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Part 1**

**SILVER SABRE RESOURCES LTD.**

**SUMMARY REPORT ON THE  
ON THE HAECKEL HILL PROPERTY,  
WHITEHORSE, YUKON TERRITORY**



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**SILVER SABRE RESOURCES LTD.**

**SUMMARY REPORT ON THE  
ON THE HAECKEL HILL PROPERTY,  
WHITEHORSE, YUKON TERRITORY**

Mike Power, M Sc. P Geoph.

**CLAIMS**

BEE 1-4	Y 91728 - Y 91731
BEE 5-12	Y 91732 - Y 91739
BEE 21-24	Y 91748 - Y 91751
BEE 25-27	YA03106 - YA03108
BEE 28-35	YA18302 - YA18309
BEE 60-63	YA92340 - YA92343
CEE 7-8	YA82530 - YA82531
CEE 10-13	YA82532 - YA82535
CEE 19	YA82581
CEE 20-21	YA85579 - YA85580
CEE 25-26	YA85584 - YA85585
CEE 24-26	YA86010 - YA86012

Work performed: June 1 - 30, 2000

Mining District: Whitehorse

NTS: 105 D/14

Location: 60° 47'N 135° 12'W

December 16, 2000

## SUMMARY

This is a summary report describing the geology, mineralization and exploration history of the Haeckel Hill Property, Whitehorse Mining District. The report includes a description of the most recent geological work performed during June 2000.

Exploration on the property to date has focussed on shear-hosted and intrusive-hosted gold mineralization in and adjacent to a small stock of the Nisling Range Plutonic Suite.

The Haeckel Hill Property is located 20 km north of Whitehorse. The property is underlain by the Hancock and Mandana Members of the Upper Triassic Lewes River Group which consist of limestone and argillite, and greywacke, tuff and argillite respectively in this area. These formations are intruded by Paleocene Nisling Range Plutonic Suite (NRPS) granite, subvolcanic rhyolite and dacite. The known gold mineralization on the Haeckel Hill Property is located in or near the axial zone of a west plunging anticline within which intermittent shearing and vein mineralization occurs. A small NRPS stock intrudes the axial region of the anticline and is exposed in a 400 by 800 m area at lower elevations. Gold mineralization occurs in Pb-Ag-Zn veins within Hancock Member limestone at higher elevations and in small veins and stockworks within sheared rhyolite at lower elevations.

Gold mineralization in the Hancock Member limestone is confined to a vein system exposed intermittently over a distance of 60 m, containing quartz-pyrite-pyrrhotite-galena-sphalerite and returning assays up to 8% Pb, 5% Zn and 171 g/t Ag from selected specimens. The best drill intersection in this Main Showing was 34 g/t Ag, 0.34 g/t Au, 1.8% Pb and 1.6% Zn across 1.5 m.

Gold mineralization in the rhyolite plug (East Showing) consists of quartz veins with pyrite, rare galena and sphalerite in disseminations and stringers in the shear zone coincident with the axial region of the fold in the rhyolite stock. Best assays returned 5000 ppb Au from trench chip samples and 280 ppb over 3.3 m in a drill hole. Mineralized rhyolite was also intersected in a drill hole southwest of the Main Showing where a 1.5 m sample assayed 1206 ppb Au.

Gold mineralization appears spatially associated with the axial zone of the anticline and further exploration on the property should be concentrated in this area, extending the region of investigation to the east and west along strike.

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## 1.0 INTRODUCTION

This report describes exploration work conducted to date on the Haeckel Hill Property, Whitehorse area, YT. The Haeckel Hill Property covers a small Tertiary intrusion and surrounding Lewes River Group metasedimentary rocks. Since 1974, geological mapping, line cutting, geophysical surveys, trenching, and drill programs have been conducted to investigate both shear-hosted and intrusive-hosted gold mineralization. This report describes the results of work conducted during 2000 and summarizes past exploration work on the property.

## 2.0 LOCATION AND ACCESS

The Haeckel Hill Property is located on the northwest boundary of the city Whitehorse, Yukon, on map sheet 105 D/14, at 60° 47'N 135° 12'W, southwest of the junction between the Alaska and North Klondike Highways (Figure 1). The route to the property is as follows:

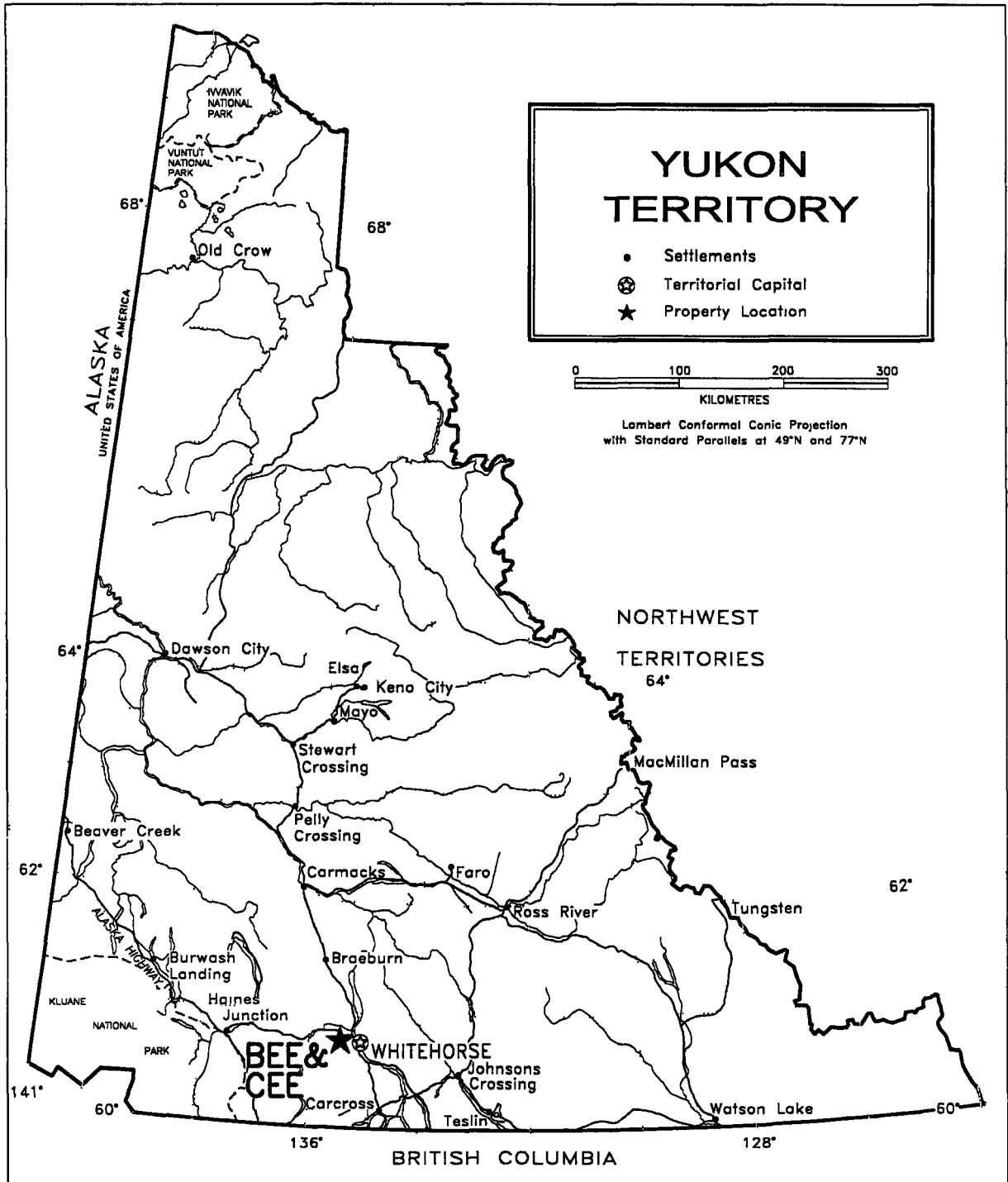
Section	Distance (km)	Remarks
Whitehorse to Old Gun Club Road	22.0	All weather paved highway
Alaska Highway to Old Gun Club	1.5	All weather gravel road
Old Gun Club to showings	0.5	CAT trail

## 3.0 PROPERTY DESCRIPTION AND TENURE

The Haeckel Hill Property consists of 45 un-surveyed Quartz Claims granted under the Yukon Quartz Mining Act in the Whitehorse Mining District. The claims are entirely within the municipal boundaries of the City of Whitehorse and are wholly owned by Silver Sabre Resources Ltd. of Whitehorse, Yukon. Claim locations are plotted in Figure 2 and claim data<sup>1</sup> is summarized below:

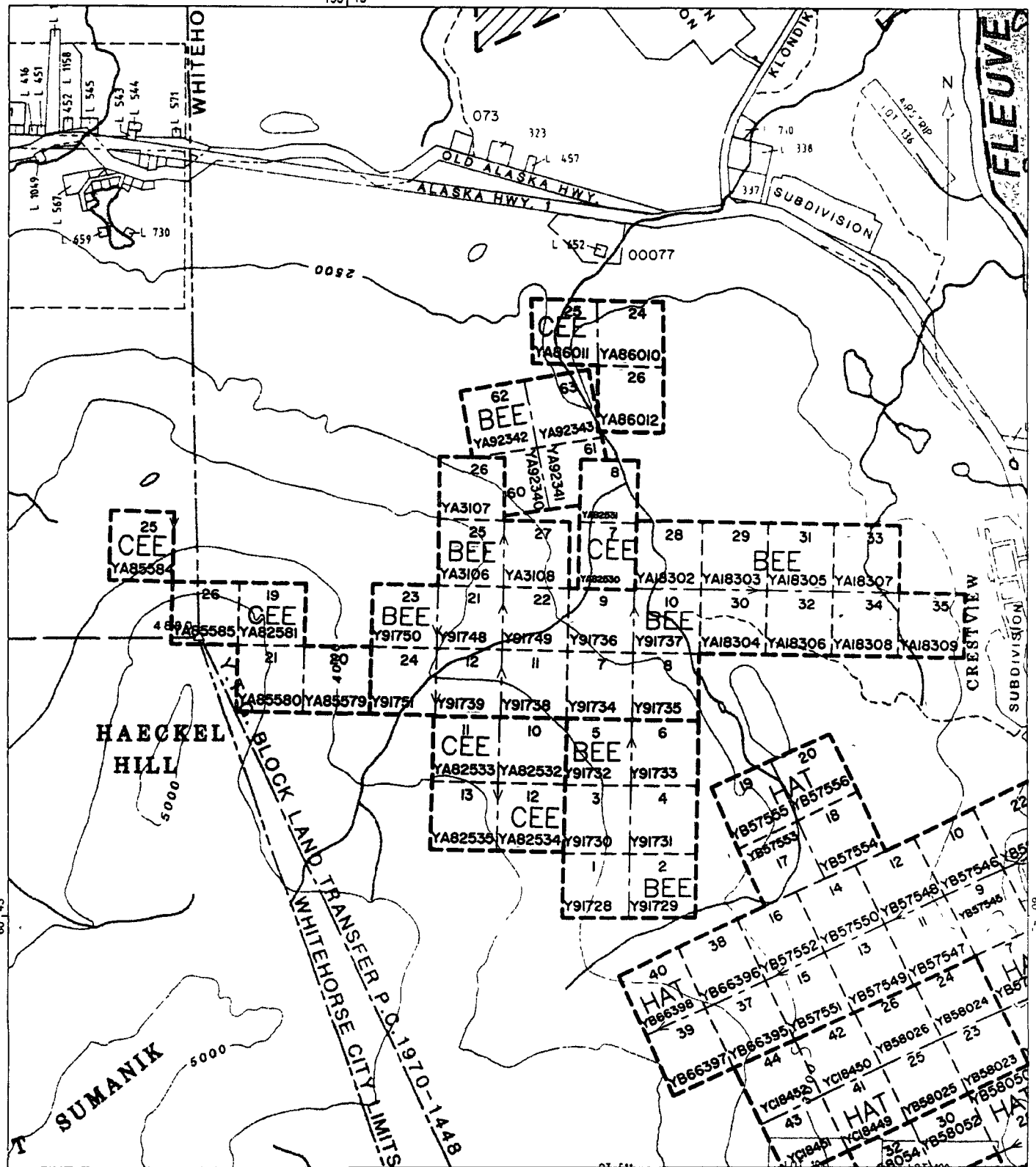
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<sup>1</sup>Claim data as reported by the Whitehorse Mining Recorder on December 13, 2000. The expiry dates account for work performed in 2000.

