Ontario

We are committed to providing accessible customer service.
If you need accessible formats or communications supports, please contact us.

Nous tenons à améliorer l'accessibilité des services à la clientèle.
Si vous avez besoin de formats accessibles ou d'aide à la communication, veuillez nous contacter.

Assessment Report Based on the 2020 Volterra-TDEM Geophysical Survey and Outcrop Mapping Program

Foy Offset Project

Foy and Bowell Townships

Chris Verzyden, P.Geo

Senior Project Geologist

KGHM International

Exploration Services

March 2021

Summary

This report describes the work completed for the Volterra Time-Domain Electromagnetic (TDEM) survey that was completed in 2020.

The TDEM survey was completed in 23 days between August 19th and September 10th, 2020 by SJ Geophysics Ltd and covered 42 line kilometers across the Foy and Bowell townships. Results are recorded in the NAD83 UTM 17N coordinate system using GPS equipment supplied by SJ Geophysics Ltd.

The total expenditures for the work reported herein were $212,861.00.

Table of Contents

List of Figures

List of Tables

Introduction

The Foy Offset Project described in this report is a westerly-trending block of four contiguous claim groups which lie on or adjacent to the Foy Offset quartz diorite dike. One of the claim groups, the Foy-Bowell property, is jointly owned by FNX Mining Company Inc. ("FNX", a subsidiary or KGHM International Ltd., "KGHMI") and Glencore Canada (Glencore). Another one of the claim groups, the Canhorn property, is jointly owned by FNX, Glencore and Vale Canada Limited ("Vale"). The other two claim groups, the Rand property and North Range property, are wholly owned by FNX.

Property Location and Access

The Foy Offset Project is best accessed by driving north from Sudbury through Valley East. Turn left on Desmarais Road and continue north for approximately 3.2 kilometers until the road turns sharply left, becoming Nelson Lake Road. Continue on the road west for approximately 10 kilometers, past the turn towards Nelson Lake, until reaching a locked gate maintained by Vale. Once past the gate, continue west along the road for approximately 7.5 kilometers until reaching the middle of the Foy Offset Project area. See Figure 1 for the route to the property.

Access to the middle of the project area is passable but is not regularly maintained. Once reaching the Canhorn property, an all-terrain vehicle is recommended for accessing the older road and trail network.

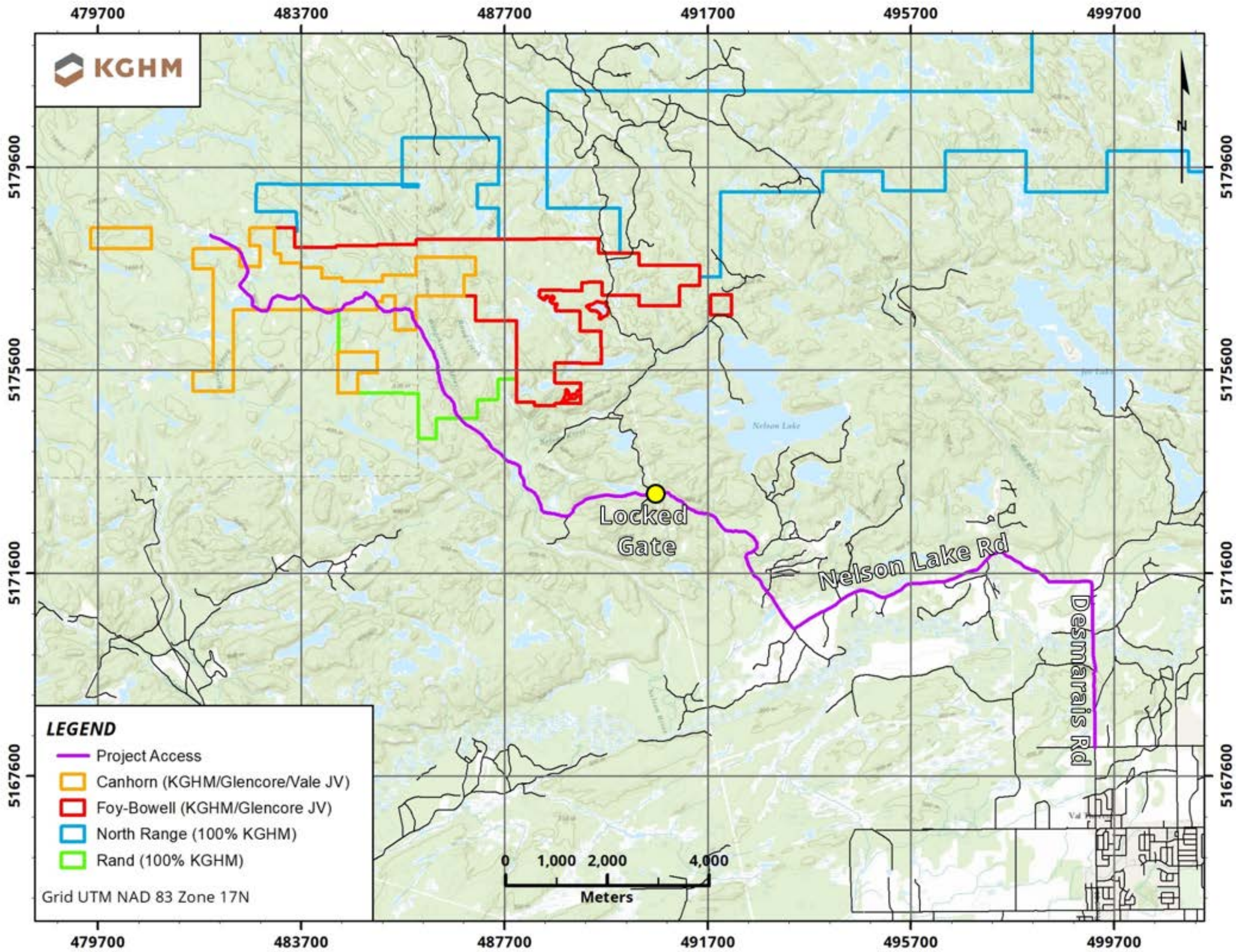

Figure 1: Foy Offset Project Location and Access

Claim Status

Work reported herein was conducted on patented claims co-owned by FNX, Glencore and Vale, as well as unpatented claims 100% owned by FNX. Land tenure is divided into 4 claim groups referred to as the Canhorn, Foy-Bowell, North Range and Rand properties.

The Canhorn property consists of 43 patented mining claims, where ownership is shared between FNX, Glencore and Vale. The Foy-Bowell property consists of 65 patented mining claims, 4 single cell mining claims and 1 license of occupation with ownership shared between FNX and Glencore. The North Range property consists of 63 boundary cell mining claims, 18 multi-cell mining claims and 1 single cell mining claim. The Rand property consists of 8 boundary cell mining claims and 34 single cell mining claims. Both the North Range and Rand properties are 100% owned by FNX. The Canhorn, Foy-Bowell and Rand properties all lie within both the Foy and Bowell townships, and the North Range property lies within the Foy, Bowell, Wisner and Hutton townships. The work described in this report was completed in the Foy and Bowell townships. For a layout of these claim groups in relation to the work program area, see Figure 2. For a listing of the individual claim status, see Appendix A.

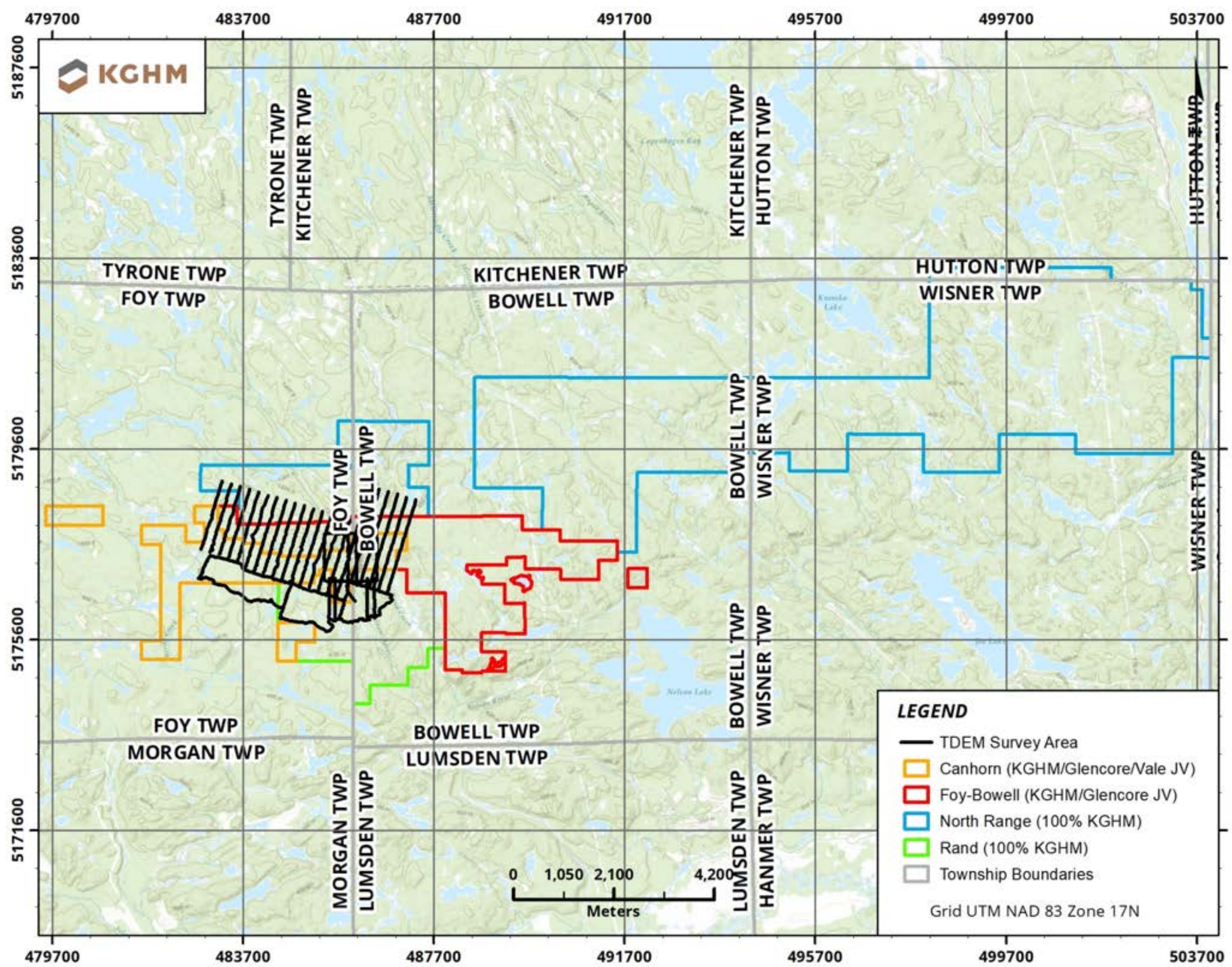

Figure 2: Foy Offset Claim Groups Layout

Regional Geology

The Foy Offset Dyke is the largest of the known radial offset dykes emanating from the base of the SIC (a region referred to as the “mouth”) along a west-northwest trajectory. The mouth of the Foy Offset Dyke is located in south-central Bowell Township between Roland Lake and the northern tip of Nelson Lake. At its mouth the dyke is approximately 400 meters wide, but narrows to 210 meters at Nickel Lake (1.5 kilometers to the northwest). Further west, within the Northwest Foy portion of the joint venture property, dyke width ranges between 50 to 100 meters. Approximately 500 meters north of the Northwest Foy Property, the Foy Offset Dike is intersected by the concentric Hess Offset Dyke.

