Fugro Airborne Surveys

INTERPRETATION REPORT

GEOTEM® Airborne Electromagnetic Survey

&

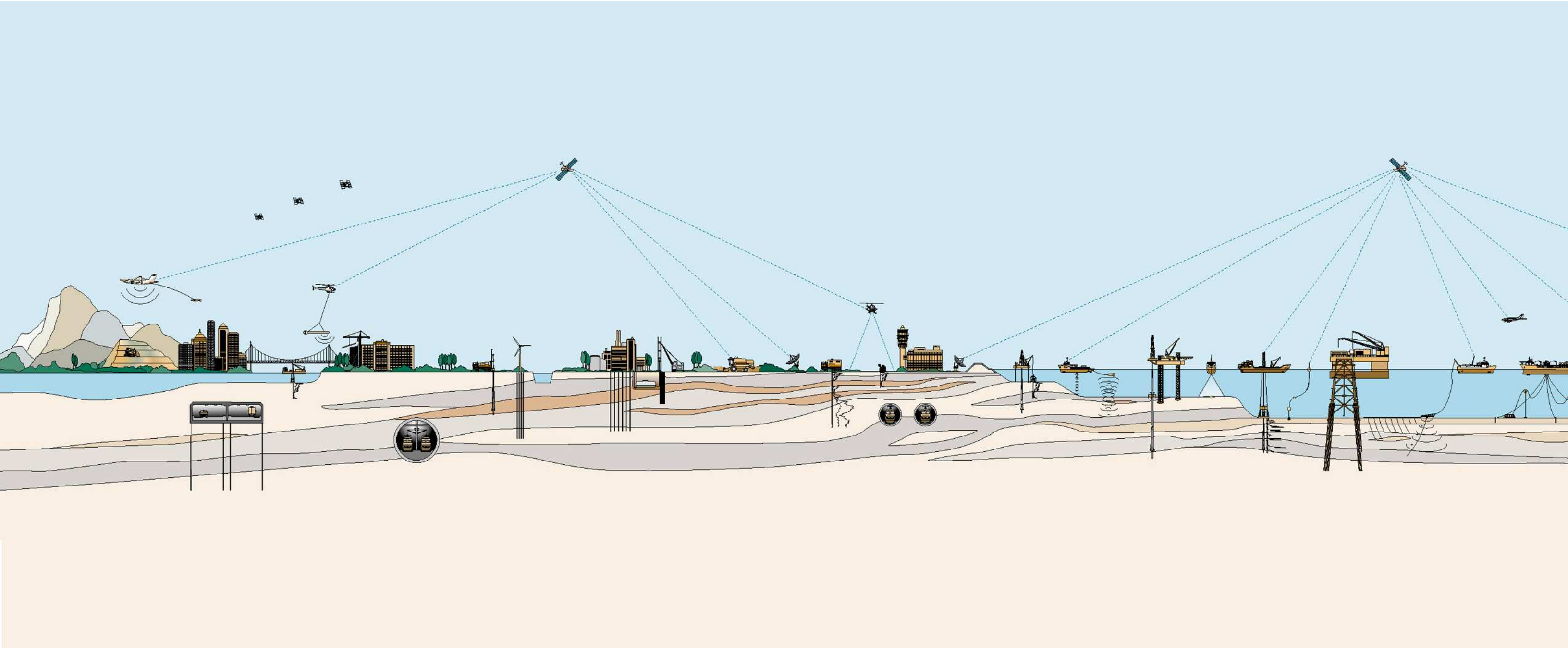
Airborne High Resolution Magnetic Survey

East Breccia Property

Sault Ste. Marie, Ontario

Job No. 12414 and 12712

Boxxer Gold Corp.



INTERPRETATION REPORT

GEOTEM® AIRBORNE ELECTROMAGNETIC SURVEY &

AIRBORNE HIGH RESOLUTION MAGNETIC

EAST BRECCIA PROPERTY

ONTARIO

JOB NO. 12414 AND 12712

Client

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Date of Report

March, 2013

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I

Introduction

As part of a GRYPHON style project Fugro Airborne Surveys conducted two airborne surveys of the East Breccia Property on behalf of Boxxer Gold Corp. The GEOTEM® electromagnetic survey was flown on December 9th, 2012, and the high resolution magnetic survey between December 10th and 12th, 2012. Using Sault Ste. Marie, Ontario as the base of operations, a total of 540 line kilometres of data were collected using a Casa 212 modified aircraft for the EM survey, and a Cessna 208B for the high resolution magnetic survey (Figure 1).

The East Breccia Property (Figure 2) is located approximately 65 km north of Sault Ste. Marie, Ontario. A total of 60 traverse lines (8 km in length with a spacing of 200 m); and 5 tie lines (1980 m spacing) were flown.

The interpretation is presented in colour on paper and as GEOSOFT digital map files. Two processing reports were presented as separate documents. Refer to these reports for more details on the surveying and system specifications as well as information on the data processing and final products. The following appendices to the processing report are of particular interest to the interpretation:

- Fixed-Wing Airborne Electromagnetic systems.
- Airborne Transient EM Interpretation.
- Multi-component modeling.
- The Usefulness of Multi-component Time-Domain Airborne EM Measurement.

Figure 1: Specially modified Casa 212 aircraft (left) and Cessna 208B aircraft (right) used by Fugro Airborne Surveys.

II

INTERPRETATION

Property Description, Geology and Exploration Model

The East Breccia Property[1] is located approximately 65 km north of Sault Ste. Marie (see Figure 2). The area is located in the south-central part of the Superior geological province in western Ontario and is underlain by folded greenschist facies Archean greenstone (essentially volcanic) of the Batchawana Greenstone Belt, which is 8-10 km wide and extends for over 75 km in an ENE direction.

Felsic intrusions occur as dykes, sills and small irregular bodies within the greenstone and granitic rocks (see Figure 3). These intrusions are economically important as they are locally associated with explosive and collapse breccia pipes, some of which contain copper mineralisation, as seen in the Tribag breccia cluster. The property is covered with glacial overburden of variable thickness.

The exploration model is an IOCG copper-molybdenum-silver deposit hosted within explosive breccia pipes similar to that mined at the former Tribag mine.

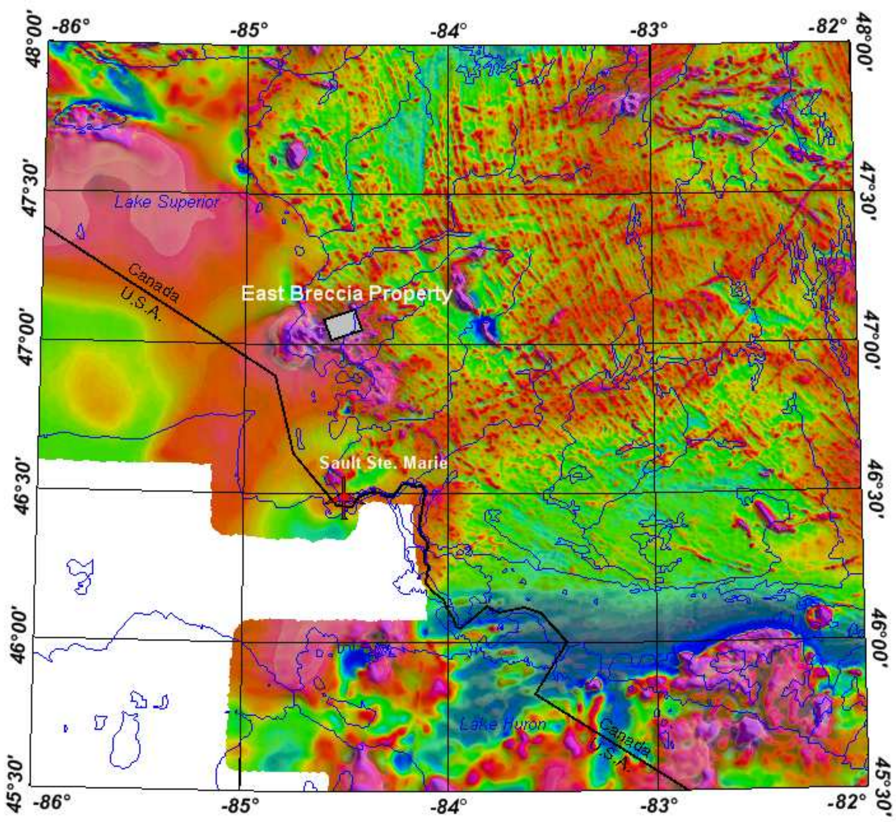


Figure 1: Regional Magnetic Data showing the survey location.

[1] Excerpts paraphrased from documents on the Boxxer Gold Corp. website

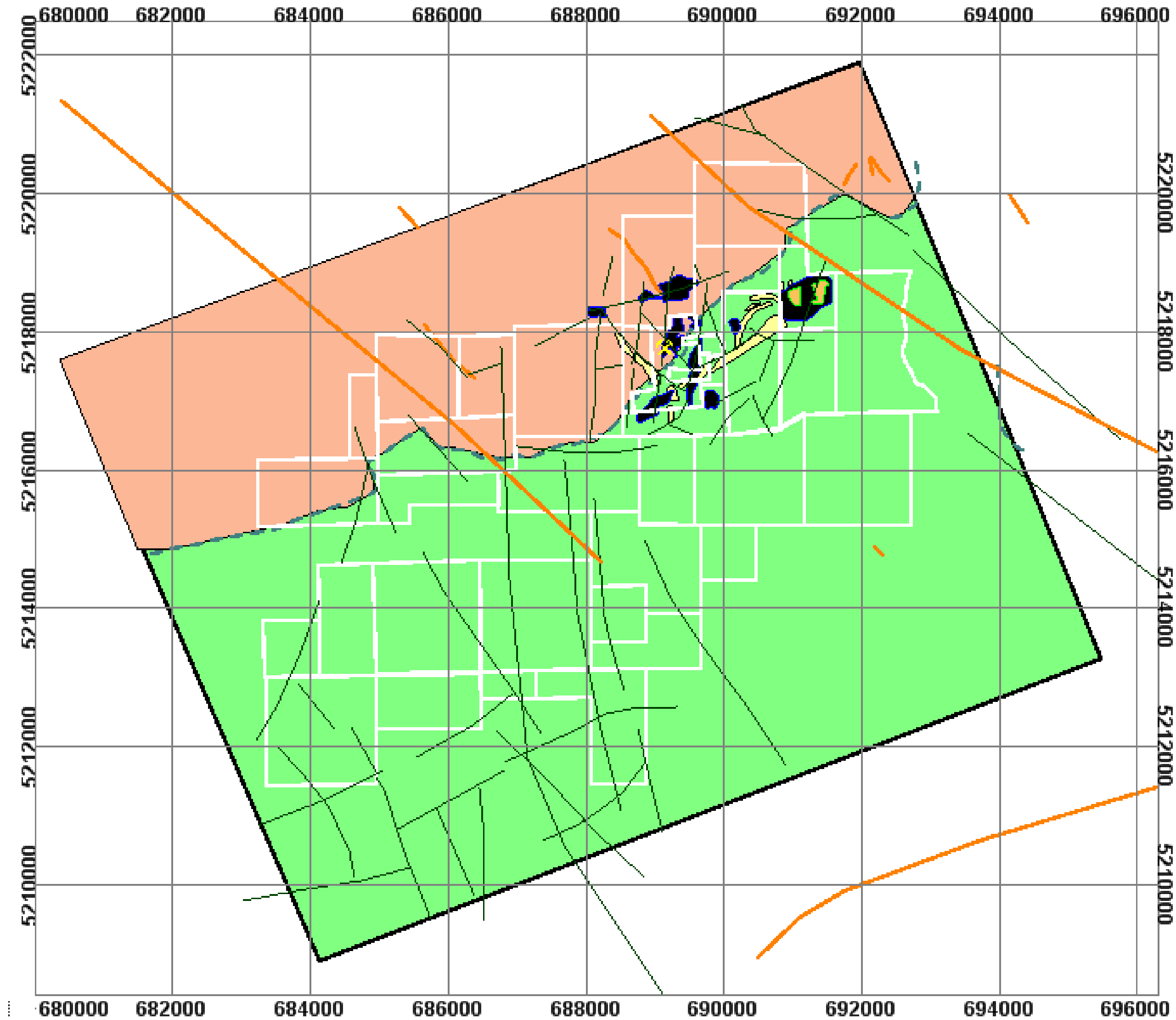


Figure 3: Mapped geology of the survey area: granite / granodiorite – pink, mafic / intermediate metavolcanics – green, breccia – black, faults - dark green, dykes – orange, gabbro – pale yellow. The claim outlines are shown in white.

General Magnetic Theory

The Earth's magnetic field, which changes from over 60,000 gammas in a vertical direction at the poles to about 30,000 gammas in a horizontal direction at the equator, induces a secondary magnetic field in rock bodies containing ferromagnetic minerals. It is this property to become magnetized by an external field that is described as the susceptibility of a rock.

Some rocks contain a natural or thermo-remnant magnetization that was acquired when the rock was last heated above the Curie point and subsequently cooled. The direction of this remanent magnetization is parallel to the magnetic field that prevailed during the cooling period. These fields, both the induced and remanent, disturb the otherwise smooth magnetic pattern of the Earth's field, and it is these perturbations that are of prime interest in aeromagnetic interpretation.

The crystalline rocks of igneous or high-grade metamorphic origin, such as granite, basalt, gneiss and schist, usually contain sufficient quantities of ferromagnetic minerals (mainly magnetite) that their influence on the earth's field can be observed even when covered by sedimentary sections thousands of feet thick.

The magnetic pattern over large areas of a single rock type is generally consistent throughout, and whenever the magnetic character changes, it usually implies a change in the rock composition. For example, the contact between a granitic mass and an ultrabasic unit can usually be precisely positioned where the magnetic pattern begins to change from the usual quiet character of granite to the more disturbed pattern of an ultrabasic rock body.

The study of magnetic anomalies does, to some degree, depend upon the latitude; in high latitudes attention is devoted to positive anomalies, while at the equator negative anomalies are of prime interest. This is due to the inclination of the earth's magnetic field, which is near vertical, 90°, at the poles, horizontal, 0°, at the equator, and about 73° North in this survey area. In such a steep magnetic inclination, the strike of a magnetic body has little effect upon the magnitude and symmetry of the anomaly it produces. An E-W dyke will be primarily positive, with a very weak negative on its north side. The same dyke striking magnetic north (azimuth 352° in this area) will be a symmetrical positive, but only about 95% of its E-W amplitude.

