**Qualifying Report** 

# On The

**Temagami Area Properties** 

**Sudbury District, Ontario** 

For

**Amador Gold Corporation** 

By: W. MacRae MSc., P.Geo. Effective Date: June 28, 2007 Signing Date: June 28, 2007 Revision Date: December 4, 2007

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# Summary

The Temagami Area properties consist of 19 non-contiguous unpatented mining claims containing 153 claim units covering approximately 2,448 hectares in the Sudbury Mining Division. The claims are held 100% by Amador Gold Corporation with a 2% royalty held on four claims in Banting Township optioned from Kirnova Corporation.

The Temagami Area property lies 6.3 to 13.8 kilometres northwest of the town of Temagami, Ontario. Vehicular access to the properties is via forestry access roads extended westward off Trans Canada Highway 11 at 4.8 and 9.5 kilometres north of the town of Temagami.

The area is underlain by a north-east trending metavolcanic-metasedimentary belt of Archean aged rock formations. The belt is approximately 13 kilometres across and 29 kilometres long. The predominant structural feature is a northeast trending syncline disrupted by the emplacement of granitic plutons. There are two volcanic cycles starting with mafic volcanic flows and progressing to intermediate then felsic pyroclastic rocks and ending with sedimentary units.

The surrounding granitic plutons are mainly trondhjemite and quartz monzonite in composition and are intrusive into the metavolcanics. The area is partially overlain by rocks of the Gowganda Formation of the Huronian Supergroup consisting mainly of relatively undisturbed paraconglomerate and siltstone units forming a complex interlayered assemblage. Nipissing Diabase intrudes the Gowganda Formation as sills and dykes. A younger series of northwest trending diabase dykes intrude all of the above rocks and are interpreted to be the youngest unit in the area.

The Ajax intrusion is an ultramafic body that intrudes into the mafic to felsic sequence of volcanic rocks and hosts the copper-nickel-PGE mineralization that was part of the historic production from the property. The intrusive is composed of peridotite to pyroxenite to partially altered gabbro and diorite.

The mineralization at the Ajax site is of a magmatic nickel sulphide type. The sulphides form as immiscible blebs in the liquid intrusion and separate out by gravity when the body is emplaced. Later remobilization can create rich sections of veining and masses. The sulphides are generally rich in nickel, copper, gold, silver, platinum and palladium.

An airborne VTEM survey has identified additional unexplained targets on the Ajax and Banting-Chambers properties. It is recommended that two phases of drilling be completed on the Ajax property and geological and geophysical surveys followed by drilling for the Banting-Chambers property.

The estimated cost to complete the Phase 1 program on the Ajax is \$282,700 and \$1,130,800 for the phase 2 drilling program. The expenditures on the Phase 2 is contingent on favourable results from the Phase 1 program. The estimated cost for the exploration program on the Banting-Chambers property is \$157,300.

# Introduction

At the request of Amador Gold Corporation, MacRae Geoservices has been contracted to prepare a technical report on the Temagami Area Properties, located near the Town of Temagami, Sudbury Mining Division (Figure 1). Amador Gold Corporation is proposing to conduct staged exploration programs on the Temagami Area properties.

Amador Gold is a public issuer company, incorporated under the laws of British Columbia, and having an address of 675 West Hastings Street, Suite 711, Vancouver, British Columbia, V6B 1N2. Amador Gold wishes to use this technical report to provide disclosure of the Temagami properties and to support future financings.

The author visited the properties on October 19 & 20, 2006 and again on May 8 & 9, 2007. The October 19<sup>th</sup> & 20<sup>th</sup> visit located the Ajax Mine infrastructure of the Strathy Township property and several outcrop areas on the Banting-Chambers Property as well as examining the access, topography and selected outcrop exposures.

This report contains details of land tenure, a summary of previous exploration programs, a synopsis of the regional and property geology, geophysical programs and assay data, with recommendations for future exploration programs.

The relevant data for the Temagami Area properties has been reviewed by the author and deems the Ajax Mine property to be an "Advanced Exploration Property". This property has had limited production from underground and an open pit. The Banting-Chambers property is of a grass roots nature.

In order to prepare this report MacRae Geoservices has reviewed public domain geological reports, maps, technical papers and private company documents, all of which are listed in the "References" section of this report.

The estimated costs used to create the proposed budget are based on knowledge of current costs as experienced by the author on other projects in Ontario.

The information in historic data when reported in imperial units has been converted to metric units using factors as published in "Metric Practice Guide for Canadian Mining and Metallurgical Industries" (Mining Association of Canada, 1978).



Figure 1. Property location map (1:10,000,000).

# **Reliance on Other Experts**

With respect to information related to property ownership and the option agreements, only a skilled lawyer trained in mining property law is qualified to give an opinion on the state of development and ownership of a mineral property. Any statements in this report are based on information supplied by Stephen Pearce, Legal Council for Amador Gold in Vancouver, B.C.. Any statement by the author with respect to claim standings and ownership should not be considered as a definitive description but only an interpretation based on information, which I believe to the best of my knowledge and experience is correct.

Concerning the information relating to ownership of concessions, permitting requirements for continuing exploration, as well as the annual payment of mineral property taxes, as required by law to maintain concessions, the author relied on information provided by Amador Gold personnel, which to the best of my knowledge and experience was accurately presented. However, I can not be held responsible for such information and (or) any statements related to this information.

Historical work reported in this document is derived from assessment files maintained by the Ministry of Northern Development and Mines and unpublished reports and maps prepared by consultants and other individuals. The author has made every attempt to accurately report and convey the contents of the reports and maps, but cannot certify the accuracy, validity or completeness of the original data contained in the files and maps. The authors of these files are not necessarily qualified persons within the context of National Policy 43-101.

The Amador Gold property has been the focus of activities of several groups from prospectors to major mining companies. Examination of the available reports prepared by these various groups suggests that the various programs were undertaken with care and using the best practises available at the time of the undertaking.

# **Property Description and Location**

The Temagami Area Properties are located from 6.3 to 13.8 kilometres north west of the Town of Temagami, Ontario (Figure 2) The NTS reference for the property is 31M/04 and the approximate geographical centre of the Ajax property is 17 T 587584E 5217311N (NAD83) while the center of the Banting – Chambers property is 17 T 582220E 5223320N (NAD83).

The Temagami Area Properties consists of 19 non-contiguous unpatented mining claims containing 153 claim units covering approximately 2,448 hectares (Figure 2.). The claims are recorded in the name of Amador Gold Corporation (100.00 %) except for claims 3003841 to 3003844 incl. which are held in the name of Kirnova Corporation as shown in Table 1. Amador Mining has an option agreement with Kirnova Corporation and Canadian Prospecting Ventures Inc. to earn 100% interest in the claims upon payment of \$22,500, issued to the vendor 150,000 common shares and expended \$110,000 in exploration expenditures over three years.



Figure 2. Property location map (1:100,000).

The claims are located on adjoining claim sheets Strathy Township G-3451, Banting Township G-3406, and Chambers Township G-3416 (Figure 3). A summary of the claim information is presented in Table 1.

Township	Claim	Recording	Claim Due	Work	Total	Total	Claim	Ownership
10 millionip	Num.	Date	Date	Required	Applied	Reserve	Units	
Banting – Chambers Property								
BANTING	3003841	2004-May-18	2007-Nov-18	\$6,400	\$6,400	\$6,395	16	Kirnova Corp.
BANTING	3003842	2004-May-18	2007-Nov-18	\$6,400	\$6,400	\$6,395	16	Kirnova Corp.
BANTING	3003843	2004-May-18	2007-Nov-18	\$6,000	\$6,000	\$5,996	15	Kirnova Corp.
BANTING	3003844	2004-May-18	2007-Nov-18	\$6,000	\$6,000	\$5,996	15	Kirnova Corp.
BANTING	3013259	2006-Jun-28	2008-Jun-28	\$6,400	\$0	\$0	16	Golden Chalice
BANTING	4201410	2006-Jun-28	2008-Jun-28	\$6,400	\$0	\$0	16	Golden Chalice
BANTING	04201411	2006-Jun-28	2008-Jun-28	\$3,200	\$0	\$0	8	Golden Chalice
BANTING	4201412	2006-Jun-28	2008-Jun-28	\$6,000	\$0	\$0	15	Golden Chalice
BANTING	4201413	2006-Jun-28	2008-Jun-28	\$3,200	\$0	\$0	8	Golden Chalice
Ajax Prope	rty							
STRATHY	3013125	2005-Jun-01	2007-Jun-01	\$400	\$0	\$0	1	Amador Gold
STRATHY	3013126	2005-Jun-03	2007-Jun-03	\$400	\$0	\$0	1	Amador Gold
STRATHY	3013127	2005-Jun-01	2007-Jun-01	\$400	\$0	\$0	1	Amador Gold
STRATHY	4201306	2006-Oct-02	2008-Oct-02	\$2,000	\$0	\$0	5	Amador Gold
STRATHY	4201307	2006-Oct-02	2008-Oct-02	\$1,600	\$0	\$0	4	Amador Gold
STRATHY	4201309	2006-Oct-02	2008-Oct-02	\$1,600	\$0	\$0	4	Amador Gold
STRATHY	4206323	2005-Jun-07	2007-Jun-07	\$2,400	\$0	\$0	6	Amador Gold
STRATHY	4207080	2005-Jun-07	2007-Jun-07	\$1,200	\$0	\$0	3	Amador Gold
STRATHY	4207081	2005-Jun-07	2007-Jun-07	\$800	\$0	\$0	2	Amador Gold
STRATHY	4207700	2005-Sep-12	2007-Sep-12	\$400	\$0	\$0	1	Amador Gold

Table 1. Claim information from MNDM database as of June 28, 2007

The Golden Chalice claims in Banting Township have been transferred to Amador Gold Corporation at cost. Strathy Township claims 3013125 to 3013127 and 4206323, 4207080 and 4207081 have had two years assessment applied to the claims to bring the due dates to 2009. Claim 4207700 has been renewed to September 12, 2009.

Property boundaries were located based on previous staking by other parties and new staking based on land which came open.

The Ajax property was a former producer with a processing facility on site. The production originated from an open pit that is almost entirely on the Ajax property while the infrastructure is located on an adjacent claim held by other interests (Figure 4). A tailings empondment area lies to the southwest to west of the abandoned production facilities approximately 630 metres, only the northern half of the tailings are within the Ajax property and the ownership of which lies with the surface rights holder, the Government of Ontario. Waste rock dumps are located on the north side of the open pit and to the east of the mill infrastructure. The open pit is presently filled with water and forms a part of a larger body of water.

The mineralized zones come to surface in the open pit area and dip to the southeast at an approximate angle of 23°. Differing interpretations have indicated there may be from two to five

separate mineralized zones but the author did not have sufficient data to verify the validity of any of these interpretations.

There are no environmental liabilities or significant issues related to previous exploration work on the property. Amador and the optionor warrant that they have not received from any government authority any notice of, or communication relating to, any actual or alleged breach of any environmental laws, regulations, policies or permits. The exploration activities on the property contemplated by Amador will not require permits issued by any regulatory authority to complete the Phase 1 program.

The following is a list of the consideration paid for the property group. Apart from below there are no other royalties, back in-rights, payments, other agreements or to the best of my knowledge encumbrances. I have relied on advice from the Company's in-house counsel for this information.

- (a) Ajax Property Purchase and sale agreement to acquire a 100% interest in the Ajax Property, Ontario. Consideration is \$80,000 cash (paid) and 300,000 common shares (300,000 issued). The property is subject to a 2% net smelter return royalty with a buy back of 1% for \$1,000,000.
- (b) Banting Chambers Property Option agreement to acquire a 100% interest in the Banting Chambers Property, Ontario. Consideration is \$22,500 cash (\$12,500 paid), 150,000 shares (100,000 issued) over two years and \$110,000 in exploration expenditures over 3 years. A 2% royalty is payable on the property, half of which can be purchased for \$500,000.
- (c) Strathy Property During fiscal 2005, the Company acquired a 100% interest in 3 claims in the Strathy Township property located in Ontario. Consideration was \$20,000 cash (paid). The property is subject to a 1% net smelter return royalty, which may be purchased for \$250,000 at any time.

### Accessibility, Climate, Local Resources, Infrastructure and Physiography

Access to the property is by Trans Canada Highway 11. The turn off for the Ajax property is 54.5 kilometres south of the town of Temiskaming Shores and 4.8 kilometres north of the town of Temagami, then by the Kanichee Mine road for 4.8 kilometres. Access to the Banting-Chambers property is from Trans Canada Highway 11 47.3 kilometres south of the town of Temiskaming Shores and 9.5 kilometres north of the town of Temagami, then by the Red Squirrel Road and subsequent logging roads for 14 kilometres.

Topography on the Temagami area properties is low to moderate with relief varying from 310 metres above sea level to 350 metres above sea level, a relief of 40 metres. Rock outcropping are typical for this location within the Precambrian Shield with 5% to 10% exposure. The drainage has a distinct northeast-southwest orientation reflecting Quaternary glacial deposits of sand and gravel and



Figure 3. Claim location map, Temagami Area Property.



Figure 4. Location of Ajax Infrastructure , Waste Dumps and Tailings Pond.

drains to the south into Lake Nipissing. Fauna for the property consists of jack pine, spruce, poplar, cedar and other less commercial species, most of which have been harvested over the last 5 to 10 years.

Local resources include a limited amount of merchantable timber, most of which has been harvested but there is an abundance of water. The Ontario Power Grid is in place to the Ajax mine site.

The property is of sufficient size to accommodate all facilities required to establish a mine if sufficient quantities of ore grade material can be established.

North Bay, Sudbury and Timmins can provide sufficient infrastructure to complete exploration and mining activities on the property. Modern telecommunications, scheduled commercial airlines, rail service and numerous truck transportation companies service the region.

### History

The exploration history of the Temagami area properties is variable as the Ajax claims have had extensive exploration and some production while the Banting-Chambers property is a grassroots Area. The history will be described for each of the properties separately.

The Ajax property was first mapped from 1887 to 1895 by A.E. Barlow for the Geological Survey of Canada. The first claim was staked in 1910 by H.C. Watkins and W.C. Langley. In 1915 a company from Buffalo, New York held an option and shipped a 7,727 kilogram bulk sample. C.C. Filteau of Cobalt in 1919 completed considerable surface work and drilled approximately 90 metres of diamond drilling. In 1928 Gibson Mining Ventures Ltd. Examined the property and reported copper values that warranted trenching.