The Foy Offset Dyke intrudes Archean granitoid country rocks consisting of granite, granodiorite to hornblende granodiorite, migmatitic hornblende (biotite) gneiss and hornblende gneiss diabase. The abundance of diabase dykes striking sub-parallel to the offset may indicate that the Foy Offset Dyke intruded a previously existing structure.

At least four northwest-striking regional faults cut the offset dyke. From east to west they are: the Rand Creek Fault (lateral displacement of approximately 200 meters); the Wingekisinaw River Fault (lateral displacement of approximately 650 meters); the Bear Lake Fault (lateral displacement of approximately 200 meters); and the Sandcherry Creek Fault (lateral displacement of approximately 700 meters).

Mineralization in the Foy Offset Dyke occurs mainly as pods, lenses and veins of massive, semi-massive and disseminated sulphide minerals, mainly pyrrhotite, pentlandite and chalcopyrite in localized areas.

History

The Foy Offset Dyke has been explored for many years by different groups. Various geological mapping and diamond drilling programs have been carried out along the Foy Offset Dyke, especially near Nickel Lake on the eastern side of the Canhorn and Foy-Bowell properties.

From 2000 to 2008 Aurora Platinum conducted several work programs in the project area, including geological mapping, Beep-Mat prospecting and diamond drilling. During this time an AeroTEM airborne electromagnetic and magnetic survey was flown by Aeroquest Limited (2000), and a MegaTEM airborne electromagnetic and magnetic survey was flown by Fugro Airborne Surveys (2001). In 2003 a surface UTEM-3 / Magnetometer survey was completed by Lamontagne Geophysics Ltd.

In 2009 a helicopter-based gravimetric survey was completed by Sander Geophysics Limited for FNX, having acquired the properties from Aurora Platinum. In addition to gravimetric data, high resolution LiDAR data was collected.

In 2013 KGHMI (having acquired FNX) completed a geological mapping and prospecting program on the North Range property. The following year a geological mapping and prospecting program was completed on the Rand property.

In 2015 KGHMI completed a Soil Gas Hydrocarbon (SGH) survey on the property. Analysis of samples and interpretation was performed by Activation Laboratories Ltd.

Volterra Time-Domain Electromagnetic Survey

Introduction

In 2020 KGHMI contracted SJ Geophysics Ltd. to acquire Volterra Time-Domain Electromagnetic (TDEM) fixed loop data on the Foy Offset Project. Fixed loop EM data was acquired along 21 survey lines utilizing two loops oriented at 20^{o}, and an additional 6 survey lines utilizing one loop oriented at 0^{o}. The survey grid was planned with a line spacing of 200 meters and individual station spacing of 25 meters.

The survey grid did not utilize cut lines; crew members navigated along the survey lines to planned station locations using hand-held GPS units. The transmitting loops were established in a similar fashion.

At the beginning of the survey, KGHMI directed SJ Geophysics to modify the station spacing based on the distance from the loop. A station spacing of 25 meters was used for the first 500 meters of each line, then 50 meter spacing for the next 500 meters, and then 100 meter spacing until the end of the line. Reading lengths were increased on more distal stations in order to provide cleaner data.

There were 2 specific modifications to the Canhorn grid during the survey. The first was the combining of loops 1 and 2 into one loop (Loop 1 & 2) due to poor site access. The second was related to preliminary results which suggested that an additional loop (Loop 5) with six lines would provide added definition of areas of interest identified from Loop 4.

The initial survey plan estimated 30.9 line kilometers, however by the end of the survey a total of 36.1 line kilometers were completed on the original grid, and 5.9 line kilometers were added for a total of 42 line kilometers. The final survey grid is shown in Figure 3.

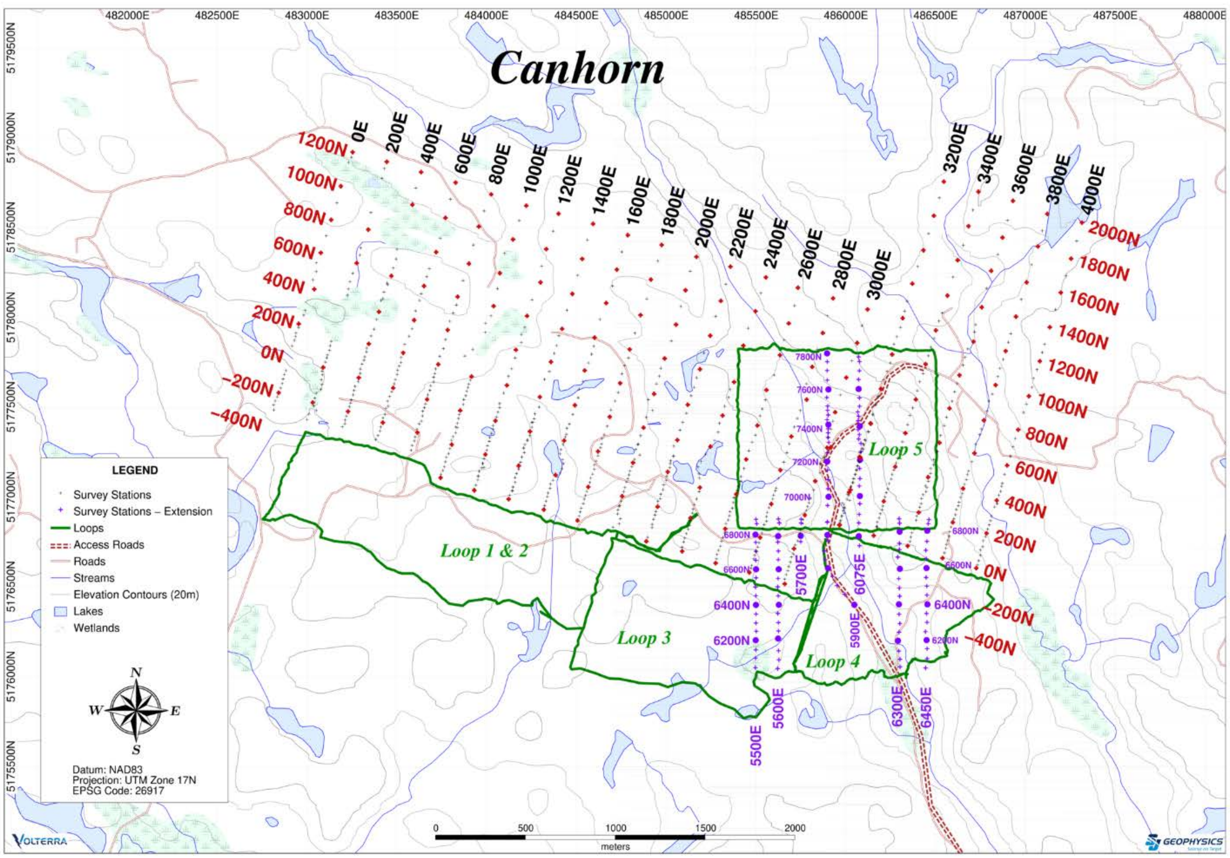

Figure 3: Final TDEM Survey Grid at Foy Offset Project (from SJ Geophysics)

Survey Methodology

Design

The Volterra Acquisition System was used to acquire time-domain electromagnetic data. Each Volterra acquisition unit records full-waveform data from attached sensors. The recorded data was then passed through proprietary signal processing software to calculate the geophysical response. Android tablets were used to view decimated raw data in real-time via a Bluetooth connection to the data acquisition unit. The signal (raw data) visible on the tablet enabled the operators to verify the transmitter waveform and to see that the sensors were functioning correctly.

Using induction magnetometers (B-field) connected to a Volterra data acquisition unit, measurements of the induced magnetic field were made along each survey line at regular intervals. At each measurement station, two components of the transient magnetic field were measured; vertical (Hz) and horizontal in-line (Hx). The induction magnetometers were aligned using a compass and bubble level and a declination of 60^{o} was used when orienting the horizontal induction magnetometers.

To investigate the possibility of deep conductors requires late time gates. Late time gates have low amplitude and can be overwhelmed by cultural noise, therefore longer measurements away from the loop edges were done in an effort to reduce late-time noise through additional stacking. A recording length of 120 seconds was used near the loop edge, lengthening to 180 seconds and finally 240 seconds on the distal edges of the loop.

Data Collection

To create the required TDEM signals for the survey, large transmitter loops were used. The primary field was generated using a single SJ Geophysics EMTX 3000 transmitter connected to the loops. The SJ Geophysics EMTX 3000 sent a square, 100% duty cycle waveform through the loop and was powered by a gas powered generator. The Foy Offset Project grid used base frequencies of 30 and 33 Hz. 30 Hz was specified by KGHMI’s geophysical consultant to gain more stacking thereby reducing late time noise, while the change to 33 Hz was made to reduce power-line noise. Summaries of the survey parameters are shown in Tables 1 to 3.

Table 1: Foy Offset Project EM Loop Parameters

Category	***Loop 1-2***	***Loop 3***	***Loop 4***	***Loop 5***
Dimensions (m) (approx.)	*1800 x 550*	*1200 x 700*	*950 x 700*	*1100 x 1000*
Base Frequency (Hz) (approx.)	*33*	*33*	*30*	*33*
Loop Resistance (Ω) (approx.)	*52*	*38*	*34*	*42*
Loop Peak-Peak Current (A) (approx.)	*8*	*11*	*13*	*10*

Table 2: TDEM Recording and Transmitting Parameters

Survey Technique	Fixed-Loop Time Domain EM
EM Signal Recording	Volterra Data Acquisition Unit (8200 Series)
Sensor (B-Field)	ANT-23 Induction Magnetometer (SN#3523, 2023, 2123) ANT-9 Induction Magnetometer (SN# 019, 029) ANT-5 Induction Magnetometer (SN# 105, 195, 215)
Measured Component	Z, X components
Sample Rate	16,000 samples/second
Reading Length	90 – 240 seconds
EM Signal Processing	CSProc
EM Transmitter	EMTX 3000 (SN# TX3009 & OS3016)
Waveform / Duty Cycle	Square / 100%
Base Frequency	30 Hz & 33 Hz
Loop Resistance	34 to 52 Ω
Current	8 to 13 A; peak to peak

Table 3: Foy Offset Project Survey Detail

Line	Loop	Start Station	End Station	Survey Length (m)	Station Spacing (m)	Components Measured	Base Frequency (Hz)
0	1&2	-350	1200	1,550	25,50,100	Z, X	33
200	1&2	-350	1200	1,550	25,50,100	Z, X	33
400	1&2	-350	1200	1,550	25,50,100	Z, X	33
600	1&2	-350	1200	1,550	25,50,100	Z, X	33
800	1&2	-350	1200	1,550	25,50,100	Z, X	33
1000	1&2	-450	1200	1,650	25,50,100	Z, X	33
1200	1&2	-450	1200	1,650	25,50,100	Z, X	33
1400	1&2	-450	1200	1,650	25,50,100	Z, X	33
1600	1&2	-450	1200	1,650	25,50,100	Z, X	33
1800	1&2	-450	1200	1,650	25,50,100	Z, X	33
2000	1&2	-450	1200	1,650	25,50,100	Z, X	33
2200	3	-450	1200	1,650	25,50,100	Z, X	33
2400	3	-450	1200	1,650	25,50,100	Z, X	33
2600	3	-450	1200	1,600	25,50,100	Z, X	33
2800	3	-450	1200	1,650	25,50,100	Z, X	33
3000	3	-450	1200	1,650	25,50,100	Z, X	33
3200	4	-50	2000	2,050	25,50,100	Z, X	30
3400	4	-50	2000	2,050	25,50,100	Z, X	30
3600	4	-50	2000	2,050	25,50,100	Z, X	30
3800	4	-50	2000	2,050	25,50,100	Z, X	30
4000	4	-50	2000	2,050	25,50,100	Z, X	30
5500	5	6050	6875	825	50	Z	33
5600	5	6050	6875	825	50	Z	33
5700	5	6750	6875	125	50	Z	33
5900	5	6400	7800	1,400	25,50	Z, X	33
6075	5	6750	7775	1,025	25,50	Z, X	33
6300	5	6050	6900	850	50	Z	33
6450	5	6050	6900	850	50	Z	33

GPS

Location data was collected using Stonex S900A & Garmin 64s GPS units in the NAD83 UTM 17N coordinate system. The Stonex S900A units received, via satellite link (Atlas), remote base station data to achieve RTK corrections. A local reference GPS base station was setup in case the rovers failed to achieve RTK solutions and post-processing for locations was necessary.

