassic	CO3	Py %	Carbon %	Comments
Paragneiss (silicified marble?)			3				15	contact 60° at 10 m The rock is composed with silica, diopside (30-40%), graphite (15-20%)
Bedded marble	30°				3		10	contact 60° and 30° in the opposite direction. The beddings of diopside go hit the 60° c.a contact. The structure don't describe a fold
Silicified marble	10° c	c	3		1		5 3 10 tr	Diopside beddings between 10,5 and 11,3 m and are oriented 30° c.a -> gradual contact
ultra silicified marble			3					gradual contact
Silicified marble			3	3		3		gradual contact
Pegmatite	65° C. 40°		3	2				contact 80° c.a Titanite 1% diopside 5% graphite vein 65° c.a (5mm thick) breccia contact 40° c.a with silica, calcite (and a little bit of chlorite) matrix mix.
White marble					3		1	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH13-11 From 20 To 30
Area ________ Logged By Fon...

Project M... | Page 3 of 4
Azi ____ Incl ____ TD ____ | Date ____
Easting ________ Northing ________

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
		White marble													3			1	
				40										2		1	2	3	Dark beddings between 27,6 and 27,7m oriented 40° c.a.
													1						contact 85° c.a.
		Pegmatite																	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

52

Hole # DDH13-11 From 30 To 36
Area ________ Logged By [illegible]
Project [illegible] Page 4 of 4
Azi ____ Incl ____ TD ____ Date ______
Easting ________ Northing ________

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
		Pegmatite																tr.	FK: 15% silica 69% wollastonite 10% titanite 1% diopside 5%
			contact 30°															2	contact 30° c.a
		White marble													3	1	2	1	
			END																

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

S L

ech: 01593 (beginning). DDH-13-12.

Hole # ________ From 0 To 70

Area ________ Logged By ________

Project ________ Page 1 of ___

Azi ____ Incl ____ TD ____ Date ________

Easting ________ Northing ________

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOx	CO_3	Sulfides: Py %	Pyrr %	Carbon %	Comments
		casing	casing																
		silicified marble		55					3				1	1				Tr	grey. marbel with thinner material (Biotite?). methapellite. Bedding (laminated). Graphite: Tr. Potassic alteration: L
		Ap Ap		Bdg															Aplite. (2x) (3.6m)
				50										1					aphanitique (1-2). FK (feldspath potassic): tr. size: 1mm, 3-5%. microcristalline.
		diabase																	
		marble	marble	35	X	X													sharp contact. (3-76 A) Diopside: 25% grained part (...)

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO_3: 1-weak, 2-moderate, 3-strong. Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST * STEVEN LAUZIER # 1430 * QUÉBEC

CCH 13-12 mine thin

Hole #	From 10 To 20	Structure	Alteration	Mineralogy	Project	Page 2 of
Area	Logged By				Azi Incl TD	Date
					Easting Northing	

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO3	Sulfides Py %	Sulfides Pyrr %	Carbon %			Comments
		Sucre gray		23					1						2			X			graphite: 1-2% max. Foliation or bedding paste with small size grain (bellite) small scal (slissement). (3-5cm) hetherogeneous (m) graphite concentrated in small size grain paste - 1-2%.
		marble		25																	
				30											2	1	X				16.6 - 17.55 sharp contact. highly bedded (3-6cm) bellite, graphite: tr. Pyrr: 1% max in Bedding. Diopside: 10-15%. epidote (t).
		marble bellite		40																	
				35														X			17.55 - 22.1. Rock. graph: 2-3% max, small flake Pyrr 2-3% (bedded).
				Crush 5% Pyrr																	
		Skarn?		50								3			1						18.6 - 19 Pegmatite (Photo 741). Characterized: Kf, Fk. wollastonite, idocrase (5%), amphibole. saussuritization (t). mica bedded.
																					Pegmatite (40cm) same composition

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

DDH 13-12

Hole #	From 20 To 30	Structure	Alteration	Mineralogy	Project	Page 2 of
Area	Logged By				Azi Incl TD	Date
					Easting Northing	

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %	Carbon %	Comments
20		Paragneiss													1		X	X	foliation - heterogene - element (A).
21				34															21.5 - 22.4. Titanite: 1-2% wollastonite (5%) Fk quartz
22		Pegmatite		33											3				22.7 - 24.35: heterogene (mix Paro-marble) Pegm.: 4% (in foliation). graphite: small flak. Tr.
23		Paragneiss - marble		60															
24														1	3			X	marble 24.3 - 30.6. Diopside: 3-4%. Graphite: Tr - 1%
25																			
26		marble		folis.															Photo Flir:
27																			
28																			
29																			graph: 1% (2 mm)

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

DDH-13-12

Hole # ______ From 30 To 40
Area ______ Logged By ______

Project ______ Page 4 of ___
Azi ____ Incl ____ TD ____ Date ______
Easting ______ Northing ______

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyr %	Carbon %	Comments
				160, 55			X						X						30.6 - 31.7 titanite 12% wollastonite quartz graphite tr. F4 (altered).
31		Pegmatite		80															dark, slightly grey (31.7 - 32.9)
32		Paragneiss		30, 70, 50													X	X	Pyrrho: 2-4% [illegible]. Graphite: tr - 1%.
																			32.9 - 33.2 Big mineral (.3 - [illegible]) titanite (2%), F1 alt.
33		Pegmatite		40					2				X	1			X	X	33.2 - 38 grey, slightly green. foliation (L) to (M). fold: (L) Pyrrho: 2-3% in foliation ([illegible]) graph. tr. 2%. epidote - chlorite (L)
				27															
35																			
36		Paragneiss																	
37				50, 40															
38		Pegmatite / Paragneiss																	38.0 - 43.6 green, slightly [illegible] [illegible]: 4% [illegible] tr. smoky quartz [illegible]
				50	X		X			X			X						
39		Quartzite																	quartz 70%.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

DDH-13-12-

Hole #	From 40 To 50	Structure	Alteration	Mineralogy	Project	Page 5 of
Area	Logged By				Azi Incl TD	Date
					Easting Northing	

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %		Carbon %			Comments
40				35, 55			X															white quartz - vein
42				20			X															< 2 mm
44																						
46		pegmatite		40																		43.5 - 47.4 wollastonite - 30% (< 5 mm), quartz, pyroxene, amphibole (?).
48		wollastonite		?					2								X		X			gradual contact. foliation ~ Pyrr: 0% [illegible]
50		pegmatite		? 80					1				1				+					gradual contact. Titanite: 5%, quartz [illegible]
52		marble																				[illegible]
54		skarn		70, 55	X	X	X		+				2						X			quartz vn + graph: 5% (cluster). 47.2 - 48.8 Pyrr: [illegible] graph: 1% - < 5 mm: [illegible] (cluster).
56		[illegible]		20		X										2			X			
58				25					2				X									48.8 - 51 white - green [illegible] Alteration wollastonite [illegible] (5%) pyroxene: 5%, quartz, Pyrr [illegible]
60		[illegible]		30, 50			X										*					

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

51

DDH-13-12 G.C = gradual contact.

Hole #	From 50 To 60	Structure	Alteration	Mineralogy	Project	Page 6 of
Area	Logged By				Azi Incl TD	Date
					Easting Northing	

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyr %	Carbon %	Comments
50		shear zone.																	
				?															G.C Extension M. graph 2-3%. Hornfels 0.5%
				20°					1								X	X	525-62,55
52		Colonphite							3				X		1				green-grey.
		amphib.		45°			A												quartz. wollastonite
53		VN																	Diopside: 5-25%. quartz Altered: (L). FA altered: L
56																			
57		quartzite.																	
58																			
				40°															quartz VN. 8cm
60																			

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

DDH-13-12

Hole # ________ From 60 To 70 | Area ________ Logged By ________

Project ________ Page 5 of ___ | Azi ___ Incl ___ TD ___ | Date ________ | Easting ________ Northing ________

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
60		quartzite																	
61							X												4cm, quartz veins
62		quartzite																	
63				70			X										X		2cm. Eqv: 5%
64																			
65		quartzite		40			X									S			2cm. Eqv: <1% + calcite.
66																			
67		quartzite																	
68																			
69				00 / 20						3									Diorite 3%, qtz, tourmaline? green chlorite. Many veinlets. Pods/breccia?
70		Diorite / Quartzite		35															

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

VL: very low.

DDH_13-72.