Magnetic Interpretation Procedures

In the qualitative interpretation, magnetic features on the maps are studied with regard to shape, size, strike and grouping. Whenever an anomaly is adequately defined, the outline of the source is shown as a magnetic/geologic contact. These contacts follow the contours and can be relied on to represent a definite change in lithology and/or structure. Any of these contacts, but particularly the linear ones, may represent faulted contacts; but as we can rarely be certain (unless it coincides with a geologically mapped fault) the contact symbol is retained since it is an indication of greater reliability than a fault.

Faults are located by offsets, terminations and strike changes in linear anomalies, or level shifts, or simply changes in character. Since the fault symbol is usually used to join isolated points of disruption, its location and direction is much more subjective than the contact symbol.

The magnetic data within this survey appears quite disrupted and complex. Numerous potential faults are suggested by the magnetic data, but due to its complexity, the delineation of faults is ambiguous (both in placement and direction) and therefore should be considered with caution. Those faults that strike in directions of already mapped faults, where the placement and direction are obvious, or have some expression either in the terrain or the EM data have been identified on the Interpretation Map.

Overview of the Magnetic Response

The magnetic data of the survey is highly variable. Three zones of very strong magnetic signature lie at the western survey boundary, at the northeastern boundary and just west of the center of the survey (labeled IF in Figure 4). These are attributed to Iron Formation (IF), as the western most body is mapped as IF and IF occurrences / deposits are mapped in close proximity to the other two anomalies. The central Iron Formation zone is associated with a large scale circular intrusive.

Multiple lineaments which can be attributed to diabase dykes trend NW-SE throughout the survey area. Please note that the dykes lay sub parallel to the survey flight line direction rendering the delineation of these difficult, and the identification of any small anomalies along these dykes extremely difficult. Although the area is covered by glacial debris, magnetic anomalies associated with glacial debris are normally in the order of 1-2 nT, and these signatures would be hidden within the generally stronger amplitudes of the bedrock material.

An obvious lithologic boundary can be identified by the subdued magnetic signature in the north and west of the survey area - likely the granite / granodiorite, than the east and south – likely the mafic meta-volcanics. However the magnetic data suggests that the boundary lies further south than what is currently mapped (see Figure 5).

There is significant evidence of correlation with the terrain (see the white outline in Figure 6), which suggests most of the magnetic signature is either due to glacial debris cover (which is unlikely given the amplitude of the magnetic anomalies), or in the absence of overburden, is due to bedrock material.

This perhaps indicates this section has been uplifted? Or the amplitudes of the dykes are reduced in the low lying areas, which suggest that glacial debris may be limited to these areas. The correlation between possible lineaments in the magnetic data and the DTM suggests that the erosional profile of the ground is, in places, structurally controlled by these basement rocks.

Figure 6 shows an obvious NE-SW fault passing through the central intrusive which is not obvious in the terrain, suggesting this is a basement structure.

Given the exploration model, the best chance of finding mineralisation is along faults, at the junction of faults / dykes, as increased amplitudes within or shoulders along the dykes, as small isolated bodies, and around the margins of the intrusive rocks (the known mineralisation from current drilling also supports a more southern boundary between the felsic intrusive and meta-volcanic rocks – see Figure 7).

It should be noted that a reduction in flight altitude could falsely amplify the response so caution should be exercised when considering the anomalies as follow-up targets.

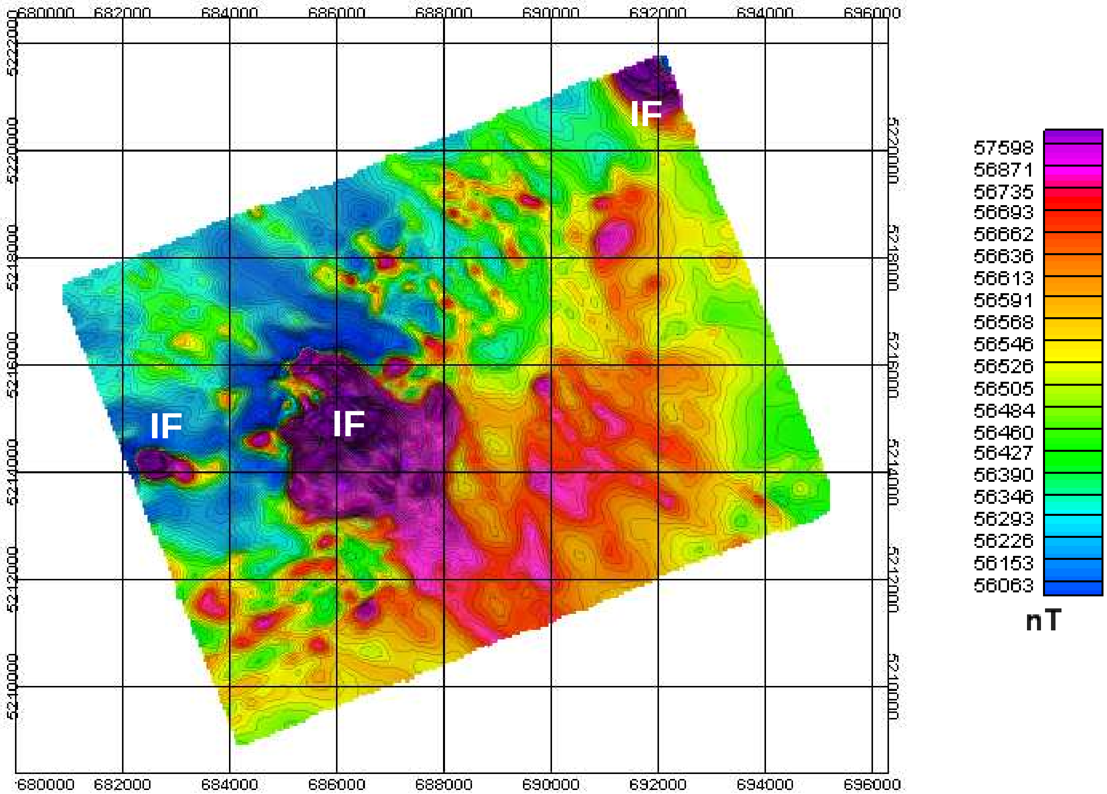


Figure 4: Total Magnetic Intensity (TMI) superimposed over the 1st Vertical Derivative of the TMI

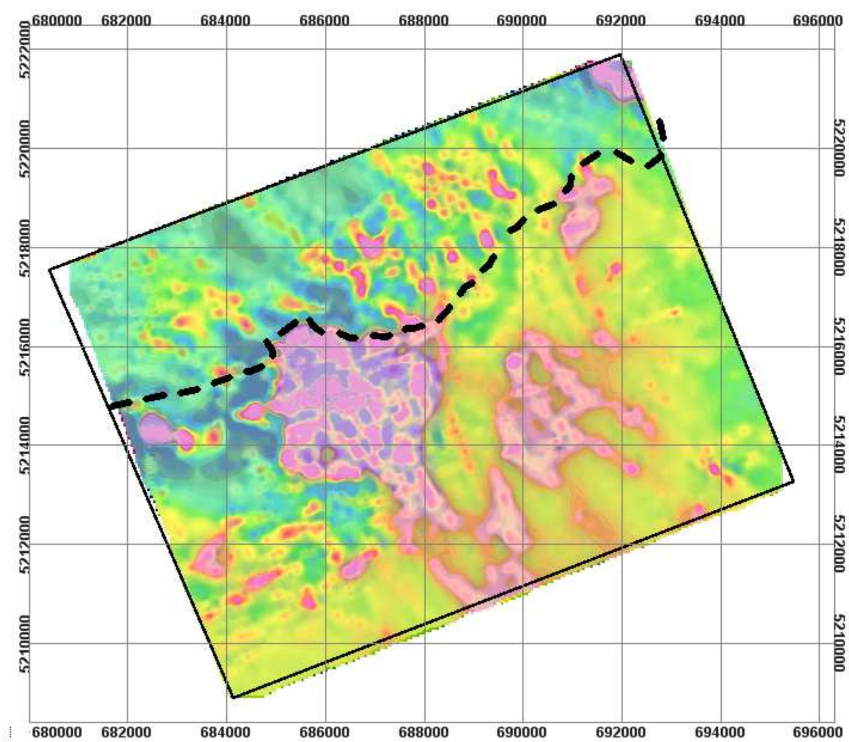


Figure 5: TMI reduced to the pole (RTP) superimposed over the 1st Vertical Derivative – RTP. The mapped boundary between the felsic intrusive (to the north) and the meta-volcanic rocks is indicated by the black dashed line.

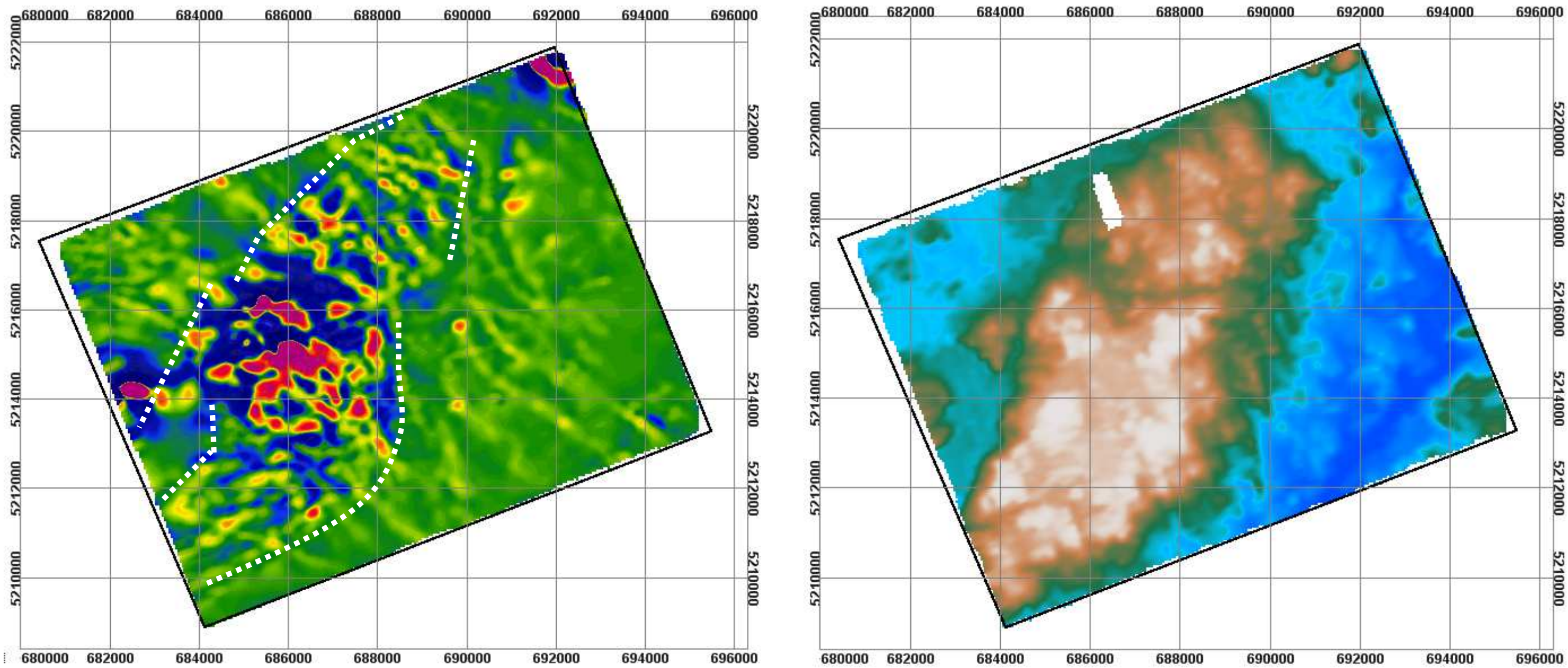


Figure 6: 1st Vertical Derivative of the TMI – left, and digital terrain model (DTM) - right.

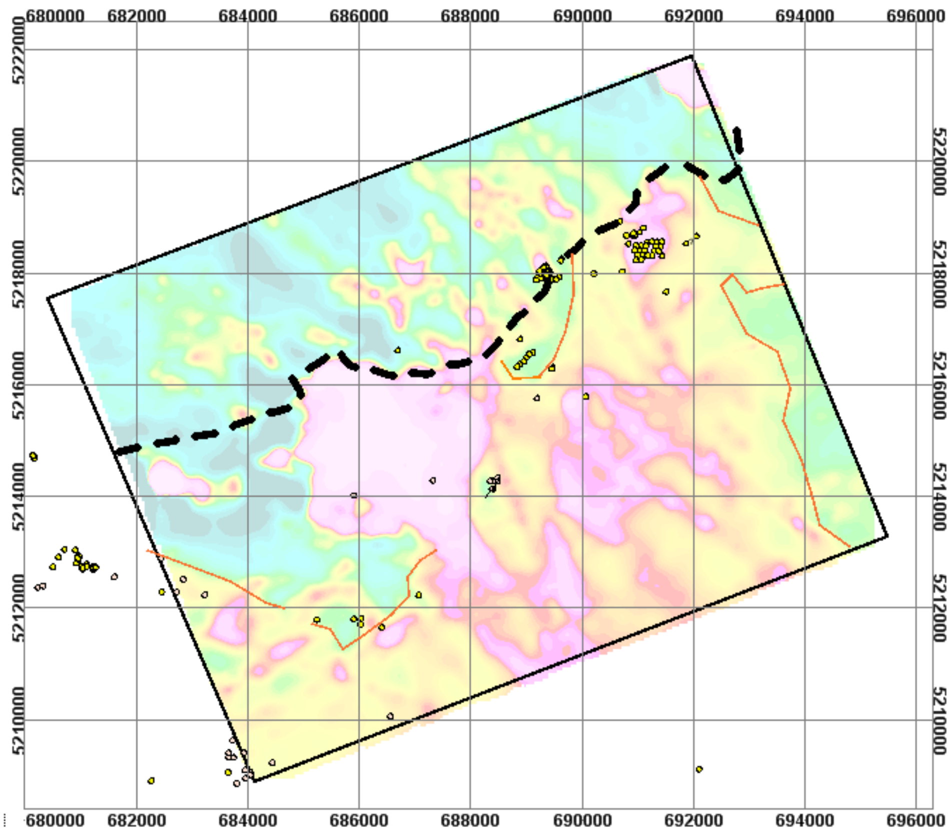


Figure 7: TMI – RTP with the mapped felsic intrusive / meta-volcanic boundary – black dashed line, drill holes in the survey area containing mineralisation (dots) and the general outline of the proposed geologic boundary – orange.