A test shipment was sent to the American Smelting and Refining Company, New Jersey in 1930 returning values of 8% copper, 3% nickel, 10.3 grams per ton gold, and 14.1 grams per ton platinum. In 1932 Cuniptau Mines Development Company obtained the property and in 1933 completed 455 metres of diamond drilling in six holes. A vertical shaft was sunk to 75 metres in 1934 and 670 metres of lateral development completed on two levels (30 metres and 68.6 metres). In January, 1934 a shipment of 13.64 tonnes of ore was received by the Mines Branch, Ottawa returning a value of 1.12% copper, 1.02% nickel, 0.34 grams per tonne gold, 6.17 grams per tonne silver and 4.46 grams per tonne platinum and palladium. In 1936 a 45.5 tonne per day pilot plant was erected and produced 96,3636 kilograms of matte containing 44,965 kilograms copper, 29,743 kilograms nickel, 1,151 grams gold, 2,572 grams platinum, 6,105 grams palladium and 28,273 grams silver. Two bulk samples were shipped from the property, 909 kilograms to International Nickel Co. and 16.36 tonnes to American Nickel Co.. The results were 7.48% copper, 3.75% nickel, 2.57 grams per tonne gold, 7.54 grams per tonne platinum, and 19.2 grams per tonne palladium for one sample and 9.45% copper, 2.64% nickel, 8.91 grams per tonne gold and 14.06 grams per tonne platinum for the other. Operations ceased in 1937 and the property was acquired by the Ontario Nickel Corporation.

The property was sold to Trebor Mines Limited in 1947 who completed geological and geophysical surveys to 1948. In 1949 Trebor drilled 128 diamond drill holes for 12,471 metres and defined three zones totalling 4,932,455 tonnes averaging 0.62% combined copper-nickel.

In 1961 Ajax Minerals Limited acquired control of the property and between 1961 and 1970 conducted geological and geophysical surveys with minor diamond drilling and metallurgical testing. In 1971 Falconbridge Nickel Mines Limited optioned the property and completed 535 metres of drilling. In 1972 and 1973 more metallurgical testing and geophysical surveys were conducted.

Kanichee Mining Incorporated acquired 30% of the property in 1973 and built a 500 ton per day mill on the property. Production commenced from an open pit in the shaft area in 1974 with no production records available. Production ceased in 1976 and Ajax Minerals was dissolved in 1978.

In 1987 Northern Platinum Ltd. Optioned the property (Tully, 1988) and drilled 680 metres in 5 holes. The following year saw the completion of line cutting, geophysical surveys, trenching, geological surveys and diamond drilling. In 1988 a total of 11 drill holes were completed for 1,002 metres. A 9,091 tonne bulk sample and pilot plant test was taken in 1989 and processed at Lakefield Research (McGoran, 1988). Results indicate that recoveries for copper were 86% and for nickel 50%. Recommendations were for additional test work to improve the recoveries for copper, nickel and platinum.

There has been several resource estimates completed on the Ajax property. I have not done sufficient work to classify the historical estimate as a current mineral resource or mineral reserve and the Company is not treating the historical estimate as a current mineral resource or mineral reserve as defined in National Instrument 43-101 and as such the historical estimate should not be relied upon. In 1949 Trebor Mines reported three zones calculated by George Dumont to contain:

	Tonnes	Combined Cu+Ni	Precious Metals*
Shaft or "S" Orebody	335,455	1.42%	\$1.95
"A" Extension	4,099,727	0.54%	\$0.75
"E" (North)	497,272	0.64%	\$0.61
Total Tonnage	4,932,454		
*Calculated at prevailing	metal prices.		

In 1950 the resource was again calculated by a John C. Dumbrille and reported five zones totalling:

4,297,727 tonnes at 0.62% combined Cu+ Ni with PGM credits.

Ajax Minerals in 1961 gave the resources calculated by Georges Dumont to be:

-	Tonnes	Copper	Nickel	Precious Metals*
Shaft Orebody	260,000	0.95%	0.58%	\$2.29
"A" Orebody	668,182	0.45%	0.26%	\$1.06
Additional Tonnage	3,909,091 c	of lower grade		
*Calculated at prevailing	g precious metal	prices.		

In 1972 D. G. Wahl completed the most recent resource estimated the following:

D.G. Wah	1 (1972)				
	<u>Overburden</u>	Waste tonnes	Mill Rock tonnes	<u>Copper</u>	<u>Nickel</u>
Shaft Orebody	37,789 cu. yds.	389,018	373,863	0.79%	0.44%
"A" Orebody	<u>12,893 cu. yds</u> .	<u>83,473</u>	<u>55,513</u>	0.50%	0.28%
Totals	50,682 cu. yds.	472,491	429,376	0.75%	0.42%

None of the above resource calculations are NI43-101 compliant and are only reported for historical completeness.

The exploration history of the Banting-Chambers property is limited. In 1999 and 2001 Temex Resources completed regional till and regional grab sampling programs over the present property (Bunner, 1999) hoping to define target areas for kimberlites or copper-nickel mineralization. The results were inconclusive with the author recommending further sampling.

### **Geological Setting**

### **Regional Geology**

The area northwest of the Town of Temagami is underlain by a north-east trending metavolcanicmetasedimentary belt of Archean aged rock formations. The belt is approximately 13 kilometres across and 29 kilometres long (Figure 4). The predominant structural feature is a northeast trending syncline disrupted by the emplacement of granitic plutons.

There are two recognized volcanic cycles starting with mafic flows and progressing to intermediate then felsic pyroclastic rocks and ending with sedimentary sequences. A thick sequence of Algomatype iron formation lies just above the main felsic to intermediate pyroclastic assemblage. Intruding the metavolcanics is a variety of metagabbros, metadiorites and felsic porphyries. The metamorphic grade of the early Precambrian rocks is reported to be lower greenschist facies.

The surrounding granitic plutons are mainly trondhjemite and quartz monzonite in composition and are intrusive into the metavolcanics. The area is partially overlain by rocks of the Gowganda Formation of the Huronian Supergroup consisting mainly of relatively undisturbed paraconglomerate and siltstone units forming a complex interlayered assemblage. Nipissing Diabase intrudes the Gowganda Formation as sills and dykes. A younger series of northwest trending diabase dykes intrude all of the above rocks and are interpreted to be the youngest unit in the area.

### **Property Geology**

The Ajax property (Bennett, 1978) is underlain by a series of volcanic rocks ranging from mafic to andesitic to rhyolitic, all trending in a north-easterly direction (Figure 5). The mafic flows vary from massive to pillowed and can be variolitic or amygdaloidal. The rhyolite can display modes from massive to tuffacious to fragmental. An ultramafic mineralized body (Ajax Intrusion) intrudes the



Figure 5. Regional Geology Map of the Temagami Area.



Figure 6. Geology of the Ajax Property area.

above units and is almost completely altered to serpentinite. All units are cut by younger diabase dykes. The area has been metamorphosed to a greenschist facies.

Mafic volcanics in the area of the Ajax pit are pillowed with an interflow tuff or volcanoclastic sediment marking the hiatus between flows. The pillows show a zonational nature with varioles coalescing near the pillow margins with some amygdules concentrating near the stratigraphic top of the flow.

Overlying the mafic volcanic units are intermediate volcanics of intermediate composition. The andesites are pale grey in colour and contain plagioclase phenocrysts 2 to 4mm in length. Subrounded to irregular clots of chloritic material are common in the intermediate to felsic volcanic units on the property. Most rocks in this group consist of "welded" and recrystallized tuffaceous rocks which have lost all visible evidence of their original pyroclastic origin.

Flows of a rhyolitic composition overlie the intermediate volcanics and weather a white colour. The rhyolite occurs as massive flows, tuffaceous units or breccia units. The rock is predominantly a fine grained aphenitic quartz with minor amounts of feldspar and sericite.

Only minor amounts of interflow sediments were noted on the property. These sediments are thin units and are volcanoclastic in nature.

The above volcanic sequences were intruded by the Ajax intrusion and several smaller bodies believed to be all of the same origin. The body is roughly oval in plan view with a length of 1070 metres north-south and approximately 760 metres east-west. The intrusion ranges in composition from peridotite to partly altered gabbro and diorite. The peridotite has been almost completely metamorphosed to serpentinite. The serpentinite contains the copper, nickel and PGE mineralization that is the deposit. The main body of the Ajax intrusion consists of reddish brown to dark grey weathering gabbro and pyroxenite. The pyroxenite is dark green on a fresh surface while the gabbro is a mottled grey green. The gabbro appears to occupy the central portion of the intrusion with pyroxenite and peroditite the periphery. The gabbro is a highly altered rock with the original textures preserved but the plagioclase is entirely replaced by clinozoisite, carbonate and white mica. The pyroxenite has been replaced by tremolite-actonolite.

Several diabase dykes that trend north-westerly cut the above rock units on the property probably of the Sudbury swarm type. A three metre wide dyke striking roughly north-south cuts through the open pit area and are probably of the Matachewan swarm type.

The Banting-Chambers property (Smyk et al, 1997) contains rocks very similar to the Ajax property (Figure 6). In the northern portion of the property is a series of mafic to intermediate flows that are massive to pillowed with some of the flows being feldspar-phyric. The feldspar-phyric flows contain numerous round to sub-round, 1 to 3 cm feldspar aggregates in a dark green chloritic matrix. The pillowed flows all indicate that tops are to the north suggesting that the package younging to the north.

North and overlying the above package is an intermediate to felsic unit that is mapped as a heterolithic tuff breccia. This breccia varies from fragment supported to matrix supported with the fragments generally of lapilli size with occasional bomb sized fragments. Fragments of tuff and



Figure 7. Geology of the Banting-Chambers Property.

crystal tuff dominate with lesser amounts of pumiceous and rhyolite lapilli lithic fragments. The matrix ranges in composition from a dark green mafic tuff to a light grey-green coarse tuff containing plagioclase and quartz crystals.

The metavolcanics units have been intruded by granite plutons in the southern portion of the property. The granites are coarse to medium grained, massive to foliated and equigranular. A large area if the granite pluton has been mapped as containing abundant roof pendants of metavolcanics material that has been metamorphosed to amphibolite.

All of the above units have been intruded by diorite, quartz diorite and hornblende gabbro bodies. These units may be subvolcanic intrusives into the volcanic pile at a very late stage. The hornblende gabbro is coarse grained, mottled, dark green and white in appearance. Disseminated to semi-massive magnetite and minor pyrite and chalcopyrite locally make up to 25% but more commonly less than 10% of the rocks. Plagioclase and hornblende constitute 90% to 95% of the rock. Dioritic rocks generally form the margins of the intrusions.

Near the northern boundary of the property is a basal diamictite and basal breccia unit that is the Coleman Member of the Gowganda formation, Cobalt Group, Huronian Supergroup. This unit unconformably overlies the metavolcanics to the south.

A large sill of Nipissing Diabase occurs on the east and west portions of the claim block. The sill is reported to be up to 250 metres thick. Only minor alteration of the underlying Archean or Proterozoic rocks has been reported.

Intruding all rock units in the area is a 125m to 175m thick, northwest trending, olivine diabase dyke. This dyke is part of the Sudbury swarm and is strongly magnetic. The dyke has a coarse-grained, intergranular to subophitic texture.

# **Deposit Types**

The Ajax and Banting-Chambers properties host or have the potential to host "Magmatic Nickel Sulphide Deposits". The copper-nickel mineralization at the Ajax deposit is disseminated to massive sulphides associated with a "keel" structure in the Ajax ultramafic intrusive. This type of mineralization is believed to be formed by the partial melting of the upper mantle, magma fractionation, magma mixing and contamination by country rock. The metal content is derived from the mantle melt and the assimilation of sulphide rich country rock producing an immiscible sulphide phase which forms a cumulate that occupies topographic lows in the intrusive body at the time of emplacement. Structural complexities can remobilize the sulphides into veins that occupy fractures in the intrusive and extend into the country rock. These deposit types are also anomalous in gold and platinum group metals. The Banting-Chambers property hosts a gabbroic intrusive that could contain nickel sulphide mineralization.

# Mineralization

Mineralization at the Ajax mine is hosted in what has been called the altered peridotite portion of a multi phase ultramafic intrusion. The mineralization was studied by Sandefur (1942) who identified pyrite, pyrrhotite, chalcopyrite, pentlandite, sphalerite, calaverite, tetrahedrite, marcasite and hematite as well as chromite. The most abundant of these ore minerals is pyrite, pyrrhotite and chalcopyrite. Pentlandite is associated with high concentrations of pyrrhotite and in places is reported to be partially replaced by violarite. Pyrite and marcasite are distributed widely without forming large accumulations while sphalerite is present in very minor amounts.

The sulphides are concentrated, up to 20%, in the lower portion of the intrusion. The intrusion has a trough like lower contact that dips 23° and plunges to the southeast under the mafic volcanics.

# Exploration

The Ajax property has had a VTEM Survey flown over most of the claims in December, 2005 and January, 2006 (Orta, Marta, 2006a). The survey was flown by Geotech Limited, 30 Industrial Parkway South, Aurora, Ontario. VTEM is a helicopter-borne time domain electromagnetic geophysical survey the specifications of which are presented in Appendix I. The flight line spacing was 50 metres with the magnetometer mean terrain clearance (mtc) of 65 metres and the EM mtc was 40 metres with a total of 241 line kilometres.

This survey generated four anomalous areas on Amador Gold claims (Figure 7). Three of the anomalies are associated with the present Ajax mine site and Ajax Intrusion while the fourth is to the southeast and sits on a mafic-felsic contact that appears folded. Anomaly A is in the area of the open pit and probably represents the remaining mineralization of the main deposit. Anomaly B appears to follow the line of infrastructure that is still in place on site although a consulting geophysicists has interpreted the anomaly to be a fault offset of Anomaly A and tops at 60 metres below surface (R. Barlow, Personal Communication). Anomaly C is a weak, possibly flat lying body associated with a dipping contact of the intrusion.

In January, 2007 an IP survey (Johnson, Mathew, 2007) was completed over a small grid of 5.0 kilometres with line spacing of 100 metres and picket spacing of 25 metres( Appendix III). The IP survey utilized a dipole-dipole electrode configuration with an "a" spacing of 25 metres. Details of the survey specifications and equipment used are in Appendix II. Several IP conductivity anomalies were recorded and correspond to the VTEM anomaly C.

On may 16, 2007 ground surveys of magnetometer, VLF-EM and GPS were completed on the lower portion of the Ajax property (Ploger, Jason, 2007). The magnetometer and VLF-EM readings were taken every 12.5 meters while the GPS readings were at 25 metre spacing for a total of 6.925 kilometres of readings for each survey (Appendix IV). A report on the survey specifications is attached as Appendix III. The magnetic survey high lighted the ultramafic intrusive body and may be



Figure 8. Ajax VTEM survey anomalies.



Figure 9. Banting-Chambers VTEM survey anomalies.

reflecting the more peridotitic portions. The VLF-EM survey traces a strong north-northeast fault structure that was reported from previous operators.

The Banting-Chambers property was partially covered by a VTEM survey in December, 2005 to January, 2006 by the same survey company that flew the Ajax property (Orta, Marta, 2006). The survey specifications are the same as the previously described Ajax survey and are presented in Appendix II. A total of 560 line kilometres of survey data was collected.

Three anomalies are of note in this survey (Figure 8). Anomaly A is within a hornblende gabbro intrusive that has copper and magnetite occurrences noted and is situated on an iron formation float boulder. Anomaly B is within what is described as mafic to intermediate metavolcanics rocks. This in an area mapped as granite but there is a good possibility that the roof pendant zone in Banting Township also occurs in this area and the anomaly is another amphibolite unit.

