

**2016 Total Magnetic Intensity Survey –WS Area**

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115I/07 Yukon, Canada

WORK PERFORMED:  
September 30 - October 6, 2016

Prepared for:

BC Gold Corp.

Prepared by:



**Geophysics Report  
WS 2016 Total Magnetic Intensity Surveys**

Prepared for:  
**BC Gold Corp.**  
Suite 520-800 West Pender Street  
Vancouver BC V6C 2V6

Prepared by:  
**Aurora Geosciences Ltd.**  
34A Laberge Road, Whitehorse, Yukon, Y1A5Y9  
Phone: (867) 668.7672 Fax: (867) 393.3577  
[www.aurorageosciences.com](http://www.aurorageosciences.com)

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## 1 SUMMARY

This memorandum report describes a Total Field Magnetism (Mag) ground geophysical survey conducted on the WS Property for BC Gold Corp. During the period of September 30<sup>th</sup> to October 6<sup>th</sup> 2016, a total of 88.9 line-kilometres of walking Mag were completed over two target areas (WS North and WS South). The crew mobilized to the property via truck and set up camp at the Carmacks Copper camp, close to the WS project; the crew accessed the site daily via ATV access roads. Both areas were initially surveyed with 50 m line spacing and then infilled to 25 m line spacing as time permitted.

To aid with this report the IP data collected by Aurora Geosciences Ltd. in 2008 are used to examine the magnetism data in the context of the chargeability data. The MMI soils collected for BC Gold are used to complement the magnetism data during targeting.

## 2 CREW AND EQUIPMENT

The following personnel conducted the surveys:

Andre Lebel	Crew Chief	Sept 30 to Oct 6, 2016
Hannah Warrington	Technician	Sept 30 to Oct 6, 2016

The crew was equipped with the following instruments and equipment:

3 NDGPS Map 60Csx	Non-differential handheld GPS
4 GEM Mag instruments	Walking Magnetometers S/N: 45336, 2011134, 50496, 411460
2 GEM Mag instrument	Base Magnetometers S/N: 705678, 708719
1 Oasis Montaj software package	Data processing
1 Laptop Computer	Data processing
1 Truck	Transportation used for move and demove
1 ATV	Transportation used for access to the grid
1 Satellite phone	Communications
1 in Reach	Communications
2 Handheld VHF radios	Communications between the crew

### 3 SURVEY LOCATION

The WS Project is located approximately 32 km north-west of Carmacks YT, within NTS map sheet 115 I / 7. The grids were located 3 km south of the Copper North's Carmacks Copper Project (located roughly 35 km north on the Free Gold Rd from Carmacks and 14 km north on the Carmacks Copper spur road). The Carmacks Copper camp was used as a base due to its proximity to the survey area; the crew used an ATV daily to access the grids via the WS Project north access road. The survey described in this report took place on virtual GPS grids without pickets. All geophysical data collected are geo-referenced to UTM Zone 08N coordinates in the NAD 83 datum.

### 4 SURVEY SPECIFICATIONS

The Mag survey was completed according to the following specifications:

<i>Areas:</i>	WS North, 21 SW-NE lines totaling 46.3 km WS South, 23 SW-NE lines totaling 43.5 km
<i>Walk cycle time:</i>	1 s
<i>Line Spacing:</i>	50 m or 25_m for detailed areas.
<i>Positioning Data:</i>	Collected with the handheld NDGPS receiver sampling at one reading per 3 s.
<i>Corrections:</i>	Temporal geomagnetic variations were removed by linear interpolation of drift determined by the base station magnetometer. Reference field set to 57,150 nT
<i>Base Station Magnetometer:</i>	The unit was cycled at a 3 second interval throughout the survey. Both base and roving magnetometers' clocks were synchronized daily to local time. The base magnetometer was located at 413950 E 6910603N UTM Zone 8N Datum: NAD 83_

## 5 DATA PROCESSING

Mag and GPS data were downloaded at the end of each survey day and the raw, unedited data archived. A copy of the data was corrected for diurnal variations using Geosoft's cross database channel lookup using the formula of "Cor\_Mag" equals "Raw\_Mag" reading minus "Base\_Mag" reading plus a datum of 57150 nT. Positioning data collected during the survey are appended to the Mag readings using Geosoft's cross database channel lookup. The diurnally corrected data are non-linear filtered to remove single station spikes from the data and saved as "NLF\_Cor\_Mag". The data are then leveled using tie line leveling where the differences between tie line and lines determine the datum shifts for each line to create a leveled data field. The shifts applied are saved in databases "IntersectionNorth.gdb" and "IntersectionSouth.gdb" which are appended to this report.

## 6 MAGNETIC SUSCEPTIBILITY MEASUREMENTS

Six samples were collected from trenches and outcrops and tested with a KT-9 Kappameter to determine the magnetic susceptibility of the geological features in the area. Four of the samples are granite or granodiorite (country rock) and the other two are samples of foliated granodiorite (host rock) with malachite staining.

**Table 1: Magnetic susceptibility measurements.**

Sample	Location	Average Magnetic susceptibility	Description
WS-1	414103E 69115721N	5.93	Biotite Granodiorite
WS-2	4141754E 6911221N	4.31	Biotite Granodiorite
WS-3	4142066E 6911133N	4.85	Biotite Granodiorite
WS-4	414389E 6910285N	0.58	Unknown
WS-5	414103E 6911572N	13.9	Foliated Biotite Granodiorite with malachite staining
WS-6	414706E 6910102N	12.2	Foliated Biotite Granodiorite with malachite staining

Each sample was tested 10 times with the KT-9 Kappameter to get an average magnetic susceptibility. The samples of biotite granodiorite (WS-1, WS-2 and WS-3) are fairly magnetic and have magnetic

susceptibility that ranges from 3 to 8 SI units. There is one sample (WS-4) that was found in the trenches that is of unknown rock type and is not magnetically susceptible. The two foliated biotite granodiorite samples (WS-5 and WS-6) are mineralized and have increased magnetic susceptibility with readings up to 35 SI units. The malachite itself is not magnetically susceptible and the increased magnetic susceptibility is suspected to originate from magnetite or pyrrhotite in the samples. One therefore would expect a magnetic high anomaly around large mineralized areas.