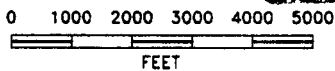


SILVER SABER RESOURCES	BEE & CEE PROPERTY	
PROPERTY LOCATION	MINING DISTRICT: WHITEHORSE	
	NTS: 105 D/14	SCALE 1: 6 000 000
Amerok Geosciences Ltd.	DRAWN BY: HDS	
	DATE: 2000.12.18	FIGURE: 1

135° 15'



135° 15'



SILVER SABRE RESOURCES		BEE & CEE PROPERTY	
CLAIM LOCATION		MINING DISTRICT WHITEHORSE	
		NTS 105 D/14	SCALE 1 12 500
Amerok Geosciences Ltd		DRAWN BY HDS	
		DATE 2000 12 19	FIGURE 2

<b>Claim</b>	<b>Record Number</b>	<b>Expiry Date</b>
BEE 1-4	Y91728 - Y91731	December 6, 2006
BEE 5-8	Y91732 - Y91735	December 6, 2005
BEE 9-11	Y91736 - Y91738	December 6, 2006
BEE 12	Y91739	December 6, 2005
BEE 21-22	Y91748 - Y91749	December 6, 2006
BEE 23-24	Y91750 - Y91751	December 6, 2005
BEE 25-26	YA03106 - YA03107	July 29, 2007
BEE 27	YA03108	July 29, 2008
BEE 28	YA18302	September 17, 2006
BEE 29 - 35	YA18303 - YA18309	September 17, 2005
BEE 60	YA92340	July 2, 2007
BEE 61	YA92341	July 2, 2011
BEE 62	YA92342	July 2, 2007
BEE 63	YA92343	July 2, 2011
CEE 7 - 8	YA82530 - YA82531	July 3, 2011
CEE 10 - 13	YA82532 - YA82535	July 3, 2005
CEE 19	YA82581	July 4, 2009
CEE 20 -21	YA85579 - YA85580	October 9, 2005
CEE 24	YA86010	October 23, 2006
CEE 25	YA85584	October 9, 2005
CEE 25	YA86011	October 23, 2006
CEE 26	YA85585	October 9, 2005
CEE 26	YA86012	October 23, 2006

#### 4.0 PHYSIOGRAPHY

The Haeckel Hill Property is situated on the low lying rolling hills of the Yukon Plateau. Elevations in the area of the property vary from 2500 to 5100 feet. Tree line is at approximately 4500 feet. Below this level, black spruce with pine in sandy areas predominate. Above tree line, vegetation consists of dwarf birch, willow and alder. The area is subject to a northern continental climatic regime. Temperature averages vary from -12 degrees Celsius in the winter to 15 degrees Celsius in the summer. Precipitation in the area is generally light.

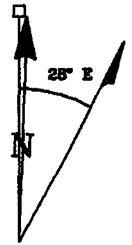
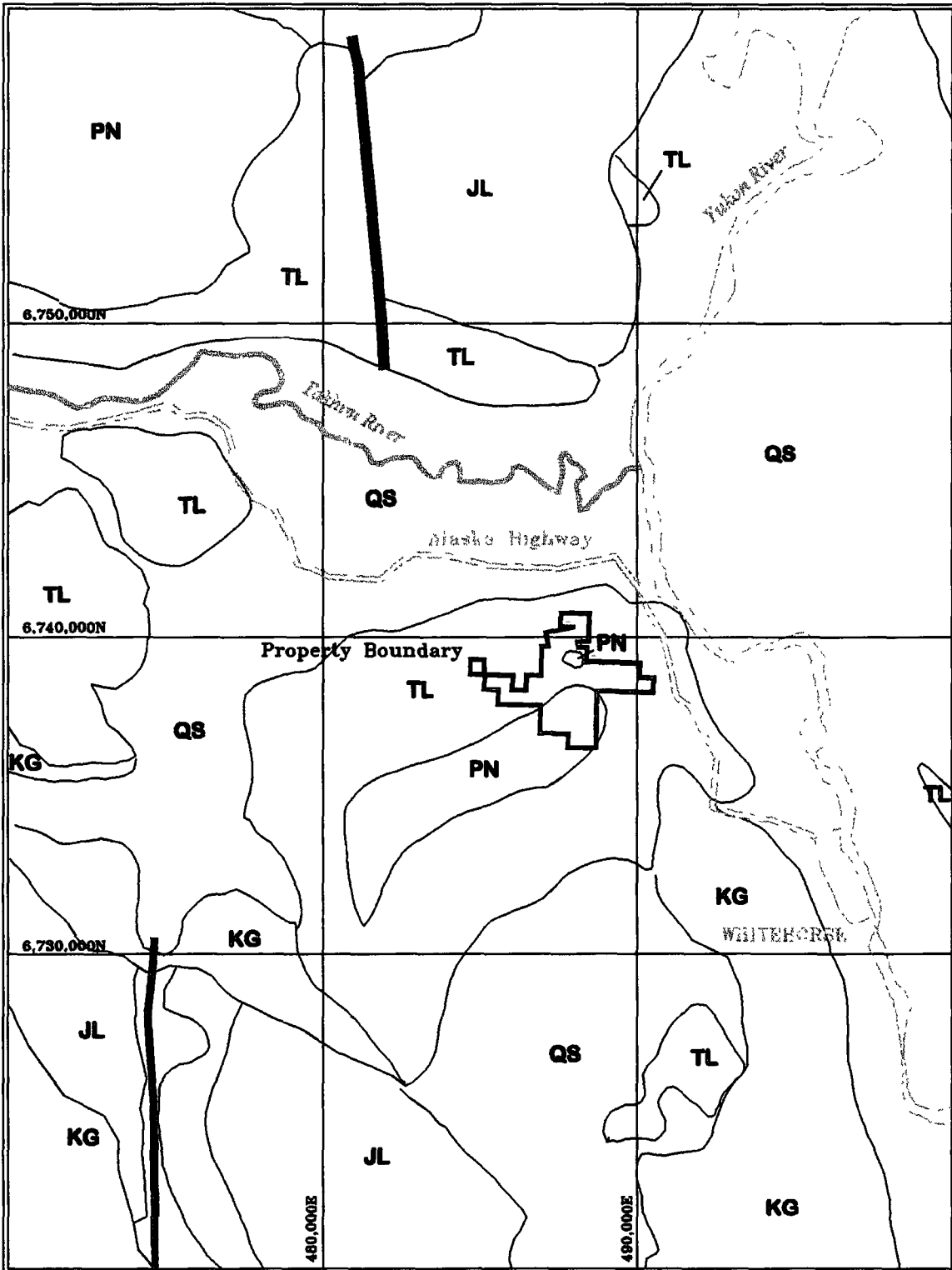
#### 5.0 REGIONAL GEOLOGY

The area of the Haeckel Hill Property has been mapped by Wheeler (1961) and Hart (1997). The property is on the southwest flank of the Whitehorse Trough and is underlain by Mesozoic sedimentary rocks intruded by Mesozoic through Tertiary intrusive rocks. Formations in the area of the property are summarized in Table I and the regional geology is portrayed in Figure 3.

**Table I. Regional Stratigraphy**  
(after Wheeler (1960) and Hart (1997))

<b>Formation (Age)</b>	<b>Description</b>
Overburden (Quaternary)	Till and colluvium
Nisling Range Plutonic Suite (Late Paleocene)	Medium to coarse grained hornblende-biotite granite and granodiorite.
Whitehorse Plutonic Suite (Mid-Cretaceous)	Biotite- and biotite-hornblende granodiorite
Laberge Group (Lower to Mid-Jurassic)	Greywacke, arkose, quartzite, conglomerate
Lewes River Group (Upper Triassic)	Greywacke, siltstone, argillite; limestone and limestone breccia; andesite, basalt and pyroclastic rocks.

The Haeckel Hill Property is underlain by Lewes River Group metasedimentary rocks. In the area of the property, these dip generally to the northeast although they are locally folded about northwest trending axes. Large scale northwest trending folds with



**QS**

Quaternary Sediments - Till, sand, alluvium, volcanic ash, loess.

**PN**

Nisling Plutonic Suite (Paleocene) - Granite, sub-volcanic rhyolite, dacite.

**KG**

Coast Intrusions (Cretaceous) - Granodiorite, granite, quartz monzonite, quartz diorite

**JL**

Laberge Group (Jurassic) - Greywacke, arkose, argillite, conglomerate, quartzite.

**TL**

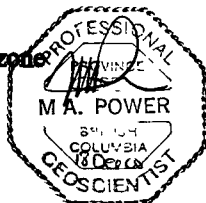
Lewes River Group (Triassic) - greywacke, siltstone, argillite, limestone, andesite, basalt, pyroclastics.



Scale: 1:200,000



- Fault or shear zone



Geology after Wheeler (1960), Hart (1997)

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**REGIONAL  
GEOLOGY  
FIGURE 3.**

**HAECKEL HILL PROPERTY**

NTS: 105 D14 Datum: NAD27

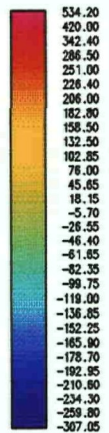
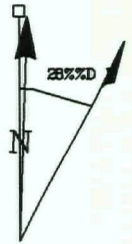
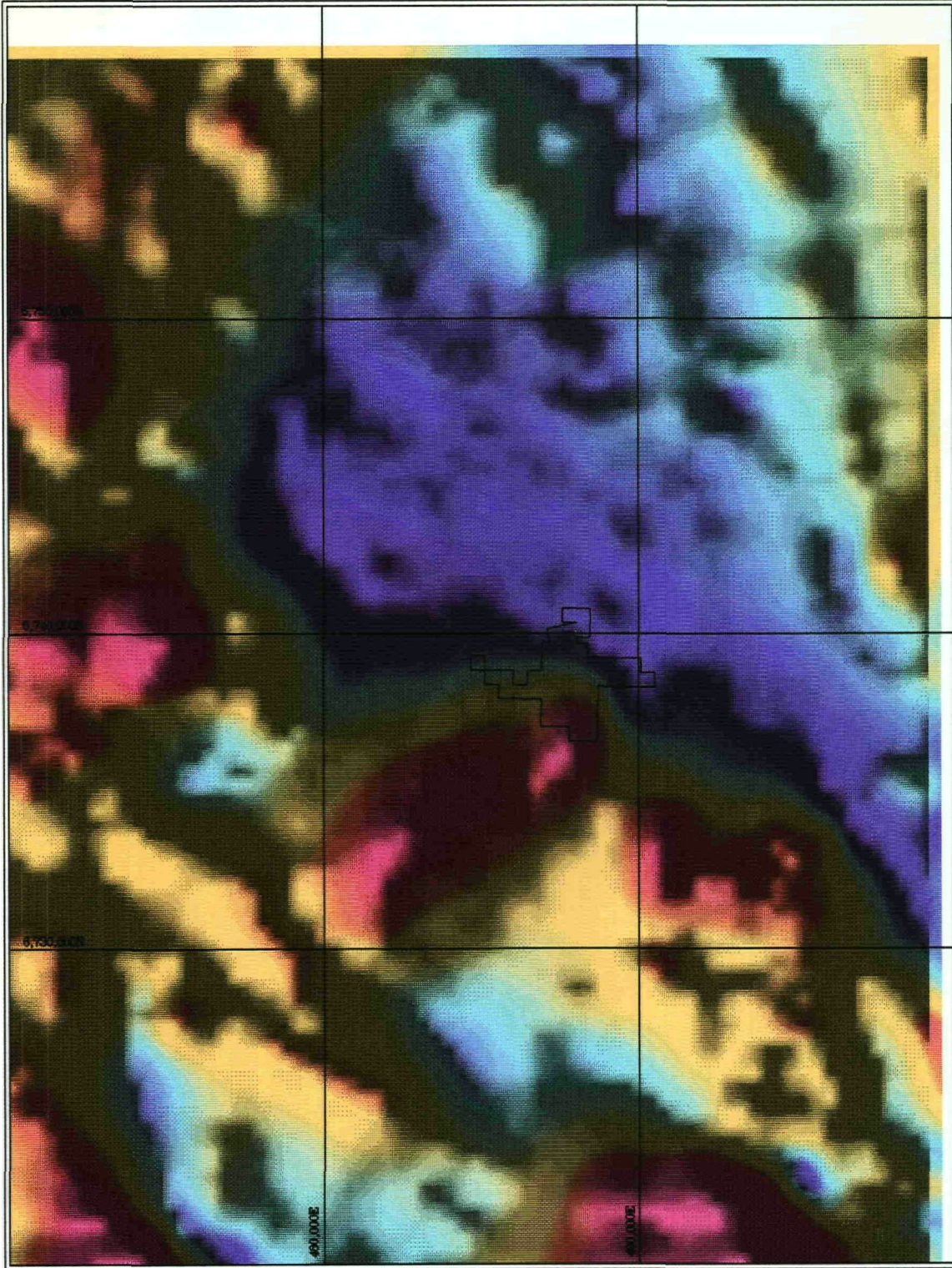
Mining District: Whitehorse