No other exploration work has been completed on the Temagami Properties.

# Drilling

The issuer has not planned or contracted for any diamond drilling on this property at the time of this report.

# Sampling Method and Approach

Amador Gold has not commenced exploration activities that would require a description of sampling methods and approach. The issuer is aware of the industry best practices guidelines.

### Sample Preparation, Analysis and Security

The issuer has not commenced exploration activities that would require a description of sample preparation, analysis and security measures. The issuer is aware of the industry best practices guidelines.

# **Data Verification**

Analytical and assay data related to mineralization on the property is taken at "face value" and no check sampling or additional assaying was completed because of the inaccessibility or lack of archived core.

Verification of the geological data consists of field investigation of several trenches and bedrock exposures by the author on field visits on October 19 & 20, 2006 and again on May 8 & 9, 2007. No samples were collected from outcrop or trench locations for verification purposes. The field data presented by Northern Platinum Limited appeared accurate and suggests that the property geology is reasonably well understood and fairly presented.

Geophysical data was verified by a visual inspection of plotted surveys. All plotted data showed a continuum of coherence readings, an absence of erratic readings and is considered a reasonable representation of the geological features of the property.

The author has no reason to believe that the presentation of data is not an accurate representation of facts at this stage of exploration on the Ajax Mine Property and the Banting-Chambers Property.

# **Adjacent Properties**

I have been unable to verify the information with respect to the adjacent property and the information disclosed is not necessarily indicative of the mineralization on the Ajax property. Deposits in the vicinity of the Ajax Property include iron ore, gold and copper/lead (Figure 7). Information on the adjacent properties is taken from assessment file information and Ontario Government Geological Reports for the area.

The Sherman Mine, located 4.7 kilometres south of the Ajax, is a magnetite iron deposit that was put into production in 1969 and operated continuously until 1990 (Bennett, G, 1978). The mine was a joint venture between Dominion Foundries and Steel Limited (Dofasco) of Hamilton (90%) and the Tetapaga Mining Company (10%), a wholly owned subsidiary of the Cleveland-Cliffs Iron Company of Cleveland, Ohio. Iron is produced from a magnetite-chert banded iron formation that varies in thickness from 58 metres to 180 metres and was mined for up to 1500 metres in length.

The soluble iron content of the ore was 25.09% with 20.5% in the form of magnetite. The pellet plant had a rated capacity of 1,000,000 tons of pellets per year.

Approximately 1.7 kilometres east of the Ajax is a gold property held by Cominco Limited (Bennett, G, 1978). This is part of a property that was formerly held by the Beanland Mining Company and saw the development of a shaft to 115.2 metres with lateral development at 46 metres and 107 metres. Four veins were exposed in the underground development, the South Vein, Vein south of South Vein, Shaver Vein and a vein north of the Shaver Vein. Resources have only been reported on the Shaver Vein as 8,180 tonnes at a grade of 17.14 grams per tonne with a minimum mining width of 0.9 metres and 100% dilution.

Approximately 2.2 kilometres southeast of the Ajax property is property held by A.E. Perron of Kirkland Lake (Bennett, G, 1978). The property is known as the Clenor deposit and has a reported gold resource of 21,818 tonnes at a grade of 7.20 grams per tonne with a mining width of 1.6 metres (L.P. Warriner, 1946). A shaft was sunk to 150 metres with lateral development at 53.3, 99.1 and 144.8 metre levels. The principal vein is hosted in mafic volcanics and strikes from 50° to 70° and dips vertically. The vein has a strike length of 170 metres and a width of 1.5 metres. I have not done sufficient work to classify the historical estimate as a current mineral resource or mineral reserve and the Company is not treating the historical estimate as a current mineral resource or mineral reserve as defined in National Instrument 43-101 and as such the historical estimate should not be relied upon.



Figure 10. Location of adjacent properties.

## **Mineral Processing and Metallurgical Testing**

The issuer has not contracted any metallurgical or mineral processing studies with respect to mineralization existing on this property.

## **Mineral Resource and Mineral Reserve Estimates**

There are no NI43-101 compliant mineral resources or reserves on the Ajax property at this time.

# **Other Relevant Data and Information**

There is, to the author's knowledge, no additional data or information, of either a positive or negative aspect, that would change the data presented or the contained recommended program.

# **Interpretation and Conclusions**

I have not done sufficient work to classify the historical estimate as a current mineral resource or mineral reserve and the Company is not treating the historical estimate as a current mineral resource or mineral reserve as defined in National Instrument 43-101 and as such the historical estimate should not be relied upon.

Previous work on the Ajax property(Ajax Minerals, 1961) indicates the presence of approximately 928,000 tons at a grade of 0.59% Copper and 0.35% Nickel with PGM credits. This estimate also quotes an additional 4 million tons at a lower grade (grade not given). Higher grade areas exist within the defined mineralization and could be selectively mined at a higher profit. The VTEM survey and the ground mag, VLF-EM and IP indicate the presence of additional targets that can be explored for additional tonnage. Anomaly B from the VTEM survey has been interpreted to be the offset extension of the mineralization from the open pit and may be the trough structure plunging under the mafic volcanic flows (Figure8).

In the Banting-Chambers area the VTEM anomaly A appears to be a magmatic sulphide type target in a very mafic hornblende gabbro body (Figure 9). Anomaly B is located in an area of mafic volcanics with a large diabase dyke, suggesting an alteration and mineralization similar to many gold deposits.

### Recommendations

The Ajax property has to be drill tested to establish the mineral resources that are reported to be in the deposit. A total of 12 holes drilled to depths of up 300 metres would constitute a first phase to verify the presence of mineralization (Figure 11). A second phase of more detailed drilling to define resources would follow if warranted.

Hole #	Easting	Northing	Dip	Azimuth	Depth
P07-01	587656	5217353	-90		100m
P07-02	587626	5217347	-90		100m
P07-03	587584	5217355	-65	0	200m
P07-04	587584	5217355	-45	0	200m
P07-05	587447	5217109	-45	90	250m
P07-06	587653	5217172	-70	270	250m
P07-07	587625	5217102	-50	270	200m
P07-08	587610	5217080	-55	270	250m
P07-09	587624	5216932	-60	270	250m
P07-10	587584	5216860	-65	270	300m
P07-11	587775	5217140	-70	110	200m
P07-12	587770	5217097	-70	110	200m

Table 2. Proposed Phase 1 Diamond Drilling

The Banting-Chambers property requires 10 kilometre grids cut over anomalies A & B with IP and mag surveys completed. Geological mapping, sampling and prospecting should also be completed primarily in the grid areas but also throughout the property. Diamond drilling would be completed on targets generated from the ground surveys.

The cost for the recommended programs are as follows:

Ajax: Phase $1 - 2,5$	00 metres of NQ drilli	ng @ \$90/m	\$225,000
Sup	ervision and planning	-	\$32,000
	1 0	Sub-Total	\$257,000
		Contingency of 10%	\$25,700
		Total Phase 1	\$282,700
Phase 2 – 10,	000 metres of NQ drill	ing @ \$90/m	\$900,000
Super	\$128,000		
	1 0	Sub-Total	\$1,028,000
		Contingency at 10%	\$102,800
		Total Phase 2	\$1,130,800
Banting-Chambers:	20 kilometres of line	cutting @ \$600/km	\$12,000
C	Geophysical surveys	C	\$35,000
	Geological surveys a	nd prospecting	\$16,000
	Diamond drilling (B	Q) 1000 metres @ \$80/m	\$80,000
		Sub-Total	\$143,000
		Contingency at 10%	\$14,300
		Total	\$157,300



Figure 11. Ajax proposed diamond drilling.

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# Certification

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# **CERTIFICATE OF AUTHOR**

I, William E. MacRae M.Sc., P.Geo. do hereby certify that:

- I am the Sole Proprietor of MacRae Geoservices and reside at: 9 Martineau Avenue, Timmins, Ontario
- 2. I graduated with an Honours Bachelor of Science degree from Lakehead University in 1975 and graduated from McMaster University with a Master of Science degree in 1982.
- 3. I am a practicing member of the Association of Professional Geoscientists of Ontario (0496).
- 4. I have worked as a geologist for over 28 years exploring for precious (which includes Platinum Group Elements) and base metals in Quebec, Ontario, Manitoba, the Northwest Territories and Nunavut.
- 5. I have read the definition of "qualified person" as defined by National Instrument 43-101 (NI 43-101) and certify that by reason of my education and experience and affiliation with a professional association, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 6. I am responsible for the preparation of all sections of the technical report titled "Qualifying Report on the Temagami Area Properties, Sudbury District for Amador Gold Corporation" and dated June 28, 2007 (the "Technical Report") concerning the Temagami Area Properties. All of the technical information in this Technical Report is based on examination of published and non published documents relating to the Temagami Area Properties and a property visit on October 19 & 20, 2006 and May 8 & 9, 2007. The sources of all information other than personal examination have been referenced in the Technical Report.
- 7. I have had no prior involvement with the Temagami Area Properties.
- 8. I am not aware of any material facts or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose making the Technical Report misleading.
- 9. I am independent of the issuer applying all of the tests in section 1.4 of National Instrument 43-101.
- 10. I have read National Instrument 43-101 and Form 43-101F1, Companion Policy 43-101CP and this technical report has been prepared in compliance with that instrument and form.
- 11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files or on their websites accessible by the public, of the Technical Report.

Dated this 28<sup>th</sup> day of June, 2007.

Ul Marfre

Seal of Qualified Person

Signature of Qualified Person

William E. MacRae

Print Name of Qualified Person

Appendix I

Ajax VTEM Survey

# REPORT ON A HELICOPTER-BORNE TIME DOMAIN ELECTROMAGNETIC GEOPHYSICAL SURVEY

Ajax property Temagami, Ontario, Canada

for

# **Amador Gold Corporation**

#### By

Geotech Limited 30 Industrial Parkway South Aurora, Ontario L4G 3W2 Tel: 905 841 5004 Fax: 905 841 0611 www.geotechairborne.com

Email: info@geotechairborne.com

Survey flown in December, 2005 – January, 2006

Project 573 May, 2006

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# REPORT ON A HELICOPTER-BORNE TIME DOMAIN ELECTROMAGNETIC SURVEY

Ajax property, Temagami, Ontario, Canada

# **Executive Summary**

During the period of December 16<sup>th</sup>, 2005 to January 6<sup>th</sup>, 2006, Geotech Limited carried out a helicopter-borne geophysical survey for Amador Gold Corporation over one block north-west of Temagami, Ontario, Canada.

Principal geophysical sensors included a time domain electromagnetic system (VTEM) and a cesium magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 241 line-km were flown.

In-field data processing involved quality control and compilation of data collected during the acquisition stage, using the in-field processing centre established at Temagami, Ontario. Preliminary and final data processing, including generation of final digital data products were done at the office of Geotech Limited in Aurora, Ontario.

The processed survey results are presented as total magnetic field grid and electromagnetic stacked profiles at logarithmic scale.

Digital data includes all electromagnetic and magnetic products plus positional, altitude and raw data.



# 1. INTRODUCTION

# 1.1 General Considerations

These services are the result of the Agreement signed between Geotech Limited and Amador Gold Corporation, to perform a helicopter-borne geophysical survey over one block north-west of Temagami, Ontario, Canada.

241 line-km of geophysical data were acquired during the survey.

Mr. John Keating acted on behalf of Amador Gold Corp. during data acquisition and processing phases of this project.

The survey block is as shown in Appendix A.

The crew was based in Temagami, Ontario for the acquisition phase of survey, as shown in Section 2 of this report.

The helicopter was based at Temagami, Ontario for the duration of the survey. Survey flying was completed by January 6<sup>th</sup>, 2006. Preliminary data processing was carried out daily during the acquisition phase of the project. Final data presentation and data archiving was completed in the Aurora office of Geotech Limited by May, 2006.

### 1.2. Survey and System Specifications

The survey block was flown at nominal traverse line spacing of 50 metres in east – west direction. Tie lines were flown perpendicular to traverse lines.

Where possible, the helicopter maintained a mean terrain clearance of 80 metres, which translated into an average height of 40 meters above ground for the bird-mounted VTEM system and 65 meters above ground for the magnetic sensor.

The block was flown using an Astar BA+ helicopter, registration C-GHSM, operated by Abitibi Helicopters Inc. Details of the survey specifications are found in Section 2 of this report.
### 1.3. Data Processing and Final Products

Data compilation and processing were carried out by the application of Geosoft OASIS Montaj and programs proprietary to Geotech Limited. Database, grid and maps of final products were presented to Amador Gold Corp.

The survey report describes the procedures for data acquisition, processing, final image presentation and the specifications for the digital data set.

### 1.4. Topographic Relief

Ajax block is located approximately 3 kilometres north-west of Temagami, Ontario. Topographically, the block exhibits a moderate relief, with elevation range from 300 metres to 370 metres above sea level.

Several rivers and lakes are observed in the survey block.



#### 2. DATA ACQUISITION

#### 2.1. Survey Area

The survey block (see location maps, Appendix A) and general flight specifications are as follows:

Survey block	Line spacing (m)	Area (Km²)	Line-km	Flight direction	Line number
Ajax	50	11.4	227.9	N90°E	L6000 - 6590
	500		25.3	N0°E	T6900 - 6970

Table 1 – Survey block

Survey block boundaries are as shown in Appendix B.

#### 2.2. **Survey Operations**

Survey operations were based in Temagami, Ontario for the acquisition phase of the survey. The crew was housed at Temagami Shores Inn and Resort for the survey period, as shown on table 2.

The following table shows the timing of the survey.

Date	<b>Crew Location</b>	Flight #	Km flown	Comments
16-Dec	Temagami		0.0	Crew mobilization.
17-Dec	Temagami		0.0	Test Flight.
18-Dec	Temagami	1, 2, 3	241.9	
19-Dec	Temagami		0.0	Heavy wind.
20-Dec	Temagami	5	11.4	
21-Dec	Temagami		0.0	Low visibility. Heavy snow.
22-Dec	Temagami		0.0	Crew demobilization.
27-Dec	Temagami		0.0	Crew mobilization, low ceiling.
28-Dec	Temagami		0.0	Low ceiling, fog all day.
29-Dec	Temagami		0.0	Flying another block.
30-Dec	Temagami		0.0	Flying another block.
31-Dec	Temagami		0.0	Crew demobilization.



3-Jan	Temagami	0.0	0 Crew mobilization.
4-Jan	Temagami	0.0	0 System troubleshooting.
5-Jan	Temagami	0.0	0 System troubleshooting.
6-Jan	Temagami	0.0	0 Survey completed.

Table 2 – Survey schedule

#### 2.3. Flight Specifications

The nominal EM sensor terrain clearance was 40 m (EM bird height above ground, i.e. helicopter is maintained 80 m above ground). Nominal survey speed was 80 km/hour. The data recording rates of the data acquisition was 0.1 second for electromagnetics and magnetometer, 0.2 second for altimeter and GPS. This translates to a geophysical reading about every 2 metres along flight track. Navigation was assisted by a GPS receiver and data acquisition system, which reports GPS co-ordinates as latitude/longitude and directs the pilot over a pre-programmed survey grid.

