



## Ministry of Energy, Mines & Petroleum Resources Mining & Minerals Division

BC Geological Survey

## ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT [type of survey(s)] Geophysical Assessment Report on the Nahmint Property	TOTAL COST \$ 95,643.28
AUTHOR(S) Trent Pezzot, B.Sc., P.Geo.	SIGNATURE(S)
NOTICE OF WORK PERMIT NUMBER(S)/DATE(S)	YEAR OF WORK 2012
STATEMENT OF WORK - CASH PAYMENT EVENT NUMBER(S)/DATE(S	) SOW Event 5324494 / May 28, 2012
PROPERTY NAME Nahmint	
CLAIM NAME(S) (on which work was done) 525100, 525102, 52510 525116, 525118, 52923 550478, 943912, 943913	7, 525109, 525110, 525111, 525112, 525113, 525114, 3, 529289, 525291, 525292, 529361, 543420, 543421, 3
COMMODITIES SOUGHT Copper, Zinc, Gold, Silver, Iron, Molyb	denum, Tellurium
MINERAL INVENTORY MINFILE NUMBER(S).092C007,-08,-09,-61,-67,	-95; 092F086,-118,-129,-140,-142,-156,-157,-160,-166,-209,-210
MINING DIVISION Alberni	NTS_092C096, 092F006
LATITUDE49 °02 '30 " LONGITUDE	<u>124_</u> o <u>53_</u> '0" (at centre of work)
OWNER(S)	
1) Nahminto Resources Ltd.	_ 2)
MAILING ADDRESS	
2802 - 1188 Howe Street	
Vancouver, B.C. V6Z 2S8	
OPERATOR(S) [who paid for the work] Snowfield Development Corp.	_ 2)
MAILING ADDRESS	
508 - 675 West Hastings Street Vancouver, B.C. V6B 1N2	
PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure	e, alteration, mineralization, size and attitude):

Skarn, Porphyry, Copper, Zinc, Silver, Gold, Tellurium, Limestone, Marble, Volcanics, Jurassic, Triassic

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			· · · ·
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne Magnetic and Radio	metrics (953 line-kilometres)	525100, 525102, 525107, 525109, 525110, 525111, 525112, 525113	\$74,843.28
GEOCHEMICAL		525114, 525116, 525118, 529233,	
(number of samples analysed for)		529289, 525291, 525292, 529361, 543420, 543421, 550478, 943912	
Soil		943913	
Silt			
Rock			
Other			
DRILLING			
(total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY/PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			<b>*</b> 00 000 00
Other Data processing, interpre	tation, meetings, reports		\$20,800.00
		TOTAL COST	\$ 95,643.28

# **GEOPHYSICAL ASSESSMENT REPORT**

ON AN

# AIRBORNE MAGNETOMETER

AND

**RADIOMETRIC SURVEY** 

NAHMINT PROJECT 49° 02' 02"N, 124° 56' 14"W

Alberni Mining Division, N.T.S. 92F/02 British Columbia, Canada

FOR

Snowfield Development Corp. Suite 508 - 675 West Hastings Street Vancouver, B.C. Canada V6B 1N2

Survey by

Precision Geosurveys Inc.

Date February, 2012

Report by GEOSCI DATA ANALYSIS LTD.

E. Trent Pezzot, BSc. PGeo.

Date: April 27, 2012

BC Geological Survey Assessment Report 33092

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## 1 SUMMARY

Nahminto Resources Ltd. (Nahminto) contracted Precision Geosurveys Inc. to conduct an airborne magnetometer and radiometric survey across their Nahmint project on Vancouver Island. The survey was flown in February, 2012. A total of 953 line kilometres were flown covering an area of approximately 85.5 km<sup>2</sup>. Survey lines were flown NE-SW on 100 metre centers with a nominal 50 metre terrain clearance. Perpendicular tie lines were flown at 1000 metre intervals.

It was the intention of these surveys to assist with the general geological mapping of the area and identify any trends or responses associated with known minfile occurrences in order to guide further exploration.

It was determined by the contractor and client that the radiometric data was compromised by extensive snow cover and no interpretation of this data was required.

Strong magnetic highs in the southeast corner, beneath Hecate Mountain and beneath Hanna Mountain reflect large and deep, high susceptibility bodies.

Background magnetic trends across the bulk of the survey area confirm the northwesterly striking geology shown on the regional government mapping. Localized magnetic features within this background generally exhibit one of three dominant orientations  $(290^{0}, 315^{0}, 330^{0})$ . Magnetic highs typically form small, elliptical shaped lenses oriented between  $310^{0}$  and  $320^{0}$ . These align to form lineations that pinch and swell, likely reflecting different facies within a folded volcano-sedimentary package. Longer, linear trends formed by both relatively high and low magnetic amplitudes reflect fault patterns oriented at  $290^{0}$  and  $330^{0}$ .

There are a number of small, circular shaped magnetic anomalies scattered across the property. Most occur as clusters and are interpreted as reflections of near surface magnetite skarns. Some of these anomalies are associated with larger magnetic anomalies that could be reflecting localized intrusions.

Several clusters of "skarn" type magnetic anomalies have been flagged as warranting further exploration. Those associated with known mineralization are afforded the highest priority. Several large magnetic anomalies, possibly reflecting intrusions are recommended as potential porphyry targets.

Several areas where fault patterns converge or intersect are recommended as exploration targets.

Initially, the conclusions based on this geophysical study should be reviewed by the project geologists to determine whether any of the geophysical targets are supported by historical geochemical and/or geological evidence. Target areas should first be examined with geological mapping and prospecting techniques. Contingent upon encouraging results, geochemical sampling and ground magnetic surveying may be warranted.

## 2 INTRODUCTION

This document is written as an assessment report and describes the geophysical interpretation of airborne magnetometer data acquired by Precision Geosurveys Inc. across the Nahmint project. Radiometric data was collected simultaneously along with the magnetic data however extensive snow cover compromised the radiometric data. This data was not corrected for by the contractor and not used in this analysis. Details concerning the claim ownership and costs of the survey and related work were provided by Nahminto.

## **3** LOCATION AND ACCESS

The Nahmint Property is located along the western shoreline of Alberni Inlet, some 25 kilometres south of the city of Port Alberni.

The property is in part accessible by road from Port Alberni by two alternate routes. The northern route follows Highway 4 west across the Somass River Bridge, then south along a series of logging roads mainly along the Alberni Inlet for approximately 50 kilometres to the northern property boundary, which takes about 1.5 hours, and is open and accessible by four wheel drive vehicles. The western route follows Highway 4 to the same turnoff, then west, south and east for approximately 75 kilometres to the western property boundary, which takes about 2 hours, and is open and accessible by four wheel drive vehicles. The lower elevations of the eastern and southern portions of the property are locally accessible by water from Port Alberni 20 to 40 kilometres south and west along the Alberni and Uchucklesit Inlets, which takes about 1 hour.



Figure 1. Location map

## 4 CLAIMS

The mineral rights to the cell mineral claims of the Nahmint Property are held 100% by private company Nahminto Resources Ltd. of Port Alberni, B.C. (FMC No. 209027). The property was optioned by Snowfield Development Corp. (Letter of Intent, January 19, 2011). The property consists of 18 contiguous cell mineral claims, acquired by Mr. Herbert W. McMaster in 2005 and 2006, and transferred to Nahminto in 2007. A 19th cell claim (550478) located near the centre of the property was acquired from Mr. Timothy Henneberry this year (2012). Two claims (943912, 943913) were staked to extend the northern boundary of the property in January, 2012. The western and south western boundaries of the cell mineral claims overlap a series of no staking reserves and clusters of mainly forfeited crown granted mineral claims along the shores of Henderson Lake and Uchucklesit Inlet.



#### Figure 2. Claim map

The mineral rights to the Three Jays and Monitor groups of crown granted mineral claims were purchased outright by Nahminto from Pacific Coast Copper Ltd. in late 2007, and consist of two separate groups of 15 crown grants which cover the former Three Jays and Monitor past producers of copper, gold and silver, and are

surrounded and overlapped by the 21 contiguous cell mineral claims of the Nahmint Property. Fourteen of the crown grants are registered to Karen Woo of Vancouver, B.C., and held beneficially for Nahminto. The 15th crown grant (Monitor #2) is registered to Dana McClure, who may be deceased, and cannot be located. This crown grant has been allowed to forfeit by failure to make the 2008 and subsequent tax payments to the crown, and the mineral rights have reverted to Nahmintos' overlying cell mineral claim 525102).

Mineral tenure lists appear in Tables 1 and 2 below:

Tuble 1 Crown Grunden winner ar Clumins					
S.I.D. #	District Lot #	Registered Owner	Claim Name	P.I.D. #	Area
					(na.)
200280	519	Nahminto c/o K.Woo	Southern Cross	009-405-950	14.9
200310	520	Nahminto c/o K.Woo	Pacific	009-405-976	8.8
200440	521	Nahminto c/o K.Woo	Norway	009-405-992	18.2
200600	523	Nahminto c/o K.Woo	Ballarat	009-406-018	13.4
200730	524	Nahminto c/o K.Woo	Three Jays	009-406-026	14.2
200860	525	Nahminto c/o K.Woo	Three Jays No.2	009-406-042	13.6
200990	526	Nahminto c/o K.Woo	Three Jays No.3	009-406-069	20.4
201060	527	Nahminto c/o K.Woo	Blue Jay	009-406-077	9.5
201190	528	Nahminto c/o K.Woo	Uncle Sam	009-406-093	12.7
201220	529	Nahminto c/o K.Woo	John Bull	009-406-115	7.7
201350	530	Nahminto c/o K.Woo	Nahwitka	009-406-140	13.8
201480	531	Nahminto c/o K.Woo	Nahwitka No.1 Fraction	009-406-174	0.2
201510	532	Nahminto c/o K.Woo	Monitor No.1	009-406-123	18.7
201640	533	Nahminto c/o K.Woo	Monitor No.1 Fraction	009-406-131	6.0
201770	534	Dana McClure	Monitor No.2	009-406-182	16.2
Totals	15 crown grants				188.3

**Table 1 – Crown Granted Mineral Claims** 

## Table 2 – Cell Mineral Claims

Tenure Number	Tenure Type	Claim Name	Registered Owner (%)	Map Number	Good To Date	Status	Area (ha.)
525100	Mineral	TJM1	209027 (100%)	092F	June 7. 2012	GOOD	529.358
525102	Mineral	TJM2	209027 (100%)	092C	June 7, 2012	GOOD	529.885
525107	Mineral	TJM3	209027 (100%)	092C	June 7, 2012	GOOD	445.079
525109	Mineral	TJM4	209027 (100%)	092F	June 7, 2012	GOOD	529.681
525110	Mineral	TJM5	209027 (100%)	092F	June 7, 2012	GOOD	529.636
525111	Mineral	TJM6	209027 (100%)	092F	June 7, 2012	GOOD	529.367
525112	Mineral	TJM7	209027 (100%)	092F	June 7, 2012	GOOD	529.555
525113	Mineral	TJM8	209027 (100%)	092F	June 7, 2012	GOOD	529.497
525114	Mineral	TJM9	209027 (100%)	092F	June 7, 2012	GOOD	529.594
525116	Mineral	TJM10	209027 (100%)	092C	June 7, 2012	GOOD	445.058
525118	Mineral	TJM11	209027 (100%)	092C	June 7, 2012	GOOD	529.746
529233	Mineral	TJM12	209027 (100%)	092F	June 7, 2012	GOOD	296.387
529289	Mineral	TJM13	209027 (100%)	092F	June 7, 2012	GOOD	465.683
529291	Mineral	TJM14	209027 (100%)	092F	June 7, 2012	GOOD	338.679
529292	Mineral	TJM15	209027 (100%)	092F	June 7, 2012	GOOD	508.230
529361	Mineral	TJM16	209027 (100%)	092F	June 7, 2012	GOOD	338.600
543420	Mineral	TJM17	209027 (100%)	092F	June 7, 2012	GOOD	508.166
543421	Mineral	TJM18	209027 (100%)	092F	June 7, 2012	GOOD	105.899
550478	Mineral	HANDY	209027 (100%)	092F	June 7, 2012	GOOD	508.2345
		CREEK					
943912	Mineral	TJM20	209027 (100%)	092F	Jan 29, 2013	GOOD	296.3426
943913	Mineral	TJM19	209027 (100%)	092F	Jan 29, 2013	GOOD	529.0068
Totals	21 claims						9551.684

All of the known mineralized zones and mine workings are located either on the 14 owned crown granted mineral claims, on the 21 overlying cell mineral claims, or on the adjacent no staking reserves as described in

Geosci Data Analysis Ltd., 2060 148<sup>th</sup> Street, Surrey, B.C., Canada V4A8L5

the History and Mineralization sections. The surface rights over most of the 15 crown granted mineral claims and the 21 cell mineral claims are held by the B.C. government as crown land, but there are some areas with timber licences held by logging companies, some small areas along the shore of Uchucklesit Inlet held as private property by individuals, and some foreshore leases.

Similar to elsewhere in British Columbia, no permit is required for non-mechanized exploration, but a valid permit is required to undertake any mechanized work on the Nahmint Property. Such permits are issued by the Inspector of Mines at the Victoria based Southwest Regional Office, Health and Safety Branch, Mining and Minerals Division, B.C. Ministry of Energy Mines and Petroleum Resources. This requires the submission of a Notice of Work and Reclamation Program Application, which takes approximately one month to process, but commonly takes longer due to delays in receiving referral responses from local First Nations Bands. In addition, owners of the surface rights of the private land covering a minor portion of the Nahmint Property must be notified in advance of any mining activity on their land, and fairly compensated for any and all damages inflicted to the surface rights, by the mineral tenure owner.

