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Agnico Eagle Mines Ltd.

Heli-GT Three-Axis Magnetic Gradiometer Survey

Atikokan
Ontario, Canada

Operations and Processing Report

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SHA GEOPHYSICS LTD

September 14
2020

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1 INTRODUCTION

Agnico Eagle Mines Ltd. (AEM) is exploring for gold in northwestern Ontario. In August, 2020 AEM contracted SHA Geophysics Ltd. (SHA) to carry out a Heli-GT helicopter-towed, three-axis magnetic gradiometer survey over two of their properties near Atikokan, Ontario, Canada. Equipment and crew mobilized to the area on Saturday, August 15th, 2020 and during the period August 16th August 19th a total of 1870 km of data was collected. Details of the airborne survey and compilation are documented in this report.

2 LOCATION

The survey blocks, Hammond Reef and Melema Lake, were located north and northeast of Atikokan, Ontario. See Figure 1 below.

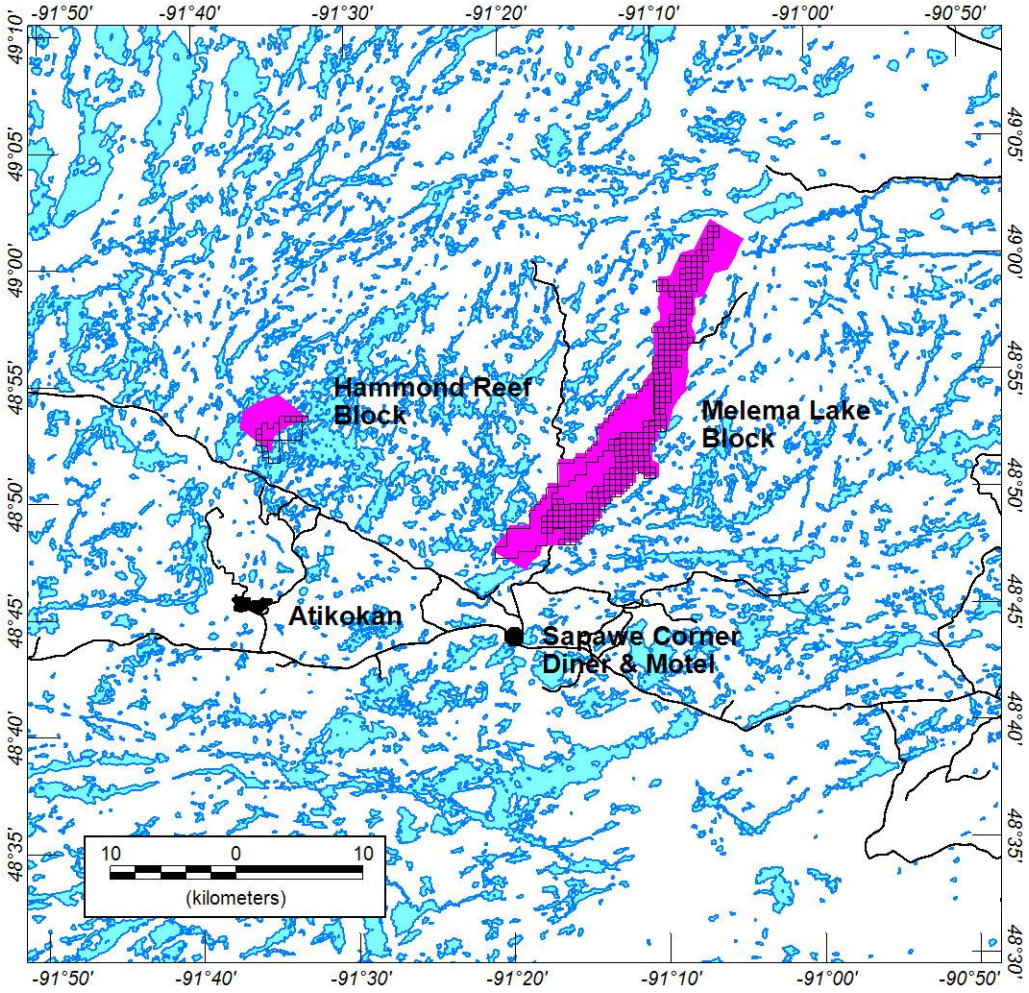

Figure 1 – Survey Block Location Map Showing Claim Cells.