The magnetic susceptibility results at WS differ from those at Carmacks Copper where the foliated host rock is less magnetically susceptible than the surrounding country rock. This discrepancy could be attributable to an insufficient sample number from WS (n=6). It also could be possible that the country rock and host rock are of different composition than the samples tested at Carmacks Copper. However the proximity of the two projects, the similarity in geological environment and the fact that the WS area is on strike with mineralized zones of the Carmacks Copper Project suggests that the magnetic responses of the two area should be similar; therefore magnetic lows are also considered viable targets.

## 7 Interpretation and Recommendations

As seen in Figure 1, 600 m NW of the WS area is Zone 12 of the Carmacks Copper Project. In the Carmacks Copper Project the host rocks were less magnetically susceptible than the surrounding country rocks indicating targets that are magnetic lows are of interest. In the WS area there are 26 identified magnetic low lineations in the total magnetic intensity and the vertical derivative grids. Three interpretations are possible; they could represent 1) a similar host rock / country rock contrast as seen at Carmacks Copper. 2) Faults or other linear features where the magnetic properties of the granodiorite have been disrupted. 3) Topographic lows where increased overburden thickness causes a magnetic low linear feature. If they represent faults or structures, intersections of lineations are more prospective for mineralization due to increased propensity of fluid flow.

Another type of magnetic anomaly that is of interest is a magnetic high that has no correlation with the topography based on magnetic susceptibility measurements. The mineralized samples (WS-5 & WS-6) have higher magnetic susceptibility measurements than the country rocks (WS-1, WS-2 & WS-3) that were tested. However, the country rock is expected to be more magnetically susceptible than overburden and therefore thin or absent overburden can create high magnetic anomalies that are not reflective of bedrock susceptibility...These generally correlate to topographic highs or ridges where the overburden is thin. These magnetic highs are of little exploration interest.

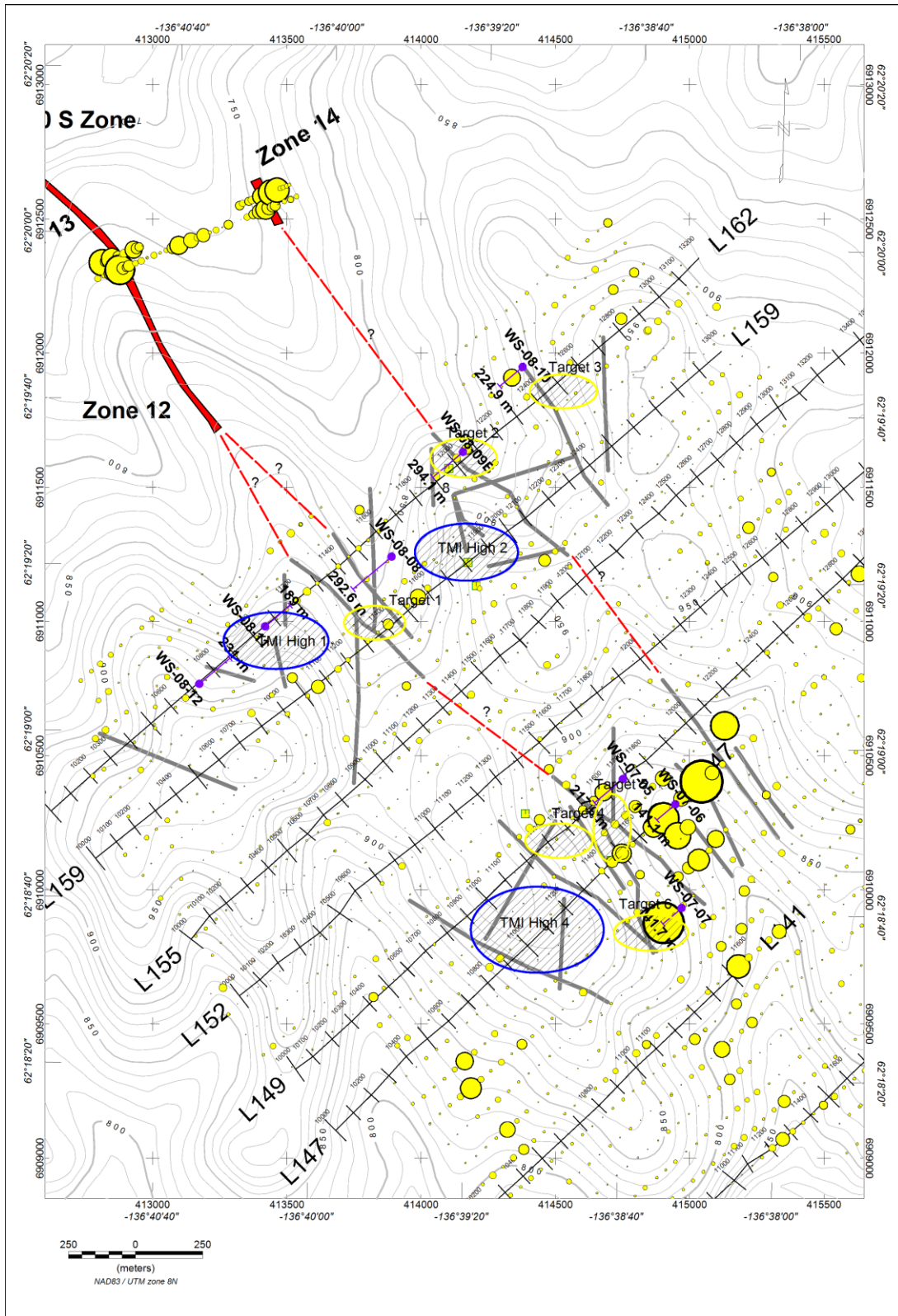


Figure 1: WS Total Magnetic Intensity interpretation.



## 7.1 WS NORTH

Target 1 is the intersection of several magnetic low lineations as seen in Figure 2. It is the intersection of lineation trending SE intersected by two trending due south. There is another intersection of magnetic low lineations immediately to the north, but this intersection has already been tested with WS-08-08 with poor results. An associated chargeability anomaly seen in Figure 5 that makes this target more prospective. Additionally, Target 1 is on trend with zone 12 of Carmacks Copper. The high resolution magnetic survey identifies separate lineations all intersecting at the target location. If the proposed Geoprobe line were extended it would test this target.