The operator was responsible for monitoring of the system integrity. He also maintained a detailed flight log during the survey, tracking the times of the flight as well as any unusual geophysical or topographic feature.

On return of the aircrew to the base camp the survey data was transferred from a compact flash card (PCMCIA) to the data processing computer.



### 2.4. Aircraft and Equipment

### 2.4.1. Survey Aircraft

An Astar BA+ helicopter, registration C-GHSM - owned and operated by Abitibi Helicopters Inc. was used. Installation of the geophysical and ancillary equipment was carried out by Geotech Ltd.

### 2.4.2. Electromagnetic System

The electromagnetic system was a Geotech Time Domain EM (VTEM) system. The layout is as indicated in Figure 1 below.





Figure 2

Receiver and transmitter coils are concentric and Z-direction oriented. The receiver decay recording scheme is shown diagrammatically in Figure 2.

Twenty-five measurement gates were used in the range from 130  $\mu s$  to 6340  $\mu s$ , as shown in the following table.

VTEM Decay Sampling scheme (Microseconds)			
Time gate	Start	End	Width
130	120	140	20
150	140	160	20
170	160	180	20
190	180	205	25
220	205	240	35
260	240	280	40
300	280	325	45
350	325	380	55
410	380	445	65
480	445	525	80
570	525	625	100
680	625	745	120
810	745	885	140
960	885	1045	160
1130	1045	1235	190
1340	1235	1470	235
1600	1470	1750	280
1900	1750	2070	320
2240	2070	2450	380
2660	2450	2920	470
3180	2920	3480	560
3780	3480	4120	640
4460	4120	4880	760
5300	4880	5820	940
6340	5820	6860	1040

Table 3 – VTEM decay sampling scheme.

Transmitter coil diameter was 26 metres, the number of turns was 4. Transmitter pulse repetition rate was 30 Hz. Peak current was 198 Amp. Duty cycle was 40%. Peak dipole moment was 420,500 NIA.

Receiver coil diameter was 1.1 metre, the number of turns was 60. Receiver effective area was 57  $m^2$ Wave form – trapezoid. Recording sampling rate was 10 samples per second.

The EM bird was towed 40 m below the helicopter.

### 2.4.3. Airborne magnetometer

The magnetic sensor utilized for the survey was a Geometrics optically pumped cesium vapor magnetic field sensor, mounted in a separate bird towed 15 m below the helicopter. The sensitivity of the magnetic sensor is 0.02 nanoTesla (nT) at a sampling interval of 0.1 seconds. The magnetometer sends the measured magnetic field strength as nanoTeslas to the data acquisition system via the RS-232 port.

### 2.4.4. Ancillary Systems

### 2.4.4.1. Radar Altimeter

A Terra TRA 3000/TRI 30 radar altimeter was used to record terrain clearance. The antenna was mounted beneath the bubble of the helicopter cockpit.

### 2.4.4.2. GPS Navigation System

The navigation system used was a Geotech PC based navigation system utilizing a NovAtel's WAAS enable OEM4-G2-3151W GPS receiver, Geotech navigate software, a full screen display with controls in front of the pilot to direct the flight and an NovAtel GPS antenna mounted on the helicopter tail.

The co-ordinates of the blocks were set-up prior to the survey and the information was fed into the airborne navigation system.

### 2.4.4.3. Digital Acquisition System

A Geotech data acquisition system recorded the digital survey data on an internal compact flash card. Data is displayed on an LCD screen as traces to allow the operator to monitor the integrity of the system. Contents and update rates were as follows:

DATA TYPE	SAMPLING
TDEM	0.1 sec
Magnetometer	0.1 sec
GPS Position	0.2 sec
RadarAltimeter	0.2 sec

Table 4 - Sampling Rates

### 2.4.5. Base Station

A combine magnetometer/GPS base station was utilized on this project. A Geometrics Cesium vapour magnetometer was used as a magnetic sensor with a sensitivity of 0.001 nT. The base station was recording the magnetic field together with the GPS time at 1 Hz on a base station computer.

The base station magnetometer sensor was installed where the crew was housed, away from electric transmission lines and moving ferrous objects such as motor vehicles.

The magnetometer base station's data was backed-up to the data processing computer at the end of each survey day.



### 3. PERSONNEL

The following Geotech Ltd. personnel were involved in the project

Field Crew

Operators:	Vladimir Kutosov
	Alex Dumyn
System Engineer:	Pavel Tishin

The survey pilots and the mechanic engineers were employed directly by the helicopter operator – Abitibi Helicopters Inc.

Pilots:	Joel Breton
	Michel Frigon
Engineers:	Marco Blais

Office

Data Processing: Data Processing / Reporting:

Final data processing at the office of Geotech Limited in Aurora, Ontario was carried out under the supervision of Andrei Bagrianski, Data Processing Manager.

Neil Fiset

Marta Orta

Overall management of the survey was carried out from the Aurora office of Geotech Ltd. by Edward Morrison, President.



## 4. DATA PROCESSING AND PRESENTATION

### 4.1. Flight Path

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the UTM coordinate system in Oasis Montaj.

The flight path was drawn using linear interpolation between x,y positions from the navigation system. Positions are updated every second and expressed as UTM eastings (x) and UTM northings (y).

### 4.2. Electromagnetic Data

A three stage digital filtering process was used to reject major sferic events and to reduce system noise. Local sferic activity can produce sharp, large amplitude events that cannot be removed by conventional filtering procedures. Smoothing or stacking will reduce their amplitude but leave a broader residual response that can be confused with geological phenomena. To avoid this possibility, a computer algorithm searches out and rejects the major sferic events. The filter used was a 16 point non-linear filter.

The signal to noise ratio was further improved by the application of a low pass linear digital filter. This filter has zero phase shift which prevents any lag or peak displacement from occurring, and it suppresses only variations with a wavelength less than about 1 second or 20 metres. This filter is a symmetrical 1 sec linear filter.

The results are presented as stacked profiles of EM voltages for the gate times, in logarithmic scale.

Generalized modeling results of the VTEM system, written by Geophysicist Roger Barlow, are shown in Appendix C.

The VTEM output voltage of the receiver coil is shown in Appendix D.

### 4.3. Magnetic Data

The processing of the magnetic data involved the correction for diurnal variations by using the digitally recorded ground base station magnetic values. The base station magnetometer data was edited and merged into the Geosoft GDB database on a daily basis. The aero magnetic data was corrected for diurnal variations by subtracting the observed magnetic base station deviations.

Tie line levelling was carried out by adjusting intersection points along the traverse lines. A microlevelling procedure was then applied. This technique is designed to remove persistent low-amplitude components of flight-line noise remaining after tie line levelling.

The corrected magnetic data from the survey was interpolated between survey lines using a random point gridding method to yield x-y grid values for a standard grid cell size of approximately 0.2 cm at the mapping scale. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.



### 5. DELIVERABLES

### 5.1. Survey Report

The survey report describes the data acquisition, processing, and final presentation of the survey results.

The survey report is provided in two paper copies and digitally in PDF format.

### 5.2. Maps

Final maps were produced at a scale of 1:10,000. The coordinate/projection system used was NAD83, UTM zone 17 north. For reference the latitude and longitude are also noted on the maps. All maps show the flight path trace and topographic data.

The following maps are presented to Amador Gold Corp. on paper,

- Total Magnetic Field contours and colour image
- Logarithmic scale Time Gates 0.22 6.34 profiles

### 5.3. Gridded Data

Total magnetic field grid is provided to Amador Gold Corp. in Geosoft GRD format. Grid cell size of 10 metres was used.

### 5.4. Digital Data

Two copies of CDs were prepared.

There are two (2) main directories,

- **Data** contains database, grid and maps, as described below.
- **Report** contains a copy of the report and appendixes in PDF format.

Database in Geosoft format, containing the following channels: •

X:	X positional data (meters – NAD83, UTM zone 17N)		
Y:	Y positional data (meters – NAD83, UTM zone 17N)		
Z:	GPS antenna elevation (meters - ASL)		
	(on the tail of the helicopter)		
Gtime1:	GPS time (seconds of the day)		
Radar:	Helicopter terrain clearance from radar altimeter (meters)		
Mag1:	Raw Total Magnetic field data (nT)		
Basemag:	Magnetic diurnal variation data (nT)		
Mag2:	Total Magnetic field diurnal variation corrected data (nT)		
Mag3:	Leveled Total Magnetic field data (nT)		
C130f:	Raw 130 microsecond time channel $(pV/A/m^4)$		
C150f:	Raw 150 microsecond time channel $(pV/A/m^4)$		
C170f:	Raw 170 microsecond time channel $(pV/A/m^4)$		
C190f:	Raw 190 microsecond time channel $(pV/A/m^4)$		
C220f:	Raw 220 microsecond time channel $(pV/A/m^4)$		
C260f:	Raw 260 microsecond time channel $(pV/A/m^4)$		
C300f:	Raw 300 microsecond time channel $(pV/A/m^4)$		
C350f:	Raw 350 microsecond time channel $(pV/A/m^4)$		
C410f:	Raw 410 microsecond time channel $(pV/A/m^4)$		
C480f:	Raw 480 microsecond time channel $(pV/A/m^4)$		
C570f:	Raw 570 microsecond time channel $(pV/A/m^4)$		
C680f:	Raw 680 microsecond time channel $(pV/A/m^4)$		
C810f:	Raw 810 microsecond time channel $(pV/A/m^4)$		
C960f:	Raw 960 microsecond time channel $(pV/A/m^4)$		
C1130f:	Raw 1130 microsecond time channel $(pV/A/m^4)$		
C1340f:	Raw 1340 microsecond time channel $(pV/A/m^4)$		
C1600f:	Raw 1600 microsecond time channel $(pV/A/m^4)$		
C1900f:	Raw 1900 microsecond time channel $(pV/A/m^4)$		
C2240f:	Raw 2240 microsecond time channel $(pV/A/m^4)$		
C2660f:	Raw 2660 microsecond time channel $(pV/A/m^4)$		
C3180f:	Raw 3180 microsecond time channel $(pV/A/m^4)$		
C3780f:	Raw 3780 microsecond time channel $(pV/A/m^4)$		
C4460f:	Raw 4460 microsecond time channel $(pV/A/m^4)$		
C5300f:	Raw 5300 microsecond time channel $(pV/A/m^4)$		
C6340f:	Raw 6340 microsecond time channel $(pV/A/m^4)$		
D130f:	Deconvolved 130 microsecond time channel $(pV/A/m^4)$		
D150f:	Deconvolved 150 microsecond time channel $(pV/A/m^4)$		
D170f:	Deconvolved 170 microsecond time channel $(pV/A/m^4)$		
D190f:	Deconvolved 190 microsecond time channel $(pV/A/m^4)$		
D220f:	Deconvolved 220 microsecond time channel $(pV/A/m^4)$		

Deconvolved 260 microsecond time channel $(pV/A/m^4)$
Deconvolved 300 microsecond time channel $(pV/A/m^4)$
Deconvolved 350 microsecond time channel $(pV/A/m^4)$
Deconvolved 410 microsecond time channel $(pV/A/m^4)$
Deconvolved 480 microsecond time channel $(pV/A/m^4)$
Deconvolved 570 microsecond time channel $(pV/A/m^4)$
Deconvolved 680 microsecond time channel $(pV/A/m^4)$
Deconvolved 810 microsecond time channel $(pV/A/m^4)$
Deconvolved 960 microsecond time channel $(pV/A/m^4)$
Deconvolved 1130 microsecond time channel (pV/A/m <sup>4</sup> )
Deconvolved 1340 microsecond time channel (pV/A/m <sup>4</sup> )
Deconvolved 1600 microsecond time channel (pV/A/m <sup>4</sup> )
Deconvolved 1900 microsecond time channel (pV/A/m <sup>4</sup> )
Deconvolved 2240 microsecond time channel (pV/A/m <sup>4</sup> )
Deconvolved 2660 microsecond time channel (pV/A/m <sup>4</sup> )
Deconvolved 3180 microsecond time channel (pV/A/m <sup>4</sup> )
Deconvolved 3780 microsecond time channel (pV/A/m <sup>4</sup> )
Deconvolved 4460 microsecond time channel (pV/A/m <sup>4</sup> )
Deconvolved 5300 microsecond time channel (pV/A/m <sup>4</sup> )
Deconvolved 6340 microsecond time channel (pV/A/m <sup>4</sup> )
Power line monitor

• Grids in Geosoft .GRD format, as follow,

Mag: Total Magnetic field

A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information.

• Maps in Geosoft .MAP format, as follow,

Mag:	Total Magnetic Field contours and colour image
LogProf:	Logarithmic scale Time Gates 0.22 – 6.34 profiles.

Maps are also provided in Adobe Acrobat PDF format.

• ASCII file VTEM\_WaveForm.xyz in Geosoft format contains the following

channel:

Volt: output voltage of the receiver coil (volts, sampling rate 20 microseconds)

• A *readme.txt* file describing the content of digital data, as described above.



### 6. CONCLUSIONS

A time domain electromagnetic helicopter-borne geophysical survey has been completed over Ajax property north-west of Temagami, Ontario, Canada.

The total area coverage is  $11.4 \text{ km}^2$ . Total survey line coverage is 241 line kilometres. The principal sensors included a Time Domain EM system and a magnetometer. Results have been presented as colour contour maps and stacked profiles at a scale of 1:10,000.

Final data processing at the office of Geotech Limited in Aurora, Ontario was carried out under the supervision of Andrei Bagrianski, Data Processing Manager.

A number of EM anomaly groupings were identified. Ground follow-up of those anomalies should be carried out if favourably supported by other geoscientific data.

Respectfully submitted,

Marta Orta, Geotech Limited



### APPENDIX A

### SURVEY AREA LOCATION MAP





### **APPENDIX B**

### SURVEY BLOCK COORDINATES

### Ajax property

UTM eastings (x)	UTM northings (y)
585940	5218596
589710	5218596
589710	5215550
585940	5215550



### APPENDIX C

### GENERALIZED MODELING RESULTS OF THE VTEM SYSTEM



### GENERALIZED MODELING RESULTS OF THE VTEM SYSTEM

#### Introduction

The VTEM system is based on a concentric or central loop design, whereby, the receiver is positioned at the centre of a 26.1 meters diameter transmitter loop that produces a dipole moment up to 625,000 NIA at peak current. The wave form is a bi-polar, modified square wave with a turn-on and turn-off at each end. With a base frequency of 30 Hz, the duration of each pulse is approximately 7.5 milliseconds followed by an off time where no primary field is present.

During turn-on and turn-off, a time varying field is produced (dB/dt) and an electro-motive force (emf) is created as a finite impulse response. A current ring around the transmitter loop moves outward and downward as time progresses. When conductive rocks and mineralization are encountered, a secondary field is created by mutual induction and measured by the receiver at the centre of the transmitter loop.

Measurements are made during the off-time, when only the secondary field (representing the conductive targets encountered in the ground) is present.