3 CLAIM CELLS

The following claim cells, within the Thunder Bay Mining district were covered by the survey.

Hammond Reef Block

109513, 127291, 128802, 131271, 140577, 146011, 160709, 165404, 166768, 171790, 174854, 177533, 194809, 197072, 213348, 214027, 214028, 214306, 214307, 214308, 214309, 215546, 215547, 224778, 228130, 231441, 231442, 231443, 232043, 232044, 250601, 251707, 260714, 261995, 268720, 280712, 300264, 307312, 308838, 309212, 309876, 315875, 315928, 328580, 328691, 328692, 332080, 332148,339120, 505617, 505619, 505620, 505623, 505624, 505625, 505626, 505627, 505628, 505630, 505631, 505632, 505633, 505634, 505635, 505636, 505639, 505949, 505950, 505954, 505956, 505960, 505961, 505963, 505969, 505971

Melema Lake Block

104672, 104673, 105281, 105282, 105283, 108827, 109605, 109606, 110040, 112387, 112388, 114058, 119100, 119934, 129866, 129867, 130408, 130409, 130410, 130430, 135650, 136662, 136663, 137823, 139014, 140596, 143283, 146473, 146474, 146534, 156654, 157370, 158426, 160083, 164390, 164391, 165031, 169183, 170631, 172015, 172016, 173582, 175070, 175469, 176275, 183966, 183967, 192935, 192936, 194585, 194586, 203822, 203823, 203824, 210014, 211106, 211682, 211683, 218511, 223157, 223158, 223159, 223160, 223161, 223800, 223801, 225394, 230051, 231134, 231761, 238605, 239756, 239816, 239840, 243972, 243973, 247820, 249827, 249988, 255240, 255332, 255333, 255334, 258018, 259841, 260978, 260979, 260980, 261626, 261627, 265733, 267034, 267847, 268569, 268753, 275980, 276508, 276510, 279157, 279287, 279793, 279794, 284479, 284480, 288703, 292580, 297789, 297979, 305795, 307062, 307063, 307064, 308936, 308937, 309081, 309082, 312594, 312595, 312596, 314322, 314323, 326400, 326401, 326505, 328504, 334734, 337045, 337218, 338804, 339448, 506686, 506687, 506688, 506689, 506690, 506691, 507287, 507288, 507289, 507290, 507813, 507814, 507815, 507816, 523027, 523028, 523029, 523030, 523031, 523032, 523033, 523034, 523035, 523036, 531421, 531422, 534567, 534568, 534569, 538161, 538162, 551751, 551752, 551753, 551754, 551755, 551756, 551757, 551758, 551759, 551760, 551761, 551762, 551763, 551764, 551765, 551766, 551767, 551768, 551769, 551770, 551771, 551772, 551773, 551774, 551775, 551776, 551777, 551778, 551779, 551780, 551781, 551782, 551783, 551784, 551785, 551786, 551787, 551788, 551789, 551790, 551791, 551792, 551793, 551794, 551795, 551806, 551807, 551808, 551809, 551810, 551811, 551812, 551813, 551814, 551815, 551816, 551817, 551818, 551819, 551820, 551821, 551822, 551823, 551824, 551825, 551826, 551827, 551828, 551829, 551830, 551831, 551832, 551833, 551834, 551835, 551836, 551837, 551838, 551839, 551840, 551841, 551842, 551843, 551844, 551845, 554678, 554679, 554680, 554681, 554682, 554683, 554684, 554685, 554686, 554687, 554688, 554689, 554690, 554691, 554692, 562041, 562042

4 GEOLOGICAL SETTING

The Hammond Reef and Melema Lake Gold Properties are situated within the south-central Wabigoon geological subprovince of the Archean Superior province. Both projects are located in the ~3 Ga Marmion batholith, adjacent to the Finlayson greenstone belt. The Hammond Reef deposit is within a zone of altered and deformed tonalites known as the Marmion deformation corridor. The Melema Lake project is located along a NE striking deformation zone which is crosscutting the Marmion Batholith about 20 KM East of Hammond-Reef.

