Airborne Geophysical Assessment Report for 2007
Frasergold Property, Williams Lake Area, British Columbia

BC Geological Survey
Assessment Report
29750

Prepared For
Hawthorne Gold Corporation
Suite 1818 – 701 West Georgia Street
Vancouver, British Columbia
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Event Number 4185661
Mine Permit No: MX-10-216

Cariboo Mining Division, British Columbia
Property location approximately 50 km east of Horsefly, BC, 100 km east of William Lake, BC, & 230 km southeast of Prince George, BC.

NTS Map Sheet 093A02, 07
UTM Coordinates NAD 1983, Zone 10N
52° 17' 30.16" North Latitude and 120° 38' 1.5" West Longitude

Dates of Work: January – December 2007

Owner of Claims: Hawthorne Gold Corporation

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Date Submitted: March 7, 2008

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1. Introduction, Property Location, Access, Property Agreements and Mineral Claims

Introduction

Planning for the geophysical survey began in January 2007 with senior management from Adriana Resources Inc. ('Adriana') reviewing Frasergold data, geology and structure. Adriana and Hawthorne Gold Corporation ('Hawthorne') share management at the senior level. In January 2007 Anthony Kovacs, P.Geoph, Exploration Manager for Adriana, and Gordon Addie, P.Geo, VP Exploration for Adriana and VP Hawthorne, began a preliminary review of the Frasergold Property and area, along with preliminary survey grid layouts. Both Anthony and Gordon conducted a review of potential geophysical companies capable of completing the survey within the required 2007 season.

This report summarizes the high resolution geophysical survey successfully completed between September 5th and 17th, 2007 with the actual airborne survey completed between September 6th and 13th, 2007, on the Frasergold Property Claims. The additional days prior and post airborne survey were needed for crew and system setup and demobilization.

Aeroquest International Advanced Airborne Geophysics was contracted by Hawthorne to complete the airborne geophysical survey using a high resolution highly focused helicopter borne AeroTEM II time domain system, which recorded electromagnetic, magnetic and radiometric data. The survey was completed over Hawthorne's Frasergold Property, Cariboo Mining Division, in south central British Columbia.

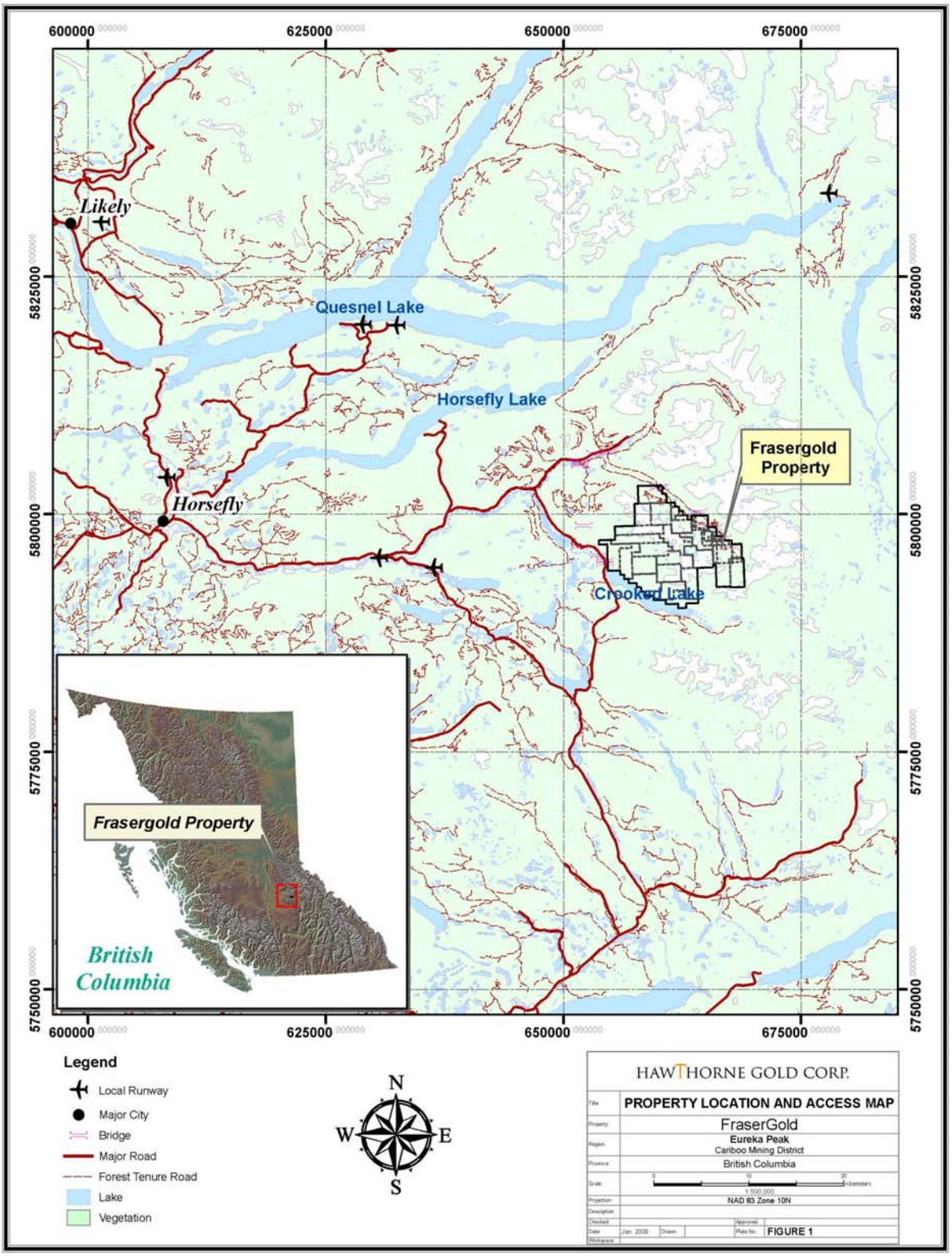
Property Location

The Frasergold Property claims are located approximately 50 kilometers east of the village of Horsefly, BC and 100 kilometres east northeast of city of Williams Lake, BC located on NTS map sheets 093A02, 07 at approximately 52° 17' 30.16" North latitude and 120° 38' 1.5" West longitude. The property outlined for assessment comprises 41 contiguous quartz mining claims covering approximately 10741 hectares within the Mackay River valley, a tributary to the Horsefly River.

Access

The property is road accessible by a series of paved and gravel surfaced roads that lead east northeast from Williams Lake to the village of Horsefly and along the Horsefly River to Mackay River. Recent logging activities have provided a series of tracks that provide good access to most of the exploration areas on the property.

Figure 1 Property Location



Property Agreements and Mineral Claims

Hawthorne has entered into a number of separate option and purchase agreements on the Frasergold property and immediately surrounding claims groups, and now owns or has option agreements on 41 claims. The entire claim block comprises approximately 10741 hectares within the Mackay River valley. Individually many of the legacy claims overlap with the Mineral Titles Online (MTO) system, and consequently the total area of all individual claims is 11,293 hectares. The option agreements are with Eureka Resources Inc. (“Eureka”), Dajin Resources Corp. (“Dajin”), Bob Bourdon (“Bourdon”) and Lloyd Addie (“Addie”), and are as follows.

Hawthorne entered into an agreement with Eureka Resources Inc. (“Eureka”) dated October 31, 2006 that provides Hawthorne the right to acquire up to a 51% interest in the Frasergold property by completing exploration expenditures totaling $3,500,000 including a Feasibility Study by April 30, 2010 and making cash payments totaling $175,000 before October 31, 2009. Hawthorne may earn an additional 9% in the property (for a total of 60%) by arranging 70% financing of capital costs for Eureka. The land covered by this agreement includes 11 legacy mineral claims located prior to the current Mineral Titles Online (“MTO”) system and seven additional claims located under the MTO system for a total of 2,866 hectares all located within the Cariboo Mining Division of central British Columbia.

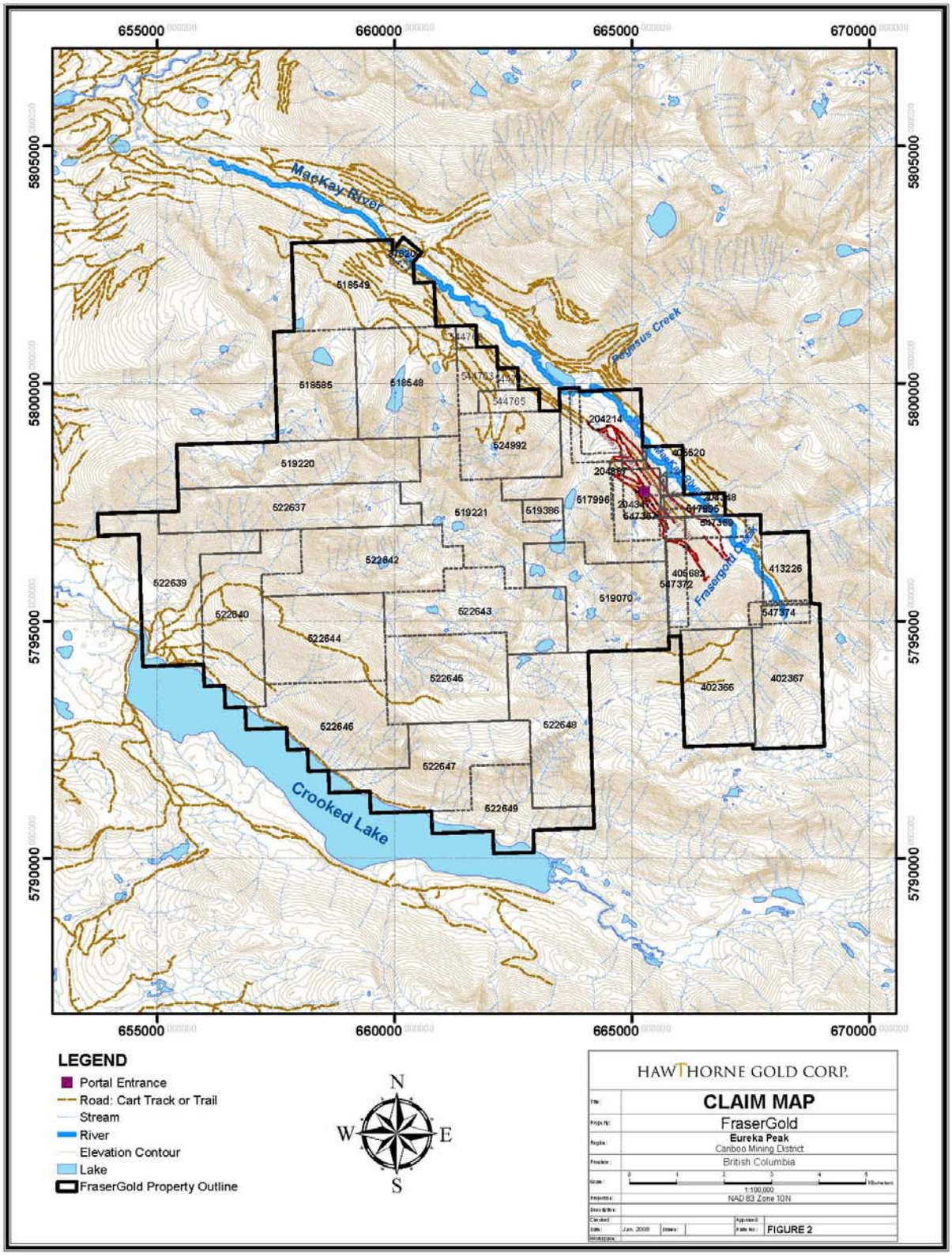
Hawthorne entered into an option agreement ("Dajin Agreement") with Dajin Resources Corp. ("Dajin") dated May 29, 2007 to acquire eighteen mineral claims covering 7,930 hectares. These claims are adjacent to the Hawthorne optioned Frasergold Property owned by Eureka Resources Inc. Certain mineral claims in the Dajin Agreement fall within the two kilometre perimeter surrounding the optioned Frasergold Property. Under the terms of the Dajin Agreement, Hawthorne can earn a 70% (and up to 100%) working interest in the claims by paying $100,000 in cash on signing and incurring $500,000 in exploration expenditures on the property over the next three years, including $150,000 in the first year. On the exercise of the option, Dajin may elect to either remain a 30% working interest partner or, for no additional consideration, convert its 30% working interest into a 2% net smelter return.

Hawthorne entered into an option agreement ("Bourdon Agreement”) to acquire a mineral claim from Robert Bourdon ("Bourdon") dated June 6, 2007. This property is located between the Hawthorne-optioned Frasergold Property owned by Eureka Resources Inc. and the newly optioned Dajin Resources Corp. optioned property. The 296.52 hectares mineral claim optioned from Bourdon falls within a two kilometre 'Area-of-Interest' clause and is an expansion of the original optioned Frasergold Property. Under the terms of the Bourdon Agreement, Hawthorne can earn a 100% interest in the claim by paying $140,000 in cash and issuing 70,000 shares over three years, including $20,000 cash and 10,000 shares on regulatory approval. Bourdon will retain a 2% net smelter return of which half can be purchased by Hawthorne for payment of $1 million. Hawthorne is also obligated to issue 150,000 common shares to Bourdon if the property is the subject of a positive feasibility study.

Hawthorne entered into a letter agreement dated September 26, 2007, to acquire 100% of four mineral claims from Lloyd Addie ("Addie") covering 197.62 hectares. Consideration for the acquisition was 50,000 common shares of the Company which were remitted in September 2007. Addie will retain a 2% net smelter return of which half can be purchased by the Company for payment of $1 million. The Claims are immediately adjacent to Hawthorne's existing property optioned from Eureka Resources Inc. A portion of the mineral claims acquired from Addie falls within a two kilometre 'Area-of-Interest' clause and is an expansion of the original optioned Frasergold Property.

The mineral claims are centered on Eureka Peak and the Eureka Peak syncline. With the addition of the purchased and optioned mineral claims, Hawthorne has greatly expanded its exploration potential in the area.

Figure 2 **Frasergold Property Claim Map**



The claims and registered owners are listed in Table 1.

Table 1 Frasergold Claims

Tenure Number	Claim Name	Owner	Good To Date	Area (Ha)
204214	MAC	Eureka Resources Inc.	2011/Jan/10	225.00
204347	KAY #10	Eureka Resources Inc.	2011/Jan/10	150.00
204348	KAY #11	Eureka Resources Inc.	2011/Jan/10	50.00
204887	MAC 9 FR.	Eureka Resources Inc.	2011/Jan/10	25.00
204896	MAC 11 FR	Eureka Resources Inc.	2011/Jan/10	25.00
378209	L-1	Eureka Resources Inc.	2011/Jan/10	25.00
402366	KAY #10	Eureka Resources Inc.	2011/Jan/10	375.00
402367	KAY #11	Eureka Resources Inc.	2011/Jan/10	450.00
405520	J#1	Eureka Resources Inc.	2011/Jan/10	100.00
405682	KAY #9	Eureka Resources Inc.	2011/Jan/10	500.00
413226	J#2	Eureka Resources Inc.	2011/Jan/10	150.00
547367	H#1	Eureka Resources Inc.	2011/Jan/10	19.77
547369	H#2	Eureka Resources Inc.	2011/Jan/10	59.32
547372	H#3	Eureka Resources Inc.	2011/Jan/10	79.11
547374	H#4	Eureka Resources Inc.	2011/Jan/10	59.34
548514	EUR # 1	Eureka Resources Inc.	2011/Jan/10	19.77
517995	NUGGET	Eureka Resources Inc.	2011/Jan/10	59.31
517996	IMPERIAL	Eureka Resources Inc.	2011/Jan/10	494.31
518548	GOLD SOURCE	Addie, Lloyd John	2011/Jan/10	498.01
518549	SED HOSTED GOLD	Addie, Lloyd John	2011/Jan/10	493.73
518585	HEADWATERS	Addie, Lloyd John	2011/Jan/10	395.11
519070	GEORGE	Addie, Lloyd John	2011/Jan/10	494.51
519220	SYNGOLD	Addie, Lloyd John	2011/Jan/10	474.30
519221	CAPROCK	Addie, Lloyd John	2011/Jan/10	474.53
519386	PATCH	Addie, Lloyd John	2011/Jan/10	39.55
522637	GOLD	Dajin Resources Corp.	2011/Jan/10	474.39
522639	GOLD	Dajin Resources Corp.	2011/Jan/10	474.48
522640	GOLD	Dajin Resources Corp.	2011/Jan/10	474.58
522642	GOLD	Dajin Resources Corp.	2011/Jan/10	474.56
522643	GOLD	Dajin Resources Corp.	2011/Jan/10	474.72
522644	GOLD	Dajin Resources Corp.	2011/Jan/10	474.67
522645	GOLD	Dajin Resources Corp.	2011/Jan/10	474.83
522646	GOLD	Dajin Resources Corp.	2011/Jan/10	474.86
522647	GOLD	Dajin Resources Corp.	2011/Jan/10	474.01
522648	GOLD	Dajin Resources Corp.	2011/Jan/10	474.97
522649	GOLD	Dajin Resources Corp.	2011/Jan/10	316.75
524992	EUREKA	Bourdon, Robert James	2011/Jan/10	296.52
544763	EUREKA	Hawthorne Gold Corp.	2011/Jan/10	98.81
544765	MISSING	Hawthorne Gold Corp.	2011/Jan/10	59.29
544767	ADD ON	Hawthorne Gold Corp.	2011/Jan/10	19.76
544769	ANOTHER	Hawthorne Gold Corp.	2011/Jan/10	19.76
			Total	**11292.63**

2. History, Economic and General Assessment, and Adjacent Properties

Most of the following information was derived from technical reports supplied by Hawthorne Gold Corporation, including a March 2007 and January 2008 NI43-101 reports.

History, Economic and General Assessment

The first record of work being conducted in the vicinity of the Frasergold property was in the late 1970's by Clifford E. Gunn who prospected the area after researching historic references to the placer gold potential of the region. During 1978 and 1979 he staked claims and prospected the area to cover a panned gold anomaly discovered in Frasergold Creek, from 1980 to 1982 the ground was optioned by Keron Holdings Ltd. and NCL Resources Ltd. A geology map was produced after preliminary soil and rock geochemical surveys were completed over the property, with results revealing a 10 kilometre long zone containing anomalous gold values from soil samples that was suspected to have a stratigraphic control.

In 1983 Eureka acquired the property and optioned it to Amoco Canada Petroleum Co. Ltd. ("Amoco"), during 1983 and 1984 Amoco collected rock and soil geochemical samples and conducted limited electromagnetic and magnetic surveys. Amoco also drilled 14 diamond drill holes totaling 4,519 metres, with 12 of the drill holes producing coarse visible gold. Anomalous intersections had values ranging from 0.023 oz Au /t over 7.5 metres to 0.342 oz Au /t over 1.5 metres, Amoco terminated the option agreement at the end of these programs and returned the property to Eureka.

Eureka continued exploring the Frasergold property in 1985 and 1986 and completed further soil and rock chip geochemical sampling, trenching and bulk sampling, reverse circulation and diamond drilling, metallurgical testing and an I.P. survey. Four holes totaling 406.5 metres were completed by reverse circulation drilling, and eighteen diamond drill holes, totaling 2,021 metres were completed in three areas. Twelve of the 18 holes had sections with visible gold and anomalous values ranged from 0.057 oz/t over 39.0 metres (hole 86-2) to 1.311 oz Au /t over 1.5 metres (hole 86-18).

A surface bulk sampling program was completed in 1985 by selecting eight sites for excavation. A total of 56 samples were collected and analyzed for gold content by fire assay. One sample, 86-12-2A from the Jay Zone, was submitted to Coastech Research Inc. who milled the material and completed cyanidation testing on the sample. Results from the cyanidation work were compared to the standard fire assay analyses. The mean fire assay (FA) values from the 56 samples varied from 0.06 oz Au/t to 0.128 oz Au/t. Coastech split bulk sample 86-12-2A into 24 composites and completed cyanidation leach metallurgical work on the samples. Leishman and Campbell (1986) report that the results varied from 0.150 oz Au/t to 1.021 oz Au/t, with a weighted average of 0.479 oz Au/t. The gold content of bulk sample 86-12-2A was determined to be 0.137 oz Au/t (Marchant, 1985).

Eureka constructed a core storage facility to securely store all core from the 1986 and previous programs. The core storage building was located at a logging camp on the Horsefly River at the junction of the Horsefly River road and the road to Crooked Lake.

In 1987 Southlands Mining Corporation ("Southlands") undertook an option on the Frasergold property, with Eureka as operator. Southlands constructed and sampled eight trenches totaling 660 metres, and completed 21 reverse circulation holes totaling 1,710 metres.

In late 1987, Southlands optioned a portion of their interest to Sirius Resources Corp. ("Sirius"). Sirius completed 17 diamond drill holes totaling 1,536 metres, drilled 37 reverse circulation holes totaling

2,456 metres, and excavated 184 metres of underground workings to provide 524 tonnes of material for bulk sampling.

In the fall of 1988 Sirius completed work in the Eureka Peak zone, collecting 478 soil samples over a closely spaced grid, collecting 27 rock chip samples from hand trenches and drilling six diamond drill holes totaling 862 metres producing varying anomalous gold assay results.

In August 1989 a legal dispute between Eureka and Southlands over the validity of the option and joint venture agreement was resolved. During September, 1989, Eureka completed a program of underground channel sampling (284 samples), muck sampling (74 samples) from untested rounds, drill core sampling (297 samples) and relogging and geological mapping of underground workings.

In 1990, Eureka entered into a joint venture agreement with Asarco Company of Canada Ltd. (Asarco). During the period 1990 and 1991, Asarco drilled 25 diamond drill holes totaling 4,687.2 metres, and 156 reverse circulation holes totaling 15,720 metres. Four 1.25 ton bulk samples were collected in 1990 for metallurgical testing by Bacon, Donaldson and Associates Ltd. The average composite grade of these bulks samples was 0.068 oz Au/t while preliminary tests indicated gold recoveries ranging from 87 to 92%.

In 1991 the underground workings were lengthened by 114 metres, these workings produced 1,591 tons of material that was divided into nine lots for off-site milling. The calculated average grade of this material was 0.027 oz Au/t. By utilizing the drill hole and underground sample data K.V. Campbell, W. Gruenwald, L. Walters and M. Schatten prepared a 1991 report for Asarco Inc. and Eureka Resources Inc. which stated there is an “in situ resource” of 3,396,970 tons at an average grade of 0.05 oz Au/t within the Main Zone portion of the Frasergold property. The figures presented above do not conform to currently accepted CIM standards or NI43-101 Standards of Disclosure for mineral exploration projects, and should not be relied upon. Campbell et al (1991) emphasize that this is not an estimate of “ore reserves”, which require detailed engineering and cost estimation. The exploration work completed to provide data for the above resource estimation was conducted using then acceptable industry best practices by professional people and recognized laboratories. This work would require confirmation testing to determine the validity of the results reported. These calculations are not CIM compliant and therefore do not fulfill NI 43-101 reporting standards and should not be relied upon. However the work provides relevant data on the Frasergold project and is provided from sources believed to be reliable. The figures are presented here for historical context only and have not been relied upon by the authors as the sole means of determining the merits of the Frasergold property.

In January, 1991, the mining, geological and geotechnical engineering firm James Askew Associates, Inc. of Englewood, Colorado was commissioned by Asarco to conduct a pre-feasibility study of the Frasergold project. This study does not conform to the current usage of a pre-feasibility study as defined by NI43-101, and should not be relied upon. The Askew report does not take into account economic, mining, metallurgical, environmental, social or governmental factors. As part of this study, Askew completed “In Situ Reserves/Resources” for the project using hand drawn polygonal methods. The basis for drawing these mineralized envelopes was data collected by Asarco and others which is believed to be reliable. Askew used a 0.03 oz Au/t cutoff with a minimum true width thickness of three metres. Assays greater than 0.60 oz Au/t were cut to 0.60 oz Au/t. Zones of gold mineralization were extended half way to the adjacent section and were extended 75 metres downdip. A specific gravity of 2.7 was used in the calculations.

Based on these parameters, Askew (1991) summarized the gold mineralization at the Frasergold property as 6,612,675 tons of mineralized material at an average grade of 0.055 oz Au/t to represent 362,825 ounces of gold. Askew (1991) does not categorize the mineralized material due to "the comparatively small amount of geological and assay data for such a long strike length". The volume and gold content estimates used by Askew (1991) do not conform to the "CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines", issued in 2000 and modified with adoption of the "CIM Definition Standards – For Mineral Resources and Mineral Reserves" in 2005. The resource estimate provided by Askew (1991) does not use CIM compliant calculations and therefore do not fulfill NI 43-101 reporting standards, and should not be relied upon. However the Askew (1991) report is relevant to the current review of the Frasergold property as it provides an indication of the scope and depth of exploration conducted on the project.

A Qualified Person has not conducted sufficient work to classify the above noted historical estimate as current mineral resources, the authors and Hawthorne are not treating the historic estimate as current mineral resources and the historic resources should not be relied upon.