Target 2 as seen in Figure 2 is the possible south-east extension of Zone 14 of the Carmacks Copper project. It is a magnetic low lineation that is on trend with Zone 14; it is imaged in the total magnetic intensity and tilt derivative but not in the vertical derivative grids. BC Gold's drilling in 2008 of WS-08-09B intersected copper mineralization highlighting this area as prospective. Figure 4 and Figure 5 shows that the target is correlative with the near surface IP anomaly on L162 and L159. A Geoprobe sampling line is proposed for this target, this should be adequate to test its significance.

Target 3 in Figure 2 is a pronounced magnetic high that does not follow a topographic high. However there is no correlative chargeability high or soil anomalies to make it a target of high priority.

There are two TMI highs seen in Figure 2 which are coincident with topographic highs and are likely the result of thin overburden. However TMI 1 could be interpreted to be on trend with zone 12 of Carmacks Copper project and respectively TMI 2 could be interpreted to be trend with zone 14 of the Carmacks copper project. They are unlikely to have any correlation with mineralization.

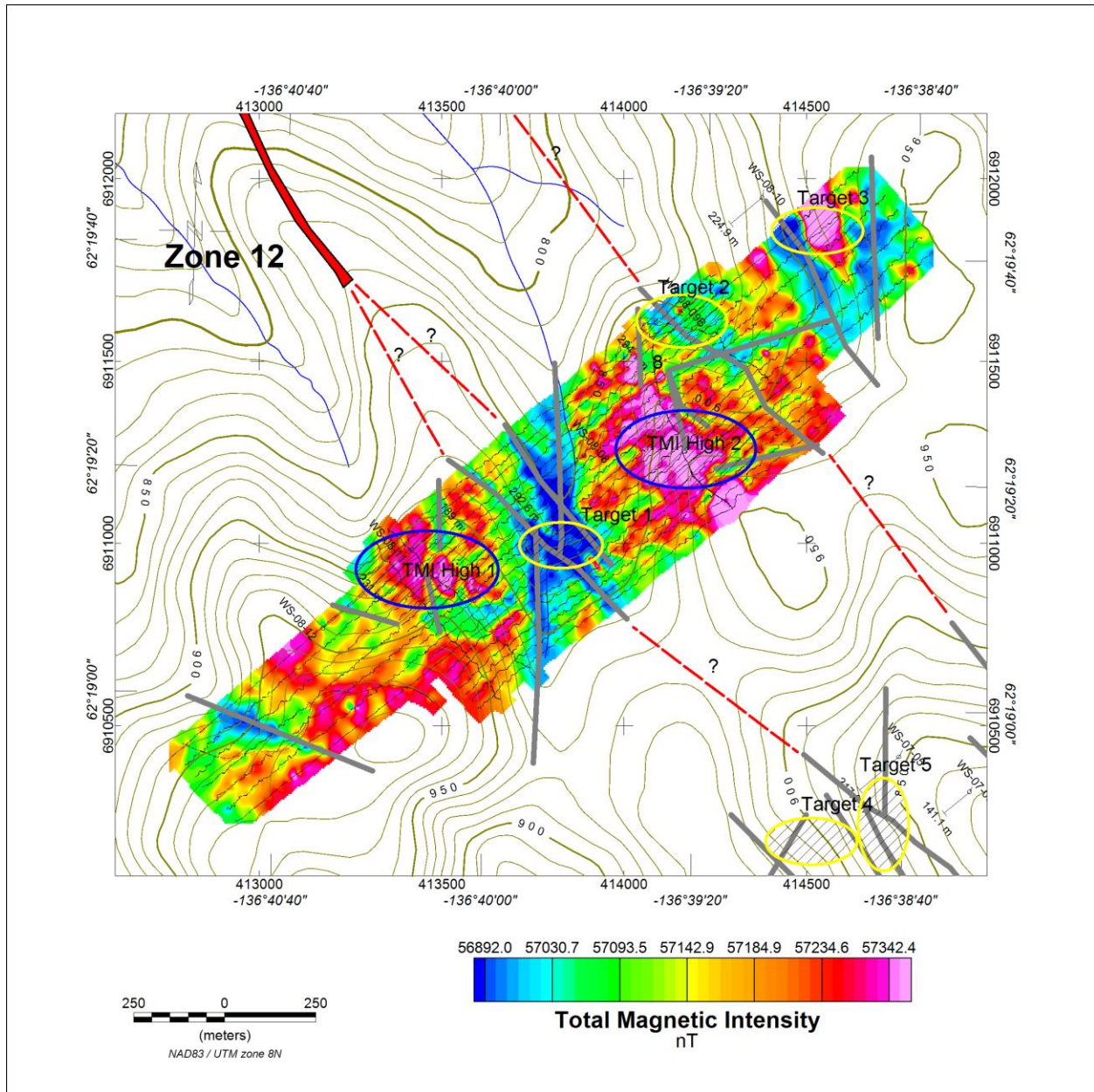


Figure 2. WS north total magnetic intensity map

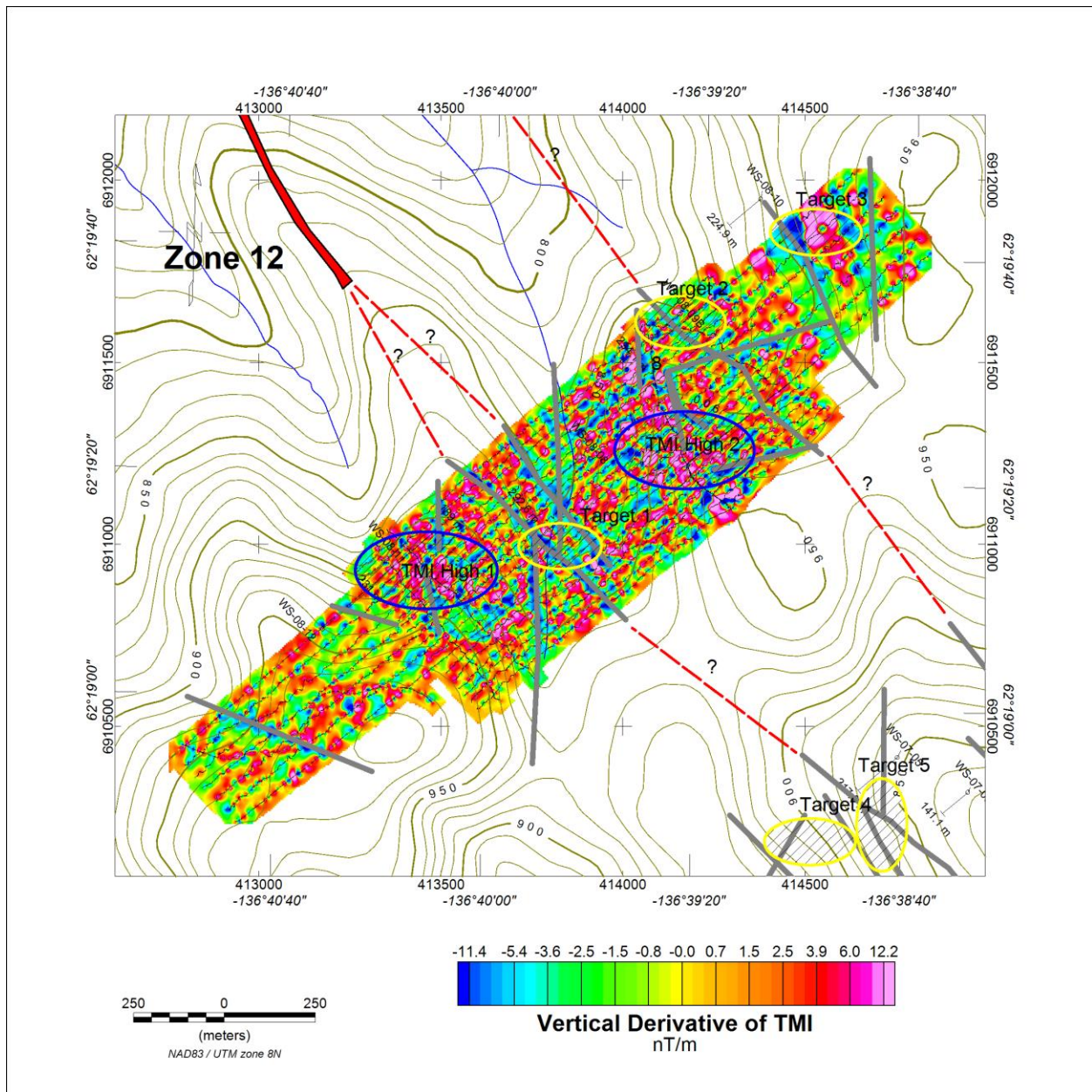


Figure 3: WS North vertical derivative of TMI.



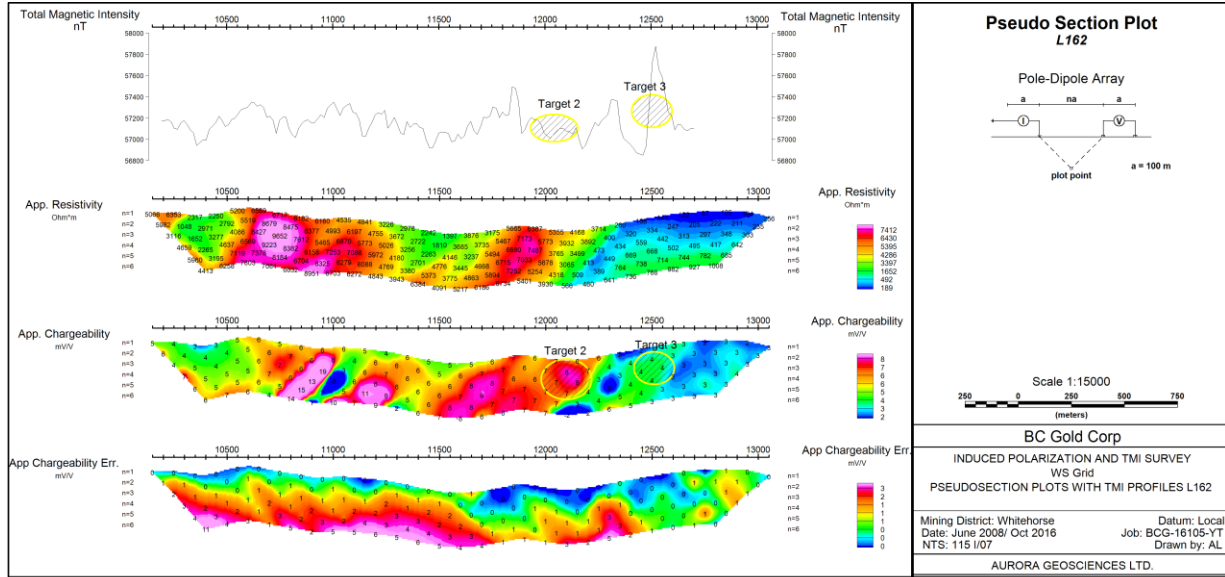


Figure 4: L162 pseudosection plots with TMI profile.