Job: 00-06 Date: 12 Dec 00



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Residual Magnetic Field (nT)



Scale: 1:200,000



Source: Digitized GSC aeromagnetic data

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HAECKEL HILL PROPERTY

NTS: 105 D

Datum: NAD27

TOTAL MAGNETIC FIELD  
CONTOUR MAP

Mining District: Whitehorse

Job: 00-06

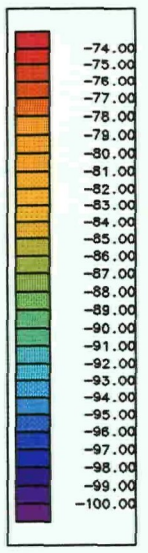
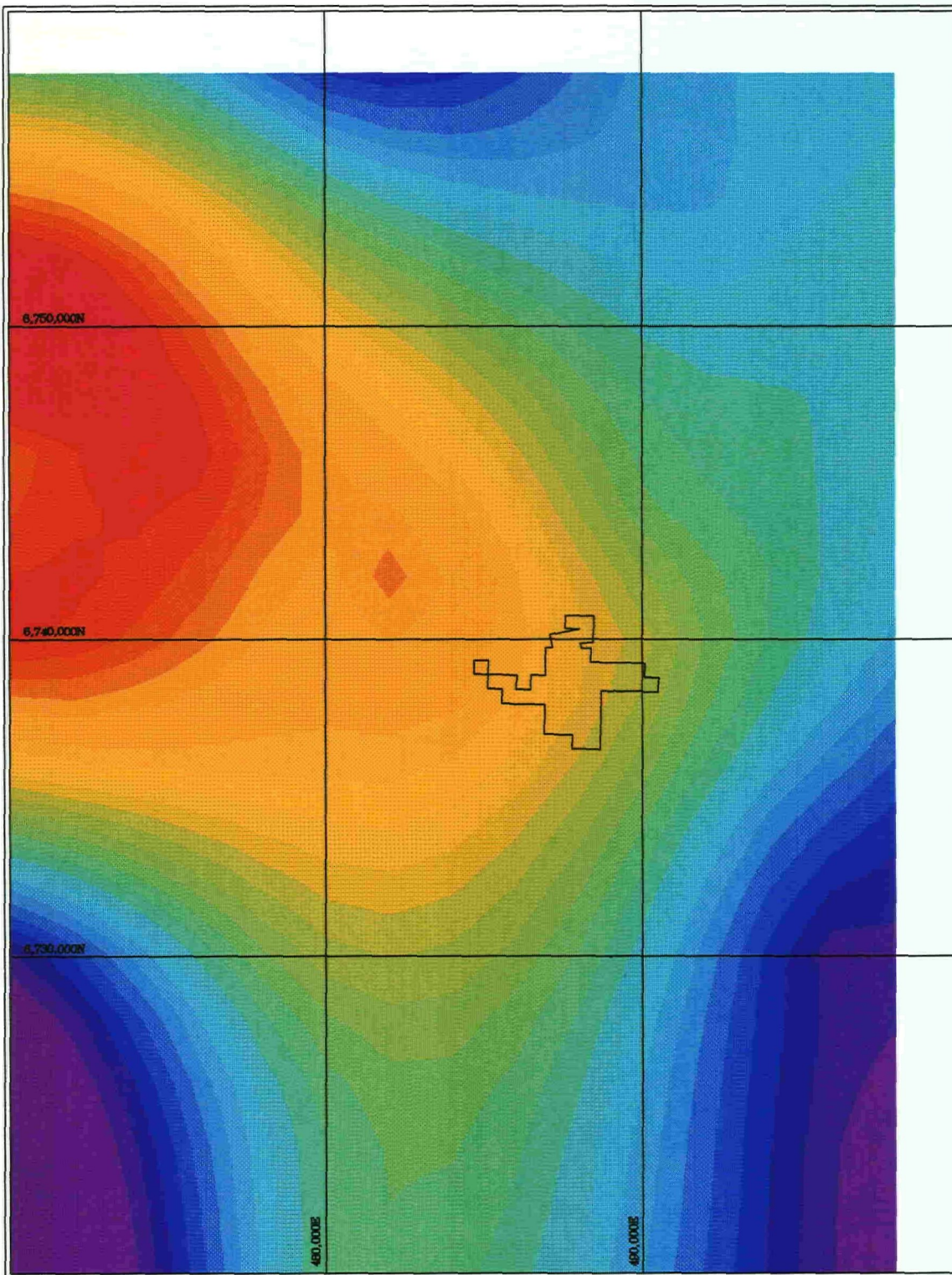
Date: 12 Dec 00

FIGURE 4.



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Bouguer Anomaly (mGal)



Scale: 1:200,000



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BOUGUER GRAVITY  
CONTOUR MAP

FIGURE 5.

HAECKEL HILL PROPERTY

NTS: 105 D Datum: NAD27

Mining District: Whitehorse

Job: 00-06 Date: 12 Dec 00



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Source: GSC Regional Gravity Data

wavelengths of up to 10 km are mapped north of the property. Intrusive bodies appear to have steeply dipping discordant contacts with surrounding sedimentary rocks. The Haeckel Hill Pluton intrudes Lewes River Group rocks on and to the south of the Haeckel Hill Property. There is a small satellite stock north of the main pluton which has been a focus of exploration work on the Haeckel Hill Property.

Figure 4 is a plot of the regional GSC aeromagnetic data for the area containing the Haeckel Hill Property, the boundaries of which are outlined in the plot. The magnetic data clearly highlight the Haeckel Hill Pluton which outcrops in the southern portion of the property. The mineralization is found in the axis of a pronounced west northwest trending low north of the high associated with the Haeckel Hill Pluton. This low is on the southern boundary of a larger region of lower total magnetic field coincident with the Takhini River valley and an area presumably underlain by Lewes River Group rocks. The trough or low running along the southern boundary of this region and through the Haeckel Hill Property may be in part associated with the Haeckel Hill magnetic high but it maintains a west northwesterly trend and appears to be a feature of regional significance.

Figure 5 is a plot of the GSC Bouguer gravity anomaly for the Haeckel Hill area. The gravity field is dominated by a strong high centred 20 km west of the property. A subsidiary feature is the north trending ridge south of the Haeckel Hill Property which appears to indicate the axis of a second intrusive centre within the Whitehorse Copper Belt. This ridge is coincident with the axis of the Haeckel Hill Pluton.

## 6.0 PROPERTY HISTORY

The Whitehorse Trough hosts significant copper-gold skarn deposits in the Whitehorse area just south of the Haeckel Hill Property. First reports of copper in the area were made by prospectors on their way to the Klondike in 1897. The Copper King claim staked in 1898 by Jack McIntyre was the first recorded find in the district and by 1899 the area had been well prospected (Tenney 1981). Between 1900 and 1921 small high grade shipments were made from the Copper King, Grafton, Valerie and Arctic Chief deposits and the Pueblo Mine went into production yielding 126 000 tons of copper ore at 3.6% before being shut down after a calamitous rock fall which killed several men. Production resumed under New Imperial Mines Ltd in 1967 and continued until 1982 when virtually all mines in the Yukon were shut down by a precipitous decline in metal prices. Total production during this period was 10.2 MT at an average grade of approximately 1.5% Cu.

The Haeckel Hill Property (Minfile 105 D 52 / 121) was originally staked by M Swetz and T Worbetts in February to June 1967 and restaked as the Bee Claims by Larry Patnode in 1974. Subsequent expansions brought the number of claims up to 84 by

1985 (Reid 1985) The initial discovery consisted of galena-pyrrhotite sphalerite pyrite skarn and vein mineralization about half way up the north facing slope of Haeckel Hill (Main Showing)

In 1979 Whitehorse Copper optioned the property and conducted line cutting IP surveys soil sampling geological mapping and trenching on the eastern portion of the property close to the Tenney Showing Results were not promising and the option was dropped L Patnode formed Silver Sabre Resources Ltd to carry out future work on the property conducting soil sampling and geophysics on the Main Showing in 1982 and following this up by diamond drilling two holes totalling 192 feet (Macdonald 1983)

MacKay (1995) reports significant mineralization in one of the drill holes testing the contact between the quartz vein and tuffaceous clastics Assays returned 34 g/t Ag 0.34 g/t Au 1.8% Pb and 1.6% Zn over narrow widths

Noranda Exploration Company Ltd optioned the Haeckel Hill Property in 1985 and performed line cutting soil sampling magnetometer and horizontal loop electromagnetic (HLEM) surveys geological mapping and trenching The exploration focus shifted from the Main Showing down hill and east approximately 600 m to a Nisling Range Plutonic Suite rhyolite / dacite intrusion (East Showing) Trenching there exposed a 75 m long east striking steeply dipping weak to moderately sheared band of rhyolite in the centre of the plug Reid (1985) reports quartz veins with associated galena and sphalerite with best assays being 1300 ppb Au over 0.37 m and 150 ppb Au over 3.2 m Geophysical surveys failed to indicate a strong EM response over the shear zone although the system used (SE 88 Genie) operates at a fairly low frequency and thus may be insensitive to a weak fault conductor

Noranda dropped its option and returned the property to Silver Sabre Resources in 1986 Silver Sabre conducted a mapping and trenching program and drilled 660 feet Two holes (RDH 86 1 and RDH86 2) targeted the mineralization exposed in the rhyolite plug shear zone Both intersected weakly anomalous gold mineralization up to 280 ppb Au over 5 feet The third hole RDH86 3 was drilled beneath the Main Showing and intersected 1650 ppb Au over 5 feet (Mackay and Reid 1986)

Subsequent work included excavator trenching in 1990 (Patnode 1990) and drilling in 1994 (Patnode 1995) 1996 (Lee 1996) and 1997 (Doherty and Clarke 1998) In 1995 sampling of the 1985 trenches on the rhyolite plug produced gold values of 1000 to 5000 ppb within Tertiary rhyolites The only significant result from the drilling was an intersection of 1206 ppb Au over 5 feet within rhyolite in hole RDH97 1 100 m southwest of the Main Showing This hole was significant in that it suggested that the rhyolite intrusive might both be auriferous and laterally extensive

In 1999 Silver Sabre conducted a program of line cutting induced polarization surveys and diamond drilling designed to explore the potential for a blind intrusive hosted gold



target between the Main Showing and the exposed rhyolite plug containing the East Showing. IP surveys located a strong chargeability high and resistivity low centred on the inferred trace of the shear zone. Prospecting during the course of the line cutting also identified a minor galena bearing quartz vein on strike with the Main Showing and the shear zone in the rhyolite plug. Three vertical 150 foot diamond drill holes tested the IP anomaly from which only one returned any significant values. Hole DDH99-1 returned 95 feet of metasediments averaging 0.0022 OPT Au (66 ppb Au) with 10 foot intervals ranging from 0.001 OPT Au to 0.005 OPT Au. All three holes contained significant amounts of disseminated sulphides demonstrating that the sources of the chargeability anomalies had been intersected. The results suggested that the gold mineralization is not directly associated with the abundant disseminated pyrite found within the rhyolite plug and within the contact aureole.