For transmitter loops, GPS points were acquired at 25 meter spacing or less along each loop edge. On the front edge and the first 100 meters of the side lengths of the loops locations were collected using the Stonex S900A RK GPS. The location of back loop edges and sections further than 100 meters from the front edge were collected via handheld Garmin 64s GPS units.

The location of each survey station was collected and similar to the process completed on the loop edges, two different location collection techniques were used. All stations close to the loops with a 25 meter station spacing had locations collected using the RTK GPS. Survey stations further away from the loop used both handheld Garmin 64s and RTK GPS, depending on equipment availability and personnel constraints.

Field Logistics

The SJ Geophysics field crew consisted of one senior geophysicist, one field geophysicist, one to two field technicians and two to four field assistants depending on personnel availability. The crew was onsite at the Foy Offset Project from August 19th to September 10th.

Collected Data

During the field period, preliminary processed data was sent to KGHMI's consulting geophysicist for review. Any changes to the original survey design were discussed and authorized by the consulting geophysicist, which included changes to station spacing and base frequencies.

The data collected by SJ Geophysics was received by KGHMI at the completion of the survey in the following deliverables:

- EM Data
    - Processed EM data as .TEM files
    - Profile plots as .png files
- Locations – Locations of survey stations and transmitter loop as .csv files
- Grid map – Map of loop and grid locations as .pdf, .png and .tif file
- Logistics report – relevant details included in this report

KGHMI Site Visits

On June 4th, KGHMI personnel traveled to the property to verify that logging roads were still accessible. On August 6th prior to the TDEM survey at the Foy Offset Project, a KGHMI geologist traveled to the site with the SJ Geophysics' supervisor as a site tour. On October 20th two KGHMI personnel traveled to the site to investigate potential conductors identified by the final loop that was added to the EM survey

Results

Preliminary results obtained during the survey indicated a pair of small conductors towards the western edge of Loop 3, and another conductor inside of Loop 4.

Of the conductors seen by Loop 3, one appeared to sit along the edge of Loop 3, while the other was only weakly responsive and located further away on the westernmost line of Loop 3. The conductor seen by Loop 4 appeared to be the strongest, however the coupling of the loop was poor and the conductor was insufficiently resolved.

Due to inconclusive nature of these anomalies, it was decided that an additional loop be added in order to better resolve these conductors. Loop 5 was established with lines extending north-south both within the loop and to the south. See Figure 4 for an overview of the survey area and anomalies identified.

The southernmost conductor on Loop 3 (Anomaly #1) was modeled as a 70m x 100m plate at a depth of approximately 180m oriented nearly horizontal, and coincided with a historical drillhole that intersected several small veins of pyrrhotite and pyrite. The northernmost conductor on Loop 3 (Anomaly #2) was modeled as a 40m x 70m plate dipping shallowly to the north at a depth of approximately 300m and corresponded to a series of massive sulphide veins that had been intersected in past drilling campaigns in the "Crazy Creek" area. The conductor inside of Loop 4 (Anomaly #3) was modeled as a 60m x 200m plate at a depth of approximately 160m dipping shallowly to the south.

Anomaly #3 is the most interesting of the conductors observed. Not only has it never been drill tested, it sits entirely within the Rand property which is 100% owned by KGHM. It is proximal to a large regional structure striking towards the northwest, with Sudbury breccia mapped nearby. A visit to the site following the survey did not identify any surface mineralization associated with this area, as the ground cover was relatively dense. The best way to test this anomaly would be using a drill.

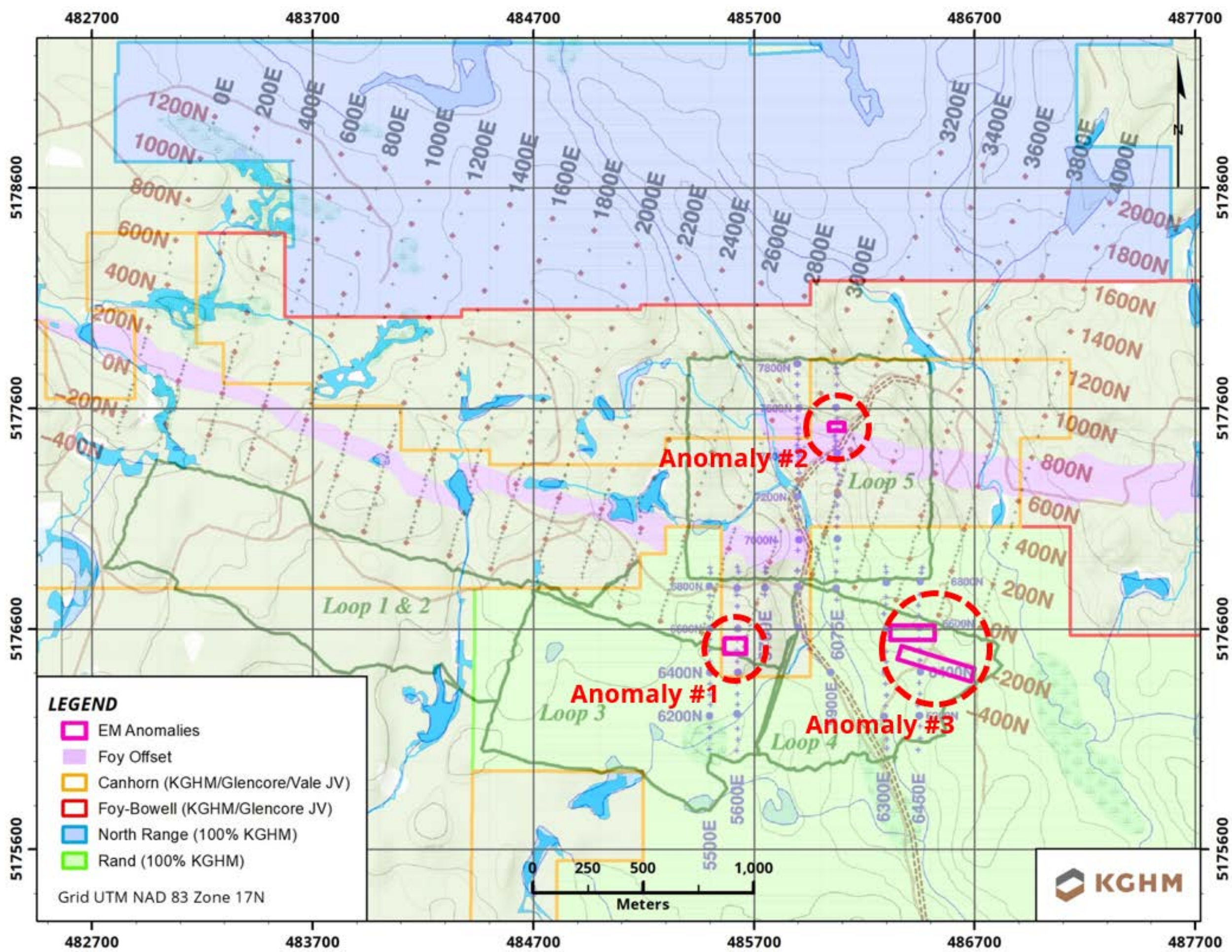

Figure 4: EM Anomalies Identified in Canhorn Survey Area

2020 Program Costs for Foy Offset Project

A summary of the 2020 program costs is shown in Table 5.

Table 4: Foy Offset Project 2020 Expenditure Summary

Foy Offset Project 2020 Work Program Expenditures		
Salaries		
Manager (Project Coordination) 1 day @ $700/day	$	700.00
Area Geologist (Project Coordination/Planning): 1 day @ $600/day	$	600.00
Senior Project Geologist (Project Supervision/Planning/Fieldwork) 7 days @ $500/day	$	3,500.00
Project Geologist (Field Crew/Planning): 3 days @ $400/day	$	1,200.00
Subtotal	**$**	**6,000.00**
Consumables		
Gasoline	$	1,213.00
Field Supplies	$	1,253.00
Subtotal	**$**	**2,466.00**
Volterra-TDEM Geophysical Survey	**$**	**204,395.00**
2020 TOTAL	**$**	**212,861.00**

Discussion and Recommendations

The EM survey was able to identify three conductors within the survey area, two of which have been tested in the past, and one that has not been tested. This untested anomaly lies within the Rand property, which is 100% owned by KGHMI. Since the area has been sufficiently mapped in the past, and much of the terrain is covered by trees and brush, the best way to investigate this conductor would be with a drill program.

Access to the area in the future by drill would be relatively easy, as past drill roads are still driveable, needing only some brush clearing on the sides in order to safely pass. The anomaly itself is at a relatively shallow depth of 160 meters, which would be fairly quick to drill once set up.

References

Allen, L., 2014. 2013 Geological Mapping/Prospecting Program, North Range Property, Foy, Wisner and Bowell Townships. Assessment File 20000008405, 39p.

Allen, L., 2014. 2014 Geological Mapping/Prospecting Program, Rand Property, Foy and Bowell Townships. Assessment File 20000008404, 37p.

Clement, Y., 2004. Surface UTEM-3 / Magnetometer Surveying of the Foy JV Property, Bowell & Foy Townships, Sudbury Mining Division. Assessment File 41I14SW2015, 45p.

Gladwin, K., 2007. 2005 Diamond Drilling Program, Foy JV Project, Foy and Bowell Townships. Assessment File 20000002297, 296p.

Gregory, S., 2008. 2007 Diamond Drilling Program, Foy JV Project, Bowell Township, Canhorn Claim Group. Assessment File 20000007882, 132p.

Gregory, S., 2008. 2007 Diamond Drilling Program, Foy JV Project, Bowell Township, Foy/Bowell Claim Group. Assessment File 20000003472, 251p.

Grant, R.W. and Bite, A., 1984. Sudbury Quartz Diorite Offset Dikes, The Geology and Ore Deposits of the Sudbury Structure, Ontario Geological Survey Special Volume 1, pp. 275-300.

Mazur, R. J., 2002. Falconbridge Option Properties: Foy and Footwall, Sudbury, Ontario. NI43-101F1 technical report prepared for Aurora Platinum Corporation by Mirador Management Co., 54p.

Tryon, A and Visser, S., 2020. Volterra-TDEM on the Foy Offset Project, Sudbury, Ontario, Canada. Logistics report prepared for KGHM International Ltd. by SJ Geophysics Ltd.

Verzyden, C., 2011. 2009 Airborne Gravimetric Survey, Foy Offset and North Range Projects, Harty, Tyrone, Foy, Bowell and Wisner Townships. Assessment File 20000006684, 61p.

Statement of Qualification

I, Christopher Verzyden of the City of Greater Sudbury, Province of Ontario, do hereby certify that:

1. I am a geologist residing at 3221 Lammi's Rd, Sudbury Ontario P3G 1M7.
2. I am a graduate of Carleton University (Ottawa, Ontario) having received a Bachelor of Science (Honours) in Earth Sciences in 2009.
3. I have been practicing in my profession as a geologist continuously since July 6th, 2009.
4. I have been an employee of KGHM International Ltd. (formerly FNX Mining Company Inc.) from July 2009 to November 2015, and February 2018 to Present.
5. The information presented in this document is true and accurate to the best of my knowledge. This information was gathered from such various sources as assessment files, publications and contractor-provided reports.
6. I performed the outcrop mapping and participated in the planning of the geophysical survey covered in this report.
7. I have no personal interest in the property covered by this report.