Magnetic Interpretation Discussion

Those targets only identified by a magnetic signature will be listed in the Magnetic Anomalies in the Survey Area section. Targets with an EM only response or an EM and magnetic response will be listed in the Conductors in the Survey Area section.

Single points indicate either isolated anomalies; good responses along a dyke; responses on the other side of a fault or a good response in a magnetically active area, wherever direction cannot be determined or is ambiguous.

There are numerous dykes, those striking essentially NW-SE have been colour coded differently to what is believed to be country rock. Some of these where narrow. are labeled shown as a linear, others as a zone where either the response is broader or the amplitude higher.

The magnetic responses over areas already known to contain mineralisation seem to be characterized by short wavelength, low amplitude anomalies. These may be cultural in origin.

There are many faults outlined on the Interpretation Map The majority of these strike ENE, NNE and NW. As mentioned earlier the granite / granodiorite – meta-volcanic boundary seems to lie further south than previously mapped.

A series of possible magnetic basement highs have been labeled on the map as well as the outline of the large scale intrusive.

Magnetic Anomalies in the Survey Area

Because of the altitude, as mentioned earlier, caution should be exercised when considering anomalies for review. Every effort has been made to only consider anomalies that either do not correlate with altitude, or cannot be wholly explained by altitude deviations, but they should still be confirmed prior to follow-up.

Many magnetic features are outlined on the Interpretation Map but only some of these are selected as priority targets. All features along faults, elevated responses along dykes etc are of interest but out of logistics cannot be discussed in detail within this report. So any “ground truthing” or other information will aid in whether the anomalies not included in this report should be upgraded to targets.

The fiducials listed below correspond to the fiducial channel in the 12712 final magnetic GEOSOFT database.

Selection	Line/s	X (NAD83)	Y(NAD83)	Fiducial	Observations
1	10500, 10540	691233	5219156	4112 2869	These selections lie within a magnetic body 700 m north of the East Breccia. It is bound and offset by ENE and NE faults. It also corresponds with weak surficial EM responses. A possible extension lies 500 m directly to the north.
2	10500	690979	5218660	4105	This lineament lies within the East Breccia. The best response lies on line 10500, but it may be amplified by low altitude.
3	10490-10520	691193	5218486	3598 1948	This is the magnetic anomaly associated with the East Breccia. Like 1 and 2 this area corresponds to weak surficial EM responses, and a small area of IP effect where the faults cross.
4	10520	691783	5217588	1930	This is an approximately 400 m NNE-SSW magnetic anomaly
5	10430	690014	5217320	2137	This weak magnetic anomaly lies along a N-S dyke. Near the junction of several faults. It also lies approximately 300m west of a good conductor. Lies within surficial EM zone.
6	10480	691542	5216141	4439	Slightly better response along a NW-SE dyke.
7	10460	692158	5213514	3559	Slightly better response along a NW-SE dyke, near the intersection with a possible fault.
8	10410	689210	5218177	4305	Broad anomaly associated with the Breton Breccia and the Tribag Mine area.
9	10380	688915	5217347	2825	Single point sharp anomaly along a NW-SE dyke. This lies in proximity (200 m north) from a known mineral occurrence, Tribag West Mine?
10	10390	689826	5215739	3353	Strong magnetic anomaly at the junction of several faults, and a dyke. Lies close to a drill hole containing mineralisation.
11	10400	690657	5214117	3879	Stronger response along a NE-SW striking magnetic linear.
12	10350 T18020	689759	5213890	6684 6485	Strong anomaly lies adjacent to a fault and dyke.
13	10260	688004	5212952	1527	Magnetic anomaly lies at the junction of a dyke and possible fault. A questionable EM anomaly lies immediately to the south.
14	10200	687079	5212161	3928	Very weak magnetic feature lying at the junction of several proposed faults. A drill hole containing mineralisation lies to the north.
15	10330	687910	5217199	5742	This is a strong anomaly lying between two faults and along a dyke.
16	10320 and 10360	688808	5216811	5298 and 1810	This is two separate magnetic bodies both striking ENE-WSW. The southern body is stronger in amplitude and lies adjacent to several faults and dykes. The weaker body lies on strike to the northeast and is associated with the West Breccia
17	10310	687280	5217494	4819	Strong magnetic feature striking ENE along a fault. Lies at the junction with a mapped fault. This lies along a surficial axis which is also a selection.
18	10290	686825	5217896	3120	This is a strong narrow anomaly lying at the junction of several faults and a dyke.
19	10260	686101	5217695	1598	Lies along a dyke near a NE-SW fault. Like 17 this also lies along a surficial axis.
20	T18040	685204	5216449	5805 and 5814	Two weak anomalies adjacent to faults, at the edge of the large intrusive body.
21	10260	686678	5216529	1581	Weak anomaly at junction of several faults, lying at the boundary of the intrusive. A drill hole containing mineralisation essentially coincides with this location. On edge of conductive overburden.
22	10220	687106	5213273	5070	A weak magnetic feature at the junction of several faults, lying on the edge of the intrusive. On edge of conductive overburden.
23	10110	685619	5210995	4079	Weak magnetic shoulder at the junction of several faults.

Selection	Line/s	X (NAD83)	Y(NAD83)	Fiducial	Observations
24	10130 10150	685874	5211826	769 And 1695 and 1690	This selection encompasses several anomalies. The two to the west lie along a possible fault striking ENE-WSW. The anomaly on line 10150 is stronger, and coincides with the junction of a second fault. The third body lies to the south and is surrounded by drill holes which contain mineralisation.
25	10150	685780	5212764	1708	This is a slightly stronger response within an already strong magnetic zone. It lies approximately 500 m south of the intrusive.
26	10160	684976	5215283	2206	Isolated strong magnetic anomaly lying adjacent to a NNE-SSW fault. It lies on the line just north of a weak EM signature.
27	10100	683877	5214828	3734	A sharp weak magnetic anomaly which lies at the junction of an ESE dyke and a NE fault.

Electromagnetic Anomaly Selection

The current routine for the selection and fitting of EM anomalies is still based on the University of Toronto plate program, which fits the response (at the anomaly peak) from the X-coil channels to a vertical plate nomogram. Given that the current GEOTEM and MEGATEM system have evolved to offer the response from coils of 3 different orientations (X, Y and Z) and from dB/dt and B-Field, this approach to the classification of the anomalies is limited and no longer fully reflects all the information being measured by the system. The resulting shortcomings are:

- All anomaly peaks, from the X-coil response, are fitted to a vertical plate model of fixed dimensions, regardless of the nature of the conductive source. The derived CTP and depth-to-source values are then only valid, if the conductor can be properly represented by a vertical plate. CTP and depth values derived from “non vertical plate” type conductors will be erroneous. In some conductive terrains, marked by prominent conductive overburden or surface alteration of other sorts, “non-vertical” type conductors may represent 90% or more of the conductive response.
- The response from the conductor must deflect a minimum of 6 channels above the background to be fitted to the nomogram. CTP or depth-to-source values will not be calculated for a valid but weaker response (a weak or deep source).
- Only the response from the X-coil channels are used in the selection and fitting. A response appearing only on the Z-coil will not be identified. This is sometimes the case for a very deep source. As the depth to the conductor increases, although it may have considerable depth extent, the system becomes less sensitive to the vertical extent of the body and conductors will appear to be more flat-lying than vertical. As a result, as depth of burial increases, the coupling of the response may disappear on the X-coil response but will persist on the Z-coil response.
- The fittings of the response is only done from the amplitudes at the peak position of the anomaly and does not take-in the full shape of the anomaly or relates the difference in response between the X-coil and Z-coil. This does not allow for the distinction between vertical, flat lying and dipping plates.

Some responses may not be visible on the regular channels of the dB/dt X-coil data, but will be identified on either the B-Field response or the Z-coil response. The initial selection of the anomalies is still being derived from the X-coil channels of the dB/dt or B-field data, but at the “review” stage (via a graphic screen editor), the response from all components (X and Z, dB/dt and B-Field) is examined. All significant responses from any of the components are inserted in the anomaly field. Since all anomaly edits are still being updated by the same routine, again only fitting the X-coil response from the dB/dt or B-field data, many of these "other" responses (from Z-coil), which have no measurable signature on the X-coil data, will only be flagged as an anomaly location with no measurable response suitable for fitting to the reference nomogram. Although improperly represented, these "other" anomalies, at the very least, are identified by their location in the TDEM anomaly listing (Appendix A in this report), and on the Interpretation Map.

For this project the anomaly selection was produced from the dB/dt X-coil data with supplemental picks from all components. These anomalies are for the most part very weak and surficial. Again like any weak magnetic anomalies, these should be considered against altitude, as well as checked against primary field fluctuations.

Refer to Appendix A for a full listing of the anomaly selections, which provides the particulars of each selected anomaly, including the conductivity-thickness-product (CTP) and the depth of the conductor below surface. It is important to note that the derived values of CTP and depth associated with the anomaly selections are only valid if the geometry of the conductive source can be well approximated by a vertical plate of 300 by 600 m. A note is also included in the Appendix to guide the correct evaluation of the anomaly information.

Electromagnetic Interpretation Procedures

The general approach to EM interpretation is two-fold. One is to work from the data in plan form (maps), correlating back to the data in profile form; the other is to work from the profiles back to the maps. The basis of target selection is to look for "anomalous" responses. Some of these will stand out on the maps as somewhat isolated features along (hopefully) favourable structural intercepts. Conversely, some localized changes in conductivity may only be apparent in profile form and may not stand out on the maps due to surrounding conductivity. So, a general review of the EM anomalies in profile form is done to search for well-defined symmetrical shape, moderate amplitude, slow decay, etc., then checked on the maps for strike length, structural (magnetic/geologic) support and overall conductivity pattern.

Two levels of correlation with magnetic/geologic basement were noted:

- Structurally favorable (along contacts, intersected by faults, near intrusives, etc);
- Coincidence of EM and magnetic bodies of similar dimensions.

At the end of this process, the EM selections will normally fall into six groups, which will be:

Based on the EM signature

A. Anomalous on the maps and having good anomaly characteristics in profile form;
B. Non-distinct on the maps but having good anomaly characteristics in profile form;
C. Anomalous on the maps but lacking good anomaly characteristics in profile form;

Based on the Magnetic signature

1. With a magnetic coincidence suggesting a common source;
2. Showing evidence of structural control from the magnetic signature;
3. Showing no support from the magnetic signature.

These six groups will then be recombined into nine categories, ordered in terms of their potential of mineralization, A-1 having the greatest potential to C-3 having the least potential.

Categories: A-1, A-2, A-3, B-1, B-2, B-3, C-1, C-2 and c-3

The EM responses discussed in the following section identify those anomalies, which generally met the criteria associated with possible mineralization. The category assigned to each selection is based on the criteria outlined above which can be summarized by the table below:

CLASSIFICATION OF EM SELECTIONS

CATERGORY	Response in plan View (from maps)	Profile expression	Magnetic signature
A-1	Anomalous	Good	Coincident anomaly
A-2	Anomalous	Good	Structural support
A-3	Anomalous	Good	No support
B-1	Non-distinct	Good	Coincident anomaly
B-2	Non-distinct	Good	Structural support
B-3	Non-distinct	Good	No support
C-1	Anomalous	Poor	Coincident anomaly
C-2	Anomalous	Poor	Structural support
C-3	Anomalous	Poor	No support

A reminder that category A-1 identifies the greatest potential for mineralization with the priority dropping to category C-3 having the least potential.

Overview of the Electromagnetic Response

Several products were selected and generated from the EM data, these products are:

- Apparent conductivity
- Decay Constant (Tau) derived from dB/dt Z-Coil Channels 08-30
- Decay Constant (Tau) derived from B-Field Z-Coil Channels 16-30

The grids generated from these products as well as channel amplitude and moment grids were used to aid in the interpretation, and where applicable are displayed in the Figures to follow in the report.

Figure 8 shows the conductivity superimposed over the two Decay Constants. A brighter colour in the image implies that the causative bodies of these anomalies have some depth component to them. For the most part these are small and isolated features; however there is a large central anomalous feature in the general vicinity of the strong magnetic response believed to be associated with iron formation and the large central intrusive. This large anomaly although strong in amplitude, decays quite quickly, so it seems to be near surface and flat lying in origin.

The slightly stronger isolated responses form an arc trending from NE to SW and essentially follow the southern boundary of the elevated terrain. Other weaker responses lie on strike to the SW of this arc, strike WSW to the west of the larger anomalous feature, and others surround the highly magnetic and conductive area. A single isolated response lies at the eastern edge of the survey. These will be discussed in more detail in the Interpretation Discussion section of this report.

For the most part the area is quite resistive with the majority of the response restricted to the early time. These early time responses correlate with low lying areas (see Figure 9), likely indicative of recent conductive sediments. Much of these anomalous regions also exhibit IP effect (a positive on-time response and negative decays in the early off-time channels). This effect is often associated with permafrost, erosion of the crystalline basement and faulting. Although this effect is interesting it does not appear to be associated with the mineralisation, but the drill hole information is limited in these regions.