The program conducted in 2000 and summarized in this report consisted of systematic prospecting and sampling of the rhyolite plug to attempt to determine the controls on gold mineralization and to examine the under explored eastern margin of the plug.

## 7.0 PROPERTY GEOLOGY AND MINERALIZATION

The property geology has been described by Reid (1985), MacKay and Reid (1986), MacKay (1995) and Power (1999). Figure 6 (back pocket) summarizes the property geology and includes the work conducted in 2000. During June 2000, Stephan Humphries and Ron Stack mapped and sampled the rhyolite intrusion under the supervision of the author. This program consisted of first re-establishing the old base line and putting in 10 line km of flagged grid. The lines were spaced 50 m apart and stations flagged in at 25 m intervals. Following this, the rhyolite plug was systematically prospected and mapped, concentrating on areas near the contacts and within the axial zone of the anticline. A total of 45 stations were examined and rock samples were collected at each site. A project log is attached as Appendix B and exploration expenses are summarized in Appendix C.

Rock units mapped on the Haeckel Hill Property are summarized in Table II. The property is predominantly underlain by argillite, limestone, conglomerate and grit assigned to the Upper Triassic Aksala Formation of the Lewes River Group (Units 1 and 2). These include clastic rocks mapped as undifferentiated Aksala Formation or the Mandana Member of the Aksala Formation, and limestones mapped as Hancock Member (Hart, 1997). The metasedimentary rocks are in turn intruded by granite, rhyolite and dacite assigned to the Nisling Range Plutonic Suite. Extensive colluvium, loess and till blankets the property and bedrock exposures are quite scarce.

Unit 1 rocks form a distinct unit within the predominantly clastic sequence. This unit consists of medium grey limestone weathering buff with white crusts, medium to

cryptocrystalline and massive to thin (10 cm) bedded. Contact metamorphism extends to within 100 m of the contact with Unit 4. Near the contact tremolite knots, iron staining and intense silicification are common together with epidote alteration along and adjacent to fractures. Limestone conglomerate assigned to Unit 1 is found at one location approximately 150 m SW of the Old Gun Club. The conglomerate is dark grey weathering light grey to medium buff and brown and contains irregular subrounded clasts up to 20 cm in diameter in a cryptocrystalline matrix. Locally the rock bears a striking resemblance to agglomerate but it is highly calcareous. Unit 1 rocks are correlated with the Upper Triassic (Norian) Hancock Member of the Aksala Formation.

**Table II Rock units Haeckel Hill Property**  
(Regional classification following Hart (1997))

Property Scale Rock Unit (Regional Unit)	Description
Overburden	Tan to light brown till and grey black colluvium
Unit 3 (Nisling Range Plutonic Suite)	Granite, rhyolite and dacite
Unit 2 (Lewes River Group Mandana Member)	Greywacke with lesser conglomerate and argillite
Unit 1 (Lewes River Group Hancock Member)	Limestone and marble limestone conglomerate and minor interbedded argillite

Unit 2 consists of greywackes with lesser conglomerate and argillite. The greywacke is generally dark to medium grey weathering light grey, medium to fine grained with angular to subangular clasts of amphibole, quartz and plagioclase. The matrix is siliceous with locally calcareous beds. Resistant quartz and plagioclase clasts impart a speckled texture and colour to the rock. Bedding varies from 10 cm to massive and locally beds are graded. Jointing is common on planes spaced up to 1 m apart but more generally are around 30 cm. Argillite is common near the contact with Unit 1 in the area of the Main Showing. This rock type is dark grey to black weathering medium to light grey, thin bedded with local thin interbedded siltstone layers. Calcite veining is common near the limestone contact. Rocks of Unit 2 are correlated with the Mandana Member of the Aksala Formation. Hart (1997) states that the Mandana Member interfingers with and locally overlies the Hancock Member on the Haeckel Hill Property. The Mandana Member rocks appear to interfinger with the Hancock Member limestones.

Unit 3 granite, rhyolite and dacite is found in a large intrusion in southern portion of the

claim block and in a small stock north of the main intrusion. The large intrusion partially mapped in the southern portion of Figure 6 is the northern limit of the Haeckel Hill Pluton. North of this feature is a small stock or plug composed of rhyolite and dacite. Unit 3 rocks are correlated with the Paleocene Nisling Range Plutonic Suite.

Granitic rocks in the Haeckel Hill Pluton are white (felsic) and dark green (mafic) weathering white and brown, anhedral with crystals to 3mm consisting of plagioclase (?albite) (50%), amphibole and biotite (30%) and quartz (10-20%). This rock unit is massive with widely spaced (1 to 2 m) joints. Marble and amphibolite inclusions up to several metres across are common near the contact with Unit 1.

The northern stock consists of subvolcanic rhyolite and dacite in a shallow hypabyssal stock centred at UTM 488250E 6739250N. This stock contains the East Showing which was drilled and trenched during 1985-1999. In the centre of the intrusion the rhyolite is medium grey to buff weathering light grey and contains plagioclase phenocrysts to 3 mm in an aphanitic ground mass. Near the margins of the plug the rhyolite is locally vesicular or contains quartz amygdules, is intensely silicified and contains 1 to 10% pyrite. Manganese stain, chlorite alteration and reddish iron stain are also common near the contact with Unit 1. Silicification is intense near the contact and especially proximal to a shear zone in the centre of the plug. Contacts with surrounding argillite and limestone are difficult to pinpoint because of the alteration on the western portion of the contact. Drill hole data and some outcrops on the northwestern margin of the plug indicate that the rhyolite is locally intercalated with the surrounding sediments. Figure 7 is a drill section from the 1999 program and indicates that the rhyolite near the contact intrudes the metasediments along bedding planes. A significant volume of Unit 3 rocks may be present beneath the metasediments as far west as the Main Showing. Drill hole DDH97-3 demonstrates that the rhyolite extends at least 500 m west of the outcrop exposure where it was intersected at a depth of 14 m.








Structure on the property is dominated by a west plunging anticline whose core contains the Unit 3 rhyolite stock. The fold is poorly exposed in cross section in the northeast facing slope of Haeckel Hill and contains a shear zone in the axial region which cuts both the intrusion and the surrounding sediments. The shear zone is intermittently exposed in trenches in the western portion of the rhyolite plug. Rhyolite or dacite within the shear zone is intensely fractured (spacing 1 to 4 cm), locally silicified and pyritized. Quartz veins up to 10 cm but averaging 2 to 4 cm are locally common particularly where the rock is silicified. The shear zone is not easily mappable nor continuous but rather appears to pinch and swell from trench to trench. The shear zone evidently served as a conduit for ascending hydrothermal fluids as intense alteration and economic mineralization are found near and within it.

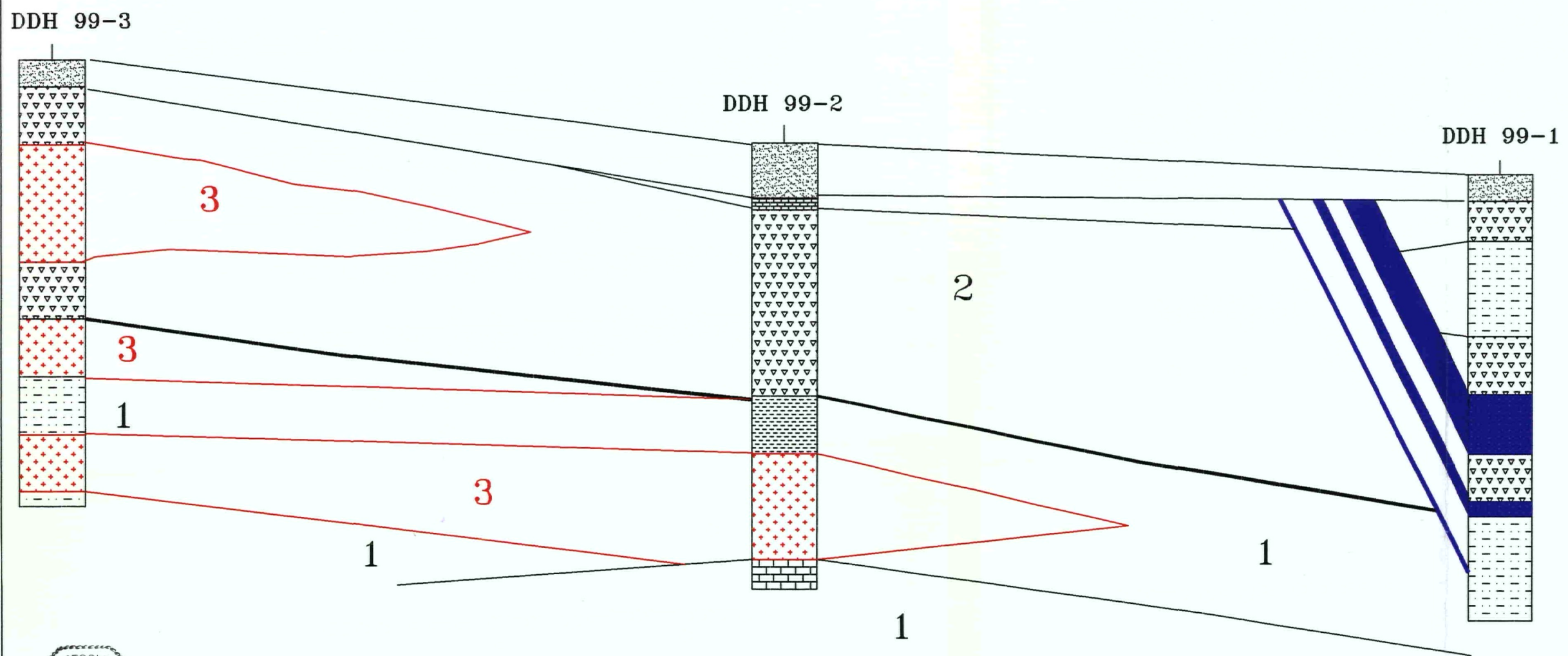
Structural data provides some insight into the controls on mineralization. Figure 8 shows a stereogram of the poles to bedding for the area of Figure 6. It is readily

S

N

LEGEND

-  Overburden
-  Quartz carbonate breccia
-  QFP & rhyolite
-  Tuff & Agglomerate
-  Siltstone
-  Limestone
-  Argillite



Stratigraphic units per Figure 6.