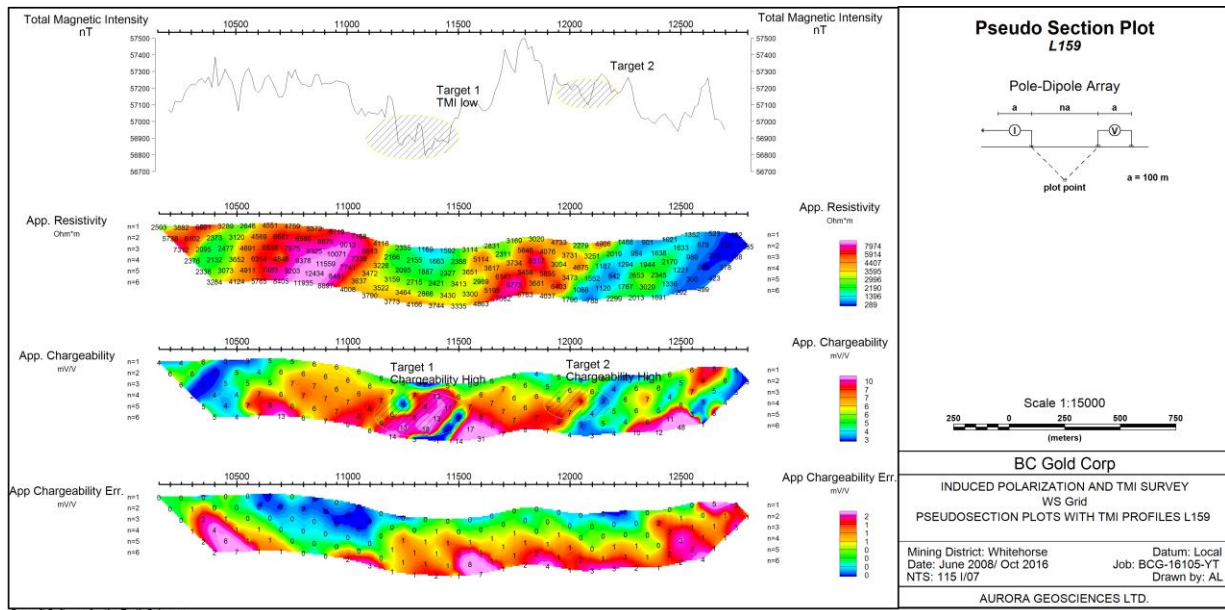


Figure 5: L159 pseudosection plots with TMI profile.

## 7.2 WS SOUTH

Target 4 is a magnetic high that has no correlation with a topographic high (Figure 6) similar to in intensity to TMI 4 which follows the ridge and is likely due to exposure, or near exposure of bedrock. It has good correlation with IP anomalies on L149 (Figure 8) where there is a broad chargeability high, and L147 (Figure 9) where there is a similar chargeability anomaly although the line wasn't completed. Previous testing of MMI soil anomalies to the east of Target 4 with WS-07-05 and WS-07-06 produced poor results.

Target 5 is an intersection of lineations trending south-east and south as seen in Figure 6. This intersection is 100 m north of the trench where mineralized samples were found in the WS south area. The SE trending lineations are roughly on strike with lineations in Target 1 and therefore on strike with Carmacks Copper's mineralized Zone 12. This group of lineations is also of interest because of several coincident anomalous MMI soils.

Target 6 is further south along the same magnetic low lineation where it intersects a southeast trending lineation (Figure 6). Downslope there is a single-sample copper-in-soil anomaly that was previously tested with diamond drill hole WS-07-07 which intersected a few stringers of mineralization but nothing significant, making this a low priority target.

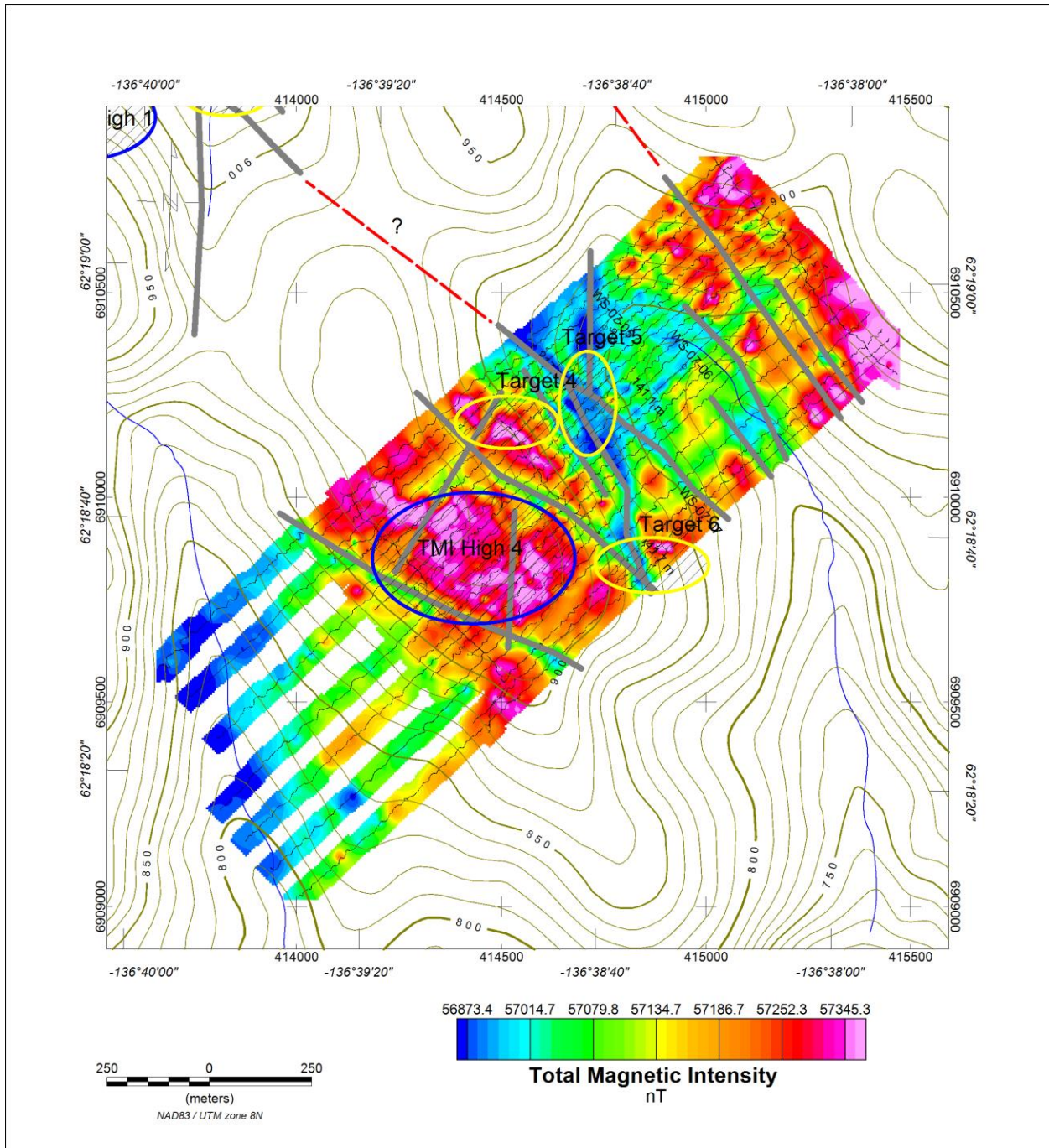


Figure 6: WS south total magnetic intensity.