In 2007 Hawthorne conducted a major exploration program on the property. The 2007 drill program was laid out to test four previously defined zones of interest; including the Main Zone, the Grouse Creek West Zone, the Grouse Creek East Zone and the Frasergold Zone. A total of 16 HQ core size diamond drill holes totaling 3,615 metres and were drilled over a period of 3 ½ months, with an average depth of 226 metres.

Between 1980 and 2007 it is estimated that $11.26 million has been expended on the exploration of the Frasergold property. A total of 39,582 metres of drilling in 344 holes has been completed on the property, along with 294 metres of underground drifts to provide access for bulk sampling and metallurgical testing.

Adjacent Properties

There are no mines in the immediate vicinity of the Frasergold Property. The closest operating mine is Imperial Metal Corporation's Mount Polley copper-gold porphyry deposit located 30 kilometres to the northwest. Numerous gold and copper prospects are located throughout the region, including the Woodjam property 15 kilometres south of the village of Horsefly, Spanish Mountain 40 kilometres to the north by the town of Likely and QR past producing mine site 50 kilometres northwest.

3. Geological, Structural Description and Deposit Model of Project Area

Geological and Structural Description

The Frasergold property straddles the boundary between two major tectonic belts of the Canadian Cordillera; the Omineca Tectonic belt lies on the east side of the property while the Intermontane Belt occupies the west and central portions of the property. Three regional tectonostratigraphic terranes are present; Kootenay, Slide Mountain and Quesnellia terranes. The Slide Mountain and Quesnellia terranes are part of the Intermontane Belt which has been accreted eastward onto the Kootenay terrane of the Omineca Belt. The Eureka Thrust forms the tectonic boundary between these two Belts.

In the project area the Omineca Tectonic Belt is represented by Hadrynian to early Paleozoic quartz-mica schists and gneisses of the Snowshoe Group. These make up part of the Kootenay terrane; pericratonic, intensely deformed, variably metamorphosed rocks which appear to be stratigraphically

related to ancestral North America. The Omineca Tectonic Belt is known for its prevalence of gold and tungsten mineral occurrences such as those in the Barkerville gold mining camp to the north of the property. The Quesnellia Terrane is composed of metavolcanic and phyllite rocks of Permian to Jurassic age. Numerous copper and gold deposits occur within this package of rocks, including the Mt. Polley mine 40 kilometres north of Frasergold.

The northwest trending, shallowly plunging, Eureka Syncline and Perseus Anticline are the dominant interpreted structures in the region. Well developed, northeast striking, near vertical extension joints are clearly manifested in the drainage pattern of the Eureka syncline. Towards the nose of the syncline, southeast of the project area, the syncline becomes overturned to the southwest with axial planes dipping steeply northeast, northeast of the MacKay River the northeast limb is also overturned to the southwest, however the syncline is upright in the area of the property. The core of the Eureka Syncline is occupied by Takla Group basic volcanic rocks consisting of basalt, augite porphyry flows, tuffs and volcanic breccias that have been metamorphosed to a low grade. The contact with the underlying sediments of the Quesnel River Group has been interpreted as a fault.

All of the pre-Tertiary rocks in the area are affected by regional dynamothermal metamorphism, with the lowest grades exposed along the Horsefly River road where clastic textures are preserved. In the Eureka Syncline, the metamorphic grade of all units increases towards the Perseus and Boss Mountain anticlines. Large areas reach medium grade amphibolite facies metamorphism and some rocks in the cores of the nearby anticlines reach the kyanite-staurolite-fibrolite zone and are associated with pegmatites. The age of the folding and metamorphism is considered to be Jurassic to early Cretaceous.

The northwest trending MacKay River valley appears to mark a major zone of vertical or near vertical fracturing. At this location the upper Triassic Quesnel River Group is sandwiched between two more competent units; younger intrusives and volcaniclastics to the south and older amphibolites, schists and gneisses to the north and east. Shearing and faulting appears to have been concentrated in the incompetent phyllite units striking along the valley.

Geological Model

The mineral claims are centred on Eureka Peak and the Eureka Peak syncline. Two styles of gold mineralization are known within this portion of the syncline. The Frasergold gold-quartz zone is hosted within graphite rich (5-40%) phyllitic sediments and is located on the east limb of the syncline, whereas the Eureka Peak gold-sulphide mineralization is found closer to the core of the fold, near the base of volcanics that overlay the sediments. Both styles of gold mineralization fit within the Orogenic Gold model currently being applied to mineralization within the Cariboo Gold Belt. Deposits within the Orogenic Gold model range in size up to multi-million ounce deposits and include such noted examples as McRaes Flat (New Zealand), Paracatu (Brazil) and Sukhoi Log (Russia). The Frasergold zone mineralization appears to fit the orogenic lode-gold deposit type; gold tends to occur in quartz veins with coarse particulate gold occurring in segregations of stringers, veins, boudins and mullions. Gold has also been commonly observed as fine anhedral grains set in quartz often near the margins of veins. The gold also appears to be associated with sulphides, including pyrrhotite, pyrite and minor chalcopyrite and sphalerite. Petrographic studies show that a major part of the gold occurs with medium to coarse grained pyrite and pyrrhotite aggregates throughout the mineralized zone. Overall the sulphide content of the Frasergold zone varies from Tr-12% sulphides, and averaging about 2-3% sulphides. Pervasive low grade gold mineralization is also found within the knotted phyllite strata where quartz is absent, however the gold also appears to be associated with sulphides within the phyllitic strata. In most or all cases the phyllitic metasediments are graphite rich, with Tr-3% chlorite alteration.

4. Geophysical Survey – Objective and General Information

Objective

The objective of the survey was to aid with identification of underlying structures and stratigraphy, and to provide enhanced opportunities to future exploration programs.

General Information

This report summarizes the high resolution geophysical survey successfully completed between the dates of September 5th and 17th, 2007 with the actual aerial survey occurring between September 6th and 13th, 2007, on the Frasergold Property Claims.

The Frasergold Property Claims group consists of 41 claims, with the entire claim block comprising approximately 10741 hectares within the Mackay River valley. Individually many of the claims overlap and consequently the total area of all claims is 11,293 hectares. The property lies on the western flank of the Cariboo Mountain Range at elevations varying from 1,200 to 2,425 meters; the northwest – southeast trending Crooked Lake defines the southwest boundary of the flight block. Aeroquest International Advanced Airborne Geophysics was contracted to complete the geophysical survey using a high resolution highly focused helicopter borne AeroTEM II time domain system recording electromagnetic, magnetic and radiometric data. Aeroquest International is based out of Mississauga, Ontario at 7687 Bath Road, Mississauga, Ontario, L4T 3T1. The Aeroquest job number is 8018.

Project accessibility was by helicopter only. The advantage of a helicopter survey over that of a fixed wing aircraft is the slower speed allows for collection of data with high spatial resolution, greater accuracy and more detail, this spatial resolution is very important for areas of complex geology and the search for discrete conductors. The AeroTEM system is completely portable and was assembled at the survey site within a day.

Crew accommodations for two pilots and field staff and survey operations were based out of Horsefly; fuel was cached at 52°21.314N and 120°38.763W.

The survey was flown over the Frasergold Property claim area during the period from September 6th – 13th, 2007, and included 1348.5 line kilometres.

Planning for the geophysical survey began in January 2007. At that time Anthony Kovacs, P.Geoph, Exploration Manager for Adriana Resources Inc., and Gordon Addie, P.Geo, VP Exploration for Adriana began a preliminary review of the area and property, along with preliminary survey grid layouts. Both Anthony and Gordon conducted a review of potential geophysical companies capable of completing the survey within the required 2007 season. The final report titled 'Report on a Helicopter-Borne AeroTEM System Electromagnetic, Magnetic and Radiometric Survey' was supplied to Hawthorne Gold Corporation in November 2007. Preliminary review of the report and data were completed by Adriana and Hawthorne staff.

5. Geophysical Survey – Description of Work and Data Presentation

The geophysical survey took place between September 6th and 13th, 2007, with line spacings flown at 100 metres apart and control (tie) lines flown perpendicular to the survey lines with spacings of 1000 metres. The line direction was NE-SW (030°). A Eurocopter (Aerospatiale) AS350B2 "A-Star" helicopter

owned and operated by Hi-Wood Helicopters, Calgary, Alberta was used to tow the EM bird and magnetometer. The flight line direction was northeast – southwest at 30°, a total of 1348.5 line kilometres were flown.

The helicopter was flown at a nominal terrain clearance of 65 metres, terrain clearance was recorded using a Terra TRA 3500/TRI-30 radar altimeter mounted on the outside of the helicopter and beneath the cockpit. A high resolution digital colour 8 mm video camera was used to record the helicopter flight path along the survey lines. GPS position and time were digitally annotated onto the video in order to verify ground position information as well as to trouble shoot cultural causes of anomalous geophysical responses. The coordinate system employed was the WGS84 (World) using the UTM zone 10N projection.

The EM bird was flown at 30 metres above terrain, however occasionally due to rugged terrain and safety concerns the EM bird was flown at greater than 30 metres above terrain. Geophysical readings were taken approximately every 1.5 to 2.5 metres along the flight path. The position of the helicopter was recorded at 0.2 second intervals using a GPS receiver, an AG-NAV2 system for navigational control and an RMS DGR-33 data acquisition system to record real-time differentially corrected GPS positional data in geodetic coordinates (latitude and longitude using WGS84). Survey coordinates were setup prior to the survey with information fed into the airborne navigation system. Throughout the program at least two high elevation 'background' checks were completed during each flight day to ensure that the gain of the system remained constant and within specification.

After each flight the EM data and the RMS data were transferred from hard drives and 128 Mb capacity FlashCards to the data processing work station. The base station magnetometer data on FlashCard was also retrieved from the base station unit. The base station was a Geometrics G-859 cesium vapour magnetometer system with integrated GPS placed on a tripod in an area of low magnetic gradient and free of cultural noise sources. Quality control and data verification was completed by comparing acquired GPS data with planned flight lines, along with verification and conversion of geophysical data. The data was then use to produce preliminary EM, magnetic contour and flight line maps in coordinate/projection system NAD83 – UTM Zone 10N, the latitude and longitude in WGS84 were also noted on the maps. Survey lines with excessive deviation from the intended flight path were re-flown, as were survey lines where data quality did not meet contract specifications.

The survey system included the use of the Aeroquest AeroTEM II time domain towed-bird system towed 38 metres below the helicopter and also employed two magnetometers, the Geometrics G-823A cesium vapour magnetometer sensor towed 21 metres beneath the helicopter in a two metre bird airfoil, and a second magnetometer G-828A installed in the tail of the EM bird. The first magnetometer, G-823A has a sensitivity of 0.001 nanoTesla (nT) at a 0.1 second sampling rate. The second magnetometer G-828A recorded data at 300 samples a second down sampled to 10 Hz by the AeroDAS acquisition system.

The AeroTEM II system has a high signal to noise ratio, with two separate EM data recording streams, the conventional RMS DGR-33 and the AeroDAS system used to record the full waveform. The high signal to noise ratio allows for surveying in areas where there may be electromagnetic noise due to local infrastructure such as power lines etc. The AeroDAS system received and recorded waveform sampled during on and off-time, and sampled at a rate of 36,000 Hz (120 channels per decay, 300 times per second) of raw streaming data onto a removable hard drive, with the data dumped and processed after each flight survey and backed up onto DVD-ROM. The data produced 33 stacked and binned on-time and off-time channels at a 10 Hz sample rate. The DGR-33 system recorded 10 samples per second of six

channels of real time processed off-time EM decay in the Z direction and one in the X direction. The data was plotted real-time on the analogue thermal chart recorder, the primary use of the RMS DGR-33 data (Z1-Z6, X1) was to provide for real-time QA/QC on board the helicopter. The RMS DGR-33 system was also used to record magnetic at 10 Hz, radar altimeter, GPS position data and time.

Apparent bedrock EM anomalies were interpreted with the aid of an auto-pick reviewed and edited by an Aeroquest geophysicist on a line by line basis. This process allowed for discrimination between low and high-conductance sources.

In addition to the acquisition of EM and Magnetic data, an airborne gamma ray spectrometer (AGRS) system was employed to capture total count, potassium, uranium and thorium concentrations. The AGRS system utilizes four (4) downward looking NaI crystals used as the main gamma-ray sensors and one upward looking crystal for monitoring non-geologic sources. Ratios of these concentrations were computed to enhance interpretation of the survey results.

All in-field and post-field data processing was carried out using Geosoft Oasis Montaj software and Aeroquest proprietary data processing software. Processed as well as raw unfiltered data was provided by Aeroquest.

On completion of the program Aeroquest provided geophysical maps plotted in the NAD83 datum with survey geodetic GPS positions projected using the UTM projection in Zone 10 North. The report included a set of ten 1:20,000 maps with the survey area covered by a single map plate and seven geophysical data products delivered, including:

- TMI – Coloured Total Magnetic Intensity (TMI) with line contours and EM anomaly symbols.
- TDR – Tilt Derivative of TMI and EM anomaly symbols.
- EM – AeroTEM off-time profiles Z5-Z15 and EM anomaly symbols.
- ACTA – AeroTEM Conductor Trending Algorithm and EM anomaly symbols.
- RADeK – Gamma Ray Spectrometer, Equivalent Potassium (eK%).
- RADeTHK – Gamma Ray Spectrometer, Equivalent Thorium/Potassium Ratio (eTh/K%).
- RADER – Gamma Ray Spectrometer, Exposure Rates.

The above seven geophysical data products are included in the appendix of this assessment report.

All hard copy maps displayed the flight path trace, skeletal topography and conductor picks as anomaly symbols classified according to calculate cut-off conductance. Digital map files were provided in Geosoft.map and Adobe PDF format, and flight navigation lines in Google earth KML format.

The geophysical profile data is archived digitally in a Geosoft GDB binary format database with a copy archived at the Aeroquest head office in Mississauga, Ontario, Canada.

6. Geophysical Survey – Interpretation of Results and Conclusion

Results

The survey was successful in mapping the conductive and magnetic properties of the geology throughout the survey area. To date only a preliminary review, interpretation and assessment of the

geophysical results has occurred, with final interpretive results depending on completion of an up to date geological and geochemical compilation map.

Aeroquest provided basic interpretation of results; the magnetic data provided high resolution maps displaying magnetic mineral content of the survey area, which can be used to interpret location of geological contacts and structural features such as potential faults and zones of alteration. Aeroquest felt that due to the high magnetic susceptibility the primary source of anomalous magnetic responses were thought to be due to magnetite more so than pyrrhotite.

The Total Magnetic Intensity data along with the EM data seem to verify the structural interpretation of the northwest trending, shallowly plunging, Eureka Syncline. The western/south western limb of the syncline displays a generally shallower dip to the northeast than the eastern/north eastern limb, which appears to dip much steeper to the southwest. A strong magnetic structure occurs in the upper central portion of the flight block which correlates well with a known porphyry centred on this region.

This structure also correlates well with the radiometric data. The airborne gamma ray spectrometer (AGRS) system employed captured total count, potassium, uranium and thorium concentrations. Ratios of these concentrations were computed to enhance interpretation of the survey results; the radiometric data seems to verify the Eureka Syncline structure as well as providing a layered appearance to the known underlying metasediments which make up the limbs of the syncline.

The EM anomalies on the maps provided by Aeroquest were classified by conductance and thickness of the source, the EM anomaly 'picks' discriminate between vertical thin and thick sources with the EM anomaly symbols denoted by N=thin and K=thick. Thick and thin sources of anomalies were more difficult to determine, where multiple close spaced conductive sources occurred, or where the source appeared to have a shallow dip. In these cases both source types could be displayed by picking thin and thick response styles, shallow dipping conductors have the thin pick located over the edge of the source, while thick picks fall over the downdip 'heart' of the anomaly.

In a generalized sense the EM anomaly 'picks' appear to follow linear trends possibly related to the underlying stratigraphic and/or structural horizons, which may correlate with sulphide rich horizons or possibly graphitic horizons, such as those which underlie the Frasergold Zone. The linear EM 'picks' which occur on the northeast limb of the syncline may be related to similar structures and/or stratigraphy comprising the southwest limb of the syncline. Apparent bedrock EM anomalies were interpreted with the aid of an auto-pick reviewed and edited by an Aeroquest geophysicist on a line by line basis. This process allowed for discrimination between low and high-conductance sources.

Conclusion

The geophysical survey appears to have verified the structural interpretation of the Eureka Syncline, along with aiding in the interpretation of underlying geology, stratigraphy and potential EM conductors.

A more detailed interpretation of data is required and should be conducted once a proper and detailed geologic compilation map has been completed. Interpretation should take place with the assistance of geological and geophysical staff and/or consultants. Specific anomalous picks should be subjected to numerical modelling to determine dip, depth and probable geometry prior to drill testing. Ground truthing of the anomalous source site along with potential mapping and geochemical sampling should

also take place prior to any planned drill programs. The resulting interpretations will guide future drilling and resource expansion activities.

The Frasergold Zone is the only area within the property that has had any degree of serious exploration and drilling, and is a zone of known anomalous gold within graphitic phyllitic metasediments. However, the geophysics appears to have outlined a number of new target zones of interest, as well as provided some degree of understanding of the underlying stratigraphy and structural dip of the stratigraphy. These potential zones of interest which appear to correlate with layered stratigraphy, linear structures and conductors along the strike of the Frasergold Zone, as well as on the opposite limb of the zone will need detailed exploration.

It is recommended that the Frasergold Property mineral dispositions described within this assessment report be held pending further review of the acquired geophysical data.

7. Geophysical Survey - Assessment Details and Statement of Expenditures

Table 2:	**Assessment Details**
Property:	Frasergold Property, Williams Lake Area, British Columbia
Mining Division:	Cariboo Mining Division, British Columbia
Prepared For:	Hawthorne Gold Corporation, Suite 1818 – 701 West Georgia Street Vancouver, British Columbia V7Y 1C6
Location:	Property located approximately 50 km east of Horsefly, BC, 100 km east of William Lake, BC, and 230 km southeast of Prince George, BC.
Type of Survey:	Helicopter-Borne AeroTEM System Electromagnetic, Magnetic and Radiometric Survey
Field Days:	13 days, September 5 – 17, 2007
Operating Days:	8 days, September 6 – 13, 2007
Aeroquest Personnel:	Bert Simon, Manager of Operations Gord Smith, Manager of Data Processing Emilio Schein and Eicka Alinne Solano, Field Data Processors David McKenna and Gabriel Genier, Field Operators Geoff Plastow, Dak Darbha, Eric Steffler, Marion Bishop, Data Interpretation and Reporting
Hi-Wood Helicopters:	Paul Kendall and Ted Slavin, Survey Pilots
Adriana Resources Personnel:	Anthony Kovacs, P.Geoph, Exploration Manager Gordon Addie, P.Geo, VP Exploration
Hawthorne Gold Personnel:	Jim Sparling, P.Geo, Exploration Manager

Total Aeroquest personnel in camp	3, with 4 on Sept 14th
Total Aeroquest food & accommodation man days (Sept 5 – 17, 2007)	37
Aeroquest Food & Accommodation:	$50/day
Total Adriana man days:	4
Total Adriana cost per man:	$550.00
Total Hawthorne man days:	5
Total Hawthorne cost per man:	$550.00

Total Survey Area Flown:	118 km^2
Total Survey Coverage:	1348.5 line-km
Total Survey Coverage within defined project area:	1318.6 line-km
Total Area of Frasergold Claims:	10740.94 ha
Total Number of Claims Included:	41
Survey Rate based on approximately 1304 line km:	$150/kilometre
Standby Charge due to weather, diurnal variations, or other environmental issues:	$3,500/day
Fuel and fuel positioning:	Supplied by Aeroquest

Table 3: Frasergold Property Statement of Expenditures

Total Hawthorne In-house Cost of Project:	
Preseason, season and post-season compilation and interpretation	$ 4,950.00
Aeroquest Food & Accommodation	$ 1,850.00
Total Aeroquest Cost of Project:	
Deposit upon signing (30% of estimated survey charge)	$ 62,200.80
Mobilization Charge	$ 5,300.00
Final survey and data acquisition charge	$134,768.40
Balance for final report	$ 10,656.18
Total	$219,725.38

8. Certificate of Qualified Persons

I, James Edwin Sparling, B.Sc., P.Geo, MBA do hereby certify that:

1. I am the Exploration Manager of:
   Hawthorne Gold Corporation
   Suite 1818 – 701 West Georgia Street
   Vancouver, BC, Canada
   V7Y 1C6

2. I am a graduate of the University of Manitoba (B.A. Economics), the University of Saskatchewan (B.Sc. Geology 1984) and Royal Roads University (M.B.A., 2003).

3. I am a member in good standing with the Association of Professional Engineers and Geoscientists of Saskatchewan (Member # 10870) and Manitoba (Member # 20438).

4. I have practiced my profession in mineral and petroleum exploration continuously since graduation in April 1984, except for the period March 2001 to May 2003 while I completed my MBA. Employed May - December 1984 as an exploration geologist with Hudson Bay Exploration & Development Co. Ltd. (HBED) in Snow Lake, Manitoba. Employed January 1985 - December 1986 with Geotemp Consulting as an independent wellsite geologist in Calgary, Alberta. Employed January 1987 as geophysical technician with Ross Conner Geophysical Contracting in Flin Flon, Manitoba. Employed as exploration geologist/geophysical technician with HBED in Flin Flon and Snow Lake, Manitoba from February 1986 – July 1987. Employed with Turner Engineering and Schindler Exploration as junior geologist from July 1988 – June 1989. Employed as geophysical technician/junior geologist with Petro-Canada Resources in Calgary, Alberta from June 1989 – June 1992. Employed as geophysical technician/Geophysical Crew Chief with Brad Koop Exploration in Flin Flon region from June 1992 – June 1994. Employed as Geophysical Crew Chief/Project Geologist with HBED throughout western and northern Canada from June 1994 to February 2001. March 2001 – April 2003 full time MBA. September – December 2003 employed as contract Project Geologist with StrataGold Corporation (SGV) in the Yukon. May 2004 – November 2007 employed as Exploration Manager with SGV. November 2007 – present employed as Exploration Manager with Hawthorne Gold Corporation.

5. I have been involved with the exploration of the property that is the subject of the Assessment Report since November 2007. During the period of November 2007 until early December 2007 I oversaw the exploration programs on the property, and visited the property during the exploration season, reviewed and interpreted data, and recommended future plans and budgets for the property. My last visit to the property was from November 20 - 22, 2007 for 3 days but was unable to assess the surficial geology due to heavy snow accumulations.

6. I have not had prior involvement with the property that is the subject of the Assessment Report.

7. I am responsible for the assessment report titled “Airborne Geophysical Assessment Report for 2007 Frasergold Property, Williams Lake Area, British Columbia” and dated March 7, 2008.

8. As of the date of this Certificate, to my knowledge, information and belief, this Assessment Report contains all scientific and technical information that is required to be disclosed to make the assessment report not misleading.

9. I am employed by Hawthorne Gold Corporation as the Exploration Manager, and have been issued stock options.

Dated this 7th day of March, 2008.

(Original signed and sealed by)

"Jim Sparling"

_____

Signature of Qualified Person

J. Edwin Sparling, P.Geo, MBA

_____

Name of Qualified Person

Bibliography

Geoff Plastow and Doug Garrie, Aeroquest Limited. Report on a Helicopter-Borne AeroTEM System Electromagnetic, Magnetic and Radiometric Survey, Wells Grey Project, Williams Lake Area, British Columbia, Canada, November 2007.

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Hawthorne Gold Corporation website, news releases and property descriptions.

J. Sparling, Hawthorne Gold Corporation, and K.V. Campbell, Earth Resource Surveys Incorporated. NI 43-101 Technical Report SUMMARY REPORT AND EXPLORATION PROPOSAL ON THE FRASERGOLD PROJECT, Cariboo Mining Division, BC, January 31, 2008.

Appendix

Appendix Includes the Following Maps in Sequential Order.

All maps are also included in the separately submitted Aeroquest Report on a Helicopter-Borne AeroTEM System Electromagnetic, Magnetic and Radiometric Survey, Wells Grey Project, Williams Lake Area, British Columbia, Canada, November 2007.