SILVER SABRE  
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HAECKEL HILL PROPERTY

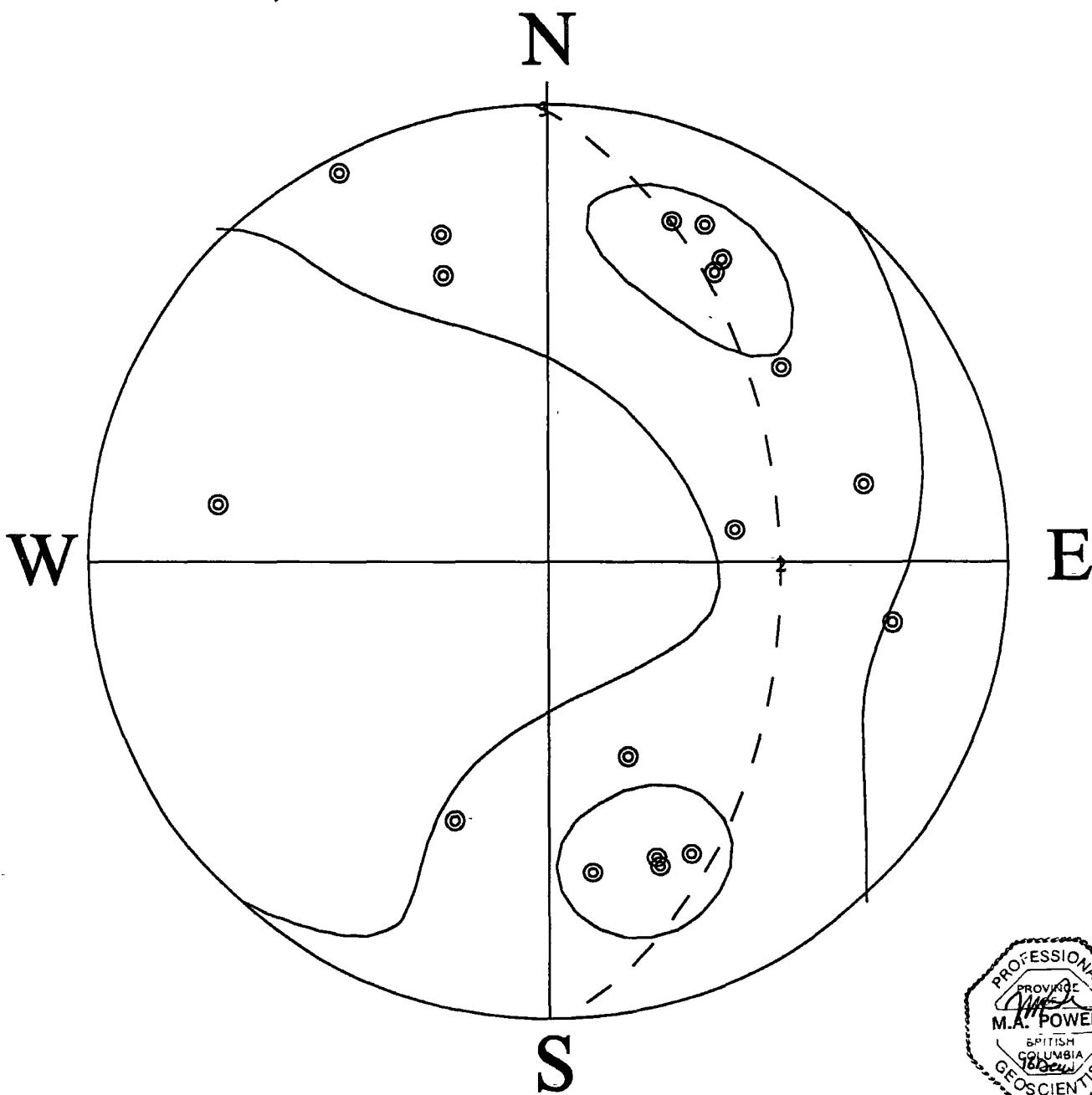
CROSS SECTION  
LINE 1550E

FIGURE 7.

NTS: 105 D/14 Datum: NAD 27  
Mining District: Whitehorse, YT  
Job: 99-12 Date: 16 DEC 00



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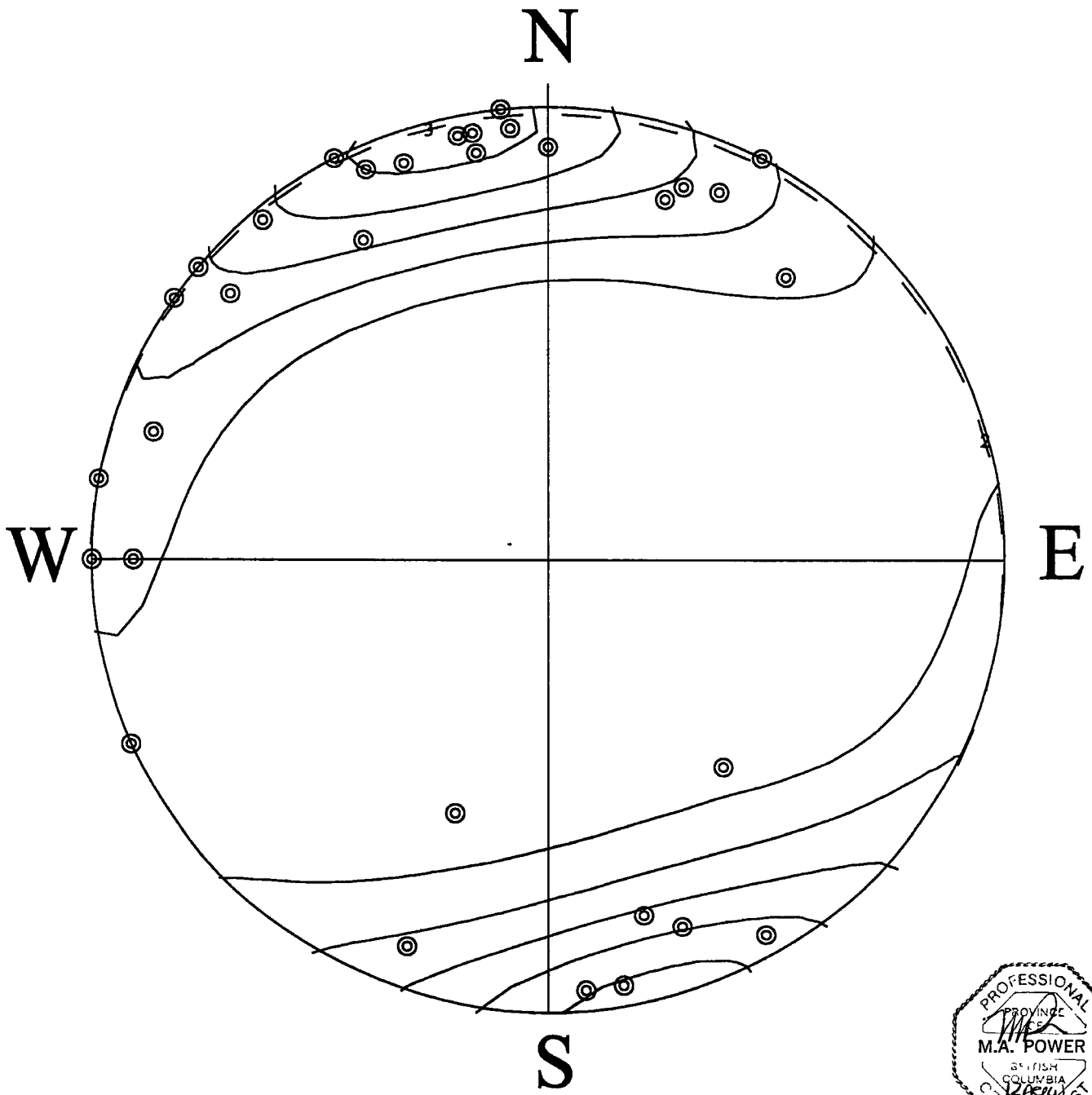


Haeckel Hill Property  
 Poles to bedding  
 n=18

E1= 268° 42° / 2.6  
 E2= 91° 48° / 6.8  
 E3= 360° 1° / 8.6

Figure 8. Structural data - bedding





Haeckel Hill Property  
 Poles to veins & fractures  
 n=33

E1= 192° 88° / 1.7  
 E2= 75° 1° / 8.6  
 E3= 345° 2° / 22.7

Figure 9. Structural data - veins & fractures

apparent that the rocks are folded about an axis of  $268^{\circ} 42^{\circ}$  as indicated by the first Eigenvector to the structural distribution. Poles to fractures and veins, predominantly in the area of the rhyolite stock, are shown in Figure 9. They are clustered about a mean axis of  $345^{\circ} 2^{\circ}$ , indicating a mean orientation of  $75^{\circ} 88^{\circ}$  S. The apparent dispersion of poles may be related to the development of conjugate joints, poorly defined in a small data set. The structural data appear to define a west-plunging fold with fractures dominantly parallel to the fold axis. Mackay and Reid (1985) suggested that mineralized veins generally strike from  $90^{\circ}$  to  $125^{\circ}$  while the author observed veining parallel to the mean trend of the shear zone, locally ranging from  $75^{\circ}$  to  $100^{\circ}$ .

## 8.0 MINERALIZATION

Mineralization on the property occurs in two settings. The Main Showing consists of sheeted galena-sphalerite-pyrite bearing quartz veins, and has returned assays of 6-20% lead-zinc, 144 gpt Ag and 5480 ppb Au (Schulze, 1995). Best assays reported in the Minfile are 8% Pb, 5% Zn and 171 g/t Ag from a selected specimen and a drill intersection of 34 g/t Ag, 0.34 g/t Au, 1.8% Pb and 1.6% Zn across 1.5 m. This style of mineralization is largely confined to the intersection of a shear zone and Unit 1 limestone approximately 400 m west of the margin of the Unit 3 stock. Individual veins extend for approximately 30 m and are exposed in several blast trenches over a distance of 60 m. In 1999, a 10 cm wide vein with similar mineralization was found 200 m east of the Main Showing along the base line.

The second style of mineralization is low grade gold within and adjacent to the Unit 3 rhyolite stock (East Showing). Exploration by Noranda in the 1980's focussed on the shear zone within the stock. Quartz veins containing pyrite with rare galena and sphalerite returned up to 2180 ppb Au from trench chip samples (Doherty and Clarke, 1997) and the best drill intersection was 280 ppb over 3.3 m in a drill hole beneath an anomalous trench sample (MacKay and Reid, 1986). Drilling during 1997 intersected the rhyolite at depths of 14 to 47 m, 500 m west of the exposed stock and returned 1206 ppb Au from a 1.52 m sample from 30.5 to 32.0 m. The results from this hole suggested that the rhyolite intrusion may contain significant low grade gold mineralization and merited additional investigation.

Mapping and sampling in 1999 focussed on the area between the western boundary of the rhyolite plug and the Main Showing and during 2000, the area of investigation shifted to the rhyolite plug and margins. A total of 35 rock samples were separated from those collected during mapping and sent for analysis to Northern Analytical Laboratories Ltd. Rock samples collected during 2000 were crushed to -10 mesh, riffle split to 200g and pulverized to -100 mesh. A 15 g sample of each was analysed for gold by atomic absorption spectrophotometry and for 30 other elements by induced coupled plasma analysis at International Plasma Laboratories Ltd. Sample descriptions

from the 2000 program are summarized in Appendix E and analyses are reported in Appendix F.

Metasediments within the alteration halo surrounding the rhyolite plug contain abundant pyrite, particularly in limestone beds but samples of these rocks from the 1999 drill program return uniformly low gold assays unless they are entrained in the central shear zone. Mineralized rhyolite which returned gold analyses greater than 50 ppb is sheared, silicified and contains abundant secondary pyrite. Sample 00BC-20 which returned 324 ppb Au was from an interval of quartz pods and veinlets. Sample 00BC-11 (95 ppb Au) contained up to 25% pyrite but lacked intense silicification. Sample 00BC-28 (473 ppb Au) was taken from intensely silicified rhyolite with 10% pyrite and abundant quartz veins. Other samples returning high assays and reported in Appendix E (00BC-32, 33) were taken from the Main Showing. All of the samples from the rhyolite plug which returned anomalous gold assays are located in the shear zone coincident with the axial zone of the property scale fold affecting the metasediments.

