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# 2022 AIRBORNE MAGNETIC SURVEY REPORT

MARRIOTT PROPERTY

Kirkland Lake, Northeastern Ontario, Canada

NTS sheets: 52L07A and 52L08D

Township: Marriott



**Plato Gold Corp.** 1240 Bay Street, Suite 800 Toronto, Ontario M5R 2A7

Date: July 15, 2022

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## 1.0 SUMMARY

J-J Minerals was contracted by Plato Gold Corp. ("Plato") in May 2022 to write an assessment report on Pioneer Exploration Consultants Ltd's ("Pioneer") airborne geophysics survey on the Marriott Property which was conducted between Feb. 13 and Mar. 4, 2022. This Report interprets the results of the airborne geophysics survey and makes recommendations for a future exploration program. The purpose of this Report is to file an airborne geophysics survey for assessment credit.

The Marriott property is located 66 km east of Matheson, in the northeast corner of Marriott Township, Ontario. The east side of the property is coincident with the Ontario-Quebec provincial border. It is located within NTS sheets: 52L07A and 52L08D. The center of the Property is 608849 m E, 5375250 m N, Zone 17, NAD 83. Marriott Property consists of 98 cell claims in the Larder Lake Mining Division and is 6.2 km x 3. 8 km in size. The claims are held 100% by Plato Gold Corp. and are in good standing. Highway 101 cuts across the northern part of the claims.

The Marriott property is located in the Timmins-Kirkland Lake area of the ~800 x 240 km Abitibi Greenstone Belt which is comprised of Archean volcanic, sedimentary and intrusive rocks cut by occasional Proterozoic diabase dikes. Abitibi Subprovince is known for its abundance of lode gold deposits which occur in deformed and metamorphosed terranes along the major structures: Porcupine-Destor fault zone ("PDF") and Larder Lake – Cadillac fault zone ("LLCD").

Plato's Marriott property is predominantly underlain by a series of alternating Fe-rich and Mg-rich tholeiitic basalts belonging to the Kinojevis Group (Jensen, 1978). Texturally, these basalts can occur as massive or pillowed flows, flow-top or pillow breccias and hyaloclastites within the property. Minor dacitic to rhyolitic volcanic rocks as well as graphitic interflow sediments are also present on the Property. A large felsic volcanic horizon has a true thickness of 90 m and extends 6 km.

In 1988, a ten-hole, 1989 m diamond drill program was undertaken on the property by Dickenson Mines Ltd and New Cinch Uranium Mines Ltd, M88 series. The drill program primarily targeted on the main felsic horizon that cuts through the length of the property. Drilling successfully intersected zones of gold enrichment. These zones were associated with siliceous horizons that displayed carbonatization and syenitization. The best assay obtained was 2.47 g Au/t over 1.0 m within a zone of lower grade assays in hole M88-09.



Hemlo Gold Corp ("Hemlo") optioned the property in 1994. In 1995, Hemlo cut 16.8 km of line in the northeast corner of the property. Lines oriented north-south were cut at 200 m intervals. An IP survey was conducted along the lines followed by a drill program targeting anomalies generated during the IP survey. Nine diamond drill holes numbered GH95-101 to 107, 111 and 114 were completed with a total length of 2867 m. The highest grade result from the drill program was intersected in an IP anomaly in hole GH95-105. The mineralization occurs in sheared and brecciated, weakly to moderately silicified, sericitized and albitized mafic volcanic unit which graded 1.71 g/t Au over 2 m.

In Summer 2005, Abitibi Geophysics carried out a total of 19.4 km of IP surveying on the property as a complementary follow-up from the winter 2005 program. A total of 19 resistivity/IP anomalies (newly outlined trends or extensions from previously defined anomalies) were identified. The results from this survey and previous geophysical surveys (Winter 2004 and Winter 2005) were compiled, interpreted, and described. A total of 6 first-priority targets, 1 second-priority target, and 9 third-priority targets were identified.

In 2005, Plato conducted a diamond drill program on its Marriott Property. The drilling comprised 11 drill holes totalling 2858 m and was the MP-01 to 11 series. MP-01 returned 1.86 g Au g/t over 1.0 m from 185.3 to 186.3 m. This intersection appears to be the extension of a zone intersected by historical Hemlo drill hole GH95-105, located 200m east of MP-01. These two intersections are interpreted to represent a splay fault subsidiary to the Destor-Porcupine Fault Zone (DPFZ).

In 2005, drill hole MP-10 situated in the northwest corner of the Property adjacent to the DPFZ, returned 2.4 Au g/t over 1.0 m from 211.8 to 212.8m and 5.14 Au g/t over 1.0 m from 222.3 to 223.2m. MP-10 also cut a zone of brecciated quartz carbonate veining enveloped by strongly sericitic and strongly pyrite mineralized altered basalt from 269.1 to 274.8m. This zone returned trace gold indicative of weak gold enrichment. MP-07 intersected 0.96 Au g/t over 0.5m from 91.5 to 92.0m.

In October 2016, Geotech Limited flew a helicopter-borne versatile time domain electromagnetic (VTEM Plus) and horizontal magnetic gradiometer geophysical survey for Kirkland Lake Gold. Kirkland Lake Gold had optioned the Marriott Property from Plato Gold at the time. A total of 246 line-km of geophysical data were acquired during the survey. Survey lines were flown north-south with traverse line spacing of 100 m and tie lines flown perpendicular to the traverse line at 1000 m spacing. The magnetic tilt – angle derivative figure is useful to help interpret locations of faults on the Property. Within the Abitibi Subprovince, gold mineralization tends to be associated with the Porcupine-Destor Fault, splay faults and cross cut faults. The



electromagnetic geophysics survey on the Marriott Property shows three linear trends of EM conductors. One of the conductors aligns with Highway 101 and the power line. The other conductive anomalies can be interpreted as lithological conductors (i.e, pyrite, lithology contacts) and structural conductors. The majority of the conductors on the Property have not been drilled.

Pioneer Exploration Consultants Ltd's ("Pioneer") conducted an airborne magnetic survey using an Unmanned Aerial Vehicle (UAV) on the Marriott Property between Feb. 13 and Mar. 4, 2022 on behalf of Plato. The purpose of this survey was to obtain better resolution magnetic data than the historic surveys. The Marriott Property has basalt with high magnetic signal. Also, the magnetic geophysical signature can be used to show the geology including rock types, faults, shear zones, folding, alteration zones and other structures.

Pioneer's crew were based in Kirkland Lake, Ontario. Pioneer's crew arrived in Kirkland Lake on Feb. 14, 2022. The drone flew 9 days on Feb. 15, 17, 18, 21, 24 and 25 and March 2, 3 and 4. Pioneer's crew had standby 5 days due to weather on Feb. 16, 19, 20, 22 and 23. The drone did not fly for 4 days on Feb. 26, 27 and 28 and March 1 due to a broken argo. The survey was completed on March 4, 2022.

Pioneer's UAV mag survey covered all of Plato's Marriott Property claims. Data collection for this survey area was conducted at multiple resolutions: 25 m spaced lines with 250 m spaced tie lines for the Northern Survey area, and 50 m spaced lines and 500 m tie lines for the Southern Survey area. Line direction was N-S (000°) and the tie lines were E-W. For a total of 573.593 line km. The nominal magnetic sensor altitude above ground level (AGL) was set to 40 m.

The final magnetic data was used to produce three different magnetic maps by Pioneer: total magnetic intensity, first vertical derivative, and 3D analytical signal. J-J Minerals also produced total magnetic intensity reduced to pole, total magnetic intensity reduced to pole tilt derivative and total magnetic intensity reduced to pole generalized derivative maps from Pioneer's data.

The total magnetic intensity map shows that there is one continuous E-W magnetic anomaly which corresponds to the iron-rich tholeiitic basalts shown in the local geology map. It was noted during the 2019 sampling that basalt that is magnetic is also enriched in Fe, Ti and V. There is a second E-W magnetic anomaly along Highway 101 which also corresponds to iron-rich tholeiitic basalt. There is a third E-W magnetic anomaly in the SW corner of the Property. The magnetic lows correspond to the magnesium-rich tholeiitic basalt.



The first vertical derivative and the total magnetic intensity reduced to pole maps were used to identify interpreted regional and cross faults. The E-W regional faults correspond to the lithology boundaries between the iron-rich tholeittic basalt and the magnesium-rich tholeittic basalt as shown on the local geology map and the Destor-Porcupine Deformation Zone. Cross cutting faults were identified with three orientations: NE-SW, NW-SE and N-S using the UAV magnetic data on the Marriott Property. Regionally cross faults were previously identified with these orientations but not in as much detail on the Property as from this UAV magnetic survey.

J-J Minerals recommends a data compilation of all of the historic sampling, drilling and geophysics data on the Marriott Property into a single Arc file to aid in a reexamination and interpretation of the historic data and to identify new exploration targets on the Property. Another recommendation is to compile all of the historic drill holes into a 3D model to identify new exploration targets.

J-J Minerals recommends a drill program on the Marriott Property consisting of 10 drill holes and totalling 10,000 m. The drill holes would be at an azimuth of 0° to the north, 60° dip and 700 to 1000 m depths. The proposed drill holes target the magnetic high anomalies and the intersection of the regional E-W faults and the NE-SW and NW-SE cross faults. The proposed drill holes also target the IP anomalies identified by Abitibi Geophysics in 2005.

# 2.0 INTRODUCTION

#### 2.1 General

J-J Minerals was contracted by Plato Gold Corp. ("Plato") in May 2022 to write an assessment report on Pioneer Exploration Consultants Ltd's ("Pioneer") airborne geophysics survey on the Marriott Property which was conducted between Feb. 13 and Mar. 4, 2022. This Report interprets the results of the airborne geophysics survey and makes recommendations for a future exploration program. The purpose of this Report is to file an airborne geophysics survey for assessment credit.

Sources of information for this Report include Ministry of Northern Development, Mines, Natural Resources and Forestry ("MNDMNRF") assessment files listed in Appendix 3 and references listed in section 12.0. Tenure information was derived from MNDMNRF MLAS map viewer website (<u>https://www.mndm.gov.on.ca/en/mines-and-minerals/applications/mlas-map-viewer</u>). Some sections of



this report, e.g., History Section 6.0, are derived from a previous assessment report filed on the Marriott Property for exploration work completed in 2018 (Valvasori et al., 2019).

#### 2.2 Terminology

**EM**: Electromagnetic geophysics surveys are used for base metal sulphides via detection of conductivity anomalies which can be generated around sulphide bodies in the subsurface (https://en.wikipedia.org/wiki/Exploration\_geophysics).

**IP:** Induced Polarization geophysics surveys are used to identify the electrical chargeability of subsurface materials (<u>https://en.wikipedia.org/wiki/Induced\_polarization</u>). IP surveys are used in mineral exploration to identify gold, copper, silver, pyrite and massive sulfide minerals (<u>https://www.agiusa.com/introduction-to-induced-polarization-surveying</u>).

**MNDMNRF**: Ministry of Northern Development, Mines, Natural Resources and Forestry which is the provincial ministry responsible for managing mining claims (Mining Lands Section) and Ontario Geological Survey.

**MLAS**: Mining Lands Administration System is the electronic system established by the Minister for administering public lands for mining purposes and for the online registration of mining claims.

**GNSS**: Global Navigation Satellite System; GNSS receiver is an electronic device that receives and digitally processes the signals from a GNSS satellite constellation in order to provide position, velocity and time.

**VTEM**: Versatile Time Domain Electromagnetic geophysics survey. Geotech's VTEM system offers exceptional data, greater depth perception and higher resolution as a result of high-quality signal-to-noise levels. It also offers the ability to energize strong conductors and explore more deeply through adjustable pulse widths. Geotech website: <u>http://geotech.ca/services/electromagnetic/vtem-versatile-time-domain-electromagnetic-system/</u>

#### 2.3 Units

The Metric System is the primary system of measure and length used in this Report and is generally expressed in kilometres (km), metres (m) and centimetres (cm); volume is expressed as cubic metres (m<sup>3</sup>), mass expressed as metric tonnes (t), area as hectares (ha), and gold and silver concentrations as grams per



tonne (g/t). Conversions from the Metric System to the Imperial System are provided below and quoted where practical. Many of the geologic publications and more recent documents now use the Metric System but older documents almost exclusively refer to the Imperial System. Metals and minerals acronyms in this report conform to mineral industry accepted usage and the reader is directed to www.maden.hacettepe.edu.tr/dmmrt/index.html for a glossary.

Other abbreviations include ppb = parts per billion; ppm = parts per million; oz/t = troy ounce per short ton;Moz = million ounces; Mt = million tonne; t = tonne (1000 kilograms); SG = specific gravity; lb/t = pound/ton; and, st = short ton (2000 pounds).

Dollars are expressed in Canadian currency (CAD\$) unless otherwise noted. Where quoted, Universal Transverse Mercator (UTM) coordinates are provided in the datum of Canada, NAD 83, Zone 17.

## 2.1 Qualified Person

The Qualified Person and author for this Report is Dr. Julie Selway, Ph.D., P.Geo., Principal Geologist for J-J Minerals and a geologist in good standing with the Association of Professional Geoscientists of Ontario (APGO # 0738). Dr. Selway has over 25 years of work experience for academia, government and industry. Dr. Selway's specialties are writing NI 43-101 reports, QA/QC reviews of drill core assays, data compilations and project management. She is the co-author of eight NI 43-101 Independent Technical Reports on gold properties in Ontario, six assessment reports on gold properties in Ontario and senior reviewer of seven NI 43-101 Reports on gold properties. A certificate of qualifications for the Qualified Person is given in Appendix 1.

## **3.0 RELIANCE ON OTHER EXPERTS**

The author of this Report relied on Plato Gold's legal counsel and MLAS map viewer website (<u>https://www.mndm.gov.on.ca/en/mines-and-minerals/applications/mlas-map-viewer</u>) for tenure information and title opinion.



# 4.0 PROPERTY DESCRIPTION AND LOCATION

## 4.1 Location

The Marriott property is located 66 km east of Matheson, in the northeast corner of Marriott Township, Ontario (Figure 4-1). The east side of the property is coincident with the Ontario-Quebec provincial border. It is located within NTS sheets: 52L07A and 52L08D. The center of the Property is 608849 m E, 5375250 m N, Zone 17, NAD 83. Highway 101 crosses through the northern part of the property (Figure 4-2).





Figure 4-1. Regional location of Marriott Property. Map obtained from Google Earth.

#### 4.2 Description and Ownership

The property consists of 98 cell claims in Marriott Township, Larder Lake Mining Division and covers a nominal area of approximately 2627 ha and is 6.2 km x 3.8 km in size (See Figure 4-3). The claims are held 100% by Plato Gold Corp. and are in good standing. Claims are owned 100% by Plato with ownership



having been transferred to Plato effective October 9, 2002 from Mr. H.E. Neal. Cell claim table is given in Appendix 2. Newmont controls all of the property north of Marriott Property.



Figure 4-2. Highway 101 on Marriott Property at the Ontario-Quebec border

#### 4.3 **Requirements to Retain the Property**

In Ontario, to retain a mining claim, companies must submit an assessment file to MNDMNRF's Geoscience Assessment Office showing that they have spent \$400/per single cell claim unit and \$200 per boundary claim on exploration. The initial mining claim is issued for a term of 2 years and then renewed every year afterward.



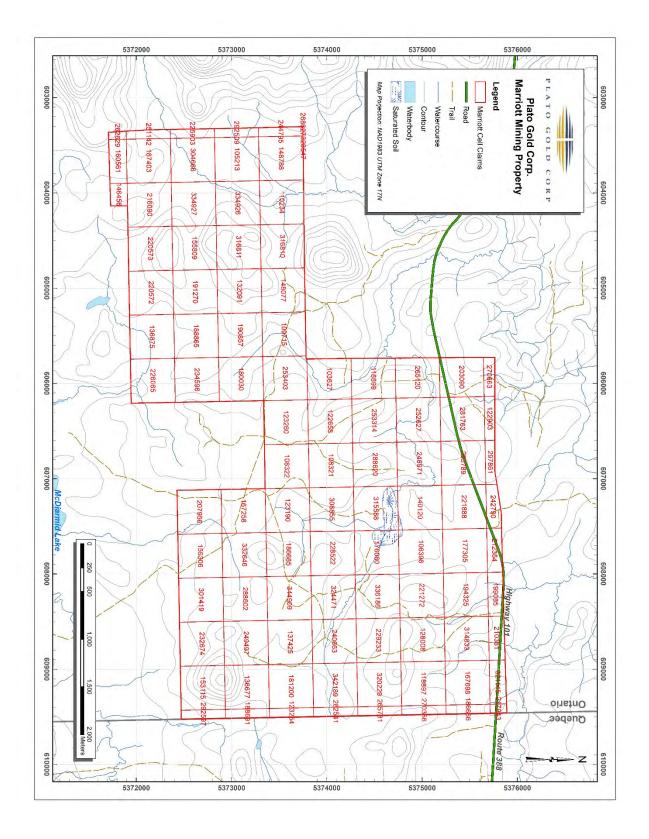


Figure 4-3 Tenure map of Marriott Property, northeastern Ontario



# 5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

#### 5.1 Access

The Marriott Property has excellent access and infrastructure. The property is accessible year-round via Highway 101. The Property can be accessed by driving East from Kirkland Lake along highway 66 for 14.3 km then turning left on Highway 672 (Figure 5-1). After 47.3 km of travel north, make a right turn onto Highway 101 (Figure 5-2). The Marriott Property is located 15km down Highway 101. A network of abandoned secondary clay and sand-based logging and drill roads dissects the Property. Trails within the Property are shown in Figure 4-3.



Figure 5-1. Turn-off from Highway 66 to Highway 672





Figure 5-2. Turn-off from Highway 672 to Highway 101

#### 5.2 **Topography Vegetation and Physiography**

The Marriott Property has flat lying to gently rolling terrain with topographic relief up to 40 m and an elevation ranging between 200 and 300 m above sea level. Outcrop on the Property is limited due to glacial overburden which is typically between 5 and 10 m in depth; however, several large ridges are present on the property. The Property has good drainage with several small creeks and rivers. The forest in the area is typical of the Boreal Shield with thick black spruce and jack pine forest with stands of lesser stands of poplar and birch. The forest on the property is second or third growth as a result of logging operations.