## 5 <u>CLIMATE AND PHYSIOGRAPHY</u>

Topographically, the property resembles a squat dome, and topography consists of terraced, flat-topped mountains incised by steep cliffs and valleys with fast-flowing, often seasonal creeks and rivers fed by small lakes. Elevations range across the property from sea level to about 1000 metres. Overburden on the property consists of thin, poorly developed soils with local pockets of thicker glacial till, and rock exposure averages about 10%. Vegetation is dense, second growth coniferous forest and fast growing alders along variably overgrown logging roads, with occasional patches of old growth hemlock, balsam, fir and cedar. Abundant fresh water sources occur across the property, available through appropriate permits for exploration or mining purposes.

The climate in the area is a temperate coastal rain forest, with warm dry summers, and very wet conditions the rest of the year. Winters are relatively mild with moderate snowfall accumulations at higher elevations that linger along north-facing slopes well into the spring. Exploration is possible year round over most of the Nahmint property.

## 6 HISTORY AND PREVIOUS WORK

Work in the area of the Nahmint property dates back to the late 1890's with the discovery of mineralization at many locations along the nearby portions of the Alberni Inlet, Uchucklesit Inlet and Henderson Lake. Considerable exploration and development work was carried out on the property in the early 1900s, particularly on the Three Jays area, including underground workings on twelve different occurrences, each representing a separate cluster of skarn deposits. Most of the work was suspended by the onset of World

War 1, and only sporadic exploration has occurred on some of the locations since then. Documented assessment work consists of six reports of exploration work completed prior to 1990 on isolated portions of the Nahmint Property by different operators who staked claims over reverted crown granted mineral claims and/or acquired titles to crown grants. Since 2005, five additional technical assessment reports submitted by Jacques Houle document both preliminary and systematic work programs. In 2011, an assessment report documenting results from on an airborne mag and VTEM survey over the Three Jays area was submitted.

There are 18 Minfile occurrences located on or adjacent to the Nahmint property. Eleven of these were covered by the airborne survey. Brief summaries of the history of these 11 occurrences are presented below as sections 6.1 to 6.11. For completeness, brief histories of the other occurrences, which are generally covered by a no staking reserve and lie just off the western edge of the airborne survey, are included as sections 6.11 to 6.20.

#### 6.1 <u>Three Jays (092F 140)</u>

The Three Jays was also called Hayes or Nahmint during its exploration and production history between 1898 and 1947, and is by far the most developed area on the Nahmint Property. Seven copper skarn deposits were discovered over a strike length of 1500 metres from the west shore of the Alberni Inlet along an east-west orientation, plus a disseminated copper zone, on the contiguous North Pole, Southern Cross, Pacific, Norway, Viking (forfeited), Ballarat, Three Jays No.2, Three Jays, Three Jays No.3 and Blue Jay (forfeited) crown granted mineral claims, which are held by Karen Woo beneficially for Nahminto. The deposits and the remaining crown grants are either on or surrounded by cell mineral claim 525100 on the northeast portion of the Nahmint Property. The deposits were explored by almost 1 km. of underground workings, including three tunnels, two shafts, and several trenches, plus an aerial tramway was installed to convey ore from the upper workings. From 1898 to 1902, 1,981 tonnes of direct shipping ore was sent to the Tacoma smelter, averaging 7.5% copper, 0.97 g/t gold and 38 g/t silver, with several stockpiles of mineralized material remaining on surface.

#### 6.2 <u>Monitor (092C 007)</u>

Three copper skarn deposits (Maynard, Hedley and Leonard) were discovered between 1898 and 1916 along a 700 metre long north-westerly trend along the east side of Handy Creek near the shore of the Alberni Inlet on the contiguous crown granted mineral claims Uncle Sam, John Bull, Nahwitka and Monitor No.1 Fraction held by Karen Woo beneficially for Nahminto. These are now surrounded by cell mineral claim 525102 on the southern portion of the Nahmint Property. Shallow underground workings and surface trenches were excavated and an aerial tramway installed to convey ore from the upper workings. Minor production of direct shipping ore to smelters occurred in two pulses, to Tacoma from 1900 to1902 and to Trail from 1916 to 1918, totalling 1,288 tons averaging 9.09% copper, 0.05 g/t gold and 28.8 g/t silver.

### 6.3 Happy John (092C 008)

Three copper skarn deposits were discovered between 1900 and 1918 along the west side of Handy Creek near the shore of the Alberni Inlet on the three, non-contiguous, forfeited crown granted mineral claims Happy John, Happy John No.1, No.2 and No.4. These are now covered by cell mineral claims 525102 and 525107 on the southern part of the Nahmint Property. Shallow underground workings and surface trenches were excavated on all the deposits, which are all within 2 km. of the Monitor deposits and may together represent a single, large cluster of copper skarns.

## 6.4 **Defiance (092C 009)**

Three iron skarn deposits were discovered between 1902 and 1916 in a cluster along a tributary of Handy Creek, due north of the Monitor and Happy John occurrences approximately 1 km. from the Alberni Inlet, also now covered by cell mineral claim 525102 on the southern portion of the Nahmint Property. Shallow underground workings and extensive surface trenches were excavated on some of the deposits. Analyses of magnetite-chalcopyrite dump material taken in 1917 yielded elevated copper and silver values, as well as iron.

## 6.5 Hecate Mountain (092F 411)

This unexplored limestone occurrence is probably the strike extension of the Barkley Sound occurrence, located 2 km. to the southwest along the Alberni Inlet. Hecate Mountain is a 250 m. wide, gently northwest-dipping limestone band near the centre of the Nahmint Property at the junction of cell claims 525102, 525110 and 525112.

#### 6.6 <u>Silver King (092C 061)</u>

Three gold/copper skarn deposits were discovered along an 800 m. east-west trend approximately 300 m. from the Alberni Inlet and 1 km. west of the Monitor occurrence on the contiguous forfeited crown granted Silver King, Copper Queen and St. George claims. These are now covered by cell claims 525102 and 525107 on the southern Nahmint Property, but the western projection of the zone extends into a pre-existing no staking reserve along the east shore of Uchucklesit Inlet. Samples taken in 1986 from siliceous pyrrhotite-chalcopyrite skarn mineralization yielded elevated gold values.

#### 6.7 Southern Cross (092C 067)

A copper skarn was discovered along the northeast shore of Uchucklesit Inlet on the forfeited crown granted Southern Cross mineral claim. This is included in a no staking reserve that pre-existed the surrounding cell mineral claim 525107, and is just beyond the southwest portion of the property boundary. Shallow

underground workings and a trench were excavated in 1904-1906, and minor production of direct shipping ore in 1905-1906 totalled 290 tonnes averaging 2.1% copper and 17.7 g/t silver.

#### 6.8 <u>Sunshine (092F 129)</u>

At least three deposits of variable iron and copper skarn were discovered between 1902 and 1918 along Cascade Creek, about 700 metres northeast of Uchucklesit Inlet on the contiguous forfeited Sunshine and Fern crown granted mineral claims. These are now covered by cell mineral claims 525109 and possibly 525107 on the southwest portion of the Nahmint Property, which extend to Uchucklesit Inlet between two no staking reserves. The deposits were explored by shallow underground workings, from which 5 tonnes were shipped in 1916, averaging 17.4% copper and 43.6 g/t silver.

#### 6.9 Saucy Lass (092F 156)

Several copper skarn deposits were discovered from 1908 to 1920 on the contiguous forfeited crown granted mineral claims Saucy Lass, Saucy Lass No.1 and Saucy Boy, located along Cascade Creek approximately 1 km. from Uchucklesit Inlet. These were explored by shallow underground workings. The deposits occur along the eastern end of a no-staking reserve and are overlapped by cell mineral claim 525109, straddling the southwest boundary of the Nahmint Property.

#### 6.10 Black Prince (092F 086)

Between two and six deposits of iron skarn, consisting of almost pure magnetite occurring in thin sheets, were discovered near a stream along the eastern side of Cass Creek between 1910 and 1916. A sample of one of the deposits taken in 1916 averaged 70.2% iron. These deposits are covered by cell mineral claims 525109 and possibly 525110 in the central portion of the Nahmint Property.

#### 6.11 Handy Creek (092F475)

This unexplored limestone occurrence is exposed over an area of 1 by 2 kilometres, and is a flat lying lens partially exposed in section along the deep gorge at the Handy Creek Main bridge. It is covered by mineral cell claim 550478.

#### 6.12 Barclay Sound (092C 095)

A 200 metre wide limestone deposit extending for 1.7 km. along the northeast shore of Uchucklesit Inlet and onto Limestone Island was discovered in 1911. It strikes northeasterly towards the Silver King skarn occurrence, and dips gently to the southeast. Most of the limestone deposit along the shore is within the no staking reserve, but its northeast projection is covered by cell claim.

#### 6.13 Torse (092F 118)

This occurrence was originally discovered and staked as the Blue Bell Group in 1898-1899, then restaked as the Torse Group (Torse No.1 to No.8 inclusive) and explored in 1917-1918. Two copper skarn deposits were discovered along the eastern side of Snug Basin, and explored by shallow underground workings and open cuts. All but the Torse No.5 crown granted mineral claims were forfeited and the area of the former claims and deposits is within a no staking reserve extending along the eastern shore of Henderson Lake and surrounding Snug Basin. The western edge of cell mineral claim 543421 overlaps the pre-existing no staking reserve, but does not cover any the known deposits of the Torse occurrence, beyond the western edge of the Nahmint Property.

#### 6.14 Ocean Wave (092F142) and Orphan Boy (092F209)

Originally known as the Belvidere Group and located 1 km. north of Snug Basin, these occurrence were covered by the once contiguous but now forfeited crown granted mineral claims Orphan Boy, Fisher Maid, Belvidere, Santa Cruz, Ocean Wave, Big Bear, Southern Cross, Alpha, Tortilla, and Belvedere No.1 Fraction. From 1899 to 1903, at least two clusters of copper skarn deposits approximately 500 m. were discovered and the northern occurrence (Ocean Wave) excavated by shallow underground workings. In 1965, a minor surface drilling program was completed on the southern occurrence (Orphan Boy), but no known documentation exists of this work. These deposits are now covered by a no staking reserve along the eastern shore of Henderson Lake, and cell mineral claim 543420 overlaps the pre-existing reserve and the deposits along the western edge of the Nahmint Property.

#### 6.15 <u>Cascade (092F157)</u>

In 1904, an outcropping deposit of copper/gold skarn was discovered along the west side of Cascade Creek approximately 400 m. from Uchucklesit Inlet, developed with a short adit and shaft for drainage, and an aerial tramway was installed. The deposit was partially mined by open cut and a trial shipment of 113 tonnes was sent to the Tacoma smelter, which averaged 13% copper and 29 g/t silver. A subsequent survey of the deposit location by the mine operators showed it to be beyond the claim boundary, and all further work was suspended. The deposit is now covered by a no staking reserve at Kildonan, the historic site of a small settlement and current site of a private fishing lodge, and is overlapped by cell mineral claim 525109 beyond the southwest boundary of the Nahmint Property.

#### 6.16 <u>Ivanhoe (092F160)</u>

From 1908 to 1909, three copper skarn deposit was discovered each about 100 metres apart just north of Snug Basin and explored with shallow underground workings. These are now covered by the no staking reserve along the east side of Henderson Lake, beyond the west boundary of the Nahmint Property.

#### 6.17 <u>Rainy Day (092F166)</u>

Four parallel, northeast-trending copper skarn deposits were discovered within 50 metres of one another from 1898 to 1928, one of which and explored by shallow underground workings, on the forfeited Rainy Day crown granted mineral claim along the eastern shore of Henderson Lake. These deposits are covered by the no staking reserve, and overlapped by cell mineral claim 543420, beyond the north-western boundary of the Nahmint Property.

#### 6.18 <u>J & S (092F210)</u>

In 1898, an iron skarn deposit was discovered and explored along the eastern shore of Henderson Lake, approximately 500 m. northeast of the Rainy Day occurrence. This deposit is covered by the no staking reserve, and overlapped by cell mineral claim 543420, beyond the north-western boundary of the Nahmint Property.

#### 6.19 Uchucklesit Inlet (092F413)

This unexplored limestone occurrence is located just north of Snug Basin, near the Torse and Ivanhoe skarn occurrences. It is situated within a no staking reserve and beyond the western boundary of the Nahmint Property.

#### 6.20 Nahminto Previous Work

For Nahminto Resources Ltd.'s three 2007 preliminary work programs, funded in part by Discovery-Corp Enterprises Inc., Jacques Houle and Mr. Herb McMaster took 38 rock samples in the Three Jays, Monitor, Sunshine, Ocean Wave/Orphan Boy areas, and also 11 orientation stream moss mat samples across the southcentral portion of the Nahmint Property. These efforts are documented in ARIS reports 29252, 29574 and 29660.

In 2008, Nahminto conducted two systematic work programs. The first, completed in the summer of 2008 was funded in part by Urastar Energy Inc. and in part by Nahminto and collected 45 rock samples and 44 stream moss mat samples across most of the Nahmint Property. The second was funded by Torch River Resources Ltd and completed during the fall of 2008. During this program Mr. Andris Kikauka, P.Geo., took 5 rock samples, 90 soil samples and 173 ground magnetic readings in the Three Jays area of the property. The two work programs are documented in ARIS report 30799.

For Torch River's spring-summer 2009 work program, Mr. Kikauka completed three phases of field work in March, May and August of 2009, targeting known skarn mineralization in four main areas on the Property. These areas consisted of Three Jays/Viking/Pacific, Monitor/Happy John, Ocean Wave/Orphan Boy, and Sunshine/Saucy Lass. Mr. Kikauka took 659 ground magnetic readings, 236 soil samples and 23 select outcrop and/or float rock chip samples. All data was documented in ARIS report 31248.