Hole #	From 70 To 80	Structure	Alteration	Mineralogy	Project	Page 8 of
Area	Logged By				Azi Incl TD	Date
					Easting Northing	

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides Py %	Sulfides Pyr %	Carbon %	Comments
70																			
71		andesite.		20															
									3										grey, slightly green (72-75) foliation: (VL) propylitic: 1c 20%
72		andesite (Kikiflurometh.)																	
73																			
74																			
75				65			x												3cm white qtz. FR.
				40			x										x	x	3cm. Qtz...: ... Pyr: Tr
76		andesite																	
77																			
		andesite		60					2									x	78-82. dark collation: (m) ... 12% / ...: 20-... 78.8-82 green. ...: ...%
78																			
				80															
79		andesite																	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis; 0° is parallel, 90° is perpendicular)

SC

DDH-13-12.

Hole #	From 80 To 90.	Project	Page 9 of
Area	Logged By	Azi Incl TD	Date
		Easting Northing	

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic		FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %		Carbon %			Comments
80		andesite																					
85																							

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH13-13 From 0 To 10

Area ________ Logged By Famuaca

Project ________ Page 1 of 3

Azi ____ Incl ____ TD ____ Date ________

Easting ________ Northing ________

Depth	Assay % CG	Lithology: Rock Type	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
		Overburden																
		? ?																No measurable contact
													1					
													1					
												1						
																3		
																	Gr	disseminate graphite tr-1%
		White marble						2										
								0				2						

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST * STEVEN LAUZIER #1430 * QUÉBEC

Hole # DDH10-13 From 10 To 20 | Area ____ Logged By Fonnugia

Project Millen | Page 2 of 3 | Azi ____ Incl ____ TD ____ | Date ____ | Easting ____ Northing ____

Depth	Assay % CG	Lithology: Rock Type	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
			45°					1										Sub- beddings 45° c.a
														3			tr.	disseminated graphite tr-1%
		White marble																
			60°					2						1		2		Dark beddings 60° c.a
														3				

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Hole # DDH13-13 From 20 To 21

Area ________ Logged By Famugia

Project Hilla

Page 3 of 3

Azi ____ Incl ____ TD ____ Date ______

Easting ________ Northing ________

Depth	Assay	Lithology		Structure					Alteration						Mineralogy								Comments
	% CG	Rock Type	Graphic	Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic		FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %		Carbon %			
		white marble														3				u			disseminated pyrite to ~1%

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

5L

Hole # DDH13-14 From 0 To 10 | Area ______ Logged By [illegible]

Project Miller [illegible] | Page 1 of 2 | Date ______

Azi ____ Incl ____ TD ____ | Easting ______ Northing ______

Depth	Assay %CG	Lithology – Rock Type	Lithology – Graphic	Structure – Graphic	Vn	Silica	Potassic	CO_3	Py %	Pyrr %	Carbon %	Comments
		Amphibolite										No measurable contact
		White marble	contact 10°					3			1	contact 10° c.a
		massive graphite	contact 30°		6							contact 30° c.a
		Silicified marble		50°, 40°			1		1	3	6, 8	beddings of graphite, pyrrhotite, diops and silica, angled 30° c.a at first and 40° c.a starting 1 m. The beddings are located between 4,7 and 5,7m
				55°		3		2		2	2, 5	beddings 55° c.a
						2, 3	1, 1				10	gradual contact
		Marble				1		3			1, 3	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO_3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST
STEVEN LAUZIER
1430
QUÉBEC

Hole # DDH13-14 From 10 To 17

Area ________ Logged By Fernando

Project ________ Page 2 of 2

Azi ____ Incl ____ TD ____ Date ________

Easting ________ Northing ________

Depth	Assay	Lithology		Structure					Alteration					Mineralogy					Comments
	% CG	Rock Type	Graphic	Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	

60°

1

3

3

3

1

3

1

3

1

2

2

1

3

1

5

1

3

1

2

1

beddings 60° c.a.

END

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

DDH-13-15

Hole #	From 0 To 10	Project	Page 1 of 2
Area	Logged By	Azi Incl TD	Date
		Easting Northing	

Columns: Depth | Assay (% CG) | Lithology (Rock Type, Graphic) | Structure (Graphic, Fault, Breccia, Vn, Gouge) | Alteration (Silica, Clay, Decalc., Propylitic, Potassic) | Mineralogy (FeOx, CO_3, Sulfides: Py %, Pyrr %, Carbon %) | Comments

Depth	Rock Type	Structure Graphic	Vn	CO_3	Carbon %	Comments
0–2	overburden					
2–2.6	Altered marble	?		2		white orange.
2.6–6	marble	40, 50		3	X	2,6-6. white. calcite: 98%. Graphite: 1-2% or more
6–6.7	graphite vn.		X		X	6-6.7?. Pure graphite: 50%.
6.7–7.1		?		3	X	gradual contact (6.7?-7.1) white slightly green. diopside: 20-30% / graphite 15%
7.1–7.8	marble	30, 30, 35	X		X	7.3-7.8: graphite vn: 20% mix with marble.
7.8–9.3				2	X	7.8-9.3 white. diopside: 5%. graphite: 1%-2%
9.3–9.8	marble	37, 25		2	X	9.3-9.8. graphite: 2-4%. folded bedding: L.
9.8–10	Silicified marble	30				9.8-10.0 grey.
10	marble					

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration FeOX, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE GEOLOGIST
STEVEN LAUZIER
1430
QUÉBEC

DDH-13-75.

Hole #	From 10 To 20	Structure	Alteration	Mineralogy	Project	Page 2 of 2
Area	Logged By				Azi Incl TD	Date
					Easting Northing	

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic		FeOx	CO_3	Py %	Pyrr %		Carbon %			Comments
		marble														3							
								3										3		1			13.4 – 13.5 (photo 746). folliation [illegible] graph: 22-1%. Pyrr: 1%
		[illegible]														3					1		– 13.5 – 20. heterogene composition: lithique, [illegible] calcite [illegible]. [illegible]: 2 – 3.0% [illegible]
		marble																					

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

51

DDH-13-16.

Hole # ______ From 0 To 10

Area ______ Logged By ______

Project ______ Page 1 of ___

Azi ___ Incl ___ TD ___ Date ______

Easting ______ Northing ______

Depth	Assay (% CG)	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	Mineralogy: FeOx	CO_3	Sulfides: Py %	Pyrr %	Carbon %	Comments
0 – 2.25		overburden																	
2.25															2			X	2.25 - 9.7 grey graphite diss: tr - 1 % Diopside: horizontal variation. [C]: 2 - 15 %.
9.7		Sulfide marble							2						1			X	9.7 - 10.2 Graph: tr

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST
STEVEN LAUZIER
1430
QUÉBEC

DDH_13-16

Hole # ________ From 10 To 20

Area ________ Logged By ________

Depth	Assay %CG	Lithology Rock Type	Lithology Graphic	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic		FeOx	CO_3	Py %	Pyrr %		Carbon %		
		marble		50					3							1				X		
		(anorthite (5% marble)		64																		
				70												2					X	

Project ________ Page 2 of 2

Azi ____ Incl ____ TD ____ Date ________

Easting ________ Northing ________

Comments

12,4 - 13,2.
Dark grey.
Diopside: 5-10%
graph: 1-3%.
Folliation: M.

13,2 - 20
grey.
Diopside: Horizontal variation.
5 - 25%.
graphite, diss Tr - 1%
Apatite: Tr.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

DDH 13-17

Hole # ______ From 0 To 10 | Area ______ Logged By ______

Project ______ Page 1 of ___ | Azi ___ Incl ___ TD ___ Date ______ | Easting ______ Northing ______

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %			Comments
1		overburden																			
1,3 – 4,8		marble		80											3			X			1,3 – 4,8 white – grey Diopside: 5 – 10% Graphite: Tr
4,8 – 6,0		calcsilicate marble		35					1								X	X			4,8 – 6,0 grey Calcsilicates: m. (Folds) Pyrrh.: w: 1%
6,0 – 8,5		marble													3			X			6,0 – 8,5 grey Diopside: 5 – 10% graphite: Tr.
8,5		pegmatite																			8,5 – [illegible]: gradual contact [illegible] [illegible] 10 – 15% [illegible]
8,8 – 10,0		marble													3			X			8,8 – 10,0 white slightly grey Diopside: 5 – 15% Graph.: Tr

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO_3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST * STEVEN LAUZIER # 1430 * QUÉBEC

Tr: Trace. (L): Low
(C): concentration.
DDH-13-17 A: Alteration

Hole #	From 10 To 20	Structure	Alteration	Mineralogy	Project	Page 2 of 2
Area	Logged By				Azi Incl TD	Date
					Easting Northing	