The Canadian Climate normals for 1971-2010 from Environment Canada (www.climate.weatheroffice.gc.ca/climate\_normals/) for Timmins (closest weather station to the property) indicate that the daily average temperature ranges from -17.5°C in January to 17.4°C in July. The highest average accumulation of rain for a month is 90.9 mm in July. The highest average accumulation of snow for a month is 65.2 cm in December. The highest average snow depth is 64 cm in February. Drilling can



be conducted year-round except for spring thaw in mid-March and April. Geological mapping and outcrop sampling can be conducted May to November when there is no snow on the ground.

#### 5.3 Infrastructure and Local Resources

The Marriott Property is well situated as it is close to both the Holloway and Holt-McDermott Mines. As such, local infrastructure such as power and fuel sources are well developed (Figure 5-3). Furthermore, water is plentiful in the area and can be sourced from local rivers and lakes. The Property is easily accessible as Highway 101 runs through it; two major airports are also near the Property (in Timmins and Rouyn-Noranda). There are several communities near the Property including Cochrane, Timmins and Kirkland Lake that can provide accommodations, grocery stores, hardware stores and hospital for labourers, as well as provide the skilled labourers required to run an exploration program or a gold mine.



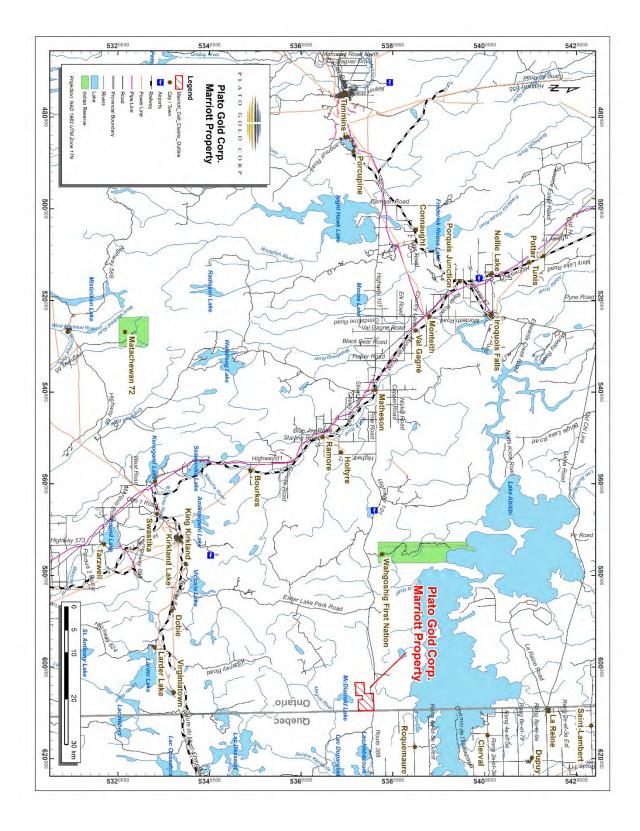


Figure 5-3 Regional infrastructure map.



The Property's surface rights are owned by the crown and they are sufficient for future mining operations. The Marriott Property does not a have a resource estimate and thus a discussion of potential tailings storage areas, potential waste disposal areas, heap leach pad areas and potential processing plant sites is not currently relevant to the Property.

## 6.0 HISTORY

#### 6.1 Early Exploration (1973-1884)

The first work recorded for the property was carried out by E. Chorzepa in 1973. He excavated a trench on present claim L-738440 that exposed massive chert containing fine disseminated pyrite (felsic volcanic horizon).

In 1984, the property was staked for Mr. H.E. Neal of Toronto and a geological mapping program was carried out over the eastern section of the property (MNDMNRF report 32D12SE0100). The survey concluded the claim group to be mostly underlain by basalt and andesites.

# 6.2 Exploration by Dickenson Mines Ltd & New Cinch Uranium Ltd (1985-1993)

Dickenson Mines Limited ("Dickenson") and New Cinch Uranium Ltd ("New Cinch") optioned the property in 1985. A grid of north- south cross lines was cut over the entire property at 100 m intervals and a geophysical program comprising total field ground magnetic and VLF-EM surveys were carried out (MNDMNRF report 32D12SE0098).

Dickenson and New Cinch carried out a second phase of exploration in 1986. This phase included a geological mapping program (MNDMNRF report 32D12SE0092) and an outcrop lithogeochemical survey (MNDMNRF report 32D12SE0090). The entire property was mapped using the grid of 100 m lines cut in 1985 and a lithogeochemistry program aimed at collecting a sample from every outcrop or outcrop area on the property was undertaken. Structures defined on the basis of the geophysical programs in 1985 were specifically targeted. A total of 433 outcrop samples were collected and analyzed for a suite of trace elements and whole rock oxides. No first-class geochemical anomalies were defined that might imply immediate proximity to a gold system but numerous lesser quality anomalies possibly suggestive of



possible mineralization were indicated. An area adjacent to the border with Quebec showed enhanced levels of low intensity carbonatization (calcite) and a portion of the property north of Highway 101 showed higher levels of antimony and carbonatization.

In early 1988, a diamond drill program was conducted for Dickenson and New Cinch (MNDMNRF report 32D12SE0087). Ten holes were completed totaling 1889 m numbered M88-01 to M88-10 (Figure 6-4). The best assay obtained was 2.47 g/t Au over an intersection length of 1.0 m within a zone of lower grade assays in hole M88-09. The purpose of the drill holes was to test magnetic lows, lithology contacts and fault zones.

#### 6.3 Exploration by Hemlo Gold Corp (1994-1996)

Hemlo Gold Corp ("Hemlo") optioned the property in 1994. Hemlo cut 16.8 km of line in the northeast corner of the property coincident with the grid established in 1985 (MNDMNRF report 32D12SE0079). Lines oriented north-south were cut at 200 m intervals. An IP survey was conducted along the lines followed by a drill program targeting anomalies generated during the IP survey. Nine diamond drill holes numbered GH95-101 to 107, 111 and 114 were completed with a total length of 2867 m (Figure 6-4) (MNDMNRF report 32D12SE0078). The highest grade result from the drill program was intersected in an IP anomaly in hole GH95-105. The mineralization occurs in sheared and brecciated, weakly to moderately silicified, sericitized and albitized mafic volcanic unit which graded 1.71 g/t Au over 2 m. A series of known, semicontinuous, untested IP anomalies remain on the Marriott property which may be the target for future drill programs.

#### 6.4 Exploration by Plato Gold (1997-2005)

Watts, Griffis and McOuat Limited ("WGM") reviewed the property in February 1997 and proposed that an exploration program be carried out to target gold mineralization associated with the Destor-Porcupine Deformation Zone ("DPFZ") splay or subsidiary faults. This program was to include line cutting/grid rehabilitation, reprocessing of previous geophysical data, fill-in magnetic surveying where required, an IP survey and a first phase diamond drill program.

Paterson, Grant *Si* Watson Limited ("PGW") was contracted in June 1997 to supervise a program of line cutting and geophysics and undertook the reprocessing of the previous ground magnetic survey data. Based on PGW's recommendation five swaths across the centre of the property were selected for grid cutting/refurbishing and IP surveying. Quantec Consulting Inc. ("Quantec") was contracted to undertake



the line cutting and IP survey (MNDMNRF report 32D12SE2007). Approximately 57.6 km of grid line including baseline and tie lines were cut and picketed.

In December 2001, R. W. Risto Geological Services ("RWR") visited core storage sites at the Holloway Mine and Lava Mountain on behalf of Plato and collected 142 samples of core from various 1995 Hemlo and 1988 Dickenson/New Cinch drill holes (MNDMNRF report 32D12SE2027). One hundred and twelve of these samples were analysed for whole rock oxides and a suite of trace metals. Analytical results were interpreted using both traditional and mass balance methods. The result of this work was published in Risto, 2002 and filed with MNDMNRF for assessment credits. Plato successfully completed the requirements of the option agreement with Mr. H.E. Neal and the property was transferred to Plato effective October 9, 2002.

In December 2002, RWR was retained by Plato to conduct a lithogeochemical program on its Marriott property, Larder Lake Mining Division, Ontario (MNDMNRF report 32D12SE2030). The program consisted of mass balance re-interpretation of lithogeochemical results for outcrop samples initially collected and analysed in 1985 and 1986 plus 30 new samples from historical drill core. The purpose of the program was to define and characterize alteration patters due to gold mineralization in the historic drill core. Gold mineralization at both Newmont's Holloway and Barrick's Holt McDermott gold mines were known to be associated with zones of carbonatized, potassium enriched, albitized, silifcified and pyritized basalt. Several drill holes displayed extensive zones of weak to moderate intensity alteration characterized by carbonatization and potassium enrichment accompanied by enrichments in gold, arsenic, antimony, and tungsten.

In Winter 2004, Plato contracted Abitibi Geophysics Inc. to carry out a 25.5 km of ground IP survey (MNDMNRF report 32D12SE2032). Three different sets of resistivity/IP anomalies were identified, of which six first-priority and eight second-priority gold exploration targets were highlighted for immediate follow-up. Only two of these fourteen promising targets had previously been tested by drilling. WGM completed a NI 43-101 report on Plato's properties in northern Ontario.

In Winter 2005, Plato contracted Abitibi Geophysics to carry out an ground IP survey (13.0 km) over the property. Results were compiled, interpreted and integrated with the previous campaigns (MNDMNRF report 32D12SE2035). Two additional DDH targets were proposed over promising anomalies. In support



of this program and ongoing efforts to geo-reference historical data for the property DGPS surveying of the grid lines subject to the IP survey and old claim posts were undertaken.

In Summer 2005, Abitibi Geophysics carried out a total of 19.4 km of ground IP surveying on the property as a complementary follow-up from the winter 2005 program (MNDMNRF report 20000001064, 2.31525). The remainder of the grid on the property not cut since 1997 was re-cut with grid lines at 100 m intervals. A total of 19 resistivity/IP anomalies (newly outlined trends or extensions from previously defined anomalies) were identified. The results from this survey and previous geophysical surveys (Winter 2004 & Winter 2005) were compiled, interpreted, and described. A total of 6 first-priority targets, 1 second-priority target, and 9 third-priority targets were identified.

From October to December 2005, Plato conducted a diamond drill program on its Marriott Property (MNDMNRF report 20000001304, 2.32009). The program consisted of line cutting, induced polarization (IP) surveys and diamond drilling. The drilling comprised 11 drill holes totalling 2858 m MP-01 to 11 series (Figure 6-4). The goal of the drill program was to target IP anomalies identified during the earlier IP surveys completed by Quantec Consulting Inc. ("Quantec") in 1997 and Abitibi Geophysics Inc ("Abitibi") in Winter-2004, Winter-2005, and Summer-2005. MP-01 returned 1.86 g Au g/t over 1.0 m from 185.3 to 186.3 m. This intersection appears to be the extension of a zone intersected by historical Hemlo drill hole GH95-105, located 200m east of MP-01. These two intersections are interpreted to represent a splay fault subsidiary to the DPFZ.

MP-10 situated in the northwest corner of the Property adjacent to the DPFZ, returned 2.4 Au g/t over 1.0 m from 211.8 to 212.8m and 5.14 Au g/t over 1.0 m from 222.3 to 223.2m. MP-10 also cut a zone of brecciated quartz carbonate veining enveloped by strongly sericitic and strongly pyrite mineralized altered basalt from 269.1 to 274.8m. This zone returned trace gold indicative of weak gold enrichment. MP-07 intersected 0.96 Au g/t over 0.5m from 91.5 to 92.0m.

## 6.5 Exploration by Kirkland Lake Gold (2016)

In October 20 to 26, 2016, Geotech Limited flew a helicopter-borne versatile time domain electromagnetic (VTEM Plus) and horizontal magnetic gradiometer geophysical survey for Kirkland Lake Gold (MNDMNRF assessment report 2.57600). Kirkland Lake Gold had optioned the Marriott Property from Plato Gold at the time. The survey used a GPS navigation system. A total of 246 line-km of geophysical



data were acquired during the survey. Survey lines were flown north-south with traverse line spacing of 100 m and tie lines flown perpendicular to the traverse line at 1000 m spacing.

The magnetic tilt – angle derivative figure is useful to help interpret locations of faults on the Property (Figure 6-1). Within the Abitibi Subprovince, gold mineralization tends to be associated with the Porcupine-Destor Fault, splay faults and cross cut faults.

The electromagnetic geophysics survey on the Marriott Property shows three linear trends of EM conductors (Figure 6-2). One of the conductors aligns with Highway 101 and the power line. The other conductive anomalies can be interpreted as lithological conductors (i.e, pyrite, lithology contacts) and structural conductors (MNDMNRF assessment report 2.57600).

The majority of the conductors on the Property have not been drilled. Historic drill hole GH95-105 from 57.0 to 57.5 m, 0.5 m interval has 1.15 g/t Au and 57.5 to 59.0 m, 1.5 m has 1.81 g/t Au. This interval is massive mafic flow with moderate sericite and albite alteration and 1-4% pyrite overall. This gold mineralization was on the Marriott Property and corresponded to the edge of a conductor. MP-01 returned 1.86 g Aug/t over 1.0 m from 185.3 to 186.3 m. This intersection appears to be the extension of a zone intersected by historical drill hole GH95-105, located 200m east of MP-01. Historic hole M88-09 also intersected gold mineralization (2.41 g/t Aug over 1 m) and a conductor. This suggests that the other conductors on the Property may also correlate with gold mineralization.



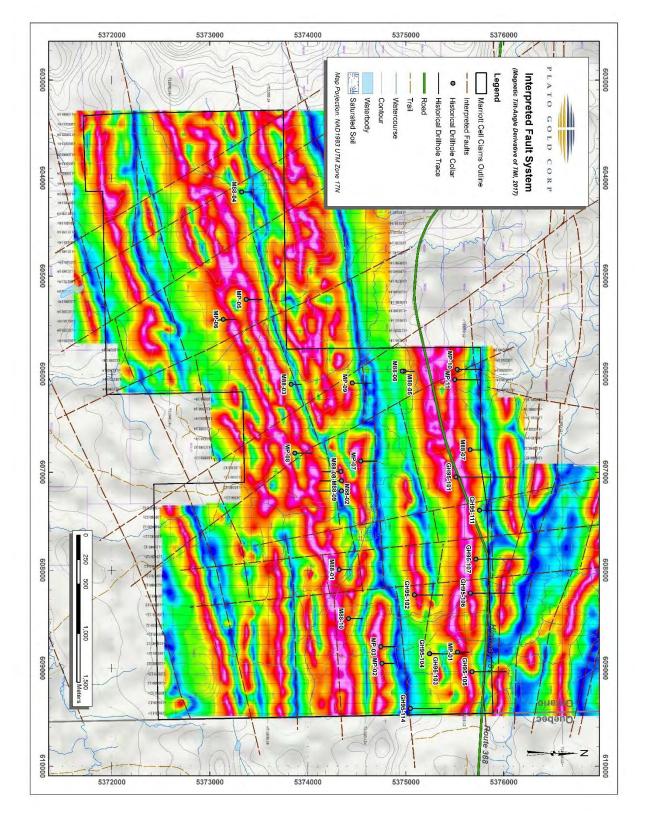


Figure 6-1 Magnetic tilt – angle derivative (from MNDMNRF report 2.57600) with interpreted faults.

Assessment Report Marriott Property Plato Gold Corp.



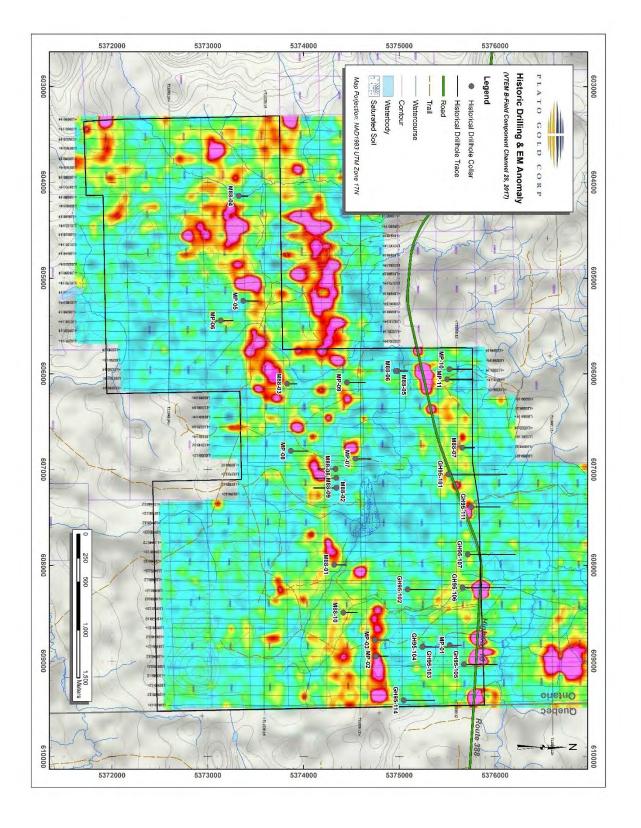


Figure 6-2 VTEM B-field Z component, Channel 28 (from MNDMNRF report 2.57600)



## 6.6 Exploration by Plato (2018)

Prospecting was done within the northeast part of the Marriott Property between November 28 and 30, 2018 (MNDMNRF assessment report 20000019183). The goals of the prospecting were to determine the abundance of outcrops on the Property, correlate lithology with moderate topographic highs and lows, and to correlate the drill hole locations with the E-W Porcupine Destor fault, NE-SW cross faults and splay faults on the Property.

The distribution of outcrops is patchy with abundant outcrops in some areas and sparse outcrops in others. The outcrops examined on the topographic highs were mostly tholeiitic basalts and the drill holes collars examined were collared on thick overburden. There is a cross fault between drill holes GH95-105 and GH95-103 which cross cuts the trail. There is a second cross fault between holes GH95-107 and GH95-101 which cross cuts Highway 101 (Figure 7-4).