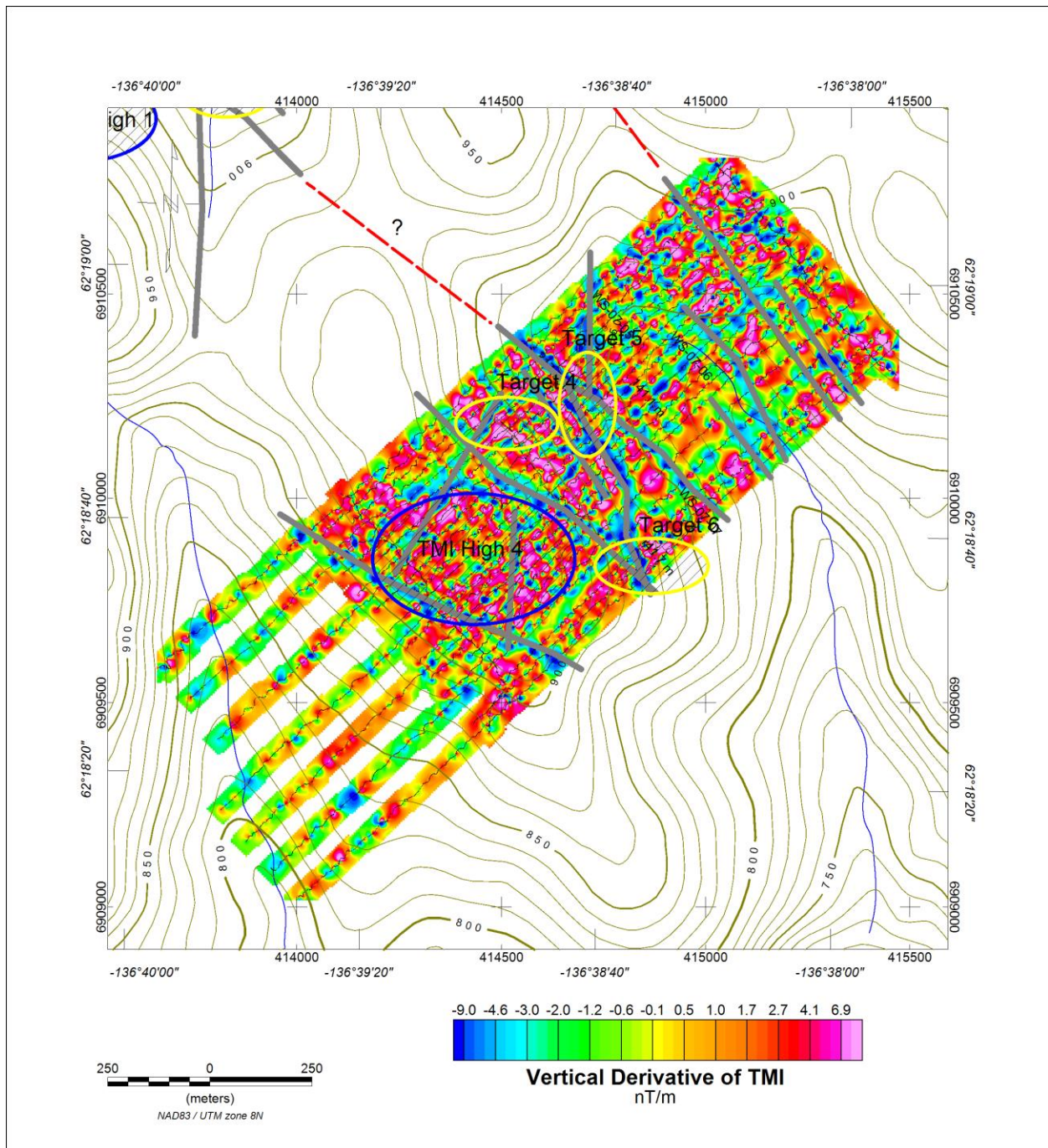


Figure 7: WS South vertical derivative of TMI.

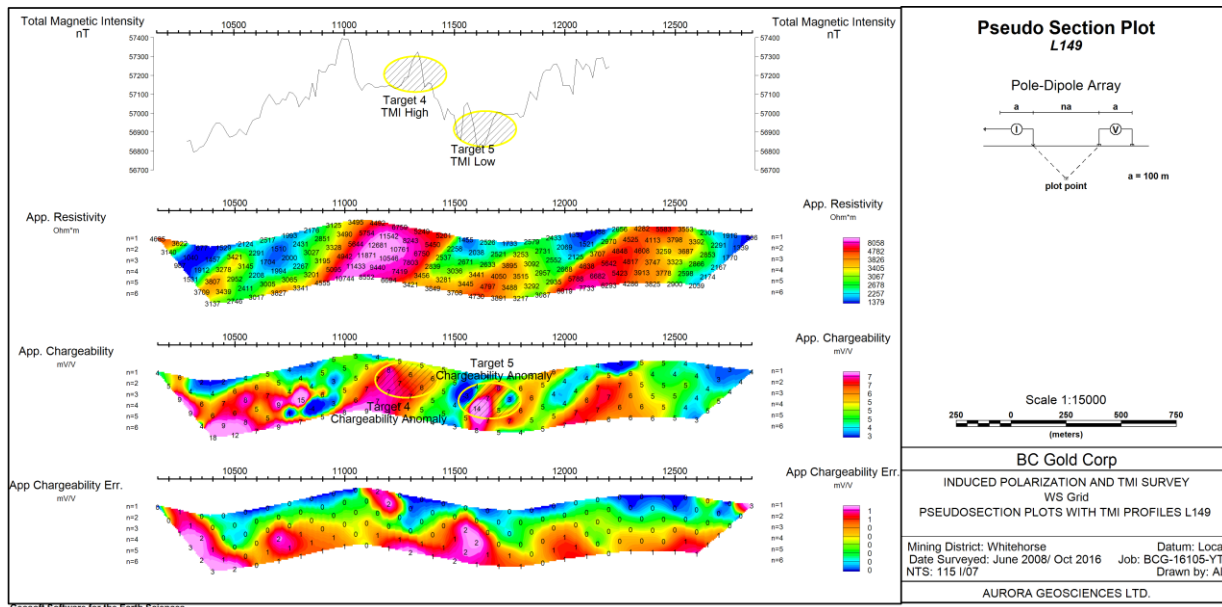


Figure 8: L149 pseudosection plots with TMI Profile.