Figure 3: TMI – Coloured Total Magnetic Intensity (TMI) with line contours and EM anomaly symbols
Figure 4: TDR – Tilt Derivative of TMI and EM anomaly symbols
Figure 5: EM – AeroTEM off-time profiles Z5-Z15 and EM anomaly symbols
Figure 6: ACTA – AeroTEM Conductor Trending Algorithm and EM anomaly symbols
Figure 7: RADeK – Gamma Ray Spectrometer, Equivalent Potassium (eK%)
Figure 8: RADeTHK – Gamma Ray Spectrometer, Equivalent Thorium/Potassium Ratio (eTh/K%)
Figure 9: RADER – Gamma Ray Spectrometer, Exposure Rates

Figure 3 **TMI – Coloured Total Magnetic Intensity (TMI) with line contours and EM anomaly symbols**

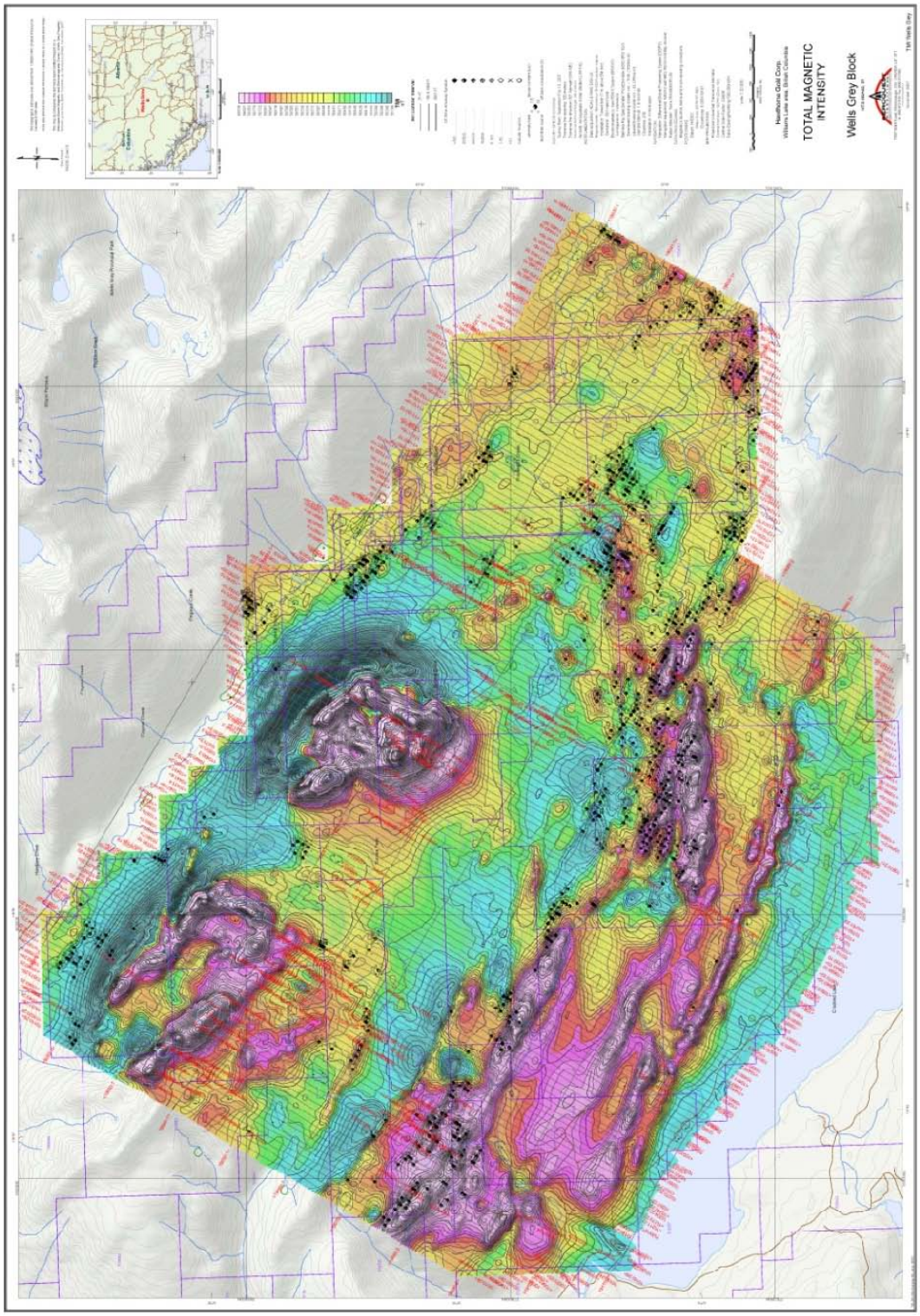


Figure 4 **TDR – Tilt Derivative of TMI and EM anomaly symbols**

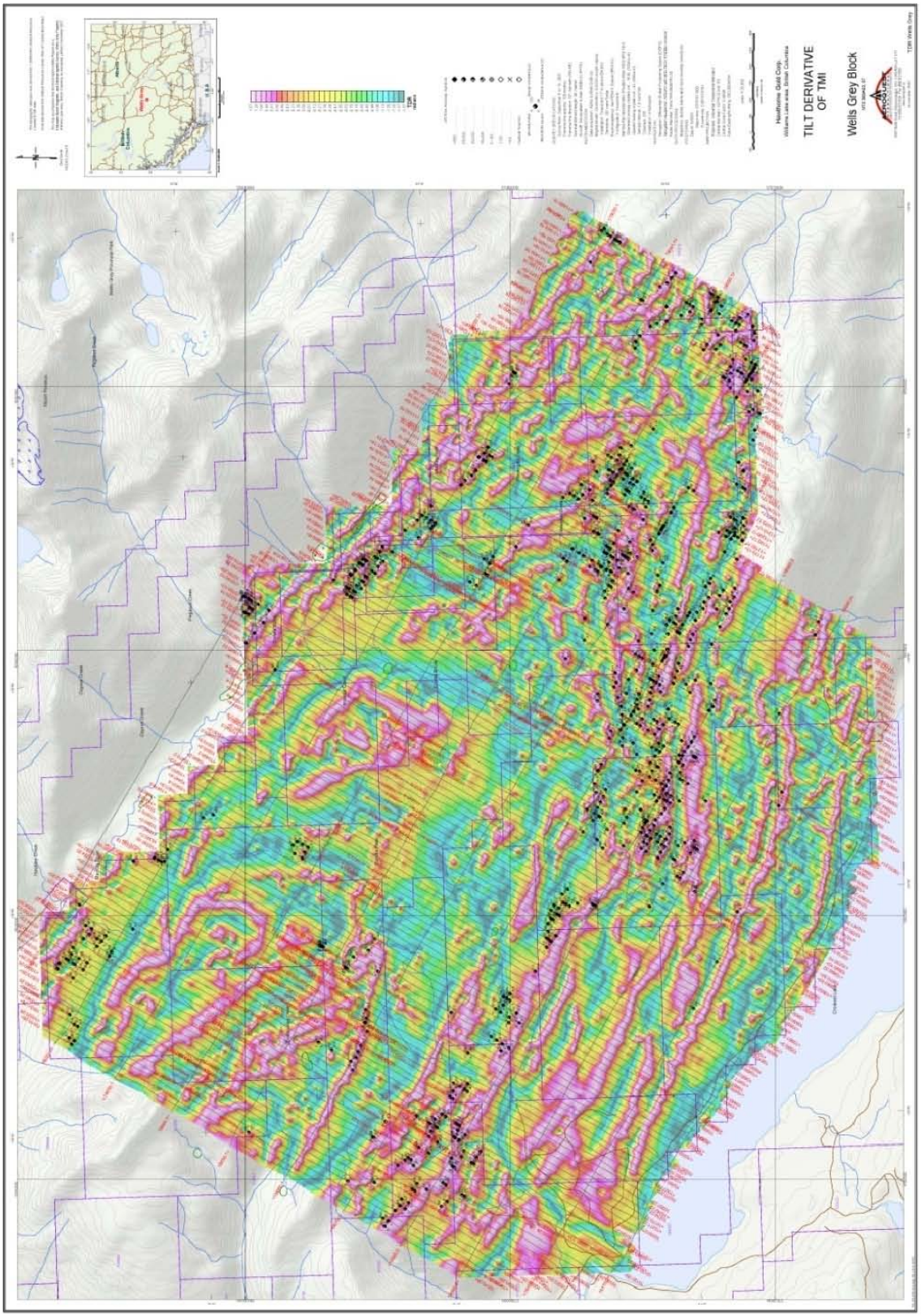


Figure 5 **EM – AeroTEM off-time profiles Z5-Z15 and EM anomaly symbols**

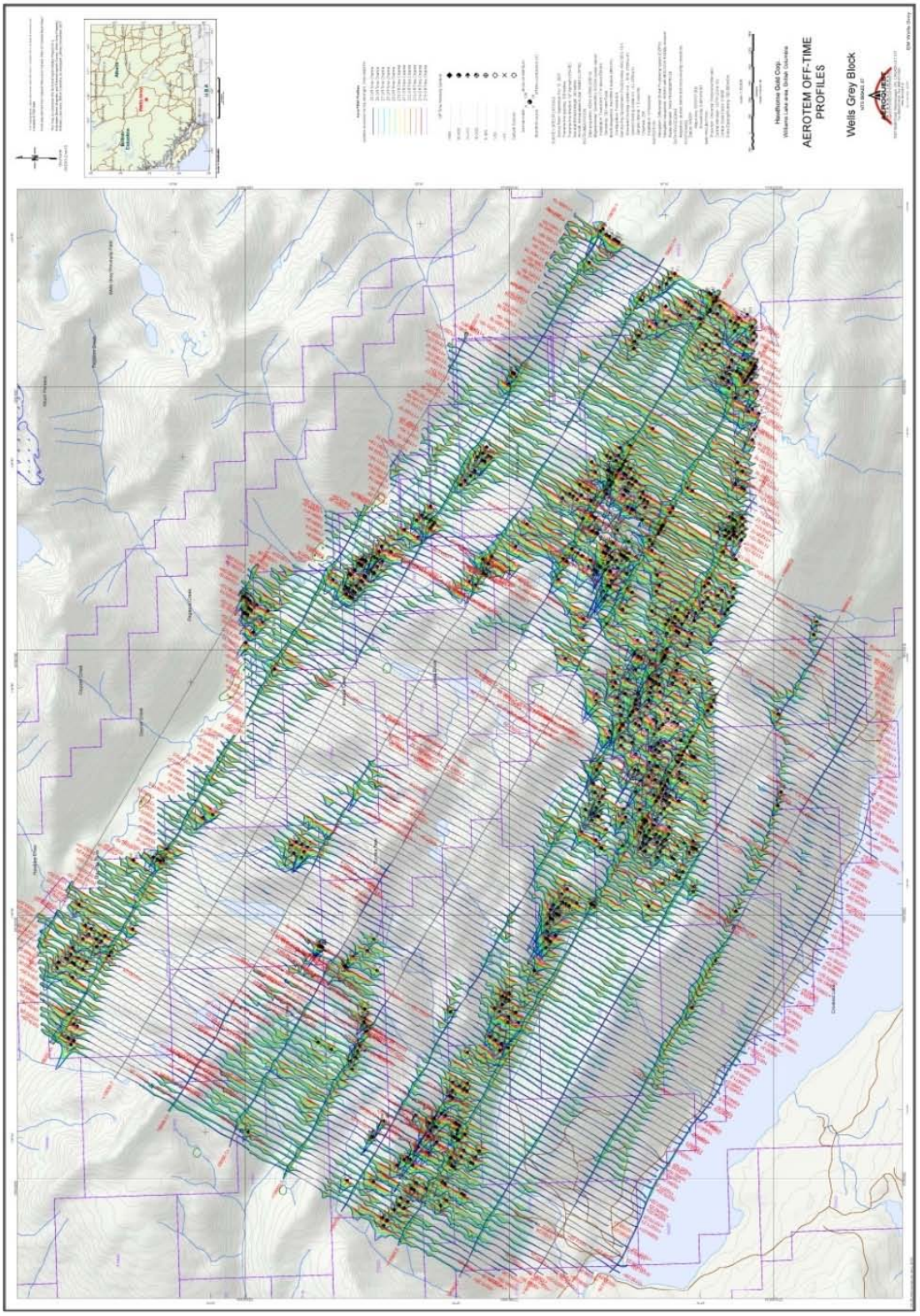


Figure 6 **ACTA – AeroTEM Conductor Trending Algorithm and EM anomaly symbols**

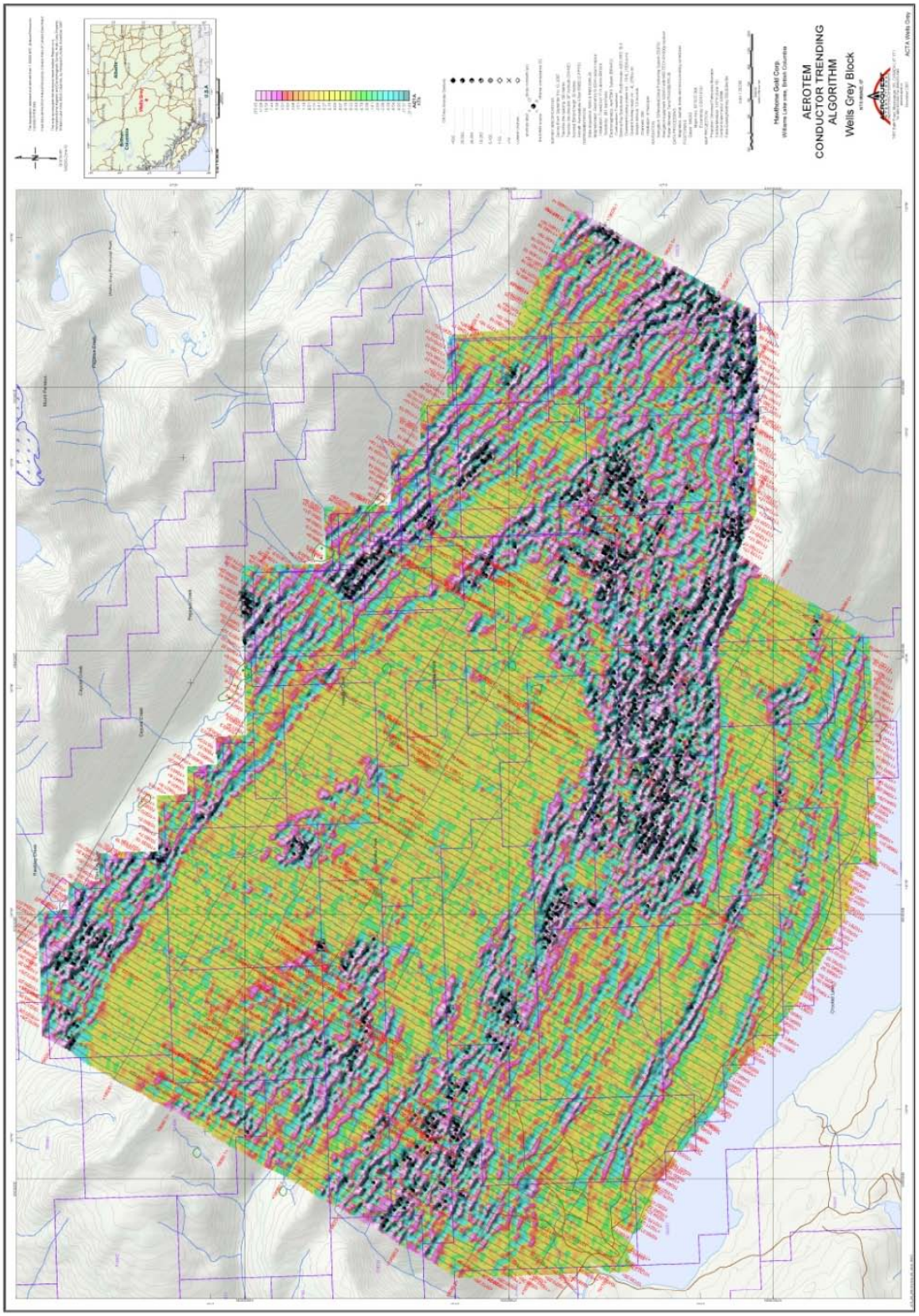


Figure 7 **RADeK – Gamma Ray Spectrometer, Equivalent Potassium (eK%)**

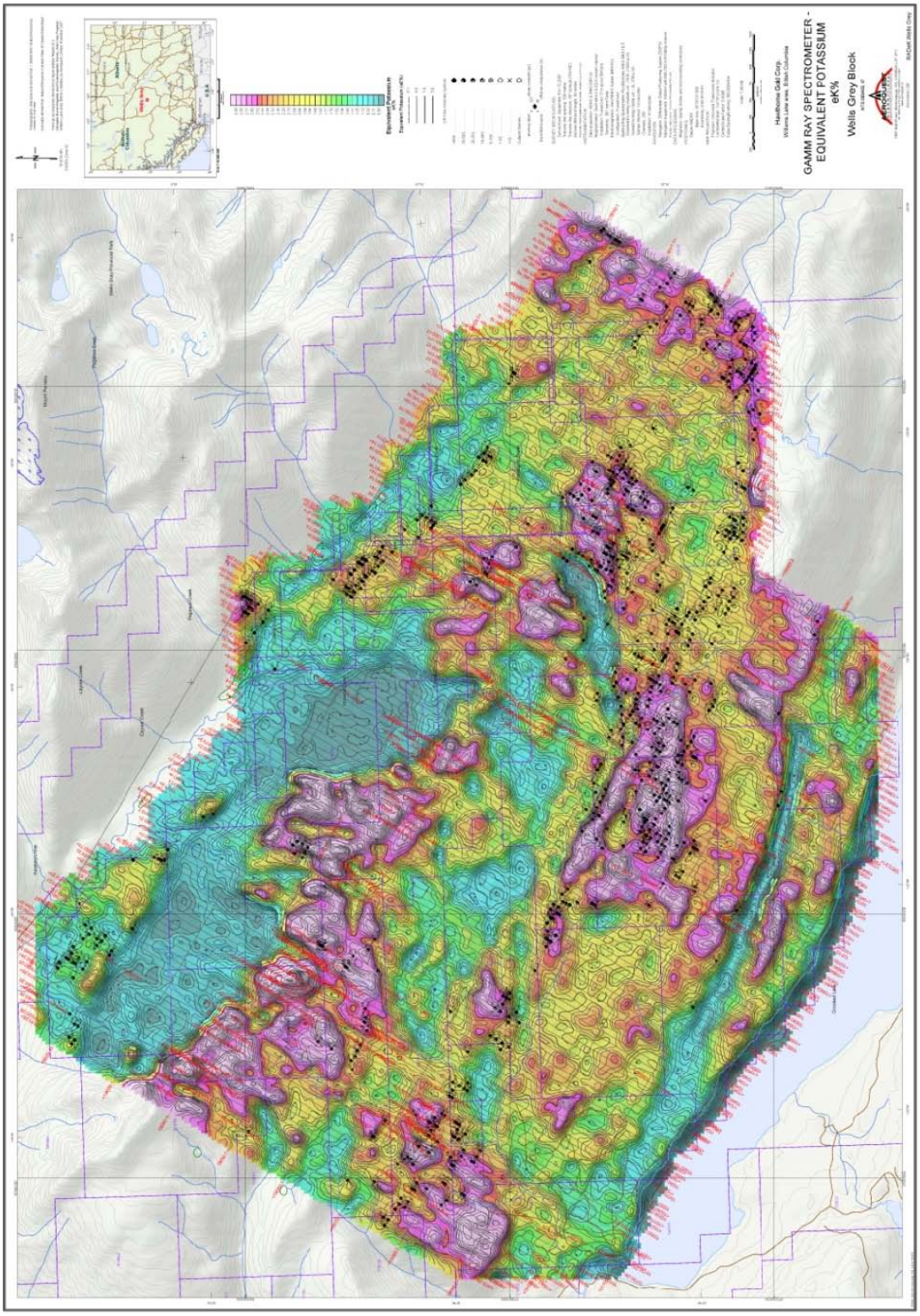


Figure 8 RADeTHK – Gamma Ray Spectrometer, Equivalent Thorium/Potassium Ratio (eTh/K%)

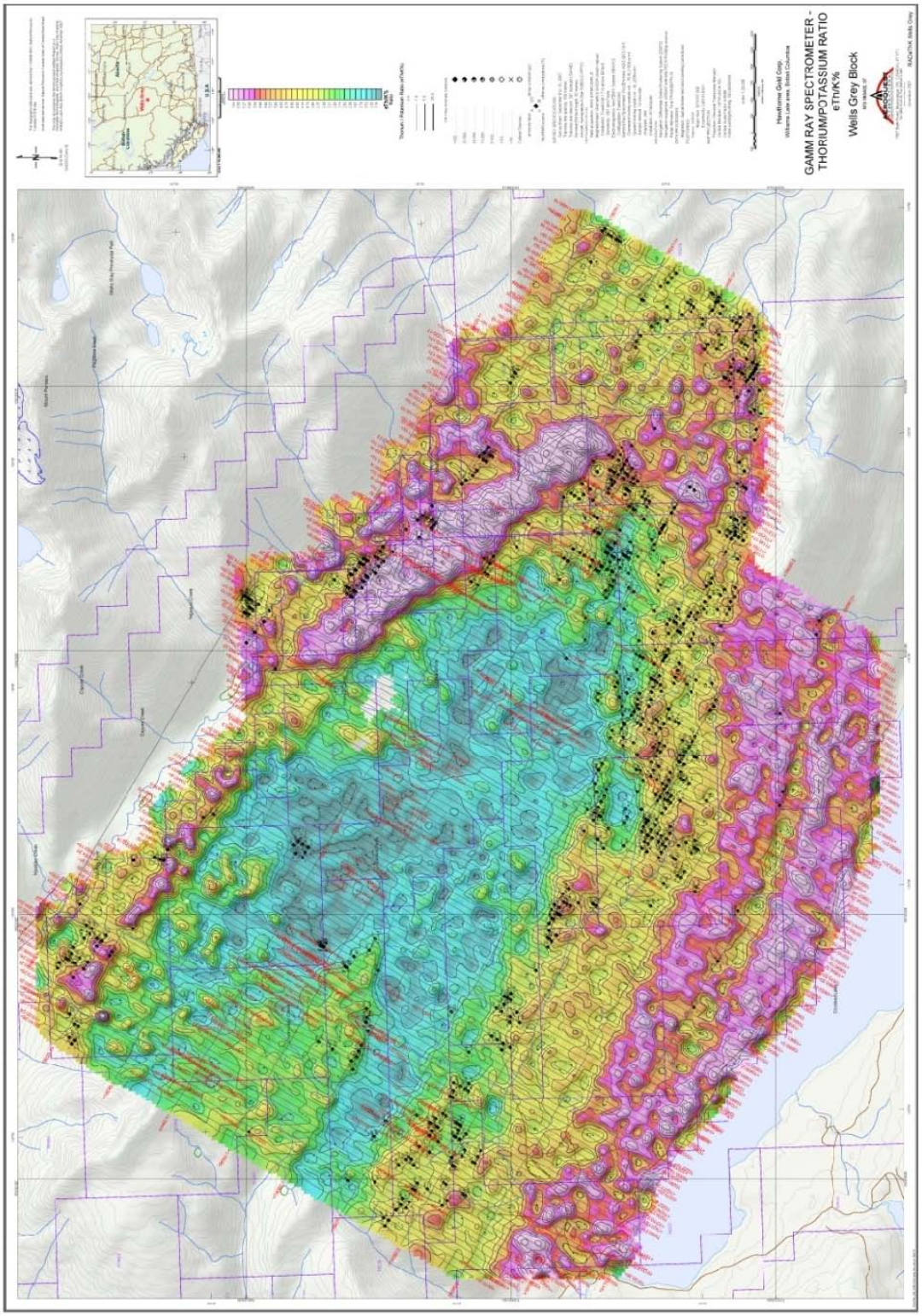
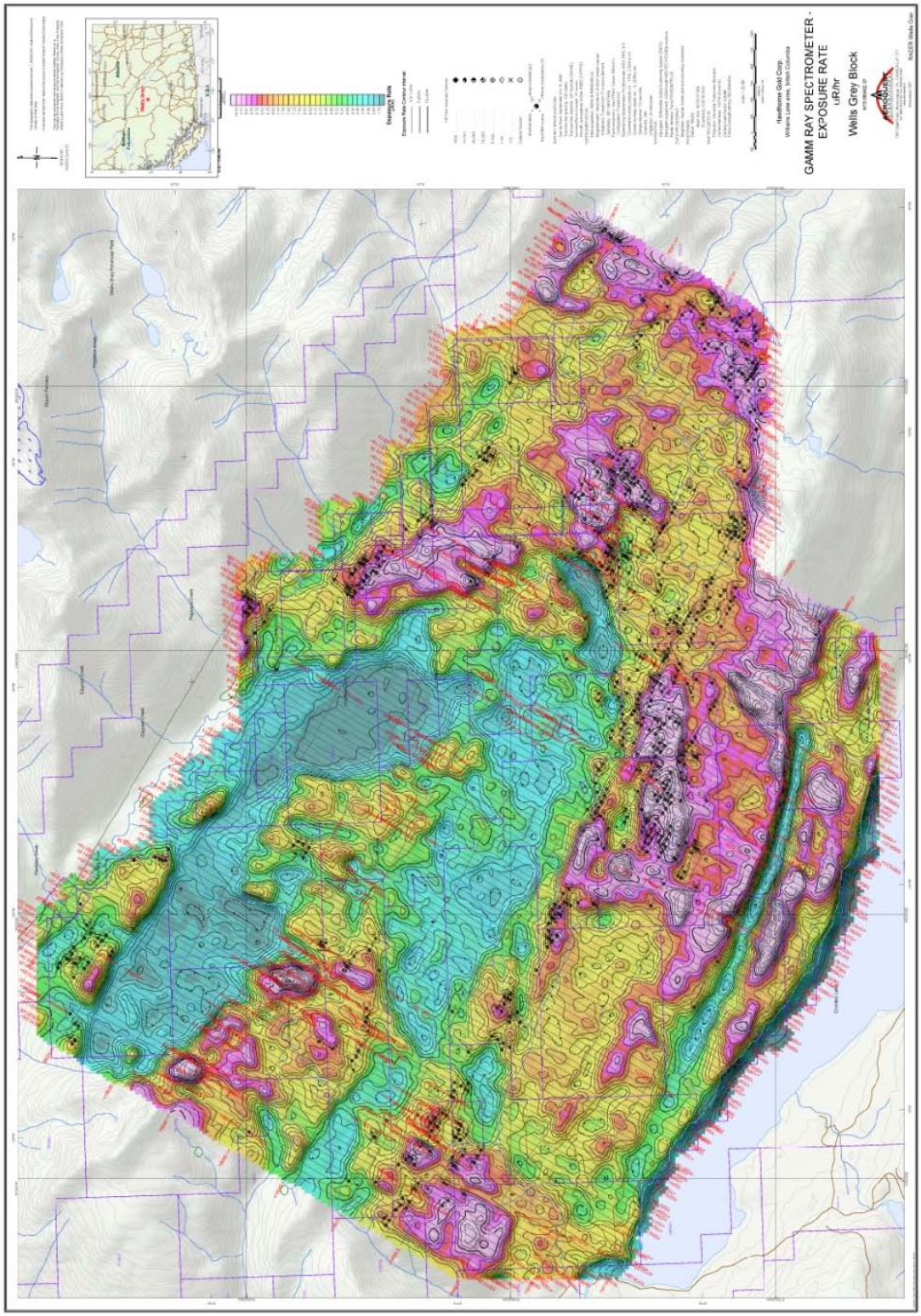


Figure 9 **RADER – Gamma Ray Spectrometer, Exposure Rates**



Report on a Helicopter-Borne AeroTEM System Electromagnetic, Magnetic and Radiometric Survey

Aeroquest Job # 08018

Wells Grey Project

Williams Lake Area, British Columbia, Canada
NTS 093A02,07

For

HAWTHORNE GOLD CORP.

by

AEROQUEST INTERNATIONAL
ADVANCED AIRBORNE GEOPHYSICS

7687 Bath Road,
Mississauga, ON, L4T 3T1
Tel: (905) 672-9129
Fax: (905) 672-7083
www.aeroquest.ca

Report date: November 2007

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- RADeTHK - Gamma Ray Spectrometer, Equivalent Thorium/Potassium Ratio (eTh/K%)
- RADER – Gamma Ray Spectrometer, Exposure Rate.