Seven historic drill collars were successfully located and surveyed with the Trimble R2 GNSS receiver including GH95-105, GH95-106, GH95-107, GH95-101, GH95-104, GH95-103, and GH95-114 (Table 6-1 and Figure 6-3). The approximate location of historic drill collar GH95-103 was found using a portable stake finder but the actual collar was not located. The DGPS used in this survey has an accuracy of  $\pm$  10 cm for the Easting and Northing. These historic holes were drilled in 1995 using local grid coordinates and the elevation was not recorded for the collars when they were drilled. Thus, this is a significant improvement in their collar locations.

	Duill	<b>F</b> a at i a a		Florestion	<b>a</b> _ :	D:	Casing	
	Drill	Easting	Northing	Elevation	Azimuth	Dip	Length	
Date	hole No	(m)	(m)	(m)	(°)	(°)	(cm)	Comments
Nov 28	GH95-							good
2018	105	609029.8	5375678	286.51	0	-60	53	condition
Nov 28	GH95-							good
2018	106	608227.5	5375662	286	0	-50	62	condition
Nov 28	GH95-							good
2018	107	607884.8	5375740	291.99	0	-50	79	condition
Nov 28	GH95-		5375514.					poor
2018	101	607051.69	38	293.55	10	-40	5	condition
Nov 29	GH95-							good
2018	104	608849.2	5375249	301.05	0	-40	43	condition
Nov 29	GH95-							detected
2018	103	608851.1	5375251	301.66				collar below

Table 6-1. Summary table for new drill collar locations from November 2018 DGPS program



	Drill	Easting	Northing	Elevation	Azimuth	Dip	Casing Length	
Date	hole No	(m)	(m)	(m)	(°)	(°)	(cm)	Comments
								surface but
								could not
								see the
								collar
								good
Nov 30	GH95-							condition;
2018	114	609407.3	5375048	306.18	0	-50	52	orange cap

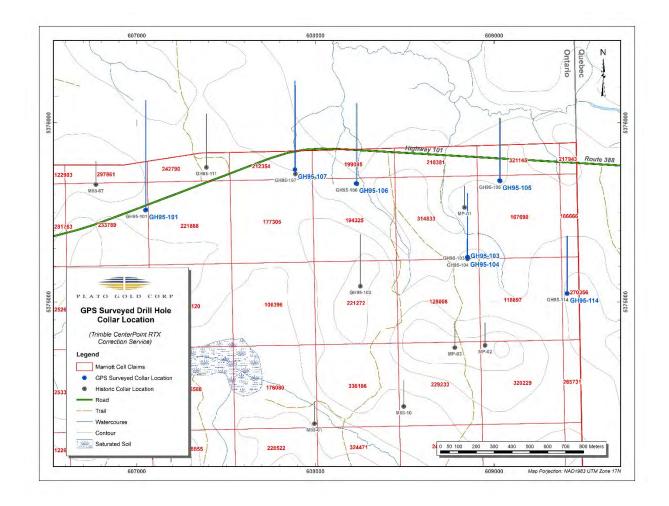


Figure 6-3. New historic drill collar locations resulting from November 2018 DGPS program



### 6.7 Exploration by Plato (2019)

Prospecting was completed on the Marriott Property between Sept. 24 and 28, 2019 (MNDMNRF assessment report 20000018152). Outcrops are abundant on the property and many of the outcrops and EM anomalies were topographic highs. Sampling included rocks which contain characteristic minerals such as pyrite, quartz-carbonate veins, blue or green chlorite and fuchsite (Cr-mica) that typically are associated with gold mineralization in the Abitibi Greenstone Belt. Sampling also included EM anomalies from Kirkland Lake Gold's 2016 VTEM survey. Unfortunately, the grab samples assayed contained no significant gold assays.

Altered basalt was found in numerous outcrops on the Property. For example, sample 159455 is a large cliff of basalt with quartz + carbonate veins with green alteration (likely chlorite) and a strong reaction to HCl acid. Sample 159473 is from a large outcrop of fine-grained basalt with calcite blebs up to 4 mm with a strong reaction to HCl acid. The basalt also contains 1% black irregular shaped minerals of possible magnetite. The basalt is strongly magnetic with trace sulfides. Sample 159474 is from a very large cliff (> 10 m high) of strongly altered andesite with fuchsite, chlorite and carbonate. Presence of fuchsite, chlorite and carbonate are indicated by 14.2 %  $Al_2O_3$ , 14.7 % CaO and 4.0% LOI.

In the southeast part of the property, an outcrop of flow top textured very fine-grained basalt with trace sulfides was identified (sample 159492). The outcrop corresponded with an EM anomaly and has elevated Fe, Mg and LOI contents (16.9 %Fe2O3, 5.73 % MgO and 4.32 % LOI). This flow texture is likely the same rocks that are referred to as brecciated basalt in historic drill core.

Randomly selected 17 grab samples were also assayed for whole rock oxides to aid in lithology identification and check for correlation between the gold mineralization and whole rock composition. Basalt samples (e.g., sample 159403) that were magnetic also had elevated Fe, Ti and V contents (~17.0% Fe<sub>2</sub>O<sub>3</sub>, ~2% TiO<sub>2</sub> and ~0.10% V<sub>2</sub>O<sub>5</sub>). Basalt samples with green or blue alteration minerals which could be chlorite or fuchsite have elevated Al and LOI (loss of ignition indicating H<sub>2</sub>O or CO<sub>2</sub>) contents (> 12.0% Al<sub>2</sub>O<sub>3</sub> and > 3.0% LOI). An example of blue to teal coloured basalt is sample 159483 which was strongly magnetic and contained fine-grained sulfides and chlorite (5.87 % MgO, 14.4% Al<sub>2</sub>O<sub>3</sub>, and 3.88 % LOI).

The geologists also did ground truthing check on the EM anomalies from Kirkland Lake's 2016 VTEM survey that were located along Highway 101. It was suspected that the EM anomalies might have been caused by power lines, but actually seven of the anomalies were cause by metal culverts and/or by wires along the side of the road. For example, the EM anomaly on Highway 101 at waypoint AR-19-03 is caused



by both wires and culvert. Only two of the EM anomalies had no wires or culverts and were related to outcrops (samples 159497 and 159498). Sample 159497 is fine-grained massive basalt with minor quartz + carbonate veining and trace sulfides. The basalt is moderately magnetic with a weak reaction to HCl acid. Sample 159498 is fine-grained massive basalt with a 2 cm shear zone with an azimuth of 290°.

### 6.8 Summary of Exploration History

A summary of the historic exploration on the Marriott Property is given in Table 6-2. A summary of all of the historic drill hole locations is given in Figure 6-4.



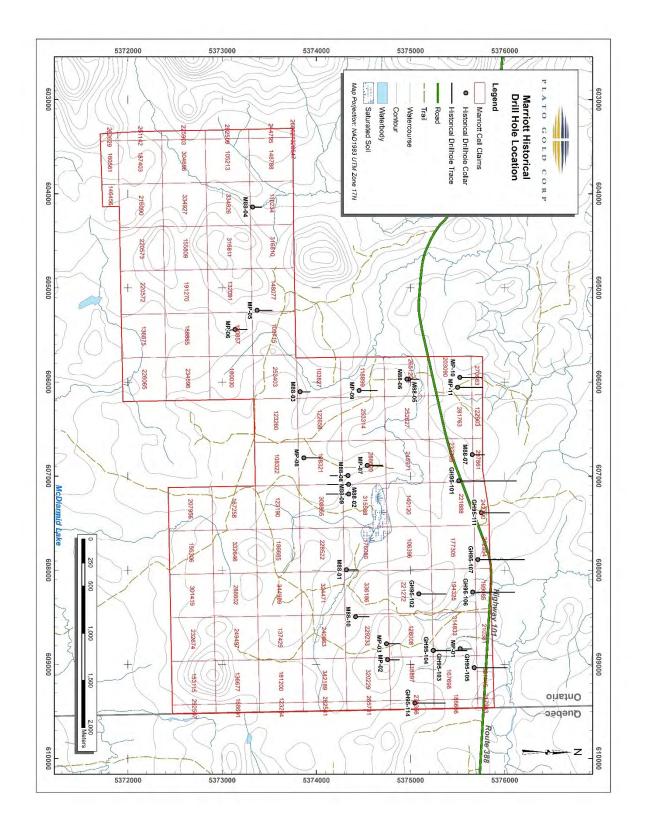


Figure 6-4 Location of historical drill holes on the Marriott Property.



## Table 6-2. Summary of exploration previously done on the Marriott Property

Assessment Report Number	Year of Report	Year of Work	Company	Type of Work	Description of Work
32D12SE0100	1985	1984	H.E Neal & Associates Ltd	Geological survey	Geological survey along compass lines at 122 m intervals
32D12SE0098	1986	1986	Dickenson Mines Ltd and New Cinch Uranium Mines Ltd	Geophysical survey	Very low frequency electromagnetic (VLF- EM) survey conducted along lines at 100 m intervals
32D12SE0092	1987	1987	Dickenson Mines Ltd and New Cinch Uranium Mines Ltd	Geological survey	Mapping of entire Marriott property with lines at 100m intervals
32D12SE0090	1988	1987	Dickenson Mines Ltd and New Cinch Uranium Mines Ltd	Lithogeochemical survey	Lithogeochemical survey over entire Marriott property, 433 rock samples collected and analysed for Au plus 20 other trace elements and whole rock oxides
32D12SE0087	1989	1988	Dickenson Mines Ltd and New Cinch Uranium Mines Ltd	Diamond drilling	Drilling of ten drill holes totalling 1889 m.



Assessment Report Number	Year of Report	Year of Work	Company	Type of Work	Description of Work
32D12SE0079	1995	1994- 1995	Hemlo Gold Mines Inc	Geophysical survey and diamond drilling	Line cutting (16.8 km), 14.0 km of ground magnetometer and induced polarization surveying at 200 m line spacing, diamond drilling of five drill holes totalling 2867.3 m
32D12SE2007	1999	1997	Plato Gold Corp.	Geophysical survey	Induced polarization, magnetics, and VLF EM surveys over Marriott Property
32D12SE2027	2002	2002	Plato Gold Corp.	Lithogeochemistry	Lithogeochemical sampling program on diamond drill core drilled in 1988 and 1995.



Assessment Report Number	Year of Report	Year of Work	Company	Type of Work	Description of Work
32D12SE2O3O	2003	2003	Plato Gold Corp.	Lithogeochemistry	Reinterpretation of lithogeochemical analytical data for samples collected in 1985 and 1986; analysis of 30 drill core samples collected in Winter 2001
32D12SE2032	2004	2004	Plato Gold Corp.	Geophysical survey	Line cutting (30.6 km) and induced polarization survey (25.5 km of dipole- dipole, a = 50 m, n = 1- 6)
32D12SE2035	2005	2005	Plato Gold Corp.	Geophysical survey	Line cutting (13.0 km) and induced polarization survey (13.0 km of dipole- dipole, a = 50 m, n = 1- 6)
2000001064	2005	2005	Plato Gold Corp.	Geophysical survey	Inducted polarization survey (19.4 km of dipole-dipole, a = 50 m, n = 1-6)



Assessment Report Number	Year of Report	Year of Work	Company	Type of Work	Description of Work
2000001304	2006	2006	Plato Gold Corp.	Diamond drilling	Diamond drilling of 11 drill holes totalling 2858 m.
2.57600	2017	2016	Kirkland Lake Gold	geophysics	Airborne VTEM Plus and horizontal Magnetic gradiometer survey
20000019183	2018	2019	Plato Gold Corp	prospecting	DGPS survey of 7 historic drill hole collars
20000018152	2019	2019	Plato Gold Corp	Prospecting	ground truthing EM anomalies

# 7.0 GEOLOGICAL SETTING AND MINERALIZATION

#### 7.1 Regional Geology

The Marriott property is located in the Timmins-Kirkland lake area of the ~800 x 240 km Abitibi Greenstone Belt which is comprised of Archean volcanic, sedimentary and intrusive rocks cut by occasional Proterozoic diabase dikes. Abitibi Subprovince is known for its abundance of lode gold deposits which occur in deformed and metamorphosed terranes along the major structures: Porcupine-Destor fault zone ("PDF") and Larder Lake – Cadillac fault zone ("LLCD") (Dubé et al., 2017) (Figure 7-1).



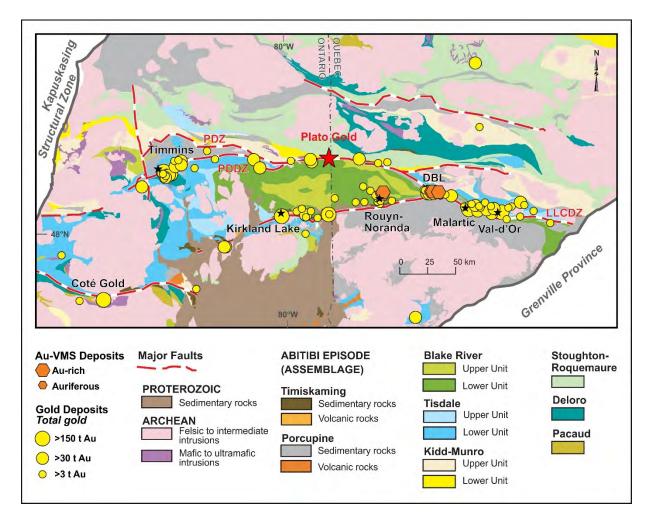


Figure 7-1 Simplified geological map of the Abitibi Subprovince with location of major gold deposits (modified from Dubé and Mercier-Langevin, 2015).

*PDZ* – *Porcupine-Destor fault zone, PDDZ* – *Porcupine-Destor Deformation Zone, LLCDZ* – *Larder-Lake-Cadillac Deformation Zone, DBL* – *Doyon-Bousquet-LaRonde mining camp.* 



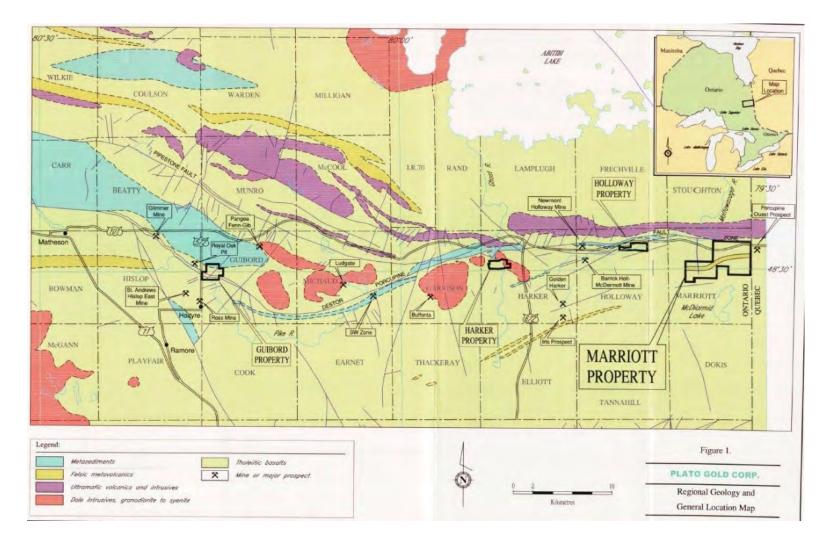


Figure 7-2. Regional geology of the Destor-Porcupine Deformation Zone (DPDZ). Map taken from MNDMNRF report 32D12SE203



Within the Abitibi Greenstone belt, two major volcanic cycles have been defined: the Lower and Upper Supergroups (Jensen and Langford, 1985). The stratigraphic succession adapted after Jensen and Langford and reinterpreted after Ayer et al (1999) is shown in Table 7-1. Figure 7-2 presents the generalized geology of the area.

Table 7-1. Stratigraphic succession of Lower and Upper Supergroups. Adapted after Jensen and Langford, 1985 and reinterpreted after Ayer et al, 1999.

#### **Stratigraphic Succession**

#### **Upper Supergroup**

#### **Destor-Porcupine Complex**

Volcanic rocks: Alkali basalt and alkali-rich felsic rocks.

Sedimentary rocks: Turbiditic conglomerates, greywacke, argillite and ironstone.

Intrusions: Stocks and dykes of syenodiorite, granodiorite and quartz monzonite.

#### Blake River Assemblage

Volcanic rocks: Calc-Alkalic basalt, andesite, dacite and rhyolite flows and tuffs. Sedimentary rocks: Volcaniclastic slump deposits.

Intrusions: Stocks and dykes of gabbro, quarz gabbro, hornblende gabbro, diorite, and subvolcanic rhyolite domes.

#### Kinojevis Assemblage

Volcanic rocks: Mg-rich and Fe-rich tholeiitic basalts and tholeiitic andesite, dacite and rhyolite flows and volcaniclastics.

Sedimentary rocks: Thin interflow argillite and chert.

Intrusions: Sills of Mg-and Fe-rich gabbro.

#### Stoughton-Roquemaure Assemblage

Volcanic rocks: Flows of peridotite and basaltic komatiite and Mg-rich tholeiitic basalt, minor Fe-rich tholeiitic basalt and minor calc-alkalic rhyolite tuff and cherty tuff. Sedimentary rocks: Minor chert and iron formation.

Intrusions: Sills and stocks of peridotite, pyroxinite and gabbro.

## Lower

Supergroup

#### *Kidd-Munro Assemblage (Hunter Mine Group)*

Volcanic rocks: Mainly calc-alkalic dacite and andesite tuff-breccia with some calcalkalic basalt, andesite and dacite flows. Sedimentary rocks: Cherts, iron formation and turbiditic greywacke, and argillite (may be equivalent to Porcupine Group) Intrusions: Dikes of quartz-feldspar porphyry and trondhjemite of Lake Abitibi Batholith.