Efficient modeling of the results can be carried out on regularly shaped geometries, thus yielding close approximations to the parameters of the measured targets. The following is a description of a series of common models made for the purpose of promoting a general understanding of the measured results.

#### Variation of Plate Depth

Geometries represented by plates of different strike length, depth extent, dip, plunge and depth below surface can be varied with characteristic parameters like conductance of the target, conductance of the host and conductivity/thickness and thickness of the overburden layer.

Diagrammatic models for a vertical plate are shown in figures A and G at two different depths, all other parameters remaining constant. With this transmitter-receiver geometry, the classic **M** shaped response is generated. Figure A shows a plate where the top is near surface. Here, amplitudes of the duel peaks are higher and symmetrical with the zero centre positioned directly above the plate. Most important is the separation distance of the peaks. This distance is small when the plate is near surface and widens with a linear relationship as the plate (depth to top) increases. Figure G shows a much deeper plate where the separation distance of the peaks is much wider and the amplitudes of the channels have decreased.

#### Variation of Plate Dip

As the plate dips and departs from the vertical position, the peaks become asymmetrical. Figure B shows a near surface plate dipping 80°. Note that the direction of dip is toward the high shoulder of the response and the top of the plate remains under the centre minimum.

As the dip increases, the aspect ratio (Min/Max) decreases and this aspect ratio can be used as an empirical guide to dip angles from near 90° to about 30°. The method is not sensitive enough where dips are less than about 30°. Figure E shows a plate dipping 45° and, at this angle, the



minimum shoulder starts to vanish. In Figure D, a flat lying plate is shown, relatively near surface. Note that the twin peak anomaly has been replaced by a symmetrical shape with large, bell shaped, channel amplitudes which decay relative to the conductance of the plate.

Figure H shows a special case where two plates are positioned to represent a synclinal structure. Note that the main characteristic to remember is the centre amplitudes are higher (approximately double) compared to the high shoulder of a single plate. This model is very representative of tightly folded formations where the conductors where once flat lying.

#### Variation of Prism Depth

Finally, with prism models, another algorithm is required to represent current on the plate. A plate model is considered to be infinitely thin with respect to thickness and incapable of representing the current in the thickness dimension. A prism model is constructed to deal with this problem, thereby, representing the thickness of the body more accurately.

Figures C, F and I show the same prism at increasing depths. Aside from an expected decrease in amplitude, the side lobes of the anomaly show a widening with deeper prism depths of the bell shaped early time channels.









С





D



E







Ι





#### **General Modeling Concepts**

A set of models has been produced for the Geotech VTEM® system with explanation notes (see models A to I above). The reader is encouraged to review these models, so as to get a general understanding of the responses as they apply to survey results. While these models do not begin to cover all possibilities, they give a general perspective on the simple and most commonly encountered anomalies.

When producing these models, a few key points were observed and are worth noting as follows:

- For near vertical and vertical plate models, the top of the conductor is always located directly under the centre low point between the two shoulders in the classic **M** shaped response.
- As the plate is positioned at an increasing depth to the top, the shoulders of the **M** shaped response, have a greater separation distance.
- When faced with choosing between a flat lying plate and a prism model to represent the target (broad response) some ambiguity is present and caution should be exercised.
- With the concentric loop system and Z-component receiver coil, virtually all types of conductors and most geometries are most always well coupled and a response is generated (see model H). Only concentric loop systems can map this type of target.

The modelling program used to generate the responses was prepared by PetRos Eikon Inc. and is one of a very few that can model a wide range of targets in a conductive half space.

### **General Interpretation Principals**

#### Magnetics

The total magnetic intensity responses reflect major changes in the magnetite and/or other magnetic minerals content in the underlying rocks and unconsolidated overburden. Precambrian rocks have often been subjected to intense heat and pressure during structural and metamorphic events in their history. Original signatures imprinted on these rocks at the time of formation have, it most cases, been modified, resulting in low magnetic susceptibility values.

The amplitude of magnetic anomalies, relative to the regional background, helps to assist in identifying specific magnetic and non-magnetic rock units (and conductors) related to, for example, mafic flows, mafic to ultramafic intrusives, felsic intrusives, felsic volcanics and/or sediments etc. Obviously, several geological sources can produce the same magnetic response. These ambiguities can be reduced considerably if basic geological information on the area is available to the geophysical interpreter.



In addition to simple amplitude variations, the shape of the response expressed in the wave length and the symmetry or asymmetry, is used to estimate the depth, geometric parameters and magnetization of the anomaly. For example, long narrow magnetic linears usually reflect mafic flows or intrusive dyke features. Large areas with complex magnetic patterns may be produced by intrusive bodies with significant magnetization, flat lying magnetic sills or sedimentary iron formation. Local isolated circular magnetic patterns often represent plug-like igneous intrusives such as kimberlites, pegmatites or volcanic vent areas.

Because the total magnetic intensity (TMI) responses may represent two or more closely spaced bodies within a response, the second derivative of the TMI response may be helpful for distinguishing these complexities. The second derivative is most useful in mapping near surface linears and other subtle magnetic structures that are partially masked by nearby higher amplitude magnetic features. The broad zones of higher magnetic amplitude, however, are severely attenuated in the vertical derivative results. These higher amplitude zones reflect rock units having strong magnetic susceptibility signatures. For this reason, both the TMI and the second derivative maps should be evaluated together.

Theoretically, the second derivative, zero contour or colour delineates the contacts or limits of large sources with near vertical dip and shallow depth to the top. The vertical gradient map also aids in determining contact zones between rocks with a susceptibility contrast, however, different, more complicated rules of thumb apply.

### **Concentric Loop EM Systems**

Concentric systems with horizontal transmitter and receiver antennae produce much larger responses for flat lying conductors as contrasted with vertical plate-like conductors. The amount of current developing on the flat upper surface of targets having a substantial area in this dimension, are the direct result of the effective coupling angle, between the primary magnetic field and the flat surface area. One therefore, must not compare the amplitude/conductance of responses generated from flat lying bodies with those derived from near vertical plates; their ratios will be quite different for similar conductances.

Determining dip angle is very accurate for plates with dip angles greater than 30°. For angles less than 30° to 0°, the sensitivity is low and dips can not be distinguished accurately in the presence of normal survey noise levels.

A plate like body that has near vertical position will display a two shoulder, classic  $\mathbf{M}$  shaped response with a distinctive separation distance between peaks for a given depth to top.

It is sometimes difficult to distinguish between responses associated with the edge effects of flat lying conductors and poorly conductive bedrock conductors. Poorly conductive bedrock conductors having low dip angles will also exhibit responses that may be interpreted as surfacial overburden conductors. In some situations, the conductive response has line to line continuity and some magnetic correlation providing possible evidence that the response is related to an actual bedrock source.



The EM interpretation process used, places considerable emphasis on determining an understanding of the general conductive patterns in the area of interest. Each area has different characteristics and these can effectively guide the detailed process used.

The first stage is to determine which time gates are most descriptive of the overall conductance patterns. Maps of the time gates that represent the range of responses can be very informative.

Next, stacking the relevant channels as profiles on the flight path together with the second vertical derivative of the TMI is very helpful in revealing correlations between the EM and Magnetics.

Next, key lines can be profiled as single lines to emphasize specific characteristics of a conductor or the relationship of one conductor to another on the same line. Resistivity Depth sections can be constructed to show the relationship of conductive overburden or conductive bedrock with the conductive anomaly.



### **APPENDIX D**

### **VTEM WAVE FORM**









Project 573



Project 573

## SURVEY SPECIFICATIONS: Survey date: December, 2005 - January, 2006 Traverse Line Spacing: 50 metres Traverse line direction: N90°E Nominal terrain clearance: 80 metres Nominal EM bird height: 40 metres Nominal Magnetic bird height: 65 metres Aircraft: AS350 BA+ helicopter, Registration C-GHSM INSTRUMENTATION Data acquisition: Geotech Acquisition System Electromagnetics: VTEM system Base frequency: 30Hz Transmitter Loop diameter: 26 metres Dipole Moment 420,500 NIA Transmitter Wave Form: Trapezoid Transmitter Pulse Width: 7.5 ms Magnetometer: Geometrics G-823A cesium vapour Resolution: 0.02 nT at 10 samples/sec NAVIGATION: Equipment: NovAtel GPS card Radar altimeter: Terra TRA3000/TRI-30 Profiles scale 1 mm = 0.1 pV/A/m^4 (Linear between +/-0.3 pV/A/m^4 logarithmic above 0.3 pV/A/m^4)

0.22 ms
0.26 ms
 0.30 ms
 0.35 ms
 0.41 ms
 0.48 ms
 0.57 ms
 0.68 ms
 0.81 ms
 0.96 ms
 1.13 ms
 1.34 ms
 1.60 ms
 1.90 ms
 2.24 ms
 2.66 ms
 3.18 ms
 3.78 ms
 4.46 ms
 5.30 ms
 6.34 ms



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May 2006

Appendix II

**Banting – Chambers VTEM Survey** 

# REPORT ON A HELICOPTER-BORNE TIME DOMAIN ELECTROMAGNETIC GEOPHYSICAL SURVEY

Banting – Chambers property Temagami, Ontario, Canada

for

**Amador Gold Corporation** 

#### By

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Survey flown in December, 2005 – January, 2006

Project 573 May, 2006

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### REPORT ON A HELICOPTER-BORNE TIME DOMAIN ELECTROMAGNETIC SURVEY

Banting - Chambers property, Temagami, Ontario, Canada

## **Executive Summary**

During the period of December 16<sup>th</sup>, 2005 to January 6<sup>th</sup>, 2006, Geotech Limited carried out a helicopter-borne geophysical survey for Amador Gold Corporation over one block north-west of Temagami, Ontario, Canada.

Principal geophysical sensors included a time domain electromagnetic system (VTEM) and a cesium magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 560 line-km were flown.

In-field data processing involved quality control and compilation of data collected during the acquisition stage, using the in-field processing centre established at Temagami, Ontario. Preliminary and final data processing, including generation of final digital data products were done at the office of Geotech Limited in Aurora, Ontario.

The processed survey results are presented as total magnetic field grids and stacked profiles at logarithmic scale.

Digital data includes all electromagnetic and magnetic products plus positional, altitude and raw data.



### 1. INTRODUCTION

### 1.1 General Considerations

These services are the result of the Agreement signed between Geotech Limited and Amador Gold Corporation, to perform a helicopter-borne geophysical survey over one blocks north-west of Temagami, Ontario, Canada.

560 line-km of geophysical data were acquired during the survey.

Mr. John Keating acted on behalf of Amador Gold Corp. during data acquisition and processing phases of this project.

The survey block is as shown in Appendix A.

The crew was based in Temagami, Ontario for the acquisition phase of survey, as shown in Section 2 of this report.

The helicopter was based at Temagami, Ontario for the duration of the survey. Survey flying was completed by January 6<sup>th</sup>, 2006. Preliminary data processing was carried out daily during the acquisition phase of the project. Final data presentation and data archiving was completed in the Aurora office of Geotech Limited by May, 2006.

### 1.2. Survey and System Specifications

The survey block was flown at nominal traverse line spacing of 50 metres. Tie lines were flown perpendicular to traverse lines.

Where possible, the helicopter maintained a mean terrain clearance of 80 metres, which translated into an average height of 40 meters above ground for the bird-mounted VTEM system and 65 meters above ground for the magnetic sensor.

The block was flown using an Astar BA+ helicopter, registration C-GHSM, operated by Abitibi Helicopters Inc. Details of the survey specifications are found in Section 2 of this report.



### 1.3. Data Processing and Final Products

Data compilation and processing were carried out by the application of Geosoft OASIS Montaj and programs proprietary to Geotech Limited. Database, grid and maps of final products were presented to Amador Gold Corp.

The survey report describes the procedures for data acquisition, processing, final image presentation and the specifications for the digital data set.

### 1.4. Topographic Relief

Benting – Chambers block is located approximately 10 kilometres north-west of Temagami, Ontario. Topographically, the block exhibits a moderate relief, with elevation range from 310 metres to 400 metres above sea level.

Several rivers and lakes are observed in the survey block.



## 2. DATA ACQUISITION

### 2.1. Survey Area

The survey block (see location maps, Appendix A) and general flight specifications are as follows:

Survey block	Line spacing (m)	Area (Km²)	Line-km	Flight direction	Line number
Banting-Chambers	50	26.2	523.8	N44°E	L7001 - 7560
	500		58.2	N134°E	T6900 - 6945

Table 1 – Survey block

Survey block boundaries are as shown in Appendix B.

### 2.2. Survey Operations

Survey operations were based in Temagami, Ontario for the acquisition phase of the survey. The crew was housed at Temagami Shores Inn and Resort for the survey period, as shown on table 2.

The following table shows the timing of the survey.

Date	Crew Location	Flight #	Km flown	Comments
16-Dec-05	Temagami		0.0	Crew mobilization.
17-Dec-05	Temagami		0.0	Test Flight.
18-Dec-05	Temagami	3	50.9	
19-Dec-05	Temagami	4	79.8	Heavy wind.
20-Dec-05	Temagami	6, 7	228.5	
21-Dec-05	Temagami		0.0	Low visivility. Heavy snow.
22-Dec-05	Temagami		0.0	Crew demobilization.
27-Dec-05	Temagami		0.0	Crew mobilization, low ceiling.
28-Dec-05	Temagami		0.0	Low ceiling, fog all day.
29-Dec-05	Temagami	9, 10	55.5	
30-Dec-05	Temagami	11	93.0	
31-Dec-05	Temagami	12	46.4	Crew demobilization.


3-Jan-06	Temagami		0.0	Crew mobilization.
4-Jan-06	Temagami		0.0	System troubleshooting.
5-Jan-06	Temagami		0.0	System troubleshooting.
6-Jan-06	Temagami	13	27.7	Survey completed.

Table 2 – Survey schedule

#### 2.3. Flight Specifications

The nominal EM sensor terrain clearance was 40 m (EM bird height above ground, i.e. helicopter is maintained 80 m above ground). Nominal survey speed was 80 km/hour. The data recording rates of the data acquisition was 0.1 second for electromagnetics and magnetometer, 0.2 second for altimeter and GPS. This translates to a geophysical reading about every 2 metres along flight track. Navigation was assisted by a GPS receiver and data acquisition system, which reports GPS co-ordinates as latitude/longitude and directs the pilot over a pre-programmed survey grid.

The operator was responsible for monitoring of the system integrity. He also maintained a detailed flight log during the survey, tracking the times of the flight as well as any unusual geophysical or topographic feature.

On return of the aircrew to the base camp the survey data was transferred from a compact flash card (PCMCIA) to the data processing computer.



## 2.4. Aircraft and Equipment

### 2.4.1. Survey Aircraft

An Astar BA+ helicopter, registration C-GHSM - owned and operated by Abitibi Helicopters Inc. was used. Installation of the geophysical and ancillary equipment was carried out by Geotech Ltd.

### 2.4.2. Electromagnetic System

The electromagnetic system was a Geotech Time Domain EM (VTEM) system. The layout is as indicated in Figure 1 below.