5 AIRBORNE SURVEY

The survey was based out of Sapawe Corner Diner and Motel, located approximately 5km south of the community of Sapawe, Ontario and approximately 20km east of Atikokan, Ontario. The southern end of the Melema Lake Block located approximately 6km north of the base of operations and the Hammond Reef Block was located approximately 25km to the northwest. Crew and equipment mobilized to the base of operations on Friday, August 14th, 2020. Surveying was conducted during the period 15th to August 19th, 2020. The following table summarizes flight specifications of the two blocks.

5.1 Flight Specifications

	Malema Lake	**Hammond Reef**
Traverse Direction	120° – 300°	130° – 310°
Traverse Spacing	75 m	75 m
Control Direction	N/A	40° – 220°
Control Spacing	~1600m	~750m
Terrain Clearance	30m	30m
Mean Ground Speed	43 m/s	45 m/s
Block Production	1690km	180km

5.2 Helicopter

Helicopter Owner / Operator	Expedition Helicopters, Cochrane, Ontario
Helicopter Model	A-Star 350B2
Helicopter Registration	C-GSSS

5.3 Personnel

The following personnel were involved in the survey:

Field

Project Geophysicist	Steve Munro
Technical Operations Manager	Frazer Hogg
Pilot	Marc Cusack

Office

Compilation and Reporting	Steve Munro
Project Management	Scott Hogg

6 GEOPHYSICAL SYSTEM

The airborne geophysical Heli-GT system consists of a towed bird that contains all of the geophysical sensors as well as altimeter and GPS antennae. A computer based recording and navigation system is located in the helicopter.