Dated in Sudbury, Ontario, this 5th day of April, 2021.

Respectfully Submitted,

Christopher Verzyden, B.Sc., P. Geo.
Senior Project Geologist
April 5th, 2021

Appendix A: Property Mining Claim Data

Table 5: Foy Offset Project Claims by Property

Property	Claim Type	Claim Number	Township	Ownership
Canhorn	Patented Parcel	S10932	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S10933	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S10934	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S10935	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S10936	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S10937	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S11667	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S11669	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S11670	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S11671	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S11672	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S11673	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S11674	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S11928	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S11929	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S31540	FOY	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S31541	FOY	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S31542	FOY	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S34608	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S34609	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S34610	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9553	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9554	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9555	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9617	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9618	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9619	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9620	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9621	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9622	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9623	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9624	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9625	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9626	FOY	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9627	FOY	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9628	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9725	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9726	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9727	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9729	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9730	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9731	BOWELL	Vale 50%; FNX-Glencore JV 50%
Canhorn	Patented Parcel	S9733	BOWELL	Vale 50%; FNX-Glencore JV 50%
Foy	License of Occupation	S82066	FOY	FNX-Glencore JV
Foy	Patented Parcel	5075	FOY	FNX-Glencore JV
Foy	Patented Parcel	5622	FOY	FNX-Glencore JV
Foy	Patented Parcel	S1667	FOY	FNX-Glencore JV
Foy	Patented Parcel	S25002	FOY	FNX-Glencore JV
Foy	Patented Parcel	S25003	FOY	FNX-Glencore JV
Foy	Patented Parcel	S25004	FOY	FNX-Glencore JV
Foy	Patented Parcel	S25005	FOY	FNX-Glencore JV
Foy	Patented Parcel	S25006	FOY	FNX-Glencore JV
Foy	Patented Parcel	S29408	FOY	FNX-Glencore JV
Foy	Patented Parcel	S29409	FOY	FNX-Glencore JV
Foy	Patented Parcel	S29411	FOY	FNX-Glencore JV
Foy	Patented Parcel	S29412	FOY	FNX-Glencore JV
Foy	Patented Parcel	S29640	FOY	FNX-Glencore JV
Foy	Patented Parcel	S29641	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37754	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37755	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37756	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37757	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37758	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37759	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37760	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37761	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37762	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37763	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37764	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37765	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37766	BOWELL	FNX-Glencore JV
Foy	Patented Parcel	S37771	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37772	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37773	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37774	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37775	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37776	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37777	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37778	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37790	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37791	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37792	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37793	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37794	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37795	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37796	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37797	FOY	FNX-Glencore JV
Foy	Patented Parcel	S37798	FOY	FNX-Glencore JV
Foy	Patented Parcel	S51089	FOY	FNX-Glencore JV
Foy	Patented Parcel	S55261	FOY	FNX-Glencore JV
Foy	Patented Parcel	S55262	FOY	FNX-Glencore JV
Foy	Patented Parcel	S55263	FOY	FNX-Glencore JV
Foy	Patented Parcel	S55264	FOY	FNX-Glencore JV
Foy	Patented Parcel	S55265	FOY	FNX-Glencore JV
Foy	Patented Parcel	S55342	FOY	FNX-Glencore JV
Foy	Patented Parcel	S55343	FOY	FNX-Glencore JV
Foy	Patented Parcel	S82061	FOY	FNX-Glencore JV
Foy	Patented Parcel	S82062	FOY	FNX-Glencore JV
Foy	Patented Parcel	S82063	FOY	FNX-Glencore JV
Foy	Patented Parcel	S82064	FOY	FNX-Glencore JV
Foy	Patented Parcel	S82065	FOY	FNX-Glencore JV
Foy	Patented Parcel	S82067	FOY	FNX-Glencore JV
Foy	Patented Parcel	S82068	FOY	FNX-Glencore JV
Foy	Patented Parcel	S82069	FOY	FNX-Glencore JV
Foy	Patented Parcel	S82070	FOY	FNX-Glencore JV
Foy	Patented Parcel	WD211	FOY	FNX-Glencore JV
Foy	Patented Parcel	WD212	FOY	FNX-Glencore JV
Foy	Patented Parcel	WD228	FOY	FNX-Glencore JV
Foy	Patented Parcel	WD37	FOY	FNX-Glencore JV
Foy	Single Cell Mining Claim	257526	BOWELL	FNX-Glencore JV
Foy	Single Cell Mining Claim	288137	BOWELL	FNX-Glencore JV
Foy	Single Cell Mining Claim	311465	BOWELL	FNX-Glencore JV
Foy	Single Cell Mining Claim	311466	BOWELL	FNX-Glencore JV
North Range	Boundary Cell Mining Claim	104288	WISNER	FNX
North Range	Boundary Cell Mining Claim	107730	WISNER	FNX
North Range	Boundary Cell Mining Claim	108277	WISNER	FNX
North Range	Boundary Cell Mining Claim	114112	BOWELL	FNX
North Range	Boundary Cell Mining Claim	129319	BOWELL	FNX
North Range	Boundary Cell Mining Claim	132114	FOY	FNX
North Range	Boundary Cell Mining Claim	134173	WISNER	FNX
North Range	Boundary Cell Mining Claim	146687	BOWELL	FNX
North Range	Boundary Cell Mining Claim	150182	WISNER	FNX
North Range	Boundary Cell Mining Claim	150790	BOWELL	FNX
North Range	Boundary Cell Mining Claim	162368	WISNER	FNX
North Range	Boundary Cell Mining Claim	171303	BOWELL	FNX
North Range	Boundary Cell Mining Claim	174707	WISNER	FNX
North Range	Boundary Cell Mining Claim	179910	WISNER	FNX
North Range	Boundary Cell Mining Claim	180093	BOWELL	FNX
North Range	Boundary Cell Mining Claim	180099	WISNER	FNX
North Range	Boundary Cell Mining Claim	181370	WISNER	FNX
North Range	Boundary Cell Mining Claim	184121	FOY	FNX
North Range	Boundary Cell Mining Claim	198858	WISNER	FNX
North Range	Boundary Cell Mining Claim	198859	WISNER	FNX
North Range	Boundary Cell Mining Claim	209287	BOWELL	FNX
North Range	Boundary Cell Mining Claim	215435	WISNER	FNX
North Range	Boundary Cell Mining Claim	216062	BOWELL	FNX
North Range	Boundary Cell Mining Claim	233146	FOY	FNX
North Range	Boundary Cell Mining Claim	237487	WISNER	FNX
North Range	Boundary Cell Mining Claim	237880	BOWELL	FNX
North Range	Boundary Cell Mining Claim	241490	WISNER	FNX
North Range	Boundary Cell Mining Claim	245333	FOY	FNX
North Range	Boundary Cell Mining Claim	245334	FOY	FNX
North Range	Boundary Cell Mining Claim	251440	FOY, BOWELL	FNX
North Range	Boundary Cell Mining Claim	252859	FOY	FNX
North Range	Boundary Cell Mining Claim	256949	WISNER	FNX
North Range	Boundary Cell Mining Claim	275255	BOWELL	FNX
North Range	Boundary Cell Mining Claim	281349	FOY, BOWELL	FNX
North Range	Boundary Cell Mining Claim	283955	WISNER	FNX
North Range	Boundary Cell Mining Claim	283956	WISNER	FNX
North Range	Boundary Cell Mining Claim	289843	WISNER	FNX
North Range	Boundary Cell Mining Claim	290090	WISNER	FNX
North Range	Boundary Cell Mining Claim	290679	BOWELL	FNX
North Range	Boundary Cell Mining Claim	292003	WISNER	FNX
North Range	Boundary Cell Mining Claim	292118	FOY	FNX
North Range	Boundary Cell Mining Claim	292692	WISNER	FNX
North Range	Boundary Cell Mining Claim	300190	FOY	FNX
North Range	Boundary Cell Mining Claim	302102	FOY	FNX
North Range	Boundary Cell Mining Claim	302103	FOY	FNX
North Range	Boundary Cell Mining Claim	302879	BOWELL	FNX
North Range	Boundary Cell Mining Claim	304137	WISNER	FNX
North Range	Boundary Cell Mining Claim	306884	BOWELL	FNX
North Range	Boundary Cell Mining Claim	308105	BOWELL, WISNER	FNX
North Range	Boundary Cell Mining Claim	318869	WISNER	FNX
North Range	Boundary Cell Mining Claim	319510	BOWELL	FNX
North Range	Boundary Cell Mining Claim	324926	WISNER	FNX
North Range	Boundary Cell Mining Claim	324928	WISNER	FNX
North Range	Boundary Cell Mining Claim	328387	FOY	FNX
North Range	Boundary Cell Mining Claim	328388	FOY	FNX
North Range	Boundary Cell Mining Claim	328724	BOWELL	FNX
North Range	Boundary Cell Mining Claim	332235	BOWELL	FNX
North Range	Boundary Cell Mining Claim	336431	WISNER	FNX
North Range	Boundary Cell Mining Claim	336785	WISNER	FNX
North Range	Boundary Cell Mining Claim	340793	FOY	FNX
North Range	Boundary Cell Mining Claim	341640	WISNER	FNX
North Range	Boundary Cell Mining Claim	343002	FOY	FNX
North Range	Boundary Cell Mining Claim	344829	WISNER	FNX
North Range	Multi-Cell Mining Claim	524662	FOY	FNX
North Range	Multi-Cell Mining Claim	524663	FOY, BOWELL	FNX
North Range	Multi-Cell Mining Claim	524664	BOWELL	FNX
North Range	Multi-Cell Mining Claim	524665	FOY, BOWELL	FNX
North Range	Multi-Cell Mining Claim	524666	BOWELL	FNX
North Range	Multi-Cell Mining Claim	524667	BOWELL	FNX
North Range	Multi-Cell Mining Claim	524668	BOWELL	FNX
North Range	Multi-Cell Mining Claim	524669	BOWELL	FNX
North Range	Multi-Cell Mining Claim	524670	BOWELL	FNX
North Range	Multi-Cell Mining Claim	524671	BOWELL	FNX
North Range	Multi-Cell Mining Claim	524672	BOWELL, WISNER	FNX
North Range	Multi-Cell Mining Claim	524673	WISNER	FNX
North Range	Multi-Cell Mining Claim	524674	WISNER	FNX
North Range	Multi-Cell Mining Claim	524675	WISNER, HUTTON	FNX
North Range	Multi-Cell Mining Claim	524676	WISNER, HUTTON	FNX
North Range	Multi-Cell Mining Claim	524677	WISNER, HUTTON	FNX
North Range	Multi-Cell Mining Claim	524678	BOWELL, WISNER	FNX
North Range	Multi-Cell Mining Claim	524679	BOWELL	FNX
North Range	Single Cell Mining Claim	144184	WISNER	FNX
Rand	Boundary Cell Mining Claim	120701	FOY	FNX
Rand	Boundary Cell Mining Claim	123219	FOY	FNX
Rand	Boundary Cell Mining Claim	148143	FOY	FNX
Rand	Boundary Cell Mining Claim	165896	FOY	FNX
Rand	Boundary Cell Mining Claim	167729	FOY, BOWELL	FNX
Rand	Boundary Cell Mining Claim	193449	BOWELL	FNX
Rand	Boundary Cell Mining Claim	196381	FOY	FNX
Rand	Boundary Cell Mining Claim	278685	BOWELL	FNX
Rand	Single Cell Mining Claim	106477	FOY	FNX
Rand	Single Cell Mining Claim	108063	BOWELL	FNX
Rand	Single Cell Mining Claim	120700	FOY	FNX
Rand	Single Cell Mining Claim	125524	BOWELL	FNX
Rand	Single Cell Mining Claim	125525	BOWELL	FNX
Rand	Single Cell Mining Claim	130814	BOWELL	FNX
Rand	Single Cell Mining Claim	137509	BOWELL	FNX
Rand	Single Cell Mining Claim	140132	BOWELL	FNX
Rand	Single Cell Mining Claim	162607	BOWELL	FNX
Rand	Single Cell Mining Claim	163883	BOWELL	FNX
Rand	Single Cell Mining Claim	165895	FOY	FNX
Rand	Single Cell Mining Claim	182728	BOWELL	FNX
Rand	Single Cell Mining Claim	184183	FOY	FNX
Rand	Single Cell Mining Claim	189505	BOWELL	FNX
Rand	Single Cell Mining Claim	189506	BOWELL	FNX
Rand	Single Cell Mining Claim	192650	BOWELL	FNX
Rand	Single Cell Mining Claim	219387	FOY, BOWELL	FNX
Rand	Single Cell Mining Claim	221896	BOWELL	FNX
Rand	Single Cell Mining Claim	221897	BOWELL	FNX
Rand	Single Cell Mining Claim	226712	FOY, BOWELL	FNX
Rand	Single Cell Mining Claim	238123	BOWELL	FNX
Rand	Single Cell Mining Claim	242812	BOWELL	FNX
Rand	Single Cell Mining Claim	270400	FOY	FNX
Rand	Single Cell Mining Claim	280008	FOY	FNX
Rand	Single Cell Mining Claim	282509	FOY, BOWELL	FNX
Rand	Single Cell Mining Claim	283368	FOY, BOWELL	FNX
Rand	Single Cell Mining Claim	292823	BOWELL	FNX
Rand	Single Cell Mining Claim	296570	BOWELL	FNX
Rand	Single Cell Mining Claim	299339	FOY	FNX
Rand	Single Cell Mining Claim	305500	BOWELL	FNX
Rand	Single Cell Mining Claim	308721	BOWELL	FNX
Rand	Single Cell Mining Claim	308722	BOWELL	FNX
Rand	Single Cell Mining Claim	323852	BOWELL	FNX
Rand	Single Cell Mining Claim	343726	BOWELL	FNX