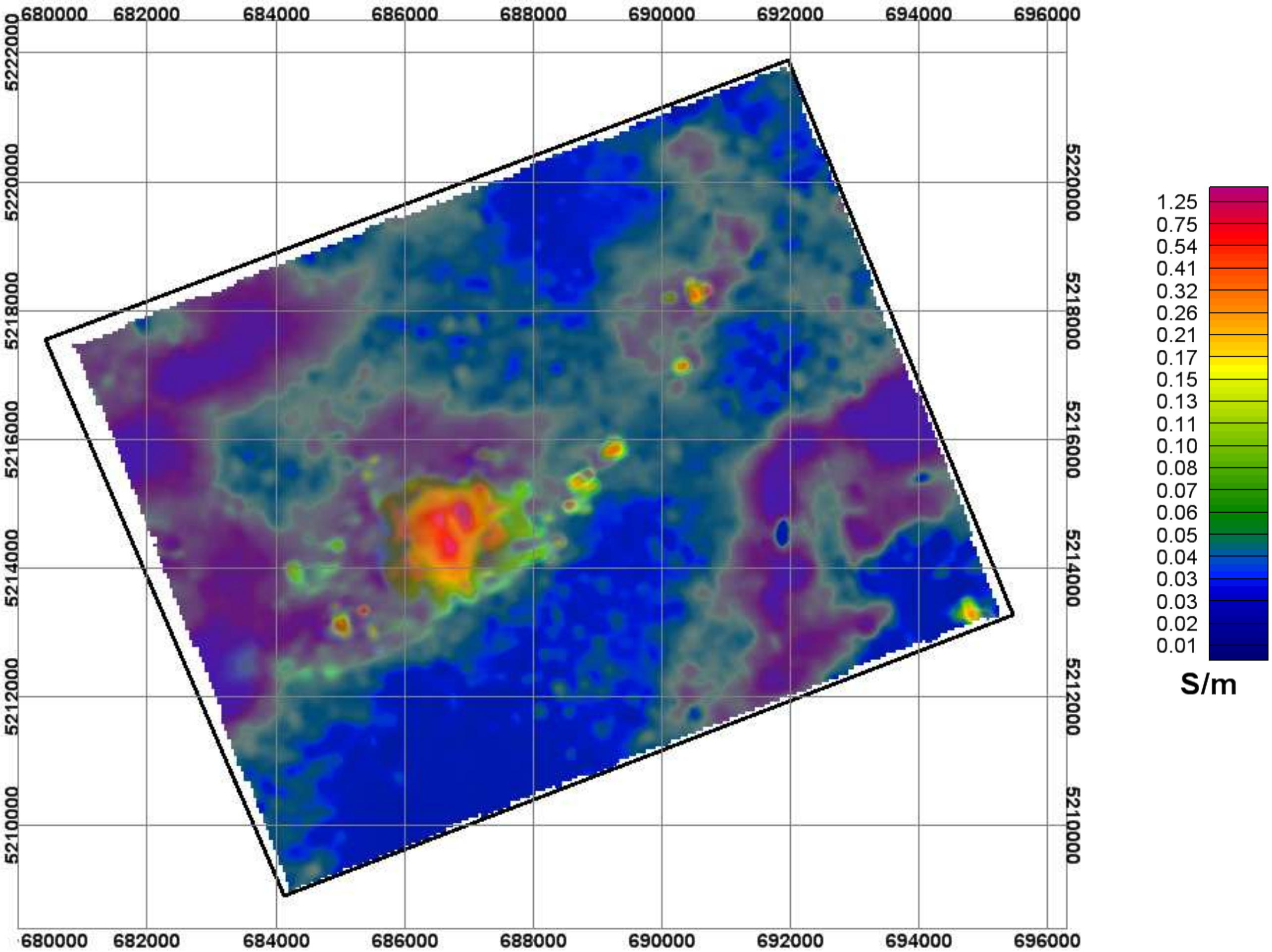


Figure 8: Conductivity superimposed over the Decay Constant (TAU) grids.

Given the exploration target, the best chance of finding mineralisation, like for the magnetic data, is along faults, at the junction of faults / dykes, at the edges of intrusives etc.

The mineralisation may present itself (depending on the mineralisation, size shape etc of the causative body) as a dipping feature with a relatively good decay, or as a very weak anomaly associated with surface alteration. Again, like the magnetic data, it should be noted that a reduction in flight altitude could falsely amplify the response so caution should be exercised when considering the anomalies.

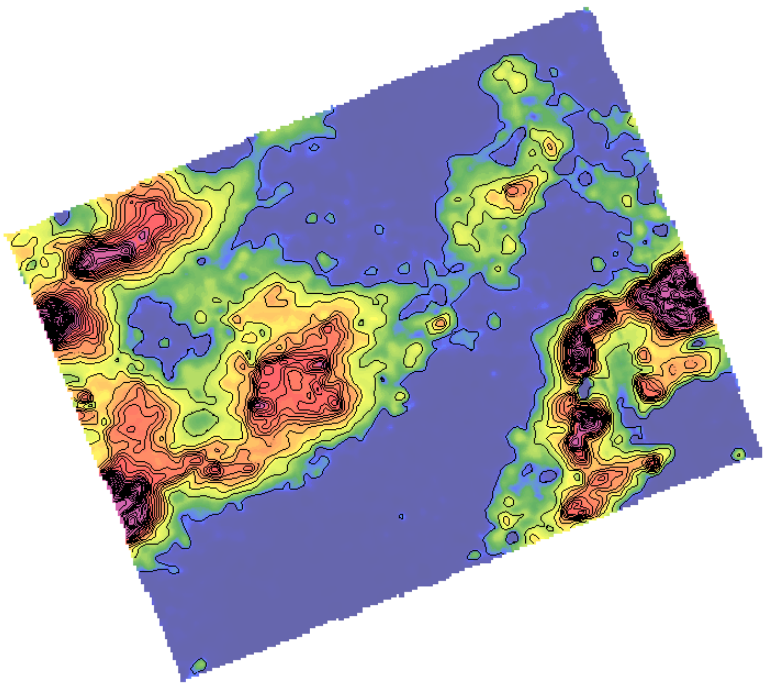
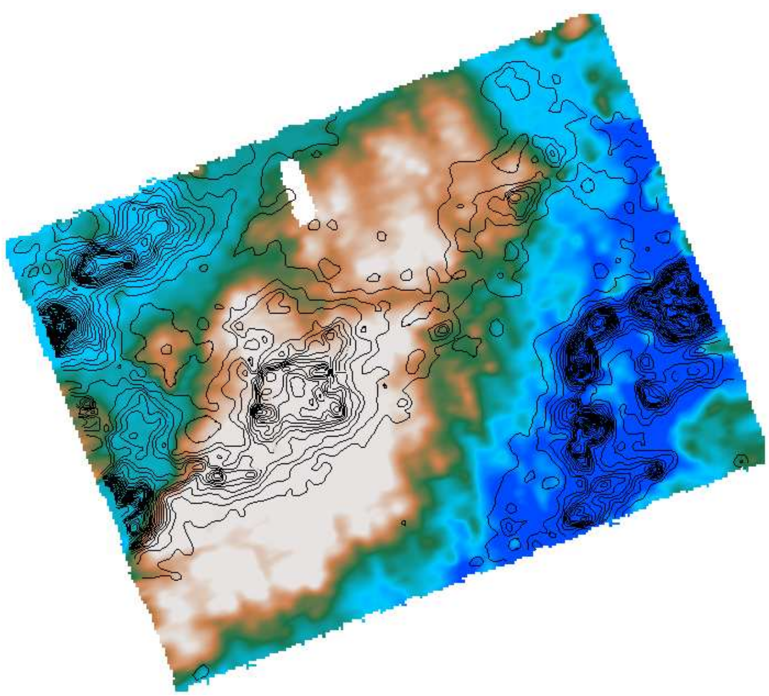


Figure 9: Conductivity with contours (above), Digital Terrain Model with the conductivity contours (below)



EM Interpretation Discussion

Significant conductors within the survey areas have been outlined on the interpretation map and are described below. The conductors are classified as conductive zones, points and axes. An axis describes a conductor that displays a relatively narrow, linear feature with defined profile response, often with indication of vertical extent. Dip directions are shown where the profiles shapes allow for a confident determination of the conductor's geometry. Single point anomalies are generally notable responses seen only on one line, and depending on their strength and the survey line spacing, can often be considered good exploration targets. Areas interpreted as conductive zones are generally broad conductors displaying a well-defined boundary on at least one of the EM grids. In some cases, axes or single point anomalies are displayed within a conductive zone where there is a well-defined, isolated response or linear feature within a broad conductive response.

Single points indicate either isolated anomalies; good responses along an axis; or responses where direction cannot be determined or is ambiguous.

The conductor targets have been divided into two sections. The surficial responses of the on-time channels which are generally isolated have been listed as targets. Some of these exhibit responses indicative of vertical extent. These may be indicative of surface alteration. The other responses (not outlined as targets) are generally extensive conductors. Surface alteration response within these zones for the most part would be too subtle to identify.

The second group is the early-mid off-time channels which generally represent better conductors and targets. Some of these are questionable at best, but have been included for the sake of completeness. Some of the questionable anomalies have been marked as selections, based on magnetic responses, or proximity of mineralisation.

These conductor targets include anomalies with either an EM only response or an EM response and magnetic target.

Conductors in the Survey Area

Every effort has been made to only consider anomalies that don't correlate with altitude deviations or primary field fluctuations but they should still be confirmed prior to follow-up.

Surficial and Near Surface Conductive Zones

Although as mentioned previously, most of the EM conductive responses relate to low-lying areas, it is also obvious that some of the magnetic contact features offset or truncate the EM anomalies / zones, indicating recent movement of these structures. There are also areas of weak responses within the more elevated terrain, which may be structurally controlled and therefore potentially of interest as possible alteration.

Therefore some of these have been included as possible targets, because of the correlation with the magnetic data or they show some indication (albeit weakly) of vertical extent.

Selection	X (NAD83)	Y(NAD83)	Observations
i	687239	5217567	This selection is a 2500 m long weakly conductor axis which follows a fault in its eastern part. It strikes ESE in the west and ENE in the east. It lies close to several magnetic selections.
ii	685488	5216339	A weak EM early on time anomaly which corresponds with on of the strongest magnetic responses over the intrusive.
iii	686105	5216215	A weak EM early on time anomaly which corresponds with on of the strongest magnetic responses over the intrusive.
iv	682179	5216456	A weak EM early on time anomaly which from the shape on the X and Z components seems to have some vertical extent. It lies on a diabase dyke.
v	685940	5210780	A weak EM early time anomaly which from the shape on the X and Z components seems to have some vertical extent. It lies on a magnetic linear at the junction with a dyke.

Well-defined / early off / mid-time Conductors

A series of potentially deeper conductors, are shown on the Interpretation Map. These bodies were selected based on early off-time / mid-time responses on the grid and profile data.

The moment data was generated to model some of the anomalies (see Appendix B of this report), The early moment grids show some weak and rather questionable trends as do the early time channels of the dB/dt and B field X coil. These are shown in Figure 10 below. The eastern moment trend essentially follows the boundary between granite / granodiorite and the meta-volcanics, as does the NE-SW trend in the channel amplitude image.

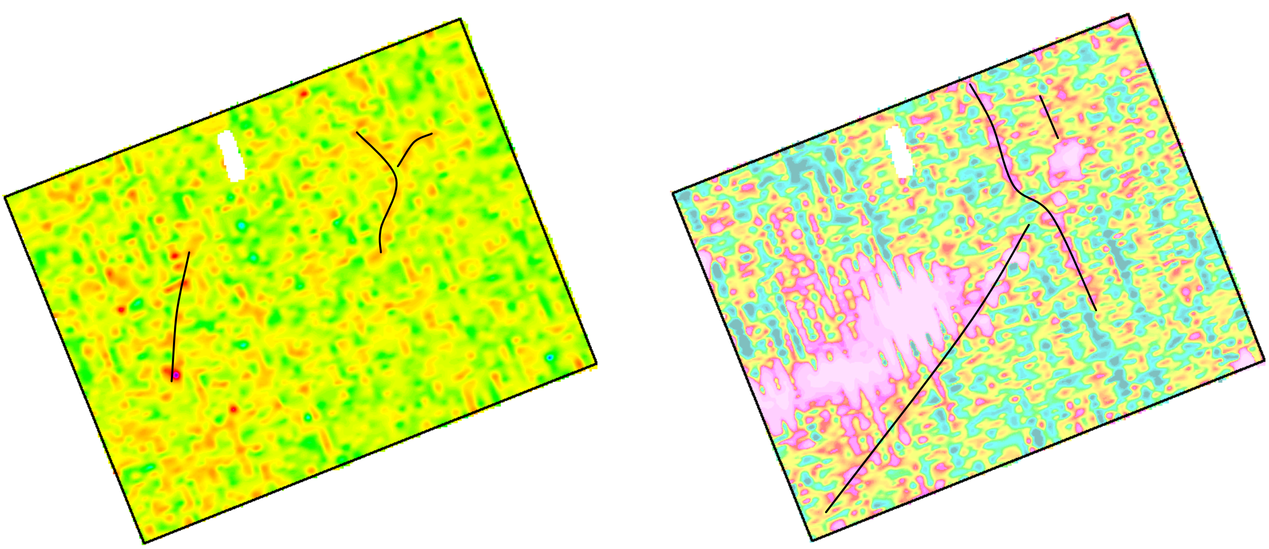


Figure 10: The 2nd order moment of the B field X coil (left) and the channel amplitude for B field X coil channel 07 (right). Both show weak lineaments indentified in the data.