During the fall 2009 work program, a one week field work program targeted primarily the Three Jays area and the creek outflows along the eastern side of the Nahmint Property. During early October, 21 outcrop or float rock samples, 49 soil samples and 15 stream moss mat samples were taken. This work program is also documented in ARIS report 31248.

The 2010 work program completed by Nahminto included a 7 day work program in early July that targeted the Silver King, Happy John, Monitor Area in the south-central portion of the property for possible tellurium-bearing skarn mineralization. The program consisted of GPS-grid based geological mapping at a 1:2000 scale with detailed mapping at selected rock sample sites, gathered 137 soil samples and 43 rock samples, taken primarily from mineralized exposures in road-cuts, open-cuts, adits or stockpiles. The results from this program were documented in a 43-101 compliant technical report by Jacques Houle, dated October 15, 2010.

In 2011, an airborne magnetometer and VTEM survey was completed over the Three Jays deposit area. The magnetometer data outlined an east-west striking magnetic body which was interpreted as a localized intrusion. The known skarn deposits lie along the southern flank of this body. The VTEM data was considered unreliable. The interpretation of this data was documented in an assessment report by E. Trent Pezzot, dated September 4, 2011.

Year	ARIS Report	Company	Work Program
1965	00777	Alberni Mines Ltd.	Geological and ground magnetic geophysical surveys on the Orphan Boy claim and occurrence
1969-70	02856	Nootka Explorations Ltd.	Geological and geochemical surveys on the Henderson Lake claims (covered the area of Torse, Ocean Wave, Ivanhoe, Rainy Day, Orphan Boy and J&S occurrences)
1980	08286	Island Mining and Exploration Co. Ltd.	Prospecting, geological and geochemical surveys on the IME claims (including crown grants and covering the Three Jays occurrence)
1980	08898	Allan Ingleson	Prospecting on the Rain Day claims (covering the Rainy Day and possibly J&S occurrences)
1986	15199	Chelan Resources Inc.	Geological, geochemical and ground geophysical (magnetics and electromagnetics) surveys on the Liquid Sunshine Property (covering Happy John, Silver King, Southern Cross occurrences)

 Table 3 – Nahmint Assessment Work Summary

Year	ARIS Report	Company	Work Program
1989	19484	Nitro Resources Ltd.	Geochemical sampling on the Liquid Sunshine Property (covering Happy John, Silver King and Southern Cross occurrences)
2007	29252	Discovery-Corp. Enterprises Inc.	Prospecting, geological mapping, rock sampling and geochemistry on portions of the Nahmint Property
2007	29574	Nahminto Resources Ltd.	Prospecting, geological mapping, rock and stream moss mat sampling on portions of the Nahmint Property
2008	29660	Nahminto Resources Ltd.	Prospecting, rock, soil, stream, moss mat sampling geochemistry on portions of the Nahmint Property
2008	30799	Torch River Resources Ltd. Others	Prospecting, rock, soil, stream moss mat sampling geochemistry and ground magnetics on portions of the Nahmint Property
2009	31248	Nahminto Resources Ltd.	Prospecting, rock, soil, stream moss mat sampling, geochemistry and ground magnetics on portions of the Nahmint Property
2010	31708	Nahminto Resources Ltd.	Technical Report (NI-43-101 compliant– summarize previous and new work on the Nahmint Property
2011	32603	Nahminto Resources Ltd.	Airborne magnetometer survey

## 7 GEOLOGY

## 7.1 Regional Geology

The Nahmint property is situated near the south end of the Wrangellian Terrane of the Insular Belt. The region is underlain by four, thick discrete volcano-sedimentary sequences ranging in age from Palaeozoic to Cretaceous, which have been variably intruded by up to four intrusive suites each associated with major tectonic events and related folding and faulting. The oldest sequence in the area belongs to the Devonian-Permian Sicker Group, which does not outcrop on the property. The middle two sequences consist of the Triassic-Jurassic Vancouver and Bonanza Groups, which are described in detail below and cover most of the property. The youngest sequence belongs to the Cretaceous Nanaimo Group, which is entirely clastic sediments and does not outcrop on the property. The only intrusive rocks known to outcrop on the property are batholiths, stocks and dikes of the Jurassic Island Intrusive Suite, but Triassic Mount Hall and Tertiary Mount Washington suite intrusives occur in the area. The Triassic-Jurassic Vancouver and Bonanza Groups were reclassified in 2007 by G. Nixon of the B.C. Geological Survey, based on his recent work on northern Vancouver Island. The Triassic Karmutsen Formation of the Vancouver Group consists of extensive, pillowed

to brecciated volcanic flows with thin inter-flow limestones and porphyritic volcanics in the upper part of the unit. Overlying the Karmutsen is the massive to bedded Triassic Quatsino Formation limestone, also of the Vancouver Group. The base of the overlying Bonanza Group is the Triassic Parson Bay Formation, consisting of volcanic breccias and tuffs overlain by bedded limestone, siltstone, mudstone and shale. These are overlain by the Jurassic LeMare Lake subaerial volcanics, tuffs and minor sedimentary rocks, the top of the Bonanza Group. These volcano-sedimentary sequences are intruded by the Early Jurassic Island Intrusives, consisting of a batholith or sill of granodiorite and related sub-intrusive porphyritic stocks and dikes.



 MPnBFch - Paleozoic - Buttle Lake Group - Fourth Lake Formation chert, siliceous muDSiD - Paleozoic - Sicker Group - Duck Lake Formation basaltic volcanic rocks muTrVs - Mesozoic - Vancouver Group undivided sedimentary rocks
 PnPBM - Paleozoic - Buttle Lake Group - Mount Mark Formation limestone bioherm/r
 PzJWg - Paleozoic to Mesozoic - Westcoast Crystalline Complex intrusive rocks, u
 uDSiN - Paleozoic - Sicker Group - McLaughlin Ridge Formation volcaniclastic roc
 uDSiN - Paleozoic - Sicker Group - Nitinat Formation calc-alkaline volcanic rock
 uKN - Mesozoic - Nanaimo Group undivided sedimentary rocks
 uTrVK - Mesozoic - Vancouver Group - Karmutsen Formation limestone, marble, calca

Figure 3. B. C. Geology Map

Claim Outline (Pink border) – Airborne Survey Grid (yellow-white line)

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## 8 GEOPHYSICAL TECHNIQUES

## 8.1 <u>Magnetic Survey Method</u>

Total Magnetic Intensity measurements are taken along survey traverses (normally on a regular grid) and are used to identify metallic mineralization that is related to magnetic materials (normally magnetite and/or pyrrhotite). Magnetic data are also used as a mapping tool to distinguish rock types, identify faults, bedding, structure and alteration zones.

## 8.2 Radiometric Survey Method

Radiometric surveys detect and map natural radioactive emanations, called gamma rays, from rocks and soils. All detectable gamma radiation from earth materials come from the natural decay products of three primary elements; uranium, thorium, and potassium. The purpose of radiometric surveys is to determine either the absolute or relative amounts of U, Th, and K in surface rocks and soils. This data can be used to map variations in the near surface lithology. Relative amplitude changes between the different elements can be used to map some alteration effects.

## 9 FIELD WORK AND INSTRUMENTATION

The survey area is an irregularly shaped block approximately 10 km by 11 km that encompasses approximately 85.5 km<sup>2</sup>. One hundred forty-six (146) survey lines and twelve (12) tie-lines, totalling some 953 line kilometres were flown. The survey was flown in three blocks: Block A, Block A1, and Block B. Block A1 can be found within Block A and has an area approximately 1.5 km by 0.65 km.



Figure 4. Nahmint property - Block A, Block A1, and, Block B.

For Blocks A and B the survey lines were flown at a 100 meter line spacing on a  $047^{0}/227^{0}$  heading. Perpendicular tie lines were flown at a one (1) km spacing on a heading of  $137^{0}/317^{0}$ .

Block A1 was flown with the same parameters as the other blocks but with the survey lines offset 50 metres to create a 50 metre infill with Block A.

An average terrain clearance of 53 metres vertically above the ground was maintained for this survey.

A logistics report provided by Precision Geosurveys Inc. is included as Appendix 3 of this report. This document provides details concerning the survey logistics and instrumentation used by the contractor.

## 10 DATA PROCESSING

Basic data processing of the magnetic data was completed by Precision Geosurveys Inc.

Before any processing and editing of the raw magnetic data, the data obtained from a compensation flight test must be applied to the raw magnetic data first. A computer program called PEIComp is used to create a model from the compensation flight test for each survey to remove the noise induced by aircraft movement; this model is applied to each survey flight so the data can be further processed.

Filtering is applied to the laser altimeter data to remove vegetation clutter and to show the actual ground clearance. To remove vegetation clutter a Rolling Statistic filter is applied to the laser altimeter data and a low pass filter is used to smooth out the laser altimeter profile to remove isolated noise. As a result, filtering the data will yield a more uniform surface in close conformance with the actual terrain.

Geosci Data Analysis Ltd., 2060 148<sup>th</sup> Street, Surrey, B.C., Canada V4A8L5 tel: (604) 535-4255 e-mail: geosci@telus.net The processing of the magnetic data involved the correction for diurnal variations. The base station data collected is edited, plotted and merged into a Geosoft (.gdb) database daily. The airborne magnetic data is corrected for diurnal variations by subtracting the observed magnetic base station deviations.

Following the diurnal correction was a lag correction. A lag correction of 1.0 seconds was applied to the total magnetic field data to compensate for the lag in the recording system as the magnetometer sensor flies 5.70 m ahead of the GPS antenna. Lastly, a heading correction was applied to the data.

Some filtering of the magnetic data is also required. A Non Linear filter was used for spike removal. The 1D Non-Linear Filter is ideal for removing very short wavelength, but high amplitude features from data. It is often thought of as a noise spike-rejection filter, but it can also be effective for removing short wavelength geological features, such as signals from surficial features. The 1D Non-Linear Filter is used to locate and remove data that is recognized as noise. The algorithm is 'non-linear' because it looks at each data point and decides if that datum is noise or a valid signal. If the point is noise, it is simply removed and replaced by an estimate based on surrounding data points. Parts of the data that are not considered noise are not modified. The combination of a Non-Linear filter for noise removal and a low pass trend enhancement filter resulted in level data. The low pass filter smoothed out the magnetic profile to remove isolated noise.

The corrected magnetic data from the survey and tie lines was used to level the data all together. Two forms of levelling are applied to the corrected data: conventional levelling and micro-levelling. There are two components to conventional levelling; the first involves statistical levelling of magnetic data to correct miss ties (intersection errors) followed by specific patterns or trends. For the second component, tie lines are brought to a common regional base value using the mean value of the cross-level error. To obtain the best possible levelled data, individual corrections are edited at selected intersections.

Lastly, micro-levelling is applied to the corrected conventional levelled data. This will remove any residual line-direction-related noise, and any low amplitude component of flight line noise, that still remains in the data after tie line levelling.

The raw and final processed data was provided in a geosoft formatted database by Precision Geosurveys Inc.

Additional filtering of the magnetic data was completed by Geosci Data Analysis Ltd. This included reduction to the pole and various vertical and horizontal gradient filters designed to enhance edge effects for interpretation. In addition to the colour contour maps, magnetic data was examined in line profile and stacked profile formats. Several 3D image processing techniques, including shadow enhancement and draping over topography were utilized for analysis.

The magnetic data was reformatted for input to a 3D inversion algorithm.

#### 10.1 <u>Inversion Programs</u>

3D inversion programs are designed to produce voxel models showing one possible subsurface distribution of the relevant physical parameter that would produce observed field data. Inversion programs are available to analyse magnetic, gravitational, resistivity, electromagnetic and induced polarization data.

The inversion programs are generally applied iteratively to, 1) evaluate the output with regard to what is geologically known, 2) to estimate the depth of detection, and 3) to determine the viability of specific measurements.

The output voxel models are viewed in one of several 3D viewing programs that allow the user to overlay the results from several different inversions with topographic, geological, geophysical, drilling and other relevant data. The models can be viewed from infinite angles and perspectives and manipulated to display specific isosurfaces or ranges of thresholds. Models can be cut and sliced to provide cross-section and plan views.

The magnetic data for this survey was analysed using the mag3d program, one of a suite of 3D inversion programs developed by a consortium of major mining companies under the auspices of the UBC-Geophysical Inversion Facility.

## 11 DATA PRESENTATION

The following 1:50000 scale plan maps were created by Precision Geosurveys Inc. to present the geophysical data for Blocks A and B. These maps are provided as digital files, in both pdf and Geosoft Oasis Montaj map formats. Copies of these files are included with the digital copy of this report as appendix 4.

- Total Magnetic Intensity (colour contour map)
- Total Magnetic Intensity (colour contour map) with flight lines
- Calculated Vertical Gradient (colour contour map)
- Digital Terrain Model (colour contour map) calculated from barometric, radar and laser altimeter data.

Total Magnetic Field and Calculated Vertical Gradient were presented for Block A1 at a 1:6000 scale.

The results from additional processing and image enhancement techniques are included as figures with the text of this report. Digital copies of these products are provided as MapInfo formatted tables.

The mag3d voxel model is provided in two formats: the native UBC inversion format, suitable for viewing in the meshtools3D viewer and vtk format, suitable for viewing in the Paraview and Mayavi viewers. Formats for several other 3D viewing software packages are available.

## 12 DISCUSSION OF RESULTS

## 12.1 Interpretation of Magnetic Data

The magnetic data was analysed in four different manners: as colour and shadow enhanced contour images, stacked profiles, topography draped images and through an inversion process which produced a 3D voxel model showing the subsurface distribution of the interpreted magnetic susceptibility property. Each technique provides a different insight that assists in the interpretation.