Appendix B: SJ Geophysics Logistics Report

The report provided to KGHM International by SJ Geophysics Ltd, titled “Volterra-TDEM on the Foy Offset Project” is included as an attachment with this report under the folder “\Appendix B – SJ Geophysics Logistics Report”.

Logistics Report

Prepared For

KGHM Polska Miedź S.A.

Volterra-TDEM

on the

Foy Offset Project

Sudbury, Ontario, Canada

Survey conducted by SJ Geophysics Ltd.
July-September 2020

Report prepared
September 2020

Table of Contents

horn EM loop parame

Index of Figures

Index of Tables

1. Survey Summary

SJ Geophysics Ltd. was contracted by KGHM Polska Miedź S.A. to acquire Volterra Time-Domain Electromagnetic (TDEM) fixed-loop data on their Foy Offset Project. Fixed loop EM data was acquired along 41 survey lines utilizing seven loops. Table 1 provides a brief summary of the project.

Client	KGHM Polska Miedź S.A.
Project Name	Foy Offset
Project Number	SJ862
Location: **Canhorn Loops** (approximate centre of the survey areas) **Northwest Foy Loops** (approximate centre of the survey areas)	Latitude: 46°46' 14"N Longitude: 81°14' 41"W 481300E 5179700N; NAD83 UTM 17N Latitude: 46°45' 35"N Longitude: 81°12' 210"W 484500E 5178500N; NAD83 UTM 17N
Total Line Kilometres	66.125 km
Production Dates	July 29 – Sept 10, 2020

Table 1: Survey summary

The Foy Offset dyke is a 30 km long radial dyke associated with the Sudbury Igneous Complex. This project aims to identify and delineate massive sulphide nickle and copper deposits which may occur in this section of the Foy Offset Dyke. Volterra-TDEM surveying is an ideal investigative technique due to the massive nature and large conductivity contrasts of the target ore deposits.

2. Location and Access

The Foy Offset Project is located in Ontario, Canada, approximately 37 km northwest of the city of Sudbury (Figure 1).

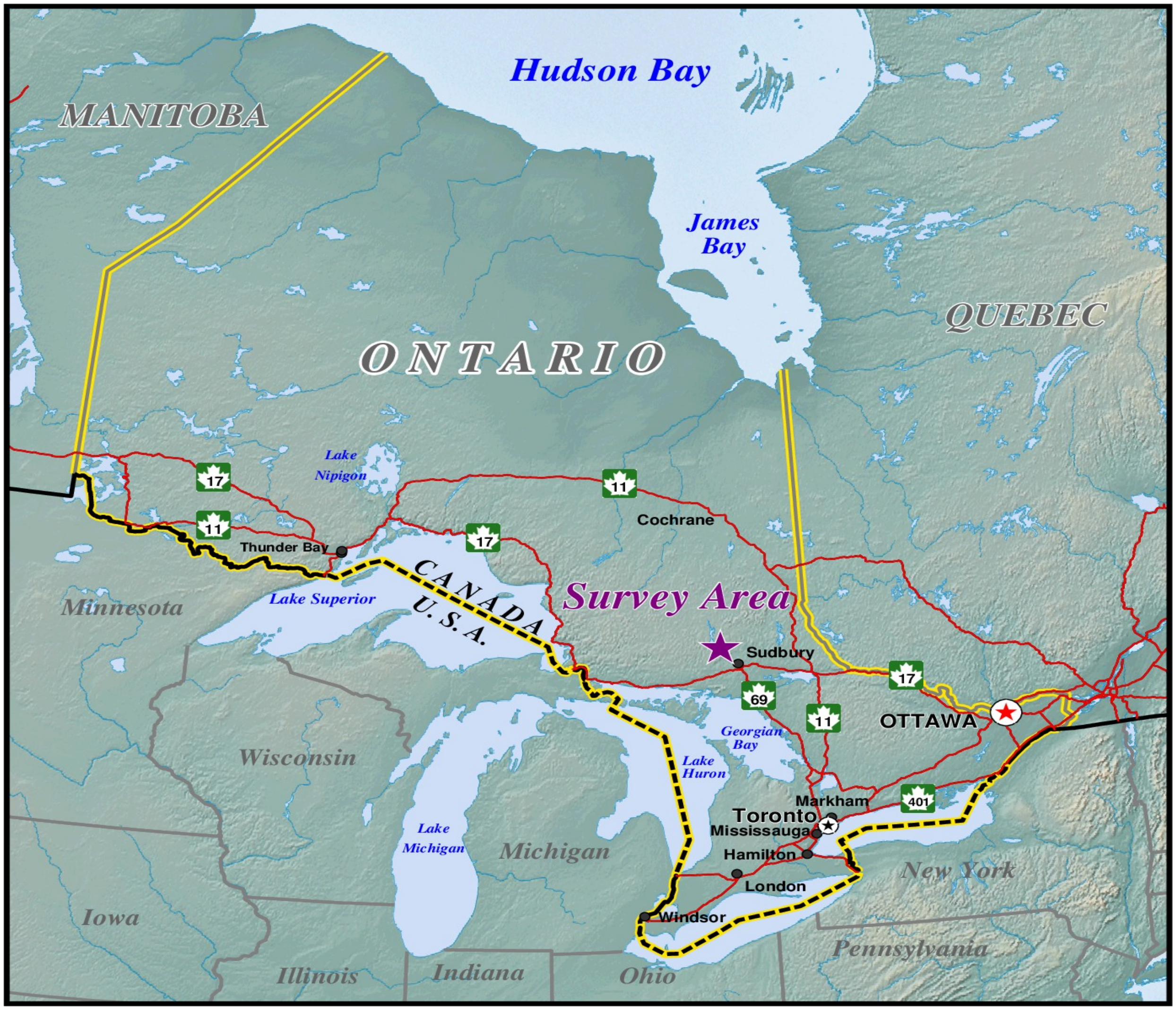

Figure 1: Overview map of the Foy Offset Project location

The project areas were accessed from Chelmsfor, 20 km northwest of Sudbury, by two different road systems. To access NW Foy, drive west on On-144N for 22 km, then right on to Regional Rd 8. Continue straight through the community of Levack and Regional Rd 8 becomes the Coleman Mine Rd. Approximately 3.5 km northeast of Levack turn left onto Seal Lake Rd.

Continue on Seal Lake Rd for 1.5 km then turn right onto an unnamed road. Continue straight for 8 km, before turning right and traveling 6.5 km to arrive at the survey area.

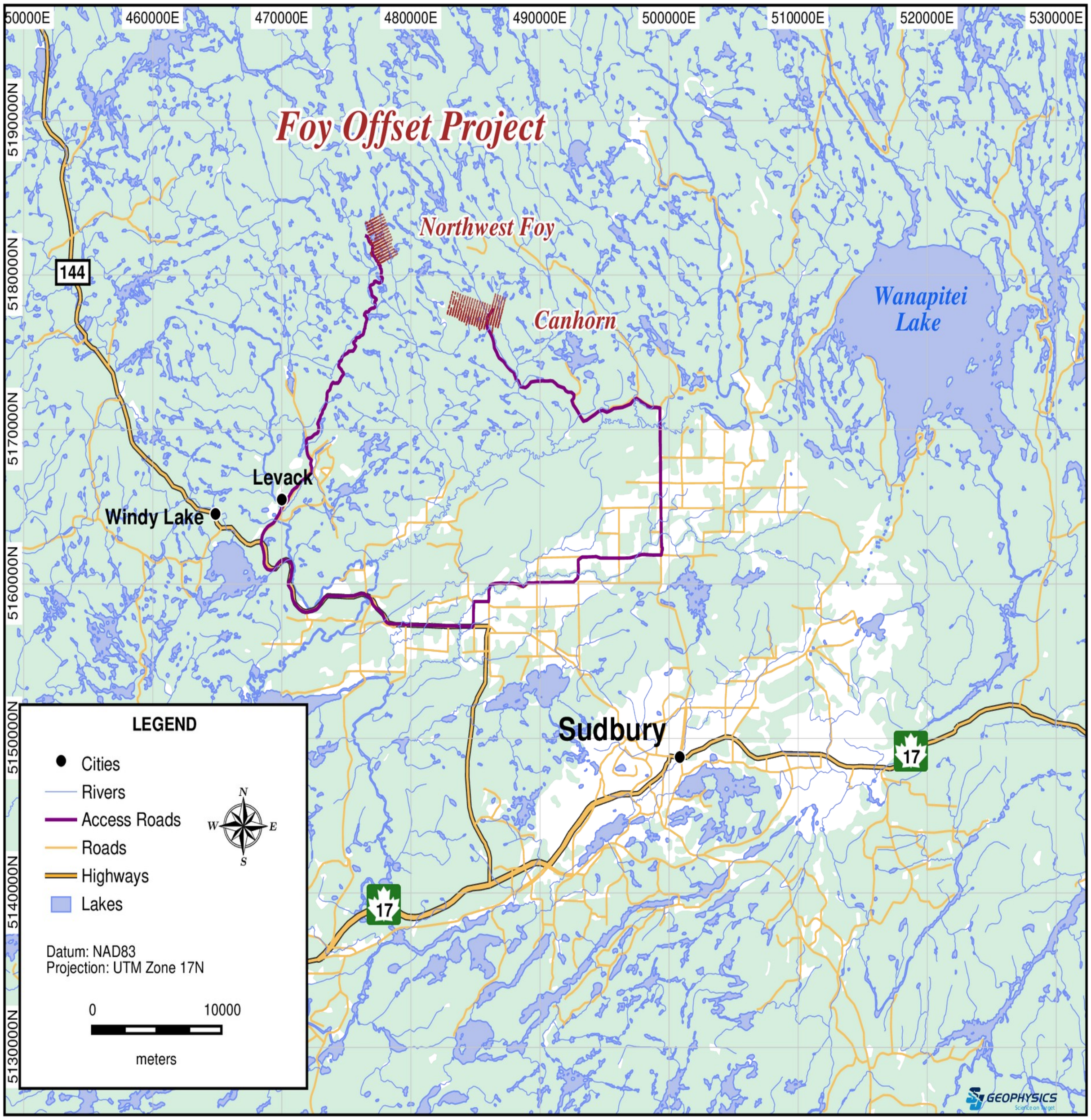

Figure 2: Local map of the survey region showing roads and access

To access Canhorn head north on Regional Rd 15 for 18 km into Val Caron, Ontario. Turn left to travel north on Regional Rd 80 for 4.6 km. Turn left onto Desmarais Rd then continue for 4.75 km onto Nelson Lake Rd. Continue on Nelson Lake Rd for 23 km. Stay left at the fork for Nelson lake fish sanctuary.