Selection	Line/s	XY (NAD83)	Category	Fiducial	Observations
A	20500	690695, 5219389	C2	71638	Questionable weak response seen in early time. Seems to lie on a dyke, which may be associated with a fault given that it seems that the larger stronger magnetic feature (just north of the East Breccia) is offset.
B	20470	690495, 5218294	A2	70895	Two near parallel features lying along faults. The strongest lies to the north west. The best anomaly lies on 20470 and coincides with the junction of the fault with a diabase dyke. It suggests a flat lying conductor. EMQ modeling was done on this anomaly and this suggests a feature at nearly 300 m depth.
C	20440	690283,5217152	A2	60809	Weak anomaly identified from the early channels. Lies at the junction of several faults, proposed and mapped.
D	20580	694782, 5213312	A2	73780	This selection lies at the very south eastern edge of the survey.
E	20390	689446, 5216339	C2	59526	Very weak and questionable. Coincides with known mineralisation from drill holes.
F	20360	689128, 5215856	A1	58793	Relatively strong EM zone, which seems to dip to the south. EMQ modeling was done on the best response of this feature (line 20360) and confirms the strike of approximately 60°and a dip to the south. The depth to body is estimated at 160 m. This also coincides with known mineralisation from drilling.
G	20330 20340	688646, 5215373	A2	61409 58295	On strike to the target of line 20360. EMQ modeling was also done (line 20330) on this anomaly and yielded very similar results. The selection is truncation at either end by mapped and proposed faults.
H	20320	688551, 5214902	A1	58034	This short strike length feature corresponds with a weak magnetic signature. It is dextrally offset from selection G. Like selections A-C, and E-G it also lies close to the proposed lithologic boundary.
I	20280 to 20300	688398, 5214336	A1 / A2	57009 to 57535	This line represents the best anomaly on the 070°striking lineament . From the responses it seems to be near vertical. It corresponds with a small magnetic anomaly and known mineralisation.
J	20250	686907, 5215426	B2	56250	This is a shoulder on the edge of the flat lying feature associated with the large intrusive body. From its response it seems to dip to the south east. It is truncated in the east by an almost N-S fault.
K	20200 20210	686059, 5215121	B1	54957 55229	This anomaly corresponds with the strongest magnetic anomaly on the survey block. It lies at the junction of several faults, and decays quite quickly. It lies within the zone of the large intrusive.
L	20180 20190	685500, 5215597	A2	54419 54670	Relatively weak anomaly bound by two proposed faults. Lies within the zone of the large intrusive body.
M	20150	684841, 5215067	C1	53602	Very weak, questionable single point response, lies within the intrusive zone, along a NNE-SSW proposed fault. Magnetic selection 26 lies directly to the north (approximately 200 m) along the same fault.
N	20130 and 20150	685228, 5213645	C2	53080 and 53628	Weak responses at the intrusive boundary. These are located adjacent to mapped and proposed faults.
O	20080 to 20150	685045, 5213187	A2	51724 to 53636	This selection is an extensive lineament striking 065°for approximately 1 .4 km. It seems to dip to the south. It is dextrally offset at a essentially N-S fault. Selections L and N lie on this same fault to the north.
P	20120	685149, 5212736	C3	52770	Weak shoulder to selection P.
Q	20150 20160	686383, 5211454	C2	53667 53831	Weak, questionable response, seen on two lines. It corresponds with a magnetic shoulder. Another questionable response is located approximately 500 m to the West (line 20130 fiducial 53117). Both lie close to known mineralisation and magnetic selection 24.
R	20010 20020	682390, 5214255	A2	49939 50227	This anomaly is associated with mapped iron formation. A weaker questionable axis (lines 20050-20060 fiducials 50976 and 51254 respectively) and strikes along the NE-SW fault approximately 700m to the east.

Selection	Line/s	XY (NAD83)	Category	Fiducial	Observations
S	20050	683281, 5213598	C2	50991	This is a weak feature, lying along a fault.
T	T28010 20030	684366, 5209659	C2	68817 50555	This weak selection lies along a ENE magnetic lineament. A response is identified on both the line and tie-line.
U	20540 20550	692526, 5217290	C2	72675 72929	Questionable weak trend lying adjacent to a NW-SE fault.
V	20490	691274, 5217457	C1	71429	Weak questionable anomaly corresponding with a small magnetic shoulder. A drill hole to the NE (approximately 300 m) contains mineralisation.
W	20470	690014, 5219534	C3	70924	Weak questionable anomaly.
X		694054, 5214081	C2		Weak questionable anomaly, lying along a NE-SW striking magnetic lineament.
Y	20500	692366, 5215126	C1	71711	Weak questionable anomaly lying along a fault, corresponding with a small magnetic shoulder.

Priority of Targets and Conclusions

Priority is given to EM targets categorized at the higher end of the ABC-123 scale. Based on this classification system:

- First Priority – A1 conductors - Selections F, H and I. Selection K is also considered a priority target based on the coincidence with the very strong magnetic anomaly.
- Second Priority – A2 conductors – Selections B, C, D, G, L, O and R.

The remaining B and C type conductors are considered to be lower priority.

Magnetic Targets selected for further consideration are as follows:

- First Priority - Selections 1, 5, 9, 10, 11, 12, 13, 15, 16 (western portion), 23
- Second Priority - Selections 4, 17, 18, 19, 26, 27
- Selections which lie close to known mineralisation - 2, 3, 8, 14, 16 (eastern portion), 21, 24, etc have already been identified.

The priority of the targets when considering follow up work must also be based on any additional geophysical and geological data, or other information available.

We trust this data will further your exploration program; and we remain available for questions and any feedback that you are able to provide.

Appendix A

TDEM Anomaly Selection for the East Breccia Property

Current approach to TDEM anomaly selection

The current routine for the selection and fitting of EM anomalies is still based on the University of Toronto plate program which fits the response (at the anomaly peak) from the X-coil channels to a vertical plate nomogram. Given that the current GEOTEM®, TEMPEST®, MEGATEM®, and HeliTEM® systems have evolved to offer the response from coils of 3 different orientations (X, Y and Z) and from dB/dt and B-Field, this approach to the classification of the anomalies is limited and no longer fully reflects all the information being measured by the system. The resulting shortcomings are:

- All anomaly peaks, from the X-coil response, are fitted to a vertical plate model of fixed dimensions, regardless of the nature of the conductive source. The derived CTP and depth-to-source values are then only valid if the conductor can be properly represented by a vertical plate. CTP and depth values derived from "non vertical plate" type conductors will be erroneous. In some conductive terrains, marked by prominent conductive overburden or surface alteration of other sorts, "non-vertical" type conductors may represent 90 % or more of the conductive response.
- The response from the conductor must deflect a minimum of 6 channels above the background to be fitted to the nomogram. CTP or depth-to-source values will not be calculated for a valid but weaker response (a weak or deep source).
- Only the response from the X-coil channels are used in the selection and fitting. A response appearing only on the Z-coil will not be identified. This is sometimes the case for a very deep source. As the depth to the conductor increases, although it may have considerable depth extent, the system becomes less sensitive to the vertical extent of the body and conductors will appear to be more flat-lying than vertical. As a result, as depth of burial increases, the coupling of the response may disappear on the X-coil response but will persist on the Z-coil response (see figure 1, anomalies A and B).
- The fitting of the response is only done from the amplitudes at the peak position of the anomaly and does not take-in the full shape of the anomaly or relate the difference in response between the X-coil and Z-coil. This does not allow for the distinction between vertical, flat-lying or dipping plates.

Fugro is presently working on the development of a new anomaly selection and classification routine which will use a window of data centered about the anomaly peak (to properly define the entire anomaly shape), using both the response from the X and Z-coils and fitting to a suite of models from flat-lying to dipping to vertical plates and spheres. This will hopefully address all the above shortcomings of the present method.

Unfortunately the current anomaly fitting program must continue to be in use until this new routine is made available. Until such time, our approach is to present the full information being measured by the system within the confines of the present program's limitations. Some responses may not be visible on the regular channels of the dB/dt X-coil data but will be identified on either the B-Field response or the Z-coil response. The initial selection of the anomalies is still being derived from the X-coil channels of the dB/dt data but at the "review" stage (via a graphic screen editor), the response from all components (X and Z, dB/dt and B-Field) are examined. All significant responses from any of the components are inserted in the anomaly field. Since all anomaly edits are still being updated by the same routine, again only fitting the X-coil response from the dB/dt data, many of these "other" responses which have no measurable signature on the dB/dt X-coil data will only be flagged as an anomaly location with no measurable response suitable for fitting to the reference nomogram. Although improperly represented, these "other" anomalies, at the very least, are identified by their location in the EM anomaly database (listing) and on the anomaly map.

Figures 1 and 2 provide examples of a typical display of the channel data used when reviewing the EM anomaly selection. Given the limited space available on a computer screen, a good display can include every even numbered channel, 8 to 30 (in more resistive areas, often all off-time channels can be displayed) for X and Z for both dB/dt and B-Field, along with the Hz monitor and the radar altimeter (the EM primary field can also be very useful).

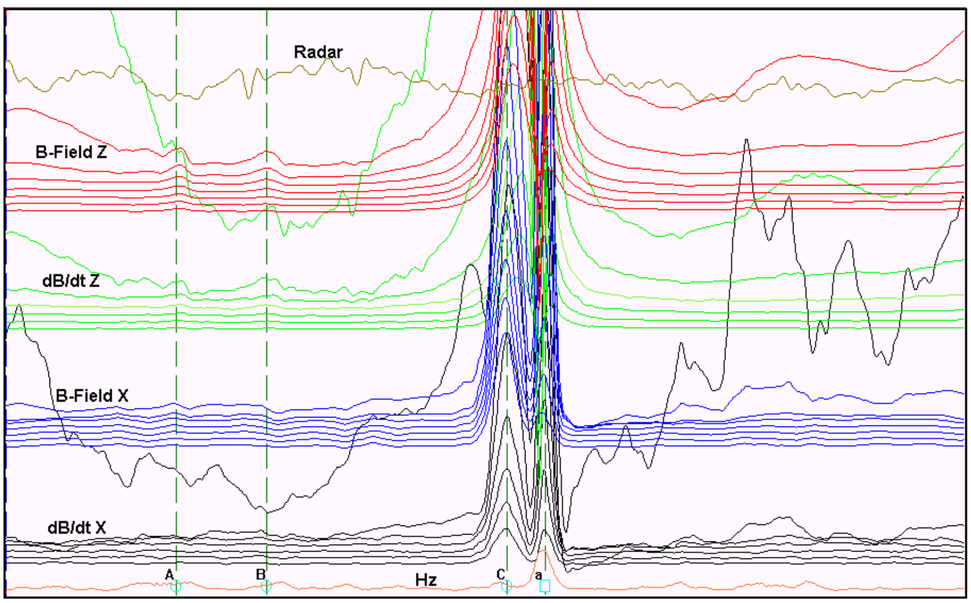


Figure 1

In **Figure 1**, anomalies identified as A and B could be indicative of a very deep source, where the coupling of the response is lost on the X-coil but persists on the Z-coil. The dB/dt X-coil response is devoid of any response while a weak response is visible of the Z-coil of the dB/dt response. Greater support for this selection is provided by the response on the B-Field. Although weak and very questionable on the X-coil (close to the noise level) the response is clearly marked on the Z-coil, as a low amplitude response of slow decay. This is a good indication of a high conductance body having a long time constant and therefore enhanced by the B-Field. These two anomalies may be prime targets for mineralization but will be indistinguishable from weak surface responses, as represented on the anomaly map or in the anomaly listing. Hence, the importance of always reviewing the EM anomaly selection against the data profiles.

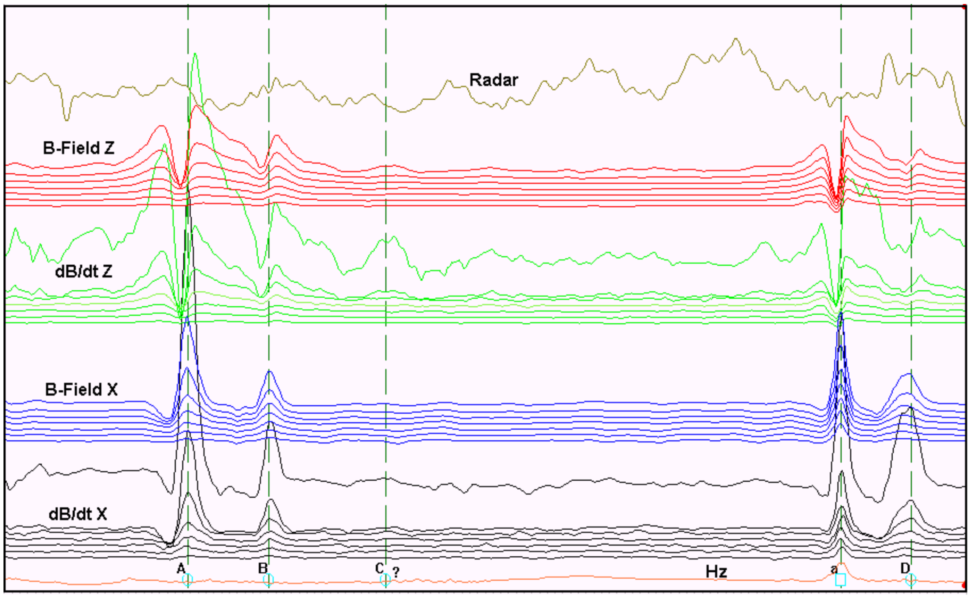


Figure 2

In **Figure 2**, anomaly C? is similar to the responses discussed in Figure 1 above, in that it presents no measurable signature on the X-coil response (for both dB/dt and B-Field) but a weak response on the Z-coil response. The difference here however, is that the B-Field response does not show an enhancement of the response on the Z-coil, but an attenuation. This is indicative of a conductive response with a short time constant and hence more likely a weak surficial source.

The anomalies discussed in Figures 1 and 2 have very similar characteristics on dB/dt X and Z and B-Field X and yet may reflect very different conductive sources, one being of potentially economic interest. The only distinguishing signature is offered by the B-Field Z-coil response. Be aware that these differences are not properly accounted for in the current anomaly selection and presentation process.