The regional government data covers the entire claims area. It was gathered on 800m spaced lines and flown at a nominal terrain clearance of 305m. This magnetic data reflects the NW-SE strike that dominates the regional geology.



Figure 5. Regional Survey - Residual Magnetic Intensity False Colour Contour Map High Altitude Government Survey - Claim Outline (Pink border) – Precision Airborne Survey Outline (yellowwhite line) – Minfile Occurrences

The claims area is underlain by two strong NW trending magnetic highs which form elliptical shaped bodies, roughly 7 km long and 3-4 km wide. One is located in the southern portion of the claim block (underlain partially by Hecate Mountain) and the other in the north (underlain by Hannah Mountain). Each appears to be comprised of two localized centres. Offsets and discontinuities of these trends give the impression of NE oriented faulting. Two small, weak magnetic highs appear to flank the northernmost high.

Geosci Data Analysis Ltd., 2060 148<sup>th</sup> Street, Surrey, B.C., Canada V4A8L5 tel: (604) 535-4255 e-mail: geosci@telus.net One is located to the SE and coincides with the Three Jays prospect. The other is located to the west and is associated with the Rainy Day, Ocean Wave and Orphan Boy minfile occurrences.

There is no obvious correlation between the regional magnetic responses and the regional geology map, other than the north-westerly strike that is associated with both the major faults and magnetic trends. The magnetic highs cross lithological boundaries, suggesting a different and more complex geology than the one presented on the government maps.

The Precision airborne survey data maps the same general trends evident on the high altitude government survey but reveals significantly more detail (Figures 5-6).

- The edges of the regional trends are more clearly delineated as sharp gradients and define a dominant structural orientation of 290<sup>°</sup>. These edges appear to be controlled by regional faults.
- The large, regional magnetic high trends are seen to be comprised of clusters of numerous smaller zones. The majority of these form elongated lenses, striking from 310<sup>°</sup> to 320<sup>°</sup>.
- There are numerous small, satellite highs scattered around the edges of the regional trends.
- The magnetic low separating the large highs closely follows the local drainages (Cass Creek, portions of Handy Creek).
- The data reveals a series of northwesterly faults bearing 330<sup>0</sup> delineated by breaks and offsets of the localized magnetic anomalies. This orientation is most obvious across the northernmost regional high but present across the entire survey grid.



Figure 6. Total Magnetic Field Intensity False Color Contour - Equal Area Distribution Shadow Enhanced from NE -background of Regional High Altitude Government Survey -

The equal area colour distribution applied to the total field data in Figure 5 is designed to highlight subtle magnetic features. A linear colour distribution (Figure 6) more clearly illustrates a significant amplitude difference between the southeast lobe of the southern regional magnetic high and the rest magnetic features.



Figure 7. Total Magnetic Field Intensity False Color Contour - Linear Distribution Shadow Enhanced from NE -Black Heavy Dashed Lines (290<sup>0</sup> faults) - Black Light Dashed Lines (330<sup>0</sup> faults) - White Lines (310<sup>0</sup>-320<sup>0</sup> mag lenses)

A number of filters were applied to enhance the linear trends evident in the magnetic data. The Calculated Vertical Gradient (cvg) and Sobel Horizontal Edge Enhancement (SobelH, SobelV) filters were all effective. These maps display the magnetic gradients (generated at contacts and faults) as narrow linears. A study of these maps reveals more of the NW lineations evident on the total field maps. It also enhances a N-S striking lineation extending from the middle of the southern edge into the centre of the block that was only weakly evident in the total field displays. This discontinuity is interpreted as a major fault zone.



Figure 8.SobelH Horizontal Edge Enhancement Filter of Total Magnetic Field IntensityFalse Color Contour Map - Shadow Enhanced from South -Black Long Dashed Lines (290° faults) - BlackShort Dashed Lines (330° faults) - White Lines (310°-320° mag lenses) – Black Zig-Zag (0° fault)



Figure 9. Calculated Vertical Gradient Filter of Total Magnetic Field Intensity False Color Contour Map - Shadow Enhanced from Northeast – High gradient areas outlined

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Figure 10. Compilation of Linear Interpretation of calculated gradients. Grey Scale TFM background map

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These displays are also effective at illustrating character differences in the magnetic data. In addition to enhancing the linear features, the cvg map (Figure 8) shows three basic characters:

- Background across the western half of the area is characterized by very quiet, smoothly varying magnetic responses. While this "quiet" area could be a masking effect generated by a thick overburden layer, this type of response is often associated with sedimentary rocks.
- Background responses across the eastern half of the survey area are not as quiet but can still be described as being subdued.
- Highly variable responses are mapped in the southeast (southeastern slopes of Hecate Mountain) and northern portions of the map (Hannah Mountain) and to a lesser degree, in a large circular area along the western edge of the claims (Mount Halliday). This response is commonly associated with volcanic or metamorphic rocks.

It is common to find a close correlation between magnetics and topography. In some instances the magnetics are responding to a discrete geological unit that is also influencing the topography. There are also situations where the topography can generate a magnetic anomaly even when there is no geological variation. Displaying the magnetic data draped over a 3D representation of the topographic surface is an effective way of illustrating this relationship.

The majority of the magnetic responses appear to be independent of topography. Lineaments that follow the major  $290^{0}$  faults can be seen to cross topographic features, suggesting the faults are near vertical. While some of the isolated magnetic highs coincide with topographic highs the majority do not.

A couple of areas where the topography may be having a measurable impact on the magnetic fields are flagged on the images below (Figures 10 and 11).

- The hills and valleys forming the drainages that flow NE down the slopes of Hecate Mountain into the southern arm of Handy Creek are mapped as weak magnetic highs and lows respectively. These subtle responses are likely an artefact of the topography.
- Cass Creek and most of Handy Creek are mapped as magnetic lows. While some part of this
  response could be associated with thicker overburden in the valleys it is more likely that the
  magnetic lows are mapping a discrete geological unit (sedimentary sequence) or structure
  (fault and alteration zone).
- 3. Northeasterly trending magnetic highs to the south of the Three Jays area closely follow topographic ridges. This response can be interpreted as reflecting the updip edge of a shallow southerly dipping surface layer.

- 4. The sharp 290<sup>0</sup> striking magnetic gradient in the northwest corner of the study area crosses topographic features. This response is attributed to the underlying geology and interpreted as a major fault zone.
- 5. This prominent and isolated magnetic high anomaly coincides with a steep cliff face. In this instance, it is very likely that both the topography and the magnetics are mapping a discrete geological unit.



Figure 11. Total Magnetic Field Intensity False Color Contour Map draped over Topography View from east – Equal Area Display - Claim and Minfile Overlays – topo related trends annotated.



Figure 12. Total Magnetic Field Intensity False Color Contour Map draped over Topography View from west – Claim and Minfile Overlays – Topo related trends annotated.

Analysis of the magnetic data as stacked profiles provides another technique for mapping the line to line correlation of magnetic trends and highlighting areas with different magnetic character. A number of these maps have been analysed in order to view different parts of the grids at different scales. This study confirmed that the large magnetic responses are generally comprised of numerous, northwest elongated lenses or plates that pinch and swell along strike. These generate complex interference patterns that make it difficult to correlate individual units between lines. An interpretation of these features, based on tracing the peak amplitude responses between lines is presented below (Figures 13 and 14). It is clear that this is an approximation of the actual geology and that a ground survey, gathering data on closely spaced stations, would reveal more complex magnetic patterns and more detailed geology. This interpretation is similar, but more detailed, to one based on the various coloured magnetic plan maps.



Figure 13. Stacked Magnetic Profile Map – Airborne Survey Survey line = 54,200 nTs – Vertical Profile Scale = 5 nTs/ground metre (500 nTs between survey lines spaced at 100m) – red fill indicates positive response. Yellow box highlights detail map below.



Figure 14. Stacked Magnetic Profile Map- Detail Window Survey line = 54,200 nTs – Vertical Profile Scale = 5 nTs/ground metre (500 nTs between survey lines spaced at 100m) – red fill indicates positive response. Red-Black lines follow magnetic high peaks. Blue-Black lines follow magnetic low peaks. Pinch and swell character indicates narrow, closely spaced magnetic lenses.

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Figure 15. Interpretation of Stacked Magnetic Profile Map Grey Scale TFM background map - Red lines follow magnetic high peaks. Blue lines follow magnetic low peaks. Fault interpretation from color contour plan maps. Claim lines in purple. Crown Grants in green.

The area of the Three Jays deposit, in the northeast quadrant of this survey, was covered by a magnetic and VTEM survey by Geotech in September, 2011. The magnetic results were very encouraging and prompted this latest survey which covered the balance of the Nahmint property. The Geotech survey was flown with east-west lines spaced at 100 metre intervals and with a 100 metre terrain clearance (to accommodate the VTEM system). To compare the effects of the lower terrain clearance of the Precision survey and provide multiple versions of data across the area of the Three Jays deposit, survey block A1 was flown in the area of the Three Jays deposit to infill survey lines at 50 metre intervals. Plots comparing the Geotech and Precision survey results are shown below.


Figure 16. Compare Total Magnetic Field Intensity maps – Three Jays Area 2011 Geotech (Left)

2012 Precision (right)

The A1 detail block is centred over the narrow WNW trending magnetic high immediately west of the Three Jays showing and the narrow low lineation separating this feature from the larger magnetic high to the northeast. The lower terrain clearance and closer line spacing of the Precision data produced a more detailed map of this feature than the one produced from the Geotech data. The low lineation separating the two magnetic highs is more clearly defined, exhibiting a sharper gradient. This enhancement can also be partially attributed to the different survey line direction. Of particular interest is the higher definition of the weak magnetic lobes along the southern edge of the strong magnetic high north of the three Jays deposit.

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Figure 17. Compare Calculated Vertical Gradient maps – Three Jays Area 2011 Geotech (Left)

2012 Precision (right)

Analysis of the calculated vertical gradient for the two surveys reveals even more dramatic variations between the Geotech and Precision data. These maps enhance the edges of the magnetic bodies and show how the large magnetic anomalies include several different internal structural features. Discontinuities along these trends are indicative of near surface faulting. The latest Precision data reveals several features that were not as apparent on the higher altitude survey data. Note that there is one suspect line (370N) in the Precision data which is significantly lower amplitude than the lines on either side. The impression of a NE striking fault crossing the block that this generates is not considered reliable.

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The results from the detail surveying across the Three Jays deposit prompted a re-evaluation of the interpretation based on last years surveying. The main features and structures that were interpreted from the Geotech data have not changed. The higher resolution Precision data has detected a few more of the weak side lobes that flank the main magnetic anomaly. These may represent additional, near surface skarn mineralization. Additionally, more subtle discontinuities and faults interpreted across the main trends have been have been detected, revealing even more complicated structures. The large magnetic anomaly due west of the Three Jays has been fully delineated. This anomaly is more similar to the WNW and NW oriented features interpreted as reflecting the regional geological trends (folded volcanic – sedimentary lithologies) than to the interpreted intrusive response associated with the large E-W anomaly due north of the Three Jays.



Figure 18. Three Jays Area – Interpretation of A1 Survey Data. Background of Total Magnetic Field Intensity Color Contour Maps – Faults (black zigzag lines), CVG gradient lineations (red-black lines), Skarn targets (white-blue ellipses), Crown Grants (white-green lines).

## 12.1.1 3D Magnetic Inversions

One of the most useful tools for magnetic analysis is the application of 3D inversion techniques. This process builds a three dimensional voxel model to describe one possible subsurface distribution of the magnetic susceptibility index (SI) rock property that could produce observed data. A coarse inversion, based on input data grid to 100m was completed across the entire block. In addition, seven smaller inversions, using input data grid to 50 metres were completed over localized magnetic anomalies and areas of interest.

The results from these inversions are best viewed in a 3D viewing program that allows the user to overlay the results from several different inversions with topographic, geological, geophysical, drilling and other relevant data. The models can be viewed from infinite angles and perspectives and manipulated to display specific isosurfaces or ranges of thresholds. Models can be cut and sliced to provide cross-section and plan views.



Figure 19. Detail Inversion Blocks - Windows 1 – 7

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## **Coarse Inversion**

The regional inversion shows the East-West and WNW striking topographic ridges in the southeast corner of the survey (east of Handy Creek) are underlain by high susceptibility, plate like bodies. These structures are near vertical and extend to considerable depth. These are the two highest susceptibility responses mapped in the area. Several surface pods of slightly lower but still relatively high susceptibility are scattered across the area. Many of these occur in clusters and area also associated with similar sized pods of very low susceptibility material. These pods are likely mapping iron rich skarns. The low susceptibility pods likely reflect bodies where the remnant magnetic fields oppose the earths' magnetic field. Two of these clusters coincide with known skarn mineralization: the Happy John/Defiance/Monitor showings on the southeastern slopes of Hecate Mountain and the Black Prince/Saucy Lass/Sunshine showings on the western slope of Hecate Mountain.



Figure 20. Regional Inversion Model - Isosurface Display – Elevated View from Southeast. Solid Red = 0.025 SI, Solid Light Blue = -0.015 SI. Dashed lines highlight clusters of near surface pods (skarns).

Applying a more moderate cutoff value of 0.12 SI shows how the survey area is underlain by two regional, northwesterly trending units of high susceptibility material. One extends the strong plate-like bodies in the extreme southeast corner to the northwest to underlie Hecate Mountain. The other crosses the northwestern corner of the survey block underlying Hannah Mountain These responses could be interpreted as deeply buried intrusive bodies or as thick plates of high susceptibility rocks, likely volcanic sequences. These

deep bodies generate pipe-like apophyses extending from depth towards the ground surface. Many of these "pipes" coincide with the clusters of interpreted skarns and could be representing feeder systems.