1. INTRODUCTION

This report describes a helicopter-borne geophysical survey carried out on behalf of Hawthorne Gold Corp. over their Wells Grey Project, Williams Lake area, British Columbia.

The principal geophysical sensor is Aeroquest's exclusive AeroTEM II (Bravo) time domain helicopter electromagnetic system which is employed in conjunction with a high-sensitivity caesium vapour magnetometer. The secondary sensor was Aeroquest's Airborne Gamma Ray Spectrometer (AGRS) system. The AGRS system utilizes four (4) downward looking NaI crystals used as the main gamma-ray sensors and one upward looking crystal for monitoring non-geologic sources. Ancillary equipment includes a real-time differential GPS navigation system, radar altimeter, video recorder, and a base station magnetometer. Full-waveform streaming EM data is recorded at 36,000 samples per second. The streaming data comprise the transmitted waveform, and the X component and Z component of the resultant field at the receivers. A secondary acquisition system (RMS) records the ancillary data.

The total survey coverage is 1348.5 line-km, of which 1318.6 line-km fell within the defined project area (Appendix 1). The survey was flown at 100 metre line spacing and in a NE-SW survey flight direction. The survey flying described in this report took place from September 6th – 13th, 2007. This report describes the survey logistics, the data processing, presentation, and provides the specifications of the survey.

2. SURVEY AREA

The Project area (Figure 1) is located in central British Columbia 230km southeast of Prince George and Williams Lake, 100km to the west. Towns closer to the area include Black Creek 30 km west and Horsefly 50 km west.

The survey is made up of a single block (118 km²) over rugged, mountainous terrain. Elevations ranged from 930 - 2300 m. NW-SE trending Crooked Lake runs along the south west boundary of the block. Project accessibility was by helicopter only.

There are 37 mining claims either wholly or partially covered by the survey. Claims are of various ownership and full details are outlined in Appendix 2.

The base of survey operations and crew accommodation was in Horsefly and a fuel cache was located at 52º 21.314N, 120º 38.763 W.

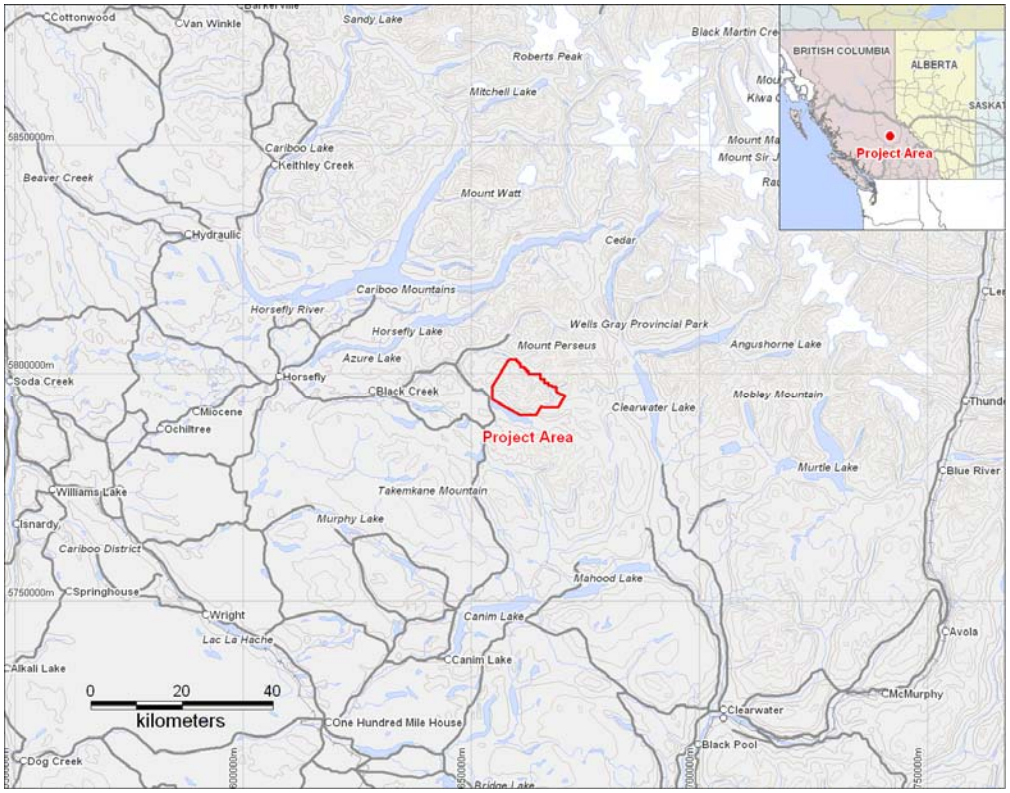


Figure 1. Project Area

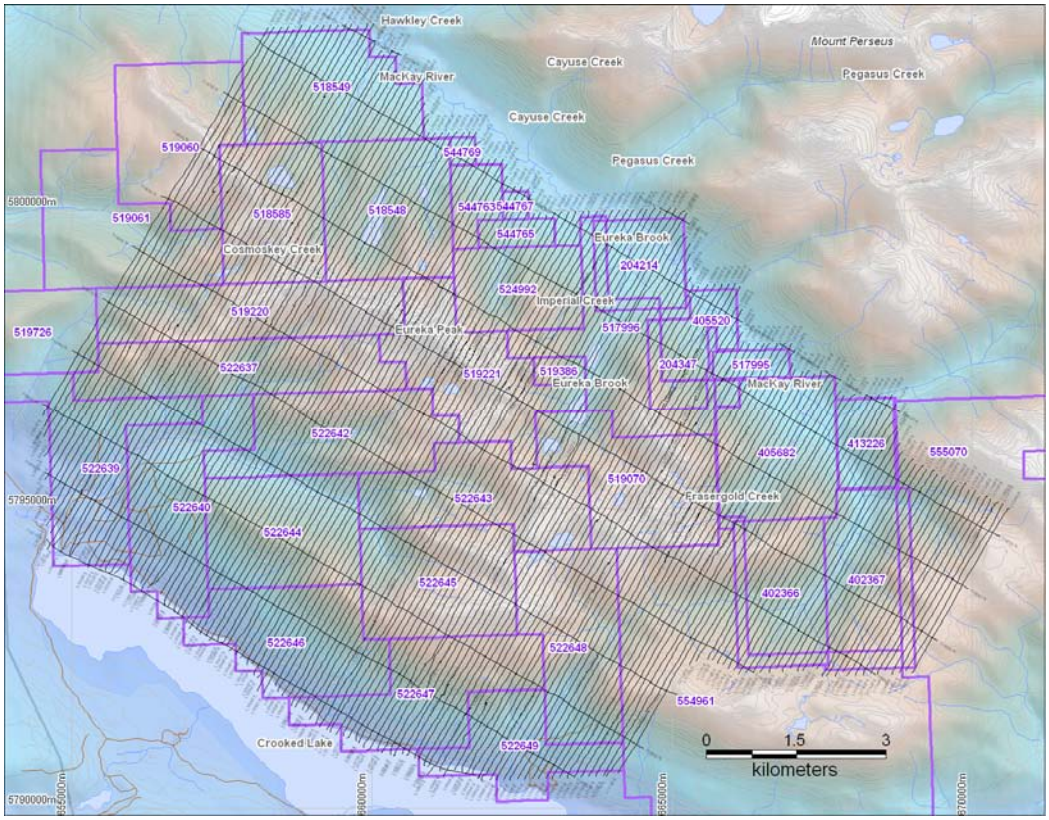


Figure 2. Project flight path and mining claims over shaded topography

3. SURVEY SPECIFICATIONS AND PROCEDURES

The survey specifications are summarised in the following table:

Project Name	Line Spacing (metres)	Line Direction	Survey Coverage (line-km)	Date flown
Wells Grey	100	NE-SW (30º)	1348.5	September 6th – 13th, 2007

Table 1. Survey specifications summary

The survey coverage was calculated by adding up the along-line distance of the survey lines and control (tie) lines as presented in the final Geosoft database. The survey was flown with a line spacing of 100 metres. The control (tie) lines were flown perpendicular to the survey lines with a spacing of 1000 metres.

The nominal EM bird terrain clearance is 30 metres, but can be higher in more rugged terrain due to safety considerations and the capabilities of the aircraft. The magnetometer sensor is mounted in a smaller bird connected to the tow rope 17 metres above the EM bird and 21 metres below the helicopter (Figure 4). A second magnetometer is installed on the tail of the EM bird. Nominal survey speed over relatively flat terrain is 75 km/hr and is generally lower in rougher terrain. Scan rates for ancillary data acquisition is 0.1 second for the magnetometer and altimeter, and 0.2 second for the GPS determined position. The EM data is acquired as a data stream at a sampling rate of 36,000 samples per second and is processed to generate final data at 10 samples per second. The 10 samples per second translate to a geophysical reading about every 1.5 to 2.5 metres along the flight path.

3.1. NAVIGATION

Navigation is carried out using a GPS receiver, an AGNAV2 system for navigation control, and an RMS DGR-33 data acquisition system which records the GPS coordinates. The x-y-z position of the aircraft, as reported by the GPS, is recorded at 0.2 second intervals. The system has a published accuracy of under 3 metres. A recent static ground test of the Mid-Tech WAAS GPS yielded a standard deviation in x and y of under 0.6 metres and for z under 1.5 metres over a two-hour period.

3.2. SYSTEM DRIFT

Unlike frequency domain electromagnetic systems, the AeroTEM II system has negligible drift due to thermal expansion. The operator is responsible for ensuring the instrument is properly warmed up prior to departure and that the instruments are operated properly throughout the flight. The operator maintains a detailed flight log during the survey noting the times of the flight and any unusual geophysical or topographic features. Each flight included at least two high elevation ‘background’ checks. During the high elevation checks, an internal 5 second wide calibration pulse in all EM channels was generated in order to ensure that the gain of the system remained constant and within specifications.

3.3. FIELD QA/QC PROCEDURES

On return of the pilot and operator to the base, usually after each flight, the AeroDAS streaming EM data and the RMS data are carried on removable hard drives and FlashCards, respectively and transferred to the data processing work station. At the end of each day, the base station magnetometer data on FlashCard is retrieved from the base station unit.

Data verification and quality control includes a comparison of the acquired GPS data with the flight plan; verification and conversion of the RMS data to an ASCII format XYZ data file; verification of the base station magnetometer data and conversion to ASCII format XYZ data; and loading, processing and conversion of the steaming EM data from the removable hard drive. All data is then merged to an ASCII XYZ format file which is then imported to an Oasis database for further QA/QC and for the production of preliminary EM, magnetic contour, and flight path maps.

Survey lines which show excessive deviation from the intended flight path are re-flown. Any line or portion of a line on which the data quality did not meet the contract specification was noted and reflown.

4. AIRCRAFT AND EQUIPMENT

4.1. AIRCRAFT

A Eurocopter (Aerospatiale) AS350B2 "A-Star" helicopter - registration C-FPTG was used as survey platform. The helicopter was owned and operated by Hi-Wood Helicopters, Calgary, Alberta. Installation of the geophysical and ancillary equipment was carried out by Aeroquest Limited personnel in conjunction with a licensed aircraft. The survey aircraft was flown at a nominal terrain clearance of 220 ft (65 metres).

Figure 3. Helicopter registration number C-FPTG

4.2. MAGNETOMETER

The AeroTEM II airborne survey system employs the Geometrics G-823A cesium vapour magnetometer sensor installed in a two metre towed bird airfoil attached to the main tow line, 21 metres below the helicopter (Figure 4). The sensitivity of the magnetometer is 0.001 nanoTesla at a 0.1 second sampling rate. The nominal ground clearance of the magnetometer bird is 51 metres (170 ft.). The magnetic data is recorded at 10 Hz by the RMS DGR-33.

4.3. MAGNETOMETER II

In addition to the main magnetometer bird on the main tow line, the AeroTEM II system includes an additional G-828A magnetometer installed on the tail of the EM bird (Figure 4).

The sensor is located 37 metres below the helicopter and has a superior nominal terrain clearance of 31 m. Data is recorded at 300 samples a second and down sampled to 10 Hz by the AeroDAS acquisition system.

Figure 4. AeroTEM II EM bird. Arrow indicates the location of the second cesium magnetometer sensor.

4.4. ELECTROMAGNETIC SYSTEM

The electromagnetic system is an Aeroquest AeroTEM II time domain towed-bird system (Figure 4, Figure 5). The current AeroTEM II transmitter dipole moment is 38.8 kNIA. The AeroTEM bird is towed 38 metres (125 ft) below the helicopter. More technical details of the system may be found in Appendix 4.

The wave-form is triangular with a symmetric transmitter on-time pulse of 1.10 ms and a base frequency of 150 Hz (Figure 5). The current alternates polarity every on-time pulse. During every Tx on-off cycle (300 per second), 120 contiguous channels of raw X and Z component (and a transmitter current monitor, itx) of the received waveform are measured. Each channel width is 27.78 microseconds starting at the beginning of the transmitter pulse. This 120 channel data is referred to as the raw streaming data. The AeroTEM system has two separate EM data recording streams, the conventional RMS DGR-33 and the AeroDAS system which records the full waveform (Figure 6).

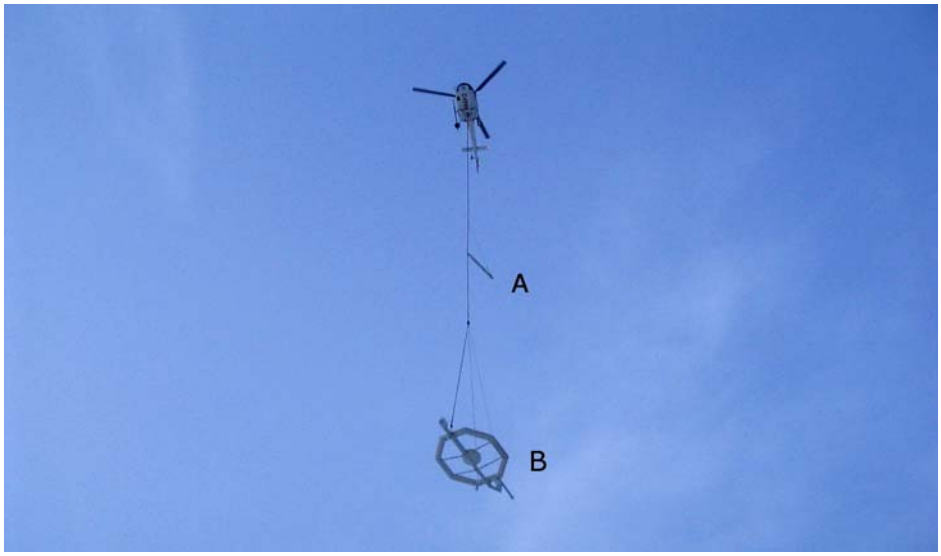


Figure 5. The magnetometer bird (A) and AeroTEM II EM bird (B)

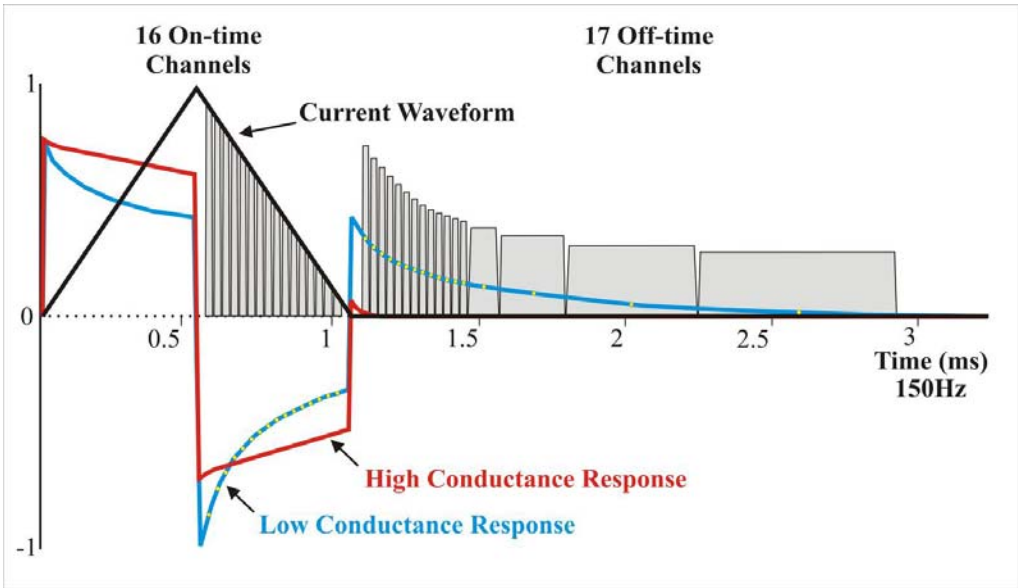


Figure 6. Schematic of Transmitter and Receiver waveforms

4.5. AERODAS ACQUISITION SYSTEM

The 120 channels of raw streaming data are recorded by the AeroDAS acquisition system (Figure 7) onto a removable hard drive. The streaming data are processed post-survey to yield 33 stacked and binned on-time and off-time channels at a 10 Hz sample rate. The timing of the final processed EM channels is described in the following table:

```
Average TxOn      0.7653 us
Average TxSwitch  586.5110 us
Average TxOff     1130.0349 us
```

Channel	Sample Range	Time Width (us)	Time Center (us)	Time After TxOn (us)
On1	3 - 3	27.778	69.444	68.679
On2	4 - 4	27.778	97.222	96.457
On3	5 - 5	27.778	125.000	124.235
On4	6 - 6	27.778	152.778	152.012
On5	7 - 7	27.778	180.556	179.790
On6	8 - 8	27.778	208.333	207.568
On7	9 - 9	27.778	236.111	235.346
On8	10 - 10	27.778	263.889	263.124
On9	11 - 11	27.778	291.667	290.901
On10	12 - 12	27.778	319.444	318.679
On11	13 - 13	27.778	347.222	346.457
On12	14 - 14	27.778	375.000	374.235
On13	15 - 15	27.778	402.778	402.012
On14	16 - 16	27.778	430.556	429.790
On15	17 - 17	27.778	458.333	457.568
On16	18 - 18	27.778	486.111	485.346

Channel	Sample Range	Time Width (us)	Time Center (us)	Time After TxOff (us)
Off0	43 - 43	27.778	1180.556	50.521
Off1	44 - 44	27.778	1208.333	78.298
Off2	45 - 45	27.778	1236.111	106.076
Off3	46 - 46	27.778	1263.889	133.854
Off4	47 - 47	27.778	1291.667	161.632
Off5	48 - 48	27.778	1319.444	189.410
Off6	49 - 50	55.556	1361.111	231.076
Off7	51 - 52	55.556	1416.667	286.632
Off8	53 - 54	55.556	1472.222	342.187
Off9	55 - 56	55.556	1527.778	397.743
Off10	57 - 59	83.333	1597.222	467.187
Off11	60 - 62	83.333	1680.556	550.521
Off12	63 - 66	111.111	1777.778	647.743
Off13	67 - 72	166.667	1916.667	786.632
Off14	73 - 80	222.222	2111.111	981.076
Off15	81 - 93	361.111	2402.778	1272.743
Off16	94 - 113	555.556	2861.111	1731.076

4.6. RMS DGR-33 ACQUISITION SYSTEM

In addition to the magnetics, altimeter and position data, six channels of real time processed off-time EM decay in the Z direction and one in the X direction are recorded by the RMS DGR-33 acquisition system at 10 samples per second and plotted real-time on the analogue chart recorder. These channels are derived by a binning, stacking and filtering procedure on the raw streaming data. The primary use of the RMS EM data (Z1 to Z6, X1) is to provide for real-time QA/QC on board the aircraft.

The channel window timing of the RMS DGR-33 6 channel system is described in the table below.

RMS Channel	Start time (µs)	End time (µs)	Width (µs)	Streaming Channels
Z1, X1	1269.8	1322.8	52.9	48-50
Z2	1322.8	1455.0	132.2	50-54
Z3	1428.6	1587.3	158.7	54-59
Z4	1587.3	1746.0	158.7	60-65
Z5	1746.0	2063.5	317.5	66-77
Z6	2063.5	2698.4	634.9	78-101

Figure 7. AeroTEM II Instrument Rack., including AeroDAS and RMS DGR-33 systems, AeroTEM power supply, data acquisition computer and AG-NAV2 navigation system.

4.7. AIRBORNE GAMMA RAY SPECTROMETER (AGRS) SYSTEM

The Aeroquest AGRS system consists of a GRS410 sensor pack (Figure 4) and a acquisition system designed and manufactured by Pico Envirotec. The sensor pack was installed on the port side basket of the Lama aircraft, and was installed in the cabin of the UH-1 aircraft. The system has 4 downward looking NaI crystals used as the main sensors and 1 upward looking crystal for monitoring non-geologic sources. The system features automatic peak detection and real-time calibration to ensure spectrum stability and a high quality final product. The full spectrum is recorded (256 or 512 channels) to allow for subsequent noise reduction processing such as NASVD. The data are processed to produce the standard IAGA ROI channels – Total Count, Potassium, Uranium and Thorium. The potassium, and equivalent uranium and thorium concentrations are also derived and ratios of these concentrations are computed to enhance the interpretation of the survey results.

Figure 8. Aeroquest AGRS system. A. AGRS Sensor (Crystal Pack), B. Data acquisition computer.

4.8. MAGNETOMETER BASE STATION

The base magnetometer was a Geometrics G-859 cesium vapour magnetometer system with integrated GPS. Data logging and UTC time synchronisation was carried out within the magnetometer, with the GPS providing the timing signal. The data logging was configured to measure at 1.0 second intervals. Digital recording resolution was 0.001 nT. The sensor was placed on a tripod in an area of low magnetic gradient and free of cultural noise sources. A continuously updated display of the base station values was available for viewing and regularly monitored to ensure acceptable data quality and diurnal variation.

4.9. RADAR ALTIMETER

A Terra TRA 3500/TRI-30 radar altimeter is used to record terrain clearance. The antenna was mounted on the outside of the helicopter beneath the cockpit. Therefore, the recorded data reflect the height of the helicopter above the ground. The Terra altimeter has an altitude accuracy of +/- 1.5 metres.

4.10. VIDEO TRACKING AND RECORDING SYSTEM

A high resolution digital colour 8 mm video camera is used to record the helicopter ground flight path along the survey lines. The video is digitally annotated with GPS position and time and can be used to verify ground positioning information and cultural causes of anomalous geophysical responses.

Figure 9. Digital video camera typical mounting location.