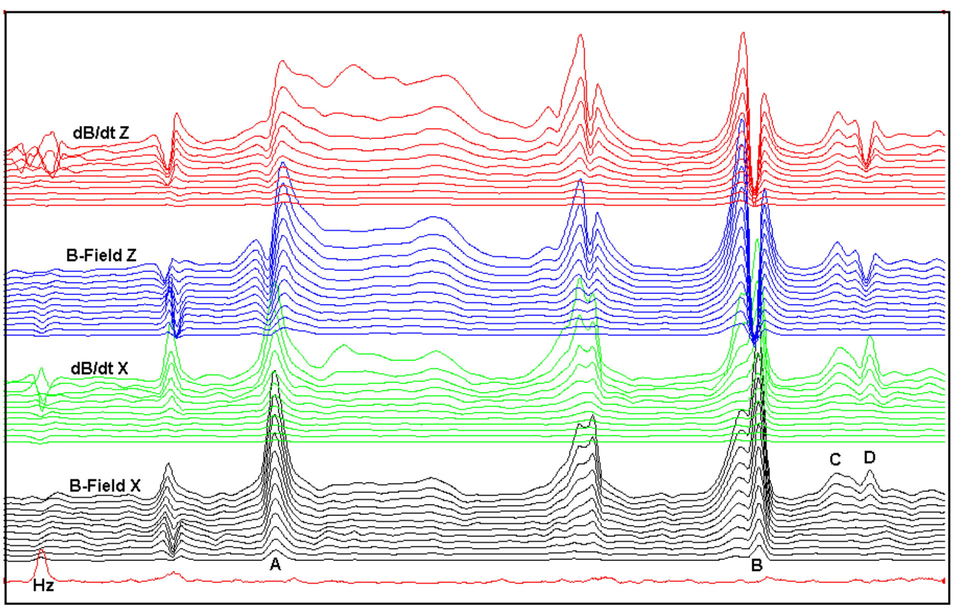


Figure 3

Figure 3 shows the importance of looking at the response with all components when evaluating the possible source of a conductive response. Anomalies identified as A and B look quite similar on the X-coil response and could both be interpreted as narrow, vertical conductors. However, looking at the response on the Z-coil clearly shows that anomaly A is the leading edge of a broad tabular body, better displayed on Z because of the enhanced coupling with the Z-coil, whereas anomaly B does reflect a narrow, near-vertical conductor. Anomalies C and D again look very similar on the response from the X-coil and could be interpreted as related to the same source. However, the response on the Z-coil indicates that the response at C is from a tabular or flat-lying source whereas the response at D is from a vertical source.

This is a reminder that the conductance and depth values in the Anomaly Listing are obtained by fitting the peak amplitudes of the response to a vertical plate model, regardless of the actual source of the anomaly. These values are only meaningful if the geometry of the source can reasonably be represented by the vertical plate model.

East Breccia Property GEOTEM Anomaly Listing

SYSTEM CONFIGURATION: Pulse repetition rate.......................…………….……....30 Hz
Pulse width..................................……………………...4020 µs
Off-time......................................……………………...12582 µs
Receiver-transmitter horizontal separation..….........≈ 130 m
Receiver-transmitter vertical separation........…….. ≈ 45 m
Receiver axis orientation.................…………......horizontal

MODEL USED IN FITTING:
Vertical plate model
Length of 600 m
Depth extent of 300 m
Vertical dip
Strike perpendicular to flight line

ANOMALY LISTING DESCRIPTION:

LINE.......................................…………………………………..........Line Number
FLT..………………………………….......Flight Number
AZ.........................…………………………………………...............Flight line heading
CAT.......………………...Anomaly category N = normal, S = surficial, C = culture
ID........………………………………...Anomaly identifier
FID......…………………..……...................................Fiducial value at anomaly peak
CH08..........………………….………...Amplitude of dB/dt X coil channel 08 (pT/s)
CH12..........…………………….……...Amplitude of dB/dt X coil channel 12 (pT/s)
CH16..........…………………….……...Amplitude of dB/dt X coil channel 16 (pT/s)
CH20..........…………………….……...Amplitude of dB/dt X coil channel 20 (pT/s)
CH24..........…………………….……...Amplitude of dB/dt X coil channel 24 (pT/s)
CH28..........…………………….……...Amplitude of dB/dt X coil channel 28 (pT/s)
NC.................………………………….......................Number of channels deflected
AltTX.................……………………..…............Terrain clearance of aircraft (metres)
X.................……………………..............UTM X coordinate of anomaly peak (metres)
Y.....………………………........................UTM Y coordinate of anomaly peak (metres)
CTP....………Computed conductance as conductivity-thickness-product (siemens)
DEP....…………………………............................Depth to source relative to surface

NOTE:

1. Selections with 0 in the CTP and DEP columns reflect surficial or culture selections that were not fitted to the vertical plate model.

2. Selections with a negative number shown in the DEP column indicate a normal selection (bedrock) where the vertical plate model used does not properly reflect the true conductor geometry.

FLT	LINE	AZ	CAT	ID	FID	CH08	CH12	CH16	CH20	CH24	CH28	NC	AltTx	X	Y	CTP	DEP
1	20010	158	N	A	49908.4	253.9	10.7	1.5	0.5	0.0	-0.4	2	125	681575	5215777	0	0
1	20010	158	N?	B	49938.4	12.6	-3.4	-0.7	-0.3	-0.1	-0.1	0	133	682229	5214181	0	0
1	20020	339	N	A	50226.3	44.5	-3.5	-3.2	-0.8	-0.5	-0.2	2	104	682470	5214144	0	0
1	20020	339	N	B	50229.1	5.9	-5.7	-2.1	-0.6	-0.1	-0.1	0	109	682410	5214305	0	0
1	20020	339	N	C	50254.2	35.8	1.3	-0.1	-0.1	0.0	-0.5	0	133	681800	5215799	0	0
1	20030	159	N?	A	50437.5	-18.2	-1.2	-0.4	0.2	0.0	-0.1	0	116	681962	5215955	0	0
1	20050	159	N?	A	50976.9	-14.0	-3.7	-0.9	-0.1	0.1	0.0	0	168	683000	5214423	0	0
1	20050	159	N?	B	51037.8	-10.5	-1.6	-1.0	-0.2	0.0	-0.3	0	173	684225	5211245	0	0
1	20060	339	N?	A	51254.2	-19.2	-3.3	-1.4	-0.5	-0.3	-0.2	0	171	683157	5214580	0	0
1	20090	158	N	A	52015.8	74.5	15.0	1.6	0.0	0.1	0.0	2	118	684418	5212892	0	0
1	20100	339	N	A	52244.5	113.0	19.6	3.5	0.7	0.4	0.0	2	143	684563	5213103	0	0
1	20110	159	N	A	52539.3	222.8	49.3	8.6	2.1	0.7	-0.1	4	121	684808	5213080	0	0
1	20120	339	N	A	52771.8	74.0	16.3	1.6	0.4	0.0	-0.1	2	141	685136	5212738	0	0
1	20120	339	N	B	52776.6	136.2	55.3	21.4	7.6	2.4	0.4	6	119	685027	5213034	19	305
1	20120	339	N	C	52779.4	96.7	32.0	11.0	3.2	1.0	-0.2	4	105	684962	5213207	0	0
1	20130	159	N	A	53089.4	53.8	13.8	2.9	0.1	-0.1	0.1	2	132	685212	5213161	0	0
1	20140	339	N	A	53318.5	66.7	24.3	7.4	2.0	0.8	0.0	4	169	685479	5213063	0	0
1	20150	159	N	A	53628.2	19.4	3.8	0.1	0.2	0.3	-0.4	0	122	685389	5213701	0	0
1	20150	159	N	B	53637.3	37.3	12.4	3.6	0.4	-0.3	-0.3	2	152	685592	5213177	0	0
1	20160	339	N?	A	53831.2	-16.8	-2.2	-0.3	-0.4	0.3	0.2	0	158	686505	5211453	0	0
1	20160	339	N	B	53858.5	41.5	11.8	1.7	0.2	-0.1	-0.5	2	154	685839	5213201	0	0
1	20170	159	N?	A	54169	-5.4	-0.6	-0.5	0.2	0.5	-0.3	0	138	686043	5213147	0	0
1	20180	339	N?	A	54351	-18.9	-2.2	-0.8	-0.3	0.1	-0.3	0	180	686937	5211391	0	0
1	20180	339	N?	B	54419.5	-11.8	-0.9	-0.8	-0.3	0.0	-0.4	0	136	685383	5215472	0	0
1	20190	158	N	A	54670	14.6	6.4	1.7	0.4	0.2	-0.4	0	129	685494	5215698	0	0
1	20210	159	N	A	55228.8	84.0	27.0	8.0	1.5	-0.3	-0.3	4	123	686120	5215171	0	0
1	20250	159	N	A	56249.8	48.6	22.7	7.5	2.1	0.7	-0.3	4	119	686905	5215413	0	0
1	20280	339	N?	A	57008.7	-4.2	0.0	-0.9	-0.4	0.0	-0.3	0	153	688039	5214147	0	0
1	20300	339	N	A	57533.3	54.4	10.0	2.7	0.5	0.2	-0.4	2	111	688424	5214308	0	0
1	20320	339	N	A	58032.9	3.5	3.4	1.3	0.4	0.7	0.2	0	150	688582	5214856	0	0
1	20320	339	N?	B	58037.7	-10.1	-0.7	0.0	0.0	-0.2	0.0	0	170	688475	5215143	0	0
1	20330	159	N	A	61408.6	15.4	12.2	7.1	3.3	1.2	-0.1	0	133	688633	5215396	0	0
1	20330	159	N?	B	61416.9	-13.9	-3.8	-1.9	-0.8	-0.2	-0.6	0	161	688811	5214944	0	0
1	20340	159	N	A	58295.9	-4.0	2.5	1.1	0.4	0.4	-0.2	0	172	688823	5215465	0	0
1	20360	158	N	A	58792.7	147.1	65.8	23.8	4.9	0.4	-0.1	6	149	689092	5215883	17	262
1	20370	339	N	A	59025.9	41.3	21.4	8.0	2.3	0.4	-0.3	2	143	689270	5215846	0	0
1	20380	158	N	A	59251.8	-7.7	-0.1	-0.8	-0.1	0.1	-0.4	0	166	689304	5216368	0	0
1	20390	339	N	A	59525.4	-8.3	-1.6	-1.0	-0.4	0.0	-0.4	0	155	689478	5216280	0	0
1	20410	339	N?	A	60059.6	-11.0	-3.0	-1.4	-0.4	0.2	-0.3	0	123	689804	5216704	0	0
1	20420	159	N?	A	60307.4	-7.9	-0.9	-0.8	-0.2	-0.1	-0.1	0	163	689978	5216837	0	0
1	20430	339	N?	A	60569.7	-5.2	-0.8	-1.2	-0.5	0.2	-0.4	0	159	690200	5216856	0	0
1	20440	159	N	A	60808.6	2.6	4.3	2.1	0.6	0.1	-0.3	0	147	690261	5217225	0	0
1	20440	159	N	B	60813.1	-9.3	-1.9	-1.0	0.0	0.0	-0.2	0	141	690365	5216956	0	0
1	20450	338	N	A	61087.3	-5.9	-2.8	-1.1	-0.6	0.4	-0.3	0	148	690512	5217117	0	0
1	20450	338	N	B	61105.8	0.0	2.2	-0.3	-0.3	0.0	-0.4	0	137	690116	5218118	0	0
2	20460	158	N	A	70583.3	11.8	5.0	1.3	0.3	-0.3	0.1	0	137	690303	5218229	0	0
2	20470	338	N	A	70895.3	12.1	2.0	0.4	0.2	0.1	-0.2	0	178	690624	5217907	0	0
2	20470	338	N	B	70902.4	125.7	45.6	16.6	4.4	0.8	-0.2	6	147	690481	5218280	16	289
2	20470	338	N?	C	70924.2	-4.2	-1.7	0.0	-0.3	0.1	-0.4	0	173	690022	5219520	0	0
2	20480	158	N	A	71122.4	32.9	6.8	2.1	0.7	0.3	-0.2	2	173	690629	5218425	0	0
2	20480	158	N?	B	71127.9	1.3	-1.1	-0.5	-0.7	-0.4	-0.2	0	184	690750	5218121	0	0
2	20490	339	N?	A	71444.7	7.1	-2.5	-1.2	-0.4	-0.1	-0.4	0	151	690938	5218253	0	0
2	20490	339	N	B	71448.2	0.6	-1.7	-0.7	0.1	0.2	-0.2	0	156	690856	5218428	0	0
2	20580	159	N	A	73779.7	65.9	26.0	11.7	4.5	1.7	0.5	4	123	694783	5213323	0	0
2	28030	69	N	A	69545.4	79.4	24.7	6.3	0.0	-0.1	-0.2	4	156	686948	5214955	0	0
2	28030	69	N	B	69588.1	34.3	17.1	7.8	1.7	0.3	0.0	2	190	689146	5215728	0	0
2	28040	249	N	A	69838	18.2	3.8	1.1	0.3	0.3	-0.1	0	138	690551	5218527	0	0

Statistics of anomalies
======================

Total number of anomalies: 57

Culture: 0

Anomalies of which NC is 1-5:	54 (0.9 %)
Anomalies of which NC is 6:	3 (0.1 %)
Anomalies of which NC is 7:	0 (0.0 %)
Anomalies of which NC is 8:	0 (0.0 %)
Anomalies of which NC is 9:	0 (0.0 %)
Anomalies of which NC is 10:	0 (0.0 %)
Anomalies of which NC is 11:	0 (0.0 %)
Anomalies of which NC is 12:	0 (0.0 %)

Appendix B

EMQ modeling of Anomalies from the East Breccia Property

The modeling with EMQ is done from the “Moment” data, which is itself calculated from the B-Field response. As such, weaker conductors which have a short time constant and a poorer B-Field response will generally not provide a sufficiently good signature on the derived Moment response to allow reliable modeling of the anomalies. Also, in order to be able to fit a response with a reasonable degree of confidence, the anomaly itself must be well defined with a minimum of disturbance from neighboring conductors. This means that, in order to be able to able to model an anomaly successfully, it must be a singular response and relatively isolated. A strong response, which is part of a cluster of anomalies, may not provide reliable modeling results if is too disturbed by the effect of nearby conductors.

Notes on the EMQ presentation:

- The BLUE profile trace represents the measured response.
- The RED profile trace represents the model results
- The cross-section window shows a “sphere” which is the default model used by the application. However the program can also be used to simulate a “plate” response. This is done by channeling all the current flow along one plane of the sphere, thus simulating the response from a plate. The outline of the plate corresponds to the plane drawn through the sphere.
- In the profile windows, the right-hand side of the image always corresponds to either North or East.
- The three profile widows, Top, Middle and Bottom, correspond to the response from the X, Y and Z coil respectively.
- EMQ solves for the following parameters: Position, depth, conductivity, dip, strike and diameter. When using the simulated “plate” response, the value of the “diameter” is a reflection of the total surface area of the conductor and is not an indication of the width of the conductor.
- If an “offset” is noted, this is relative to the flight line. However, the position given is correct and reflects the offset.