In addition to the two major trends, there are several areas where the moderate 0.12 SI cutoff outlines small, northwesterly elongated and vertically oriented plugs. These responses may be reflecting small intrusions and are potential sites for porphyry style targets. One such anomaly lies immediately north of the Three Jays deposit.



Figure 21. Regional Inversion Model - 3D Isosurface Display – Elevated View from South. Solid Red = 0.025 SI, Solid Yellow = 0.012 SI. Dashed lines highlight clusters of near surface pods (skarns).

Analysis of the relatively low susceptibility trends shows a plate like body following wrapping around the western, northern and northeastern flanks of Hecate Mountain. This body is closely tracked by the main surface drainages of Cass Creek and a large section of Handy Creek. This response likely traces a major sedimentary rock unit which has been folded around Hecate Mountain. This unit shows variable dips along its length but generally dips near vertically or steeply away from Hecate Mountain. The unit is offset by the major northerly trending fault interpreted through the centre of the block.

Large low susceptibility bodies are mapped along much of the perimeter of the survey block. These are likely generated from a combination of being only partially defined and coincident with the surrounding waters of Alberni Inlet. The inversion model is not considered reliable in these areas.

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The northern half of the inversion model reflects a number of near surface lenses of low susceptibility material. These bodies generally form elongated bodies reflecting one of the dominant orientations  $(290^{0}, 315^{0}, 330^{0})$  seen on the colour plan maps. Some of these responses may be reflecting alteration zones along interpreted faults. Most are interpreted as reflecting low susceptibility layers in the volcano-sedimentary rock sequences. The low susceptibility body immediately southeast of the Three Jays deposit is anomalous in that it extends to significantly more depth than the others. This response may be due in part to the influence from the high susceptibility bodies located on either side, which are interpreted as potential intrusions.



Figure 22. Regional Inversion Model - 3D Isosurface Display – Elevated View from East. Solid Blue = -0.008 SI.

## **Detail Inversions**

<u>Win 1</u> was set up to cover the southern lobe of the large magnetic high along the southern border of the survey. The Monitor showing (comprised of three copper skarns) is located along the western edge of this magnetic high anomaly.

The inversion shows a distinct correlation between the magnetic body and topography. A top view (Figure 22) shows the topographic ridge appears to be centred above an ENE elongated intrusive type body with near vertical sides. A side view of the model looking from the south (Figure 23) shows the central core of the magnetic body lies below the centre of the topographic ridge and forms a triangular peak, similar in shape to a sharks tooth. A couple of prominent magnetic highs at the western edge of topographic ridge appear to be apophyses extending up from this core. Decreasing the threshold limit (Figure 24) reveals a number of small, localized magnetic highs (and lows) surrounding the main body. These appear to be surface features with limited depth extent and can be interpreted as alteration zones (possibly skarns) flanking a large intrusion.

The low susceptibility background host rocks model as a surface layer that generally follows topography, forming dipping layers along the mountain slopes (Figure 25). This response is likely reflecting a sedimentary sequence, possibly the upper Triassic Vancouver Group.



Figure 23. Win 1 - Mag3d Inversion Model - 3D Isosurface Displays – Top View Red Solid= 0.05 SI, Translucent Red = 0.04 SI. Shows ENE elongated high susceptibility body underlying topographic ridge.



Figure 24. Win 1 - Mag3d Inversion Model - 3D Isosurface Displays – Side View from South Red Solid= 0.05 SI, Translucent Red = 0.044 SI. Shows "shark tooth" shaped intrusion with apophyses extending to surface along western flank.



Figure 25. Win 1 - Mag3d Inversion Model - 3D Isosurface Displays – Top View Red Solid= 0.05 SI, Translucent Red = 0.044 SI, Solid Blue = -0.025 SI. Shows weak, localized magnetic high and low bodies surrounding large intrusion.



Figure 26. Win 1 - Mag3d Inversion Model - 3D Isosurface Displays – Elevated view from East Red Solid= 0.05 SI, Translucent Light Blue =-0.012 SI, Solid Blue = -0.025 SI. Elevated view from east side looking west shows low susceptibility background forms layers paralleling topography along sides of the ridge.

The Monitor showing is located to the west and downslope from these magnetic anomalies, along the eastern side of Handy Creek. Ground magnetic data, gathered on 4 north-south lines spaced 100 metres apart with stations at 12.5 metres reveal significantly more magnetic variations at the ground surface than are reflected in the airborne data. This pattern is repeated on ground survey data to the west that tested the area of the Happy John showing and to the north over the Three Jays deposit. This evidence suggests that while the airborne data is detecting anomalies that are likely reflections of magnetite skarns, detail ground magnetic surveying will likely be necessary to precisely locate the source bodies.

Based on the airborne data, search for similar skarn mineralization should be directed east and upslope from the Monitor showing.



Figure 27. Stacked Profile Magnetics – Ground Survey Data – Monitor and Happy John Areas Survey line = 54,450 nTs – Vertical Profile Scale = 5 nTs/ground metre (500 nTs between survey lines spaced at 100m) – red fill indicates positive response. Background airborne mag, colour contour – linear distribution.

<u>Win 2</u> was setup to cover the area of small magnetic highs in the southwest corner of the survey. The area encompasses the Happy John, Defiance and Silver King mineral showings and overlaps windows 1, 3 and 4.

This inversion block skirts the southern flank of Hecate Mountain. The model shows a hint of the large NW striking high magnetic susceptibility unit along its' northern edge that underlies Hecate Mountain. It also suggests the course of Handy Creek in the southeast corner of the block is mapped by a thin low susceptibility zone that expands into a large buried mass to the south. This expansion is questionable and may be due (in part) to the presence of Alberni Inlet to the south.

The inversion shows a number of small, near surface pods of high susceptibility and low susceptibility material scattered along the lower slopes Hecate Mountain. These signatures are typical of skarn or alteration zones. The Defiance minfile showing (comprised of 3 iron skarns) is located along the outer edge of one of the high susceptibility pods. The Happy John (3 copper skarns) is located approximately 200 metres southwest of another. The inversion model maps three additional high susceptibility pods and several low susceptibility pods in the immediate area that could be reflecting similar exploration targets.



Figure 28. Win 2 Inversion block - Total Magnetic Field Intensity draped over topo – View from Southwest



Figure 29. Win 2 - Mag3d Inversion Model - Paraview 3D Isosurface Displays - Top View Red Solid= 0.02 SI, Solid Blue = -0.01 SI. Shows edge of ENE elongated high susceptibility body underlying Hecate Mountain and scattered surface pods (skarns) to the south.

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Figure 30. Win 2 - Mag3d Inversion Model 3D Isosurface Displays – Side view from West Red Solid= 0.02 SI, Solid Blue = -0.01 SI. Shows scattered surface pods (skarns) along southern slope of Hecate Mountain.

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<u>Win 3</u> overlaps the northern edge of Win 1 and encompasses the very strong magnetic anomaly lying underlying the ridges to the east of Handy Creek.



Figure 31. Win 3 Inversion block - Total Magnetic Field Intensity draped over topo – View from South

The detail inversion shows a similar but more detailed version of the model produced by the regional inversion. It maps a high susceptibility, plate like body that strikes NNW across the centre of the block. A cross-sectional view through this plate shows it to be approximately 300 metres wide. In the near surface this plate dips steeply to the north (approximately 85<sup>0</sup>) then arcs gently to become near vertical at depth. This inversion suggests this plate abruptly terminates at its' SE end and plunges at a moderate angle to the NW and that the extremely high amplitude magnetic anomalies along its axis are generated from pipe-like apophyses extending up from depth. These pipes appear to dip steeply to the southeast. There are small scattered pods of high susceptibility material at the surface around the edges of the main body.



Figure 32. Win 3 - Mag3d Inversion Model - 3D Isosurface Displays - Side view from northwest Red Solid= 0.03 SI.,



Figure 33. Win 3 - Mag3d Inversion Model - 3D Isosurface Displays - Side view from SSW. Red Solid= 0.03 SI., Main plate has sharp vertical edge to the southeast and plunges at moderate angle to the northwest.

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<u>Win 4</u> covers the bulk of Hecate Mountain. It overlaps Win 2 to the south and Win 3 to the east. This area includes the Hecate Mountain, Black Prince and Saucy Lass mineral showings.

Figure 34. Win 4 Inversion block - Total Magnetic Field Intensity draped over topo View from South west

This detail inversion confirms that Hecate Mountain sits over top of a large, deep, dome shaped intrusive body. Several weak magnetic highs scattered across the mountain originate from near surface pods of high susceptibility material. Some of these appear to be associated with pipe-like apophyses that finger up from the deep intrusion. These responses are similar to the ones associated with the Defiance and Happy John showings to the southeast.



Figure 35. Win 4 - Mag3d Inversion Model - 3D Isosurface Displays Side view from southeast, Red Solid = 0.03 SI, Yellow Mesh= 0.02 SI, Translucent Green = 0.01 SI.

There is a large cluster of both high and low magnetic anomalies mapped in the northwest corner of this inversion block. The bulk of these are located on the lower slopes of Hecate Mountain, uphill from Cass Creek but there are also several mapped to northwest of Cass Creek. The inversion models these as near surface features. The high susceptibility anomalies typically occur as surface pods. The low susceptibility anomalies occur both as pods and as larger, elongated bodies that parallel the slope. These responses are consistent with skarn and alteration effects. The low susceptibility bodies in the inversion model may be misleading. It is possible that the magnetic lows are mapping the presence of remnant magnetization (magnetite) that is aligned opposite to the earth's magnetic field. This interpretation is supported by the description of the Black Prince minfile occurrence as being comprised of 2 to 6 iron skarns with occurrences of pure magnetite in sheets. This showing is located along one of the larger, narrow linear low susceptibility lenses surrounded by numerous small high susceptibility pods. The inversion suggests there may be significantly more skarns developed between the Black Prince and Saucy Lass showings.



Figure 36. Win 4 - Mag3d Inversion Model - 3D Isosurface Displays - Elevated view from north. Solid Red = 0.03 SI, Translucent Yellow= 0.02 SI, Translucent Light Blue = -0.007 SI, Solid Dark Blue = -0.012 SI.

Win 5 covers the large area to the south of the Three Jays showing extending north from an overlap with Win 3. This area is characterized by a generally quiet magnetic background with higher values associated with the hills in the central portion of the block and lower values following the Handy Creek valley in the southwest portion. The high area can be divided into two wide, NW striking bands. Each of these bands is comprised of several narrow high lineations that generally coincide with topographic highs. These local trends could be interpreted in two ways. They could be reflecting the updip edge of shallow southerly dipping stratigraphy, enhanced by the topographic effects. Another interpretation could be that the topographic ridges could be formed by more vertically oriented plates that are both resistive to weathering and have a higher magnetic susceptibility than the surrounding host rocks. There are a few localized magnetic highs within the block: two in the northwest quadrant fall along the southwestern of the two high bands and the other is located along the lower slopes near Alberni Inlet in the eastern section. These likely originate from small, plug-like intrusions.



Figure 37. Win 5 Inversion block - Total Magnetic Field Intensity draped over topo-View from east looking west

Cross sections through magnetic inversion suggest the large high band dominating the central section is associated with a deep, buried high susceptibility mass while the second band (to the southwest) reflects a near surface zone. The geological package appears to dip at a steep angle to the southwest.

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Figure 38. Win 5 Inversion block – Cross-section looking northwest. Insert shows location of cross-section through western portion of inversion block

The magnetic inversion suggests the two sequences of high bands are reflecting two different geological environments. The large band to the northeast appears to be formed by a deep seated intrusive type mass with narrow, linear apophyses extending up to the surface to generate some of the narrow, internal bands. The smaller band to the southwest appears to be formed by a linear, half-pipe type of anomaly extending from the surface down to several hundred meters. The narrow surface lineations associated with this band (and some of the lineations in the northern band) are likely associated with a folded thin bed within the sedimentary package.

The localized, higher amplitude anomalies in both the western and eastern portions of the block appear to be associated with surface bodies with limited depth extent. They do not appear to be associated with the deep seated (intrusive) mass in the centre of the block. The concentration of high susceptibility material is likely associated with folding of the stratigraphy in these areas. This effect is most apparent in the vicinity of the eastern anomaly. In this area, the inversion model shows northwest striking high magnetic linears as narrow, pipe like bodies that lie along and very close to the ground surface.



Figure 39. Win 5 - Mag3d Inversion Model - Isosurface Displays Elevated view from SSE. Red Solid = 0.02 SI, Orange= 0.015 SI, Yellow = 0.01 SI,

<u>Win 6</u> covers a large area (approximately 5 km x 6 km) across the Northwest quadrant of the survey. The area encompasses five major magnetic trends (Figure 39).

- 1. Quiet, moderate amplitude magnetic intensities form the background level across the central portion of the grid.
- Two northwest striking magnetic high trends cross the northern portion of the block. The northernmost crosses the survey block, following a major topographic ridge and is considered open along strike in both directions.
- 3. The other forms a more localized trend, approximately 3 km long and 1 km wide and crosses local topography.
- 4. An elongated low trend forms a large arcuate trend following Cass Creek and Handy Creek along the southern portion of the block.
- 5. Localized magnetic highs are mapped to the south of the creeks, along the lower slopes of Hecate Mountain.



Figure 40. Win 6 Inversion block - Total Magnetic Field Intensity draped over topo Elevated view from south west. Annotations showing major magnetic trends

These major features were modelled by the regional 3D inversion and this detailed inversion does not significantly alter those results. It does delineate the localized variations along the trends more clearly. These include several discontinuities that likely reflect faulting.