Figure 2

Receiver and transmitter coils are concentric and Z-direction oriented. The receiver decay recording scheme is shown diagrammatically in Figure 2.

Twenty-five measurement gates were used in the range from 130  $\mu$ s to 6340  $\mu$ s, as shown in the following table.

VTEM Decay Sampling scheme (Microseconds)				
Time gate Start End Width				
130	120	140	20	
150	140	160	20	
170	160	180	20	
190	180	205	25	
220	205	240	35	
260	240	280	40	
300	280	325	45	
350	325	380	55	
410	380	445	65	
480	445	525	80	
570	525	625	100	
680	625	745	120	
810	745	885	140	
960	885	1045	160	
1130	1045	1235	190	
1340	1235	1470	235	
1600	1470	1750	280	
1900	1750	2070	320	
2240	2070	2450	380	
2660	2450	2920	470	
3180	2920	3480	560	
3780	3480	4120	640	
4460	4120	4880	760	
5300	4880	5820	940	
6340	5820	6860	1040	

Table 3 – VTEM decay sampling scheme.

Transmitter coil diameter was 26 metres, the number of turns was 4. Transmitter pulse repetition rate was 30 Hz. Peak current was 198 Amp. Duty cycle was 40%. Peak dipole moment was 420,500 NIA. Receiver coil diameter was 1.1 metre, the number of turns was 60. Receiver effective area was 57  $m^2$ Wave form – trapezoid. Recording sampling rate was 10 samples per second.

The EM bird was towed 40 m below the helicopter.

### 2.4.3. Airborne magnetometer

The magnetic sensor utilized for the survey was a Geometrics optically pumped cesium vapor magnetic field sensor, mounted in a separate bird towed 15 m below the helicopter. The sensitivity of the magnetic sensor is 0.02 nanoTesla (nT) at a sampling interval of 0.1 seconds. The magnetometer sends the measured magnetic field strength as nanoTeslas to the data acquisition system via the RS-232 port.

### 2.4.4. Ancillary Systems

#### 2.4.4.1. Radar Altimeter

A Terra TRA 3000/TRI 30 radar altimeter was used to record terrain clearance. The antenna was mounted beneath the bubble of the helicopter cockpit.

#### 2.4.4.2. GPS Navigation System

The navigation system used was a Geotech PC based navigation system utilizing a NovAtel's WAAS enable OEM4-G2-3151W GPS receiver, Geotech navigate software, a full screen display with controls in front of the pilot to direct the flight and an NovAtel GPS antenna mounted on the helicopter tail.

The co-ordinates of the blocks were set-up prior to the survey and the information was fed into the airborne navigation system.

### 2.4.4.3. Digital Acquisition System

A Geotech data acquisition system recorded the digital survey data on an internal compact flash card. Data is displayed on an LCD screen as traces to allow the operator to monitor the integrity of the system. Contents and update rates were as follows:

DATA TYPE	SAMPLING	
TDEM	0.1 sec	
Magnetometer	0.1 sec	
GPS Position	0.2 sec	
RadarAltimeter	0.2 sec	

Table 4 - Sampling Rates

### 2.4.5. Base Station

A combine magnetometer/GPS base station was utilized on this project. A Geometrics Cesium vapour magnetometer was used as a magnetic sensor with a sensitivity of 0.001 nT. The base station was recording the magnetic field together with the GPS time at 1 Hz on a base station computer.

The base station magnetometer sensor was installed where the crew was housed, away from electric transmission lines and moving ferrous objects such as motor vehicles.

The magnetometer base station's data was backed-up to the data processing computer at the end of each survey day.



# 3. PERSONNEL

The following Geotech Ltd. personnel were involved in the project

Field Crew

Operators:	Vladimir Kutosov	
	Alex Dumyn	
System Engineer:	Pavel Tishin	

The survey pilots and the mechanic engineers were employed directly by the helicopter operator – Abitibi Helicopters Inc.

Pilots:	Joel Breton
	Michel Frigon
Engineers:	Marco Blais

Office

Data Processing:	Neil Fiset
Data Processing / Reporting:	Marta Orta

Final data processing at the office of Geotech Limited in Aurora, Ontario was carried out under the supervision of Andrei Bagrianski, Data Processing Manager.

Overall management of the survey was carried out from the Aurora office of Geotech Ltd. by Edward Morrison, President.



# 4. DATA PROCESSING AND PRESENTATION

### 4.1. Flight Path

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the UTM coordinate system in Oasis Montaj.

The flight path was drawn using linear interpolation between x,y positions from the navigation system. Positions are updated every second and expressed as UTM eastings (x) and UTM northings (y).

### 4.2. Electromagnetic Data

A three stage digital filtering process was used to reject major sferic events and to reduce system noise. Local sferic activity can produce sharp, large amplitude events that cannot be removed by conventional filtering procedures. Smoothing or stacking will reduce their amplitude but leave a broader residual response that can be confused with geological phenomena. To avoid this possibility, a computer algorithm searches out and rejects the major sferic events. The filter used was a 16 point non-linear filter.

The signal to noise ratio was further improved by the application of a low pass linear digital filter. This filter has zero phase shift which prevents any lag or peak displacement from occurring, and it suppresses only variations with a wavelength less than about 1 second or 20 metres. This filter is a symmetrical 1 sec linear filter.

The results are presented as stacked profiles of EM voltages for the gate times, in logarithmic scale.

Generalized modeling results of the VTEM system, written by Geophysicist Roger Barlow, are shown in Appendix C.

The VTEM output voltage of the receiver coil is shown in Appendix D.

### 4.3. Magnetic Data

The processing of the magnetic data involved the correction for diurnal variations by using the digitally recorded ground base station magnetic values. The base station magnetometer data was edited and merged into the Geosoft GDB database on a daily basis. The aero magnetic data was corrected for diurnal variations by subtracting the observed magnetic base station deviations.

Tie line levelling was carried out by adjusting intersection points along the traverse lines. A microlevelling procedure was then applied. This technique is designed to remove persistent low-amplitude components of flight-line noise remaining after tie line levelling.

The corrected magnetic data from the survey was interpolated between survey lines using a random point gridding method to yield x-y grid values for a standard grid cell size of approximately 0.2 cm at the mapping scale. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.



# 5. DELIVERABLES

### 5.1. Survey Report

The survey report describes the data acquisition, processing, and final presentation of the survey results.

The survey report is provided in two paper copies and digitally in PDF format.

#### 5.2. Maps

Final maps were produced at a scale of 1:20,000. The coordinate/projection system used was NAD83, UTM zone 17 north. For reference the latitude and longitude are also noted on the maps. All maps show the flight path trace and topographic data.

The following maps are presented to Amador Gold Corp. on paper,

- Total Magnetic Field contours and colour image
- Logarithmic scale Time Gates 0.22 6.34 profiles

#### 5.3. Gridded Data

Total magnetic field grid is provided to Amador Gold Corp. in Geosoft GRD format. Grid cell size of 10 metres was used.

#### 5.4. Digital Data

Two copies of CDs were prepared.

There are two (2) main directories,

- **Data** contains database, grid and maps, as described below.
- **Report** contains a copy of the report and appendixes in PDF format.

Database in Geosoft format, containing the following channels: •

X:	X positional data (meters – NAD83, UTM zone 17N)		
Y:	Y positional data (meters – NAD83, UTM zone 17N)		
Z:	GPS antenna elevation (meters - ASL)		
	(on the tail of the helicopter)		
Gtime1:	GPS time (seconds of the day)		
Radar:	Helicopter terrain clearance from radar altimeter (meters)		
Mag1:	Raw Total Magnetic field data (nT)		
Basemag:	Magnetic diurnal variation data (nT)		
Mag2:	Total Magnetic field diurnal variation corrected data (nT)		
Mag3:	Leveled Total Magnetic field data (nT)		
C130f:	Raw 130 microsecond time channel $(pV/A/m^4)$		
C150f:	Raw 150 microsecond time channel $(pV/A/m^4)$		
C170f:	Raw 170 microsecond time channel $(pV/A/m^4)$		
C190f:	Raw 190 microsecond time channel $(pV/A/m^4)$		
C220f:	Raw 220 microsecond time channel $(pV/A/m^4)$		
C260f:	Raw 260 microsecond time channel $(pV/A/m^4)$		
C300f:	Raw 300 microsecond time channel $(pV/A/m^4)$		
C350f:	Raw 350 microsecond time channel $(pV/A/m^4)$		
C410f:	Raw 410 microsecond time channel $(pV/A/m^4)$		
C480f:	Raw 480 microsecond time channel $(pV/A/m^4)$		
C570f:	Raw 570 microsecond time channel $(pV/A/m^4)$		
C680f:	Raw 680 microsecond time channel $(pV/A/m^4)$		
C810f:	Raw 810 microsecond time channel $(pV/A/m^4)$		
C960f:	Raw 960 microsecond time channel $(pV/A/m^4)$		
C1130f:	Raw 1130 microsecond time channel $(pV/A/m^4)$		
C1340f:	Raw 1340 microsecond time channel $(pV/A/m^4)$		
C1600f:	Raw 1600 microsecond time channel $(pV/A/m^4)$		
C1900f:	Raw 1900 microsecond time channel $(pV/A/m^4)$		
C2240f:	Raw 2240 microsecond time channel $(pV/A/m^4)$		
C2660f:	Raw 2660 microsecond time channel $(pV/A/m^4)$		
C3180f:	Raw 3180 microsecond time channel $(pV/A/m^4)$		
C3780f:	Raw 3780 microsecond time channel $(pV/A/m^4)$		
C4460f:	Raw 4460 microsecond time channel $(pV/A/m^4)$		
C5300f:	Raw 5300 microsecond time channel $(pV/A/m^4)$		
C6340f:	Raw 6340 microsecond time channel $(pV/A/m^4)$		
D130f:	Deconvolved 130 microsecond time channel $(pV/A/m^4)$		
D150f:	Deconvolved 150 microsecond time channel $(pV/A/m^4)$		
D170f:	Deconvolved 170 microsecond time channel (pV/A/m <sup>4</sup> )		
D190f:	Deconvolved 190 microsecond time channel $(pV/A/m^4)$		
D220f:	Deconvolved 220 microsecond time channel (pV/A/m <sup>4</sup> )		

D260f:	Deconvolved 260 microsecond time channel $(pV/A/m^4)$
D300f:	Deconvolved 300 microsecond time channel $(pV/A/m^4)$
D350f:	Deconvolved 350 microsecond time channel $(pV/A/m^4)$
D410f:	Deconvolved 410 microsecond time channel $(pV/A/m^4)$
D480f:	Deconvolved 480 microsecond time channel $(pV/A/m^4)$
D570f:	Deconvolved 570 microsecond time channel $(pV/A/m^4)$
D680f:	Deconvolved 680 microsecond time channel $(pV/A/m^4)$
D810f:	Deconvolved 810 microsecond time channel $(pV/A/m^4)$
D960f:	Deconvolved 960 microsecond time channel $(pV/A/m^4)$
D1130f:	Deconvolved 1130 microsecond time channel (pV/A/m <sup>4</sup> )
D1340f:	Deconvolved 1340 microsecond time channel (pV/A/m <sup>4</sup> )
D1600f:	Deconvolved 1600 microsecond time channel (pV/A/m <sup>4</sup> )
D1900f:	Deconvolved 1900 microsecond time channel (pV/A/m <sup>4</sup> )
D2240f:	Deconvolved 2240 microsecond time channel (pV/A/m <sup>4</sup> )
D2660f:	Deconvolved 2660 microsecond time channel (pV/A/m <sup>4</sup> )
D3180f:	Deconvolved 3180 microsecond time channel (pV/A/m <sup>4</sup> )
D3780f:	Deconvolved 3780 microsecond time channel (pV/A/m <sup>4</sup> )
D4460f:	Deconvolved 4460 microsecond time channel (pV/A/m <sup>4</sup> )
D5300f:	Deconvolved 5300 microsecond time channel (pV/A/m <sup>4</sup> )
D6340f:	Deconvolved 6340 microsecond time channel (pV/A/m <sup>4</sup> )
PLinef:	Power line monitor

• Grids in Geosoft .GRD format, as follow,

Mag: Total Magnetic field

A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information.

• Maps in Geosoft .MAP format, as follow,

Mag:	Total Magnetic Field contours and colour image
LogProf:	Logarithmic scale Time Gates 0.22 – 6.34 profiles.

Maps are also provided in Adobe Acrobat PDF format.

- ASCII file VTEM\_WaveForm.xyz in Geosoft format contains the following channel:
  - Volt: output voltage of the receiver coil (volts, sampling rate 20 microseconds)
- A *readme.txt* file describing the content of digital data, as described above.



# 6. CONCLUSIONS

A time domain electromagnetic helicopter-borne geophysical survey has been completed over Banting – Chambers property north-west of Temagami, Ontario, Canada.

The total area coverage is  $26.2 \text{ km}^2$ . Total survey line coverage is 560 line kilometres. The principal sensors included a Time Domain EM system and a magnetometer. Results have been presented as colour contour maps and stacked profiles at a scale of 1:20,000.

Final data processing at the office of Geotech Limited in Aurora, Ontario was carried out under the supervision of Andrei Bagrianski, Data Processing Manager.

A number of EM anomaly groupings were identified. Ground follow-up of those anomalies should be carried out if favourably supported by other geoscientific data.

Respectfully submitted,

Marta Orta, Geotech Limited



# APPENDIX A

# SURVEY AREA LOCATION MAP





### **Contract 573 - Amador Gold Corporation**

### Temagami, Ontario, Canada

Location map

1000	0	1000	2000
	me	etres	
	NAD83 / U	TM zone 17N	



### **APPENDIX B**

### SURVEY BLOCK COORDINATES

### **Banting – Chambers property**

UTM eastings (x)	UTM northings (y)
582374	5226834
586454	5222913
583280	5219573
579143	5223470



## **APPENDIX C**

## GENERALIZED MODELING RESULTS OF THE VTEM SYSTEM



### GENERALIZED MODELING RESULTS OF THE VTEM SYSTEM

#### Introduction

The VTEM system is based on a concentric or central loop design, whereby, the receiver is positioned at the centre of a 26.1 meters diameter transmitter loop that produces a dipole moment up to 625,000 NIA at peak current. The wave form is a bi-polar, modified square wave with a turn-on and turn-off at each end. With a base frequency of 30 Hz, the duration of each pulse is approximately 7.5 milliseconds followed by an off time where no primary field is present.

During turn-on and turn-off, a time varying field is produced (dB/dt) and an electro-motive force (emf) is created as a finite impulse response. A current ring around the transmitter loop moves outward and downward as time progresses. When conductive rocks and mineralization are encountered, a secondary field is created by mutual induction and measured by the receiver at the centre of the transmitter loop.

Measurements are made during the off-time, when only the secondary field (representing the conductive targets encountered in the ground) is present.

Efficient modeling of the results can be carried out on regularly shaped geometries, thus yielding close approximations to the parameters of the measured targets. The following is a description of a series of common models made for the purpose of promoting a general understanding of the measured results.