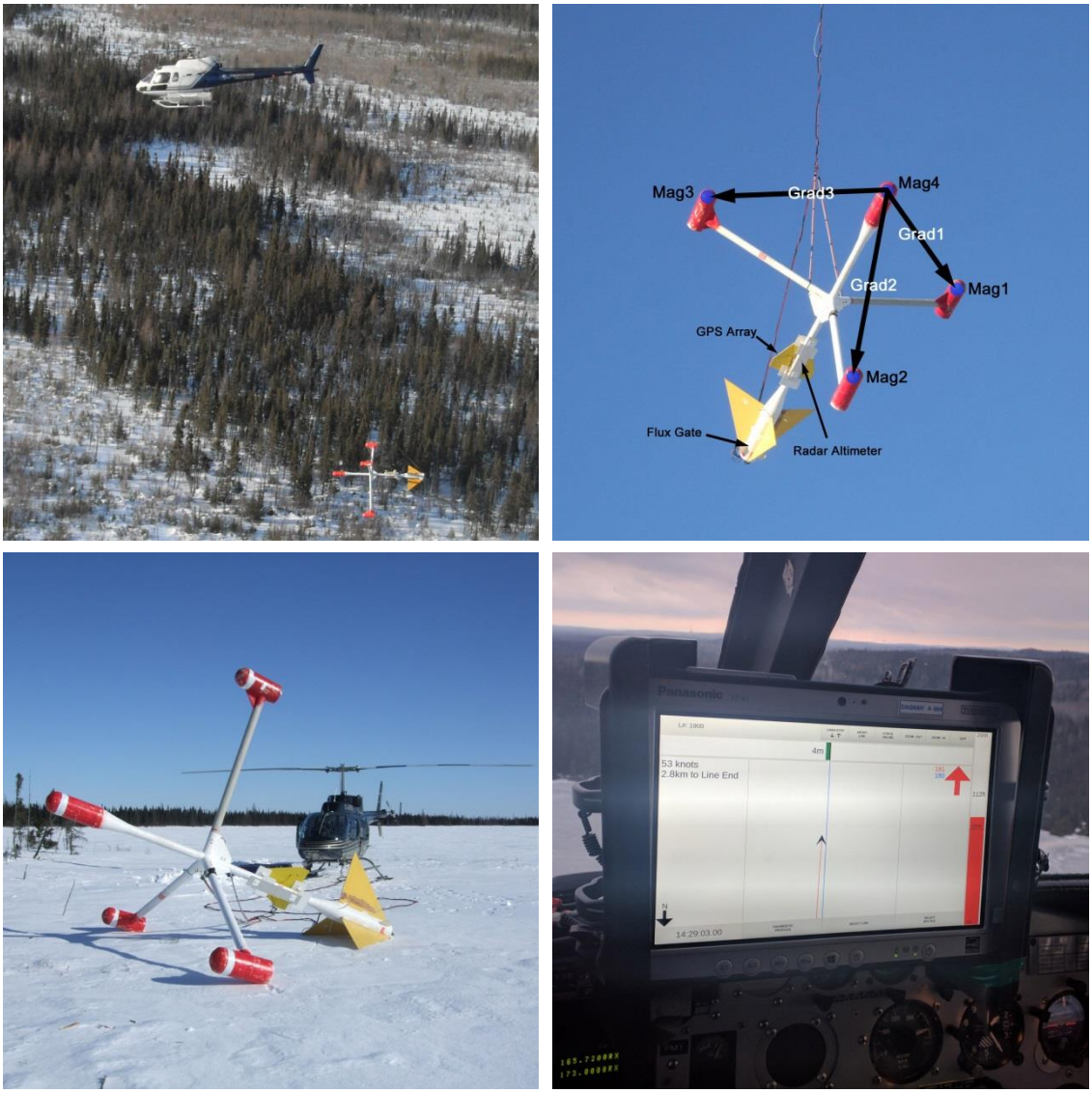

Figure 2 – The Heli-GT bird is towed 25 m below the helicopter. The basic orthogonal magnetic gradients G1, G2 and G3 are measured on 3 metre baselines. A radar altimeter and 4 GPS antennae are mounted on the towed bird. In the helicopter a touch screen computer tablet logs the data and directs navigation.

6.1 Bird

All of the geophysical and ancillary equipment is housed in a towed bird designed by SHA Geophysics Ltd. The bird is manufactured from non-magnetic FRP and breaks down for ease of transportation.

6.2 Magnetic sensors

Four Scintrex CS-3 cesium sensors are arranged in an orthogonal array with 3 m sensor separation from the nose sensor to those at the end of each arm. The output from each sensor was processed by a KVS KMAG4 unit to resolve the magnetometer output to a resolution of about 0.005 nT at a rate of ten samples per second. The Heli-GT bird was flown at a nominal altitude of 30m.

6.3 Radar Altimeter

A Terra TRA 3500 / TR 140 radar altimeter was used to measure bird height above ground. The range of operation was from 0 to 2500 ft.

6.4 Fluxgate Magnetometer

A Billingsley TFM100G2 3-axis fluxgate magnetometer was used to record the orientation of the bird with respect to the earth's magnetic field. The range of each component of the fluxgate was +/- 100,000 nT.

6.5 Analog to Digital ADC

The analog output of the radar altimeter and fluxgate magnetometer were digitized with a KVS KANA8 eight-channel differential ADC. The device provides 24 bit resolution and was operated at 10 Hz.

6.6 GPS System

GPS positional information was recorded using an array of four 12-channel receivers mounted on the Heli-GT bird. In addition to the measurement of Latitude, Longitude and Altitude a calculation of bird pitch, roll and yaw was calculated from differences between antennae with an accuracy better than 1 degree.

6.7 Navigation and Recording System

The navigation and recording system used was the DAQNAV, developed by SHA Geophysics. Both navigation and data recording are carried out using a tablet computer mounted in the helicopter cockpit. The tablet's touch screen provides an operator with an interface for monitoring the geophysical and ancillary instrumentation, as well as presenting graphic navigation information for the pilot.

The PPS pulse from the GPS system was recorded and tied to each of the sensors with an accuracy of about +/- 0.05 seconds.

Data recorded included the following:

Magnetic sensors:	10 Hz
Fluxgate sensors:	10 Hz
Radar Altimeter:	10 Hz
GPS X / Y / Z:	5 Hz
GPS Pitch / roll / yaw:	5 Hz

6.8 Base Station

A magnetic and GPS base station was established at the base of operations (623,030E 5,398,700 N, UTM Zone 15n, NAD83). A GEM SSM19TW proton magnetometer recorded the diurnal magnetic variation at 1 Hz with a resolution of 0.1 nT. A Ublox EVK-M8 GPS receiver provided a GPS time reference and recorded a differential correction file.