The large magnetic high striking NW across the northern part of the study area is mapped as a high susceptibility plate underlying the topographic ridge (Hannah Mountain). The northern edge of this plate dips vertically. The southern edge dips steeply to the south. This plate encompasses two large, pipe-like cores, located below the two topographic peaks in the area. The large trend is punctuated with numerous, small surface pods of both high and low susceptibility. These responses are very similar to the response associated with iron skarns in the southern portions of the property.

The second, weaker magnetic high trend reflects a surface feature, comprised of a series of localized high susceptibility bodies, extending from surface to shallow depths. This high trend is flanked by two narrow, low susceptibility lenses that converge to the northwest. This response suggests a folded, sedimentary source.



Figure 41. Win 6 - Mag3d Inversion Model - Isosurface Displays - Elevated view from southeast. Solid Red = 0.03 SI, Translucent Yellow = 0.02 SI, Solid Light Blue = -0.01 SI.



Figure 42. Win 6 - Mag3d Inversion Model Isosurface Displays - Elevated view from southeast. Solid Red = 0.03 SI, Translucent Yellow = 0.02 SI, Translucent Green = 0.012 SI.

Win 7 covers the Three Jays claims. It overlaps Win 5 to the south and Win 6 to the west.

This area is unique in that it was flown last year using the Geotech system. Even though that survey was flown with a terrain clearance averaging 100 metres the results were very encouraging. While the lower terrain clearance from this newer survey generates more detail in the colour contour and profile maps and allows for a "better" interpretation of the near surface features, the larger, low frequency magnetic anomalies, which reflect the deeper sources, have not changed dramatically. There is a noticeable change in the inversion model to the west of the Three Jays deposit resulting from the additional survey data in this area.

The steep sided intrusive plug interpreted immediately north of the three Jays deposit has not changed significantly in the top 500 metres. This latest inversion suggests this plug narrows at depth while the earlier inversion showed it as expanding. This later interpretation is considered more reliable because the additional survey data to the west was able to constrain the model in this direction.



Figure 43. Comparison of Geotech and Precision Mag3d Inversion Models -Three Jays area. . Side view from northeast - Isosurface Displays - Red = 0.015 SI (Precision Survey), Green = 0.02 SI (Geotech Survey).

The magnetic high anomaly immediately west of the Three Jays deposit was only partially defined by the earlier survey. This later survey closes the anomaly off to the west and the inversion suggests the source is a near surface, NW striking band. This response is common across the area and interpreted to represent a slightly higher susceptibility facies (likely folded) of the volcano-sedimentary unit.

There are three strong, localized high magnetic anomalies mapped in the western portion of this block. The inversion models these as large, vertically oriented plugs of high susceptibility material. One of these anomalies straddles the northern edge of the survey block and is only partially defined. Consequently the inversion model across this feature (even though it is similar to the other two), is considered unreliable. The inversion shows all three of these anomalies are flanked by numerous localized surface plugs of both high and low susceptibility. These responses are similar to those mapped near the Happy John, Defiance and Monitor showings which are interpreted as potential skarns.



Figure 44. Win 7 - Mag3d Inversion Model - Paraview 3D Isosurface Displays. Top View Red Solid= 0.015 SI, Green Mesh = 0.009 SI, Solid Blue = -0.012 SI.



Figure 45. Win 7 - Mag3d Inversion Model - 3D Isosurface Displays. View from Southeast View from below surface, looking up towards the northwest. Red Solid= 0.015 SI, Green Mesh = 0.009 SI. Shows depth extent associated with stronger magnetic highs.

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#### 12.2 Interpretation of Radiometric Data

The radiometric data was compromised by extensive snow cover and not processed by the contractor, Precision Geosurveys Inc. No analysis of this data was attempted.

## 13 <u>CONCLUSIONS</u>

The airborne magnetic survey was useful in mapping the major geological trends across the property, including changes in lithology and fault patterns. The background magnetic trends appear to define a northwesterly trending volcano-sedimentary package that has been subjected to considerable deformation in the form of folding and faulting. Numerous localized magnetic anomalies of varying amplitude are detected. Many of these appear in clusters and exhibit the characteristics of near surface skarn deposits. Several larger magnetic anomalies are detected that appear to be mapping buried intrusions.

The geophysical data has outlined several areas that warrant further exploration for skarn mineralization similar to that reported at the known minfile occurrences. There is also the potential for porphyry and other types of alteration mineralization associated with interpreted intrusions. Intersecting fault patterns provides the potential for structurally controlled mineralization.

Geological mapping and prospecting, geochemical sampling and ground magnetic surveying is warranted as the next phase of exploration. Several areas of interest have been recommended for further exploration.

IP is likely to be the most effective geophysical tool to directly map sulphide mineralization (either skarn or porphyry). As this prospect matures, 3D IP surveying should be considered as a viable exploration option.

## 14 <u>**Recommendations</u>**</u>

The airborne geophysical maps and this report should be reviewed by the project geologists familiar with this area to determine whether there is any existing geological data to support, complement or refute any of the geophysical anomalies and/or the interpreted contacts, intrusions, faults, structures and skarn occurrences presented here.

There is no shortage of anomalous magnetic anomalies that model as small, surface pods of variable magnetic susceptibility and can be interpreted as skarns. Many of these occur in clusters and are in the vicinity of larger magnetic bodies that extend to depth and could be reflecting buried intrusions. As most of these "skarn" targets are mapped as surface or very near surface targets, ground followup should initially consist of geological mapping and prospecting. Contingent on these results, it is likely that detailed ground magnetic surveying and geochemical sampling will be warranted.

Top priority should be afforded to four clusters of "skarn" type anomalies that are associated with known mineralization: Three Jays, Monitor, Happy John / Defiance and Black Prince.

<u>Three Jays</u>: This latest data has not significantly altered the interpretation based on the earlier (Geotech) airborne survey and the recommendations based on that study stand. The Three Jays skarn deposits appear to be located along the upper regions of the southern flank of a buried intrusion. The magnetics suggests a similar geological environment extends for ~ 1.8 kilometres along strike to the east and west. In addition, the northern flank of the interpreted intrusion could represent a new and untested target for similar mineralization. The presence of the buried intrusion may represent a potential porphyry system in the area. Small lobes along the edge of the intrusion are considered localized targets along the larger trend.

<u>Monitor</u>: The monitor showing is located approximately 1.6 km west of and downslope from a large intrusive body that is clearly mapped by a strong magnetic high. There are numerous small, magnetic bodies scattered across the surface to the west of this intrusion that can be interpreted as magnetic skarns. These targets occur upslope and to the east of the known mineralization.

Happy John and Defiance: These skarn showings are located along the southern slope of Hecate Mountain, west of Handy Creek. The Defiance (three iron skarns) is located on the higher slopes along the eastern flank of one of the strongest of several localized magnetic anomalies in the area. The Happy John (3 copper skarns) is located further down slope, approximately 300 metres southwest of another strong magnetic anomaly. The magnetic inversion shows these anomalies are associated with near surface, isolated pods of high susceptibility material, typical of the response expected from skarn type mineralization. The detail inversion reveals 4 large high susceptibility and two large low susceptibility pods in the immediate vicinity that are considered priority iron skarn targets. There are also several additional smaller and lower amplitude pods in the vicinity that warrant further study.

<u>Black Prince</u>: This showing, which consists of 2 to 6 iron skarns, is located along a narrow, northerly trending magnetic linear that extends for approximately 700 metres. This anomaly is located along the northeastern edge of a large cluster of "skarn" type anomalies formed along the lower, western slopes of Hecate Mountain. The Saucy Lass and Sunshine skarns are located along the western and southern edges of this cluster. The magnetic inversion identifies 5 large, high amplitude skarn targets and more than a dozen smaller and weaker targets in the area.

In addition to the skarn clusters that include known mineralization, there are six new skarn cluster target areas shown on the compilation and recommendation map (Figure 44) that warrant investigation.

The airborne survey has detected several larger, localized magnetic bodies (many which occur within, below or adjacent to the "skarn-type" clusters) that may represent localized intrusions. These anomalies offer the potential for mineralization associated with porphyry and other types of alteration systems. Twenty-eight (28) of these anomalies have been flagged on Figure 46.

Structural deformation, such as folding and faulting are often associated with zones of increased porosity and permeability that allow solutions to percolate and mineral deposits to accumulate. Four areas with intersecting fault patterns have been flagged as structural targets.

Historical geological and geochemical information should be reviewed to help prioritize these skarn, porphyry and structural targets.

Respectfully submitted, per Geosci Data Analysis Ltd.

E. Trent Pezzot, BSc., PGeo.,

Geophysics, Geology

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Figure 46. Compilation and Recommendation Map

## 15 APPENDIX 1 – STATEMENT OF QUALIFICATIONS – E. TRENT PEZZOT

I, E. Trent Pezzot, of the city of Surrey, Province of British Columbia, hereby certify that:

- 1) I graduated from the University of British Columbia in 1974 with a B.Sc. degree in the combined Honours Geology and Geophysics program.
- 2) I have practised my profession continuously from that date.
- 3) I am a registered member of the Association of Professional Engineers and Geoscientists of British Columbia.
- 4) I have no interest in Snowfield Development Corp., Nahminto Resources Ltd., or any of their subsidiaries or related companies, nor do I expect to receive any.

Signed by: \_\_\_\_\_

E. Trent Pezzot, BSc., PGeo.

Geophysics/Geology

# 16 APPENDIX 2 – COST BREAKDOWN

The following cost breakdown was provided by Nahminto Resources Ltd.

2012 Cost Statement for Nahmint Property								
Exploration Work	Comments	Units	Rate (\$)	Subtotal (\$)	HST (\$)	Total (\$)		
Airborne Magnetic and Radiometric Survey	Precision Geosurveys Inc.	953 kilometres	70.12	66824.36	8018.92	74843.28		
Data Processing, Interpretation, Report, meetings	Geosci Data Analysis Ltd.	100 hours	150.00	15000.00	1800.00	16800.00		
Consulting, meetings, photocopy, historical research	Jim Simpson	10 days	357.15	3571.50	428.50	4000.00		
			Total	85395.86	10247.42	95643.28		

# 17 APPENDIX 3 – LOGISTICAL REPORT – PRECISION GEOSURVEYS INC.

An electronic version of the pdf formatted logistical report prepared by Precision Geosurveys Inc. is attached to this report. This document includes the Instrument Specifications and a description of the survey methodology used.

File Name

 $AirborneGeophysicalSurveyReport\_NahmintoResourcesLtd\_NahmintProperty\_BlockA\_A1\_B.pdf$ 



Precision GeoSurveys Inc

# Nahmint Property -Block A, A1, and B

Prepared for: Nahminto Resources Ltd.

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## Introduction:

This report outlines the survey operations and data processing actions taken during the airborne geophysical survey flown at the Nahmint property located southwest of Port Alberni, British Columbia, Canada (Figure 1). The airborne geophysical survey was flown by Precision GeoSurveys Inc. for Nahminto Resources Ltd. The geophysical survey, carried out February 3, 2012 to February 7, 2012, February 26, 2012, and February 27, 2012, saw the acquisition of high resolution magnetic data.

Radiometric data was collected simultaneously along with the acquisition of magnetic data. However, with variable snow cover the radiometric data is compromised, therefore the data is not corrected for and should be used with discretion.



Figure 1: Nahmint property location.



# 1.1 Survey Area

The Nahmint property is located approximately 26 kilometers south west of Port Alberni, British Columbia, Canada and is found south of the Nahmint Lake (Figure 2). On the east side of the Nahmint property runs the Alberni Inlet.



Figure 2: Nahmint property area location on Google Earth.

The survey area of Nahmint property is approximately 10 km by 11 km. The property itself is composed of three blocks: Block A, Block A1, and Block B (Figure 3). Block A1 can be found within Block A and has an area approximately 1.5 km by 0.65 km. A total of 953 line kilometers of magnetic data were flown for this survey; this total includes tie lines and survey lines.



Figure 3: Nahmint property - Block A, Block A1, and, Block B.


For Block A and Block B, the survey lines were flown at 100 meter spacings at a  $047^{\circ}/227^{\circ}$  heading; the tie lines were flown at 1 km spacings at a heading of  $137^{\circ}/317^{\circ}$  (Figures 4 and 5).



Figure 4: Plan View – Block A and Block B with survey and tie lines outlined in yellow and the boundary in red.



Figure 5: Terrain View – Block A and Block B with survey and tie lines outlined in yellow and the boundary in red.



Block A1, the survey lines were flown at 100 meter spacings at a  $047^{\circ}/227^{\circ}$  heading; the tie lines were flown at 1000 km spacings at a heading of  $137^{\circ}/317^{\circ}$  (Figures 6 and 7). The survey and tie lines for this block was offset to create a 50 m infill with Block A.



Figure 6: Plan View - Block A1 with survey and tie lines outlined in yellow and the boundary in red.



Figure 7: Terrain View – Block A1 with survey and tie lines outlined in yellow and the boundary in red.



### 1.2 Survey Specifications:

The geodetic system used for this survey is WGS 84 and the area is contained in zone 10N (Figure 8). The survey data acquisition specifications and coordinates for Nahmint property are specified as followed (Tables 1 to 4).



Figure 8: Proposed survey basemap of Nahmint property.



Survey block	Line Spacing m	Planned Survey Line km	Planned Tie Line km	Total Planned Line km	Total Actual Flown km	Survey Line Orientation	Nominal Survey Height m
А	100	672	70	742	748	047°/227°	50
A1 (Infill)	100	10		10	20	047°/227°	50
В	100	185	20	205	185	047°/227°	50
Total				957	953		

 Table 1: Nahmint property survey acquisition specifications.