#### Variation of Plate Depth

Geometries represented by plates of different strike length, depth extent, dip, plunge and depth below surface can be varied with characteristic parameters like conductance of the target, conductance of the host and conductivity/thickness and thickness of the overburden layer.

Diagrammatic models for a vertical plate are shown in figures A and G at two different depths, all other parameters remaining constant. With this transmitter-receiver geometry, the classic **M** shaped response is generated. Figure A shows a plate where the top is near surface. Here, amplitudes of the duel peaks are higher and symmetrical with the zero centre positioned directly above the plate. Most important is the separation distance of the peaks. This distance is small when the plate is near surface and widens with a linear relationship as the plate (depth to top) increases. Figure G shows a much deeper plate where the separation distance of the peaks is much wider and the amplitudes of the channels have decreased.

#### Variation of Plate Dip

As the plate dips and departs from the vertical position, the peaks become asymmetrical. Figure B shows a near surface plate dipping 80°. Note that the direction of dip is toward the high shoulder of the response and the top of the plate remains under the centre minimum.

As the dip increases, the aspect ratio (Min/Max) decreases and this aspect ratio can be used as an empirical guide to dip angles from near 90° to about 30°. The method is not sensitive enough where dips are less than about 30°. Figure E shows a plate dipping 45° and, at this angle, the



minimum shoulder starts to vanish. In Figure D, a flat lying plate is shown, relatively near surface. Note that the twin peak anomaly has been replaced by a symmetrical shape with large, bell shaped, channel amplitudes which decay relative to the conductance of the plate.

Figure H shows a special case where two plates are positioned to represent a synclinal structure. Note that the main characteristic to remember is the centre amplitudes are higher (approximately double) compared to the high shoulder of a single plate. This model is very representative of tightly folded formations where the conductors where once flat lying.

#### Variation of Prism Depth

Finally, with prism models, another algorithm is required to represent current on the plate. A plate model is considered to be infinitely thin with respect to thickness and incapable of representing the current in the thickness dimension. A prism model is constructed to deal with this problem, thereby, representing the thickness of the body more accurately.

Figures C, F and I show the same prism at increasing depths. Aside from an expected decrease in amplitude, the side lobes of the anomaly show a widening with deeper prism depths of the bell shaped early time channels.









С





D



E







Ι





#### **General Modeling Concepts**

A set of models has been produced for the Geotech VTEM® system with explanation notes (see models A to I above). The reader is encouraged to review these models, so as to get a general understanding of the responses as they apply to survey results. While these models do not begin to cover all possibilities, they give a general perspective on the simple and most commonly encountered anomalies.

When producing these models, a few key points were observed and are worth noting as follows:

- For near vertical and vertical plate models, the top of the conductor is always located directly under the centre low point between the two shoulders in the classic **M** shaped response.
- As the plate is positioned at an increasing depth to the top, the shoulders of the **M** shaped response, have a greater separation distance.
- When faced with choosing between a flat lying plate and a prism model to represent the target (broad response) some ambiguity is present and caution should be exercised.
- With the concentric loop system and Z-component receiver coil, virtually all types of conductors and most geometries are most always well coupled and a response is generated (see model H). Only concentric loop systems can map this type of target.

The modelling program used to generate the responses was prepared by PetRos Eikon Inc. and is one of a very few that can model a wide range of targets in a conductive half space.

#### **General Interpretation Principals**

#### Magnetics

The total magnetic intensity responses reflect major changes in the magnetite and/or other magnetic minerals content in the underlying rocks and unconsolidated overburden. Precambrian rocks have often been subjected to intense heat and pressure during structural and metamorphic events in their history. Original signatures imprinted on these rocks at the time of formation have, it most cases, been modified, resulting in low magnetic susceptibility values.

The amplitude of magnetic anomalies, relative to the regional background, helps to assist in identifying specific magnetic and non-magnetic rock units (and conductors) related to, for example, mafic flows, mafic to ultramafic intrusives, felsic intrusives, felsic volcanics and/or sediments etc. Obviously, several geological sources can produce the same magnetic response. These ambiguities can be reduced considerably if basic geological information on the area is available to the geophysical interpreter.



In addition to simple amplitude variations, the shape of the response expressed in the wave length and the symmetry or asymmetry, is used to estimate the depth, geometric parameters and magnetization of the anomaly. For example, long narrow magnetic linears usually reflect mafic flows or intrusive dyke features. Large areas with complex magnetic patterns may be produced by intrusive bodies with significant magnetization, flat lying magnetic sills or sedimentary iron formation. Local isolated circular magnetic patterns often represent plug-like igneous intrusives such as kimberlites, pegmatites or volcanic vent areas.

Because the total magnetic intensity (TMI) responses may represent two or more closely spaced bodies within a response, the second derivative of the TMI response may be helpful for distinguishing these complexities. The second derivative is most useful in mapping near surface linears and other subtle magnetic structures that are partially masked by nearby higher amplitude magnetic features. The broad zones of higher magnetic amplitude, however, are severely attenuated in the vertical derivative results. These higher amplitude zones reflect rock units having strong magnetic susceptibility signatures. For this reason, both the TMI and the second derivative maps should be evaluated together.

Theoretically, the second derivative, zero contour or colour delineates the contacts or limits of large sources with near vertical dip and shallow depth to the top. The vertical gradient map also aids in determining contact zones between rocks with a susceptibility contrast, however, different, more complicated rules of thumb apply.

#### **Concentric Loop EM Systems**

Concentric systems with horizontal transmitter and receiver antennae produce much larger responses for flat lying conductors as contrasted with vertical plate-like conductors. The amount of current developing on the flat upper surface of targets having a substantial area in this dimension, are the direct result of the effective coupling angle, between the primary magnetic field and the flat surface area. One therefore, must not compare the amplitude/conductance of responses generated from flat lying bodies with those derived from near vertical plates; their ratios will be quite different for similar conductances.

Determining dip angle is very accurate for plates with dip angles greater than 30°. For angles less than 30° to 0°, the sensitivity is low and dips can not be distinguished accurately in the presence of normal survey noise levels.

A plate like body that has near vertical position will display a two shoulder, classic  $\mathbf{M}$  shaped response with a distinctive separation distance between peaks for a given depth to top.

It is sometimes difficult to distinguish between responses associated with the edge effects of flat lying conductors and poorly conductive bedrock conductors. Poorly conductive bedrock conductors having low dip angles will also exhibit responses that may be interpreted as surfacial overburden conductors. In some situations, the conductive response has line to line continuity and some magnetic correlation providing possible evidence that the response is related to an actual bedrock source.



The EM interpretation process used, places considerable emphasis on determining an understanding of the general conductive patterns in the area of interest. Each area has different characteristics and these can effectively guide the detailed process used.

The first stage is to determine which time gates are most descriptive of the overall conductance patterns. Maps of the time gates that represent the range of responses can be very informative.

Next, stacking the relevant channels as profiles on the flight path together with the second vertical derivative of the TMI is very helpful in revealing correlations between the EM and Magnetics.

Next, key lines can be profiled as single lines to emphasize specific characteristics of a conductor or the relationship of one conductor to another on the same line. Resistivity Depth sections can be constructed to show the relationship of conductive overburden or conductive bedrock with the conductive anomaly.



# APPENDIX D

### **VTEM WAVE FORM**











Appendix III

Ajax IP Survey

Report of an Induced Polarization Survey

On the

Ajax Property

Strathy Township, Ontario

Claim Nos. 3013125, 3013126, 3013127, 4207080,

4206323, 4207700, 4207081

Sudbury Mining Division

For

Amador Gold Corp.

May 29, 2007 Timmins, Ontario Matthew Johnston Consulting Geophysicist 1226 Gatineau Blvd. Timmins, Ont. P4R 1E3

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Statement of Qualifications

# Appendices

Appendix A Geophysical Instruments and Survey Methods

### List of Maps

Мар	Scale
5 I.P./Resistivity Pseudo-Sections Lines 107N to 111N	1:2500
Filtered Resistivity Contours with I.P. Anomalies Plan Map Filtered IP Contours with I.P. Anomalies Plan Map	1:5000
Filtered Resistivity Contours with I.P. Anomalies Plan Map Filtered IP Contours with I.P. Anomalies Plan Map	1:50 1:50

#### 1.0 Introduction

The Ajax property of Amador Gold Corp. consists of seven unpatented mining claims, 3013125, 3013126, 3013127, 4207080, 4206323, 4207700, 4207081, located in Strathy Township, Sudbury Mining Division. During January 2007, a geophysical survey program consisting of induced polarization and resistivity surveys was conducted over a portion of this claim group. Ray Meikle and Associates of North Bay, Ontario; carried out the geophysical surveys. The I.P. surveys were performed in order to evaluate and map the presence of disseminated to massive sulphides with respect to their location, width, and concentrations.

#### 2.0 Location And Access

The property is located approximately 15 kilometres north of the town of Temagami in the central portion of Strathy Township, Sudbury Mining Division. Access to the property is via highway 11 north from Temagami for approximately 15 kilometres to the Kanichee Mine road. Drive west on the Kanichee Mine road for approximately 10 kilometres to where the claims are intersected by this road. The grid and claims are accessible via local trails, hydro right of ways and ATV trails which provide access to the grid area and claims via snowmobile, four wheel drive vehicles and walking (see figures 1 and 2).

#### 3.0 Summary of 2007 Geophysical Program

The geophysical program consisted of induced polarization and resistivity surveying. This survey was carried out on a grid of previously cut lines oriented at  $095^{\circ}$  and spaced every 100 meters and chained and marked every 25 meters. The I.P. survey was performed using a dipole-dipole electrode configuration. The dipole a spacing was 25 metres and increasing separations of n=1, n=2, n=3, n=4, n=5 and n=6 times the dipole spacing was measured in order to map the response at depth. A total of approximately 5-km of I.P. data was measured and recorded.

The I.P. equipment used for the survey consisted of a Phoenix IPT-1 transmitter operating in the time domain powered by a 2 kilowatt MG-2 motor generator. The chargeability (measured in mV/V) between the transmitted current and the received voltage is recorded by an Iris Elrec IP-6 I.P. receiver which records the chargeability and the apparent resistivity for each set of dipoles. The chargeability measured in this survey is an equivalent measure of the polarization of the underlying lithology.

A description of the survey method and equipment used can be found in Appendix A.

#### 4.0 Discussion of Results

The results of the I.P. survey are presented as contoured and posted pseudosections of the apparent resistivity and chargeabilities at a scale of 1:2500. In addition plan maps at a scale of 1:5,000 showing the contours of the filtered apparent resistivity and chargeabilities with the interpretation and location of the I.P. anomalies is also presented. All maps accompany this report in the pocket at the back of this report.

The resistivity data as displayed by the contoured resistivity plan map shows a wide variation of measured resistivities in the range of 26 to 36713 ohm-m with a background resistivity of approximately 4036 ohm-m. The higher resistivity areas of the grid may likely be mapping areas of bedrock ridges and sub-cropping bedrock areas. These areas are quite evident on the plan map. It is also possible the high resistivity zones may be outlining more resistive felsic lithology or silica altered horizons as well. A prominent northeast-southwest trending linear resistivity high can be observed east of baseline 0N between lines 107N and 110N. This area is also observed to have no anomalous IP response.

The I.P. anomalies have been interpreted and are displayed on the plan map of the filtered resistivity and chargeability responses as well. Emphasis was placed on identifying I.P. anomalies, which were thought to originate within the bedrock as opposed to cultural sources; or those I.P. anomalies that, may be associated with bedrock relief.

Several significant anomaly trends were identified and labeled on the plan as A-1 and A-2. The responses are interpreted to be bedrock conductive zones and occur at depths of between 1 and 25 metres below surface.

The anomalous group of IP anomalies comprising A-1 are well defined and appears to consist of closely spaced sub-parallel anomalies with complex responses and very high chargeabilities between lines 109N and 111N; and all of these responses are also coincident with significant anomalous resistivity lows. This suggests underlying bedrock mineralization with either graphite or sulphide mineralization present.

IP anomaly A-2 is a well defined anomaly located between L111N/150E and L107N/25E; with the best responses located on lines 111N and 110N. These anomalies and are also associated with anomalous resistivity lows.

#### 5.0 Conclusions and Recommendations

The induced polarization surveys completed over the Ajax grid were successful in mapping several discrete zones of well defined anomalous I.P. effects as well as mapping the bedrock resistivity. The interpreted I.P. anomalies are strong and well defined and will likely require further investigation in order to determine their causes. The most promising I.P. anomalies, which are thought to arise from bedrock sources, have been interpreted and identified. Each of the identified IP anomalies mapped by the present survey can be considered as **high priority** follow-up exploration targets; in particular the anomalies located on lines 109N, 110N, and 111N, located between 0E and 400E.

It is difficult to quantitatively rate all of the I.P. anomalies in terms of their economic potential when searching for exploitable mineral deposits, but it is possible that some of the I.P. anomalies mapped by this survey are caused by disseminated to semimassive metallic mineralization. This type of mineralization is often associated which valuable deposits of massive sulphides, gold and platinum group minerals. Prior to follow-up exploration the anomaly locations as shown on the plan maps should also be investigated to ascertain if the locations have any association with man made non geological sources. All of the responses should be investigated further in order to determine the priority of follow-up needed. The anomalies should be further screened utilizing any other different types of geophysical surveys that may have been undertaken on the Pamour grid. This would aid greatly in further refining the interpretation of the I.P. survey.

Any existing geological, diamond drilling or geochemical information that may exist in the mining recorder assessment files should be investigated and compiled prior to further exploration of the IP anomalies in order to accurately assess the follow-up exploration method for these anomalies.

Respectively Submitted,

Matthew Johnston Consulting Geophysicist














OLD CORP.	SURY SURY CLE AND ASSOCIATES	DLARISATION	.5, 2, 3, 5, 7.5, 10, NTS 5 ELREC IP-6 0ENIX IPT-1 3KW 1:2500 5 50 75 ters)"	ole-Dipole Array na a plot point : n = 6
-----------	------------------------------------	-------------	--	---







Appendix IV

Ajax Mag-VLF-GPS Survey



PO Box 219 14579 Government Road Larder Lake, Ontario POK 1L0, Canada Phone (705) 643-1122 Fax (705) 643-2191

# AMADOR GOLD CORP.

# GPS, Magnetometer and VLF EM Surveys Over the

# AJAX PROPERTY Strathy Township, Ontario

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May 2007



# 1. SURVEY DETAILS

# 1.1 PROJECT NAME

This project is known as the Ajax Property.

# 1.2 CLIENT

AMADOR GOLD CORP.

711-675 West Hastings Street. Vancouver, British Columbia V6B 1N2

# 1.3 LOCATION

The Ajax Property is located in Strathy Township approximately 6.5 km northwest of Temagami, Ontario. The survey area covers a portion of claims numbered S3013126, S3013126 and S4207081located in the central region of Strathy Township, within the Sudbury Mining Division.