3. Survey GridVolterra-TDEM

3.1. Planned Grids

The Volterra-TDEM survey was planned to acquire data over two target areas. The first area, NW Foy, consisted of a single grid using three loops with 15 lines orientated at 60°. The second area, Canhorn, consisted of a single grid using four loops with 21 lines orientated at 20°. Orientations of the grids and loops were chosen based on local geological trends. Both grids were to have a line spacing of 200 m, and a stations spacing of 25 m.

3.2. Surveyed Grid

No line preparations were carried out in advance of the survey. Crew members navigated along the survey lines to theoretical stations in real-time using hand-held GPS units. The large loops were established in a similar fashion.

The scope of the Volterra-TDEM was reduced during data collection compared to the planned grid. At the request of the representatives of KGHM Polska Miedź S.A., the station spacing was modified to be variable depending on distance from the loop. A station spacing of 25 m was used for the first 500 m of each line, then 50 m spacing for the next 500 m and then 100 m till end of line. Reading lengths were also increased on far stations to provided cleaner data. A detailed breakdown of the survey lines is available in Appendix A. The surveyed grids are shown in Figures 3 and 4 .

There were 2 specific changes done to the Canhorn grid during the survey. The first was loops one and two were combined into one loop named Loop 1-2 due to poor site access. The second was due to preliminary results, as it was decided to survey an additional loop with six lines. The extension, labeled loop 5, focused on areas of interest identified from loop 4.

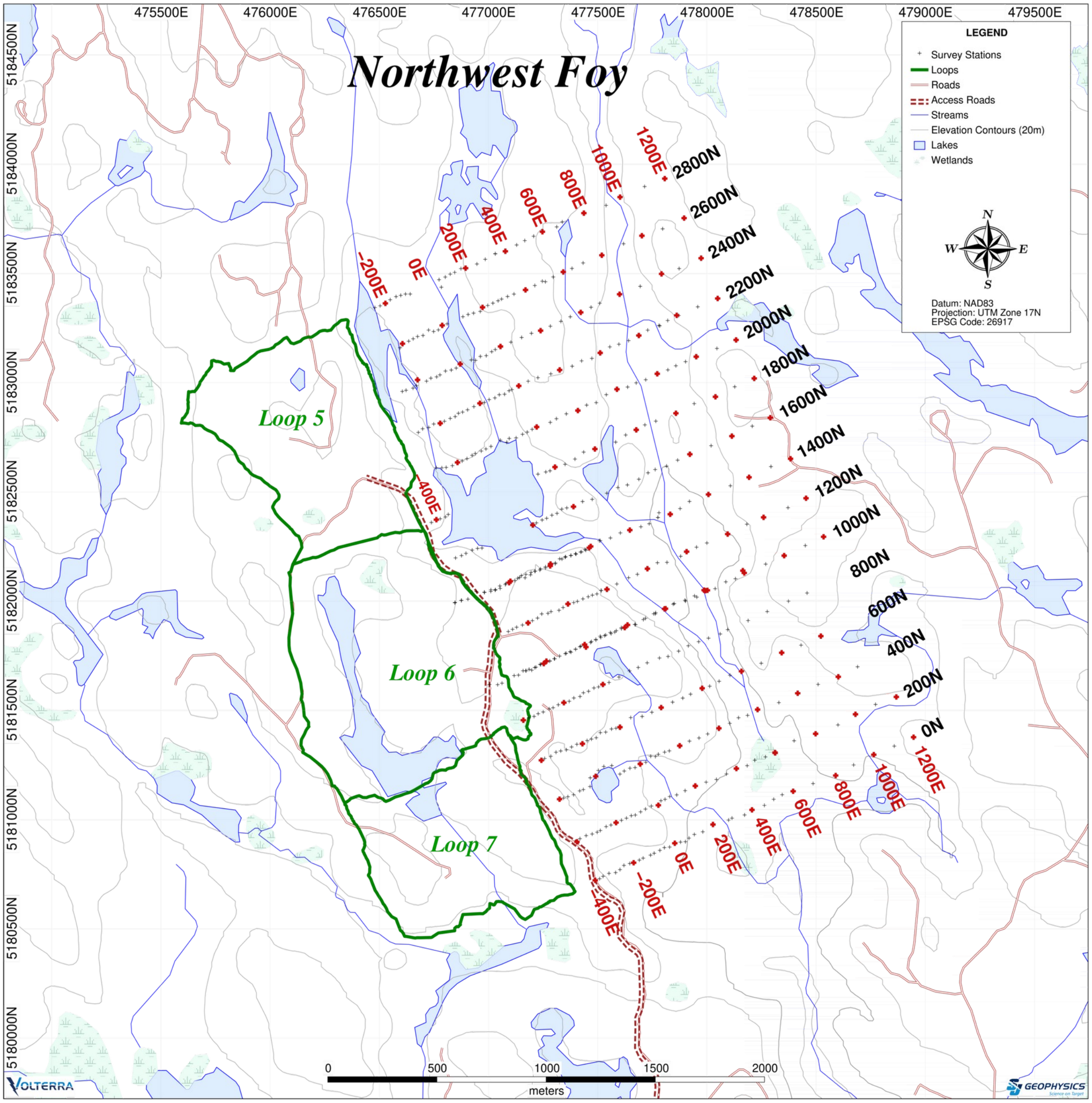

Figure 3: NW Foy grid EM loop and survey grid

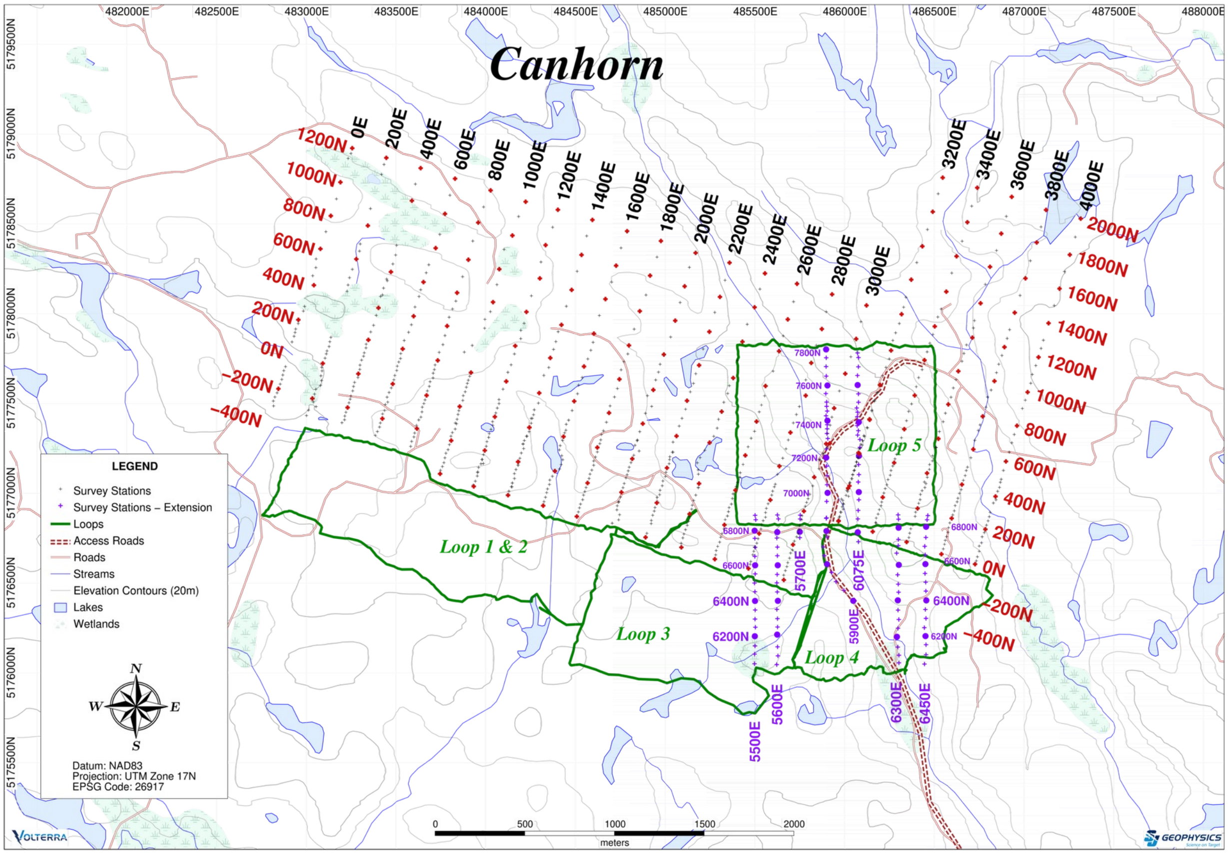

Figure 4:Canhorn EM survey area with all grid and loops including the extension, loop 5.

4. Survey Parameters and Instrumentation

4.1. Volterra-TDEM Survey Design

The Volterra Acquisition System was used to acquire time-domain electromagnetic data. Each Volterra acquisition unit records full-waveform data from attached sensors. The recorded data is then passed through proprietary signal processing software to calculate the geophysical response. Android tablets are used to view decimated raw data in real-time via a Bluetooth connection to the data acquisition unit. The signal (raw data) visible on the tablet enables the operators to verify the transmitter waveform and to see that the sensors are functioning correctly.

Using induction magnetometers (B-field) connected to a Volterra data acquisition unit measurements of the induced magnetic field were made along each survey line at regular intervals. At each measurement station two components of the transient magnetic field were measured; vertical (Hz) and horizontal in-line (Hx). The induction magnetometers were aligned using a compass and bubble level and a declination of 60º (NW Foy), 20º (Canhorn) and 0º (Canhorn extension) were used when orienting the horizontal induction magnetometers. To investigate the possibility of deep conductors requires late time gates. Late time gates have low amplitude and can be overwhelmed by cultural noise, therefore; longer measurements away from the loop edges were done in an effort to reduce late-time noise through additional stacking. A recording length of 120 seconds were used near the loop edge, lengthening to 180 seconds and finally 240 seconds on the distal edges of the loop.

4.2. EM Loops

To create the required TDEM signals for the survey, large transmitter loops were used. The primary field was generated using a single SJ Geophysics EMTX 3000 transmitter connected to the loops. The SJ Geophysics EMTX 3000 sent a square, 100 % duty cycle waveform through the loop and was powered by a gas powered generator. The NW Foy grid used a base frequency of 6 Hz while the Canhorn grid used frequencies 30 and 33 Hz. The change to 30 Hz was at the request of the client to gain more staking therefore less late time noise. It was then changed to 33 Hz to reduce power-line noise. The details of the EM loops are listed in Table 2 and Table 3.