7 DATA COMPILATION

7.1 Basic Processing

The data collected during flight, in the air and from the base station, was aligned with reference to GPS time. Each of the four magnetometer channels was compensated to remove magnetic error associated with bird orientation. The basic magnetic gradients; G1, G2 and G3, measured from the nose sensor (mag4) to each of the radial sensors (mag1, mag2 and mag3) were calculated. Any noise spikes, if present, were identified and removed.

A low-pass filter was applied to the base station data to eliminate short wavelength artifacts. A median value was removed from the base station profile to create a diurnal correction profile, which was subtracted from the compensated mag4 profile. The base station corrected total field profile was stored as *mag_diur*.

7.2 Gradient Processing

The recorded pitch, roll and yaw of the bird were used to mathematically rotate the measured basic gradients to true G-north, G-east and G-down.

The GPS altitude of the bird was used to calculate a smooth drape surface. This is a smooth theoretical surface above the terrain that the bird would follow under ideal conditions. There would be only smooth altitude changes, line to line and along the flight line. The difference between the GPS altitude of this smooth drape surface and the actual GPS altitude of the bird was combined with the measured vertical gradient to calculate an altitude correction. The altitude correction was applied to m*ag_diur* and the resulting profile was stored as *mag_alt_cor*.

7.3 Magnetic Levelling

The channel *mag_alt_cor* was used as input to the control line levelling process.

The intersections between traverse and control lines were calculated and the differences between the magnetic values were measured. Ignoring unreliable differences in locations of steep magnetic gradient, a correction was calculated to eliminate the measured differences at the intersections. This correction profile was a piecewise linear function between intersections. The control line leveled magnetic profile was stored as *mag_TL_lev*. A final microlevel correction was calculated and applied. The final data channel was stored as *mag_fin*.

7.4 Gradient Tensor Gridding (GT-GRID)

GT-Grid is a proprietary gridding program developed by SHA Geophysics that uses total magnetic field data as well as the measured horizontal gradient data to produce a total magnetic field grid. The total magnetic field grid produced by GT-Grid is a fully conformal process that simultaneously honours the total field as well as the measured horizontal gradient profile data.

The final, leveled total field magnetic channel (m*ag_fin*) and the G-east (*Ge)* and G-north (*Gn*) gradient channels, were used by the GT-GRID process to calculate a total field magnetic grid for each block.

8 INTERPRETATION AND RECOMMENDATIONS

The magnetic data has mapped features consistent with steeply-dipping volcanic units. Faulting is evident throughout each dataset. It is recommended that the data be interpreted in context with known geology and mineralization.

9 DIGITAL DATA ARCHIVE

All of the maps, grids and profile data have been provided in digital form.

9.1 Profile Data

The profile data for each survey block is provided in both Geosoft "gdb" format and ASCII “xyz” format. Each format includes the following channels.

Channel	Units	Content
line		Line number
flight		Flight number
gpstime	seconds	GPS time
X	metres	UTM easting NAD83, Zone 15n
Y	metres	UTM northing NAD83, Zone 15n
lon	degrees	GPS Longitude WGS84
lat	degrees	GPS Latitude WGS84
gpsalt	metres	GPS altitude NAD83
radalt	metres	radar altimeter (bird height)
DTM	Metres	levelled Digital Terrain elevation
fx	nT	Fluxgate axis x (forward)
fy	nT	Fluxgate axis y (port)
fz	nT	Fluxgate axis z (up)
heading	degrees	Bird heading
pitch	degrees	Bird pitch
roll	degrees	Bird roll
basemag	nT	Raw base station magnetometer – 1Hz
fbasemag_int	nT	Interpolated and filtered base station profile
mag1_raw	nT	Raw upper port magnetometer
mag2_raw	nT	Raw down magnetometer
mag3_raw	nT	Raw upper starboard magnetometer
mag4_raw	nT	Raw nose magnetometer
mag1_comp	nT	Compensated upper port magnetometer
mag2_comp	nT	Compensated down magnetometer
mag3_comp	nT	Compensated upper starboard magnetometer
mag4_comp	nT	Compensated nose magnetometer
G1	nT/m	Magnetic gradient: mag4 to mag1
G2	nT/m	Magnetic gradient: mag4 to mag2
G3	nT/m	Magnetic gradient: mag4 to mag3
mag_diur	nT	Base station corrected mag (applied to mag4)
Mag_alt_cor	nT	Altitude-corrected mag
mag_TL_lev	nT	Tie line network leveled mag
mag_fin	nT	Final microlevelled mag
Ge	nT/m	Measured magnetic East gradient
Gn	nT/m	Measured magnetic North gradient
Gv	nT/m	Measured magnetic Vertical gradient