4.11. GPS NAVIGATION SYSTEM

The navigation system consists of an Ag-Nav Incorporated AG-NAV2 GPS navigation system comprising a PC-based acquisition system, navigation software, a deviation indicator in front of the aircraft pilot to direct the flight, a full screen display with controls in front of the operator, a Mid-Tech RX400p WAAS-enabled GPS receiver mounted on the instrument rack and an antenna mounted on the magnetometer bird. WAAS (Wide Area Augmentation System) consists of approximately 25 ground reference stations positioned across the United States that monitor GPS satellite data. Two master stations located on the east and west coasts collect data from the reference stations and create a GPS correction message. This correction accounts for GPS satellite orbit and clock drift plus signal delays caused by the atmosphere and ionosphere. The corrected differential message is then broadcast through one of two geostationary satellites, or satellites with a fixed position over the equator. The corrected position has a published accuracy of less than 3 metres.

Survey co-ordinates are set up prior to the survey and the information is fed into the airborne navigation system. The co-ordinate system employed in the survey design was WGS84 [World] using the UTM zone 10N projection. The real-time differentially corrected GPS positional data was recorded by the RMS DGR-33 in geodetic coordinates (latitude and longitude using WGS84) at 0.2 s intervals.

4.12. DIGITAL ACQUISITION SYSTEM

The AeroTEM received waveform sampled during on and off-time at 120 channels per decay, 300 times per second, was logged by the proprietary AeroDAS data acquisition system. The channel sampling commences at the start of the Tx cycle and the width of each channel is 27.778 microseconds. The streaming data was recorded on a removable hard-drive and was later backed-up onto DVD-ROM from the field-processing computer.

The RMS Instruments DGR33A data acquisition system was used to collect and record the analogue data stream, i.e. the positional and secondary geophysical data, including processed 6 channel EM, magnetics, radar altimeter, GPS position, and time. The data was recorded on 128 Mb capacity FlashCard. The RMS output was also directed to a thermal chart recorder.

5. PERSONNEL

The following Aeroquest personnel were involved in the project:

- Manager of Operations: Bert Simon
- Manager of Data Processing: Gord Smith
- Field Data Processors: Emilio Schein, Eicka Alinne Solano
- Field Operators: David McKenna, Gabriel Genier
- Data Interpretation and Reporting: Geoff Plastow, Dak Darbha, Eric Steffler, Marion Bishop

The survey pilots, Paul Kendall and Ted Slavin, were employed directly by the helicopter operator – Hi-Wood Hellicopters.

6. DELIVERABLES

6.1. HARDCOPY DELIVERABLES

The report includes a set of ten 1:20,000 maps. The survey area is covered by a single map plate and seven geophysical data products are delivered as listed below:

- TMI – Coloured Total Magnetic Intensity (TMI) with line contours and EM anomaly symbols.
- TDR – Tilt Derivative of TMI and EM anomaly symbols
- EM – AeroTEM off-time profiles Z5 – Z15 and EM anomaly symbols.
- ACTA – AeroTEM Conductor Trending Algorithm and EM anomaly symbols.
- RADeK – Gamma Ray Spectrometer, Equivalent Potassium (eK%)
- RADeTHK - Gamma Ray Spectrometer, Equivalent Thorium/Potassium Ratio (eTh/K%)
- RADER – Gamma Ray Spectrometer, Exposure Rate

The coordinate/projection system for the maps is NAD83 – UTM Zone 10N. For reference, the latitude and longitude in WGS84 are also noted on the maps.

All the maps show flight path trace, skeletal topography, and conductor picks represented by an anomaly symbol classified according to calculated off-time conductance. The anomaly symbol is accompanied by postings denoting the calculated off-time conductance, a thick or thin classification and an anomaly identifier label. The anomaly symbol legend and survey specifications are displayed on the left margin of the maps.

6.2. DIGITAL DELIVERABLES

6.2.1. Final Database of Survey Data (.GDB, .XYZ)

The geophysical profile data is archived digitally in a Geosoft GDB binary format database. A description of the contents of the individual channels in the database can be found in Appendix 2. A copy of this digital data is archived at the Aeroquest head office in Mississauga.

6.2.2. Geosoft Grid files (.GRD)

Levelled Grid products used to generate the geophysical map images. Cell size for all grid files is 20 metres.

- Total Magnetic Intensity lower sensor (Magf)
- AeroTEM Conductor Trending Algorithm (ACTA)
- AeroTEM Z Offtime Channel 1 (Zoff1)
- Tilt Derivative of TMI (Magf_TDR)
- Gamma Ray Spectrometer – Total Counts (Counts)
- Gamma Ray Spectrometer – Equivalent Thorium/Potassium Ratio (Equiv_Th_K)
- Gamma Ray Spectrometer – Equivalent Uranium/Thorium Ratio (Equiv_U_K)
- Gamma Ray Spectrometer – Potassium (Counts_K, Equiv_K)
- Gamma Ray Spectrometer – Thorium (Counts_Th, Equiv_Th)
- Gamma Ray Spectrometer – Uranium (Counts_U, Equiv_U)
- Gamma Ray Spectrometer – Exposure rate (Exp_Rate)

6.2.3. Digital Versions of Final Maps (.MAP, .PDF)

Map files in Geosoft .map and Adobe PDF format.

6.2.4. Google Earth Survey Navigation Files (.KML)

Flight navigation lines in Google earth KML format. Double click to view flight lines in Google Earth.

6.2.5. Free Viewing Software (.EXE)

- Geosoft Oasis Montaj Viewing Software
- Adobe Acrobat Reader
- Google Earth Viewer

6.2.6. Digital Copy of this Document (.PDF)

Adobe PDF format of this document.

7. DATA PROCESSING AND PRESENTATION

All in-field and post-field data processing was carried out using Aeroquest proprietary data processing software and Geosoft Oasis Montaj software. Maps were generated using 36-inch wide Hewlett Packard ink-jet plotters.

7.1. BASE MAP

The geophysical maps accompanying this report are based on positioning in the NAD83 datum. The survey geodetic GPS positions have been projected using the Universal Transverse Mercator projection in Zone 10 North. A summary of the map datum and projection specifications is given following:

- Ellipse: GRS 1980
- Ellipse major axis: 6378137m eccentricity: 0.081819191
- Datum: North American 1983 - Canada Mean
- Datum Shifts (x,y,z) : 0, 0, 0 metres
- Map Projection: Universal Transverse Mercator Zone 10 (Central Meridian 123ºW)
- Central Scale Factor: 0.9996

- False Easting, Northing: 500,000m, 0m

For reference, the latitude and longitude in WGS84 are also noted on the maps.

The background vector topography was sourced from Natural Resources Canada 1:50000 National Topographic Data Base data and the background shading was derived from NASA Shuttle Radar Topography Mission (SRTM) 90 metre resolution DEM data.

7.2. FLIGHT PATH & TERRAIN CLEARANCE

The position of the survey helicopter was directed by use of the Global Positioning System (GPS). Positions were updated five times per second (5 Hz) and expressed as WGS84 latitude and longitude calculated from the raw pseudo range derived from the C/A code signal. The instantaneous GPS flight path, after conversion to UTM co-ordinates, is drawn using linear interpolation between the x/y positions. The terrain clearance was maintained with reference to the radar altimeter. The raw Digital Terrain Model (DTM) was derived by taking the GPS survey elevation and subtracting the radar altimeter terrain clearance values. The calculated topography elevation values are relative and are not tied in to surveyed geodetic heights.

Each flight included at least two high elevation 'background' checks. These high elevation checks are to ensure that the gain of the system remained constant and within specifications.

7.3. ELECTROMAGNETIC DATA

The raw streaming data, sampled at a rate of 36,000 Hz (120 channels, 300 times per second) was reprocessed using a proprietary software algorithm developed and owned by Aeroquest Limited. Processing involves the compensation of the X and Z component data for the primary field waveform. Coefficients for this compensation for the system transient are determined and applied to the stream data. The stream data are then pre-filtered, stacked, binned to the 33 on and off-time channels and checked for the effectiveness of the compensation and stacking processes. The stacked data is then filtered, levelled and split up into the individual line segments. Further base level adjustments may be carried out at this stage. The filtering of the stacked data is designed to remove or minimize high frequency noise that can not be sourced from the geology.

The final field processing step was to merge the processed EM data with the other data sets into a Geosoft GDB file. The EM fiducial is used to synchronize the two datasets. The processed channels are merged into 'array format; channels in the final Geosoft database as Zon, Zoff, Xon, and Xoff.

Apparent bedrock EM anomalies were interpreted with the aid of an auto-pick from positive peaks and troughs in the off-time Z channel responses correlated with X channel responses. The auto-picked anomalies were reviewed and edited by a geophysicist on a line by line basis to discriminate between thin and thick conductor types. Anomaly picks locations were migrated and removed as required. This process ensures the optimal representation of the conductor centres on the maps.

At each conductor pick, estimates of the off-time conductance have been generated based on a horizontal plate source model for those data points along the line where the response amplitude is sufficient to yield an acceptable estimate. Some of the EM anomaly picks do not display a Tau value; this is due to the inability to properly define the decay of the conductor usually because of low signal amplitudes. Each conductor pick was then classified according to a set of seven ranges of calculated off-time conductance values. For high conductance sources, the on-time conductance values may be used, since it provides a more accurate

measure of high-conductance sources. Each symbol is also given an identification letter label, unique to each flight line. Conductor picks that did not yield an acceptable estimate of off-time conductance due to a low amplitude response were classified as a low conductance source. Please refer to the anomaly symbol legend located in the margin of the maps.

7.4. MAGNETIC DATA

Prior to any levelling the magnetic data was subjected to a lag correction of -0.1 seconds and a spike removal filter. The filtered aeromagnetic data were then corrected for diurnal variations using the magnetic base station and the intersections of the tie lines. No corrections for the regional reference field (IGRF) were applied. The corrected profile data were interpolated on to a grid using a bi-directional grid technique with a grid cell size of 20 metres. The final levelled grid provided the basis for threading the presented contours which have a minimum contour interval of 25 nT.

7.5. RADIOMETRIC DATA

7.5.1. Equipment and General Adherence to IAEA Standards

Aeroquest Limited generally adopts the standards for airborne gamma-ray spectrometry (the radiometric method) as laid out in the IAEA Technical Report 323 – Airborne Gamma-Ray Spectrometry Surveying.

7.5.2. Spectral Calibration

When calibrated (with thorium source about once a year) linearity of the each detector is measured and linearity correction coefficients are calculated. When operating in real time (collecting data), the linearity of each detector is mathematically corrected for each measurement. Individual detector tracking (tuning) and linearity correction provide better fit of the individual spectra that are being summed and therefore a sharper (better resolution) spectrum is obtained.

Calibration of the 5 detectors was carried out on September 22, 2007 as follows:

Crystal	S/N	Cs resolution (%)
1	SAM359	7.9
2	SAM358	8.4
3	SAM355	8.4
4	SAM357	8.4
5	SAM356	9.1

7.5.3. Data Quality Assurance and Control

The spectrometer data are referenced to the other ancillary data sets using the Pico Envirotec data acquisition system (Figure 4). After each flight, preliminary ROI channels are generated and profiles are then plotted from the digital data to check for any missing data, spikes or data corrupted by other noise sources. Where necessary, the data are corrected or flagged for re-flight depending on the severity or duration of the noise.

7.5.4. Dead-time Correction

Generally, the first data reduction step for radiometric data is dead-time correction. Because the GRS-10 dead time is virtually nil, this correction is only applied where the total count rates are extremely high. Dead-time correction is made to each window using the expression N=n/(1-T) where N is the corrected count; n is the raw recorded count; and T is the dead-time.

7.5.5. Filtering to Prepare for Background Corrections

The radar altimeter data are filtered in order to ensure that no noise sources from the altimeter data are introduced to the radiometric data processing. The upward looking data are also filtered to improve the count statistics. A typical filter width ranges from 10 to 20s. In order to establish radon background levels from the upward-looking detector data, temporary heavily filtered upward and downward looking uranium and downward looking thorium data are utilized. The original unfiltered data are, of course, retained. All filtering will be carried out in consultation with the Client Representative if requested by the Client.

7.5.6. Cosmic and Aircraft Background

Cosmic and aircraft background expressions are determined for each spectral window as described in chapter 4 of the IAEA Technical Report 323. The general form of these expressions is N = a + bC, where N is the combined cosmic and aircraft background for each window; a is the aircraft background in the window; C is the cosmic channel count; and b is the cosmic stripping factor for the window.

The expressions are evaluated for each ROI window for each sample and used as a subtractive correction for the data.

7.5.7. Radon Background

Correction of the data for variations in background due to radon is a multi-step process. First, test flights at various elevations over water are carried out in the field to establish the contribution of atmospheric radon to the ROI windows. A least squares analysis of the data from these test flights yields the constants for equations 4.9 to 4.12 (IAEA Report 323). Second, the response of the upward looking detector to radiation from the ground is established. Here a departure from the IAEA Report has been recommended by Grasty and Hovgaard (1996). The expression for the radon component in the downward looking uranium window is given by Ur =(u – a1U – a2T + a2bT – bu)/(au – a1 – a2aT) (see Eq. 4.3 – IAEA 323) where, Ur is the radon background detected in the downward U window; u is the measured count in the upward uranium window; U is the measured count in the downward uranium window; T is the measured count in the downward thorium window; a1, a2, au and aT are proportionality factors; and bu and bT are constants determined experimentally. Using a1 or a2 (see above) in this equation will result in a good estimate of Ur permitting correction of the other ROI windows.

Survey altitude test data will be collected and used to establish atmospheric background and calibrate the upward and downward looking detector systems. Variations in count rates due to soil moisture content and altimeter variations can largely be overcome by a normalization procedure using the thorium count. The procedure correlates the thorium count to the uranium count assuming the contribution to each ROI from the ground is proportional.

7.5.8. Computation of Effective Height Above Ground Level

Radar altimeter data are used in adjusting the stripping ratios for altitude and to carry out the height attenuation corrections. They are then converted to effective height (he) at STP by the expression he = (h * 273.15)/(T + 273.15)* (P/1013), where h is the observed radar altitude; T is the temperature in degrees C; and P is the barometric pressure in mbar.

7.5.9. Compton Stripping Correction

The stripping ratios α, β, γ, a, b and g are determined during tests over calibration pads. The principal ratios a, β and g should be adjusted for temperature, pressure and altitude (above ground) before stripping is carried out. These stripping ratios are used to remove the contribution in each of the three ROI windows from higher energy sources, leaving only the contribution from potassium, uranium and thorium.

7.5.10. Altitude Attenuation Correction

The altitude attenuation correction corrects the data in each of the ROI windows for the effects of altitude. The count rates decrease exponentially with altitude and therefore the counts are corrected to a constant altimeter datum at the nominal survey height of 30m.

7.5.11. Apparent Radioelement Concentrations

The corrected count rate data can be converted to estimate the ground concentrations of each of the three radioelements, potassium, uranium and thorium. The procedure assumes an infinite horizontal slab source geometry with a uniform radioelement concentration. The calculation assumes radioactive equilibrium in the U and Th decay series. Therefore the U and Th concentrations are assigned as equivalent concentrations using the nomenclature eU and eTh.

An estimate of the air absorbed dose rate can be made from the apparent concentrations, K%, eU ppm and eTh ppm.

7.5.12. Computation of Radioelement Ratios

Standard ratioing of the three radioelements (eU/eTh, eU/K and eTh/K) can be carried out and presented in profile or plan map form. In order to ensure statistical confidence in generating these ratios, we generally take the following precautions:

- Reject all data point where the apparent potassium concentration is less than 0.25% as these measurements are likely taken over water.
- Carry out cumulative summing along the survey line of each radioelement, rejecting areas where the summation does not exceed a certain threshold value (usually 10 counts for both numerator and denominator).
- Compute the ratios using the cumulative sums.

8. GENERAL COMMENTS

The survey was successful in mapping the magnetic and conductive properties of the geology throughout the survey area. Below is a brief interpretation of the results. For a detailed interpretation please contact Aeroquest Limited.

8.1. MAGNETIC RESPONSE

The magnetic data provide a high resolution map of the distribution of the magnetic mineral content of the survey area. This data can be used to interpret the location of geological contacts and other structural features such as faults and zones of magnetic alteration. The sources for anomalous magnetic responses are generally thought to be predominantly magnetite because of the relative abundance and strength of response (high magnetic susceptibility) of magnetite over other magnetic minerals such as pyrrhotite.

8.2. EM ANOMALIES

The EM anomalies on the maps are classified by conductance (as described earlier in the report) and also by the thickness of the source. A thin, vertically orientated source produces a double peak anomaly in the z-component response and a positive to negative crossover in the x-component response (Figure 8). For a vertically orientated thick source (say, greater than 10 metres), the response is a single peak in the z-component response and a negative to positive crossover in the x-component response (Figure 9). Because of these differing responses, the AeroTEM system provides discrimination of thin and thick sources and this distinction is indicated on the EM anomaly symbols (N = thin and K = thick). Where multiple, closely spaced conductive sources occur, or where the source has a shallow dip, it can be difficult to uniquely determine the type (thick vs. thin) of the source (Figure 10). In these cases both possible source types may be indicated by picking both thick and thin response styles. For shallow dipping conductors the 'thin' pick will be located over the edge of the source, whereas the 'thick' pick will fall over the downdip 'heart' of the anomaly.

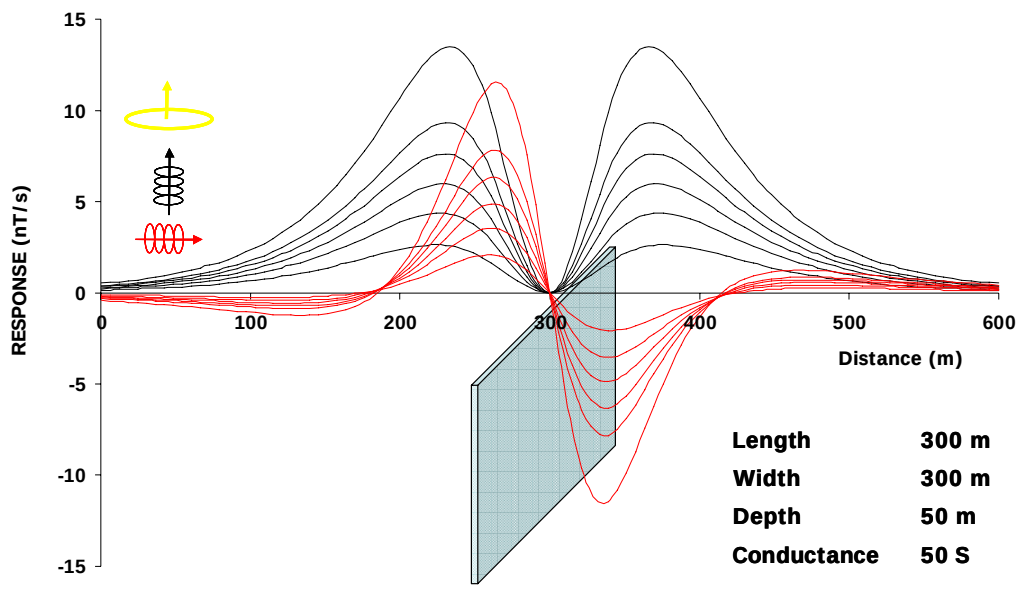


Figure 10. AeroTEM response to a 'thin' vertical conductor.

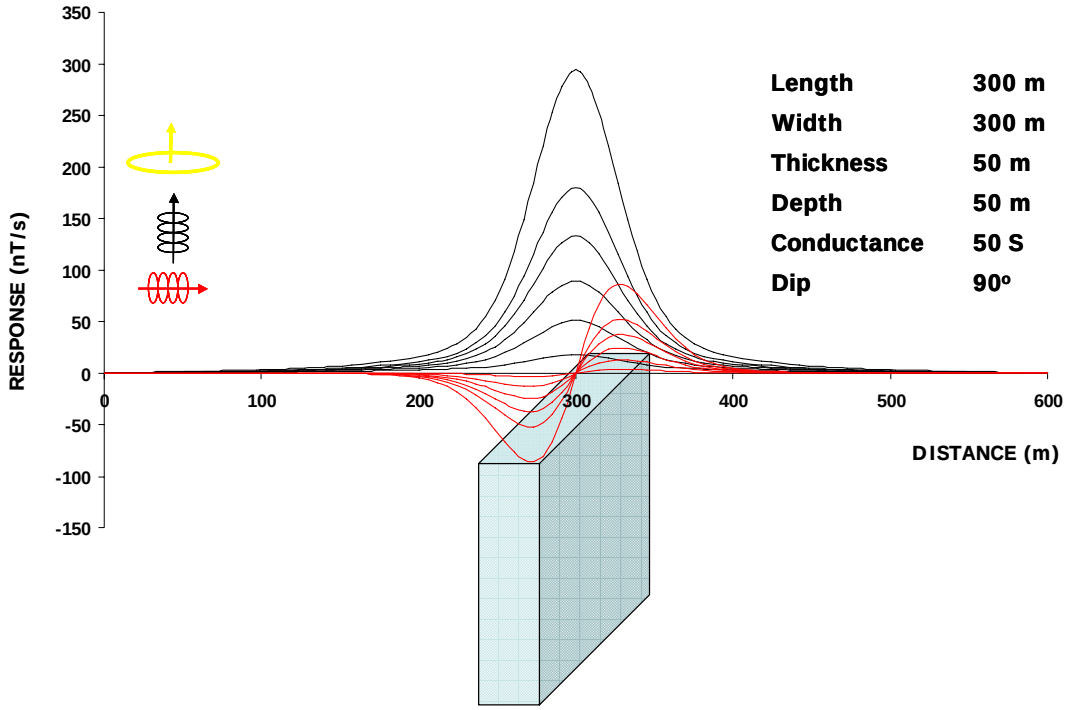


Figure 11. AeroTEM response for a 'thick' vertical conductor.

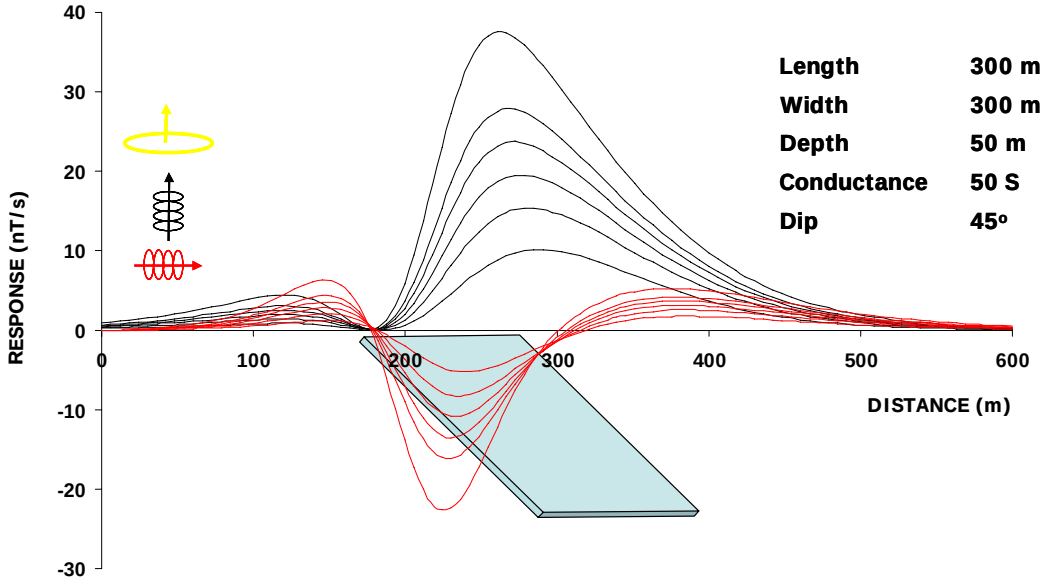


Figure 12. AeroTEM response over a 'thin' dipping conductor.

All cases should be considered when analyzing the interpreted picks and prioritizing for follow-up. Specific anomalous responses which remain as high priority should be subjected to numerical modeling prior to drill testing to determine the dip, depth and probable geometry of the source.

Respectfully submitted,

Geoff Plastow

Aeroquest Limited

November, 2007

Reviewed By:

Doug Garrie

Aeroquest Limited

November, 2007

APPENDIX 1: SURVEY BOUNDARIES

The following table presents the Wells Grey block boundaries. All geophysical data presented in this report have been windowed to 100m outside these outlines. X and Y positions are in metres: WGS84 UTM Zone 10N.