Depth	Assay % CG	Lithology Rock Type	Lithology Graphic	Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic		FeOx	CO_3	Sulfides Py %	Sulfides Pyrr %		Carbon %			Comments
10		marble		50																			magnetite? 10.8
		Decalcification (marble)																					
		marble							3									x					Foliation [illegible] pyrr: [illegible]
		Decalcification		40																			
11		marble							1				x			2				x			zone slightly whiter
																							graph: 1-2%. Albite? (L) (A)
																							Foliation: L. Photo 767
																							quartz veining
																							Diopside: 5-10%.
12		marble + diopside																			x		diopside: [illegible] %
																							lithics: [illegible] (0-4cm)
																							graph: Tr! Photo 766
13																							
14																							
15																							15. (end)

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

DDH 13-78

Hole #	From 0 To 10	Structure					Alteration					Mineralogy						Project	Page 1 of
Area	Logged By													Sulfides				Azi Incl TD	Date
Depth	Assay (% CG) / Lithology (Rock Type, Graphic)	Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %		Easting Northing	Comments

Lithology:

- marble
- Altered? / diopside?
- marble
- calcite? vein / calcite? 10%
- diopside
- marble

Structure graphic: 80; 35

Alteration (Silica): 1; 2; 3

Mineralogy (CO_3): 1; 2; 3

Comments:

3.3 - 3.8: blue ... range?

3.8 - 7.1 white slightly gray
diopside: 5 - 10%.
Graphite: Tr.

white quartz!
Carbon...: 5 - 10%
7.3 - 8.

gray-brown ... Tr. - 1%
diopside 5% ... alteration (...)
Graph. Tr. - 2% (... 40)
8.2 - 10.1
gray.
Graph. Tr. - 1% ...
Diopside 5 - 10%
Silicious? Tr. - 5 (... 2-4 cm)

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO_3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE GEOLOGIST * STEVEN LAUZIER # 1430 * QUÉBEC

[signature]

DDH-13_78

H: hard
M: medium
L: low

Hole #	From 70 To 80	Structure	Alteration	Mineralogy	Project	Page 2 of 3
Area	Logged By			Sulfides	Azi Incl TD	Date
					Easting Northing	

Depth	Assay (% CG)	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %	Carbon %	Comments
71		marble																	
72		marble																	
73		marble																	
74		marble																	
75		skarn													3		X	X	75.2-75.5 gradual contact. white, wollastonite 70%, pyrr 2-4%, amphibole 20%. 75.5-75.8 irregular contact. gray-white to green diopside 2-10%, pyr[illegible] 2-4%, graphite 2%
76		marble																	
77		marble		40					3			X		2			X	X	77.0-77.4 gradual contact. Dark-green. Sk alteration (?) Banded (?) contacts with graphite; pyrr 2% disse. Apatite VG contacts with breccia.
78		skarn		40		X													78.8-78.9 gradual contact
79		marble																	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

51

DDH 13-18

Hole # ________ From 20 To 30

Area ________ Logged By ________

Project ________ Page 3 of 3

Azi ____ Incl ____ TD ____ Date ________

Easting ________ Northing ________

Depth	Assay	Lithology		Structure					Alteration					Mineralogy					Comments
	% CG	Rock Type	Graphic	Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	
		marble													3		X	X	gray. anhydrite: 5-15%. Pyrr: Tr. graph: Tr. Lithology: [illegible] ~1-2% [illegible] size ~1-6 mm
				55, 70					2						2		X	X	25.3-27.3 gray. breccia 1 dom. (dolomitic). [illegible] 5-10%. Pyrr: 3% - 5% (bliss)
		carb-silt/mix w/ marble, Chlo rich					X		2									X 3	white [illegible] graph: 2%. [illegible]
		marble													3			X	27.3-30.? gray. [illegible] 5-10%. [illegible]: <2%. graph: Tr.

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

51

Hole # DDH14-19 From 0 To 10 | Area ____ Logged By M. Fonseca | Project Milton | Page 1 of 3 | Date ____
Azi ____ Incl ____ TD ____ | Easting ____ Northing ____

Depth	Assay %CG	Lithology Rock Type	Structure Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Py %	Pyrr %		Carbon %	Comments
0–3m		overburden																	
3m		silicified diopside marble						2						1	2	3		10 / 5	No measurable contact calcite 30% Diopside : 20% silica : 40% disseminated graphite
4.5m		marble						1								tr		3	gradual contact calcite 65% silica 30% Diopside 5%
6.5m		bedded silicified marble	65 / 65 / 65 / 65 / 65					3							1	tr / 5 / 4 / 7 / 1		5 / 10 / 4 / 15 / 3	gradual contact Calcite 35% silica 60% diopside 5% beddings with graphite 65° c.a D=40% S=55% beddings with graphite 65° c.a D=35 S=50% C=15%
9.5m		quartzite						3								tr		1	contact 50° c.a coarse silica S=85% D=10%
9.[illegible]m		silicified marble						3								1		1	contact 55° c.a calcite : 15% silica : 67% Diopside : 15%

KEY: Fault, Breccia, Gouge (presence or absence). Vn (for vein mineral). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE GEOLOGIST
LAUZIER
1430
QUÉBEC

Lauzier

Hole # DDH14-12 From 10 To 20 | Project: Hilton | Page 2 of 3
Area ____ Logged By M. Farnusia | Azi ____ Incl ____ TD ____ | Date ____
Easting ____ Northing ____

Depth	Assay %CG	Lithology Rock Type	Structure Graphic	Silica	Potassic	FeOx	CO_3	Py %	Pyr %	Carbon %	Comments
10–10.5m		silicified marble		3					1	1	calcite : 15% silica : 62% diopside ~15%; contact 60° c.a
10.5m–10.6m	white	marble								2	S=8% D=30% C=60%; contact 60° c.a
10.6m–11.7m		silicified marble	C.	3					3	3	calcite vein 60° c.a; silica 51%; diopside 40%; calcite 3%
11.7m–12.2m		white marble					3		2	2	gradual contact; Calcite 85% diopside 5%; silica 3%
12.2m–13m		silicified marble		3						1	contact 50° c.a; coarse minerals; silica 70%; diopside : 26%; calcite 3%
13m–13.1m	white	marble			1	1	3			4	contact 60° c.a; C=85% D=10%
13.1m–16.1m		silicified marble	55	3				1	1	2	contact [illegible] c.a; bedding 55° c.a; silica 62%; diopside 33%
16.1m–16.5m		Pegmatite									contact 65° c.a; S: 60% D=20% wollastonite 30% Titanite
16.5m–16.8m	silicif.	marble		3	1			1		1	contact 70° c.a; S=75% D=20% C=5%
16.8m–17m		marble		3						2	contact 70° c.a; S=51% D=7% C=40%
17m–17.3m		Quartzite		3							contact 60° c.a; coarse minerals S=30% D=10%
17.3m–17.7m		marble		3						1	contact 50 c.a; S=52% C=40% D=7%
17.7m–17.8m		quartzite		3							contact 45 c.a; S=30% D=1%
17.8m–18.6m		marble		3	1					3	contact 45 c.a; S=52% C=40% D=5%
18.6m–20		silicified marble		3				1, 4, 1	1	2	gradual contact; Silica = 70%; Diopside = 24%; calcite = 2%

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO_3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

Hole # DDH-13 From 20 To 29.5m | Project Miller | Page 3 of 3

Area ______ Logged By M. Farrugia

Azi ____ Incl ____ TD ____ Date ____

Easting ______ Northing ______

Depth	Assay %CG	Rock Type	Structure Graphic	Silica	Potassic	CO3	Py %	Pyrr %	Carbon %	Comments
		silicified marble		3			1	1	2	gradual contact
20,3m		calcite pegmatitic				3				calcite 90% Diopside - 10% chromi apatite : tr. gradual contact
20,4m		silicified marble		3		1			1	Silica 54% Diopside - 25% calcite - 20% gradual contact
21,3m		calcite pegmatitic				3			1	Calcite 97% contact 45° c.a
22m		marble							1	C=70% S=20% D=3% contact 45° c.a
22,1m		calcite pegmatitic				3			1	Calcite 99% no measurable contact.
22,6m		White marble		1		3			3	Calcite 82% Silica 10% Diopside 5% contact 50° c.a
23,6m		calcite pegmatitic				3			tr	Calcite 95% Titanite: tr Diopside: 1% gradual contact.
24m		Pegmatite		1	1	2			tr	Silica 30% wollastonite 25% Diopside 10% calcite 34% Titanite 1% blue calcite in the last cm. gradual contact
25,1m		marble		2						Silica 25% Diopside 3% calcite 67% Titanite - 5% gradual contact
25,5m		Pegmatite		1					tr	S=30% D=15% W=20% C=33% T=2% gradual contact
26,1m		marble		1						Diopside - 45% Silica 30% calcite 25% contact 45° c.a
26,6m		Pegmatite						15		W=45 C=40 D=tr. blue calcite contact 45° c.a
26,7m		marble		1		3			3	Calcite 77% Silica 10% Diopside 10% contact 55° c.a
		ultra silicified marble - quartzite?	70°	3				2	1	coarse silica in the 30 first cm. after it's thinner Silica 87% Diopside 10% bedding 70° c.a
28,5m										