9.2 Gridded Data

The grids, projected in NAD83 UTM Zone 15n coordinates, are in Geosoft format. The cell size is 15 metres. The following is a description of the grid set provided.

Grid Name	Units	Description
Blockname_GT-TMI	nT	Total magnetic field GT-Grid

Where “blockname” is either *Melema* or *Hammond_Reef*.

GeoTIFF image files (with pixel size of 2m) are also included for each grid type.

9.3 Map Files

Mapsets for each of the grid types have been prepared for each block. The Melema Lake mapset contains two sheets per map type. The maps are presented at a scale of 1:20,000, in a NAD83, UTM Zone 15n projection.

Map Name	Units	Description
Blockname_GT-TMI	nT	Total magnetic field GT-Grid

Where “blockname” is either *Melema* or *Hammond_Reef*.

The Melema Lake mapset has two sheets per map type, denoted by a _NE (northeast) or _SW (southwest) suffix on the file name.

Corresponding sets of JPEG and PDF images (at a resolution of 200 dpi) are also included.

Respectfully submitted,

Steve Munro, P.Geo (limited)
Chief Geophysicist
SHA Geophysics Ltd.
Toronto, Canada
September 14, 2020

Scott Hogg, P.Eng
President
SHA Geophysics Ltd.
Toronto, Canada
September 14, 2020

CERTIFICATE OF QUALIFICATIONS

I, Steve Munro, do hereby certify that:

- I reside at 614 Bayfield Street, Pickering, Ontario, Canada, L1V 3W5
- I received an honours Bachelor of Science degree from the University of Toronto as a geophysics specialist in 1992
- I have practiced as a geophysicist since 1992
- I am a member of the Association of Professional Geoscientists of Ontario
- I have no financial interest in Agnico Eagle Mines Ltd.

Steve Munro, B.Sc, P.Geo (limited)
Senior Geophysicist
SHA Geophysics Ltd.
Toronto, Ontario
September 14, 2020

I, Scott Hogg, do hereby certify that:

- I reside at 1 Deepwood Crescent. Toronto, Ontario, Canada, M3C 1N7
- I am a graduate of the University of Toronto, Engineering Science, geophysics program, 1970.
- I have practiced as a geophysicist since 1972
- I am a registered professional engineer, Professional Enginers of Ontario, PEO.
- I have no financial interest in Agnico Eagle Mines Ltd.

Scott Hogg, P.Eng
President
Scott Hogg & Associates Ltd.
Toronto, Canada
September 14, 2020

nT
- 56053
- 56069
- 56081
- 56093
- 56106
- 56114
- 56122
- 56130
- 56134
- 56142
- 56150
- 56162
- 56170
- 56179
- 56183
- 56187
- 56195
- 56203
- 56211
- 56219
- 56227
- 56235
- 56248
- 56260
- 56276
- 56300
- 56341
- 57030
- Melema Lake Claims
- Mining Land Tenure
- Operational Cell Claims

Contour Intervals: 25 nT, 200 nT

The Heli-GT Magnetic System, developed by SHA Geophysics Ltd., measures three orthogonal magnetic gradients to provide Grad-East, Grad-North and Grad-Vertical.

The bird contains 4 cesium sensors in an orthogonal array with 3 meter baselines.

Geo-reference is provided by radar altimeter, GPS position and bird pitch, roll and yaw.

The measurements are designed to optimize the GT-GRID mapping process that builds high resolution magnetic maps using total field and gradient information.

N

Scale: 1:24,000

0 1 2
Kilometers

NAD 1983 UTM Zone 15N

Agnico Eagle Mines Ltd
Heli-GT Survey
Melema Lake Property, Ontario
September 2020

GT-Grid of Total Magnetic Intensity
Contractor: SHA Geophysics Ltd