## 9.0 CONCLUSIONS

The results of the work conducted on the Haeckel Hill Property to date lead to the following conclusions:

- a. A small Nisling Range Plutonic Suite rhyolite stock occurs in the centre of a large, west plunging anticline. The axial region of the fold is locally sheared and silicified. The sheared axial region of the fold cuts the rhyolite plug, Unit 1 limestone and Unit 2 clastic metasediments. Gold mineralization discovered to date on the property occurs near or within the sheared axial region of the fold.
- b. Steeply dipping quartz veins with pyrite-pyrrhotite-galena-sphalerite massive to disseminated sulphide mineralization occur in Unit 1 limestone. Selected specimens of this material assayed up to 8% Pb, 5% Zn and 171 g/t Ag and the best drill intersection was 34 g/t Ag, 0.34 g/t Au, 1.8% Pb and 1.6% Zn across 1.5 m. This style of mineralization is restricted to Unit 1 limestone, within 50 m of the anticlinal fold axis.
- c. Quartz veins with pyrite, rare galena and sphalerite in disseminations and stringers are found in the shear zone coincident with the axial region of the fold in the rhyolite stock. Intense silicification together with chlorite and sericite alteration are associated with the sulphide minerals. Mineralized specimens of this material have returned assays of up to 2180 ppb Au from trench chip samples and 280 ppb over 3.3 m in a drill hole.
- d. Mineralization, similar in style to that described above was intersected in a drill hole approximately 100 m south of the fold axis. The single intersection consisted of pyrite-altered rhyolite assaying 1206 ppb Au from a 1.52 m sample.
- e. Metasedimentary rocks in the alteration halo surrounding the exposed rhyolite stock contain abundant pyrite but returned assays of only up to 0.005 OPT Au over 10 feet in one drill hole. Mineralization in this hole is associated with a steeply dipping quartz-carbonate breccia near the anticlinal fold axis.
- f. The overall results of exploration conducted to date on the Haeckel Hill Property suggest that the gold mineralization is structurally controlled and occurs in a variety of settings. These include Pb-Zn-Ag veins and skarn mineralization within Unit 1 limestone, quartz-carbonate veins within clastic metasedimentary rocks and stockwork-style veins within the

rhyolite plug.

## 10.0 RECOMMENDATIONS

The following recommendations are made for further work on the property:

1. Future investigations should focus on the axial zone of the fold cutting the rhyolite plug and structures related to it. All known gold mineralization discovered to date on the property is spatially associated with this structure.
2. The shear zone associated with the fold axis should be traced out by VLF or HLEM surveys.
3. Soil sampling, prospecting and sampling, supplemented by blast trenching where results warrant, should be conducted in an area centred on the fold axis and extending west from the Main Showing and east from the eastern margin of the rhyolite stock.
4. No future work on the rhyolite plug or the Main Showing is warranted. These targets have been repeatedly investigated and have failed to yield a significant economic gold intersection.

Respectfully submitted,  
**AMEROK GEOSCIENCES LTD.**



M.A. Power, M.Sc, P. Geo.  
Geophysicist

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## APPENDIX A. STATEMENT OF QUALIFICATIONS

I, Michael Allan Power, M.Sc. P.Geo., P.Geoph , with business and residence in Whitehorse, Yukon Territory do hereby certify that:

1. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia (registration number 21131) and a professional geophysicist registered by the Northwest Territories Association of Professional Engineers, Geologists and Geophysicists (licensee L942).
2. I am a graduate of the University of Alberta with a B.Sc. (Honours) degree in Geology obtained in 1986 and a M.Sc. in Geophysics obtained in 1988.
3. I have been actively involved in mineral exploration in the Northern Cordillera and the Northwest Territories since 1988.
4. I have no interest, direct or indirect, nor do I expect to receive any interest, direct or indirect, in Silver Sabre Resources Ltd. or any of its properties.
5. The foregoing report is based on publically available data, reports and maps, on geological mapping and geophysical surveys conducted by the author and on mapping performed under the direction of the author.

Dated this 18<sup>th</sup> day of December 2000 in Whitehorse, Yukon Territory.

Respectfully submitted,



Michael A. Power M.Sc. P. Geo.  
Geophysicist



**APPENDIX B. PROJECT LOG**

**SURVEY LOG**  
**JOB 00-006**  
**GEOLOGICAL MAPPING & PROSPECTING**  
**BEE AND CEE CLAIMS**

Period: 12/Jun/00 - 21/June/00

Personnel:

Stefan Humphries	- Geologist
Brad Trost	- Geophysicist
Christine Purves	- Field Assistant
Ron Stack	-Field Assistant

Mon 12 Jun 00	Line Cutting Brad Trost and Christine Purves
Tue 13 Jun 00	Line Cutting Brad Trost and Christine Purves
Wed 14 Jun 00	Geological Mapping Stefan Humphries and Brad Trost
Thur 15 Jun 00	Geological Mapping Stefan Humphries and Brad Trost
Fri 16 Jun 00	Geological Mapping Stefan Humphries and Brad Trost
Mon 19 Jun 00	Geological Mapping Stefan Humphries and Brad Trost
Tue 20 Jun 00	Prospecting and Sampling Stefan Humphries and Ron Stack
Wed 21 Jun 00	Prospecting and Sampling Stefan Humphries and Ron Stack
Thur 22 Jun 00	Sample Sorting and Notes Preparation Stefan Humphries

Personnel:

Stephan Humphries  
1123 Cherry Street  
Nelson, B.C.  
V1L 6C1

Brad Trost  
P.O.Box 5808  
Whitehorse, YT  
Y1A 5L6

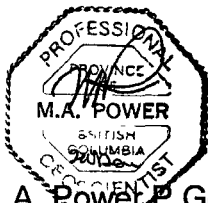
Christine Purves  
16 Alsek Road.  
Whitehorse, YT  
Y1A 3J8

Ron Stack  
Box 10086  
Whitehorse, YT  
Y1A 7A1

**APPENDIX C. STATEMENT OF EXPENSES**

Geological mapping: Geologist and helper w/truck 8.0 days @ \$590 per diem	\$4,720.00
Assays (net of coupons): 35 samples @ \$14.00	\$440.00
Sample sorting and logging: 1 day @ \$270	\$270.00
Final report	<u>\$2,600.00</u>
<i>Total project expenditures</i>	<b>\$ 8,030.00</b>

I certify that these expenditures are true and correct to the best of my knowledge.



M. A. Power P. Geo.  
Geophysicist

December 18, 2000

**APPENDIX E. ROCK SAMPLE DESCRIPTIONS**

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Sample	Grid E	Grid N	Description	Significant assays
00BC-1	1625E	1000N	Rhyolite: medium grey weathering reddish brown; aphanitic, <10 pyrite to 2 mm 70% feldspar / quartz	
00BC-2	1620E	1000N	Rhyolite: light to medium grey weathering reddish brown, aphanitic, 15-20% pyrite to 3 mm.	
00BC-3	1650E	1000N	Rhyolite: medium grey weathering reddish brown; aphanitic, pyrite in veinlets up to 4mm; epidote alteration	
00BC-4	1700E	988N	Rhyolite medium grey weathering reddish brown; fine crystalline to 1 mm, <10% pyrite to 2 mm.	
00BC-5	1694E	998N	Rhyolite: medium grey weathering reddish brown; crystals to 2 mm with 15% plagioclase phenocrysts, <5% fine crystalline pyrite.	
00BC-6	1702E	1002N	Rhyolite. medium grey weathering reddish brown; aphanitic, 10% pyrite to 4 mm.	
00BC-7	1697E	1008N	Rhyolite. white weathering red, aphanitic with 10% pyrite to 4 mm	
00BC-8	1696E	1047N	Rhyolite: medium-dark grey weathering reddish brown and green; aphanitic with some hornblende to 1mm Chlorite and epidote alteration 5-10% pyrite up to 2 mm	
00BC-9	1952E	925N	Rhyolite medium - dark grey weathering reddish brown, fine to medium crystalline with plagioclase up to 3 mm, pyrite up to 1 mm, locally 10% of rock.	35 ppb Au

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00BC-10	1972E	918N	Rhyolite medium grey weathering reddish brown or grey. Plagioclase (35%) up to 3 mm in aphanitic groundmass. 10-15% pyrite up to 1 mm	
00BC-11	1967E	922N	Rhyolite: medium grey weathering reddish brown grey Plagioclase (35%) up to 2 mm in aphanitic ground mass Pyrite (25%) up to 1 mm.	95 ppb Au
00BC-12	1902E	1076N	Rhyolite. medium grey weathering dark grey. Plagioclase (30%) up to 5 mm. Limestone breccia. Pyrite up to 10%	
00BC-13	1881E	1102N	Rhyolite: medium grey weathering dark grey. Plagioclase (25%) up to 2 mm in aphanitic groundmass. Pyrite (5%) up to 1 mm.	
00BC-14	1859E	1137N	Rhyolite: dark grey weathering same. Plagioclase (30%) in crystals up to 2 mm. Pyrite (5%).	
00BC-15	1833E	991N	Rhyolite: medium grey weathering reddish brown. Plagioclase (40%) in phenocrysts to 4 mm within aphanitic ground mass Pyrite (20%) in veins and disseminations up to 2 mm. Some biotite.	
00BC-16	1804E	1000N	Rhyolite: medium grey weathering reddish brown. Plagioclase (30%) up to 2 mm in aphanitic quartz-plag groundmass. Pyrite (10-15%) up to 2 mm. Rock is highly fractured and iron stained.	
00BC-17	1800E	970N	Rhyolite medium grey weathering reddish brown Predominantly aphanitic Pyrite (10-20%) in crystals up to 3 m.	
00BC-18	1643E	892N	Rhyolite: dark grey weathering reddish brown Plagioclase (30%) and biotite (5 - 10%) in crystals to 1 mm	

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00BC-19	1695E	829N	Rhyolite: light grey weathering dark grey Plagioclase (40%) in crystals <1 mm. Pyrite (5%).	
00BC-20	1682E	943N	Rhyolite light grey weathering reddish brown, silicified, aphanitic, pyrite (10-15%) up to 3 mm. This sample from sheared rhyolite containing quartz lenses and pods.	324 ppb Au
00BC-21	1682E	943N	Rhyolite: light grey weathering reddish brown, silicified, aphanitic, pyrite (10-15%) up to 3 mm. This sample from country rock adjacent to sheared rhyolite	21 ppb Au
00BC-22	1658E	895N	Rhyolite: light grey weathering dark grey-red. Plagioclase (45%) up to 1 mm within aphanitic groundmass Pyrite (10%) up to 2 mm	
00BC-23	1663E	889N	Rhyolite. light grey weathering dark grey- red Plagioclase (35%) in phenocrysts to 2 mm within aphanitic quartz-plagioclase groundmass. Pyrite (5-10%) and chalcopyrite(?) (<1%) in small crystals.	
00BC-24	1767E	838N	Rhyolite light grey weathering reddish brown. Plagioclase (20%) in crystals to 2 mm. Pyrite (5-10%) crystals	
00BC-25	1802E	796N	Rhyolite. light grey weathering reddish brown Plagioclase (40%) in crystals to 2 mm. Pyrite (10-15%) in crystals up to 2-3mm Fractured with quartz and calcite veins At contact with argillite.	
00BC-26	1622E	842N	Rhyolite light grey weathering reddish brown Plagioclase (15%) in crystals to 1 mm within aphanitic groundmass. Pyrite (<5%) in crystals to 1 mm	
00BC-27	1632E	887N	Rhyolite. light grey weathering reddish brown Quartz eyes to 4 mm Pyrite (10%)	

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00BC-28	1905E	877N	Rhyolite light grey weathering reddish brown. Plagioclase (40%) in phenocrysts 1-2mm within aphanitic groundmass. Pyrite (10%) in crystals up to 2 mm. Abundant quartz veins	473 ppb Au
00BC-29	905E	887N	Rhyolite light grey weathering reddish brown. Plagioclase (30%) in crystals up to 1 mm within aphanitic ground mass. Pyrite (10-20%) in crystals up to 3 mm	
00BC-30	1905E	882N	Rhyolite: light grey weathering reddish brown. Plagioclase (30%) in crystals up to 1 mm Pyrite (20%)	41 ppb Au
00BC-31	1900E	895N	Rhyolite: light grey weathering reddish brown. Plagioclase (30%) in crystals up to 1 mm. Pyrite (20%). Quartz veins, 5-10 cm thick	
00BC-32			Vein showing (Haeckel Hill)	1045 ppb Au
00BC-33			As above	300 ppb Au
00BC-34	1500E	870N	Rhyolite: light grey weathering reddish brown. Some pyrite	
00BC-35	1697E	1047N	Dacite. dark grey weathering brownish grey. 30% plag, 5% hornblende, 5% biotite Medium to coarse crystals to 5 mm. 10-20 pyrite in crystals 3-4 mm.	