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH14-20	From 0	To 10	Project Milan	Page 1 of 4
Area	Logged By M. Farrugia		Azi ___ Incl ___ TD ___	Date
			Easting ___ Northing ___	

Depth	Assay %CG	Lithology: Rock Type	Lithology: Graphic	Structure: Graphic	Fault	Breccia	Vn	Gouge	Alteration: Silica	Clay	Decalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides: Py %	Sulfides: Pyrr %	Carbon %	Comments
0–2,5m		Overburden																	
2,5m–5,6m		silicified diopside marble	? ? ?						3							1	6/1	4	No measurable contact. Partially ... C: 55% D: 40% E: 3% T: 2%
5,6m–6,6m		Pegmatite	contact 65°						3										Contact 65° CA. ~: 90% D: 10%. Partly ... with coarse silica
6,6m–7m		silicified diopside marble							3										gradual contact. S: 57% D: 40% ... %
7m–7,1m		Pegmatite							1									1	gradual contact. S: 90% D: 7% T: 3%
7,1m–7,4m		silicified diopside marble							3										gradual contact. S: 70% ... %
7,4m–7,8m		silicified diopside marble – pegmatite ...							3							1			gradual contact. S: 64 D: 30 T: 5
7,8m–9m		ultra silicified marble							3							1	3	4	gradual contact
9m–10m		silicified marble							3							3 / 1 / 5	2 / 1 / 2	3 / 1 / 6	gradual contact. S: 60 %. D: 30%

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein mineral). Alteration: Silica, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

GÉOLOGUE / GEOLOGIST STEVEN LAUZIER # 1430 QUÉBEC

Hole # DDH14-20 From 10 To 20

Area ______ Logged By M. Tamuga

Project Hiller

Page 2 of 4

Azi ____ Incl ____ TD ____ Date ____

Easting ____ Northing ____

Depth	Assay %CG	Rock Type	Structure Graphic	Silica	Potassic	Py %	Pyrr %	Carbon %	Comments
10–10,7		silicified marble		3		2		1	gradual contact
10,7–11,5		ultra silicified marble		3		10, 1			Big pyrite phenocrystals. S: 75-80% D: 10%
11,5–12,1		silicified marble - pyrrhotite minor		3		1	1		gradual contact S: 75% T: 2% C: 10% D: 10%
12,1–12,9		silicified marble	5°	3, 2				1, 4	gradual contact S: 60-65% D: 30% C: 15% sub bedding: 60° c a.
12,9–20		White marble			1	1, 3, 1		2	gradual contact. Diopside: 5-7%, calcite: 90-93%

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH14-20	From 20 To 30	Structure	Alteration	Mineralogy	Project Miller	Page 2 of 4
Area	Logged By M. Ferrarin				Azi ___ Incl ___ TD ___	Date
					Easting ___ Northing ___	

Rock Type	Structure Graphic	Silica	Potassic	CO_3	Py %	Pyrr %	Carbon %	Comments
							2	
							5	
							2	
		1					8	diopside 5-7%
White								calcite 90-95%
			1					
marble							2	
								gradual contact
Silicified					1	1	1	
marble	65							
		3			4	2	10	Graphite bedding 55°
						2	3	
	65					8	8	graphite-pyrrhotite bedding 55°
								S: 50-70%
						3	2	D: 25-30%
				1				
						4		
						2		

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SL

Hole # DDH14-20 From 30 To 36

Area ______ Logged By M. Cannuzzini

Project Miller

Page 4 of 4

Azi ____ Incl ____ TD ____ Date ______

Easting ______ Northing ______

Depth	Assay %CG	Lithology – Rock Type	Lithology – Graphic	Structure – Graphic	Fault	Breccia	Vn	Gouge	Silica	Clay	Detalc.	Propylitic	Potassic	FeOx	CO_3	Sulfides – Py %	Sulfides – Pyrr %	Carbon %		Comments
		Silicified marble							3								2 1	2 tr 2 tr		gradual contact
		marble							2						2			tr		C: 30% S: 40% D: 30%
		Pegmatite														4				contact 15° C.a. Wollastonite 36% C: 20% S: 40% gradual contact [illegible]
		Silicified marble							3						1	tr		3		S: 58% D: 35% C: 4%
			END																	

KEY: Fault, Breccia, Gouge (presence or absence). Vn (list vein minerals). Alteration, FeOx, CO3 (1-weak, 2-moderate, 3-strong). Graphic (measured relative to core axis: 0° is parallel, 90° is perpendicular)

SC

Appendix 13. Flotation testwork, chemical upgrading test report

An Investigation into

GRAPHITE UPGRADING AND PURIFICATION TESTWORK ON THE MILLER DEPOSIT

CANADA CARBON

Project 14185-001/-002 Final Report
July 23, 2013

SGS Canada Inc. | P.O. Box 4300, 185 Concession Street, Lakefield, Ontario, Canada K0L 2H0
Tel: (705) 652-2000 Fax: (705) 652-6365 www.met.sgs.com www.ca.sgs.com
Member of the SGS Group (SGS SA)

Table of Contents

List of Tables

Introduction

This report summarizes initial scoping work examining methods to upgrade graphite by flotation followed by chemical upgrading. The objective of the chemical purification was to upgrade the +48 mesh fraction of the concentrate produced in a flotation test to a grade of >99.9% total carbon. The flotation test work was completed under project 14185-001 and the hydrometallurgical test work was completed under project 14185-001/-002. The results from this test program were reported to Mr. Bruce Duncan of Canada Carbon as they became available.

The test work included:

- Sample preparation and characterization;
- Crushing, blending and splitting;
- Flotation testing;
- Chemical upgrading.

Hassan Moussaid
Project Manager, Hydrometallurgical Dept.

Stephen Mackie, Ph.D.,
Manager, Hydrometallurgical Dept.

Kevin Stewart
Metallurgist, Mineral Processing

Dan Imeson, MSc.
Manager, Mineral Processing

Experimental work by: Hassan Moussaid and Kevin Stewart
Report preparation by: Hassan Moussaid
Reviewed by: S. McKenzie, K.Bradley D. Imeson, S. Mackie

Testwork Summary

1. Sample Preparation and Head Characterization

The graphite feed from the Miller deposit received on June 4, 2013 and assigned the SGS receipt number 0023Jun13. The sample was crushed to -6 mesh. A 1-kg sample was removed and submitted for batch flotation test work. A head sample was submitted for the full carbon suite of assays. The assay results are presented in Table 1.

Table 1: Head Grade Analysis

Sample ID	C(t)	C(g)	TOC leco	pulp CO2	S	LOI @ 1000°C
	%	%	%	%	%	%
Head Grade	65.1	61.2	<0.05	61.2	0.04	72.3

The head graphite sample assayed at 65.1% total carbon, and 61.2% graphitic carbon. The head sample is also characterized by its low sulphur content (0.04%) and low total organic carbon (<0.05%).

2. Metallurgical Testing

2.1. Flotation Test work

A single flotation test was performed on 1 kg of material to upgrade the graphite prior to leaching. The test results are summarized Table 2, and test details are provided in the Appendix A.