X	Y
658197.7	5802965.6
659951.8	5803021.8
659966.8	5802558.5
660392.5	5802572.3
660407.5	5802109.0
660833.3	5802122.9
660863.4	5801196.3
661715.0	5801224.2
661730.1	5800760.9
662156.0	5800774.9
662171.4	5800311.5
662597.3	5800325.6
662612.6	5799862.2
665188.4	5799960.3
665223.9	5798660.1
666066.0	5798688.5
666099.7	5797689.1
666950.5	5797688.0
666966.2	5797224.6
667706.0	5797232.0
667719.4	5796838.5
668686.6	5796819.6
668758.9	5795910.8
670593.9	5794954.0
669052.0	5792355.0
667552.9	5792303.7
667549.7	5792397.5
666103.9	5792348.9
665439.2	5792682.0
664199.6	5790636.2
662919.5	5790594.2
660785.9	5790525.0
654695.3	5794041.7
654607.9	5796821.4

APPENDIX 2: MINING CLAIMS

From Government of British Columbia Mineral Titles Online (November 2007)

Tenure Number	Claim Name	Owner	Map Number	Good To Date	Mining Division	Area (Ha)
204214	MAC	EUREKA RESOURCES INC.	093A038	2008/dec/01	CARIBOO	225.00
204347	KAY #10	EUREKA RESOURCES INC.	093A028	2009/dec/01	CARIBOO	150.00
402366	KAY #10	EUREKA RESOURCES INC.	093A028	2008/may/09	CARIBOO	375.00
402367	KAY #11	EUREKA RESOURCES INC.	093A028	2008/may/09	CARIBOO	450.00
405520	J#1	EUREKA RESOURCES INC.	093A038	2008/oct/04	CARIBOO	100.00
405682	KAY #9	EUREKA RESOURCES INC.	093A038	2007/dec/14	CARIBOO	500.00
413226	J#2	EUREKA RESOURCES INC.	093A028	2008/jan/31	CARIBOO	150.00
517995	NUGGET	EUREKA RESOURCES INC.	093A	2007/dec/14		59.31
517996	IMPERIAL	EUREKA RESOURCES INC.	093A	2007/dec/14		494.31
518548	GOLD SOURCE	ADDIE, LLOYD JOHN	093A	2008/jan/26		494.01
518549	SED HOSTED GOLD	ADDIE, LLOYD JOHN	093A	2008/jan/26		493.73
518585	HEADWATERS	ADDIE, LLOYD JOHN	093A	2008/jan/26		395.11
519060	CREST	ADDIE, LLOYD JOHN	093A	2008/jan/26		493.74
519061	SYN	ADDIE, LLOYD JOHN	093A	2008/jan/26		493.86
519070	GEORGE	ADDIE, LLOYD JOHN	093A	2008/jan/26		494.51
519220	SYNGOLD	ADDIE, LLOYD JOHN	093A	2008/jan/26		474.30
519221	CAPROCK	ADDIE, LLOYD JOHN	093A	2008/jan/26		474.53
519386	PATCH	ADDIE, LLOYD JOHN	093A	2008/jan/26		39.55
519726	DAVE	ADDIE, LLOYD JOHN	093A	2008/jan/26		296.40
522637	GOLD	DAJIN RESOURCES CORP.	093A	2008/jan/26		474.39
522639	GOLD	DAJIN RESOURCES CORP.	093A	2008/jan/26		474.48
522640	GOLD	DAJIN RESOURCES CORP.	093A	2008/jan/26		474.58
522642	GOLD	DAJIN RESOURCES CORP.	093A	2008/jan/26		474.56
522643	GOLD	DAJIN RESOURCES CORP.	093A	2008/jan/26		474.72
522644	GOLD	DAJIN RESOURCES CORP.	093A	2008/jan/26		474.67
522645	GOLD	DAJIN RESOURCES CORP.	093A	2008/jan/26		474.83
522646	GOLD	DAJIN RESOURCES CORP.	093A	2008/jan/26		474.86
522647	GOLD	DAJIN RESOURCES CORP.	093A	2008/jan/26		475.01
522648	GOLD	DAJIN RESOURCES CORP.	093A	2008/jan/26		474.97
522649	GOLD	DAJIN RESOURCES CORP.	093A	2008/jan/26		316.75
524992	EUREKA	BOURDON, ROBERT JAMES	093A	2007/dec/14		296.52
544763	EUREKA	HAWTHORNE GOLD CORP.	093A	2007/dec/14		98.81
544765	MISSING	HAWTHORNE GOLD CORP.	093A	2007/dec/14		59.29
544767	ADD ON	HAWTHORNE GOLD CORP.	093A	2007/dec/14		19.76
544769	ANOTHER	HAWTHORNE GOLD CORP.	093A	2007/dec/14		19.76
554961	BRIAN 1	BULLION GOLD CORP.	093A	2008/mar/01		3445.18
555070	CROOKED LAKE 1	ADDIE, GEORGE GORDON	093A	2008/mar/01		3444.07

APPENDIX 3: DESCRIPTION OF DATABASE FIELDS

The GDB file is a Geosoft binary database. In the database, the Survey lines and Tie Lines are prefixed with an "L" for "Line" and "T" for "Tie".

COLUMN	UNITS	DESCRIPTOR
Line		Line number
Flight		Flight number
emfid		AERODAS Fiducial
utctime	hh:mm:ss.ss	UTC time
x	m	UTM Easting (NAD83, Zone 10N)
y	m	UTM Northing (NAD83, Zone10N)
ralt	m	Radar altimeter (on mag bird)
bheight	m	Terrain clearance of EM bird
Basemagf	nT	Base station total magnetic intensity
magf	nT	Final levelled total magnetic intensity from upper mag sensor installed in a bird 17 m above the EM bird.
Zon	nT/s	Processed Streaming On-Time Z component Channels 1-16
Zoff	nT/s	Processed Streaming Off-Time Z component Channels 0-16
Xon	nT/s	Processed Streaming On-Time X component Channels 1-16
Xoff	nT/s	Processed Streaming Off-Time X component Channels 0-16
pwrline		powrline monitor data channel
grade		Classification from 1-7 based on conductance of conductor pick
Anom_ID		Anomaly Character (K= thicK, N = thiN)
Anom_labels		Alphanumeric label of conductor pick
Off_Tau	µs	Off-time decay constant at conductor pick
Off_Con	S	Off-time conductance at conductor pick
Off_AllTau	µs	Off-time decay constant
Off_allcon	S	Off-time conductance
TranOff	ms	Transmitter Off
TranOn	ms	Transmitter On
TranPeak	ms	Transmitter Peak
TranSwitch	ms	Transmitter Switch
GPSzfin	M	GPS altitude of Mag bird
dtmf	m	Digital Terrain Model

The spectometer GDB file is a Geosoft binary database. In the database, the Survey lines and Tie Lines are prefixed with an "L" for "Line" and "T" for "Tie".

COLUMN	UNITS	DESCRIPTOR
x	m	UTM Easting (NAD83, Zone 10N)
y	m	UTM Northing (NAD83, Zone 10N)
Fiducial		Fiducial
utctime	hh:mm:ss.ss	UTC time
althm	m	Radar altitude of aircraft
altbf	m	Barometric altitude
Barotf	°C	Barometric temperature
Galtm	m	Elevation of GPS antenna (AMSL) (WGS84)
Cos_raw	cps	Uncorrected Cosmic counts
Isp1d_cpt		256 channel spectral data (downward looking)
Isp1u_cpt		256 channel spectral data (upward looking)
Kcorr	%	Radiometric – potassium (%K)
K_raw	cps	Uncorrected Potassium counts
Tccorr	nGy/hr	Radiometric – dose rate
Tc_raw	cps	Uncorrected Total counts
Tcexp	uR/hr	Radiometric – exposure rate
Thcorr	ppm	Radiometirc – equivalent Thorium
Th_raw	cps	Uncorrected Thorium counts
Thkratio		Thorium/Potassium Ratio
Ucorr	ppm	Radiometirc – equivalent Uranium
U_raw	cps	Uncorrected Uranium counts
Upu_raw	cps	Uncorrected Uranium upward looking counts
Uthratio		Uranium/Thorium Ratio

APPENDIX 4: AEROTEM ANOMALY LISTING

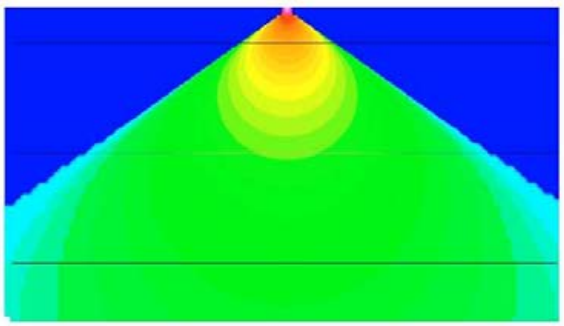
Please refer to 08018_WellsGrey_ANOM.xls, .gdb and .xyz in attached DVD

APPENDIX 5: AEROTEM DESIGN CONSIDERATIONS

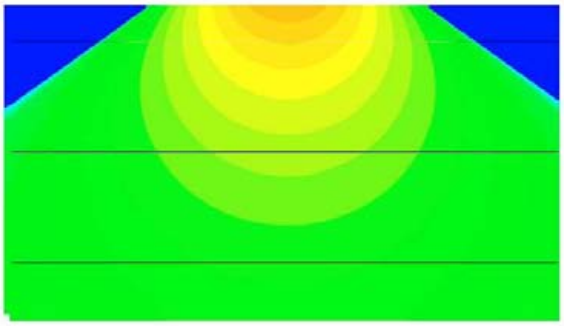
Helicopter-borne EM systems offer an advantage that cannot be matched from a fixed-wing platform. The ability to fly at slower speed and collect data with high spatial resolution, and with great accuracy, means the helicopter EM systems provide more detail than any other EM configuration, airborne or ground-based. Spatial resolution is especially important in areas of complex geology and in the search for discrete conductors. With the advent of helicopter-borne high-moment time domain EM systems the fixed wing platforms are losing their *only* advantage – depth penetration.

Advantage 1 – Spatial Resolution

The AeroTEM system is specifically designed to have a small footprint. This is accomplished through the use of concentric transmitter-receiver coils and a relatively small diameter transmitter coil (5 m). The result is a highly focused exploration footprint, which allows for more accurate "mapping" of discrete conductors. Consider the transmitter primary field images shown in Figure 1, for AeroTEM versus a fixed-wing transmitter.



The footprint of AeroTEM at the earth's surface is roughly 50m on either side of transmitter



The footprint of a fixed-wing system is roughly 150 m on either side of the transmitter

Figure 1. A comparison of the footprint between AeroTEM and a fixed-wing system, highlights the greater resolution that is achievable with a transmitter located closer to the earth's surface. The AeroTEM footprint is one third that of a fixed-wing system and is symmetric, while the fixed-wing system has even lower spatial resolution along the flight line because of the separated transmitter and receiver configuration.

At first glance one may want to believe that a transmitter footprint that is distributed more evenly over a larger area is of benefit in mineral exploration. In fact, the opposite is true; by energizing a larger surface area, the ability to energize and detect discrete conductors is reduced. Consider, for example, a comparison between AeroTEM and a fixed-wing system over the Mesamax Deposit (1,450,000 tonnes of 2.1% Ni, 2.7% Cu, 5.2 g/t Pt/Pd). In a test survey over three flight lines spaced 100 m apart, AeroTEM detected the Deposit on all three flight lines. The fixed-wing system detected the Deposit only on two flight lines. In exploration programs that seek to expand the flight line spacing in an effort to reduce the cost of the airborne survey, discrete conductors such as the Mesamax Deposit can go undetected. The argument often put forward in favour of using fixed-wing systems is that because of their larger footprint, the flight line spacing can indeed be widened. Many fixed-wing surveys are flown at 200 m or 400 m. Much of the survey work performed by Aeroquest has been to survey in areas that were previously flown at these wider line spacings. One of the reasons for AeroTEM's impressive discovery record has been the strategy of flying closely spaced lines and finding all the discrete near-surface conductors. These higher resolution surveys are being flown within existing mining camps, areas that improve the chances of discovery.

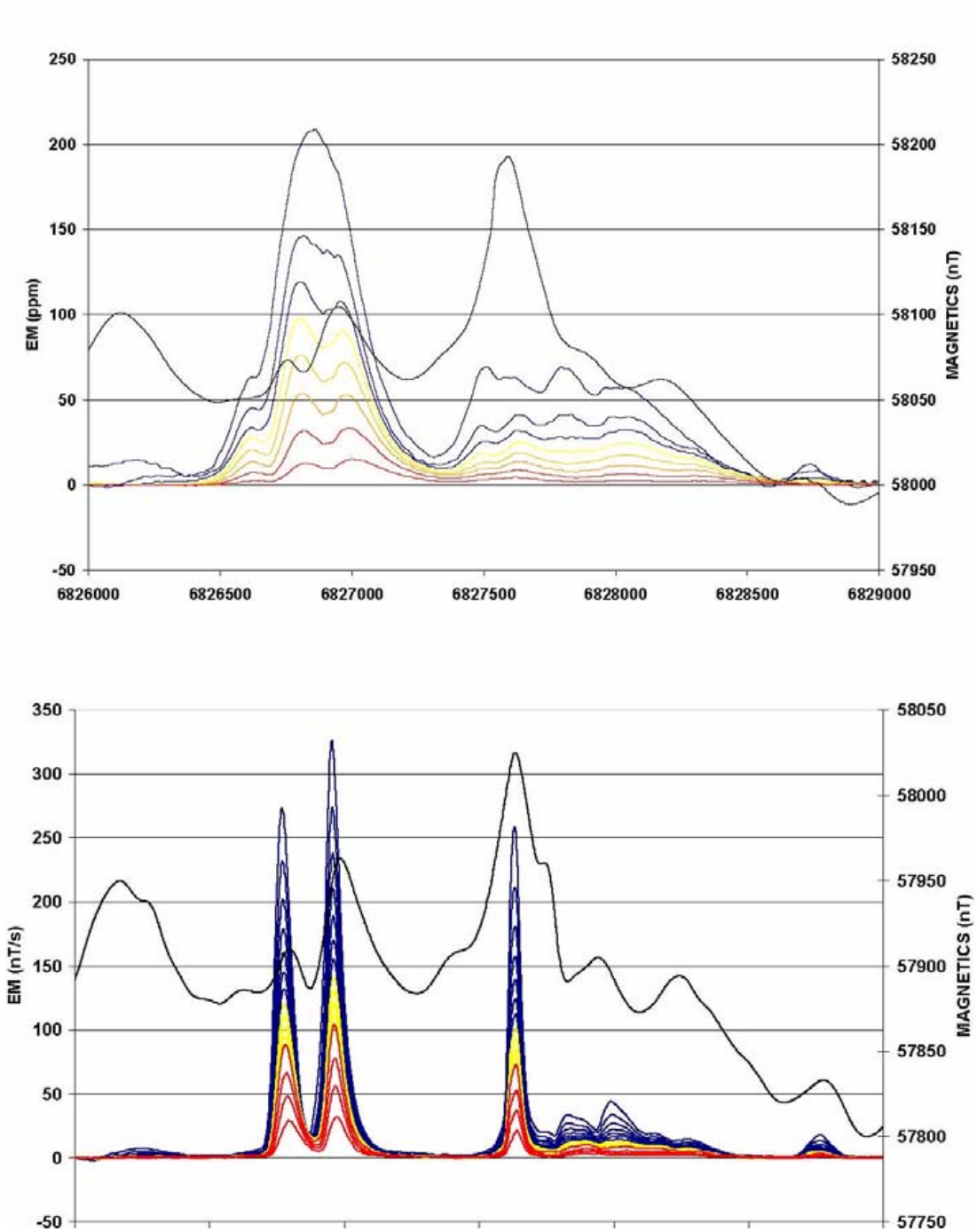


Figure 2. Fixed-wing (upper) and AeroTEM (lower) comparison over the eastern limit of the Mesamax Deposit, a Ni-Cu-PGE zone located in the Raglan nickel belt and owned by Canadian Royalties. Both systems detected the Deposit further to the west where it is closer to surface.

The small footprint of AeroTEM combined with the high signal to noise ratio (S/N) makes the system more suitable to surveying

in areas where local infrastructure produces electromagnetic noise, such as power lines and railways. In 2002 Aeroquest flew four exploration properties in the Sudbury Basin that were under option by FNX Mining Company Inc. from Inco Limited. One such property, the Victoria Property, contained three major power line corridors.

The resulting AeroTEM survey identified all the known zones of Ni-Cu-PGE mineralization, and detected a response between two of the major power line corridors but in an area of favorable geology. Three boreholes were drilled to test the anomaly, and all three intersected sulphide. The third borehole encountered 1.3% Ni, 6.7% Cu, and 13.3 g/t TPMs over 42.3 ft. The mineralization was subsequently named the Powerline Deposit.

The success of AeroTEM in Sudbury highlights the advantage of having a system with a small footprint, but also one with a high S/N. This latter advantage is achieved through a combination of a high-moment (high signal) transmitter and a rigid geometry (low noise). Figure 3 shows the Powerline Deposit response and the response from the power line corridor at full scale. The width of power line response is less than 75 m.

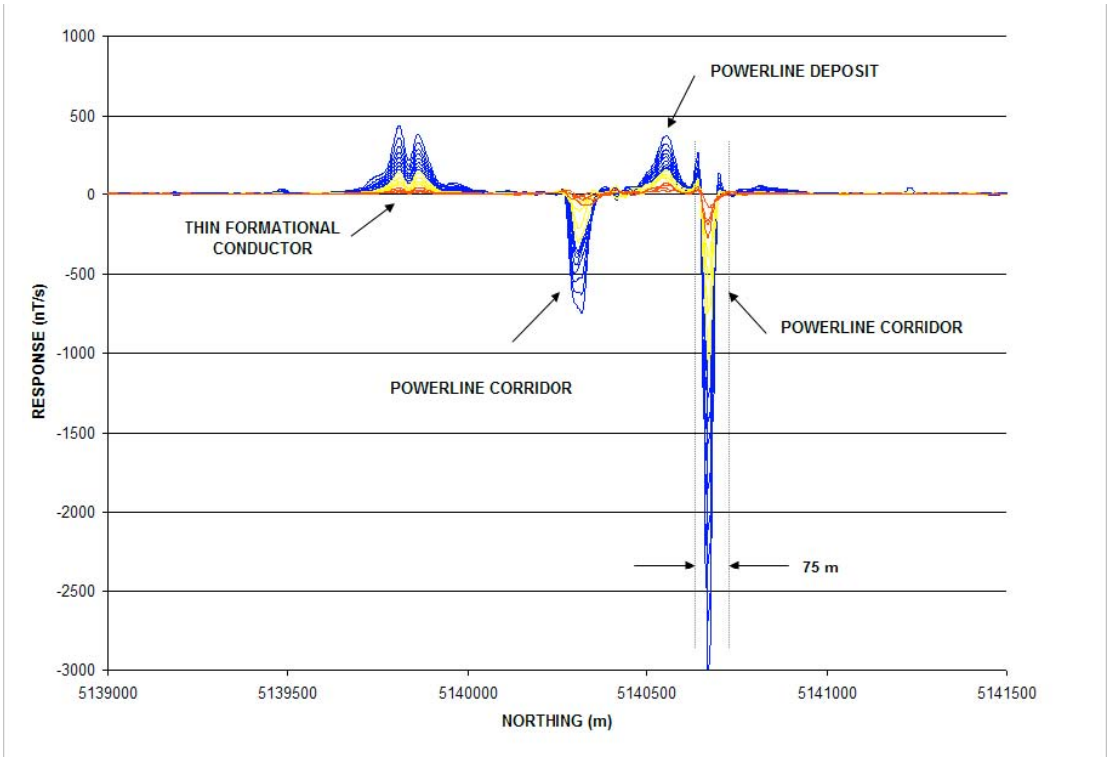


Figure 3. The Powerline Deposit is located between two major power line corridors, which make EM surveying problematic. Despite the strong response from the power line, the anomaly from the Deposit is clearly detected. Note the thin formational conductor located to the south. The only way to distinguish this response from that of two closely spaced conductors is by interpreting the X-axis coil response.

Advantage 2 – Conductance Discrimination

The AeroTEM system features full waveform recording and as such is able to measure the on-time response due to high conductance targets. Due to the processing method (primary field removal), there is attenuation of the response with increasing conductance, but the AeroTEM on-time measurement is still superior to systems that rely on lower base frequencies to detect high conductance targets, but do not measure in the on-time.

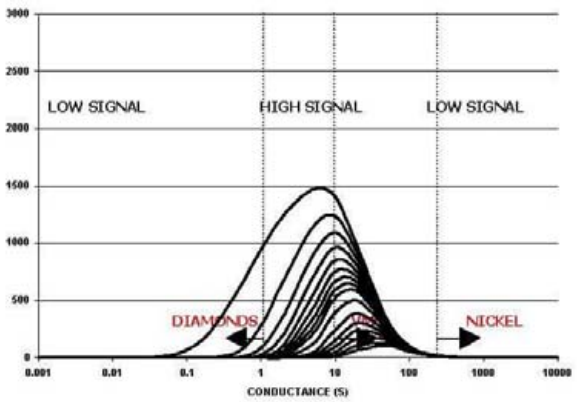
The peak response of a conductive target to an EM system is a function of the target conductance and the EM system base frequency. For time domain EM systems that measure only in the off-time, there is a drop in the peak response of a target as the base frequency is lowered for all conductance values below the peak system response. For example, the AeroTEM peak response occurs for a 10 S conductor in the early off-time and 100 S in the late off-time for a 150 Hz base frequency. Because

base frequency and conductance form a linear relationship when considering the peak response of any EM system, a drop in base frequency of 50% will double the conductance at which an EM system shows its peak response. If the base frequency were lowered from 150 Hz to 30 Hz there would be a fivefold increase in conductance at which the peak response of an EM occurred.

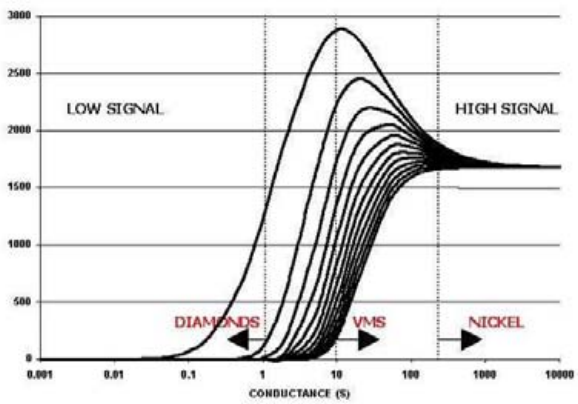
However, in the search for highly conductive targets, such as pyrrhotite-related Ni-Cu-PGM deposits, a fivefold increase in conductance range is a high price to pay because the signal level to lower conductance targets is reduced by the same factor of five. For this reason, EM systems that operate with low base frequencies are not suitable for general exploration unless the target conductance is more than 100 S, or the target is covered by conductive overburden.

Despite the excellent progress that has been made in modeling software over the past two decades, there has been little work done on determining the optimum form of an EM system for mineral exploration. For example, the optimum configuration in terms of geometry, base frequency and so remain unknown. Many geophysicists would argue that there is no single ideal configuration, and that each system has its advantages and disadvantages. We disagree.

When it comes to detecting and discriminating high-conductance targets, it is necessary to measure the pure inphase response of the target conductor. This measurement requires that the measured primary field from the transmitter be subtracted from the total measured response such that the secondary field from the target conductor can be determined. Because this secondary field is in-phase with the transmitter primary field, it must be made while the transmitter is turned on and the transmitter current is changing. The transmitted primary field is several orders of magnitude larger than the secondary field. AeroTEM uses a bucking coil to reduce the primary field at the receiver coils. The only practical way of removing the primary field is to maintain a rigid geometry between the transmitter, bucking and receiver coils. This is the main design consideration of the AeroTEM airframe and it is the only time domain airborne system to have this configuration.



The off-time AeroTEM response for the 16 channel configuration.



The on-time response assuming 100% removal of the measured primary field.

Figure 4. The off-time and on-time response nomogram of AeroTEM for a base frequency of 150 Hz. The on-time response is much stronger for higher conductance targets and this is why on-time measurements are more important than lower frequencies when considering high conductance targets in a resistive environment.