Plato Gold's Marriott Property lies within the Upper Supergroup which is comprised of volcanic and sedimentary rocks that strike ~east-west, dip south and face south towards the axis of the Blake River synclinorium. Rocks of the Lower Supergroup may have diverse orientations as they were folded prior to the deposition of the Upper Supergroup.

The dominant structure in the area is the Destor-Porcupine Deformation Zone ("DPDZ") which extends east-west a distance of at least 300 km from Timmins to Destor. The DPDZ does not represent one discrete fault but a number of fault branches of several succeeding orders separating a number of fault blocks. Branches of the DPDZ crosscut both the Lower and Upper Supergroups.

Metamorphic grade in the area ranges from sub-greenschist to greenschist facies.

#### 7.2 **Regional Mineralization**

The principal control for the distribution of gold mineralization in the area is proximity to the DPDZ (Figure 7-1). Differential movement along various branches and splays of the DPDZ has generated zones of dilation where gold has been precipitated. Second-order controls on mineralization are more obscure.

Berger, (2001) divided the DPDZ into 5 domains that are bounded by N-NW striking faults (Figure 7-3). The domains include: Timmins, Pamour, Nighthawk-Matheson, Hislop-Michaud and Harker Holloway. Regardless of domain, all gold mineralization associated with the DPDZ has alteration assemblages characterized by carbonatization, albitization and sericitization.

Plato's Marriott property lies within the Harker-Holloway domain. The Harker-Holloway domain hosts the Holloway and Holt-McDermott Mines, which are both located ~12km west of Plato's Marriott Property, as well as a number of other significant gold showings. Furthermore, the Porcupine-Ouest Occurrence is located ~1 km east of Plato's property just south of Highway 101. Several gold showings proximal to Plato's Marriott Property are associated with felsic volcanic horizons that are also present on Plato's Marriott property.



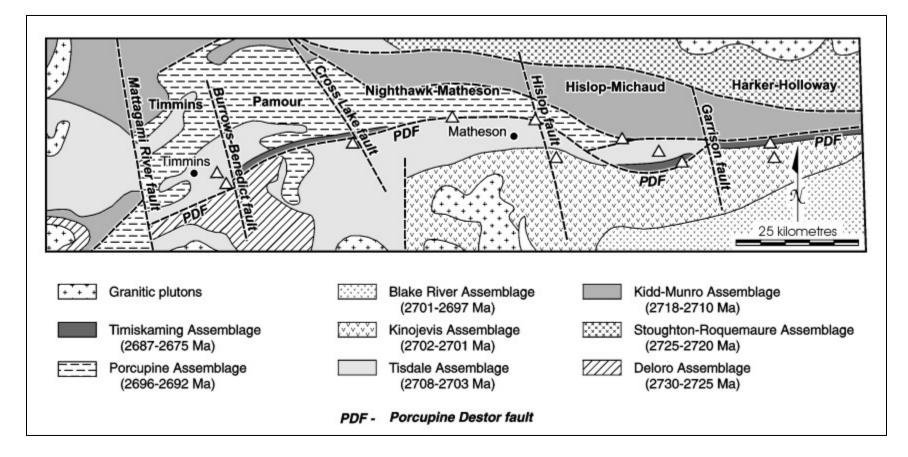


Figure 7-3. Domain Map of the Destor-Porcupine Deformation Zone (DPDZ) from Berger (2001)



## 7.3 Local Geology

Plato's Marriott property (Figure 7-4) is predominantly underlain by a series of alternating Fe-rich and Mgrich tholeiitic basalts belonging to the Kinojevis Group (Jensen, 1978). Texturally, these basalts can occur as massive or pillowed flows, flow-top or pillow breccias and hyaloclastites within the property.

Minor dacitic to rhyolitic volcanic rocks as well as graphitic interflow sediments are also present on the Property. A large felsic volcanic horizon has a true thickness of 90 m and extends 6 km. Furthermore, other felsic volcanic horizons are present in the western part of the property. These horizons are known to be weakly mineralized the southeast corner of Harker Township.



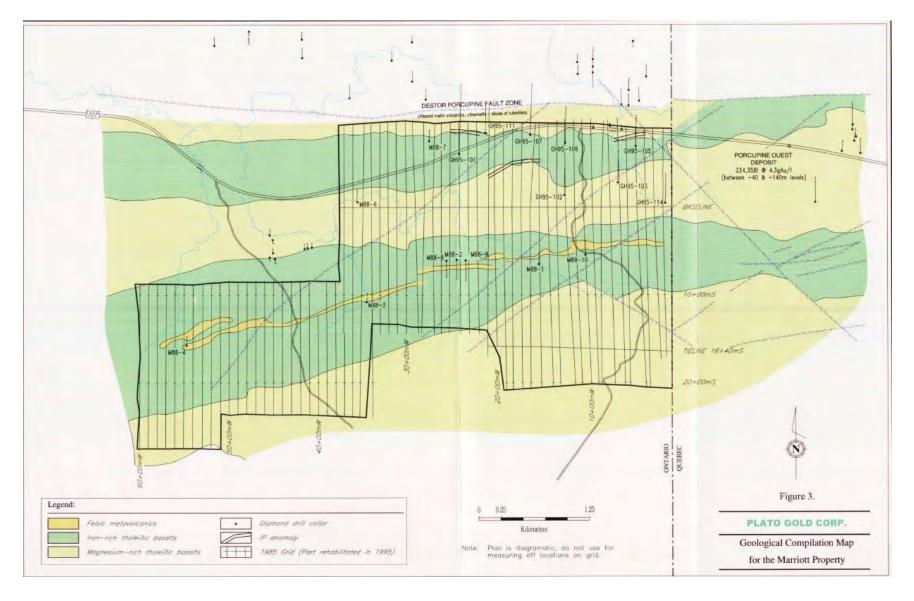


Figure 7-4. Marriott Property geological map. Taken from MNDMNRF report 32D12SE



## 7.4 Local Mineralization

The 1988 drill program showed that low levels of gold enriched mineralization occur in association with a felsic volcanic horizon that extends across the property. The 1995 Hemlo drilling program also intersected low levels of gold mineralization in association with narrow/minor shear/fault zones in the northern part of the property and a second narrow felsic volcanic horizon. These zones of deformation may be coincident with changes in character of volcanism from dominantly Fe-rich tholeiitic to Mg-rich or subsidiary faults of the DPDZ.

## **8.0 EXPLORATION**

## 8.1 Geophysics Survey Logistics

Pioneer Exploration Consultants Ltd's ("Pioneer") conducted an airborne magnetic survey using an Unmanned Aerial Vehicle (UAV) on the Marriott Property between Feb. 13 and Mar. 4, 2022 on behalf of Plato. In October 2016, Geotech Limited flew a helicopter-borne versatile time domain electromagnetic (VTEM Plus) and horizontal magnetic gradiometer geophysical survey on the Marriott Property at a line spacing of a 100 m. Pioneer's line spacing was to 25 and 50 m. Pioneer's survey was flown by a drone much closer to the ground than the previous helicopter-borne survey. The purpose of this survey was to obtain better resolution magnetic data than the historic surveys. The Marriott Property has basalt with high magnetic signal. Also, the magnetic geophysical signature can be used to show the geology including rock types, faults, shear zones, folding, alteration zones and other structures.

The staging locations were accessed by truck, with the use of a trailer mounted aerial platform to maintain line of sight from the roadway. Highway 101 is along the northern boundary of the Marriott Property and was used as a staging location for the drone driver to access the Northern Survey area. The drone driver must be within 2 km of the drone and must be in line of sight with the drone. As the trails on the Property were covered by waist deep snow and a thin ice crust, they were not useable by snowmobiles or argo during the survey. The last 3 days of the survey required helicopter access staged from the Heli Explore hangar in La Sarre, Quebec to access the Southern Survey area. The helicopter landed in the tall trees on the Southern Survey area to give the drone driver access to this area.



Extremely cold weather (i.e., below -20°C) and strong winds and heavy snow on site resulted in 5 standby days as the drone could not fly.

Pioneer's crew were based in Kirkland Lake, Ontario. Pioneer's crew arrived in Kirkland Lake on Feb. 14, 2022. The drone flew 9 days on Feb. 15, 17, 18, 21, 24 and 25 and March 2, 3 and 4. Pioneer's crew had standby 5 days due to weather on Feb. 16, 19, 20, 22 and 23. The drone did not fly for 4 days on Feb. 26, 27 and 28 and March 1 due to a broken argo. The survey was completed on March 4, 2022.

#### 8.2 Geophysics Survey Parameters

Pioneer's UAV mag survey covered all of Plato's Marriott Property claims as listed in Appendix 2 in Marriott township. Data collection for this survey area was conducted at multiple resolutions: 25 m spaced lines with 250 m spaced tie lines for the Northern Survey area, and 50 m spaced lines and 500 m tie lines for the Southern Survey area (Figure 8-1). Line direction was N-S (000°) and the tie lines were E-W. For a total of 573.593 line km.

The nominal magnetic sensor altitude above ground level (AGL) was set to 40 m. Satellite imagery was used to create a high resolution DSM to assist the UAV terrain following procedure and to minimize the possible topographic effects on the magnetic data. The nominal production groundspeed is 9 m/s for flat topography with no wind. The average distance covered by each flight is approximately 6-10- line kms of data acquisition.

The full report from Pioneer with the details of the survey including descriptions of the survey specifications, geophysical equipment, base station equipment, tests and calibrations and data processing is given in Appendix 4.



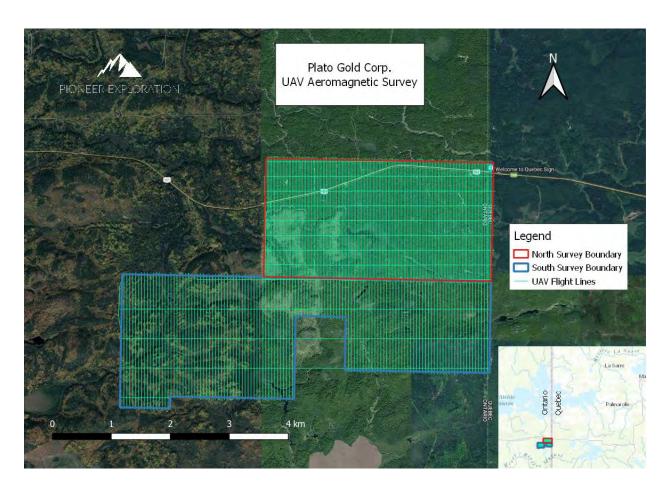


Figure 8-1 The north survey boundary is shown in red and the south survey boundary is outlined in Blue. UAV flight lines are green. Highway 101 is along the north part of the Marriott Property.



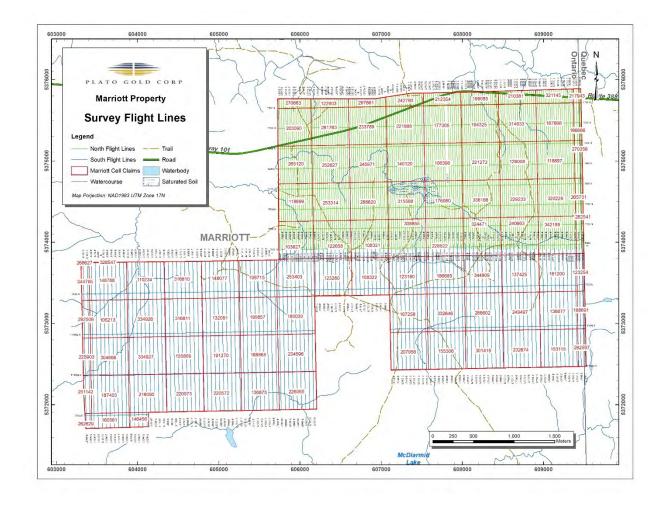


Figure 8-2 Flight path lines for Pioneer's UAV magnetic survey of the Marriott Property. Blue lines are the North Survey and green lines are the South Survey.

Cell Claim		
Number	Line km (m)	Line km (km)
270663	2401.56	2.402
122903	2520.46	2.520
297861	2418.84	2.419
242790	3032.02	3.032
212354	3326.09	3.326
199085	3359.42	3.359
210381	3606.44	3.606
321145	3372.34	3.372
217943	793.34	0.793

Table 8-1 Line km per cell claim for North Survey, Marriott Property.



total	309956.31	309.95631	
282541	1834.895	1.835	
342189	8248.79	8.249	
240663	8385.47	8.385	
324471	7820.98	7.821	
228522	8011.945	8.012	
308855	7224	7.224	
108321	7574	7.574	
122658	7233.4	7.233	
103627	6796.8	6.797	
265731	2041.54	2.042	
320229	9240	9.240	
229233	9702	9.702	
336186	9240	9.240	
176080	9702	9.702	
315588	9240	9.240	
288620	9702	9.702	
253314	9240	9.240	
118899	8699.92	8.700	
270356	1935.59	1.936	
118897	8778	8.778	
128008	9240	9.240	
221272	8778	8.778	
106396	8778	8.778	
140120	8778	8.778	
245971	8778	8.778	
252627	9240	9.240	
265120	8279	8.279	
186666	8778 1946.59	8.778 1.947	
167698	9240 8778	9.240 8.778	
194325 314833	9240	8.778 9.240	
177305	8778 8778	8.778 9 7 7 9	
221888	8778 8778	8.778	
233789	9240	9.240	
281763	8802.12	8.802	
203090	8262.76 8.263		



Table 8-2 Line km	per cell claim for the Sou	th Survey, I	Marriott Property.
Coll			

Cell		
Claim	Line km	Line km
Number	(m)	(km)
103627	1426.23	1.426
122658	1540.1	1.540
108321	1657.34	1.657
308855	1396.76	1.397
228522	1291.42	1.291
324471	1188.22	1.188
240663	1222.552	1.223
342189	1054.58	1.055
282541	242.98	0.243
268627	8	0.008
328547	13	0.013
244795	1021.223	1.021
148788	4630.09	4.630
110234	4611.28	4.611
316810	5035.71	5.036
148077	4563.76	4.564
109715	4557.85	4.558
253403	4634.34	4.634
123260	4620	4.620
108322	5082	5.082
123190	4620	4.620
186685	4620	4.620
344909	4620	4.620
137425	5082	5.082
181200	4620	4.620
123254	1015.7	1.016
292509	1013.09	1.013
105213	4620	4.620
334926	4620	4.620
316811	5082	5.082
132091	4620	4.620
190857	4620	4.620
180030	4620	4.620
167258	4620	4.620
332646	4620	4.620
288602	4620	4.620
249497	5082	5.082
136677	4620	4.620
188691	1028.87	1.029



Cell		
Claim	Line km	Line km
Number	(m)	(km)
225903	1019.16	1.019
304666	4620	4.620
334927	4620	4.620
155809	5082	5.082
191270	4620	4.620
188865	4620	4.620
234596	4620	4.620
207956	4620	4.620
155306	4620	4.620
301419	4620	4.620
232674	5082	5.082
153115	4620	4.620
292597	1022.58	1.023
251142	924	0.924
187403	4158	4.158
216090	4158	4.158
220573	4620	4.620
220572	4158	4.158
136875	4158	4.158
226065	4158	4.158
262629	454.74	0.455
160561	2103.11	2.103
146456	1131.77	1.132
Total	211970.455	211.970

Table 8-3 Comparison of percentage of survey within andoutside of the Marriott Property.

Northern Survey	309.956	line km
Southern Survey	211.970	line km
Total UAV mag survey	521.927	
survey on property	91.0%	
overfly	9.0%	

## 8.3 **Results Geophysics Survey**

The final magnetic data was used to produce three different magnetic maps by Pioneer: total magnetic intensity, first vertical derivative, and 3D analytical signal (Figure 8-3, Figure 8-4, Figure 8-5). J-J Minerals also produced total magnetic intensity reduced to pole, total magnetic intensity reduced to pole tilt



derivative and total magnetic intensity reduced to pole generalized derivative maps from Pioneer's data (Figure 8-6, Figure 8-7, Figure 8-8).

The total magnetic intensity data is used to highlight geological structures that may be visible in the survey area by their magnetic signature or their magnetic contrast to their surroundings. The total magnetic intensity map shows that there is one continuous E-W magnetic anomaly which corresponds to the iron-rich tholeiitic basalts shown in the local geology map (Figure 7-4 and Figure 8-3). It was noted during the 2019 sampling that basalt that is magnetic is also enriched in Fe, Ti and V. There is a second E-W magnetic anomaly along Highway 101 which also corresponds to iron-rich tholeiitic basalt. There is a third E-W magnetic anomaly in the SW corner of the Property. The magnetic lows correspond to the magnesium-rich tholeiitic basalt.

The first vertical derivative is used to delineate the contacts between large-scale magnetic domains because its value is zero over vertical contacts. The first vertical derivate map was used to identify interpreted regional faults and cross faults (see section 8.4).



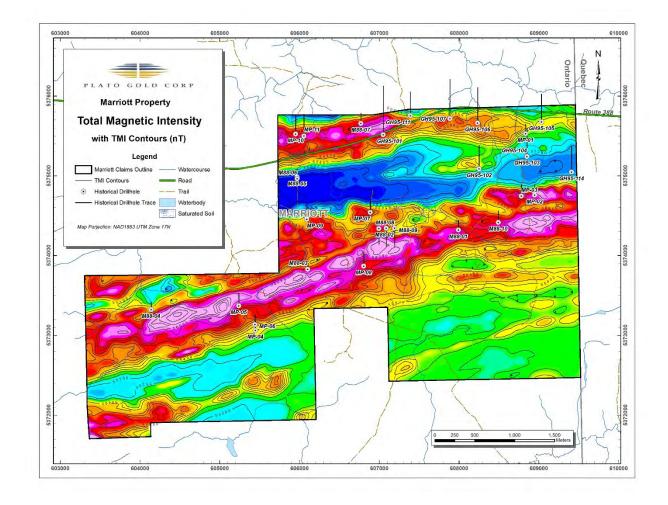


Figure 8-3 Total Magnetic Intensity and historic drill holes for Marriott Property.