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**APPENDIX F. ASSAY CERTIFICATES**



05/07/2000

Certificate of Analysis

# of pages (not including this page): 2

Amerok

WO# 00047

Certified by   
 Justin Lemphers (Senior Assayer)

Date Received: 23/06/00

**SAMPLE PREPARATION:**

Code	# of Samples	Type	Preparation Description (All wet samples are dried first)
r	35	rock	Crush to -10 mesh; riffle split 200g; pulverize to -100 mesh

**ANALYTICAL METHODS SUMMARY:**

Symbol	Units	Element	Method (A:assay) (G:geochem)	Fusion/Digestion	Lower Limit	Upper Limit
Au	ppb	Gold	G: FA/AAS	15g FA / aqua regia	5	7000

AAS = atomic absorption spectrophotometry  
 FA = fire assay

1000ppb = 1ppm = 1g/mt = 0.0001% = 0.029166oz/ton

05/07/2000

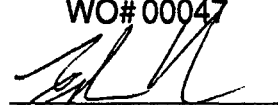
Certificate of Analysis

Page 1

Amerok

WO# 00047

Certified by



Sample #	Au ppb
r 00BC-1	12
r 00BC-2	10
r 00BC-3	17
r 00BC-4	<5
r 00BC-5	10
r 00BC-6	8
r 00BC-7	6
r 00BC-8	8
r 00BC-9	35
r 00BC-10	13
r 00BC-11	95
r 00BC-12	6
r 00BC-13	6
r 00BC-14	<5
r 00BC-15	22
r 00BC-16	8
r 00BC-17	9
r 00BC-18	12
r 00BC-19	<5
r 00BC-20	324
r 00BC-21	21
r 00BC-22	10
r 00BC-23	13
r 00BC-24	8
r 00BC-25	6
r 00BC-26	8
r 00BC-27	7
r 00BC-28	473
r 00BC-29	25
r 00BC-30	41

05/07/2000


Certificate of Analysis

Page 2

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Sample #	Au ppb
r 00BC-31	27
r 00BC-32	1045
r 00BC-33	301
r 00BC-34	10
r 00BC-35	6



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CERTIFICATE OF ANALYSIS

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Fax (604) 879-7898
[067215:42:02:00071200]

Northern Analytical Laboratories

35 Samples

Out: Jul 12, 2000 In: Jun 30, 2000

Project : None Given
Shipper : Norm Smith
Shipment: PO#: 176729
Analysis:
ICP(AqR)30

Comment:

Document Distribution

1 Northern Analytical Laboratories EN RT CC IN FX
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Whitehorse DL 3D EM BT BL
YT Y1A 2Z7 0 0 0 0 0
Canada Ph:867/668-4968
Att: Norm Smith Fx:867/668-4890
Em:NAL@hypertech.yk.ca

Table with columns: CODE, AMOUNT, TYPE, PREPARATION DESCRIPTION, PULP, REJECT. Includes an 'Analytical Summary' section with columns: ##, Code, Method, Units, Description, Element, Limit Low, Limit High.

EN=Envelope # RT=Report Style CC=Copies IN=Invoices Fx=Fax(1=Yes 0=No) Totals: 1=Copy 1=Invoice 0=3 1/2 Disk
DL=Download 3D=3 1/2 Disk EM=E-Mail BT=BBS Type BL=BBS(1=Yes 0=No) ID=C030901

\* Our liability is limited solely to the analytical cost of these analyses

BC Certified Assayer: David Chiu

Handwritten signature of David Chiu



CERTIFICATE OF ANALYSIS

iPL 00F0672

2036 Columbia Street
Vancouver, B C
Canada V5Y 3E1
Phone (604) 879-7878
Fax (604) 879-7898

INTERNATIONAL PLASMA LABORATORY LTD

Client: Northern Analytical Laboratories
Project: None Given

35 Samples
35=Pulp

[067215:42:02:00071200] Out In Jul 12, 2000 Page 1 of 1
Jun 30 2000 Section 1 of 1

Table with columns: Sample Name, Ag, Cu, Pb, Zn, As, Sb, Hg, Mo, Tl, Bi, Cd, Co, Ni, Ba, W, Cr, V, Mn, La, Sr, Zr, Sc, Ti, Al, Ca, Fe, Mg, K, Na, P. Rows 00BC - 1 to 00BC - 35.

Min Limit 0.1 1 2 1 5 5 3 1 10 2 0.1 1 1 2 5 1 2 1 2 1 1 1 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01
Max Reported\* 99.9 20000 20000 20000 9999 999 9999 999 999 9999 99.9 9999 9999 9999 999 9999 9999 9999 9999 9999 9999 9999 9999 1.00 9.99 9.99 9.99 9.99 9.99 5.00 5.00
Method ICP
---No Test Ins=Insufficient Sample Del=Delay Max=No Estimate Rec=ReCheck m=x1000 %=Estimate % NS=No Sample P=Pulp





**STRATIGRAPHY**

- Pliocene**
- 3 Nisling Range Plutonic Suite: granite, rhyolite, dacite
- Upper Triassic**
- 2 Mandanna Member: Greywacke, volcanic and tuff
  - 1 Hancock Member: Limestone/marble with argillite, limestone conglomerate

**LEGEND**

- Outcrop**
- Trenches, cat, hand or blast
  - Drillhole, diamond (DDH) or reverse circulation (RDH)
  - Approximate contact
  - Approximate fold location, anticline
  - Roads, Trails
  - Streams
  - Strike and dip of bedding
  - Strike and dip of joints/fractures
  - Strike and dip of foliation/cleavage
  - Vertical joints/fractures
  - Geology station (2000)
  - Shear zone or vein system



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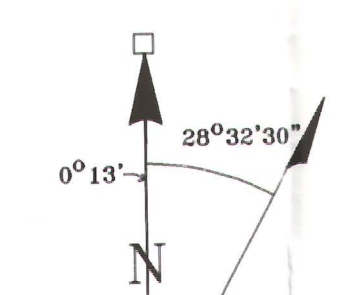
**HAECKEL HILL PROPERTY**

**PROPERTY GEOLOGY  
FIGURE 6.**

NTS: 105D/14	Datum: NAD 27
Mining District: Whitehorse	
Job: 00-06	Date: 12 DEC 00

**AMEROK GEOSCIENCES LTD.**

Geological mapping by:  
M. Power (1999)  
S. Humphries (2000)  
Stratigraphy after Hart (1997)



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Old Whitehorse Copper Baseline



IM

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**SILVER SABRE RESOURCES LTD.  
  
TOTAL MAGNETIC FIELD  
AND VLF-EM SURVEYS  
AT THE HAECKEL HILL PROPERTY,  
WHITEHORSE, YUKON**



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2000  
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**SILVER SABRE RESOURCES LTD.**

**TOTAL MAGNETIC FIELD  
AND VLF-EM SURVEYS  
AT THE HAECKEL HILL PROPERTY,  
WHITEHORSE, YUKON**

Mike Power, M.Sc., P.Geoph.

CLAIMS

BEE 1-4	Y 91728 - Y 91731
BEE 5-12	Y 91732 - Y 91739
BEE 21-24	Y 91748 - Y 91751
BEE 25-27	YA03106 - YA03108
BEE 28-35	YA18302 - YA18309
BEE 60-63	YA92340 - YA92343
CEE 7-8	YA82530 - YA82531
CEE 10-13	YA82532 - YA82535
CEE 19	YA82581
CEE 20-21	YA85579 - YA85580
CEE 25-26	YA85584 - YA85585
CEE 24-26	YA86010 - YA86012

Location: 60° 47'N 135° 12'W

NTS: 105 D/14

Mining District: Whitehorse, YT

Date: January 16, 2001



## SUMMARY

Line cutting, total magnetic field and very low frequency electromagnetic (VLF-EM) surveys were conducted on the Haeckel Hill Property between December 24, 2000 and January 10, 2001. The Haeckel Hill Property consists of 45 Quartz Claims staked in the Whitehorse Mining District on NTS 105 D14. It is located 20 km north of Whitehorse.

The property is underlain by the Hancock and Mandana Members of the Upper Triassic Lewes River Group which consist of limestone and argillite, and greywacke, tuff and argillite respectively in this area. These formations are intruded by Paleocene Nisling Range Plutonic Suite (NRPS) granite, subvolcanic rhyolite and dacite. The known gold mineralization on the Haeckel Hill Property is located in or near the axial zone of a west plunging anticline within which intermittent shearing and vein mineralization occurs. A small NRPS stock intrudes the axial region of the anticline and is exposed in a 400 by 800 m area at lower elevations. Gold mineralization occurs in Pb-Ag-Zn veins within Hancock Member limestone at higher elevations and in small veins and stockworks within sheared rhyolite at lower elevations.

The total magnetic field survey was conducted over 13.83 line-km of flagged grid, reading stations at 5 m. The VLF-EM survey was conducted over 4.8 line-km of flagged grid, reading stations at 12.5 m. The grid base line is oriented at  $90^{\circ}$  and the transmitter at Cutler, Maine (apparent azimuth  $95^{\circ}$ ) was used in the survey. The total magnetic field survey was conducted using a synchronized base station cycling at 10 s during field acquisition and the field data was corrected for temporal geomagnetic variation.

The total magnetic field survey identified a NW striking, NE dipping regional gradient with a possible dipolar response, coincident with the rhyolite stock, superimposed on the regional gradient. The VLF-EM survey identified 4 anomalies, three of which appear to originate from tabular dipping conductors and one of which may originate at a nonconductive contact between two rock units with contrasting electrical resistivity.

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## 1.0 INTRODUCTION

Amerok Geosciences Ltd. was retained by Silver Sabre Resources Ltd. to conduct ground total magnetic field and very low frequency electromagnetic (VLF-EM) surveys on the Haeckel Hill Property, Whitehorse Mining District, Yukon. A total of 14.8 line-km of grid was re-established following which 13.83 line-km of magnetic field surveys and 4.7 line-km of VLF-EM surveys were conducted between December 24, 2000 and January 10, 2001 to map an intrusive contact and locate structures of potential economic interest. This report describes the surveys performed, data, results and an interpretation.