Advantage 3 – Multiple Receiver Coils

AeroTEM employs two receiver coil orientations. The Z-axis coil is oriented parallel to the transmitter coil and both are horizontal to the ground. This is known as a maximum coupled configuration and is optimal for detection. The X-axis coil is oriented at right angles to the transmitter coil and is oriented along the line-of-flight. This is known as a minimum coupled configuration, and provides information on conductor orientation and thickness. These two coil configurations combined provide important information on the position, orientation, depth, and thickness of a conductor that cannot be matched by the traditional geometries of the HEM or fixed-wing systems. The responses are free from a system geometric effect and can be easily compared to model type curves in most cases. In other words, AeroTEM data is very easy to interpret. Consider, for example, the following modeled profile:

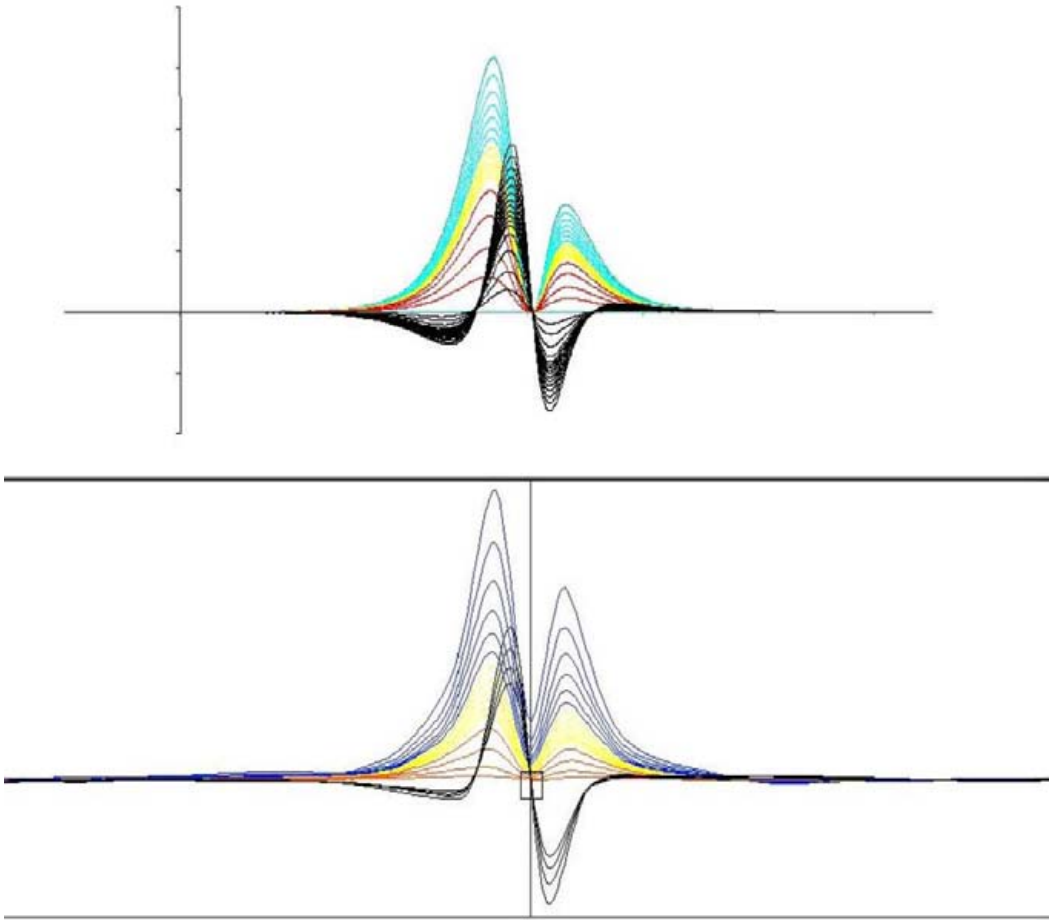


Figure 5. Measured (lower) and modeled (upper) AeroTEM responses are compared for a thin steeply dipping conductor. The response is characterized by two peaks in the Z-axis coil, and a cross-over in the X-axis coil that is centered between the two Z-axis peaks. The conductor dips toward the higher amplitude Z-axis peak. Using the X-axis cross-over is the only way of differentiating the Z-axis response from being two closely spaced conductors.

HEM versus AeroTEM

Traditional helicopter EM systems operate in the frequency domain and benefit from the fact that they use narrowband as opposed to wide-band transmitters. Thus all of the energy from the transmitter is concentrated in a few discrete frequencies. This allows the systems to achieve excellent depth penetration (up to 100 m) from a transmitter of modest power. The Aeroquest Impulse system is one implementation of this technology.

The AeroTEM system uses a wide-band transmitter and delivers more power over a wide frequency range. This frequency range is then captured into 16 time channels, the early channels containing the high frequency information and the late time channels containing the low frequency information down to the system base frequency. Because frequency domain HEM systems employ two coil configurations (coplanar and coaxial) there are only a maximum of three comparable frequencies per configuration, compared to 16 AeroTEM off-time and 12 AeroTEM on-time channels.

Figure 6 shows a comparison between the Dighem HEM system (900 Hz and 7200 Hz coplanar) and AeroTEM (Zaxis) from surveys flown in Raglan, in search of highly conductive Ni-Cu-PGM sulphide. In general, the AeroTEM peaks are sharper and better defined, in part due to the greater S/N ratio of the AeroTEM system over HEM, and also due to the modestly filtered AeroTEM data compared to HEM. The base levels are also better defined in the AeroTEM data. AeroTEM filtering is limited to spike removal and a 5-point smoothing filter. Clients are also given copies of the raw, unfiltered data.

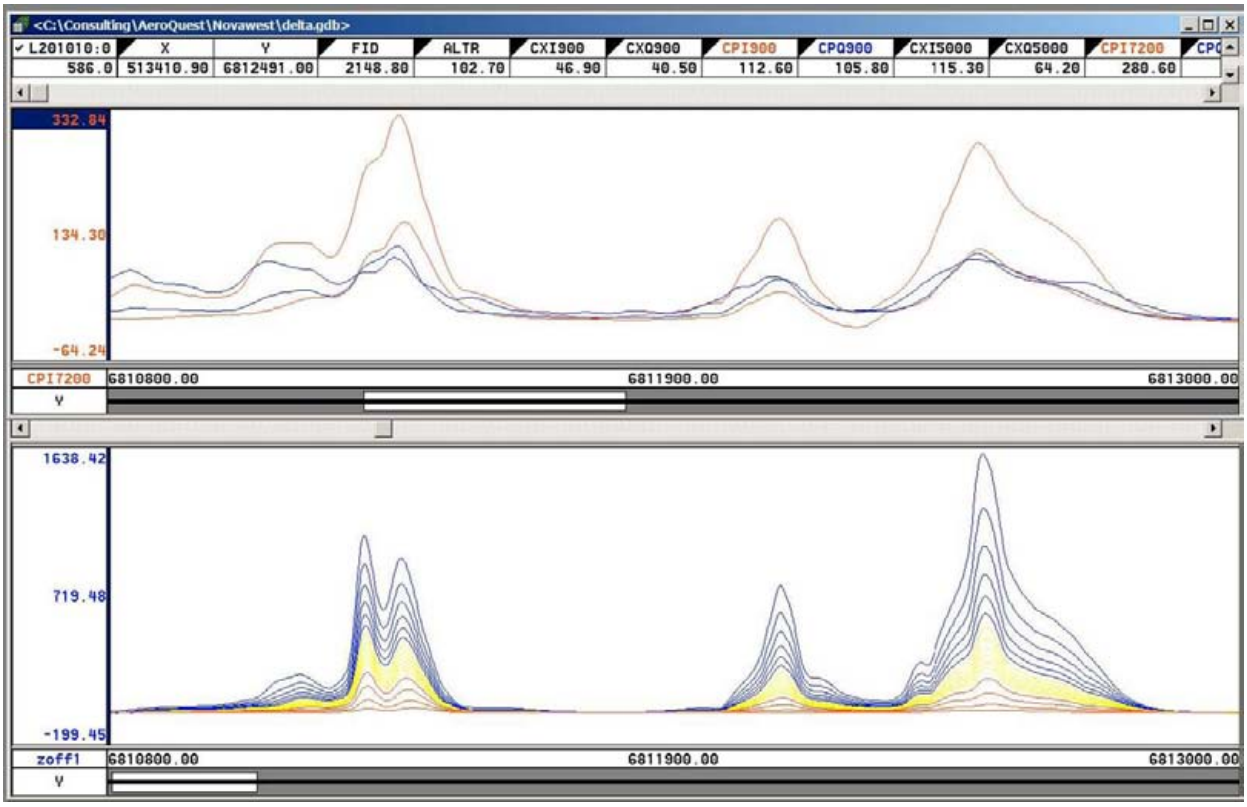


Figure 6. Comparison between Dighem HEM (upper) and AeroTEM (lower) surveys flown in the Raglan area. The AeroTEM responses appear to be more discrete, suggesting that the data is not as heavily filtered as the HEM data. The S/N advantage of AeroTEM over HEM is about 5:1.

Aeroquest Limited is grateful to the following companies for permission to publish some of the data from their respective surveys: Wolfden Resources, FNX Mining Company Inc, Canadian Royalties, Nova West Resources, Aurogin Resources, Spectrem Air. Permission does not imply an endorsement of the AeroTEM system by these companies.

APPENDIX 6: AEROTEM INSTRUMENTATION SPECIFICATION SHEET

AEROTEM Helicopter Electromagnetic System

System Characteristics

- Transmitter: Triangular Pulse Shape Base Frequency 150 Hz
- Tx On Time - 1,150 (150 Hz) µs
- Tx Off Time - 2,183 (150 Hz) µs
- Loop Diameter - 5 m
- Peak Current - 250 A
- Peak Moment - 38,800 NIA
- Typical Z Axis Noise at Survey Speed = 5 nT peak to peak
- Sling Weight: 270 Kg
- Length of Tow Cable: 40 m
- Bird Survey Height: 30 m nominal

Receiver

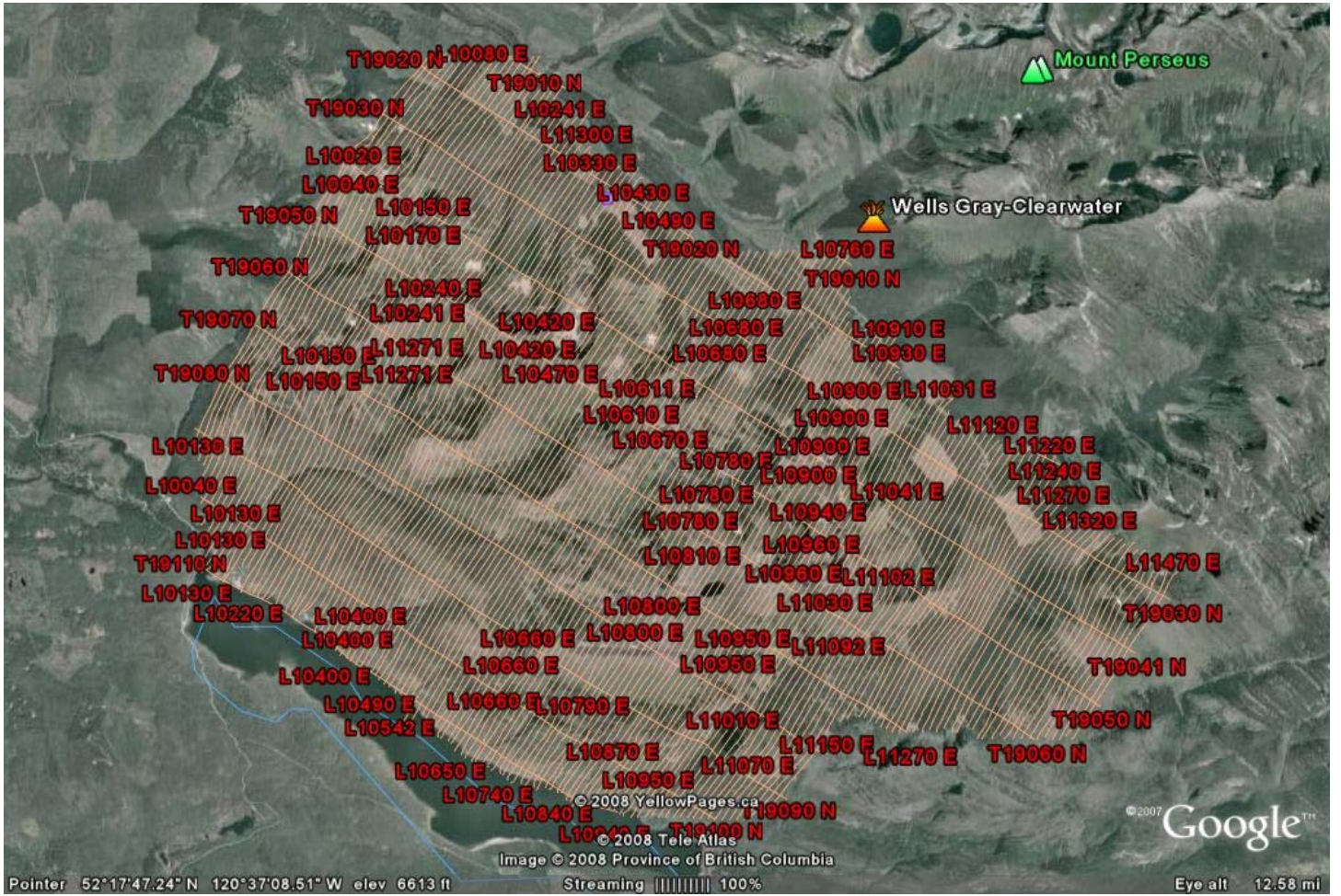
- Two Axis Receiver Coils (x, z) positioned at centre of transmitter loop
- Selectable Time Delay to start of first channel 21.3 , 42.7, or 64.0 ms

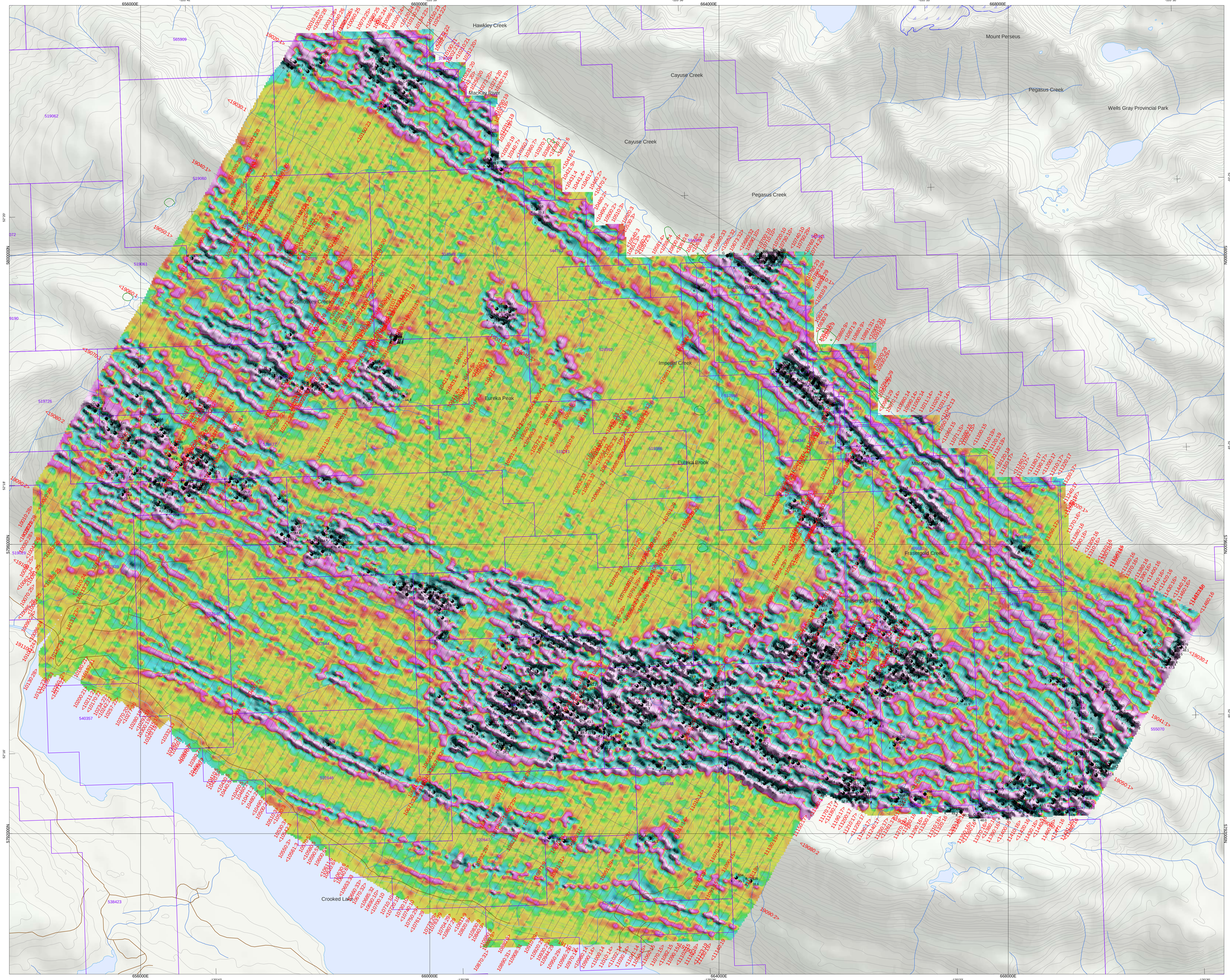
Display & Acquisition

- AERODAS Digital recording at 120 samples per decay curve at a maximum of 300 curves per second (27.778µs channel width)
- RMS Channel Widths: 52.9,132.3, 158.7, 158.7, 317.5, 634.9 µs
- Recording & Display Rate = 10 readings per second.
- On-board display - six channels Z-component and 1 X-component

System Considerations

Comparing a fixed-wing time domain transmitter with a typical moment of 500,000 NIA flying at an altitude of 120 m with a Helicopter TDEM at 30 m, notwithstanding the substantial moment loss in the airframe of the fixed wing, the same penetration by the lower flying helicopter system would only require a sixty-fourth of the moment. Clearly the AeroTEM system with nearly 40,000 NIA has more than sufficient moment. The airframe of the fixed wing presents a response to the towed bird, which requires dynamic compensation. This problem is non-existent for AeroTEM since transmitter and receiver positions are fixed. The AeroTEM system is completely portable, and can be assembled at the survey site within half a day.


Mount Perseus
Wells Gray-Clearwater
T19020 N
L10080 E
T19010 N
T19030 N
L10241 E
L11300 E
L10020 E
L10330 E
L10040 E
L10430 E
T19050 N
L10150 E
L10490 E
L10170 E
T19020 N
L10760 E
T19060 N
T19010 N
L10240 E
L10680 E
T19070 N
L10241 E
L10420 E
L10680 E
L10910 E
L10150 E
L11271 E
L10420 E
L10680 E
L10930 E
T19080 N
L10150 E
L11271 E
L10470 E
L10611 E
L10800 E
L11031 E
L10610 E
L10960 E
L11120 E
L10130 E
L10670 E
L10900 E
L11220 E
L10780 E
L10900 E
L11240 E
L10040 E
L10780 E
L11041 E
L11270 E
L10130 E
L10780 E
L10940 E
L11320 E
L10130 E
L10810 E
L10960 E
T19110 N
L10960 E
L11102 E
L11470 E
L10130 E
L10800 E
L11030 E
L10220 E
L10400 E
T19030 N
L10400 E
L10660 E
L10800 E
L10950 E
L11092 E
L10660 E
L10950 E
T19041 N
L10400 E
L10490 E
L10660 E
L10790 E
L11010 E
T19050 N
L10542 E
L11150 E
L10670 E
L11070 E
L11270 E
T19060 N
L10650 E
L10950 E
L10740 E
L10840 E
T19090 N
T19100 N
©2007 Google
© 2008 YellowPages.ca
© 2008 Tele Atlas
Image © 2008 Province of British Columbia
Pointer 52°17'47.24" N 120°37'08.51" W elev 6613 ft
Streaming 100%
Eye alt 12.58 mi



Grid North
NAD83-Zone10

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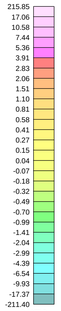

Off-Time Anomaly Symbols

- >50S .....
- 35-50S .....
- 20-35S .....
- 10-20S .....
- 5-10S .....
- 1-5S .....
- <1S .....
- Cultural Sources.....

anomaly label A 125 decay constant (µs)
thick/thIN source K 36 off-time conductance (S)

SURVEY SPECIFICATIONS:
- Survey flown: September 6 to 13, 2007
- Traverse line spacing: 100 metres
- Traverse line direction: 30° Azimuth (SW-NE)
- Nominal EM bird height: 30 metres
- Aircraft: Aerospatiale A-Star 350B2 (C-FPTG)

INSTRUMENTATION:
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  - Sensitivity: .001 nanoTesla
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  - Configuration: Towed bird
- Gamma Ray Spectometer: PicoEnvirotex AGIS GRS 10-5
  - Downward looking crystals vol. - 16.8L (1024cu in)
  - Upward looking crystal vol. - 4L (256cu in)
  - Sample Interval: 1.0 seconds
  - Channels: 256
  - Installation: In helicopter

NAVIGATION:
- Navigation: Differential Global Positioning System (DGPS)
- Navigation equipment: IGNAV with MID-TECH RX400p receiver
- Radar Altimeter: Terra TRA3000/TRI-30

DATA PROCESSING
- Magnetics: diurnal, tieline and micro-leveling corrections

POSITIONING
- Datum: NAD83
  - Major Axis: 6378137.000
  - Eccentricity: 0.081819191

MAP PRECETION
- Projection: Universal Transverse Mercator
- Central Meridian: 123°W (Zone 10)
- Central Scale Factor: 0.9996
- False Easting/Northing: 500,000m/0m

scale 1:20,000

250 0 250 500 750 1000 1250 1500
(metres)
NAD83 / UTM zone 10N

Hawthorne Gold Corp.
Williams Lake area, British Columbia

AEROTEM CONDUCTOR TRENDING ALGORITHM

Wells Grey Block

NTS 093A02, 07

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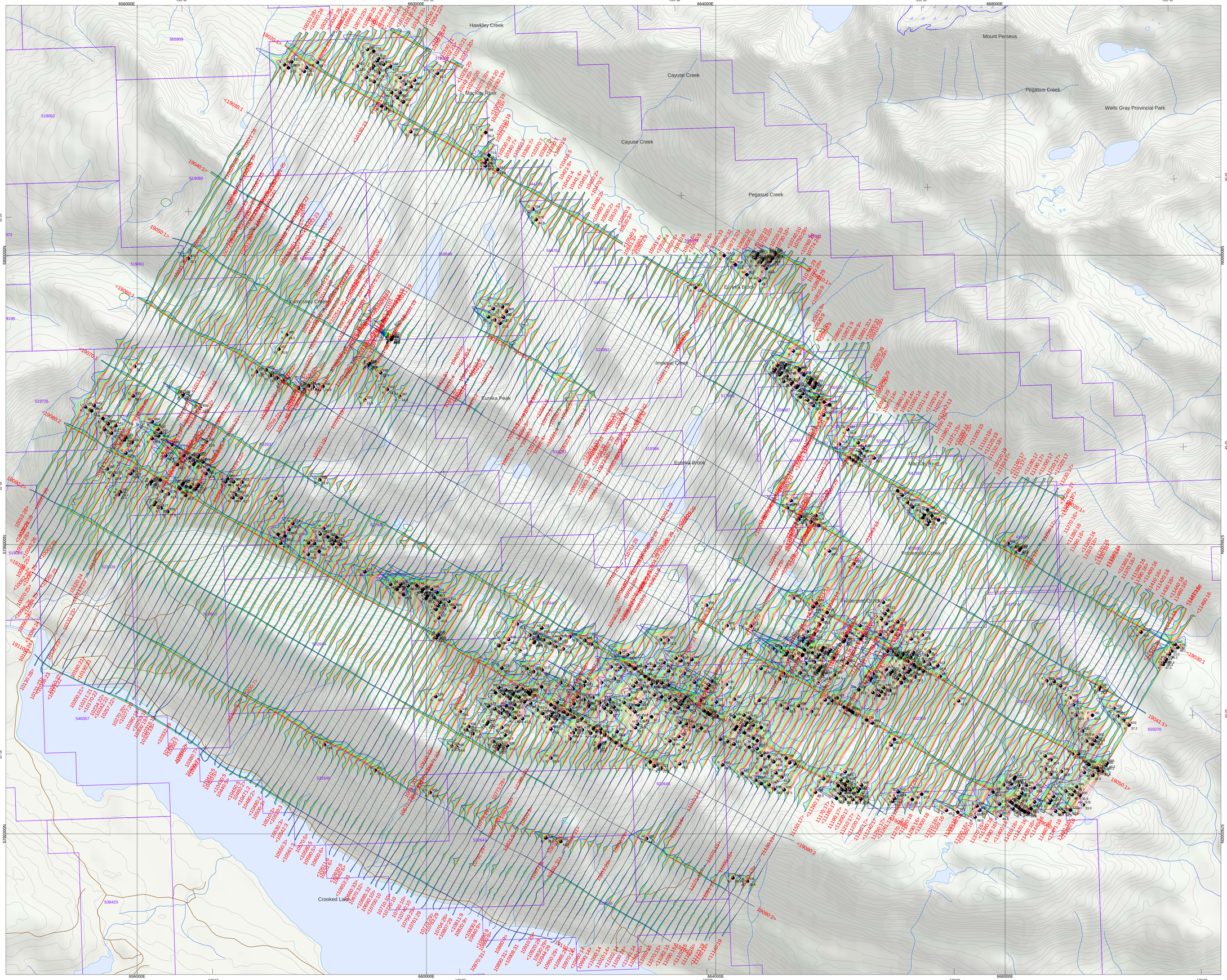
November 2007

ACTA Wells Grey



Grid North
NAD83-Zone10

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AeroTEM Profiles

positive excursion to top and right, 1mm=200nT/s

- Z5 Off-Time Channel
- Z6 Off-Time Channel
- Z7 Off-Time Channel
- Z8 Off-Time Channel
- Z9 Off-Time Channel
- Z10 Off-Time Channel
- Z11 Off-Time Channel
- Z12 Off-Time Channel
- Z13 Off-Time Channel
- Z14 Off-Time Channel
- Z15 Off-Time Channel