Longitude	Latitude	Easting	Northing
124.9329246	49.07105380	358826	5437154
124.9329599	49.05396935	358775	5435255
124.8752802	49.05398570	362989	5435151
124.8634230	49.04656703	363835	5434305
124.8633685	49.01984012	363766	5431334
124.9132399	48.98344333	360018	5427379
124.9672935	48.98330764	356063	5427465
124.9906271	49.00015330	354405	5429382
124.9954879	48.99758631	354042	5429106
124.9958132	48.99991074	354025	5429365
125.0019482	48.99980441	353576	5429365
125.0016023	49.03244019	353697	5432992

 Table 2: Nahmint Block A survey polygon coordinates using WGS 84 in zone 10N.

Longitude	Latitude	Easting	Northing
125.0146152	49.05414670	352810	5435430
125.0014134	49.05398065	353774	5435386
125.0014074	49.08313770	353860	5438627
124.9576629	49.08314148	357054	5438544
124.9576635	49.07897622	357042	5438081
124.9389018	49.07897814	358412	5438046
124.9389057	49.07063858	358388	5437119
124.9331802	49.07023086	358805	5437063
125.0019065	49.03354146	353678	5433115
125.0143559	49.03350466	352768	5433135

Table 3: Nahmint Block B survey polygon coordinates using WGS 84 in zone 10N.



Longitude	Latitude	Easting	Northing
124.8974592	49.04800043	361352	5434526
124.8843523	49.04811629	362310	5434515
124.8805387	49.04461601	362579	5434119
124.8860009	49.04213385	362173	5433853
124.8937963	49.04200615	361603	5433853
124.8985201	49.03884279	361249	5433510
124.9046876	49.04304134	360810	5433988

Table 4: Nahmint Block A1 survey polygon coordinates using WGS 84 in zone 10N.

#### 2.0 Geophysical Data:

Geophysical data is collected in a variety of ways and is used to aid in the exploration and determination of geology, mineral deposits, oil and gas deposits, contaminated land sites and UXO detection.

For the purposes of this survey, airborne magnetic data was collected to serve in the exploration of Nahmint property which contains high grade porphorytic rocks and copper.

#### 2.1 <u>Magnetic Data:</u>

Magnetic surveying is probably the most common airborne survey type to be conducted for both mineral and hydrocarbon exploration. The type of survey specifications, instrumentation, and interpretation procedures, depend on the objectives of the survey. Typically magnetic surveys are performed for:

- 1. Geological Mapping to aid in mapping lithology, structure and alteration in both hard rock environments and for mapping basement lithology, structure and alteration in sedimentary basins or for regional tectonic studies.
- 2. Depth to Basement mapping for exploration in sedimentary basins or mineralization associated with the basement surface.

#### 3.0 Survey Operations:

Precision GeoSurveys flew the Nahmint property using a Eurocopter AS350 helicopters (Figure 9). The survey lines were flown at a nominal line spacing of one hundred (100) meters and the tie lines were flown at 1 km spacing for the magnetometer. The average survey elevation was 53 meters vertically above ground for the Nahmint property. The experience of the pilot helped to ensure that the data quality objectives were met and that the safety of the flight crew was never compromised given the potential risks involved in airborne surveying.





Figure 9: Eurocopter AS350 equipped with mag stinger for magnetic data acquisition.

The base of operations for this survey was in Port Alberni, British Columbia, Canada. The Precision crew consisted of three members:

Harmen Keyser - Pilot Lee Guest – Operator/On-site Geophysicist Jenny Poon - On-site Geophysicist

The survey was started February 3, 2012 and completed February 27, 2012. The survey encountered several delays due to poor weather conditions.

3.1 Base Station Details:

A magnetic base station is set up before every flight to ensure that diurnal activity is recorded during the survey flights. In this case, the base station was located in the bushes of the Macktush campground close to the Nahmint property (Table 5).



Station name	Easting/ Northing	Longitude/ Latitude	Datum/ Projection
GEM 2	366285.10E	-124.49.55.37E	WGS84, Zone
	5440765.29N	49.06.18.67N	10N
GEM 3	366287.10E	-124.49.55.27E	WGS84, Zone
	5440765.29N	49.06.18.68N	10N

 Table 5: Base station details at Macktush campground.

Base station readings were reviewed at regular intervals to ensure that no data was collected during periods with high diurnal activity (greater than 5 nT per minute). The base station was installed at a magnetically noise-free area, away from metallic items such as steel objects, vehicles, or power lines. The magnetic variations recorded from the stationary base station are removed from the magnetic data recorded in flight to ensure that the anomalies seen are real and not due to solar activity.

#### 4.0 Equipment:

For this survey, a magnetometer, base station, laser altimeter, pilot guidance unit, and a data acquisition system were required to carry out the survey and collect quality, high resolution data. The survey magnetometer is carried in an approved "stinger" configuration to enhance flight safety and improve data quality in this mountainous terrain.

#### 4.1 <u>AGIS:</u>

The Airborne Geophysical Information System, AGIS, (Figure 10), is the main computer used in data recording, data synchronizing, displaying real-time QC data for the geophysical operator, and generation of navigation information for the pilot display system.



Figure 10: AGIS installed in the Eurocopter AS350.



The AGIS was manufactured by Pico Envirotec; therefore the system uses standardized Pico software and external sensors are connected to the system via RS-232 serial communication cables. The AGIS data format is easily converted into Geosoft or ASCII file formats by a supplied conversion program called PEIView. Additional Pico software allows for post real time magnetic compensation and survey quality control procedures.

#### 4.3 <u>Magnetometer:</u>

The magnetometer used by Precision GeoSurveys is a Scintrex cesium vapor CS-3 magnetometer. The system was housed in a front mounted "stinger" (Figure 11). The CS-3 is a high sensitivity/low noise magnetometer with automatic hemisphere switching and a wide voltage range, the static noise rating for the unit is +/- 0.01 nT. On the AGIS screen the operator can view the raw magnetic response, the magnetic fourth difference and the survey altitude for immediate QC of the magnetic data. The magnetic data is recorded at 10 Hz. A magnetic compensator is also used to remove noise created by the movement of the helicopter as it pitches, rolls and yaws within the Earth's geomagnetic field.



Figure 11: View of the mag stinger.

#### 4.4 Base Station:

For monitoring and recording of the Earth's diurnal magnetic field variation, Precision GeoSurveys operates two GEM GSM-19T magnetometer base stations continuously throughout the airborne data acquisition survey. Both base stations are mounted as close to the survey blocks, and in an area with low magnetic gradient, as possible to give



accurate magnetic field data. It is also mounted in an area away from electric transmission power lines and moving ferrous objects, such as aircrafts and motor vehicles.

The GEM GSM-19T magnetometer with GPS (Figure 12) uses the proton precession technology sampling at a rate of 0.5 Hz. The GSM-19T has an accuracy of  $\pm - 0.2$  nT at 1 Hz. Base station data recorded in the solid-state memory of the base station, are downloaded onto a field laptop using GEMLink 5.0 software. Profile plots of the base station readings are generated and updated at the end of each survey day.



Figure 12: GEM GSM-19T proton precession magnetometer.

#### 4.5 Laser Altimeter:

The pilot is provided with terrain guidance and clearance with an Acuity AccuRange AR3000 laser altimeter (Figure 13). This is attached at the aft end of the magnetometer boom. The AR3000 sensor is a time-of-flight sensor that measures distance by a rapidly-modulated and collimated laser beam that creates a dot on the target surface. The maximum range of the laser altimeter is 300 m off of natural surfaces with 90% reflectance and 3 km off special reflectors. Within the sensor unit, reflected signal light is collected by the lens and focused onto a photodiode. Through serial communications and analog outputs, the distance data are transmitted and collected by the AGIS at 10 Hz.



Figure 13: Acuity AccuRange AR3000 laser altimeter.



### 4.6 Pilot Guidance Unit:

The PGU (Pilot Guidance Unit) is a graphical display type unit that provides continuous steering and elevation information to the pilot (Figure 14). It is mounted remotely from the data system on top of the instrument panel. The PGU assists the pilot to keep the helicopter on the flight path and at the desired ground clearance.



Figure 14: Pilot Guidance Unit.

The LCD monitor measures 7 inches, with a full VGA 800 x 600 pixel display. The CPU for the PGU is housed in the PC-104 console and uses Windows XP Embedded operating system control, with input from the GPS antenna, laser altimeter, and AGIS

#### 5.0 Data Acquisition Magnetometer Checks:

At the start of the survey, airborne magnetometer system tests were conducted. The three tests conducted were the compensation flight, heading error test, and the lag test.

#### 5.1 Compensation Flight Test:

During aeromagnetic surveying noise is introduced to the magnetic data by the aircraft itself. Movement in the aircraft (roll, pitch and yaw) and the permanent magnetization of the aircraft parts (engine and other ferric objects) are large contributing factors to this noise. To remove this noise a process called magnetic compensation is implemented. The magnetic compensation process starts with a test flight at the beginning of the survey where the aircraft flies in the four orthogonal headings required for the survey (047°/227° and 137°/317° in the case of this survey) at an altitude where there is no ground effect in the magnetic data. In each heading, three specified roll, pitch, and yaw maneuvers are performed by the pilot; these maneuvers provide the data that are required to calculate the necessary parameters for compensating the magnetic data.



### 5.2 Lag Test:

Followed by the compensation flight, a lag test is conducted. This is performed to determine the relationship between the time the digital reading was recorded by the instrument and the time for the position fix for fiducial of the reading was obtained by the GPS system.

The test was flown in the four orthogonal headings over an identifiable magnetic anomaly (ie.Truck, Trailer, etc.) at survey speed and height. A lag of 10 fiducials (1.0 seconds) was determined from the lag test.

#### 5.3 <u>Heading Error Test:</u>

To determine the magnetic heading effect a cloverleaf pattern flight test is conducted. The cloverleaf test is flown in the same heading as the survey and tie lines. For each direction, it must fly over a recognizable feature on the ground in order to estimate the heading error.

#### 6.0 Data Processing:

After a survey flight all of the data is collected and several procedures are undertaken to ensure that the data meets a high standard of quality. All data was processed using Pico Envirotec software and Geosoft Oasis Montaj geophysical processing software.

#### 6.1 Magnetic Processing:

Before any processing and editing of the raw magnetic data, the data obtained from the compensation flight test must be applied to the raw magnetic data first. A computer program called PEIComp is used to create a model from the compensation flight test for each survey to remove the noise induced by aircraft movement; this model is applied to each survey flight so the data can be further processed.

Filtering is applied to the laser altimeter data to remove vegetation clutter and to show the actual ground clearance. To remove vegetation clutter a Rolling Statistic filter is applied to the laser altimeter data and a low pass filter is used to smooth out the laser altimeter profile to remove isolated noise. As a result, filtering the data will yield a more uniform surface in close conformance with the actual terrain.

The processing of the magnetic data involved the correction for diurnal variations. The base station data collected is edited, plotted and merged into a Geosoft (.gdb) database daily. The airborne magnetic data is corrected for diurnal variations by subtracting the observed magnetic base station deviations. Following the diurnal correction was a lag correction. A lag correction of 1.0 seconds was applied to the total magnetic field data to compensate for the lag in the recording system as the magnetometer sensor flies 5.70 m ahead of the GPS antenna. Lastly, a heading correction was applied to the data.



Some filtering of the magnetic data is also required. A Non Linear filter was used for spike removal. The 1D Non-Linear Filter is ideal for removing very short wavelength, but high amplitude features from data. It is often thought of as a noise spike-rejection filter, but it can also be effective for removing short wavelength geological features, such as signals from surficial features. The 1D Non-Linear Filter is used to locate and remove data that is recognized as noise. The algorithm is 'non- linear' because it looks at each data point and decides if that datum is noise or a valid signal. If the point is noise, it is simply removed and replaced by an estimate based on surrounding data points. Parts of the data that are not considered noise are not modified. The combination of a Non-Linear filter for noise removal and a low pass trend enhancement filter resulted in level data as indicated in the results section of this report. The low pass filter smoothes out the magnetic profile to remove isolated noise.

The corrected magnetic data from the survey and tie lines was used to level the data all together. Two forms of levelling are applied to the corrected data: conventional levelling and micro-levelling. There are two components to conventional levelling; the first involves statistical levelling of magnetic data to correct miss ties (intersection errors) followed by specific patterns or trends. For the second component, tie lines are brought to a common regional base value using the mean value of the cross-level error. To obtain the best possible levelled data, individual corrections are edited at selected intersections. Lastly, micro-levelling is applied to the corrected conventional levelled data. This will remove any residual line-direction-related noise, and any low amplitude component of flight line noise, that still remains in the data after tie line levelling.

### 5.3 <u>Final Data Format</u>

Channel	Units	Description
Χ	m	UTM Easting - WGS84 Zone 10 North
Y	m	UTM Northing - WGS84 Zone 10 North
Galt	m	GPS height - WGS84 Zone 10 North
DTM	m	Digital Terrain Model
Lalt	m	Laser Altimeter readings
GPStime	Hours:min:secs	GPStime
basemag	nT	Base station diurnal data
mag	nT	Total Magnetic Intensity

Abbreviations used in the GDB files are listed in the following table:

Table 6: Nahmint property survey channel abbreviations.

The file format will be provided in two (2) formats, the first will be a .GDB file for use in Geosoft Oasis Montaj, the second text format will be a .XYZ file. A complete file, provided in each format will contain only magnetic data.