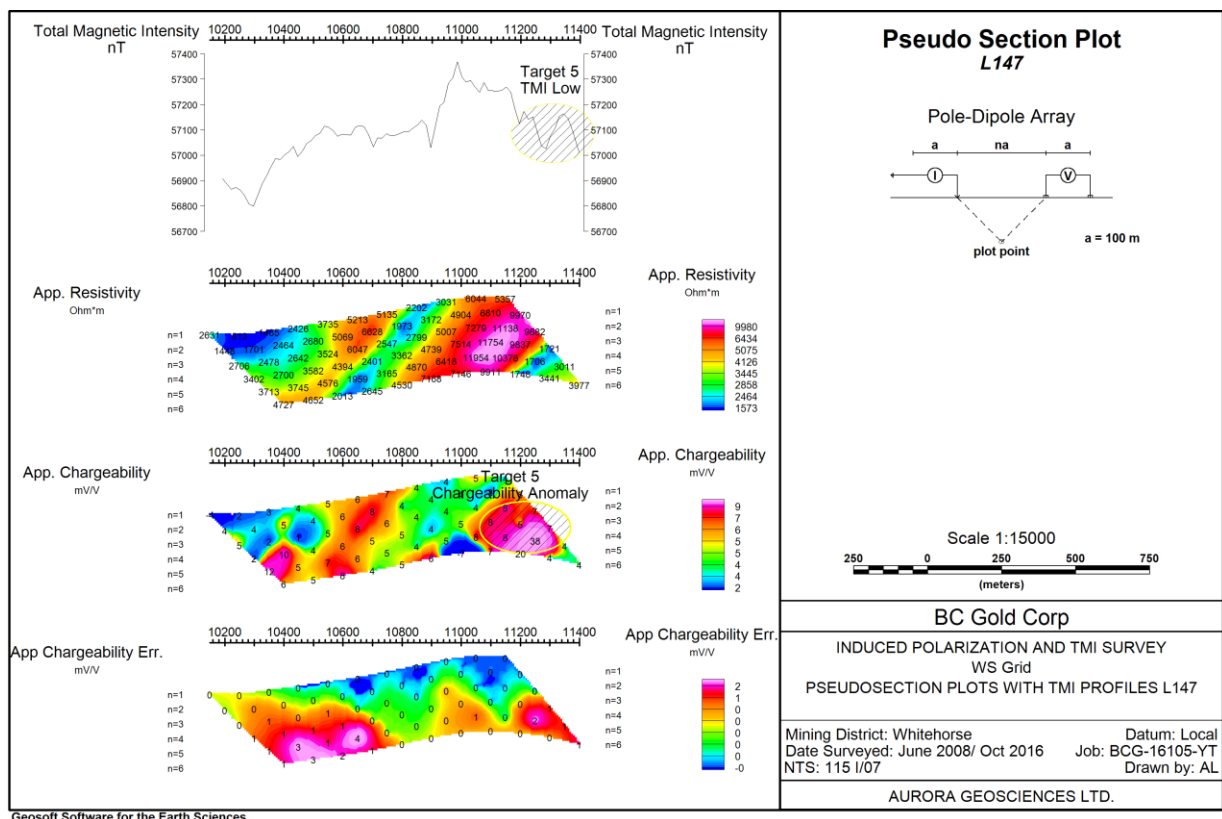


Figure 9: L147 pseudosection plots with TMI profile.



## 8 PRODUCTS

The following files are included in the digital version of this report:

Instrument Dump files \Raw\"date\"...	Name convention <WM \"date\" \"operator's initials.txt>  Raw GEM Base station magnetometer daily dump files: Name convention <BM \"date\".txt  Raw GPS positioning data files: Name convention <GPS \"date\" \"operator's initials.txt\" Name convention <GPS \"date\" \"operator's initials.gpx\"  All dump files have been left unedited
Final ASCII XYZ and Geosoft format GDB files \Final Data\...	WS North Mag Final.gdb WS South Mag Final.gdb WS North Mag Final.csv WS South Mag Final.csv
Maps in .pdf, .jpeg format and .map Geosoft packed maps format \Maps\...	WS North TMI WS South TMI WS North VD WS South VD WS Grid Map
Figures .pdf, .jpeg format \Figures\...	WS Total Magnetic Intensity Interpretation  WS North Total Magnetic Intensity  WS North Vertical derivative of TMI  L162 Pseudosection plots with TMI profile L159 Pseudosection plots with TMI profile  WS South Total Magnetic Intensity  WS South Vertical derivative of TMI  L149 Pseudosection plots with TMI profile L147 Pseudosection plots with TMI profile

Grids in .grd Geosoft grid format WS North TMI.grd  
 \Grids\... WS South TMI.grd  
 WS North VD.grd  
 WS South VD.grd  
 WS North TD.grd  
 WS South TD.grd

This Report and Crew Log BCG-16105-YT WS Mag Crew log.pdf  
 in .pdf format

<b><u>Channel</u></b>	<b><u>Description</u></b>
UTME_Z8N_NAD83	UTM Easting as NAD83 Zn 8N in meters
UTMN_Z8N_NAD83	UTM Northing as NAD83 Zn 8N in meters
X	Grid X
Y	Grid Y
Raw_Mag	Uncorrected, raw magnetic reading as nT
Base_Mag	Uncorrected, raw magnetic readings interpolated from the base mag database for that day as nT
sq	Signal Quality Indicator
Time	Time in HH:MM:SS.S
NLF_Cor_Mag	Non linear Filtered magnetic reading.
Cor_Mag	Diurnal corrected magnetic reading as nT
Final_Mag	Final leveled magnetic reading as nT
Cross_Level	The value of the reading at the same location in the line in nT
Cross_Diff	The difference between the reading on the line and the tie line in nT
Cross_Grad	The gradient of the tie line at the intersection point in nT