Figure 1: Location of Ajax Property

# 1.4 ACCESS

Access to the property was attained with a 4x4 truck via a year around gravel road. The property is located approximately 5km west on the Kanichee Mine Road, which is located approximately 5km north along highway 11 from Temagami, Ontario.

# 1.5 SURVEY GRID

The grid consists of 6.925 kilometers of recently re-established grid lines. The lines are spaced 100



meter increments with stations picketed at 25m intervals. The baseline ran at 0°N for a total length of 400m  $\,$ 



Figure 2: Claim Map with Ajax Grid



# 2. SURVEY WORK UNDERTAKEN

# 2.1 SURVEY LOG

Date	Description	Line	Min Extent	Max Extent	Total Survey (m)
16 May, 2007	Locate grid and begin both Mag/VLF survey and GPS survey. Complete grid				
	without any problems.	10700N	25W	900E	925
		10800N	350W	950E	1300
		10900N	375W	950E	1325
		11000N	375W	950E	1325
		11100N	300W	950E	1250
		BL0	10700N	11100N	400
		900E	10700N	11100N	400

# Table 1: Survey log

# 2.2 PERSONNEL

Karl Zancanella of Larder Lake, Ontario, conducted all the magnetic data collection and Stan Veinot of Larder Lake, Ontario was responsible for the GPS control and GPS waypoint collection.

# 2.3 SURVEY SPECIFICATIONS

The survey was conducted with a GSM-19 v7 Overhauser magnetometer with magnetic and VLF EM samples (NAA, NLK and NML) every 12.5m. A Scintrex OMNI PLUS was employed as a base station mode for diurnal correction. GPS waypoints were taken every 25m to establish a better control for future exploration.

The TFM and VLF EM data has been coorelated to the GPS data and has been presented in UTM space.

A total of 6.925 line kilometers of magnetic survey was conducted May 16<sup>th</sup>, 2007. This consisted of 554 magnetometer samples taken at 12.5m intervals.



# 3. OVERVIEW OF SURVEY RESULTS

# 3.1 SUMMARY INTERPRETATION

A significant magnetic anomaly crosses the property in a north-northeast direction. This magnetic high appears to have a coincident VLF EM axis. This most likely represents the continuation of the mineralized zone mined on the property north of this one.

A second VLF EM conductor crosses the east end of the property in a NE direction. This conductor can be seen on line 10700N at 550E and appears to be associated with a magnetically depressed region. This may indicate a geologic contact or faulted area.

I would recommend a followup HLEM or fixed loop EM survey..



# **APPENDIX A**

# STATEMENT OF QUALIFICATIONS

- I, C. Jason Ploeger, hereby declare that:
- 1. I am a geophysicist (non-professional) with residence in Larder Lake, Ontario and am presently employed as president of Larder Geophysics Ltd. of Larder Lake, Ontario.
- 2. I graduated with a Bachelor of Science degree in geophysics from the University of Western Ontario, in London Ontario, in 1999.
- 3. I have practiced my profession continuously since graduation in Africa, Bulgaria, Canada, Mexico and Mongolia.
- 4. I am a member of the Ontario Prospectors Association.
- 5. I do have an interest in the properties and securities of **AMADOR GOLD CORP**, but I have no interest in this property.
- 6. I am responsible for the final processing and validation of the survey results and the compilation of the presentation of this report. The statements made in this report represent my professional opinion based on my consideration of the information available to me at the time of writing this report.

Larder Lake, ON May 2007

H

C. Jason Ploeger, B.Sc. (geophysics) President of Larder Geophysics Ltd.



# **APPENDIX B**

# THEORETICAL BASIS AND SURVEY PROCEDURES

# TOTAL FIELD MAGNETIC SURVEY

Base station corrected Total Field Magnetic surveying is conducted using at least two synchronized magnetometers of identical type. One magnetometer unit is set in a fixed position in a region of stable geomagnetic gradient, and away from possible cultural effects (i.e. moving vehicles) to monitor and correct for daily diurnal drift. This magnetometer, given the term 'base station', stores the time, date and total field measurement at fixed time intervals over the survey day. The second, remote mobile unit stores the coordinates, time, date, and the total field measurements simultaneously. The procedure consists of taking total magnetic measurements of the Earth's field at stations, along individual profiles, including Tie and Base lines. A 2 meter staff is used to mount the sensor, in order to optimally minimize localized near-surface geologic noise. At the end of a survey day, the mobile and base-station units are linked, via RS-232 ports, for diurnal drift and other magnetic activity (ionospheric and sferic) corrections using internal software.

For the gradiometer application, two identical sensors are mounted vertically at the ends of a rigid fiberglass tube. The centers of the coils are spaced a fixed distance apart (0.5 to 1.0m). The two coils are then read simultaneously, which alleviates the need to correct the gradient readings for diurnal variations, to measure the gradient of the total magnetic field.

# **VLF Electromagnetic**

The frequency domain VLF electromagnetic survey is designed to measure both the vertical and horizontal inphase (IP) and Quadrature (OP) components of the anomalous field from electrically conductive zones. The sources for VLF EM surveys are several powerful radio transmitters located around the world which generate EM radiation in the low frequency band of 15-25kHZ. The signals created by these long-range communications and navigational systems may be used for surveying up to several thousand kilometres away from the transmitter. The quality of the incoming VLF signal can be monitored using the field strength. A field strength above 5pT will produce excellent quality results. Anything lower indicates a weak signal strength, and possibly lower data quality. A very low signal strength (<1pT) may indicate the radio station is down.

The EM field is planar and horizontal at large distances from the EM source. The two components, electric (E) and magnetic (H), created by the source field are orthogonal to each other. E lies in a vertical plane while H lies at right angles to the direction of propagation in a horizontal plane. In order to ensure good coupling, the strike of possible conductors should lie in the direction of the transmitter to allow the H vector to pass through the anomaly, in turn, creating a secondary EM field.

The VLF EM receiver has two orthogonal aerials which are tuned to the frequency of the transmitting station. The direction of the source station is locate by rotating the sensor around a vertical axis until a null position is found. The VLF EM survey procedure consists of taking measurements at stations along each line on the grid. The receiver is rotated about a horizontal axis, right angles to the traverse and the tilt recorded at the null position.



# **APPENDIX C**

## **GSM 19**



### Specifications

**Overhauser Performance** 

Resolution: 0.01 nT Relative Sensitivity: 0.02 nT Absolute Accuracy: 0.2nT Range: 20,000 to 120,000 nT Gradient Tolerance: Over 10,000nT/m Operating Temperature: -40°C to +60°C

## **Operation Modes**

Manual: Coordinates, time, date and reading stored automatically at min. 3 second interval. Base Station: Time, date and reading stored at 3 to 60 second intervals. Walking Mag: Time, date and reading stored at coordinates of fiducial. Remote Control: Optional remote control using RS-232 interface. Input/Output: RS-232 or analog (optional) output using 6-pin weatherproof connector.

## **Operating Parameters**

Power Consumption: Only 2Ws per reading. Operates continuously for 45 hours on standby. Power Source: 12V 2.6Ah sealed lead acid battery standard, other batteries available Operating Temperature: -50°C to +60°C

## Storage Capacity

Manual Operation: 29,000 readings standard, with up to 116,000 optional. With 3 VLF stations: 12,000 standard and up to 48,000 optional.

Base Station: 105,000 readings standard, with up to 419,000 optional (88 hours or 14 days uninterrupted operation with 3 sec. intervals)

Gradiometer: 25,000 readings standard, with up to 100,000 optional. With 3 VLF stations: 12,000, with up to 45,000 optional.

## **Omnidirectional VLF**

Performance Parameters: Resolution 0.5% and range to ±200% of total field. Frequency 15 to 30 kHz.

Measured Parameters: Vertical in-phase & out-of-phase, 2 horizontal components, total field coordinates, date, and time.

Features: Up to 3 stations measured automatically, in-field data review, displays station field strength continuously, and tilt correction for up to  $\pm 10^{\circ}$  tilts.

Dimensions and Weights: 93 x 143 x 150mm and weighs only 1.0kg.



Dimensions and Weights

Dimensions: Console: 223 x 69 x 240mm Sensor: 170 x 71mm diameter cylinder Weight: Console: 2.1kg Sensor and Staff Assembly: 2.0kg

Standard Components

GSM-19 magnetometer console, harness, battery charger, shipping case, sensor with cable, staff, instruction manual, data transfer cable and software.

## Taking Advantage of a "Quirk" of Physics

Overhauser effect magnetometers are essentially proton precession devices except that they produce an orderof magnitude greater sensitivity. These "supercharged" quantum magnetometers also deliver high absolute accuracy, rapid cycling (up to 5 readings / second), and exceptionally low power consumption.

The Overhauser effect occurs when a special liquid (with unpaired electrons) is combined with hydrogen atoms and then exposed to secondary polarization from a radio frequency (RF) magnetic field. The unpaired electrons transfer their stronger polarization to hydrogen atoms, thereby generating a strong precession signal-- that is ideal for very high-sensitivity total field measurement. In comparison with proton precession methods, RF signal generation also keeps power consumption to an absolute minimum and reduces noise (i.e. generating RF frequencies are well out of the bandwidth of the precession signal).

In addition, polarization and signal measurement can occur simultaneously - which enables faster, sequential measurements. This, in turn, facilitates advanced statistical averaging over the sampling period and/or increased cycling rates (i.e. sampling speeds).

The unique Overhauser unit blends physics, data quality, operational efficiency, system design and options into an instrumentation package that ... exceeds proton precession and matches costlier optically pumped cesium capabilities.



# **APPENDIX C**

# **GARMIN GPS 76**



# **GPS** Performance

Receiver: WAAS-enabled, 12 parallel channel GPS receiver continuously tracks and uses up to 12 satellites to compute and update your position

### **Navigation Features** Waypoints/icons: 500 with name and graphic symbol, 10 nearest (automatic), 10 proximity **Routes:** 50 reversible routes with up to 50 points each, plus MOB and TracBack® modes Tracks: Automatic track log; 10 saved tracks let you retrace your path in both directions Current speed, average speed, resettable max. speed, trip timer and trip distance Trip computer: Alarms: Anchor drag, approach and arrival, off-course, proximity waypoint, shallow water and deep water Tables: Built-in celestial tables for best times to fish and hunt, sun and moon rise, set and location Map datums: More than 100 plus user datum Position format: Lat/Lon, UTM/UPS, Maidenhead, MGRS, Loran TDs and other grids, including user grid Acquisition times Warm: Approximately 15 seconds Cold: Approximately 45 seconds AutoLocate®: Approximately 2 minutes Update rate: 1/second, continuous **GPS** accuracy Position: < 15 meters, 95% typical\* Velocity: 0.05 meter/sec steady state WAAS accuracy Position: < 3 meters, 95% typical\* Velocity: 0.05 meter/sec steady state Power Two "AA" batteries (not included) Source: Battery Life: Up to 16 hours Physical Size: 2.7"W x 6.2"H x 1.2"D (6.9 x 15.7 x 3.0 cm) Weight: 7.7 ounces Display

1.6"W x 2.2"H (4.1 x 5.6 cm) 180 x 240 pixels, high-contrast FSTN with bright backlighting



Case:	Fully gasketed, high-impact plastic alloy, waterproof to IEC 529 IPX7 standards
Interfaces:	RS232 with NMEA 0183, RTCM 104 DGPS data format and proprietary Garmin®
Antenna:	Built-in quadrifilar, with external antenna connection (MCX)
Differential:	DGPS (USCG and WAAS capable)
Temperature range:	5°F to 158°F (-15°C to 70°C)
Dynamics:	6 g's
User data storage:	Indefinite, no memory battery required

Specifications obtained from www.garmin.com



# **APPENDIX D**

# LIST OF MAPS (IN MAP POCKET)

Posted contoured TFM plan map (1:2500)

1) #07-025-AMADOR-AJAX-MAG-CONT

Posted contoured TFM plan map (1:2500)

2) #07-025-AMADOR-AJAX-MAG-PROF

Posted contoured TFM plan map (1:2500)

- 3) #07-025-AMADOR-AJAX-VLF-NAA
- 4) #07-025-AMADOR-AJAX-VLF-NLK
- 5) #07-025-AMADOR-AJAX-VLF-NML

# TOTAL MAPS=1







St

Total GSM-19

Magnotometer Operated by: Karl Zancanella GPS Operated by: Stan Veinot Processed by: C Jason Ploeger, B.Sc. Map Drawn By: Micheline Desgagné May 16, 2007

# AMADOR GOLD CORPORATION

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# AJAX GRID Strathy Township, Ontario

TOTAL FIELD MAGNETIC PROFILED PLAN MAP

Posting Level: 0nT Field Inclination/Declination: 74degN/12degW Station Seperation: 12.5 meters Total Field Magnetic Profile Scale: 500nT/mm

GSM-19 OVERHAUSER MAGNETOMETER/VLF v5

LARDER

- Creese





# AMADOR GOLD CORPORATION

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# AJAX GRID Strathy Township, Ontario

VLF IN PHASE/OUT PHASE PROFILE VLF FRASER FILTERED CONTOURED PLAN MAP 24.0kHz NAA - CUTLER USA Projection: NAD 83, Zone 17

In Phase: Posted Right/Bottom (Red) Out Phase: Posted Left/Top (Blue)

Vertical Profile Scales: 2.5 %/mm Contour Interval: 0, 5, 10, 15, 20, 25, 50, 100

Station Seperation: 12.5 meters Posting Level: 0

GSM-19 OVERHAUSER MAGNETOMETER/VLF v7

LARDER GEOPHYSICS LTD.

(705) 643-1122

Drawing #07-025-AMADOR-AJAX-VLF-NML



# AMADOR GOLD CORPORATION

- NN -

# AJAX GRID Strathy Township, Ontario

VLF IN PHASE/OUT PHASE PROFILE VLF FRASER FILTERED CONTOURED PLAN MAP 24.8kHz NLK - SEATTLE, USA

In Phase: Posted Right/Bottom (Red) Out Phase: Posted Left/Top (Blue)

Vertical Profile Scales: 2.5 %/mm Contour Interval: 0, 5, 10, 15, 20, 25, 50, 100

Station Seperation: 12.5 meters Posting Level: 0

GSM-19 OVERHAUSER MAGNETOMETER/VLF v7

LARDER GEOPHYSICS LTD.

(705) 643-11

Drawing #07-025-AMADOR-AJAX-VLF-NML



# AMADOR GOLD CORPORATION

# AJAX GRID Strathy Township, Ontario

VLF IN PHASE/OUT PHASE PROFILE VLF FRASER FILTERED CONTOURED PLAN MAP 25.2kHz NML - LaMOURE, NORTH DAKOTA, USA

In Phase: Posted Right/Bottom (Red) Out Phase: Posted Left/Top (Blue)

Vertical Profile Scales: 2.5 %/mm Contour Interval: 0, 5, 10, 15, 20, 25, 50, 100

Station Seperation: 12.5 meters Posting Level: 0

GSM-19 OVERHAUSER MAGNETOMETER/VLF v7

LARDER GEOPHYSICS LTD.

Drawing #07-025-AMADOR-AJAX-VLF-NML