General comments about the modeling:

As is the case for all modeling; the better the fit, the more confident the results. Although the “sphere” model is the fundamental model used by the program, the simulated” plate response is more commonly used to best approximate the conductors. Looking closely at the differences between the measured and modeled profiles, one often notes that the actual measured data, although it may have the same general shape and amplitude, displays a much more complex profile shape with numerous additional inflexions. This likely reflects the fact that the actual conductor is not homogeneous but rather made-up of numerous smaller conductive lenses and stringers which, as a volume, occupy a space that can be reasonably well approximated by a single enclosing “plate”. This results in an anomaly which has a composite shape that should correspond fairly well to the plate parameters used by the modeling. It is also important to remember that the GEOTEM and

MEGATEM systems have a very large footprint (in the order of 400 to 500 m) and will tend to homogenize the conductive responses into a single response. This may result in depth estimates which are a bit too deep.

The reporting of the depth estimates

As mentioned, the fundamental model used by EMQ is the "sphere" model, although the response from a "plate" can be simulated by restricting the flow of EM currents to channel through a single plane of the sphere. However, the reader should be aware that the depth value reported by the program always refers to the top of the sphere, regardless of whether the "sphere" or "plate" model was used in the fitting. In the case of the plate model, the depth value given will reflect the top of the plate if the plate is vertical and will be close to the top of the plate for a steeply dipping plate. However, in the case of a shallow dipping or flat-lying plate, the actual depth to the plate itself will be closer to the depth value given "plus" half of the diameter of the sphere.

It's important to note, however, that although the program can simulate a "plate" model by restricting the flow of currents along a particular plane through the sphere, the resulting shape of the conductor is essentially a disc and not a square plate. Because the conductivity – volume must remain the same, the area of what would be the equivalent plate must be equal to the area of the disc. Since a square of equal area to a circle will always have side dimensions which are less than the diameter of the circle, then for a given centre, the top of the plate will always be inside the outer edge of the circle. So, because of this, it is normal for a surface or near-surface plate-like conductor to be shown as a sphere with its top extending above the surface.

In the modeling results provided, if the simulated "plate" model was used in the fitting, then two depth values are given, one for the top of the "enclosing" sphere and one for the approximate depth of the plate which was read off directly from the cross-section window of the modeling results.

The modeling approach used

Like any modeling software, EMQ does not necessarily provide a unique solution. Often, several different solutions will give very comparable fits.

The shape of an anomaly (comparing the differences and relative symmetries between the 3 components, X, Y and Z) is defined by the orientation of the body (strike, dip and offset from the flight line). Any change in these parameters will have a direct effect on the resulting shape of the anomaly such that the orientation of the body can usually be determined with very little ambiguity.

The amplitude of the anomaly (and to some degree its wavelength) on the other hand, is controlled by the "conductivity-volume" and the depth to source. Here, multiple solutions can exist. A large diameter sphere of low conductivity and close to surface will give a very similar response to a much smaller diameter sphere of higher conductivity at greater depth. If one of these parameters is known, such as the diameter of the sphere or its conductivity, then the depth to source can be determined with little ambiguity. However, if all 3 parameters are unknown, then we're back to multiple solutions.

The following approach to the modeling was used to reduce these ambiguities:

- Initially, all 3 components (X, Y and Z) of a given order (the 2nd order for example) were modeled in order to define the orientation of the body (strike, dip and offset from the line).

- Then, as a second pass, having determined the orientation of the body at step 1, two or more orders of the same component were modeled simultaneously (1st, 2nd and 3rd Moment of Z, for instance). Generally, the response from the best fitting component was used for this. The scalar differences in the amplitude of the response between the different orders of moments will identify which of the alternatives is the most plausible. Since the orientation of the body cannot be determined very well from a single component, the values of dip, strike and offset obtained at step 1 were simply entered and fixed. Only the depth, diameter and the conductivity parameters were inverted.

When applicable, results from both steps are provided.

Note on the position of the conductor

If comparing the position of the conductor, as determined by the EMQ modeling, with the location given in the anomaly listing which accompanies the standard EM anomaly map (which may have been provided as a separate product), one should be aware that these locations may not always refer to the same thing.

The information provided with the standard EM anomaly map is obtained by fitting the peak values of the X-coil response to the nomogram (model response curves) of a vertical plate model. If the conductor can indeed be represented by a vertical plate like body and is crossed orthogonal to strike, then the peak of the response on the X-coil will coincide with the axis of the plate and the location given will reflect the centre of the body. However, any variation in strike or dip of the conductor, other than orthogonal and vertical, will shift the peak of the response away from the axis of the conductor. It is also important to remember that the fixed-wing TDEM systems have a footprint in the order of about 400 m, due to the flying height and transmitter – receiver geometry. So, a short strike length conductor located in between two flight lines may still be identified as being on each of the two adjacent lines.

In summary then, the location of the EM anomalies provided in the anomaly listing which accompanies the standard EM anomaly map, will only reflect the true position of the axis of the conductor only if the body is a vertical plate-like body, orthogonal to the flight line and has a strike length which exceeds two or more line intervals.

The position of the conductor obtained from the modeling done with the EMQ application, on the other hand, is more accurate. Unlike the vertical plate fitting used for the standard EM anomaly map which fits only the peak values of the X-coil response, the modeling done with EMQ uses the entire anomaly shape from the both the X and Z coil response and, optionally the Y-coil response as well, and allows for changes in strike, dip and offset from the survey line.

So, EMQ solves for the position of the conductor by using the entire anomaly shape from all coil sets, allowing for changes in strike, dip and offset from the line while the information provided in the EM anomaly listing reflects only the position of the peak of the response measured from the X-coil and this will only represent the axis of the conductor if it is a vertical plate-like body, orthogonal to the flight line with a strike length which exceeds two line spacing.

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EM responses selected for the modeling

East Breccia Property

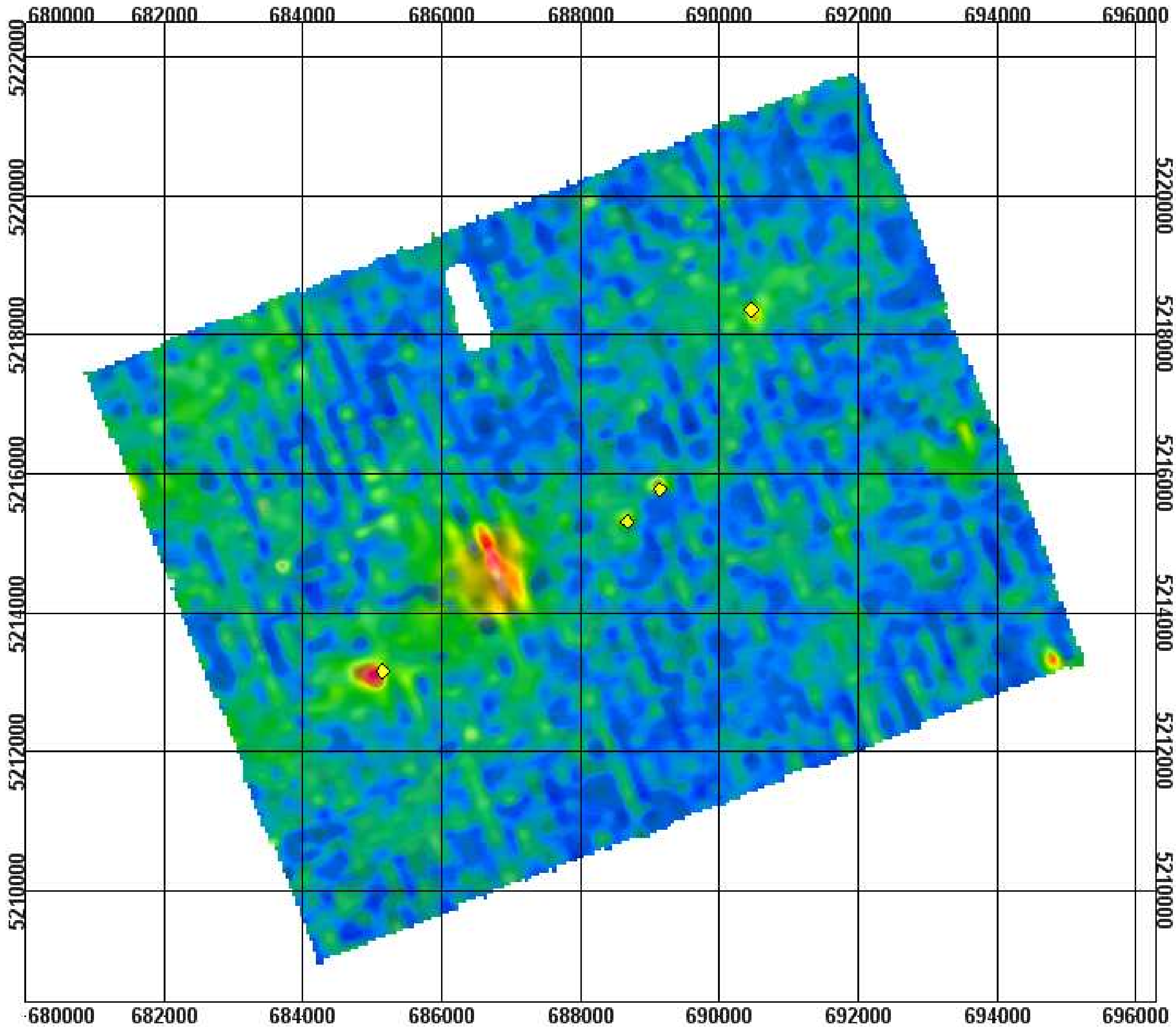


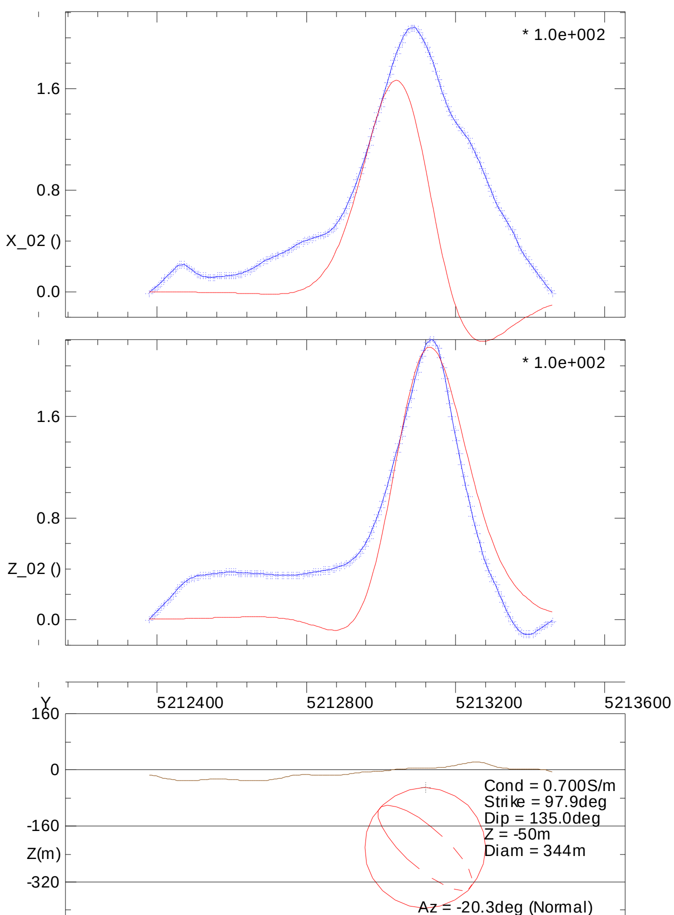
Image of the 1st Order Moment from the X component superimposed over the response from the Z coil. The four EMQ modeling locations are identified by the yellow diamond symbols.

MODELING RESULTS OVER THE EAST BRECCIA PROPERTY

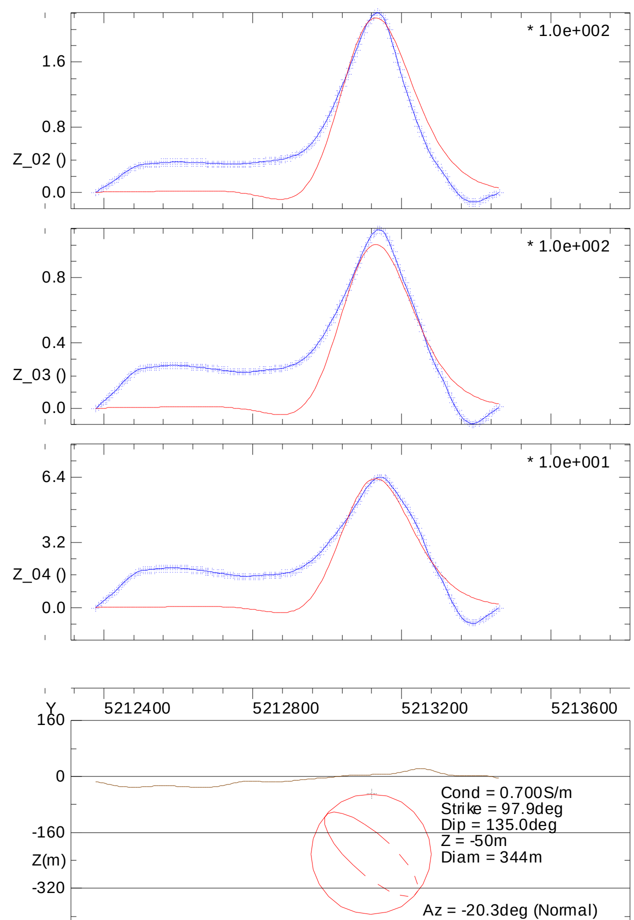
Line: 20120 **Fiducial**: 52774

Model	: plate
Position	: 685141 E, 5213171 N (NAD83 UTM 16N)
Depth to top of sphere	: 50 m
Diameter of the sphere	: 344 m
Corresponding depth to plate	: approximately 240 m
Conductivity	: 0.7 S/m
Strike direction	: 98°
Dip	: 135°N
Offset from the flight line	: 150 m to the east

Comments: Not a great fit but the anomaly profile shows numerous inflexions in the X component indicative of a much more complex body than could be fitted with a single body. The computed strike direction is generally similar to that defined on the interpretation map (75/255°) however the dip from this modeling suggests the body is dipping to the north, whereas the conductor axis on the interpretation map suggests a dip to the south-east. This suggests that this body is separate from the kilometer long trend.