NW Foy Grid	Loop 5	Loop 6	Loop 7
Dimensions (m) (approx.)	1000 x 700	1000 x 900	800x800
Base Frequency (Hz) (approx.)	6	6	6
Loop Resistance (Ω) (approx.)	34	38	32
Loop Peak-Peak Current (A) (approx.)	11	11	11

Table 2: NW Foy EM loop parameters

Canhorn grid	Loop 1-2	Loop 3	Loop 4	Loop 5
Dimensions (m) (approx.)	1800 x 550	1200 x 700	950 x 700	1100 x 1000
Base Frequency (Hz) (approx.)	33	33	30	33
Loop Resistance (Ω) (approx.)	52	38	34	42
Loop Peak-Peak Current (A) (approx.)	8	11	13	10

Table 3: Canhorn EM loop parameters

4.3. Acquisition Parameters

The recording and transmitting parameters used for the survey are described in Table 4. The full instrument specifications are listed in Appendix B.

Survey Technique	Fixed-Loop Time Domain EM
EM Signal Recording	Volterra Data Acquisition Unit (8200 Series)
Sensor (B-Field)	ANT-23 Induction Magnetometer (SN# 3523, 2023, 2123) ANT-9 Induction Magnetometer (SN# 019, 029) ANT-5 Induction Magnetometer (SN# 105, 195, 215)
Measured Component	Z, X components
Sample Rate	16,000 samples/second
Reading Length	90 - 240 seconds
EM Signal Processing	CSProc
EM Transmitter	EMTX 3000 (SN# TX3009 & OS3016)
Waveform / Duty Cycle	Square / 100 %
Base Frequency	6 Hz, 30 Hz & 33 Hz
Loop Resistance	32 to 52 Ω
Current	8 to 13 A; peak-to-peak

Table 4: TDEM recording and transmitting parameters

4.4. GPS

Location data was collected using Stonex S900A & Garmin 64s GPS units in the NAD83 UTM 17N coordinate system. The Stonex S900A units received, via satellite link (Atlas), remote base stations data to achieve RTK corrections. Two local reference GPS base stations were setup in case the rovers failed to achieve RTK solutions and post processing for locations was necessary. The local base stations are listed in Table 5.

For transmitter loops, GPS points were acquired at 25 m or less along each loop edge. On the front edge and first 100 m of the side lengths of the loops, locations were collected using the Stonex S900A RTK GPS. The location of back loop edges and sections further than 100 m from the front edge were collected via hand-held Garmin 64s GPS units.

The location of each survey station was collected and like loop edges, two different location collection techniques were used. All stations close to the loops with a 25 m station spacing had locations collected using the RTK GPS. Survey stations further away used both hand-held Garmin 64s and RTK GPS, depending on equipment availability and personal constraints.

Grid	**Easting (m)**	**Northing (m)**	**Elevation (m)**
Canhorn	5175955.5	486271.25	350.29
NW Foy	477028.310	5181764.065	439.035

Table 5: Local Base Station location

5. *Field Logistics*

The SJ Geophysics field crew consisted of one senior geophysicist, one field geophysicist, one to two field technicians and two to four field assistants depending on personal availability. Syd Visser , senior geophysicist, was on-site as the dedicated data processor and did not directly participate in data acquisition. He did however make many trips into the field to aid in logistics , setting up transmitter sited and discuss safety.

Crew Member Name	**Role**	**Dates on Site**
Syd Visser	Senior Geophysicist	July 30 – September 10, 2020
Alex Tryon	Field Geophysicist	July 30 – September 9, 2020
Abiola Salami	Field technician	July 30 – September 10, 2020
Dylan Cushman-Albano	Field assistants	July 30 – August 20, 2020
Katherine Cambly	Field assistants	July 30 – August 20, 2020
Morgan MacNeill	Field technician	August 11 – September 9, 2020
Thomas Sproule	Field assistants	August 23 – September 9, 2020
Anthony Zamperoni	Field Geophysicist	August 21 – September 2, 2020
Eric Laakso	Field assistants	September 1 – September 10, 2020

Table 6: Details of the SJ Geophysics crew on site

The SJ Geophysics crew's first day on site at the Foy offset project site was on July 30 and remained on site till September 10, 2020. Mobilization began on July 27, 2020 with one crew member driving gear from Emo, Ont, and finished when the rest of the crew arrived via air in

Sudbury on July 29th , 2020. Demobilization to Vancouver, BC, occurred on September 11h, 2020, with one crew member driving and the rest flying.

The SJ Geophysics crew was accommodated at two different motels during the project. At first the crew stayed at Moonlight Inn and suites before moving to the Northland motel to be closer to the worksite and reduce travel time. Both hotels provided WiFi which allowed for easy communication and data transfers from the crew to the SJ Geophysics office. Email, cell phones and satellite phones were used for communication between all parties involved in the project. The crew prepared all breakfasts and lunches at the hotels. Some dinners were purchased at local restaurants

On July 30th, KGHM' Senior Project Geologist, Christopher Verzyden, led a comprehensive safety orientation for the Foy Offset Project. Discussed were techniques and protocols aimed at minimizing risk at work, safe work practices, reporting expectations, and potential areas of dangerous terrain. The SJ Geophysics crew conducted daily safety tailgate meetings. At these meetings, personnel discussed issues related to weather conditions (including ramifications on the survey/personal safety), encounters with potentially problematic wildlife, efficient organization of daily tasks, and any other work-related questions or concerns. Comprehensive weekly safety meeting were held on Wednesdays throughout the project, with KGHM representatives present.

The crew began laying loop wire in the afternoon July 30th on the NW Foy area after the safety orientation. Data acquisition began on August 1st and continued on the NW Foy grid until August 18th. Delays during the survey of the NW Foy grid consisted of a one day delay on August 4th to reprogram equipment and a slow down on August 17th due to thunderstorms. Breaks in the loop wire did occur a couple of times, however; their impact was not significant.

Production on the Canhorn area began with loop 4 on August 19th. On August 22nd there was an equipment failure causing the transmitter to lost power and no production was obtained. The problem was rectified and surveying continued the next day. Surveying was completed on September 6th after many days of wet weather. Like the NW Foy grid, breaks in the loop wire did occur several times, however; their impact was not significant. Discussions of an extension to further characterize an anomaly located on loop 4 took place during the last few days of surveying. The crew stood on standby on September 7th while discussions were ongoing. The extension went ahead with production taking place from September 8th to September 10th. The crew demobilized from site on September 11.

All of the preliminary processed data was send to KGHM consulting geophysicist Brian Bengert for review. Any changes in survey design before and during the survey were suggested and or discussed and authorized by Brian which included changes in station spacing and base frequencies. Discussions with Brian also let to the recommendation to extend the survey on the Canhorn.

6. Data Quality

6.1. Locations

The location data collected on the Foy Offset Project was of consistently high to very high quality. Both survey teams carried differential GPS units with them during surveying and collected RTK corrected GPS points at the 25m spaced stations. The same can be said for points along the loop edge front loop edge. The bulk of the points collected by RTK were collected within an accuracy threshold of 0.5 m (3D) with the majority of those having an accuracy of < 20 cm. There were areas in the grid in which denser canopy cover impeded GPS signals or prevented radio-linking with the satellite base station. Approximately 15 % of the total recorded GPS points (loop and station points) were affected in this manner. Any points with obviously erroneous data were edited or removed from the set. Some points were collected using a Garmin GPS handheld. These locations were also of a high quality.

6.2. **Volterra-TDEM**

The data on the NW Foy grid was collected using a base frequency of 6 Hz. There was basically no response from any conductors including conductive half space, therefore the data basically indicated nothing but noise thus making it even more difficult to tell how well the equipment was performing. To determine that there was no issue with the equipment during the period when loop 5 was first energized, loop 7 was left connected and a short survey was completed across the near loop edge of loop 7. The response from this short survey line indicated that there was definitely no issue with the equipment and that there was simply no apparent conductive response in the survey area. The base frequency was changed to approx. 30 Hz for the

Canhorn area to reduce data noise even further through increased stacking.

The response on most of the Canhorn survey area was very similar to the response seen on the NW Foy grid. Fortunately, there was a very subtle large wavelength response from loop 4, and a more pronounced short wavelength response from the north east corner of loop 3. Due to these responses, it was determined that loop 4 and 3 were likely not well situated to interpret these conductors and it was suggested to detail the anomaly with a better positioned Canhorn loop 5. The data from loop 5 confirmed and better outlined the anomalous responses with good quality data.

7. Deliverables

This logistics report and maps are provided digitally in PDF format. A brief description of the provided data is below.

- EM Data
  - Processed EM data as .TEM files
  - Profile plots as .png files
- Locations – Locations of survey stations and transmitter loop
- Logistics report
- Grid map

The processed EM data is provided in TEM file format. The TEM files contain column separated data with the instrument parameters stored in a header. The header describes the instrument parameters, EM time gates, and loop locations. The EM data consists of the station label, UTM coordinates, loop label, and associated decay curve.

The processed EM data was divided into time gates using the “SQRT2” timing scheme. The timing scheme (ie. time gates) describes how the width of the time channels change with each subsequent channel, starting from late-time. The “SQRT2” scheme divides the previous channels width by a factor of $2^{1/2}$. The number of gates is chosen based on the minimum gate width (early time) and the sampling rate of the Volterra acquisition unit. The SQRT2 scheme for a 5 Hz base frequency provides 20 time gates. For Volterra-EM data, Channel 1 refers to the latest time gate, following the convention of the UTEM and UREM systems[1].

As the data is collected using a 100% duty cycle waveform, the results are a measurement of the total field. To obtain the secondary field, the primary field must be subtracted from the data in the direction of the sensor field. Handheld GPS units can be used to collect the location data but are usually not of sufficient quality to accurately calculate the primary field for standard processing. To correct for the error in the calculation of the primary field, it can be assumed that the latest time gate (referred to as the reference time gate) is equal to the primary field and is subtracted from the total field to obtain the secondary field. The reference time gate itself is always reduced to the calculated primary field and will show any large very late-time responses. The survey carried out on the Foy Offset Project used differentially corrected GPS units to provide the means to accurately calculate the primary field for processing.

The TEM data can be output three different ways to facilitate interpretation. The standard procedure is to deconvolve the EM data with the full-waveform transmitter current to obtain total field data with units of picoTesla per Amp. The total field data is then reduced to obtain secondary field data, which can be presented two ways. The first way is to reduce the total field data by the reference time gate or calculated primary field. Result is the secondary field presented in picoTesla per Amp. This is sometimes referred to as constant gain or point normalized measurements. The second way is to reduce the total field data by the reference time gate or calculated primary field and normalize by the calculated total primary field at that station then multiply by 100. Result is the secondary field expressed as a percentage of the total primary field. This is referred to as variable gain or continuously normalized measurements.

For the TDEM fixed-loop survey configuration, TEM files are provided for each survey line. The data is provided in folders organized by survey line as described below.

- Loop/SurveyLine
    - Total-Field: Deconvolved to the current monitor. Units are pT/A.
    - CH1red: Total-Field data reduced to the reference time gate or calculated primary field. Units are pT/A.

1 *UTEM: Lamontagne Geophysics Ltd.*
UREM: Vale Canada Ltd.

- CH1red-png: Images of the CH1 data in PNG format.
- PercentPrimary: CH1red data normalized by calculated total primary field multiplied by 100. Units are percent of the primary field.
- PercentPrimary-png: Images of the PercentPrimary data in PNG format.

Respectfully submitted,

Alex Tryon, B.Sc

Field Geophysicist

SJ Geophysics Ltd.

Syd Visser, P.Geo (BC)

Senior Geophysicist

SJ Geophysics Ltd.