Table 2: Flotation Test Results

Product	Weight		Assays, %			% Distribution		
	g	%	C (t)	C(gr)	LOI	C (t)	C(gr)	LOI
4th Cleaner Conc +48 mesh	202.5	20.2	94.4	93.5	95.0	28.3	30.9	26.5
4th Cleaner Conc -48 mesh	387.4	38.6	78.7	71.7	82.1	45.1	45.3	43.8
4th Clnr Conc (Combined)	589.9	58.7	84.1	79.2	86.5	73.4	76.1	70.2
3rd Clnr Conc	673.3	67.0	83.1	76.6	85.7	82.8	84.1	79.4
2nd Clnr Conc	690.2	68.7	81.7	75.2	84.5	83.4	84.6	80.3
1st Clnr Conc	732.3	72.9	79.0	72.5	82.5	85.6	86.6	83.1
1st Cl Conc + Scav Conc	786.0	78.2	78.9	72.3	82.3	91.7	92.6	89.0
1st Cl Tail	124.2	12.4	37.5	31.3	47.3	6.9	6.3	8.1
Ro Conc	654.0	65.1	66.4	58.2	71.9	64.2	62.1	64.7
Ro Tail	148.0	14.7	34.4	29.3	43.4	7.5	7.1	8.8
Head (calc.)	*1004.5*	*100.0*	*67.3*	*61.1*	*72.4*	*100.0*	*100.0*	*100.0*

2.2. Results and Discussion

The feed sample was ground for 1 minute in a rod mill grind to liberate the large flaked graphite. A “flash flotation” stage was performed on this coarsely ground material. This recovered the coarse flakes generated in the primary grind.

The tailings from the flash float was reground in the same rod mill as a secondary grind, where further graphite was liberated and recovered in the rougher flotation stage.

The flash and rougher concentrate were combined and reground in a ceramic mill with 1/2“ ceramic media. The ceramic media provides a gentle abrasion-type grind that prevents breakage of the graphite flakes compared to using the traditional steel grinding media which would be too harsh for the graphite flakes.

The reground product was then refloated in a cleaning stage to upgrade the graphite. The cleaner concentrate was upgraded three more times in three cleaner stages.

Fuel oil and methyl isobutyl carbonal (MIBC) were used as the collector and frother, respectively throughout the flowsheet as flotation reagents.

The 4th cleaner concentrate was then screened on a 48 mesh screen producing a plus and minus product that was assayed along with the various products produced in the test. The +48 mesh fraction was then leached.

The 4th cleaner concentrate recovered 73% of the C(t) at a grade of 84.1% C(t). When the 4th cleaner concentrate was screened at 48 mesh the C(t) grade of the +48 mesh fraction was 94% at almost 30% recovery. The C(t) grade of the -48 mesh fraction was almost 80%. To upgrade the -48 mesh fraction, additional regrinding (similar to flash and rougher concentrate regrinding) and several cleaning stages will probably be required to upgrade the graphite to greater than 95%, while achieving higher overall recoveries.

The C(t) grade of the rougher tailing was 34% representing roughly 7.5% of the total C(t) in the feed. The losses in the 1st cleaner scavenger tails were minimal giving a combined tailing C(t) loss of 8.3%. The test details are included in Appendix A.

2.3. Chemical Upgrading

2.3.1. Head Grade Characterization

The +48 mesh fraction of the graphite flotation concentrate was subjected to chemical upgrading. A representative head sample of approximately 10 grams was submitted for chemical analysis. The head assay data are presented in Table 3. The concentrate assayed at 94.4% total carbon and 93.5% graphitic carbon. Key impurities include Fe, Al, Ca, Si and Mg.

Table 3: Head Grade Analysis of the +48 Mesh Fraction

Sample ID	C(t) %	C(g) %	LOI %	Si %	S %	Al g/t	Mg g/t	Fe g/t	Ca g/t
F1 +48 M	94.4	93.5	95	1.18	0.03	2230	2060	4010	9600
Sample ID	Mn g/t	Mo g/t	Na g/t	Ni g/t	P g/t	Pb g/t	Sb g/t	Se g/t	Sn g/t
F1 +48 M	66.5	< 200	116	< 20	< 30	< 20	< 10	< 30	< 20
Sample ID	Bi g/t	Cd g/t	Co g/t	Cr g/t	Cu g/t	Be g/t	K g/t	Li g/t	Ba g/t
F1 +48 M	< 20	< 2	< 4	8	19.4	0.16	203	11	8.1
Sample ID	Sr g/t	Ti g/t	Tl g/t	U g/t	V g/t	Y g/t	Zn g/t	Ag g/t	As g/t
F1 +48 M	28.4	19.9	< 30	< 20	< 2	2.9	6	< 2	< 30

2.3.2. Hydrofluoric Acid Leaching

The objective of the hydrofluoric acid (HF) leach is to remove Si and other impurities from the graphite concentrate, and in doing so produce a high purity graphite product.

The HF leach was conducted in a Teflon beaker equipped with a magnetic stir bar and temperature probe. The reactor was placed on top of a stirring hot plate. The test was conducted in two stages. The first stage involved mixing the feed sample with a set amount of concentrated sulphuric acid (96% H_2SO_4) and water. The resulting mixture had the consistency of wet sand. Concentrated HF (48%) was added to the mixture. The resulting slurry was heated to 90°C. After 300 minutes water was added to the reaction slurry. The slurry was stirred at 90°C for an additional hour. After the reaction period, the slurry was filtered and the residue was thoroughly washed to recover the graphite. The test details and data are included in Appendix B.

2.3.3. Results and Discussion

The test conditions and results are presented in Table 4 and Table 5 .

Table 4: Test Conditions- HF/H_2SO_4 Leaching

Test:	Graphite Mass,	Particule Size,	HF,	H_2SO_4,	Time,	Temp,
	g	mesh	kg/t Feed	kg/t Feed	min	°C
CC-T1	20	+48	334	864	360	90

Table 5: HF/H_2SO_4 Leach Results

Initial Graphite Grade					Final Graphite Grade				
C(t), %	C(g), %	LOI, %	LOI @500°C %	S% %	C(t) % %	C(g) %	LOI% %	LOI @500°C %	S% %
94.4	93.5	95	n.a	0.03	100	99.2	100.8	0.55	0.02

The results show (Table 5) that the graphite was upgraded to 99.2% graphitic carbon and 100% total carbon.

2.4. Two Stage Alkaline Roasting-Hydrofluoric Acid Leaching

2.4.1. Alkaline Roasting

The alkaline roasting process is based on the ability of sodium hydroxide to react with the impurities in the graphite concentrate at high temperatures, especially Si, S, Fe and Ca, rendering such impurities soluble in water.

The alkaline roasting procedure consists of a caustic bake, water wash, and dilute acid leach. The caustic-graphite slurry was mixed manually for about 15 minute in a crucible. First excess water was boiled off, and then the crucible was placed into a muffle furnace at a temperature of 400^oC. The reaction time was measured from the moment the sample reached the target temperature. At the conclusion of the reaction time, the crucible was removed from the furnace and the solids quenched with deionised (DI) water. The resulting slurry was heated to 80^oC, while agitating for about 30 minutes and then the slurry was vacuum filtered. The resulting residue was subjected to a series of repulp-filtration steps using warm DI water until the filtrate reached a neutral pH. The washed residue was then slurried in 10% H_2SO_4 and leached for about 30 minutes at 80^oC. The resulting slurry was vacuum filtered The filter cake was repulped with DI water to remove any trace of acid. The test details and data are included in Appendix B and Table 6.

2.4.2. Hydrofluoric Acid Leaching

The washed and dried residue from the alkaline roasting stage (Section 2.4.1) was further leached with HF/H_2SO_4 mixture using the same conditions as in Section 2.3.2. The purpose of this stage is to leach the remaining and the most obstinate impurities into soluble components. The test details and data are included in Appendix B and Table 6.

Table 6: Test Conditions-(Alkaline Roast, HF/H_2SO_4)

Test:	Graphite Mass,	Particule Size,	HF,	H_2SO_4,	NaOH,	Time,	Temp,
	g	mesh	kg/t Feed	kg/t Feed	kg/t Feed	min	°C
Alkaline Roast	30	+48			833	60	400
HF/H_2SO_4 Leach	18	+48	370.7	960		360	90

2.4.3. Results and Discussion

The results (Table 7) show that the graphite was upgraded to 99.1% graphitic carbon as the result of the alkaline roasting stage. The graphite residue from this stage was further upgraded in the HF/H_2SO_4 leaching stage to approximately 100% graphitic carbon. The graphite reached 100% total carbon in both stages.