Off-Time Anomaly Symbols

- >50S
- 35-50S
- 20-35S
- 10-20S
- 5-10S
- 1-5S
- <1S
- Cultural Sources

anomaly label A, K — decay constant (µs) 125, 36

thicK/thiN source — off-time conductance (S)

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  - Channels: 256
  - Installation: In helicopter

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- False Easting/Northing: 500,000m/0m

scale 1:20,000

250 0 250 500 750 1000 1250 1500

(meters)

NAD83 / UTM zone 10N

Hawthorne Gold Corp.
Williams Lake area, British Columbia

AEROTEM OFF-TIME PROFILES

Wells Grey Block

NTS 093A02, 07

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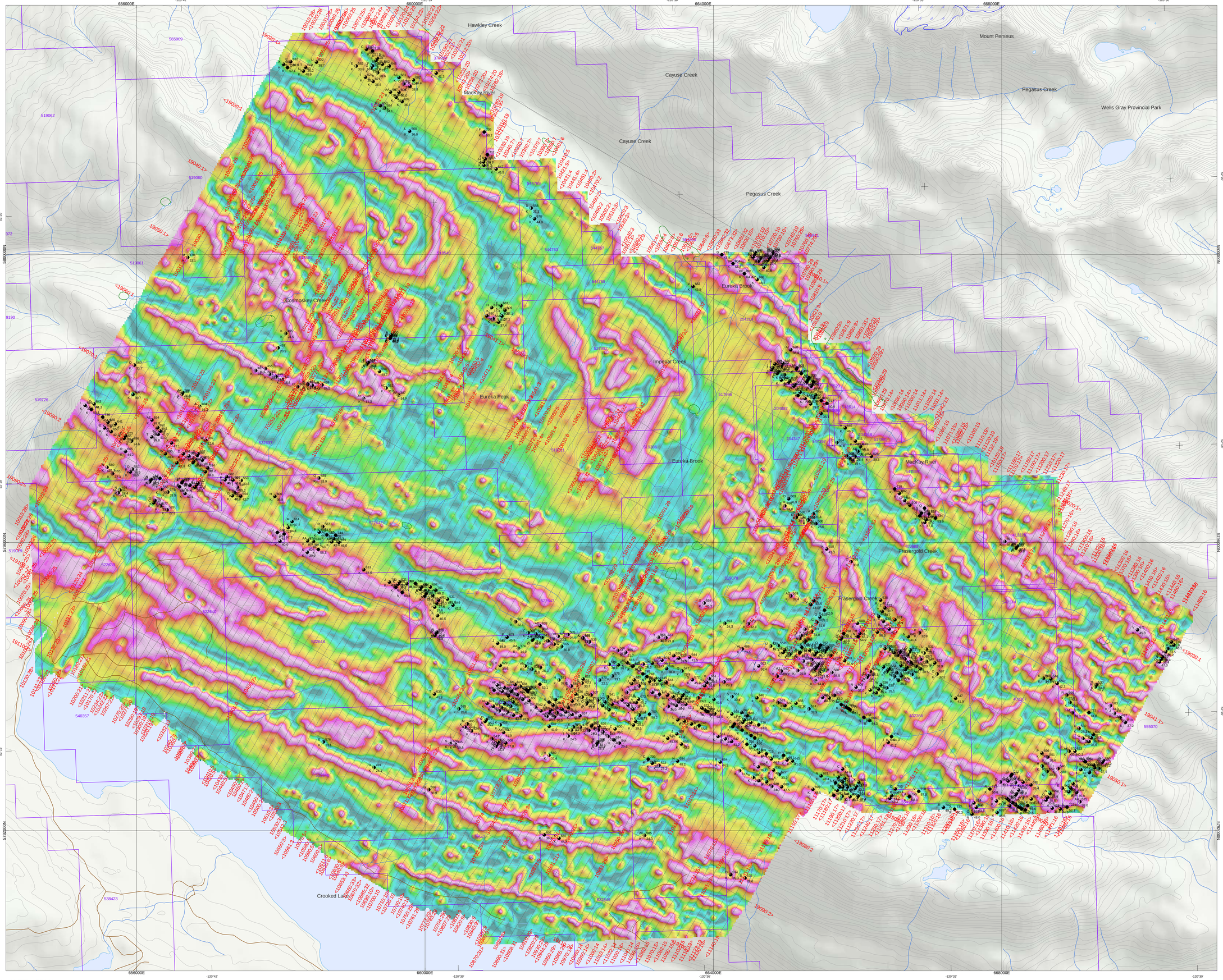
November 2007

EM Wells Grey

EM_20k_Wells Grey map. AQL Job no. 08-018



Grid North
NAD83-Zone10

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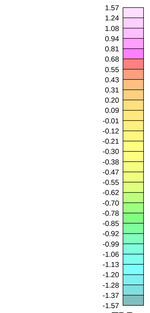

Off-Time Anomaly Symbols

- >50S .....
- 35-50S .....
- 20-35S .....
- 10-20S .....
- 5-10S .....
- 1-5S .....
- <1S .....
- Cultural Sources....

anomaly label A 125 decay constant (µs)

thick/thin source K 36 off-time conductance (S)

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  - Channels: 256
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- Projection: Universal Transverse Mercator
- Central Meridian: 123°W (Zone 10)
- Central Scale Factor: 0.9996
- False Easting/Northing: 500,000m/0m

scale 1:20,000

250 0 250 500 750 1000 1250 1500
(meters)
NAD83 / UTM zone 10N

Hawthorne Gold Corp.
Williams Lake area, British Columbia

TILT DERIVATIVE OF TMI

Wells Grey Block

NTS 093A02, 07

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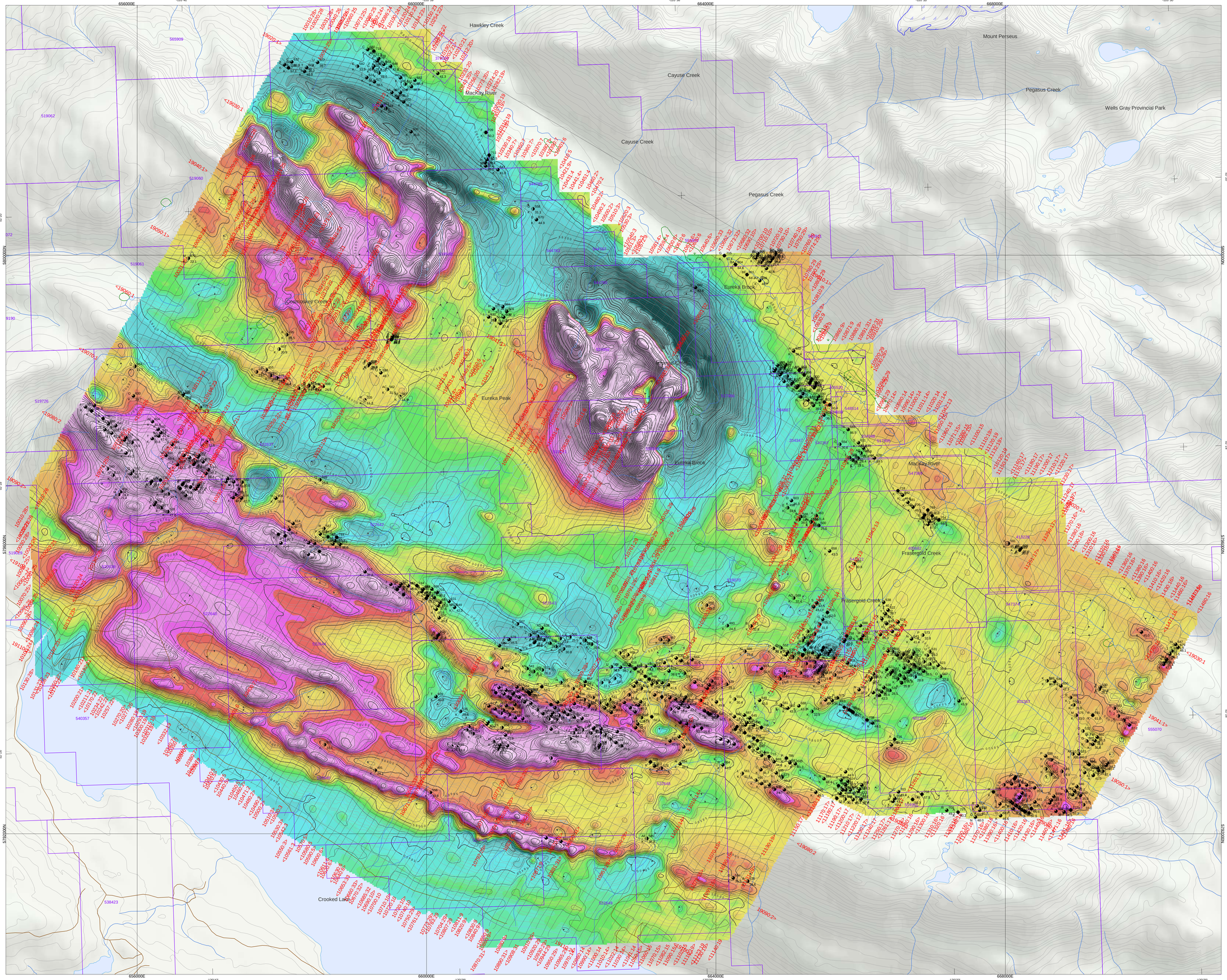
November 2007

TDR Wells Grey

TDR_20k_Wells Grey.map, AQL Job no. 08-018



Grid North
NAD83-Zone10

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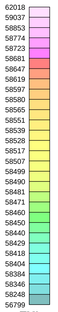

TMI Contour Interval

25 nT

100 & 500nT

2000 nT

Off-Time Anomaly Symbols

>50S

35-50S

20-35S

10-20S

5-10S

1-5S

<1S

Cultural Sources

anomaly label A 125 decay constant (µs)

thickKthiN source K 36 off-time conductance (S)

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  - Channels: 256
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  - Eccentricity: 0.081819191

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- False Easting/Northing: 500,000m/0m

scale 1:20,000

250 0 250 500 750 1000 1250 1500

(meters)

NAD83 / UTM zone 10N

Hawthorne Gold Corp.
Williams Lake area, British Columbia

TOTAL MAGNETIC INTENSITY

Wells Grey Block

NTS 093A02, 07

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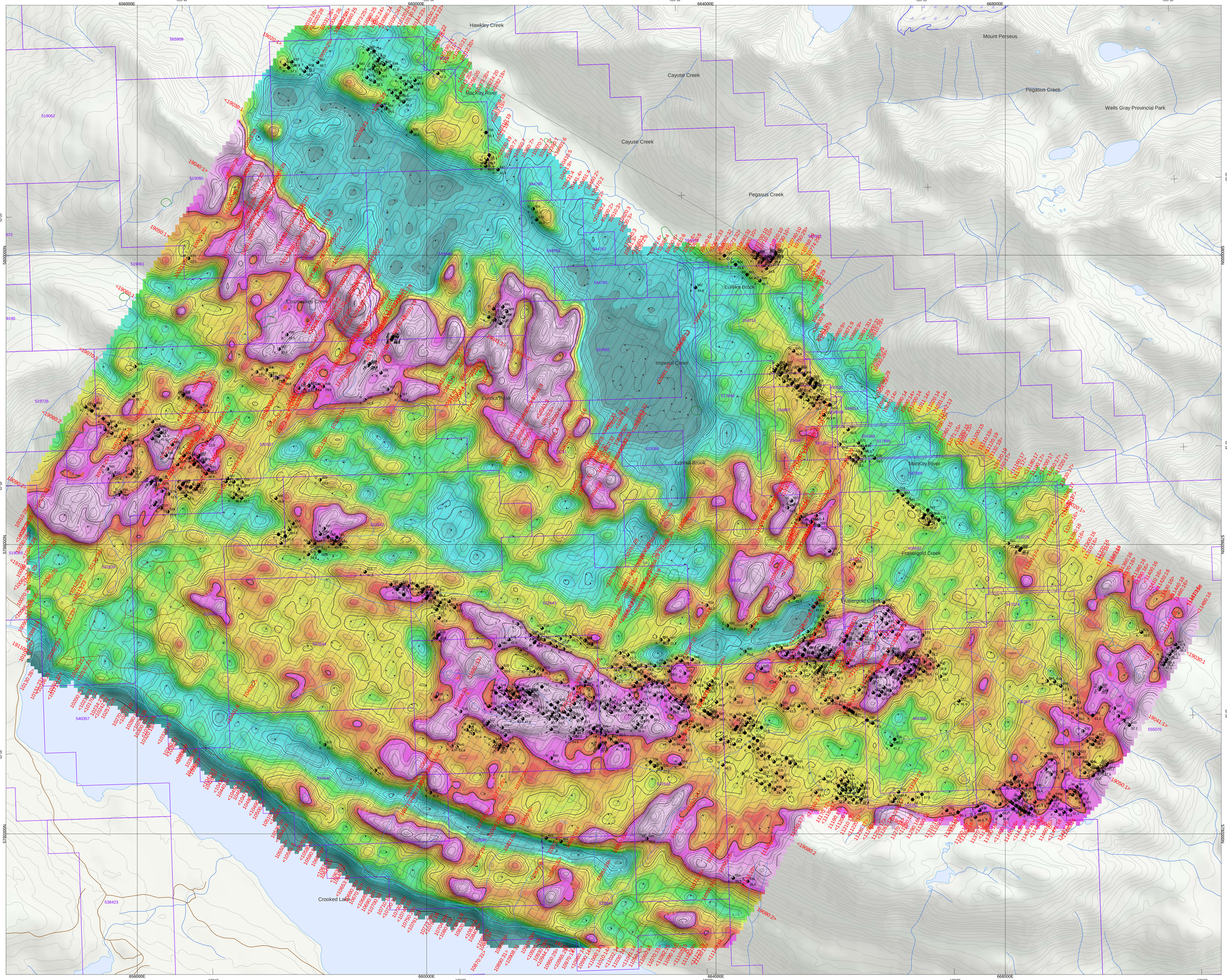
November 2007

TMI Wells Grey



Grid North
NAD83-Zone10

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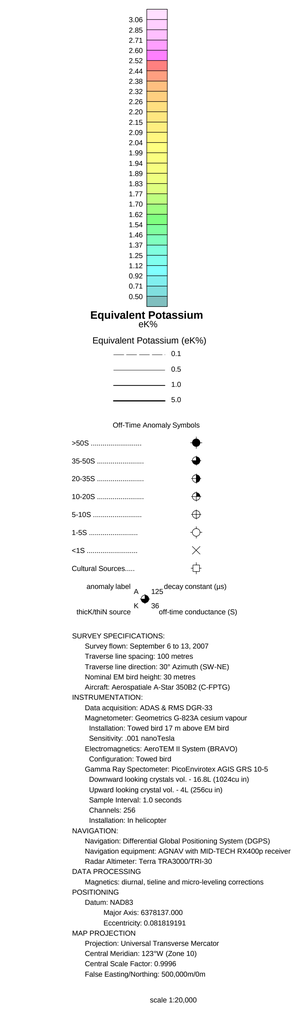

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- False Easting/Northing: 500,000m/0m

scale 1:20,000

250 0 250 500 750 1000 1250 1500
(metres)
NAD83 / UTM zone 10N

Hawthorne Gold Corp.
Williams Lake area, British Columbia

GAMM RAY SPECTROMETER - EQUIVALENT POTASSIUM eK%

Wells Grey Block

NTS 093A02, 07

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7687 Bath Road, Mississauga, ON, CANADA L4T 3T1
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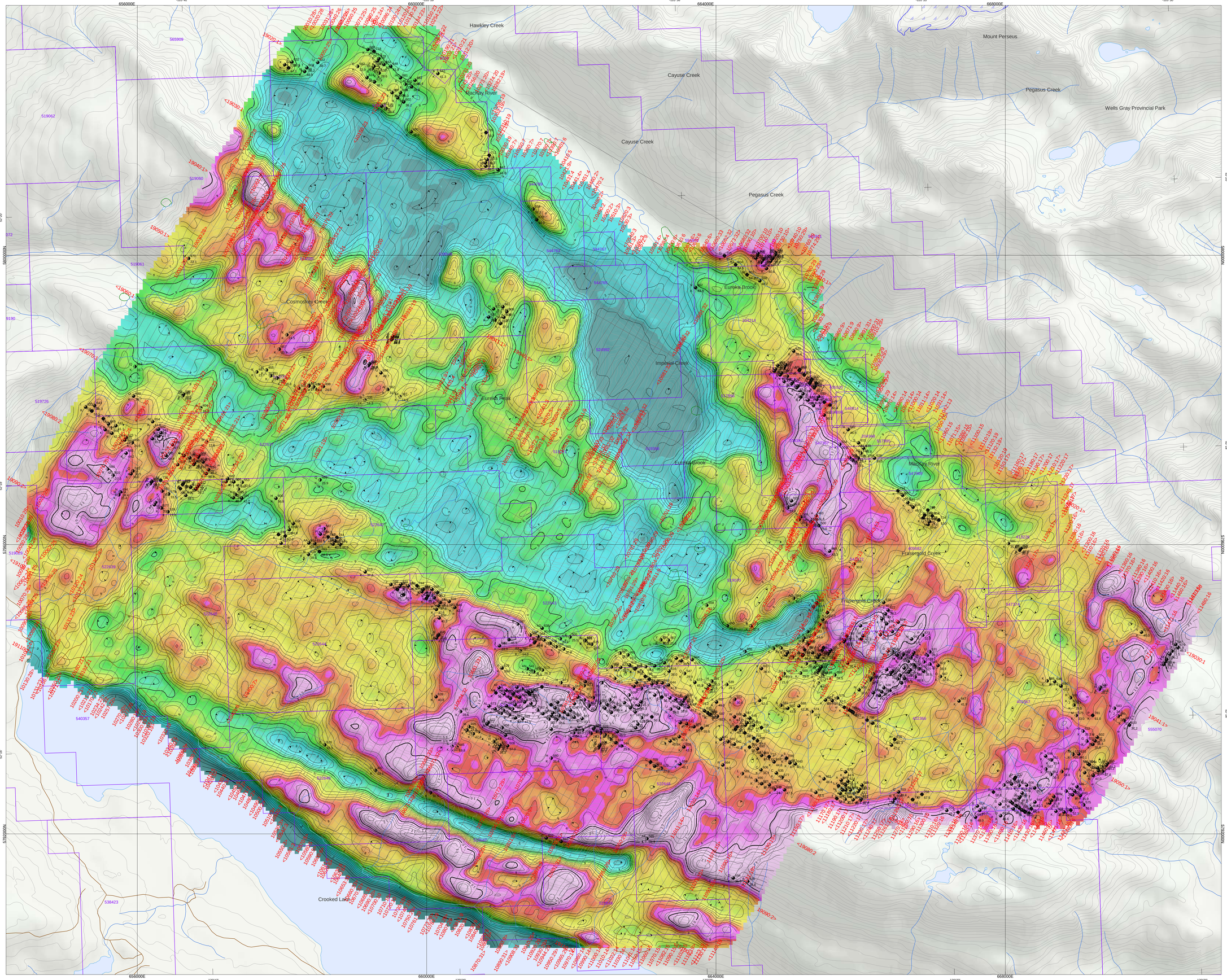
www.aeroquest.ca

November 2007

RADeK Wells Grey

RADeK_20k_Wells Grey.map, AQL Job no. 08-018



Grid North
NAD83-Zone10

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Exposure Rate uR/hr
10.53
9.83
9.41
9.08
8.79
8.52
8.25
8.02
7.80
7.59
7.40
7.22
7.03
6.83
6.62
6.39
6.13
5.88
5.60
5.32
5.01
4.68
4.34
3.96
3.56
3.04
2.40
1.79

Exposure Rate
uR/hr

Exposure Rate Contour Interval

- .5 & 1 uR/hr
- 5 uR/hr
- 10 uR/hr

Off-Time Anomaly Symbols

- >50S
- 35-50S
- 20-35S
- 10-20S
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- 1-5S
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- Cultural Sources

anomaly label A 125 decay constant (µs)
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250 0 250 500 750 1000 1250 1500
(metres)
NAD83 / UTM zone 10N

Hawthorne Gold Corp.
Williams Lake area, British Columbia

GAMM RAY SPECTROMETER - EXPOSURE RATE uR/hr

Wells Grey Block

NTS 093A02, 07

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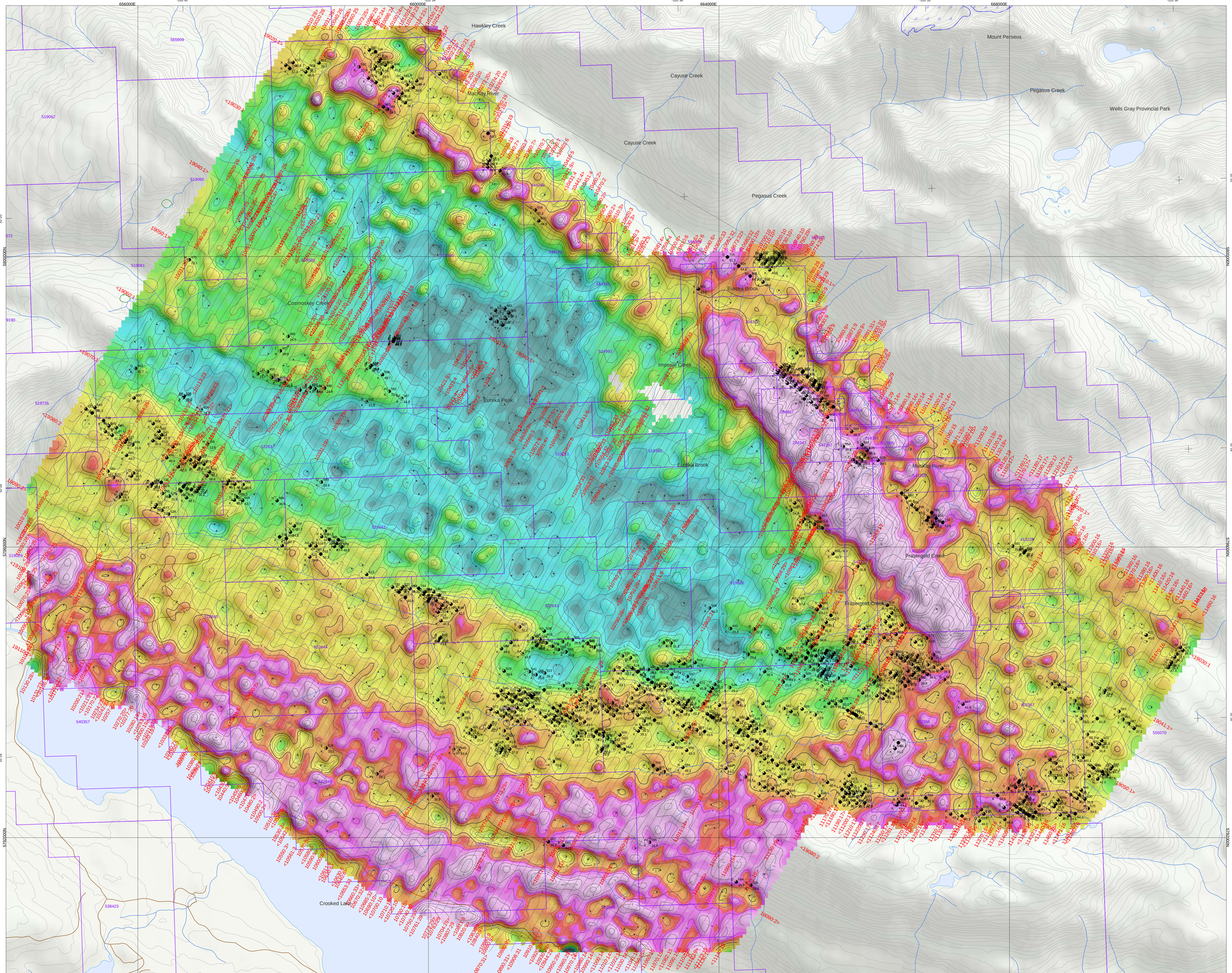
RADER Wells Grey

RADER_20k_Wells Grey.map, AQL Job no. 08-018



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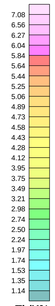

Thorium / Potassium Ratio (eTh/K%)

0.5
1.0
5.0
25.0

Off-Time Anomaly Symbols

>50S
35-50S
20-35S
10-20S
5-10S
1-5S
<1S
Cultural Sources

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scale 1:20,000

250 0 250 500 750 1000 1250 1500
(meters)
NAD83 / UTM zone 10N

Hawthorne Gold Corp.
Williams Lake area, British Columbia

GAMM RAY SPECTROMETER - THORIUM/POTASSIUM RATIO eTh/K%

Wells Grey Block

NTS 093A02, 07

AEROQUEST INTERNATIONAL
ENVIRONMENTAL SERVICES
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November 2007

RADeThK Wells Grey