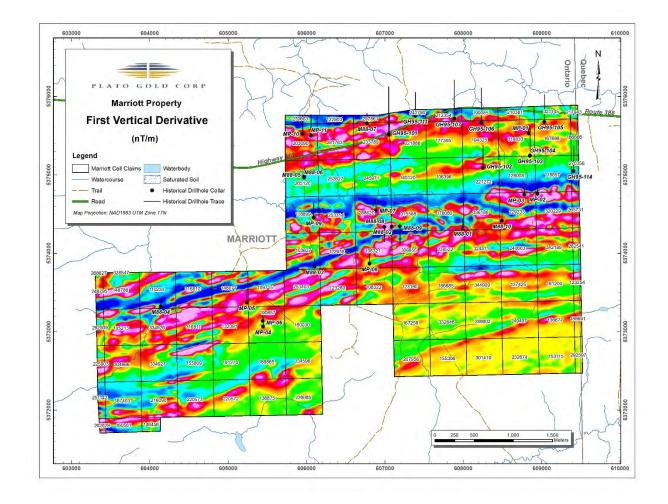


Figure 8-4 First Vertical Derivative and historic drill holes for Marriott Property.



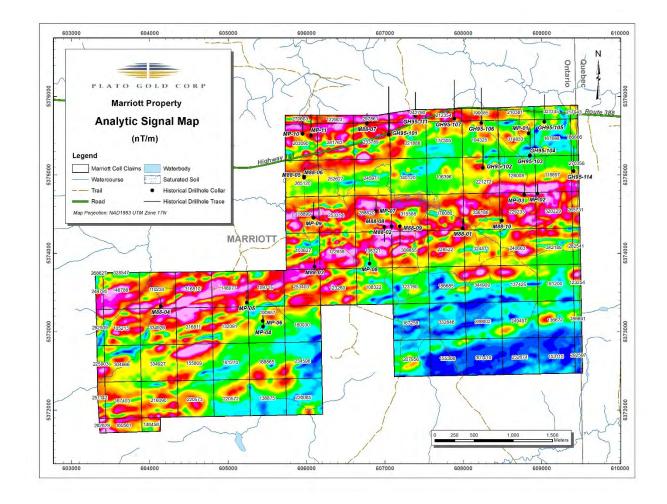


Figure 8-5 Analytic Signal and historic drill holes for Marriott Property.



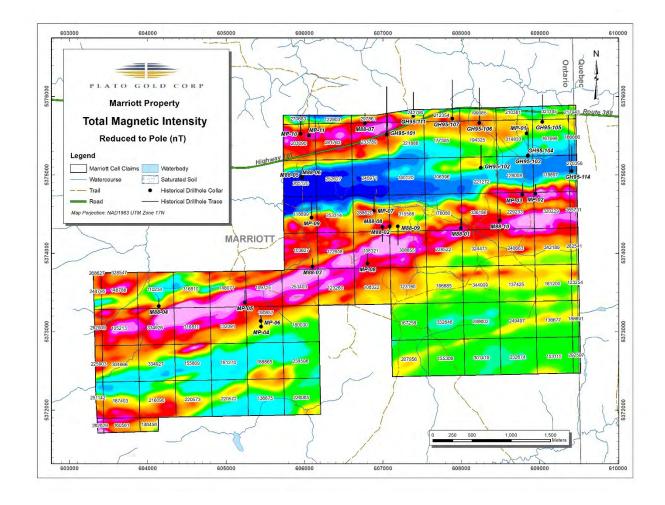


Figure 8-6 Total Magnetic Intensity reduced to pole and historic drill holes for Marriott Property



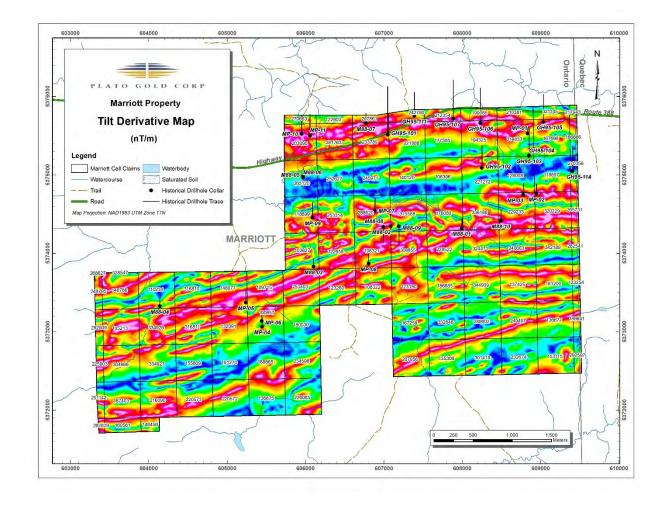


Figure 8-7 Total Magnetic Intensity reduced to pole tilt derivative map and historic drill holes for Marriott Property.



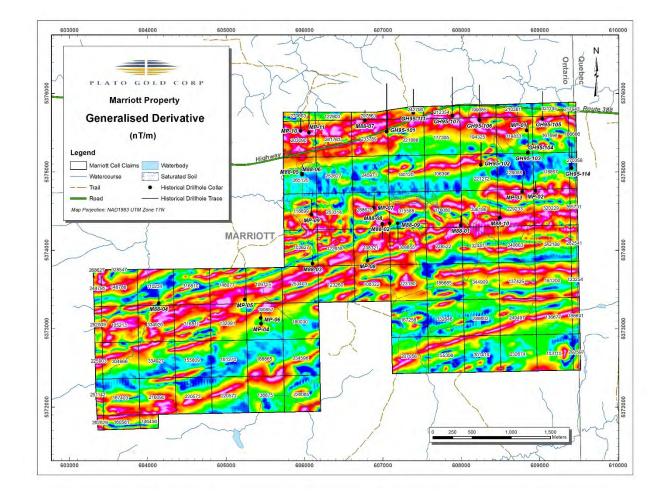


Figure 8-8 Total Magnetic Intensity reduced to pole generalized derivative map and historic drill holes for Marriott Property.

#### 8.4 Interpreted faults from geophysics survey

The first vertical derivative and the total magnetic intensity reduced to pole maps were used to identify interpreted regional and cross faults (Figure 8-9 and Figure 8-10). The E-W regional faults correspond to the lithology boundaries between the iron-rich tholeittic basalt and the magnesium-rich tholeittic basalt as shown on the local geology map (Figure 7-4) and the Destor-Porcupine Deformation Zone (Figure 7-3).

Cross cutting faults were identified with three orientations: NE-SW, NW-SE and N-S using the UAV magnetic data on the Marriott Property. Regionally cross faults were previously identified with these orientations but not in as much detail on the Property as from this UAV magnetic survey.



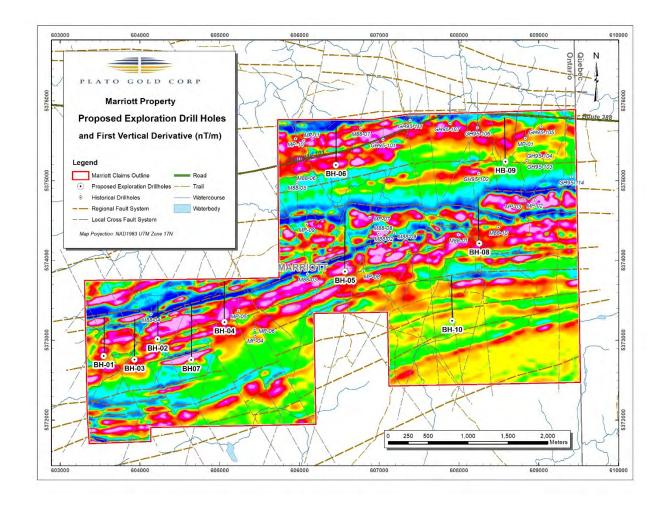


Figure 8-9 Interpreted regional and cross faults based on the First Vertical Derivative, Marriott Property



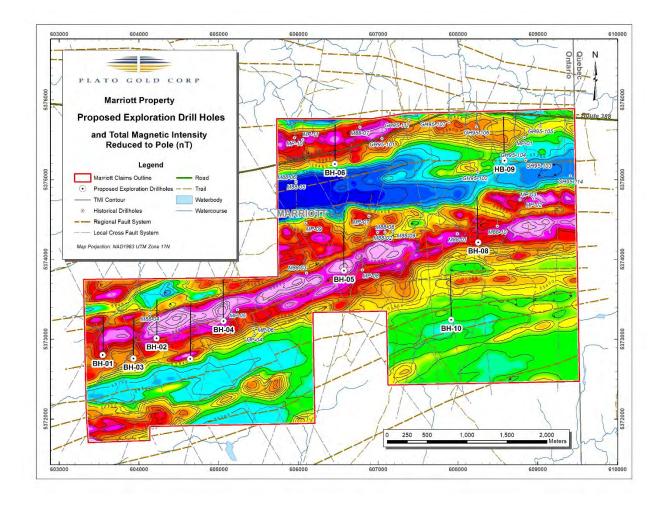


Figure 8-10 Interpreted regional faults and cross faults based on the Total Magnetic Intensity reduced to pole, Marriott Property.

## 9.0 DATA VERIFICATION

### 9.1 Quality Control for UAV Mag Survey

Reflight tolerances, tests and calibrations and data quality control for Pioneer's survey are given in Appendix 4.

## **10.0 INTERPRETATION AND CONCLUSIONS**

The Marriott property is located 66 km east of Matheson, in the northeast corner of Marriott Township, Ontario. The east side of the property is coincident with the Ontario-Quebec provincial border. It is located



within NTS sheets: 52L07A and 52L08D. The center of the Property is 608849 m E, 5375250 m N, Zone 17, NAD 83. Marriott Property consists of 98 cell claims in the Larder Lake Mining Division and is 6.2 km x 3.8 km in size. The claims are held 100% by Plato Gold Corp. and are in good standing.

The Marriott property is located in the Timmins-Kirkland Lake area of the ~800 x 240 km Abitibi Greenstone Belt which is comprised of Archean volcanic, sedimentary and intrusive rocks cut by occasional Proterozoic diabase dikes. Abitibi Subprovince is known for its abundance of lode gold deposits which occur in deformed and metamorphosed terranes along the major structures: Porcupine-Destor fault zone ("PDF") and Larder Lake – Cadillac fault zone ("LLCD").

Plato's Marriott property is predominantly underlain by a series of alternating Fe-rich and Mg-rich tholeiitic basalts belonging to the Kinojevis Group (Jensen, 1978). Texturally, these basalts can occur as massive or pillowed flows, flow-top or pillow breccias and hyaloclastites within the property. Minor dacitic to rhyolitic volcanic rocks as well as graphitic interflow sediments are also present on the Property. A large felsic volcanic horizon has a true thickness of 90 m and extends 6 km.

Pioneer Exploration Consultants Ltd's ("Pioneer") conducted an airborne magnetic survey using an Unmanned Aerial Vehicle (UAV) on the Marriott Property between Feb. 13 and Mar. 4, 2022 on behalf of Plato. The purpose of this survey was to obtain better resolution magnetic data than the historic surveys. The Marriott Property has basalt with high magnetic signal. Also, the magnetic geophysical signature can be used to show the geology including rock types, faults, shear zones, folding, alteration zones and other structures.

Pioneer's crew were based in Kirkland Lake, Ontario. Pioneer's crew arrived in Kirkland Lake on Feb. 14, 2022. The drone flew 9 days on Feb. 15, 17, 18, 21, 24 and 25 and March 2, 3 and 4. Pioneer's crew had standby 5 days due to weather on Feb. 16, 19, 20, 22 and 23. The drone did not fly for 4 days on Feb. 26, 27 and 28 and March 1 due to a broken argo. The survey was completed on March 4, 2022.

Pioneer's UAV mag survey covered all of Plato's Marriott Property claims. Data collection for this survey area was conducted at multiple resolutions: 25 m spaced lines with 250 m spaced tie lines for the Northern Survey area, and 50 m spaced lines and 500 m tie lines for the Southern Survey area. Line direction was N-S (000°) and the tie lines were E-W. For a total of 573.593 line km. The nominal magnetic sensor altitude above ground level (AGL) was set to 40 m.



The final magnetic data was used to produce three different magnetic maps by Pioneer: total magnetic intensity, first vertical derivative, and 3D analytical signal. J-J Minerals also produced total magnetic intensity reduced to pole, total magnetic intensity reduced to pole tilt derivative and total magnetic intensity reduced to pole generalized derivative maps from Pioneer's data.

The total magnetic intensity map shows that there is one continuous E-W magnetic anomaly which corresponds to the iron-rich tholeiitic basalts shown in the local geology map. It was noted during the 2019 sampling that basalt that is magnetic is also enriched in Fe, Ti and V. There is a second E-W magnetic anomaly along Highway 101 which also corresponds to iron-rich tholeiitic basalt. There is a third E-W magnetic anomaly in the SW corner of the Property. The magnetic lows correspond to the magnesium-rich tholeiitic basalt.

The first vertical derivative and the total magnetic intensity reduced to pole maps were used to identify interpreted regional and cross faults. The E-W regional faults correspond to the lithology boundaries between the iron-rich tholeittic basalt and the magnesium-rich tholeitic basalt as shown on the local geology map and the Destor-Porcupine Deformation Zone. Cross cutting faults were identified with three orientations: NE-SW, NW-SE and N-S using the UAV magnetic data on the Marriott Property. Regionally cross faults were previously identified with these orientations but not in as much detail on the Property as from this UAV magnetic survey.

The purpose of the report was to file the Pioneer's 2022 survey for assessment credit. The objectives of the report were to interpret the maps produced by Pioneer and make recommendations for future exploration. These objectives were met.

### **11.0 RECOMMENDATIONS**

J-J Minerals recommends a data compilation of all of the historic sampling, drilling and geophysics data on the Marriott Property into a single Arc file to aid in a reexamination and interpretation of the historic data and to identify new exploration targets on the Property. Another recommendation is to compile all of the historic drill holes into a 3D model to identify new exploration targets. The airborne VTEM survey completed in 2016 identified several conductors that have not been drilled yet.

J-J Minerals recommends a drill program on the Marriott Property consisting of 10 drill holes and totalling 10,000 m. The drill holes would be at an azimuth of  $0^{\circ}$  to the north,  $60^{\circ}$  dip and 700 to 1000 m depths. The



approximate collar locations are shown in Figure 8-9 and Figure 8-10. The proposed drill holes target the magnetic high anomalies and the intersection of the regional E-W faults and the NE-SW and NW-SE cross faults. The proposed drill holes also target the ground IP anomalies identified by Abitibi Geophysics in 2005 (MNDMNRF report 20000001064, 2.31525).



## **12.0 REFERENCES**

- Ayer, J.A., Trowell, N.F., Amelin, Y., and Corgu, F; 1999: Geological Compilation of the Abitibi greenstone belt in Ontario: toward a revised stratigraphy based on compilation and new geochronological results in Summary of Field Work and other activities 1998, OGS Misc Paper 169, pp 14-24
- Atherton, P.G; 1984: Report on Geological Survey performed on Marriott Claim Group Marriott Township for H.E Neal, H.E Neal & Associates Ltd.
- Berger, B.R; 2001: Project Unit 97-024. Variation in Styles of Gold Mineralization along the Porcupine-Destor Deformation Zone in Ontario: An Exploration Guide in Summary of Field Work and Other Activities 2000, OGS Misc. Report.
- Dubé, B., Mercier-Langevin, P., Ayer, J., Atkinson, B. and Monecke, T. 2017. Orogenic greenstone-hosted quartz-carbonate gold deposits of the Timmins-Porcupine camp; Reviews in Economic Geology, v. 19, p. 51–79.
- Dubé, B., Mercier-Langevin, P., Castonguay, S., McNicoll, V.J., Bleeker, W., Lawley, C.J.M., De Souza, S., Jackson, S.E., Dupuis, C., Gao, J.-F., Bécu, V., Pilote, P., Goutier, J., Beakhouse, G.P., Yergeau, D., Oswald, W., Janvier, V., Fontaine, A., Pelletier, M., Beauchamp, A.-M., Katz, L.R., Kontak, D.J., Tóth, Z., Lafrance, B., Gourcerol, B., Thurston, P.C., Creaser, R.A., Enkin, R.J., El Goumi, N., Grunsky, E.C., Schneider, D.A., Kelly, C.J., and Lauzière, K., 2015. Precambrian lode gold deposits a summary of TGI-4 contributions to the understanding of lode gold deposits, with an emphasis on implications for exploration, In: Targeted Geoscience Initiative 4: Contributions to the Understanding of Precambrian Lode Gold Deposits and Implications for Exploration, (ed.) B. Dubé and P. Mercier- Langevin; Geological Survey of Canada, Open File 7852, p. 1–24.
- Horner, C; 1987: Report on Geology of the Neal Claims Marriott Township for Dickenson Mines Limited and New Cinch Uranium Ltd, H.E. Neal & associates Ltd.
- Lambert, G.; 1995: Report on I.P. survey for Marriott Claims
- Jensen, L.S; 1978: Geology of Stoughton and Marriott Townships, District of Cochrane, OGS Report 173, 72 p.
- Jensen, L.S., and Langford, F.F; 1985: Geology and Petrogenesis of the Archean Abitibi Belt in the Kirkland Lake Area, Ontario, OGS Misc Paper 123.
- Risto, R.W., 1997: A Review of the Mineral Properties of Plato Gold Corp. in Northern Ontario, Watts, Griffis, and McOuat.
- Risto, R.W., 1998: Letter Report Re: Plato Properties in Northern Ontario, Watts, Griffis and McOuat.
- Risto, R.W.; 1987: Report on Lithogeochemistry Survey Performed on the Neal Claims Marriott Township for Dickenson Mines Limited and New Cinch Uranium Ltd. H.E. Neal & Associates Ltd.