Table 7: Tests Results-(Alkaline Roast, HF/H_2SO_4)

Initial Graphite Grade			
C(t) % %	C(g) %	LOI% %	LOI @500°C %
94.4	93.5	95	n.a
First Stage:Alkaline Roast			
C(t) % %	C(g) %	LOI% %	LOI @500°C %
100	99.1	101	1.04
Second Stage:HF/H_2SO_4 Leach			
C(t) % %	C(g) %	LOI% %	LOI @500°C %
100	100	101	0.73

Conclusions and Recommendations

Based on the results and observations from the tests detailed in this report, the following conclusions and recommendations are made:

Flotation Tests:

- The 4^{th} cleaner concentrate recovered 73% of the C(t) at a grade of 84.1% C(t). When the 4^{th} cleaner concentrate was screened at 48 mesh the C(t) grade of the +48 mesh fraction was 94% at almost 30% recovery. The C(t) grade of the -48 mesh fraction was almost 80%. To upgrade the -48 mesh fraction, addition regrinding (similar to flash and rougher concentrate regrinding) and several cleaning stages will probably be required to upgrade the graphite to greater than 95%, while achieving higher recoveries;

- The C(t) grade of the rougher tailing was 34% which represents roughly 7.5% of the total C(t) in the feed. The losses in the 1^{st} cleaner scavenger tails were minimal giving a combined tailing C(t) losses were 8.3%;

- It is recommended that further flotation test work is performed to optimize the graphite recovery and grades while preserving the integrity of the large flakes.

Hydrometallurgical Test work:

- The HF/H_2SO_4 acid combination was efficient in removing most impurities. The resulting purified graphite solids were upgraded to 100% total carbon and 99.2% graphitic carbon;

- The caustic baking followed by HF/H_2SO_4 acid leach was efficient in upgrading the graphite to approximately 100% graphitic carbon and to 100% total carbon;

- According to SGS, the caustic baking process followed by hydrofluoric leaching test results were very encouraging. After being optimized on batch/bench, larger scale continuous testing of the Alkaline roasting process is recommended.

Appendix A – Flotation Testwork

Test No: F1 **Project No: 14185-001** **Operator: KS** **Date: June 15, 2013**

Purpose:	Exploratory test on Canada Carbon Sample, upgrading graphite concentrate for leach tests
Procedure:	As described below
Feed:	1 kg of -6 mesh of the Canadian Carbon sample
Primary Grind:	1 min/ 2kg @ 65 % solids in rod mill #3
Secondary Grind:	5 min @ 65% solids in SS rod mill #3 K80 = 689 um
Polishing Grind: Ro & Flash Conc	15 minutes Ceramic mill with 1/2"ceramic media K80 = 330 um

Conditions:

Stage	**Reagents, g/t**			**Time, minutes**			**pH**
	Fuel Oil	**MIBC**		**Grind**	**Cond.**	**Froth**	
Primary Grind				**1**			
Flash Flotation 1	5	10			2	1.0	7.3
Flash Flotation 2	5	5			1	1.0	
Secondary Grind				**5**			
Rougher 1	5	10			1	1.0	7.4
Rougher 2	5	5			1	2.0	
Combine Flash Conc & Ro Conc							
Regrind PM (ceramic media)				**15**			
1st Cleaner	10	15			1	4.0	7.4
1st Cleaner Scavenger	5					3.0	
2nd Cleaner	5.0	10			1	3.5	
3rd Cleaner	5.0	15			1	3.0	
4th Cleaner	5.0	10			1	3.0	
4th cleaner concentrate screened at 48 mesh - fractions sent for assay							
Total	50	80	0	21	9	22	

Stage	Flash/Rougher & Sulphide Rougher	1st Cleaner & Scavenger	2nd, 3rd & 4th Cleaners
Flotation Cell	1000 g - D1	1000 g - D1	500 g - D1
Speed (rpm)	1,800	1,800	1,500

Metallurgical Balance

Product	**Weight**		**Assays, %**			**% Distribution**		
	g	**%**	**C (t)**	**C(gr)**	**LOI**	**C (t)**	**C(gr)**	**LOI**
4th Cleaner Conc +48 mesh	202.5	20.2	94.4	93.5	95.0	28.3	30.9	26.5
4th Cleaner Conc -48 mesh	387.4	38.6	78.7	71.7	82.1	45.1	45.3	43.8
4th Cleaner Tails	83.4	8.30	76.5	58.5	80.1	9.44	7.95	9.19
3rd Cleaner Tails	16.9	1.68	23.6	17.8	37.2	0.59	0.49	0.86
2nd Cleaner Tails	42.1	4.19	35.2	29.4	48.6	2.19	2.02	2.81
1st Cleaner Scavenger Conc	53.7	5.35	76.7	68.3	79.9	6.09	5.98	5.90
1st Cleaner Scavenger Tails	70.5	7.02	7.72	3.2	22.5	0.80	0.37	2.18
Ro Tail	148.0	14.7	34.4	29.3	43.4	7.53	7.07	8.84
Head (calc.)	*1004.5*	*100.0*	*67.3*	*61.1*	*72.4*	*100.0*	*100.0*	*100.0*
Head (direct)			65.1	61.2	72.3			

Product	**Weight**		**Assays, %**			**% Distribution**		
	g	**%**	**C (t)**	**C(gr)**	**LOI**	**C (t)**	**C(gr)**	**LOI**
4th Clnr Conc	589.9	58.7	84.1	79.2	86.5	73.4	76.1	70.2
3rd Clnr Conc	673.3	67.0	83.1	76.6	85.7	82.8	84.1	79.4
2nd Clnr Conc	690.2	68.7	81.7	75.2	84.5	83.4	84.6	80.3
1st Clnr Conc	732.3	72.9	79.0	72.5	82.5	85.6	86.6	83.1
1st Cl Conc + Scav Conc	786.0	78.2	78.9	72.3	82.3	91.7	92.6	89.0
1st Cl Tail	124.2	12.4	37.5	31.3	47.3	6.90	6.3	8.08
Ro Conc	654.0	65.1	66.4	58.2	71.9	64.2	62.1	64.7
Ro Tail	148.0	14.7	34.4	29.3	43.4	7.53	7.1	8.84

Appendix B – Chemical Purification Testwork

Project No.: CALR-14185-001
Client: **CANADA CARBON**
Test: **CC-T1**

Date: 17-Jun-13
Technologist: H.Moussaid

Purpose: To evaluate an HF/H2SO4 leach on a graphite sample by removing the impuritlies
Grind: (+)48 mesh fraction of the flotation testwork
Sample: F1 (+48mesh) Test

Leach Conditions

Feed Weight (g): (Dry)	**20.0**
Target Leach Weight Total (g):	**83.9**
Weight of H2SO4 Addition (g):	**18.00**
Weight of HF(48%) Addition (g):	**13.9**
Weight of H2O Addition (g):	**50.0**
Pulp Density (% Solids w/w):	**23.8**
Temperature (°C):	**90.0**

Procedure:

HF/H2SO4

18g of of conc H2SO4 and 50g of DI water was added to a 1000ml teflon beaker. While mixing 20g of graphite was slowly added, then 13.9g of 48% HF was slowly added.
The beaker was covered with a Teflon watch glass and placed on a hot plate.
The pulp was mixed with a magnetic stir bar and heated slowly to a boil (~90 °C).
After 5hour, 100ml of hot DI water was added.
The pulp was then boiled for 1 more hour.
After 1 hour, the beaker was removed from the hot plate and cooled.
The graphite slurry was filtered through low ash PVC membrane (5 µm). The residue was repulped three times with hot DI water and 3 times displacement washed.

Analytical Requirements:

Sample	Sample ID(s)	Analysis	LIMS No.
Filtrate	CC-T1 FIL	ICP-Scan, Si	CA02849-JUN13
Wash	CC-T1 WSH	ICP-Scan, Si	CA02849-JUN113
Residue	CC-T1 RES	C(t),LOI @ 500C and 1000C	CA02890-JUN13

Test: **CC-T1**

Date: 17-Jun-13
Technologist: H.Moussaid

Leach Data:

Time min	Temp (°C)	Comments
0	35.5	All feed in, started heat and mixing
15	78.0	
45	90.0	
120	90.0	
180	90.0	
240	90.0	
300	90.0	Added 100 ml of DI water
360	90.0	End of Reaction

Sample Data:

	Solution			**Solid**	**Gross Mass, g**		**Net Mass, g**	
Sample	Mass, g	Soln Den., g/mL	Vol, mL	Tare	Wet	Dry	Wet	Dry
CC-T1 FIL	166.9	1.0902	153.1					
CC-T1 WSH	409.4	1.0078	406.2					
CC-T1 RES				206.5	230	225.00	23.50	18.50