Respectfully submitted,

Andre Lebel,

Geophysicist

Aurora Geosciences Ltd

## Appendix I

## Project Log



## BCG-16105-YT WS mag

		Andre Lebel	Hannah Warrington	
	<b>Current Job</b>	<b>7</b>	<b>7</b>	
	<b>Jun 2016 Totals</b>	0	0	
	<b>Jul 2016 Totals</b>	0	0	
	<b>Aug 2016 Totals</b>	0	0	
	<b>Sep 2016 Totals</b>	1	1	
	<b>Oct 2016 Totals</b>	6	6	
	<b>Fri 3-Jun-2016</b>			
	<b>Wed 28-Sep-2016</b>			
	<b>Thu 29-Sep-2016</b>			
	<b>Fri 30-Sep-2016</b>	Mobe	Mobe	
	<b>Sat 1-Oct-2016</b>	Walk-Mag	Walk-Mag	
	<b>Sun 2-Oct-2016</b>	Walk-Mag	Walk-Mag	
	<b>Mon 3-Oct-2016</b>	Walk-Mag	Walk-Mag	
	<b>Tue 4-Oct-2016</b>	Walk-Mag	Walk-Mag	
	<b>Wed 5-Oct-2016</b>	Walk-Mag	Walk-Mag	
	<b>Thu 6-Oct-2016</b>	Demobe	Demobe	
	<b>Fri 7-Oct-2016</b>			
	<b>Sat 8-Oct-2016</b>			



## Production Summary - BCG-16105- YT WS mag

	<b>BCG-16105-YT WS mag</b>	
	Walk mag	Grid - Line
<b>Current Job</b>	<b>75.000</b>	
<b>Wed 28-Sep-2016</b>		
<b>Thu 29-Sep-2016</b>		
<b>Fri 30-Sep-2016</b>		
<b>Sat 1-Oct-2016</b>	11.3	WS N - L16250 - L16075
<b>Sun 2-Oct-2016</b>	13.8	WS N - L16050 - L15750
<b>Mon 3-Oct-2016</b>	18	WS S - 14400 - 14950
<b>Tue 4-Oct-2016</b>	18.8	WS-S 14425 - 15000
<b>Wed 5-Oct-2016</b>	13.1	WS-N L16200 - L15775
<b>Thu 6-Oct-2016</b>		
<b>Fri 7-Oct-2016</b>		
<b>Sat 8-Oct-2016</b>		
<b>Sun 9-Oct-2016</b>		
<b>Mon 10-Oct-2016</b>		
<b>Tue 11-Oct-2016</b>		



## BCG-16105-YT WS mag

**DATE:**

Friday, September 30, 2016

**PREPARED BY:**

Andre Lebel

### Comments

Weather

Clear 5C

### LOGISTICS

Type	Contractor	Hrs. or units
Truck	Aurora	1
ATV w ATV Trailer	Aurora	1

### Notes (production comments, incidents, other)

Mobe day. Andre and Hannah left Whitehorse at 10 am and arrived at the Carmacks copper camp at 2pm. Spent the rest of the day setting up the camp at the Carmacks Copper camp site. Drove out to the grid to check out the condition of the access road once finished with the camp.



# BCG-16105-YT WS mag

<b>DATE:</b>	Saturday, October 01, 2016
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<b>PREPARED BY:</b>
<b>Andre Lebel</b>

<b>Comments</b>
Weather Clear 5C

<b>LOGISTICS</b>		
<i>Type</i>	<i>Contractor</i>	<i>Hrs. or units</i>
Truck	Aurora	1
ATV w ATV Trailer	Aurora	1

<b>Notes (production comments, incidents, other)</b>
<p>Started the Mag on the northern most lines of the WS north grid. Hannah had issues with her internal battery in her mag, it only lasted until 2pm. We switched out the battery for another one at the end of the day.</p>



## BCG-16105-YT WS mag

<b>DATE:</b>	Sunday, October 02, 2016
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<b>PREPARED BY:</b>
Andre Lebel

<b>LOGISTICS</b>		
Type	Contractor	Hrs. or units
Truck	Aurora	1
ATV w ATV Trailer	Aurora	1

### Comments

#### Weather

Clear 0C

### Notes (production comments, incidents, other)

Finished the lines of the WS north grid. Drove down to the WS south grid at the end of the day to make sure it was passable.





**BCG-16105-YT WS mag**

**DATE:** Sunday, October 03, 2016

**PREPARED BY:**  
Andre Lebel

**Comments**

**Weather**  
Clear 5C

**LOGISTICS**

Type	Contractor	Hrs. or units
Truck	Aurora	1
ATV w ATV Trailer	Aurora	1

**Notes (production comments, incidents, other)**

Started the WS south grid at southern most line. Got the majority of the grid done by the end of the day.



**BCG-16105-YT WS mag**

**DATE:** Tuesday, October 04, 2016

**PREPARED BY:**  
Andre Lebel

**Comments**

**Weather**  
Clear 0C

**LOGISTICS**

Type	Contractor	Hrs. or units
Truck	Aurora	1
ATV w ATV Trailer	Aurora	1

**Notes (production comments, incidents, other)**

Finished the WS south grid and started the infills. Got all the infills but three done by the end of the day.



**BCG-16105-YT WS mag**

**DATE:** Wednesday, October 05, 2016

**PREPARED BY:**  
Andre Lebel

**Comments**  
Weather  
Clear 0C

<b>LOGISTICS</b>		
<i>Type</i>	<i>Contractor</i>	<i>Hrs. or units</i>
Truck	Aurora	1
ATV w ATV Trailer	Aurora	1

**Notes (production comments, incidents, other)**  
HW did infills on the WS North from L15775 to L16025. AL did the east extensions from L16200 to L15900 and infilled the western extensions to 50m. Collected a few samples for mag susceptibility readings once the mag was finished.



**BCG-16105-YT WS mag**

**DATE:** Thursday, October 06, 2016

**PREPARED BY:**  
Andre Lebel

**Comments**  
Weather  
Clear OC

<b>LOGISTICS</b>		
<i>Type</i>	<i>Contractor</i>	<i>Hrs. or units</i>
Truck	Aurora	1
ATV w ATV Trailer	Aurora	1

**Notes (production comments, incidents, other)**  
Packed up the gear and demobed back to Whitehorse. Left camp at 12:30 pm and arrived in Whitehorse at 4pm.

**Appendix II**

---

**References**

Drury, I and Kramar, S., 2008. Induced polarization survey preliminary field report. Report by Aurora Geosciences Ltd. for BC Gold Corp.

Dzuiba, F., 2009. Memorandum: Carmacks 2009 IP Surveys. Report by Aurora Geosciences Ltd. for BC Gold Corp.

Pautler, J. 2016. Yukon Mineral Exploration Program Proposal for a Target evaluation program on the WS Project. Proposal by J. Pautler for BC Gold Corp.