- Risto, R.W.; 1986a: Report on Ground Magnetometer Survey Performed on the Neal claims Marriott Township for Dickenson Mines Limited and New Cinch Uranium Ltd., H.E. Neal & Associates Ltd.
- Risto, R.W.; 1986b: Report on Ground VLF-EM (Cutler) Survey Performed on the Neal claims Marriott Township for Dickenson Mines Limited and New Cinch Uranium Ltd., H.E. Neal & Associates Ltd.
- Risto, R.W.; 1986b: Report on 1988 Diamond Drill Program Marriott Project Neal Claims Marriott Township for Dickenson Mines Limited and New Cinch Uranium Ltd., H.E. Neal & Associates Ltd.
- Tihor, L.A., and R. Gadzala; 1995: Report on 1994-1995 Mineral Exploration Performed on the Neal claims Marriott Township, Hemlo Gold Mines Inc.
- Valvasori, A., Graham, B., Selway, J.; 2019: Assessment report 2018 Prospecting Report, Marriott Property, Kirkland Lake, Northeastern Ontario, Canada, NTS sheets 52L07A and 52L08D for Plato Gold Corp.



## **13.0 STATEMENT OF AUTHORSHIP**

This Report, titled "2022 Airborne Magnetic Survey Report, Marriott Property, Kirkland Lake, Northeastern Ontario, Canada, NTS sheets: 52L07A and 52L08D, Township: Marriott", and dated July 15, 2022, was prepared and signed by the following author and Qualified Person:

ONA GE 2 JULIE B. SELWAY Julie Selway C Principal Geologist, Ph. De PRACTISING MEMBER 0738 J J Minerals Inc July 15, 2022 Sudbury, Ontario



## **Appendix 1 - Certificate of Qualifications**



Julie Selway 40 Mission Hill Sudbury, Ontario, Canada, P3E 6M1 Telephone: 705-690-7996 Email: jselway@eastlink.ca

#### **CERTIFICATE OF QUALIFIED PERSON**

I, Julie Selway, do hereby certify that:

- 1. I am employed as a Principal Geologist for geological consulting firm J-J Minerals Inc, Sudbury, Ontario.
- 2. I am the Qualified Person for this Report entitled "2022 Airborne Magnetic Survey Report, Marriott Property, Kirkland Lake, Northeastern Ontario, Canada, NTS sheets: 52L07A and 52L08D, Township: Marriott", and dated July 15, 2022, and prepared for Plato Gold Corp.
- I hold the following academic qualifications: B.Sc. (Hons) Geology (1991) Saint Mary's University; M.Sc. Geology (1993) Lakehead University; Ph.D. Mineralogy (1999) University of Manitoba.
- 4. I am a member of the Association of Professional Geoscientists of Ontario (Member #0738). I am a member in good standing of the Mineralogical Association of Canada, Geological Association of Canada and Mineralogical Society of America.
- I am the co-author of six NI 43-101 Independent Technical Reports on gold properties in Ontario, six assessment reports on gold properties in Ontario and senior reviewer of seven NI 43-101 Reports on gold properties. I supervised the prospecting program at Marriott Property in 2019.
- 6. I have not visited the Marriott Property.
- 7. As of the date of this certificate, to the best of my knowledge, information and belief, the report contains all scientific and technical information that is required to be disclosed to make this report not misleading.

Dated this 15th Day July 2022.

Julie Selway, Ph.D. JULIE B. SELWAY Principal Geologist, J-J Minepakchisung MEMBER 0738



## Appendix 2 – Plato Gold's cell claims for Marriott Property Table 13-1 Marriott cell claim table

Provincial Grid	Township /	Tenure	Tenure Type	Anniversary	Work Required
Cell ID	Area	ID		Date	
32D12A393	Marriott	167698	Single Cell Mining Claim	2023-03-12	\$ 400.00
32D12A298	Marriott	186666	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A278	Marriott	217943	Boundary Cell Mining Claim	2022-03-12	\$ 200.00
32D12A277	Marriott	321145	Boundary Cell Mining Claim	2023-03-12	\$ 200.00
32D12A276	Marriott	210381	Boundary Cell Mining Claim	2022-03-12	\$ 200.00
32D12A296	Marriott	314833	Single Cell Mining Claim	2023-03-12	\$ 400.00
32D12A295	Marriott	194325	Single Cell Mining Claim	2023-03-12	\$ 400.00
32D12A275	Marriott	199085	Boundary Cell Mining Claim	2022-03-12	\$ 200.00
32D12A294	Marriott	177305	Single Cell Mining Claim	2023-03-12	\$ 400.00
32D12A274	Marriott	212354	Boundary Cell Mining Claim	2022-03-12	\$ 200.00
32D12A293	Marriott	221888	Single Cell Mining Claim	2022-03-20	\$ 400.00
32D12A273	Marriott	242790	Boundary Cell Mining Claim	2022-03-20	\$ 200.00
32D12A378	Marriott	123254	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A377	Marriott	181200	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A358	Marriott	282541	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A357	Marriott	342189	Single Cell Mining Claim	2023-03-12	\$ 400.00
32D12A376	Marriott	137425	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A270	Marriott	240663	Single Cell Mining Claim	2023-03-12	\$ 400.00
32D12A355	Marriott	324471	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A375	Marriott	344909	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A374	Marriott	186685	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A354	Marriott	228522	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A373	Marriott	123190	Single Cell Mining Claim	2023-03-20	\$ 400.00
32D12A353	Marriott	308855	Single Cell Mining Claim	2023-03-20	\$ 400.00
32D12A350	Marriott	103627	Boundary Cell Mining Claim	2022-10-04	\$ 200.00
32D12A330	Marriott	118899	Boundary Cell Mining Claim	2022-10-04	\$ 200.00
32D12A351	Marriott	122658	Single Cell Mining Claim	2023-03-12	\$ 400.00
32D12A331	Marriott	253314	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A371	Marriott	123260	Single Cell Mining Claim	2023-03-12	\$ 400.00
32D12A370	Marriott	253403	Boundary Cell Mining Claim	2023-10-04	\$ 200.00
32D12A372	Marriott	108322	Single Cell Mining Claim	2023-03-20	\$ 400.00
32D12A317	Marriott	118897	Single Cell Mining Claim	2022-03-20	\$ 400.00
32D12A318	Marriott	270356	Single Cell Mining Claim	2022-03-20	\$ 400.00
32D12A316	Marriott	128008	Single Cell Mining Claim	2022-03-20	\$ 400.00
32D12A315	Marriott	221272	Single Cell Mining Claim	2023-03-20	\$ 400.00
32D12A314	Marriott	106396	Single Cell Mining Claim	2022-03-20	\$ 400.00
32D12A313	Marriott	140120	Single Cell Mining Claim	2022-03-20	\$ 400.00
32D12A271	Marriott	122903	Boundary Cell Mining Claim	2022-03-12	\$ 200.00
32D12A291	Marriott	281763	Single Cell Mining Claim	2022-03-12	\$ 400.00



Provincial Grid Cell ID	Township / Area	Tenure ID	Tenure Type	Anniversary Date	Work Required
			Devenden v Cell Mining Claim		¢ 200.00
32D12A290	Marriott	203090	Boundary Cell Mining Claim	2023-03-12	\$ 200.00
32D12A270	Marriott	270663	Boundary Cell Mining Claim	2023-03-12	\$ 200.00
32D12A311	Marriott	252627	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A310	Marriott	265120	Boundary Cell Mining Claim	2022-03-12	\$ 200.00
32D12A338	Marriott	265731	Single Cell Mining Claim	2022-03-20	\$ 400.00
32D12A337	Marriott	320229	Single Cell Mining Claim	2023-03-20	\$ 400.00
32D12A336	Marriott	229233	Single Cell Mining Claim	2023-03-20	\$ 400.00
32D12A335	Marriott	336186	Single Cell Mining Claim	2022-03-20	\$ 400.00
32D12A334	Marriott	176080	Single Cell Mining Claim	2023-03-20	\$ 400.00
32D12A333	Marriott	315588	Single Cell Mining Claim	2023-03-20	\$ 400.00
32D12A292	Marriott	233789	Single Cell Mining Claim	2023-03-20	\$ 400.00
32D12A272	Marriott	297861	Boundary Cell Mining Claim	2022-03-20	\$ 200.00
32D12A312	Marriott	245971	Single Cell Mining Claim	2022-03-20	\$ 400.00
32D12A332	Marriott	288620	Single Cell Mining Claim	2023-03-20	\$ 400.00
32D12A352	Marriott	108321	Single Cell Mining Claim	2023-03-20	\$ 400.00
32D12A397	Marriott	136677	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A398	Marriott	188691	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A396	Marriott	249497	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A395	Marriott	288602	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A394	Marriott	332646	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A393	Marriott	167258	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D05I017	Marriott	153115	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D05I018	Marriott	292597	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D05I016	Marriott	232674	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D05I015	Marriott	301419	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D05I014	Marriott	155306	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D05I013	Marriott	207956	Single Cell Mining Claim	2022-03-12	\$ 400.00
32D12A366	Marriott	110234	Boundary Cell Mining Claim	2022-03-11	\$ 200.00
32D12A367	Marriott	316810	Boundary Cell Mining Claim	2022-03-11	\$ 200.00
32D12A365	Marriott	148788	Boundary Cell Mining Claim	2022-03-11	\$ 200.00
32D12A345	Marriott	328547	Boundary Cell Mining Claim	2022-03-11	\$ 200.00
32D12A364	Marriott	244795	Boundary Cell Mining Claim	2022-03-11	\$ 200.00
32D12A344	Marriott	268627	Boundary Cell Mining Claim	2022-03-11	\$ 200.00
32D12A385	Marriott	105213	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D12A384	Marriott	292509	Boundary Cell Mining Claim	2022-03-11	\$ 200.00
32D12A386	Marriott	334926	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D12A387	Marriott	316811	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D05I007	Marriott	155809	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D05I006	Marriott	334927	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D051005	Marriott	304666	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D051005	Marriott	225903	Boundary Cell Mining Claim	2022-03-11	\$ 200.00



Provincial Grid Cell ID	Township / Area	Tenure ID	Tenure Type	Anniversary Date	Work Required
32D05l025	Marriott	187403	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D05I024	Marriott	251142	Boundary Cell Mining Claim	2022-03-11	\$ 200.00
32D05I026	Marriott	216090	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D05I027	Marriott	220573	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D05I046	Marriott	146456	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D05I045	Marriott	160561	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D05I044	Marriott	262629	Boundary Cell Mining Claim	2022-03-11	\$ 200.00
32D12A369	Marriott	109715	Boundary Cell Mining Claim	2022-03-11	\$ 200.00
32D12A368	Marriott	148077	Boundary Cell Mining Claim	2022-03-11	\$ 200.00
32D12A388	Marriott	132091	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D12A389	Marriott	190857	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D12A390	Marriott	180030	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D05I010	Marriott	234596	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D05I009	Marriott	188865	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D051008	Marriott	191270	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D05I028	Marriott	220572	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D05I029	Marriott	136875	Single Cell Mining Claim	2022-03-11	\$ 400.00
32D05I030	Marriott	226065	Single Cell Mining Claim	2022-03-11	\$ 400.00
					\$ 34,000.00



## Appendix 3 – Assessment files used in this report

Assessment Report Number	Year of Report	Year of Work	Company	Type of Work	
32D12SE0100	1985	1984	H.E Neal & Associates Ltd	Geological survey	
32D12SE0098	1986	1986	Dickenson Mines Ltd and New Cinch Uranium Mines Ltd	Geophysical survey	
32D12SE0092	1987	1987	Dickenson Mines Ltd and New Cinch Uranium Mines Ltd	Geological survey	
32D12SE0090	1988	1987	Dickenson Mines Ltd and New Cinch Uranium Mines Ltd	Lithogeochemical survey	
32D12SE0087	1989	1988	Dickenson Mines Ltd and New Cinch Uranium Mines Ltd	Diamond drilling	
32D12SE0079	1995	1994- 1995	Hemlo Gold Mines Inc	Geophysical survey and diamond drilling	
32D12SE2007	1999	1997	Plato Gold Corp.	Geophysical survey	
32D12SE2027	2002	2002	Plato Gold Corp.	Lithogeochemistry	
32D12SE2030	2003	2003	Plato Gold Corp.	Lithogeochemistry	
32D12SE2032	2004	2004	Plato Gold Corp.	Geophysical survey	
32D12SE2035	2005	2005	Plato Gold Corp.	Geophysical survey	
2000001064	2005	2005	Plato Gold Corp.	Geophysical survey	
2000001304	2006	2006	Plato Gold Corp.	Diamond drilling	
2.57600	2016	2017	Kirkland Lake Gold	Geophysical survey	
20000019183	2019	2018	Plato Gold Corp	Prospecting	
20000016979	2019	2019	Plato Gold Corp	Prospecting	

Table 13-2 Assessment files used in this report.



## **Appendix 4 – Pioneer Exploration Consultants Ltd.'s Report**



# PLATO GOLD CORP UAV Aeromagnetic Survey Logistics Report







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### Introduction

From February 13<sup>th</sup> to March 4<sup>th</sup>, 2022 Pioneer Exploration Consultants Ltd. (Pioneer) completed an airborne magnetic survey using an Unmanned Aerial Vehicle (UAV) near La Sarre, Quebec, Canada. The survey was flown at the request of Plato Gold Corp.

This report covers data acquisition, instrument descriptions, data processing and presentations. The digital data delivery is described later in this report. This report does not include any geological interpretations of the geophysical dataset. Key survey personnel are listed in Table 1.

#### Table 1: Personnel involved with the project.

Pilot in Command	Vlad Shutyi, Fred Bowen
Ground Crew	Mack Evenden, Justin Dyck
Data Processing and QA/QC	Kiyavash Parvar

#### <u>Location</u>

The project area is located along the Ontario-Quebec provincial border, near the town of Duparquet, QC. The staging locations were accessed by truck, with the use of a trailer mounted aerial platform to maintain line of sight from the roadway. Some areas in the south required heli access as well, staged from the Heli Explore hangar in La Sarre, QC. The completed survey lines are illustrated in Figure 1.

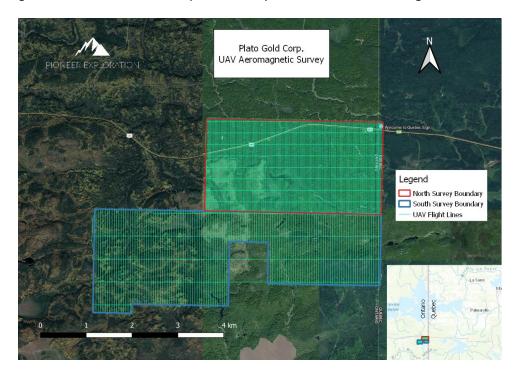


Figure 1: The north survey boundary is shown in red, and the south boundary is outlined in blue. UAV flight lines are overlain in green. Inset, the location of the project relative to La Sarre, QC is observed.

Plato Gold Corp. Aeromagnetic Survey Logistics Report



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# **Survey Specifications and Procedures**

Data collection for this survey area was conducted at multiple resolutions: 25 m spaced lines with 250 m spaced tie lines for the northern survey area, and 50 m spaced lines and 500 m tie lines for the southern survey area. The nominal magnetic sensor altitude above ground level (AGL) was set to 40 m. Elevation from the terrain may vary depending on the treeline and obstacles on the flight route. Satellite imagery was used to create a high resolution DSM to assist the UAV terrain following procedure and to minimize the possible topographic effects on the magnetic data. The nominal production groundspeed is 9 m/s for flat topography with no wind. The survey speed may vary depending on the terrain and environmental conditions.

The ground crews performed daily safety meetings and pre-flight checks prior to the start of drone flight operations. The Pilot in Command (PIC) is responsible for the safety of the crew and equipment during the survey operations. Each survey flight is pre-planned using ground control software, then the flight plans are uploaded to the UAV prior to takeoff. The UAV system flies the pre-defined waypoint-based flight plans while the ground crew maintains visual line of sight with the craft and the flight telemetry information. Flights are terminated and the UAV returns for landing when the battery voltage reaches a certain limit, or when the flight plan is complete. The survey flights can be manually terminated and taken over with full manual pilot control at anytime. Upon landing, the flight batteries are exchanged and the sensor is downloaded for data QAQC. The average distance covered by each flight is approximately 6-10-line kms of data acquisition.

Addition details on the completed survey can be found in Table 2.

Area Name	Line	Line	Tie Line	Total Line
	Spacin	Direction	Spacing	Kilometres
	g (m)	(deg)	(m)	(km)
Plato Gold Corp ( North and South Grids)	25 / 50	000	250 / 500	573.593

#### Table 2: Survey details.

### **Instrumentation and Software**

The principal airborne sensor used was a Gem Systems Canada GSMP-35U potassium vapor sensor mounted on a UAV platform. Ancillary equipment included a laser altimeter with a 130m range, Global Positioning Satellite (GPS) system antenna and Inertial Measurement Unit (IMU). A stationary GSM-19 Overhauser magnetometer was used as a base station. Raw aerial magnetometer data was collected at a





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rate of 10 Hz while base station data was collected at a rate of 0.16 Hz. Total field and GPS UTC time were recorded with each data point, enabling diurnal correction to be applied during final data processing.

#### Magnetic Base Station

A GSM-19 Overhauser Magnetometer base station was placed in a location of low magnetic gradient, away from electrical transmission lines and moving metallic objects, such as motor vehicles and aircrafts. The data collected from this base station was used to diurnally correct the aeromagnetic data. The GSM-19 Overhauser Magnetometer is supplied by GEM systems of Markham, Ontario. General specifications of the magnetometer are included in Appendix 1: Instrument Specification.

#### Unmanned Aerial Vehicle – Matrice 600

Pioneer used the Matrice M600 Pro UAV to complete this survey. The Matrice 600 (M600) is DJI's platform designed for professional aerial photography and industrial applications. It is built to closely integrate with a host of powerful DJI technologies, including the A3 flight controller, Lightbridge 2 transmission system, Intelligent Batteries and Battery Management system, for maximum performance and quick setup. As stated by the manufacturer, some of the advantages to using this type of multirotor systems are:

<u>Total Integration</u>: The modular design makes the M600 easy to set up and ready to use in just minutes. Its dust proof propulsion systems simplify maintenance while actively cooled motors make for reliable operation during extended use.