%Wet Loss: **7.50**

Mass Balance Of Selected Elements

	mass or vol, g or mL	Al	Ca	Fe	Mg	Na	Ti	Si
Assays, % or mg/L								
Graphite Feed	20.0	0.223	0.96	0.401	0.206	0.0116	0.00199	1.18
HF	13.4							
FIL	153.1	19	427	499	144	1.58	1.7	1510
WSH	406.2	32	63	19	17.3	0.14	<0.2	29
RES	18.5	n.a	n.a	n.a	n.a	n.a	n.a	n.a
IN - Elemental Masses, g								
Graphite Feed		0.045	0.192	0.1	0.041	0.002	0.0004	0.2
HF								
Total IN, g		**0.045**	**0.19**	**0.08**	**0.041**	**0.0023**	**0.0004**	**0.2360**
OUT - Elemental Masses, g								
FIL		0.003	0.065	0.076	0.022	0.000	0.000	0.231
WSH		0.013	0.026	0.008	0.007	0.000	0.000	0.012
RES		n.a	n.a	n.a	n.a	n.a	n.a	n.a
Total OUT, g		**0.02**	**0.0910**	**0.08**	**0.03**	**0.0003**	**0.0003**	0.243
%OUT/IN		35.7	47.4	104.9	70.6	12.9	85.8	102.9
% Extraction, %		***35.7***	***47.4***	***104.9***	***70.6***	***12.9***	***85.8***	***102.9***
Solids Mass Reduction, %	**7.5**							

*** this mass balance is performed using only the graphite feed and the assays of the filtrate and the washes.

Project No.:	**CALR-14185-002**	Technologist:	H.Moussaid
Client:	**CANADA CARBON**	Date:	08-Jul-13
Test:	**CB-1**		

Purpose: 25%NaOH baking of Graphite @ 400°C to remove impurities followed by water and acid leach

Sample: (+)48mesh graphite from flotation test: F1

Grade: 94.4C(T)

HSE

Review MSDS for concentrated hot sodium hydroxide, NaOH.
Work under ventilation, use adequate personal protective equipment.

Input data and Calculations:

Test temperature	400	°C
Time to heat	60	min
Wet Weight	30.00	g
Moisture Content	0.00	%
Leach caustic:Graphite Ratio	2.00	:1
Dry Weight	30.00	g

Procedure:

1 Review MSDS for NaOH; work under fumehood; wear applicable PPE
2 Measure and weigh the desired amount of graphite and Caustic sample; place in crucible
3 Place crucible in spill tray and put into muffle furnace
4 Set muffle furnace temperature to 400 °C for 1 hours.
5 At time t = 0, record data and observations and continue for the duration of the reaction
6 When test is complete, turn off furnace and remove crucible; place in fume hood
7 Quench sample with enough DI water to allow for repulping of residue
8 Filter the quenched sample; weigh the pregnant solution and measure SG, remove a sample for analysis
9 Wash 3 times with 125 mL water,
10 the filtered residue was slurried in (10% H_2SO_4) with the L/S ratio at 4/1 (w/w) at 80C for 30 min.
11 The acidic slurry was filtered and thoroughly washed with DI water.
12 Combine washes into single container
13 Store solution in a sealed and marked container for possible further testwork/analysis
14 Weigh the wet cake (residue) and determine moisture content by drying to constant weight at 120°C
15 Submit the two analytical solution
16 Submit the dried filter cake residues for analysis
17 Ensure all data are recorded, verify balance (if applicable), and summarize results

Analytical Requirements:

Sample	Sample ID(s)	Analysis	
Filtrate	CB-1 FIL	N.A	FIL
Wash	CB-1 WSH	N.A	WSH
Residue	CB-1 RES	C(t), LOI @ 1000C	RES
Feed Solids	CB-1 Head	C(t), LOI @ 1000C	Head

Test: **CB-1**

Technologist: H.Moussaid
Date: 08-Jul-13

Measurements/Observations:

Time min	Temp (°C)	Comments
0	400	mixed 30g of graphite with 25% NaOH (60g)in Crucible
30	400	and placed in a furnace @ 400C
60	400	End of Test
		the baked graphite was mixed with DI water and water leached
		for 4 hours, the slurry was filtered and the residue was repulped
		4 times with hot DI WATER.
		The residue was slurried in 10% H2SO4

Sample Data:

Sample		**Solution**			**Solid**	**Gross Mass, g**		**Net Mass, g**	
		Mass, g	Soln Den., g/mL	Vol, mL	Tare	Wet	Dry	Wet	Dry
CB-1 FIL	NaOH Wsh	823.4	1.029	800.2					
CB-1 WSH	H2SO4+Wsh	786.9	1.028	764.7					
CB-1 RES					202.6	243.6	227.00	41.00	24.40
%Wet Loss:	18.67								

Project No.: CALR-14185-002 **Date:** 9-Jul-13
Client: **CANADA CARBON** **Technologist:** H.Moussaid
Test: **CC-T2**

Purpose: To evaluate an HF/H2SO4 leach on a graphite sample by removing the impuritlies
Grind: (+)48 mesh
Sample: **Residue from Test: CB-1**

Leach Conditions

Feed Weight (g): (Dry)	**18.0**
Target Leach Weight Total (g):	**81.9**
Weight of H2SO4 Addition (g):	**18.00**
Weight of HF(48%) Addition (g):	**13.9**
Weight of H2O Addition (g):	**50.0**
Pulp Density (% Solids w/w):	**22.0**
Temperature (°C):	**90.0**

Procedure:

HF/H2SO4

18g of of conc H2SO4 and 50g of DI water was added to a 1000ml teflon beaker
13.9g of 48% HF was added very slowly while mixing
The beaker was covered with a Teflon watch glass and placed on a hot plate.
The pulp was mixed with a magnetic stir bar and heated slowly to a boil (~90 °C).
After 5hour, 100ml of hot DI water was added.
The pulp was then boiled for 1 more hour.
After 1 hour, the beaker was removed from the hot plate and cooled.
The graphite slurry was filtered through low ash PVC membrane (5 µm). The residue was repulped three times with hot DI water and 3 times displacement washed.

Analytical Requirements:

Sample	Sample ID(s)	Analysis	LIMS No.
Filtrate	CC-T2 FIL		
Wash	CC-T2 WSH		
Residue	CC-T2 RES	C(t),LOI @ 500C and 1000C	

Date: 9-Jul-13
Technologist: H.Moussaid

Leach Data:

Time min	Temp (°C)	Comments
0	35.5	All feed in, started heat and mixing
15	78.0	
45	90.0	
120	90.0	
180	90.0	
240	90.0	
300	90.0	Added 100 ml of DI water
360	90.0	End of Reaction

Sample Data:

	Solution			Solid	Gross Mass, g		Net Mass, g	
Sample	Mass, g	Soln Den., g/mL	Vol, mL	Tare	Wet	Dry	Wet	Dry
CC-T2 FIL	150.2	1.0902	137.8					
CC-T2 WSH	350.1	1.0078	347.4					
CC-T2 RES				21.2	45.2	38.90	24.00	17.70

%Wet Loss: **1.67**

SGS Minerals Services
Size Distribution Analysis

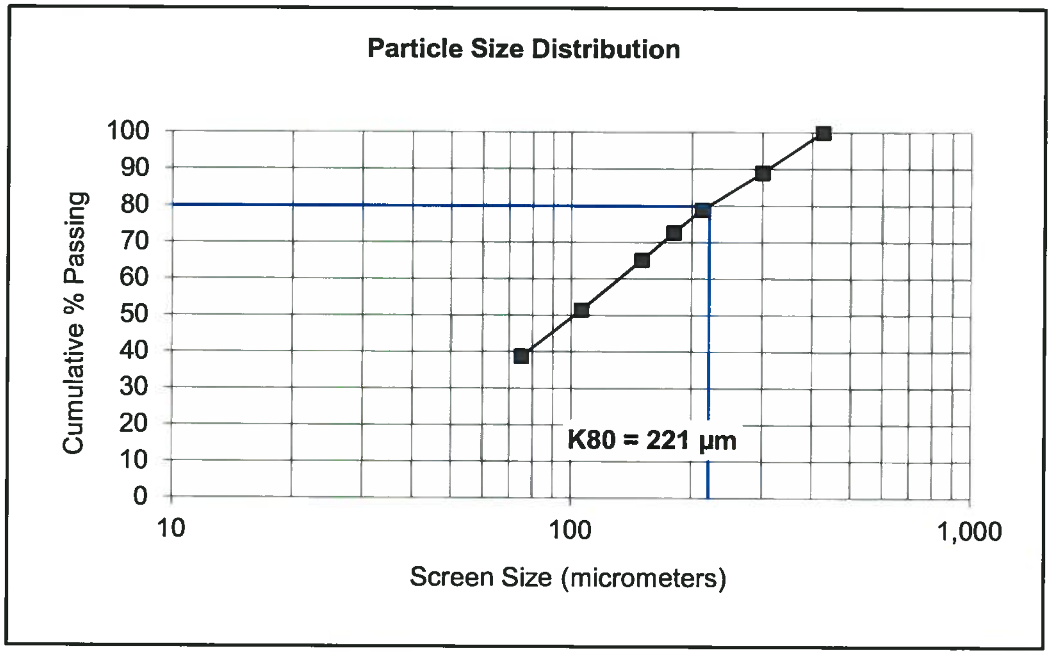
Project No. **14185-001**

Sample: **10th Clnr Conc** Test No.: **F2** **SFA**

Size		Weight	% Retained		% Passing
Mesh	µm	grams	Individual	Cumulative	Cumulative
35	425	0.0	0.0	0.0	100.0
48	300	11.4	11.0	11.0	89.0
65	212	10.4	10.1	21.1	78.9
80	180	6.5	6.3	27.4	72.6
100	150	7.7	7.5	34.9	65.1
150	106	14.1	13.7	48.5	51.5
200	75	13.1	12.7	61.2	38.8
Pan	-75	40.0	38.8	100.0	0.0
Total	-	**103.2**	100.0	-	-
K80	**221**				