Appendix A: Survey Details

Canhorn

Line	Series	Loop	Start Station	End Station	Survey Length (m)	Station Spacing (m)	Components Measured	Base Frequency (Hz)
0	E	1&2	-350	1200	1,550	25,50,100	Z, X	33
200	E	1&2	-350	1200	1,550	25,50,100	Z, X	33
400	E	1&2	-350	1200	1,550	25,50,100	Z, X	33
600	E	1&2	-350	1200	1,550	25,50,100	Z, X	33
800	E	1&2	-350	1200	1550	25,50,100	Z, X	33
1000	E	1&2	-450	1200	1,650	25,50,100	Z, X	33
1200	E	1&2	-450	1200	1,650	25,50,100	Z, X	33
1400	E	1&2	-450	1200	1650	25,50,100	Z, X	33
1600	E	1&2	-450	1200	1,650	25,50,100	Z, X	33
1800	E	1&2	-450	1200	1,650	25,50,100	Z, X	33
2000	E	1&2	-450	1200	1,650	25,50,100	Z, X	33
2200	E	3	-450	1200	1650	25,50,100	Z, X	33
2400	E	3	-450	1200	1650	25,50,100	Z, X	33
2600	E	3	-450	1200	1600	25,50,100	Z, X	33
2800	E	3	-450	1200	1650	25,50,100	Z, X	33
3000	E	3	-450	1200	1650	25,50,100	Z, X	33
3200	E	4	-50	2000	2050	25,50,100	Z, X	30
3400	E	4	-50	2000	2050	25,50,100	Z, X	30
3600	E	4	-50	2000	2050	25,50,100	Z, X	30
3800	E	4	-50	2000	2050	25,50,100	Z, X	30
4000	E	4	-50	2000	2050	25,50,100	Z, X	30

Total Linear Metres = 36100

Northwest Foy

Line	Series	Loop	Start Station	End Station	Survey Length (m)	Station Spacing (m)	Components Measured	Base Frequency (Hz)
0	N	5	-500	1200	1,700	25,50,100	Z, X	6
200	N	5	-500	1200	1,700	25,50,100	Z, X	6
400	N	5	-500	1100	1,600	25,50,100	Z, X	6
600	N	5	-500	1000	1500	25,50,100	Z, X	6
800	N	5	-500	1025	1,525	25,50,100	Z, X	6
1000	N	6	-500	1200	1,700	25,50,100	Z, X	6
1200	N	6	-400	1200	1600	25,50,100	Z, X	6
1400	N	6	-400	1200	1,600	25,50,100	Z, X	6
1600	N	6	-400	1200	1,600	25,50,100	Z, X	6
1800	N	6	-400	1200	1,600	25,50,100	Z, X	6
2000	N	7	-400	1200	1600	25,50,100	Z, X	6
2200	N	7	-400	1200	1600	25,50,100	Z, X13	6
2400	N	7	-400	1200	1600	25,50,100	Z, X	6
2600	N	7	-400	1200	1600	25,50,100	Z, X	6
2800	N	7	-400	1200	1600	25,50,100	Z, X	6

Total Linear Metres = 24125

Canhorn Extension

Line	Series	Loop	Start Station	End Station	Survey Length (m)	Station Spacing (m)	Components Measured	Base Frequency (Hz)
5500	E	5	6050	6875	825	50	Z,	33
5600	E	5	6050	6875	825	50	Z,	33
5700	E	5	6750	6875	125	50	Z,	33
5900	E	5	6400	7800	1,400	25,50	Z, X	33
6075	E	5	6750	7775	1,025	25,50	Z, X	33
6300	E	5	6050	6900	850	50	Z	33

Line	Series	Loop	Start Station	End Station	Survey Length (m)	Station Spacing (m)	Components Measured	Base Frequency (Hz)
6450	E	5	6050	6900	850	50	Z	33

Total Linear Metres = 5900

Appendix B: Instrument Specifications

Volterra Acquisition Unit (Dabtube 8000 Series)

Technical:

Input impedance:	100 MΩ
Input overvoltage protection:	5.6 V
ADC bit resolution:	24-bit
Internal memory:	Storage Capacity 32 GB
Number of inputs:	4
Synchronization:	GPS
Selectable Sampling Rates (samples/second):	128000, 64000, 32000, 16000, 8000, 4000, 2000, 1000
Common mode rejection:	More than 80 dB (for Rs=0)
Voltage sensitivity:	Range: -5.0 to +5.0 V (24 bit)
Features:	Programmable Gain

General:

Dimensions:	Diameter: 43 mm, Length: 405 mm
Weight:	0.5 kg
Battery:	5.0 VDC nominal
Operating temperature range:	-40 ºC to 40 ºC

Volterra Acquisition Unit (Dabtube 8200 Series)

Technical:

Input impedance:	20 MΩ
Input overvoltage protection:	5.6 V
ADC bit resolution:	24-bit
Internal memory:	Storage Capacity 64 GB
Number of inputs:	4
Synchronization:	GPS
Selectable Sampling Rates (samples/second):	128000, 64000, 32000, 16000, 8000, 4000, 2000, 1000
Common mode rejection:	More than 80 dB (for Rs=0)
Voltage sensitivity:	Range: -5.0 to +5.0 V (24 bit)
Features	Programmable Gain, AC/DC coupling

General:

Dimensions:	Diameter: 43 mm, Length: 405 mm
Weight:	0.5 kg
Battery:	5.0 VDC nominal
Operating temperature range:	-40 ºC to 40 ºC

Surface Induction Magnetometer (ANT-23, ANT-9, ANT- 5)

Sensor Serial Number	3523, 2023, 2123, 019, 029, 105, 195, 215
Frequency Range:	0.1 Hz to 50,000 Hz
Sensitivity in Passband:	100 mV/nT

SJ Geophysics EM Transmitter (EMTX-3000 Series)

Transmitter Output Stage:

Input Voltage:	10 to 400 V DC
Output Voltage:	20 to 800 V, peak to peak
Output Current:	0 to 18 A, peak to peak
Frequency:	0.1 to 1 kHz, adjustable in 0.001 Hz
Duty Cycle:	10 to 100 %
Waveform:	Square
Features:	Output stages can be connected in parallel (up to 4 units) for a maximum of 72 A, peak-to-peak

Transmitter Controller:

Input Voltage:	7 – 20 V DC
Output Current:	0.4 – 2 A

Power Supply:

BK Precision 9116

Appendix C: Geophysical Techniques

Time Domain EM Method

The time domain EM technique energizes the ground with a variable magnetic field known as the primary field. A transmitter sends an alternating electric current through a loop of wire laid on the surface to create the primary field (Figure 5). Each time a variation occurs in the current (e.g. succession of on-time/off-time) and therefore in the primary field, induced voltage causes eddy currents to flow within underground conductors near the loop. Circulating about these currents is another magnetic field termed the “secondary” field. The magnitude and rate of decay of the eddy currents depend on the electrical conductivity and the geometry of the medium. As the secondary field is directly proportional to the eddy currents, recordings of the secondary field can be exploited to infer information about the conductivity structure of the subsurface. In resistive media eddy currents decay rapidly, whereas in conductive media the currents will decay more slowly.

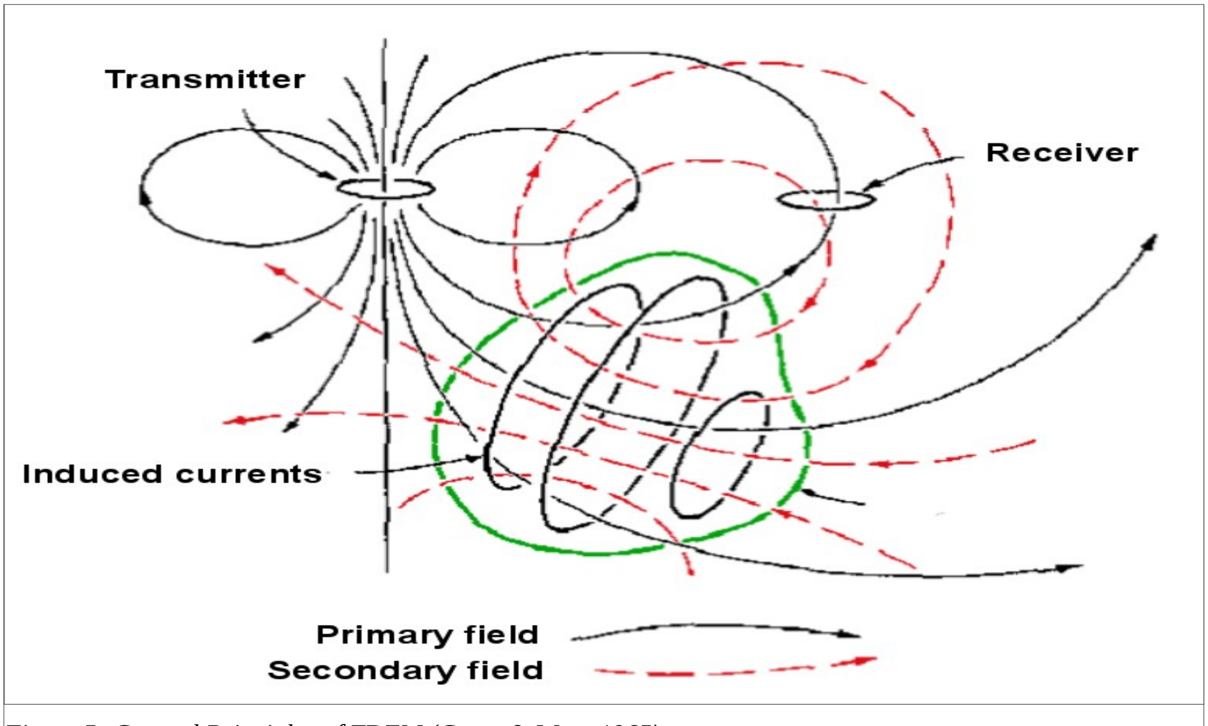

Figure 5: General Principles of TDEM (Grant & West, 1965).

Volterra-EM Method

The Volterra-EM system provides significantly more flexibility over traditional EM surveys (surface or downhole) through the use of SJ Geophysics' proprietary data acquisition units. Each data acquisition unit can be configured to record data from a unique sensor (B-field coil, dB/dt coil, fluxgate magnetometer, resistivity / IP sensors, etc.). The Volterra-EM system uses internal memory for data storage, is time synced using an onboard GPS sensor and high quality internal clock, and employs an inertial measurement unit. These advances eliminate the need for specialized receiver cables and a centralized receiver control station, making the system more portable, more versatile, and in the case of borehole surveys – much lighter. The Volterra-EM system takes advantage of SJ Geophysics' EMTX 3000 transmitter, capable of operating at variable duty cycle, although typically operated at 100% duty cycle. The SJ Geophysics' Volterra-EM system can be powered using standard batteries or a 2000 W generator, making the system that much more field ready.

A typical Volterra surface EM system will use sensitive induction magnetometer sensors connected to a data acquisition unit to measure the total magnetic field – the vector sum of the primary and secondary magnetic fields on the surface. The information carried by the secondary magnetic field will be extracted during a processing stage using filtering, modelling and normalization techniques. Downhole EM surveys will typically employ a highly sensitive induction magnetometer (B-field coil) and a three component fluxgate magnetometer, however this configuration can be altered depending on survey requirements.

Measurements are taken along a line or a borehole and can be outside, inside or crossing the transmitter loop. Moreover, two different loops using two different frequencies can stimulate the ground at the same time, and the secondary field related to each of them will be isolated in a processing stage. TDEM measurements are generally considered repeatable; however, changing field conditions such as variable water content can reduce the overall repeatability. Incorporating other data sets to assist in geological interpretation is prudent.

Appendix C: Invoices and Receipts

Records of expenditures for the 2020 exploration program are included as an attachment with this report under the folder "\Appendix C – Invoices and Receipts".

Withheld for confidentiality.