### Appendix A

Equipment Specifications



Configuration Options	15
Cycle Time	999 to 0.5 sec
Environmental	-40 to +60 ° Celsius
Gradient Tolerance	7,000 nT/m
Magnetic Readings	299,593
Operating Range	10, 000 to 120,000 nT
Power	12 V @ 0.62 A
Sensitivity	0.1 nT @ 1 sec
Weight (Console/ Sensor)	3.2 Kg
Integrated GPS	Yes

### GEM GSM-19T Proton Precession Magnetometer (Base Station)



#### Scintrex CS-3 Survey Magnetometer

<b>Operating Principal</b>	Self-oscillation split-beam Cesium Vapor (non-radioactive Cs-133)	
Operating Rage	15,000 to 105,000 nT	
Gradient Tolerance	40,000 nT/metre	
<b>Operating Zones</b>	10° to 85° and 95° to 170°	
Hemisphere Switching	<ul> <li>a) Automatic</li> <li>b) Electronic control actuated by the control voltage levels (TTL/CMOS)</li> <li>c) Manual</li> </ul>	
Sensitivity	0.0006 nT √Hz rms.	
Noise Envelope	Typically 0.002 nT P-P, 0.1 to 1 Hz bandwidth	
Heading Error	+/- 0.25 nT (inside the optical axis to the field direction angle range $15^{\circ}$ to $75^{\circ}$ and $105^{\circ}$ to $165^{\circ}$ )	
Absolute Accuracy	<2.5 nT throughout range	
Output	a) continuous signal at the Larmor frequency which is proportional to the magnetic field (proportionality constant 3.49857 Hz/nT) sine wave signal amplitude modulated on the power supply voltage b) square wave signal at the I/O connector, TTL/CMOS compatible	
Information Bandwidth	Only limited by the magnetometer processor used	
Sensor Head	Diameter: 63 mm (2.5") Length: 160 mm (6.3") Weight: 1.15 kg (2.6 lb)	
Sensor Electronics	Diameter: 63 mm (2.5") Length: 350 mm (13.8") Weight: 1.5 kg (3.3 lb)	
Cable, Sensor to Sensor Electronics	3m (9' 8"), lengths up to 5m (16' 4") available	
<b>Operating Temperature</b>	-40°C to +50°C	
Humidity	Up to 100%, splash proof	
Supply Power	24 to 35 Volts DC	
Supply Current	Approx. 1.5A at start up, decreasing to 0.5A at 20°C	
Power Up Time	Less than 15 minutes at -30°C	



**Pico Envirotec AGIS data recorder system** (for Navigation, Gamma spectrometer, VLF-EM and Magnetometer Data Acquisition)

Functions	Airborne Geophysical Information System (AGIS) with integrated Global Positioning System Receiver (GPS) and all necessary navigation guidance software. Inputs for geophysical sensors - portable gamma ray spectrometer GRS-10, MMS4 Magnetometer, Totem 2A EM, A/D converter, temperature probe, humidity probe, barometric pressure probe, and laser altimeter. Output for the 2 line Pilot Indicator
Display	Touch screen with display of 800 x 600 pixels; customized keypad and operator keyboard. Multi- screen options for real-time viewing of all data inputs, fiducial points, flight line tracking, and GPS channels by operator.
GPS Navigation	Garmin 12-channel, WAAS-enabled
Data Sampling	Sensor dependent
Data Synchronization	Synchronized to GPS position
Data File	PEI Binary data format
Storage	80 GB
Supplied Software	<b>PEIView:</b> Allows fast data Quality Control (QC) <b>Data Format:</b> Geosoft GBN and ASCII output <b>PEIConv</b> : For survey preparation and survey plot after data acquisition
Software	<b>Calibration:</b> High voltage adjustment, linearity correction coefficients calculation, and communication test support <b>Real Time Data Collection:</b> Automatic Gain real time control on natural isotopes and PC based test and calibration software suite
Power Requirements	24 to 32 VDC
Temperature	Operating:-10 to +55 deg C; storage:-20 to +70 deg C



# Appendix B Maps





Map 1: Nahmint Property flight path.





Map 2: Nahmint property digital terrain model.





Map 3: Nahmint property of Block A and Block B calculated vertical gradient.





Map 4: Nahmint property of Block A and Block B total magnetic intensity.





Map 5: Nahmint Property of Block A and Block B total magnetic intensity with plotted flight lines.





Map 6: Nahmint property of Block A1 calculated vertical gradient.





Map 7: Nahmint property of Block A1 calculated vertical gradient.



#### 18 APPENDIX 4 – MAPS

The following maps, generated at a scale of 1:50,000 using a topographic base map were generated by Precision Geosurveys Inc. to present the geophysical data for Blocks A and B and are provided as pdf documents with the digital copy of this report.

- TMI\_BlockA\_and\_B.pdf : Total Magnetic Intensity (colour contour map)
- TMI\_with\_Plotted\_FlightLines\_BlockA\_and\_B.pdf: Total Magnetic Intensity (colour contour map) with flight lines
- CVG\_BlockA\_and\_B.pdf : Calculated Vertical Gradient (colour contour map)
- DTM\_BlockA1\_BlockA\_and\_B.pdf: Digital Terrain Model (colour contour map) calculated from barometric, radar and laser altimeter data.
- FlightPath\_BlockA1\_BlockA\_and\_B.pdf: Flight Path Recovery Map, Topographic Base
- RawK\_BlockA1\_BlockA\_and\_B.pdf: Uncorrected Potassium colour contour map.
- RawTh\_BlockA1\_BlockA\_and\_B.pdf: Uncorrected Thorium colour contour map.
- RawU\_BlockA1\_BlockA\_and\_B.pdf: Uncorrected Uranium colour contour map.
- RawTC\_BlockA1\_BlockA\_and\_B.pdf: Uncorrected Total Count colour contour map.

Total Magnetic Field and Calculated Vertical Gradient were presented for Block A1 at a 1:6000 scale.

- TMI\_BlockA1: Total Magnetic Intensity (colour contour map)
- CVG\_BlockA: Calculated Vertical Gradient (colour contour map)

The various layers used to generate the maps included as figures with the text of this report are provided to Snowfield Development Corp. and Nahminto Resources Ltd. as MapInfo formatted table files (\*.tab).

The Mag3D inversion models are provided in both the native UBC inversion file format and the vtk file format.







Block A: Block B:



TMI



Block A: Block B:





LEGEND Map Pr











Block A: Block B:

LEGEND Map Pro





11.64 10.59 9.96 9.50 9.15 8.86

8.60

8.38 8.17 7.99 7.83

7.66

7.52 7.38 7.25

7.12

6.99

6.87 6.75

6.63

6.52

6.40

6.28

6.16

6.05

5.92

5.80 5.66

5.53

5.38

5.24

5.08

4.91 4.73

4.52

4.27 3.93

3.44

Th (cps)















LEGEND





#### LEGEND

Map Projection

Projection: Universal Transverse Mer Central Meridian: 237 Zone 10 Datum: WGS 84



Survey Dates: Survey Base: Helicopter Type: Registration:

#### Block A:

Tie Line Spacing: Tie Line Direction

Block A1 (50 m infill) Survey Line Spacing: Survey Line Direction Tie Line Spacing: Tie Line Direction:

Block B:

Survey Line 5

#### AIRBORNE SYSTE

Scintrex CS-3 Mas

Sample Rate Sensitivity

Gamma Ray Spect

Pico Envirotec GRS-10 Gamma Spe 16.8 L of Nai synthetic "downward ward looking" o 4.2 Lof "upw

ebruary 3, 2013 ort Alberni, BC rocopter AS35

50 meters 50 meters 50 meters

100 meters 047\*-227\* 1000 meters 137\*-317\*

50 meters 047\*-227\* 500 meters 137\*-317\*

100 meters 047\*-227\* 1000 meters 137\*-317\*

Stinger with 3 10 Hz 0.01 Nt

1 H



# Nahminto Resources Ltd.

Nahmint Block A1 Total Magnetic Intensity Created By: Precision GeoSurveys Inc. March 2012

Precision GeoSurveys Inc.



Projection: Universal Transverse M Central Meridian: 237 Zone 10 Datum: WGS 84



Survey Dates: Survey Base: Helicopter Type Registration:

Block A: urvey Line Sp Tie Line Spacing: Tie Line Direction

Block A1 (50 m infill) Survey Line Spacing: Survey Line Direction Tie Line Spacing: Tie Line Direction:

Block B: Survey Line ! e Line Spacing Tie Line Die

#### AIRBORNE SYSTEM

Scintrex CS-3 M

Sample Rate:

Gamma Ray Se 16.8 L of Nal synthetic "o 2 L of "up

February 3, 2012 Port Alberni, BC Eurocopter AS350

C-GOHA

50 meters 50 meters 50 meters

100 meters 047°-227° 1000 meters 137°-317°

50 meters 047\*-227\* 500 meters 137\*-317\*

100 meters 047\*-227\* 1000 meters 137\*-317\*

Stinger with 3 10 Hz 0.01 Nt

1 Hz



(meters) WGS 84 / UTM zone 10N

## Nahminto Resources Ltd.

Nahmint Block A1 Calculated Vertical Gradient Created By: Precision GeoSurveys Inc. March 2012

Precision GeoSurveys Inc.

CVG
2012 Cost Statement for Nahmint Property								
Exploration Work type	Comment	Days			Totals			
Personnel (Name)* / Position	Field Days (list actual days)	Days	Rate	Subtotal*				
Harmen Keyser / Pilot	3-7-Feb-12 and 26-27-Feb-12		\$0.00	\$0.00				
Lee Guest / Operator/Geophysicist	3-7-Feb-12 and 26-27-Feb-12		\$0.00	\$0.00				
Jenny Poon / Geophysicist	3-7-Feb-12 and 26-27-Feb-12		\$0.00	\$0.00				
Trent Pezzot / Geophysicist	office		\$0.00	\$0.00				
James Simpson / Consulting	office		\$0.00	\$0.00				
				\$0.00	\$0.00			
Office Studies	List Personnel (note - Office on	l <mark>y, do n</mark> o	ot include	field days				
Data processing, intepretation, reports	Trent Pezzot, P.Geo.	15.0	\$1,120.00	\$16,800.00				
Other (airborne survey consulting)	James Simpson	10.0	\$400.00	\$4,000.00				
				\$20,800.00	\$20,800.00			
Airborne Exploration Surveys	Line Kilometres / Enter total invoiced a	mount						
Aeromagnetics	Precision Geosurveys Inc.	953.0	\$39.27	\$37,421.64				
Radiometrics	Precision Geosurveys Inc.	953.0	\$39.27	\$37,421.64				
				\$74,843.28	\$74,843.28			
TOTAL Expenditures					\$95,643.28			













CVG











TMI



llicek A: Block B:













llicek A: Block B:











Map Projection

Projection: Universal Transverse Mercato Central Meridian: 237 Zone 10 Datum: WGS 84



mary bala   february 2, 2021 is february 2, 2021, february 26, 2022, and february 27, 2023.     mary bala   Developer Tables     mary bala   Developer Tables     mary tothonologi   Developer Tables     mary Tothonologi   Developer Tables     mary tothonologi   Mary tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should be used to one tothonologic data are not corrected and should data are not corrected and should data are not corre						
error foreigne error	Survey Dates			February 3, 2012 to Februa	ry 7, 2012, February 26, 5	2012, and Feltimary 27, 2012
<pre>belower fame: belower bel</pre>	Survey Basal			Port Alberni, BC		
right room CORE   unwy Technology: Competition of the same not corrected and should be used to the discretion.   UNY FAMAMETER   Materianis: So materia   Materianis: So materia   performance: So materia   performace: So materia	Helicopter Type:			Eurocopter A5350		
And Yierhoologe Managements Marken Schoologe Addressed and and addressed and and addressed addressed and addressed a	Registration:			C-GOHK		
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pertometer: 50 meters back. ters Sacing: 00 meters ter Une Sacing: 000 meters ter Une Direction 017-227 ter Une Sacing: 000 meters ter Une Direction 017-237 ter Une Direct	Magnetometer:			50 meters		
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la Lue Direction: 197-317 Rok.II: Unrew Line Spacing: 100 meters way Lue Direction: 207-327 is Line Spacing: 100 meters is Line Direction: 197-317 INDORE SYSTEM: Control Systems Diffuences	fie Line Spacing:			500 meters		
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Nahmint Block A1 Calculated Vertical Gradient Created By: Precision GeoSurveys Inc. March 2012

CVG



#### Map Projection:

Projection: Universal Transverse Mercator Central Meridian: 237 Zone 10 Datum: WGS 84



Survey Dates:	February 3, 2012 to February 7, 2012, February 26, 2012, and February 27, 2012
Survey Base:	Port Alberni, BC
Helicopter Type:	Eurocopter AS350
Registration:	C-GOHK
Survey Technology:	Magnetic survey only. Radiometric data were collected with variable snow cover. Therefore radiometric data are not consisted and should be used with docration.
SURVEY PARAMETERS:	
Mean Terrain Gearance:	
Helicopten	50 meters
Magnetornater	50 meters
Spectrometer:	50 meters
Illock A.	
Survey Line Specing:	100 meters
Survey Line Direction:	047'-227'
Tie Line Spacing:	1000 meters
Tie Line Direction:	137-317
Hock A1 (50 m infill);	
Survey Line Specine:	50 meters
Survey Line Direction:	047*-227*
Tie Line Spacing:	S00 meters
Tie Line Direction	137'-317'
Block B:	
Survey Line Specing:	100 meters
Survey Line Direction:	047*-227*
Tie Line Spacing:	1000 meters
Tie Line Direction:	137-317
AIRBORNE SYSTEMS:	
Scintrex CS-3 Magnetometer Sensor	
Configuration	Stinger with 3 axis compensation
Sample Rate:	10 Hr
Sensitivity:	0.01 NE
Gamma Ray Spectrometer	
Pico Envirotec GRS-10 Garryna Spectrometer 16.8 L of Nai synthetic "downward looking" crystals and 4.2 L of "upward looking" synthetic crystals.	a
Sample Rate:	1.04
	Scale 1:6000
100 0	100 200 300 400
Without Half and the State of the	(meters)
	WGS 84 / UTM zone 10N

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Nahmint Block A1 Total Magnetic Intensity Created By: Precision GeoSurveys Inc. March 2012