Results from the 2nd Order Moment of the X and Z coil response

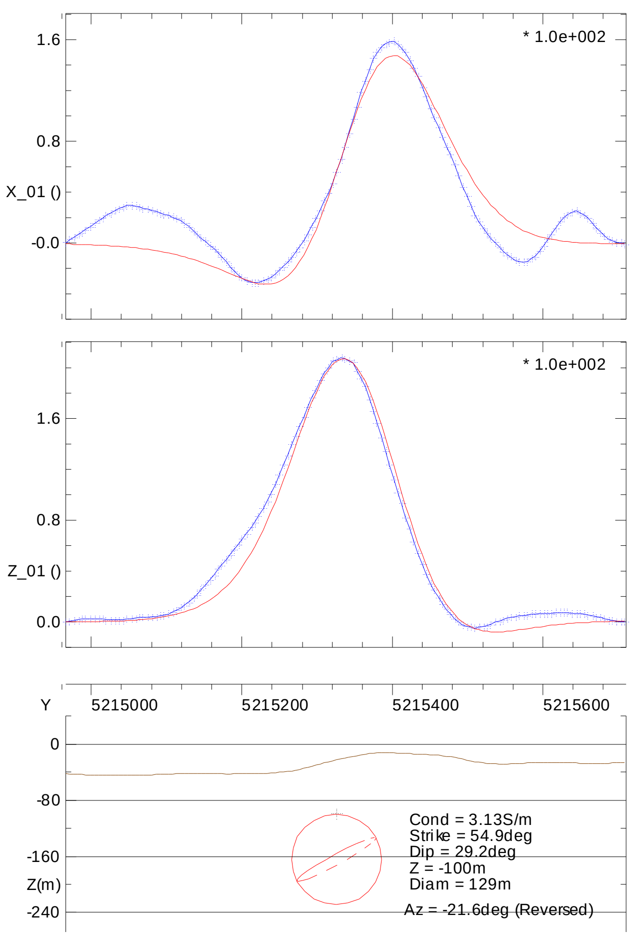


Results from the 2nd, 3rd and 4th Order Moment of the Z coil

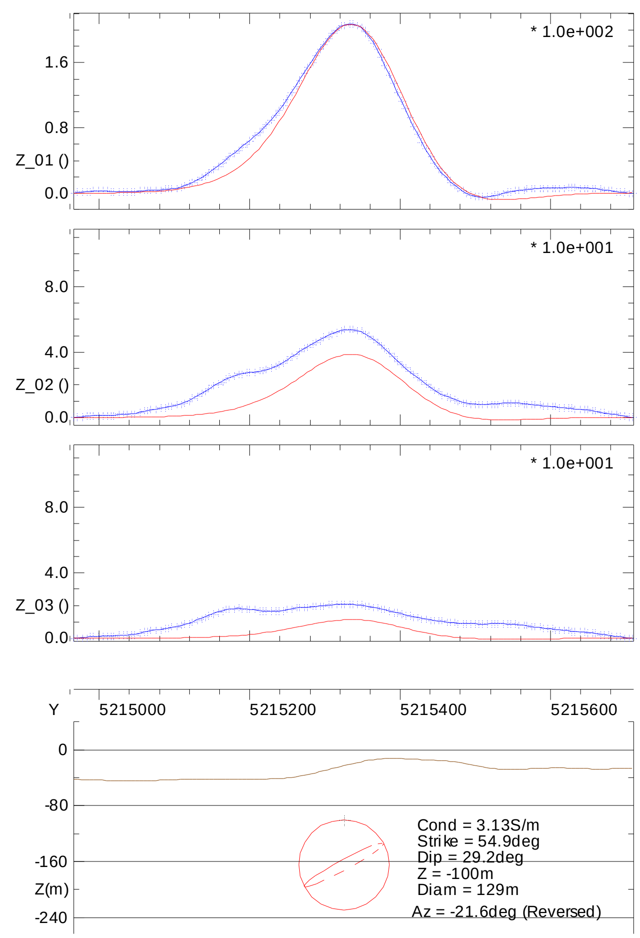
Line: 20330 **Fiducial**: 61407

Model	: plate
Position	: 688667 E, 5215328 N
Depth to top of sphere	: 100 m
Diameter of the sphere	: 130 m
Corresponding depth to plate	: approximately 160 m
Conductivity	: 3 S/m
Strike direction	: 55°
Dip	: 30° S
Offset from the flight line	:

Comments: This is a good fit for both the X and Z components. The strike is close to the direction drawn on the interpretation map.



Results from the 1st Order Moment of the X and Z coil response

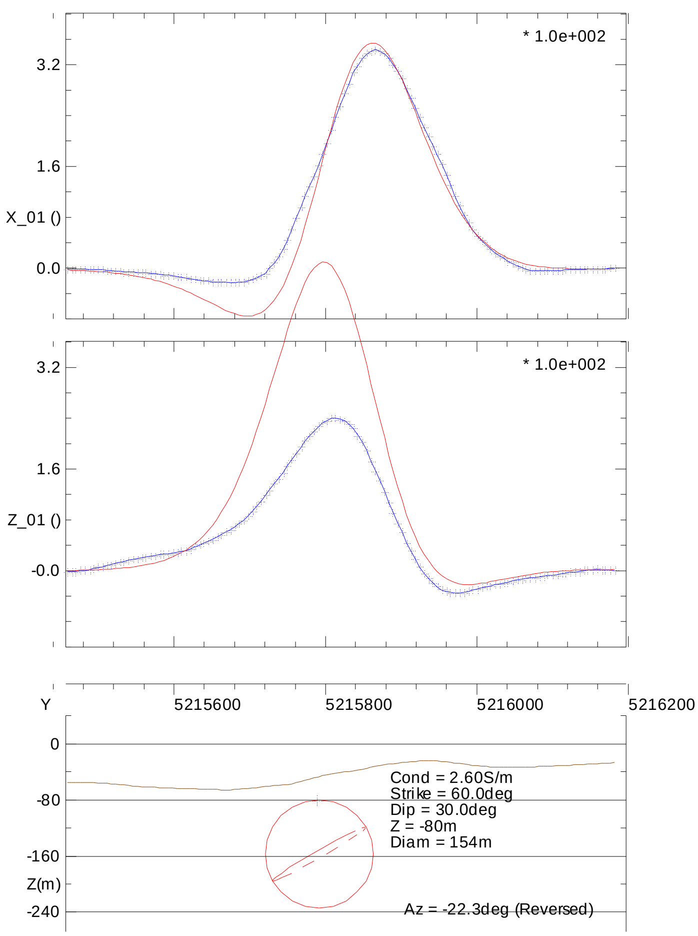


Results from the 1st, 2nd and 3rd Order Moment of the Z coil

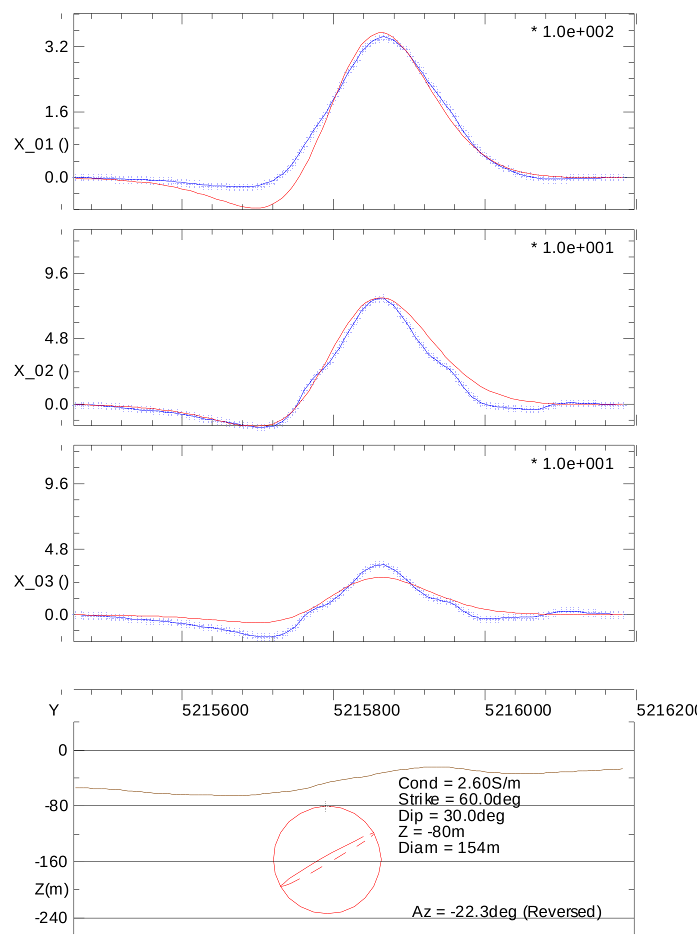
Line: 20360 **Fiducial**: 58793

Model	: plate
Position	: 689138 E, 5215794 N
Depth to top of sphere	: 80 m
Diameter of the sphere	: 155 m
Corresponding depth to plate	: 160 m
Conductivity	: 2.6 S/m
Strike direction	: 60°
Dip	: 30°S
Offset from the flight line	:

Comments: Given the strength of this anomaly in the channel amplitude data, it was surprising that the moment data for the Z component indicated a relatively shallow body. This anomaly lies close to the given location of the New Senator East Occurrence, and coincides with the location of a drill hole (MNDM drill hole identifier number 209706) that was drilled in 1998. The main commodity is copper.



Results from the 1st Order Moment of the X and Z coil response

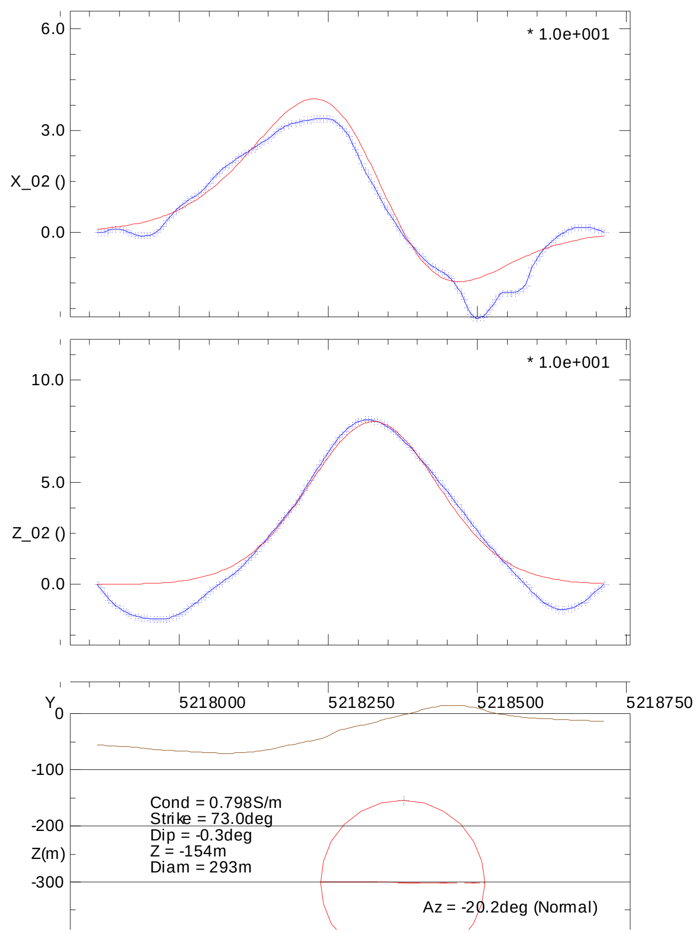


Results from the 1st, 2nd and 3rd Order Moment of the X coil

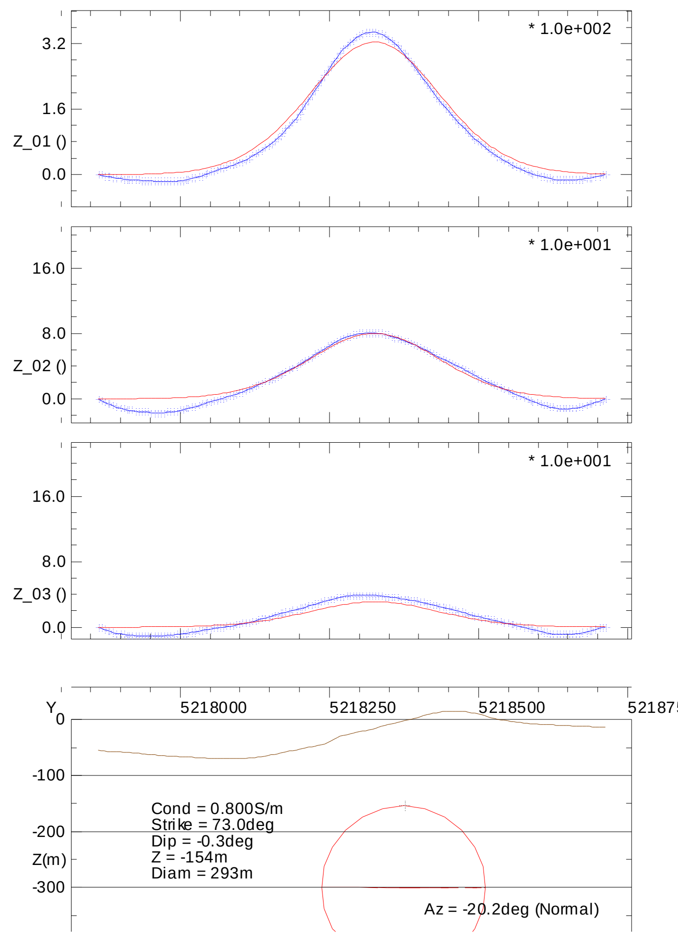
Line: 20470 **Fiducial**: 70898

Model	: plate
Position	: 690449 E, 5218376 N
Depth to top of sphere	: 150 m
Diameter of the sphere	: 300 m
Corresponding depth to plate	: 300 m
Conductivity	: 0.8 S/m
Strike direction	: 73°
Dip	: 0
Offset from the flight line	:

Comments: A good fit for shape for the X and Z components, and a good fit for amplitude for the Z component. This anomaly is located between the Tribag Mine and the East Breccia.



Results from the 2nd Order Moment of the X and Z coil response



Results from the 1st, 2nd and 3rd Order Moment of the Z coil