LIMS CA03367-JUL13

Sample ID	C(t) %	C(g) High %
F2 10th Clnr Conc +48mesh	100.1	99.09
F2 10th Clnr Conc +65mesh	99.9	99.02
F2 10th Clnr Conc +80mesh	98.6	99.05
F2 10th Clnr Conc +100mesh	97.3	97.2
F2 10th Clnr Conc +150mesh	98	93.43
F2 10th Clnr Conc +200mesh	97.2	96.69
F2 10th Clnr Conc -200mesh	84.4	84.06



Kevin Stewart
Metallurgist, Mineral Processing
Minerals Services
SGS Canada Inc.
185 Concession St.,
Lakefield, ON K0L 2H0
Canada

Appendix 14. GDMS and EBC tests report

GDMS
ANALYTICAL REPORT

Evans Analytical Group
103 Commerce Blvd
Liverpool, New York 13088

Telephone (315) 431-9900
Fax: (315) 431-9800
Email info.ny@eaglabs.com
www.eaglabs.com

Customer:	**SGS Minerals Services**	*P.O.#*	**123543**
	185 Concession Street, Lakefield, ON K0L 2H0 CANADA		
Date:	3-Oct-2013	*Job #*	S0DKJ261
Customer ID:	**Graphite Flake**	*Sample ID:*	S131002051
	14185-002 CC-T2 RES		*[Rev: 2013-10-03 09:51:02]*

Element	Concentration [ppm wt]	Element	Concentration [ppm wt]
Li	< 0.05	Ag	< 0.1
Be	< 0.05	Cd	< 1
B	0.12	In	Binder
C	Matrix	Sn	< 1
F	=< 100	Sb	< 1
Na	39	Te	< 0.5
Mg	5.7	I	=< 5
Al	3.7	Cs	< 0.1
Si	24	Ba	< 0.1
P	0.85	La	=< 0.5
S	14	Ce	=< 0.5
Cl	0.81	Pr	=< 0.5
K	< 0.1	Nd	< 0.05
Ca	3.5	Sm	< 0.05
Sc	< 0.05	Eu	< 0.5
Ti	0.11	Gd	< 0.05
V	< 0.05	Tb	< 0.05
Cr	11	Dy	< 0.05
Mn	< 0.05	Ho	< 0.05
Fe	12	Er	< 0.05
Co	< 0.05	Tm	< 0.05
Ni	0.26	Yb	< 0.05
Cu	< 0.1	Lu	< 0.05
Zn	< 0.1	Hf	< 0.05
Ga	< 0.5	Ta	< 100
Ge	< 1	W	0.38
As	< 0.1	Re	< 0.05
Se	< 0.5	Os	< 0.05
Br	< 0.1	Ir	< 0.05
Rb	< 0.1	Pt	< 0.5
Sr	< 0.1	Au	< 0.5
Y	0.12	Hg	< 0.5
Zr	0.25	Tl	< 0.05
Nb	< 0.5	Pb	< 0.05
Mo	< 0.1	Bi	< 0.05
Ru	< 0.5	Th	0.01
Rh	< 0.1	U	< 0.01
Pd	< 0.5		

ISO 17025

ACCREDITED

Testing Cert. #2797.03

J.SCHIEBLER (Analyst)

Analyzed according to WI F rev. 12/06/12

Reviewed by

Precision and bias typical of GDMS measurements are discussed under ASTM F1593.

ELEMENT	SYMBOL	CONC. PPM	EQUIV. FACTOR	BORON EQ. PPM
Boron	B	0,12	1	0,12
Chlorine	Cl	0,81	0,0134	0,010854
Titanium	Ti	0,11	0,0018	0,000198
Iron	Fe	12	0,000649	0,007788
Nickel	Ni	0,26	0,00108	0,0002808
				0,1391208
				TOTAL BORON EQUIV. PPM
				Measured values only

Appendix 15. Thermal upgrading results

ELEMENT	SYMBOL	INITIAL CONC. ppm	MEASURED ppm	PURIFIED CONC. ppm	MEASURED ppm
Lithium	Li	0,05		0,05	
Beryllium	Be	0,05		0,05	
Boron	B	0,3	0,3	0,15	0,15
Carbon	C				
Fluorine	F	10	10		
Sodium	Na	15	15	3,4	3,4
Magnesium	Mg	20	20	0,5	
Aluminum	Al	25	25	0,2	0,2
Silicon	Si	30	30	1,5	1,5
Phosphorus	P	0,4	0,4	0,1	
Sulphur	S	25	25	11	11
Chlorine	Cl	2	2	1	1
Potassium	K	1	1	0,8	0,8
Calcium	Ca	100	100	3	3
Scandium	Sc	0,05		0,05	
Titanium	Ti	0,2	0,2	0,05	
Vanadium	V	0,05		0,05	
Chromium	Cr	3	3	0,05	
Manganese	Mn	0,2	0,2	0,05	
Iron	Fe	10	10	0,05	
Cobalt	Co	0,05		0,05	
Nickel	Ni	0,7	0,7	0,7	0,7
Copper	Cu	1	1	0,05	
Zinc	Zn	1	1	0,05	
Gallium	Ga	0,05		0,05	
Germanium	Ge	0,05		0,05	
Arsenic	As	0,05		0,05	
Selenium	Se	0,5		0,5	
Bromine	Br	0,05		0,05	
Rubidium	Rb	0,05		0,05	
Strontium	Sr	0,1	0,1	0,1	
Yttrium	Y	0,1	0,1	0,05	
Zirconium	Zr	0,07	0,07	0,05	

Niobium	Nb	0,1		0,5	
Molybdenum	Mo	0,1		0,1	
Ruthenium	Ru	0,05		0,5	
Rhodium	Rh	0,05		0,1	
Palladium	Pd	0,05		0,5	
Silver	Ag	0,1		0,1	
Cadmium	Cd	0,1		1	
Indium	In	0,05		0,05	
Tin	Sn	0,05		0,05	
Antimony	Sb	0,05		0,05	
Technetium	Te	0,05		0,05	
Iodine	I	0,05		0,05	
Cesium	Cs	0,05		0,05	
Barium	Ba	0,05		0,05	
Lanthanum	La	0,05		0,05	
Cerium	Ce	0,05		0,05	
Praseodynium	Pr	0,05		0,05	
Neodymium	Nd	0,05		0,05	
Samarium	Sm	0,05		0,05	
Europium	Eu	0,05		0,5	
Gadolinium	Gd	0,05		0,05	
Terbium	Tb	0,05		0,05	
Dysprosium	Dy	0,05		0,05	
Holmium	Ho	0,05		0,05	
Erbium	Er	0,05		0,05	
Thulium	Tm	0,05		0,05	
Ytterbrium	Yb	0,05		0,05	
Lutetium	Lu	0,05		0,05	
Hafnium	Hf	0,05		0,05	
Tantalum	Ta	10		10	
Tungsten	W	1	1	0,7	0,7
Rhenium	Re	0,05		0,05	
Osmium	Os	0,05		0,05	
Iridium	Ir	0,05		0,05	

Platinum	Pt	0,05		0,5	
Gold	Au	0,05		0,5	
Mercury	Hg	0,05		0,5	
Thallium	Tl	0,05		0,05	
Lead	Pb	0,2	0,2	0,05	
Bismuth	Bi	0,01		0,05	
Thorium	Th	0,01		0,01	
Uranium	U	0,01		0,01	
		259,3	246,27	40,72	22,45