<u>Smart Flight Safety</u>: The M600 uses sine-wave driven, intelligent ESCs to ensure it performs accurately, safely and efficiently while A3's self-adaptive flight systems adjust flight parameters automatically based on different payloads. The A3 can be upgraded with two additional GNSS and IMU units to A3 Pro or with D-RTK GNSS for enhanced accuracy.

<u>Extended Flight Time and Transmission Range</u>: The M600 features an extended flight time and a 5 km long-range, ultra-low latency HD image transmission for accurate image composition and capture. The system uses 6 small DJI Intelligent Batteries, allowing it to be shipped easily to wherever it is needed. A customized battery management system and power distribution board allows all six batteries to be turned on with the press of a single button and keeps the system in flight in the event of a battery failure. It also allows users to check the battery status in real-time during flight.

<u>Powerful App Control</u>: The M600 supports a live HD view, battery status, redundancy status, transmission strength and much more, straight from the tablet application.

#### UAV Aeromagnetic Configuration

GEM System's UAV GSMP-35U is a potassium magnetometer providing unmatched sensitivity in addition to a low heading error effect. The GSMP-35U operates similarly to other alkali vapor magnetometers while benefiting from the unique spectral properties of potassium. Each GSMP-35U system has 0.0002 nT sensitivity combined with +/- 0.1 nT absolute accuracy over its full operating range. More details on the instrument can be found in Appendix 1: Instrument Specification. The UAV aeromagnetic setup consists of a towed bird configuration with a sensor-aircraft separation distance of either 3 or 5m. The sensor is





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flown along the survey lines with a fixed heading to maximize the signal amplitude and provide the best sensor orientation for the local conditions. This action minimizes heading errors. The data is both stored on board during acquisition and transmitted in real-time back to the ground control station to monitor the collection during flight and ground clearance of the sensor from the laser altimeter data.





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### **Data Deliverables and Channel Descriptions**

All data is typically delivered in either Geosoft Database (GDB) or simple formats such as .txt or csv. The data deliverables are client specific to best suit their needs and software requirements. Regardless of software, a database is supplied to the client with channel descriptions as described in Table 3.

Parameter	Explanation	Units/Format
Date	Flight Date	Yyyy/mm/dd
Time	GNSS time stamp	hhmmss.ss
lat	Latitude (WGS84)	Decimal degrees
lon	Longitude (WGS84)	Decimal degrees
alt	GPS altitude above the average sea level	metres
utmE	UTM easting (WGS84)	metres
utmN	UTM northing (WGS84)	metres
sat	Number of locked satellites	metres
zone	UTM zone	-
yaw	IMU yaw reading	Degrees
pitch	IMU pitch reading	Degrees
roll	IMU roll reading	Degrees
nT	Magnetic field readings (Raw)	Nanotesla
nT2	Diurnal correction has been applied on the nT channel (Diurnal datum: 55400 nT)	Nanotesla
Final	Final Total Magnetic Intensity	Nanotesla
Levelled	Levelled data based on tie line intersections	Nanotesla
VD1	1 <sup>st</sup> Vertical derivative	nT/m
AS	Analytic Signal	nT/m





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### **Magnetic Maps and Derived Data Products**

The final magnetic data has been presented in the form of several different magnetic maps (Appendix 2: Final Maps). Each of these different data presentations is a useful tool for identifying geological structures and other features.

#### Total Magnetic Intensity

Based on the flight lines covered by the drone, the total magnetic field map grid was created by interpolating the filtered magnetic data. The purpose of this data presentation is to highlight geological structures that may be visible in the survey area by their magnetic signature or their magnetic contrast to their surroundings.

#### First Vertical Derivative

The first order vertical derivative quantifies the rate of change of the magnetic field as a function of elevation. It is an approximation of the vertical magnetic gradient, which could be directly measured with separate magnetometers vertically spaced apart. The purpose of this type of filter is to eliminate the long wavelength signatures and make sharp features more detectable, such as the edges of magnetic bodies. This filter also increases the noise level, which limits the use of higher order derivatives (n=2 for example). The vertical derivative is used to delineate the contacts between large-scale magnetic domains because its value is zero over vertical contacts.

#### 3D Analytic Signal

The analytic signal is the square root of the sum of the squares of the derivatives in the x, y, and z directions:

Analytical Signal =  $\sqrt{dx * dx + dy * dy + dz * dz}$ 

The analytic signal is useful in locating the edges of magnetic source bodies, particularly where remanent magnetic signals and/or low magnetic latitude complicates interpretation.





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# **Data Processing**

All general magnetic QA/QC and data processing techniques have been applied to the data. All post-field data processing was carried out using Geosoft Oasis Montaj, Python and Microsoft Excel software/ programming languages. Presentation of final maps used ESRI ArcMap and/or Geosoft Oasis Montaj. Results were gridded using minimum curvature method and a grid cell size of approximately 1/3 of flight line spacing.

The geophysical images accompanying this report are positioned using the WGS 1984 datum. The survey geodetic GPS positions have been map-projected using the Universal Transverse Mercator (UTM) projection. A summary of the map datum and projection specifications are as follows:

- Datum: WGS 1984 UTM Zone 17 U
- Scale Factor: 1:125000 and 1 :17000
- Linear Unit: Metre (1)

The magnetic data was first quality checked in the field and any points lacking sufficient georeferenced data or which were excessively noisy were removed. The resulting data was processed as mosaics throughout the survey area as data was collected daily. The final result is a combination of all collected data, including lines that were re-flown due to weak or insufficient magnetic signal.

The base station readings were initially processed and filtered to remove high frequency noise. The filtered base station dataset was then used to perform a diurnal correction on the magnetic survey data. The diurnally corrected profile data were interpolated into a grid using the minimum curvature technique with a grid size of approximately 1/3 of flight line spacing. All final maps have a normalized color interval.

After finishing interpolation, initial processing subjected the data to a non-linear filter with a wavelength limit of 3-4 fiducials and tolerance of 0.001. This filter removes high frequency noise which mostly occur because the sensor is in the dead zone due to sudden changes in sensor orientation, effect of ferro-metallic objects, or the influence of weather conditions on the sensor. This filter smooths out noise and high frequency features.

After leveling the data using the tie lines, the data was micro-levelled. This step is performed to mitigate the corrugation effect associated with gaps between the data lines and is completed by applying a highpass butterworth filter with the threshold of 100-200 metres (line spacing x 4) followed by a directional cosine filter perpendicular to the line direction. The resulted noise channel was then subtracted from the leveled values to microlevel the data. The final result of the leveling and micro-leveling processes was then put in "Final" Channel of the database.





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The following corrections were applied to the airborne magnetic data:

• Correction for diurnal variation using the digitally recorded ground base station magnetic values as described above

• Lag was measured by a lag test prior to the operation. Only a minor lag correction is applied to final data (0.2s)

- Heading biases were applied based on clover leaf data collected
- Micro-leveling
- Analytic Signal calculation
- First Vertical Derivative calculation

The final maps are included in Appendix 2: Final Maps.





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# **Data Comments**

Pioneer's UAV aeromagnetic surveys result in a high quality, high resolution data product. The increased flight line density and lower flight elevation possible with the use of a UAV platform results in superior resolution data products when compared to conventional airborne magnetic data. Using an auto-controlled UAV platform also allows for minimal deviation from pre-planned flight lines, and greatly reduces the impact of human errors during data acquisition.

Logistics remains a major challenge of UAV surveying. In order to operate legally within the guidelines set by Transport Canada, line of sight must be maintained to the UAV and surrounding airspace at all times. This often results in the necessity of several staging locations for covering the survey area, and sometimes requires the employment of additional equipment such as an aerial platform or scissor lift to achieve unobstructed line of sight beyond surrounding buildings or vegetation. The smaller flight sorties are typical in UAV-based surveys and require greater attention in post processing.

Pioneer makes every effort to identify potential sources of noise in order to mitigate their impact on our collected survey data. The magnetic noise envelope of our UAVs has been mapped in 3D prior to use. Our flight lines are planned with a minimum of 50 m overlap past the survey boundaries so that the magnetic sensor has time to stabilize itself after the UAV has completed its turns. Additionally, weather is carefully monitored and when excessive data inconsistency is noted due to weather conditions, flights are suspended until conditions improve.

Pioneer is very pleased with the results from this survey and confirms that the level of error and noise in the dataset falls below our threshold, which is set based on the Geological Survey of Canada guidelines for airborne magnetometer survey data.

Respectfully submitted,

Kiyavash Parvar, M.A.Sc. UAV Geophysics Vice President of Geophysics Pioneer Exploration Consultants Ltd. Ottawa, Ontario







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# **Appendix 1: Instrument Specification**





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# **GSM-19 Overhauser Magnetometer**

#### Performance

Sensitivity: Standard GSM-19 0.022 nT @ 1 Hz GSM-19PRO 0.015 nT @ 1 Hz Resolution: 0.01 nT Absolute Accuracy: 0.1 nT Dynamic Range: 20,000 to 120,000 nT Gradient Tolerance: up to 10,000 nT/m Samples at: 60+, 5, 3, 2, 1, 0.5, 0.2 sec Operating Temperature: -40°C to +50°C

#### **Operating Modes**

Manual: Coordinates, time, date and reading stored automatically at up to 0.2 sec. Base Station: Time, date and reading stored at 1 to 60 second intervals. Remote Control: Optional remote control using RS-232 interface. Input / Output: Input/Output: RS-232 using 6-pin weatherproof connector with USB adapter.

#### Memory - (# of Readings in millions)

Mobile: 1.4M, Base Station: 5.3M, Gradiometer: 1.2M, Walking Mag: 2.6M

#### Dimensions

Console: 223mm x 69mm x 240 mm(8.7x2.7x9.5in) Sensor: 175mm x 75mm diameter cylinder (6.8in long by 3 in diameter)

#### Weights

Console with Belt: 2.1 kg Sensor and Staff Assembly: 1.0 kg





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# Matrice 600

#### Structure

Diagonal Wheelbase: 1133 mm Aircraft Dimensions: 1668 mm x 1518 mm x 759 mm (Propellers, frame arms and GPS mount unfolded) 640 mm x 582 mm x 623 mm (Frame arms and GPS mount folded) Package Dimensions : 620 mm x 320 mm x 505 mm Intelligent Flight Battery Quantity: 6 Weight (with six TB47S batteries): 9.1 kg Weight (with six TB48S batteries): 9.6 kg Max Takeoff Weight: 15.1 kg

#### Performance

Hovering Accuracy (P-Mode, with GPS) Vertical: ±0.5 m, Horizontal: ±1.5 m Max Angular Velocity: Pitch: 300°/s, Yaw: 150°/s Max Pitch Angle: 25° Max Speed of Ascent: 5 m/s Max Speed of Descent: 3 m/s Max Wind Resistance: 8 m/s Max Flight Altitude above Sea Level: 2500 m Max Speed: 18 m/s (No wind) Hovering Time (with six TB47S batteries)\* No payload: 35 min, 6 kg payload: 16 min No payload: 40 min, 5.5 kg payload: 18 min

\* The hovering time is based on flying at 10 m above sea level in a no-wind environment and landing with 10% battery level.

#### **Remote Controller**

**Operating Frequency:** 

- 920.6 MHz to 928 MHz (Japan)
- 5.725 GHz to 5.825 GHz
- 2.400 GHz to 2.483 GHz

Max Transmission Distance (unobstructed, free of interference) :

- FCC Compliant: 3.1 miles (5 km)
- CE Compliant: 2.1 miles (3.5 km)





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#### EIRP:

- 10 dBm @ 900 M/li>
- 13 dBm @ 5.8 G
- 20 dBm @ 2.4 G

Video Output Port: HDMI, SDI, USB Dual Users Capability: Master-and-Slave control Mobile Device Holder: Supports smartphones and tablets Output Power: 9 W Operating Temperature: 14° to 104° F (-10° to 40° C) Storage Temperature: Less than 3 months: -4° to 113° F (-20° to 45° C) More than 3 months: 72° to 82° F (22° to 28° C)

Charge Temperature: 32° to 104° F (0° to 40° C) Built-in Battery: 6000 mAh, 2S LiP Max Tablet Width: 170 m

#### **Propulsion System**

Motor Model: DJI 6010 Propeller Model: DJI 2170

#### Battery

Model: TB48S Capacity: 5700 mAh Voltage: 22.8 V Type: LiPo 6S Energy: 129.96 Wh Net Weight: 680 g Operating Temperature: 14° to 104° F (-10° to 40° C) Storage Temperature: Less than 3 months: -4° to 113° F (-20° to 45° C) More than 3 months: 72° to 82° F (22° to 28° C) Charge Temperature: 41° to 104° F (5° to 40° C) Max Charging Power: 180 W

#### Charger

Model: A14-100P1A Voltage: Output26.3 V Power Rating: 100 W





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# GEM GSMP-35UA: Ultra Light-Weight Potassium Magnetometer

#### **Magnetometer Specifications**

Sensitivity: 0.0002 nT @ 1 Hz Resolution: 0.0001 nT Absolute Accuracy: +/- 0.1 nT Heading Error: + / – 0.05 nT Dynamic Range: 15,000 to 120,000 nT Gradient Tolerance: 50,000 nT/m Sampling Intervals: 1, 2, 5, 10, 20 Hz Operating Temperature: -40°C to +55°C

#### Orientation

Sensor Angle: optimum angle 35° between sensor head axis & field vector. Proper Orientation: 10° to 80° & 100° to 170 Heading Error: +/- 0.05 nT between 10° to 80° and 360° full rotation about axis.

#### Environmental

Operating Temperature: -40°C to +55°C Storage Temperature: -70°C to +55°C Humidity:0 to 100%, splashproof

#### **Dimensions & Weight**

Sensor: 161mm x 64mm (external dia) with 2m cabling ; 0.43 kg Electronics Box: 236mm x 56mm x 39mm; 0.46 kg Option 1 cabling; .125kg Option 3 light weight battery; .250kg

#### Power

Power Supply:18 to 32 V DC Power Requirements: approx. 50 W at start up, dropping to 12 W after warm-up Power Consumption:12 W typical at 20°C Warm-up Time: <15 minutes at -40°C

#### Outputs

20 Hz RS-232 output with comprehensive Windows Personal Computer (PC) software for data acquisition and display.





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Outputs UTC time, magnetic field, lock indication, heater, field reversal, GPS position (latitude, longitude altitude, number of satellites)

#### Components

Sensor, pre-amplifier box, 2m sensor /pre-amplifier cable (optional cable 3-5m), manual & shipping case

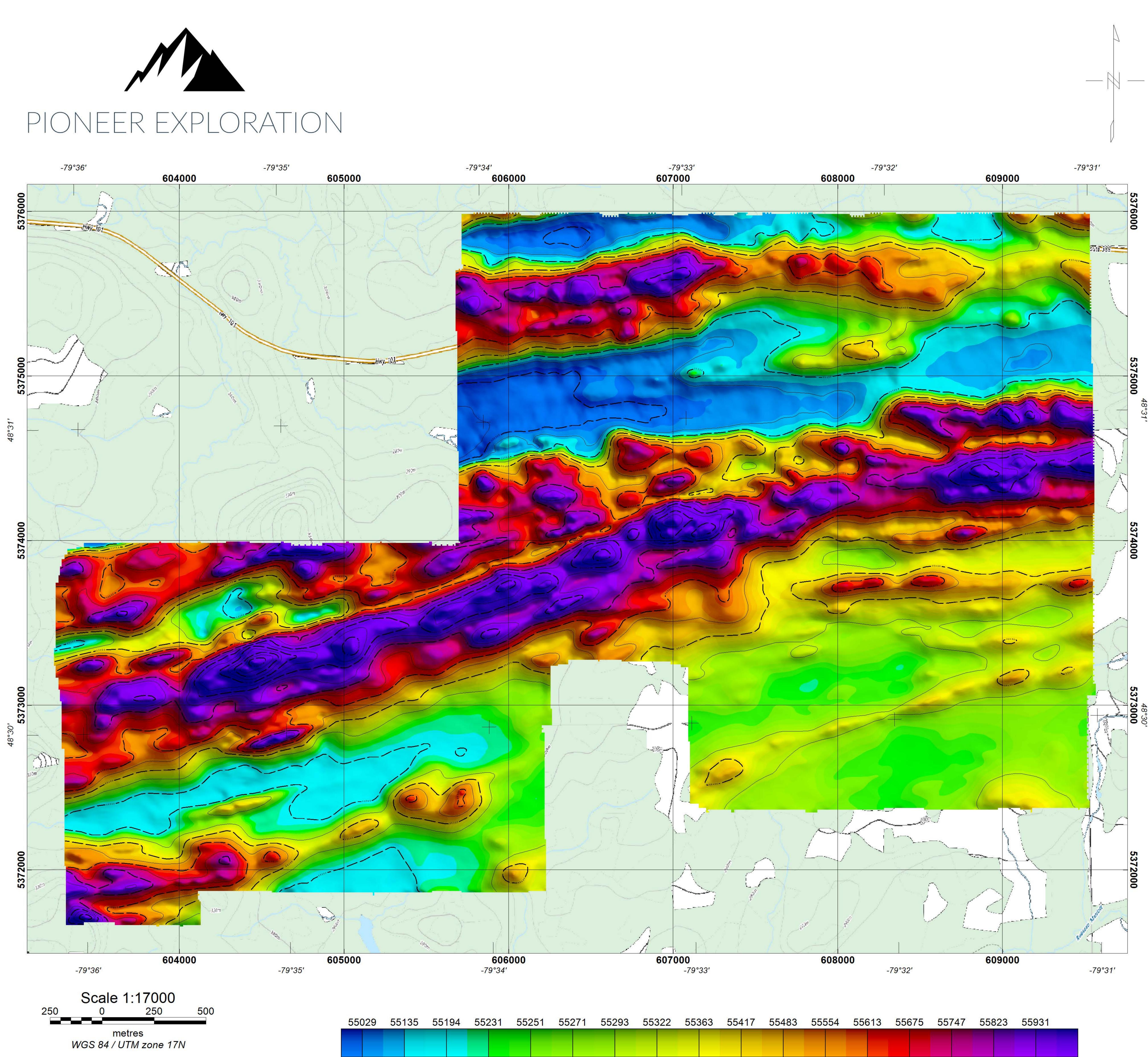




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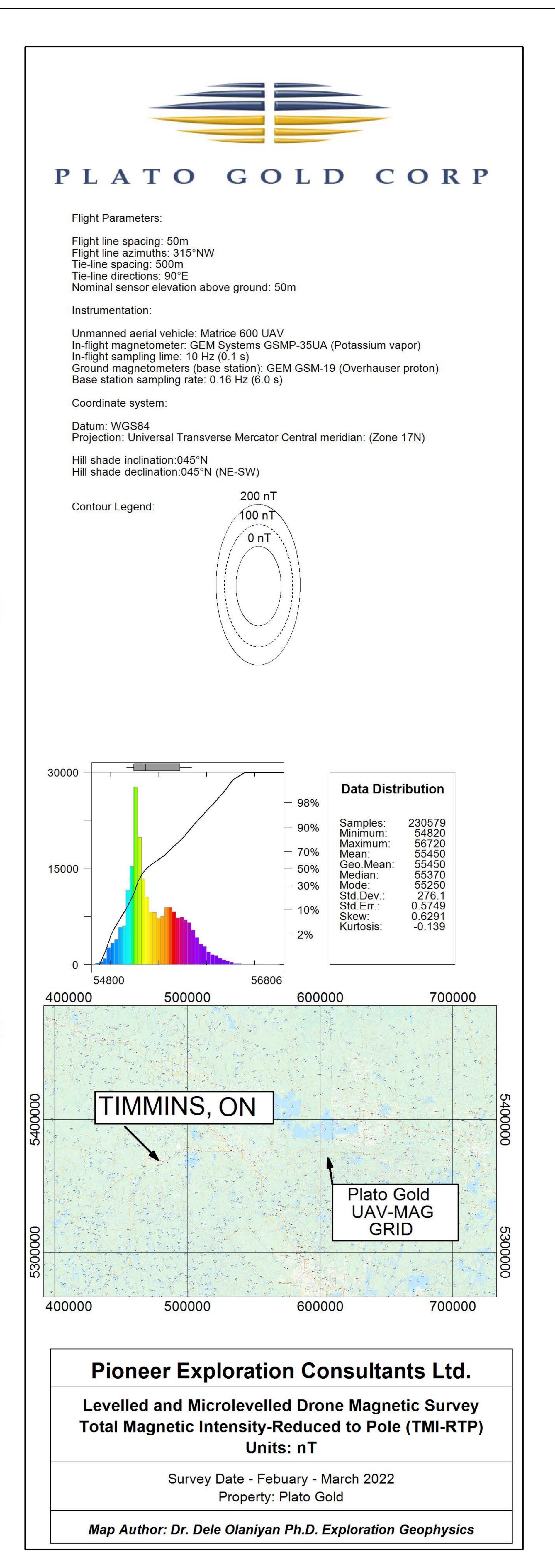
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# **Appendix 2: Final Maps**

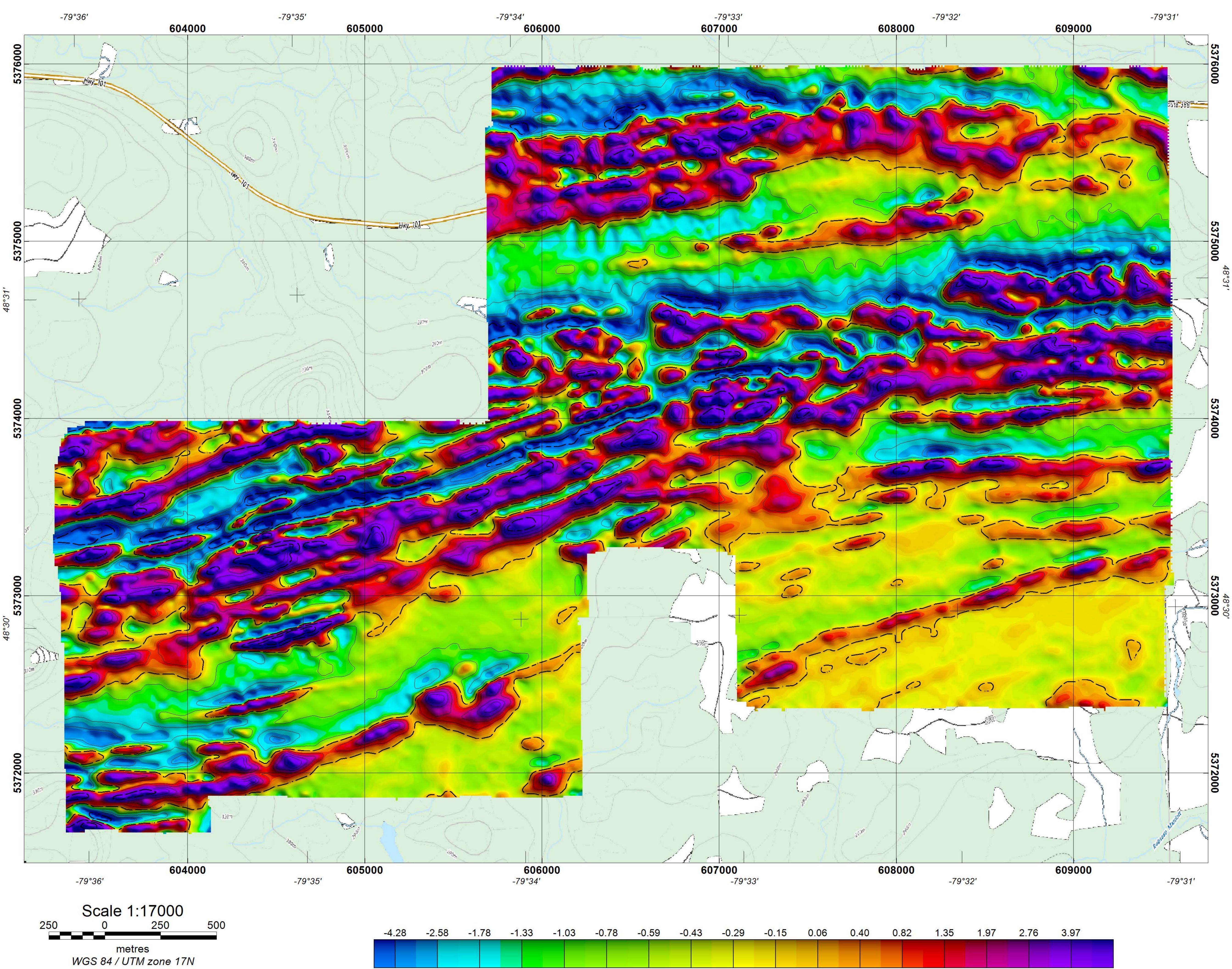


55483	55554	55613	55675	55747	55823	55931	
	55483	55483 55554	55483 55554 55613	55483 55554 55613 55675	55483 55554 55613 55675 55747	55483 55554 55613 55675 55747 55823	55483 55554 55613 55675 55747 55823 55931

TMI\_RTP nT



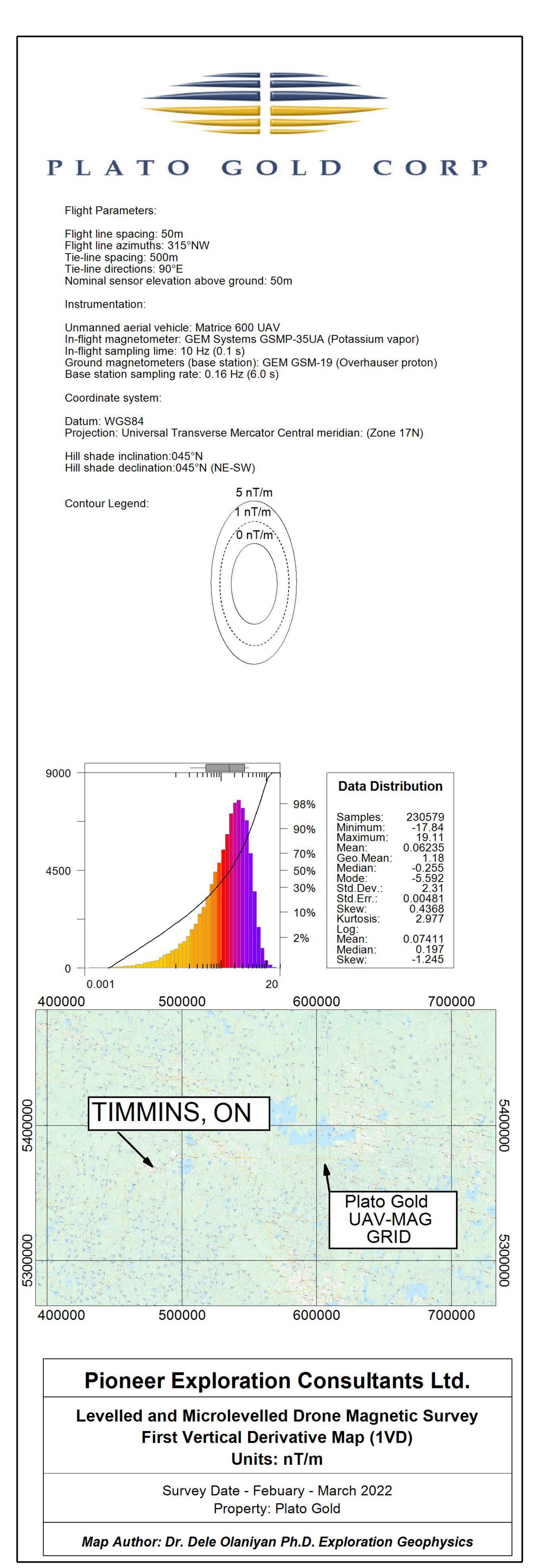




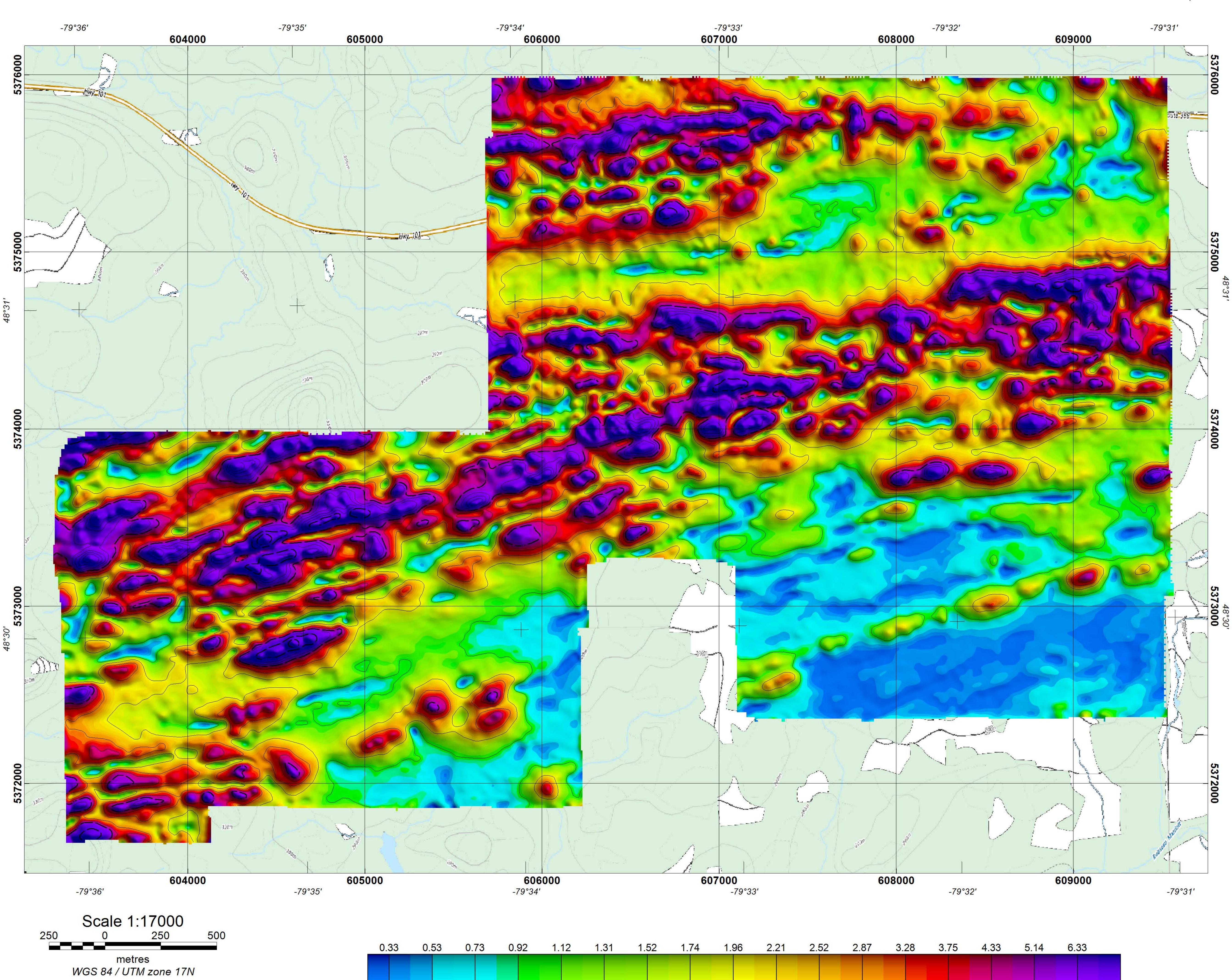
**1VD** 

nT/m

\ \_\_\_\_\_



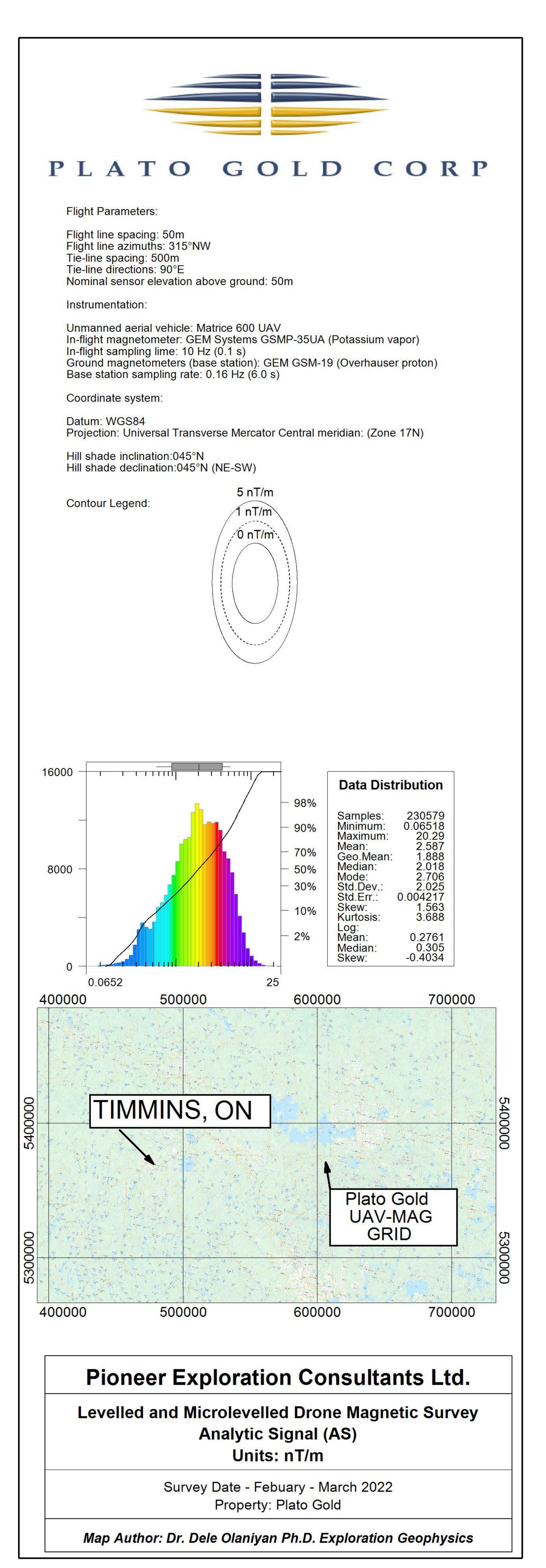




AS nT/m

2.52	2.87	3.28	3.75	4.33	5.14	6.33	

\ \_\_\_\_\_



		Expenditure Details (Receipt entries)								Invoice			
Primary Cost Ca	ategory	Secondary Cost Category	Work Per	formed	Invoicee	Invoice Reference #	Invoice Date	Billing Unit	Linit Drico	# Unite	Total Cost (No Tax)	Rounded	Deference
Primary Exploration Activity	Work Subtype	Associated Cost Type	Start Date	End Date	invoicee	Invoice Reference #	invoice Date	bining Offic	Onterice	# Units		Koundeu	Reference
Airborne_Geophysical_Work	Magnetics		February 13, 2022	March 4, 2022	Pioneer Exploration	202204-04	April 7, 2022	l-km	\$ 94.15	573.59	\$ 54,000.64	\$ 54,001.00	1A
Airborne_Geophysical_Work	Magnetics	Contractor Mob/Demob	February 13, 2022	March 4, 2022	Pioneer Exploration	202204-04	April 7, 2022	each	\$ 3,300.00	1.00	\$ 3,300.00	\$ 3,300.00	1B
Airborne_Geophysical_Work	Magnetics	Report/Map	June 16, 2022	June 30, 2022	J-J Minerals	351	June 30, 2022	days	\$ 800.00	11.50	\$ 9,200.00	\$ 9,200.00	2
Airborne_Geophysical_Work	Magnetics	Report/Map	July 1, 2022	July 15, 2022	J-J Minerals	352	July 15, 2022	days	\$ 800.00	6.50	\$ 5,200.00	\$ 5,200.00	3
										Total	\$ 71,700,64	\$ 71 701 00	