## 2.0 LOCATION AND ACCESS

The Haeckel Hill Property is located on the northwest boundary of the city Whitehorse, Yukon, on map sheet 105 D/14, at 60° 47'N 135° 12'W, southwest of the junction between the Alaska and North Klondike Highways (Figure 1). The route to the property is as follows:

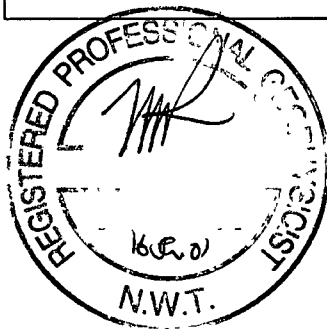
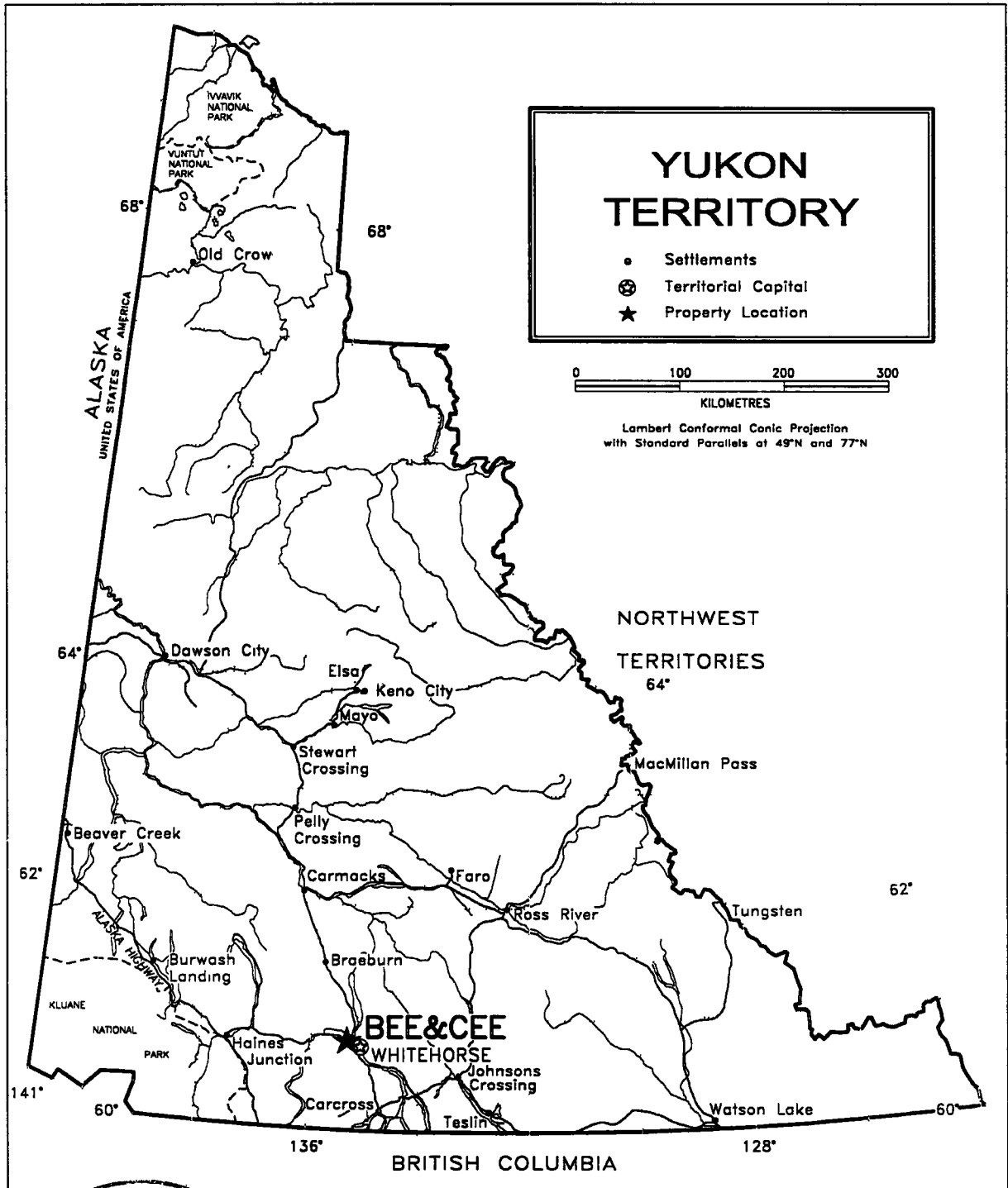
Section	Distance (km)	Remarks
Whitehorse to Old Gun Club Road	22.0	All weather paved highway
Alaska Highway to Old Gun Club	1.5	All weather gravel road
Old Gun Club to showings	0.5	CAT trail

## 3.0 PROPERTY

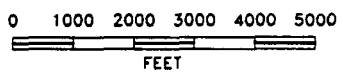
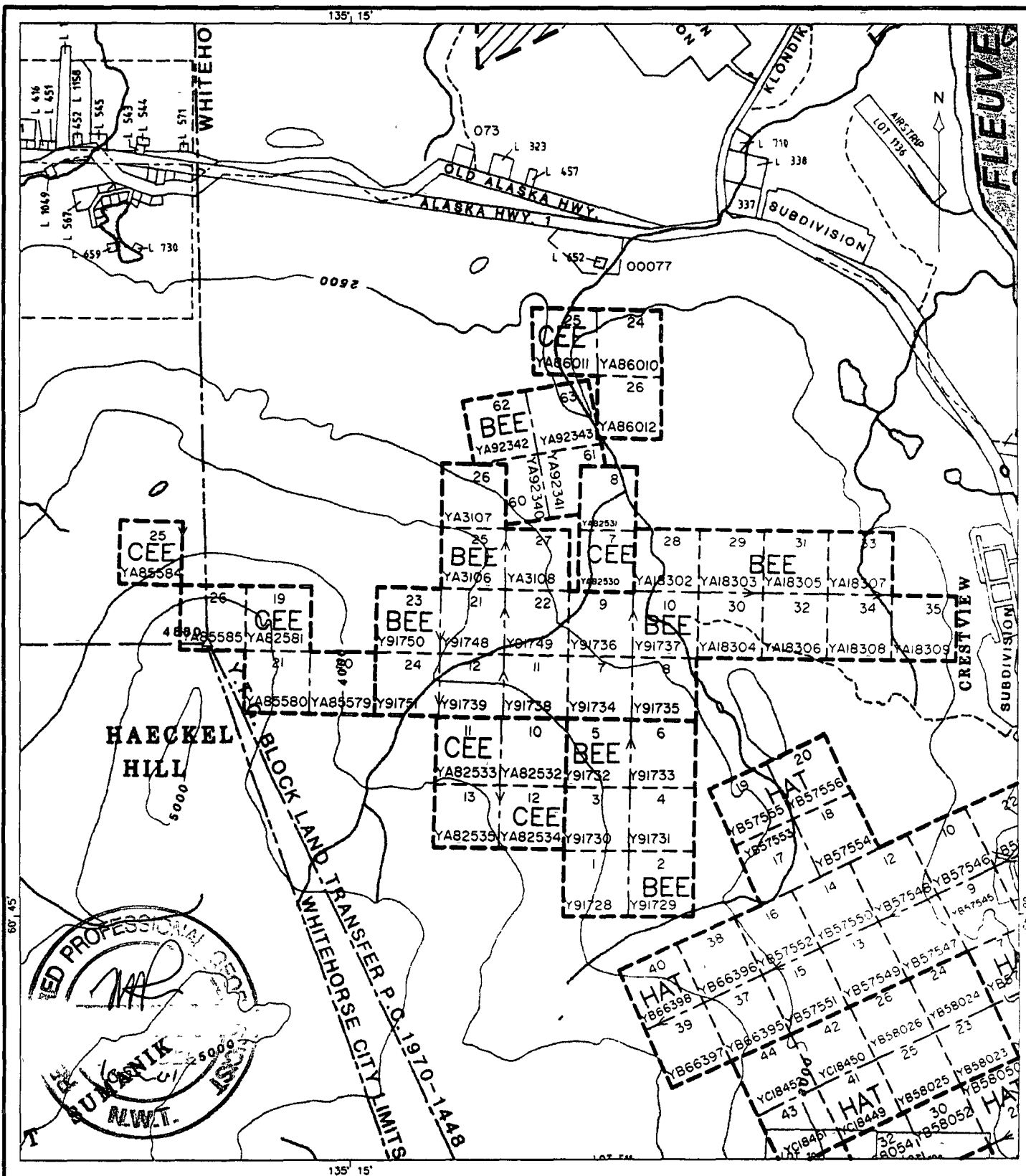
The Haeckel Hill Property consists of 45 un-surveyed Quartz Claims granted under the Yukon Quartz Mining Act in the Whitehorse Mining District. The claims are entirely within the municipal boundaries of the City of Whitehorse and are wholly owned by Silver Sabre Resources Ltd. of Whitehorse, Yukon. Claim locations are plotted in Figure 2 and claim data<sup>1</sup> is summarized below:

Claim	Record Number	Expiry Date
BEE 1-4	Y91728 - Y91731	December 6, 2006

<sup>1</sup>Claim data as reported by the Whitehorse Mining Recorder on December 13, 2000. The expiry dates account for work performed in 2000.



SILVER SABER RESOURCES	BEE & CEE PROPERTY	
PROPERTY LOCATION	MINING DISTRICT: WHITEHORSE	
	NTS: 105 D/14	SCALE 1: 6 000 000
	DRAWN BY: HDS	
Amerok Geosciences Ltd.	DATE: 2000.10.16	FIGURE: 1



SILVER SABRE RESOURCES	BEE & CEE PROPERTY	
CLAIM LOCATION	MINING DISTRICT. WHITEHORSE	
	NTS 105 D/14	SCALE 1 125 000
Amerok Geosciences Ltd.	DRAWN BY HDS	
	DATE: 2000 12.19	FIGURE 2

BEE 5-8	Y91732 - Y91735	December 6, 2005
BEE 9-11	Y91736 - Y91738	December 6, 2006
BEE 12	Y91739	December 6, 2005
BEE 21-22	Y91748 - Y91749	December 6, 2006
BEE 23-24	Y91750 - Y91751	December 6, 2005
BEE 25-26	YA03106 - YA03107	July 29, 2007
BEE 27	YA03108	July 29, 2008
BEE 28	YA18302	September 17, 2006
BEE 29 - 35	YA18303 - YA18309	September 17, 2005
BEE 60	YA92340	July 2, 2007
BEE 61	YA92341	July 2, 2011
BEE 62	YA92342	July 2, 2007
BEE 63	YA92343	July 2, 2011
CEE 7 - 8	YA82530 - YA82531	July 3, 2011
CEE 10 - 13	YA82532 - YA82535	July 3, 2005
CEE 19	YA82581	July 4, 2009
CEE 20 -21	YA85579 - YA85580	October 9, 2005
CEE 24	YA86010	October 23, 2006
CEE 25	YA85584	October 9, 2005
CEE 25	YA86011	October 23, 2006
CEE 26	YA85585	October 9, 2005
CEE 26	YA86012	October 23, 2006

#### 4.0 PHYSIOLOGY, GEOLOGY AND ECONOMIC MINERALIZATION

The Haeckel Hill Property is situated on the low lying rolling hills of the Yukon Plateau. Elevations in the area of the property vary from 2500 to 5100 feet. Tree line is at approximately 4500 feet. Below this level, black spruce with pine in sandy areas predominate. Above tree line, vegetation consists of dwarf birch, willow and alder. The area is subject to a northern continental climatic regime. Temperature averages vary from -12 degrees Celsius in the winter to 15 degrees Celsius in the

summer. Precipitation in the area is generally light.

## 5.0 GEOLOGY

The area of the Haeckel Hill Property has been mapped by Wheeler (1961) and Hart (1997). The property is on the southwest flank of the Whitehorse Trough and is underlain by Mesozoic sedimentary rocks intruded by Mesozoic through Tertiary intrusive rocks. Formations in the area of the property are summarized in Table I and the regional geology is portrayed in Figure 3.

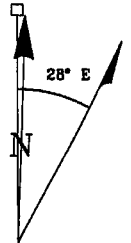
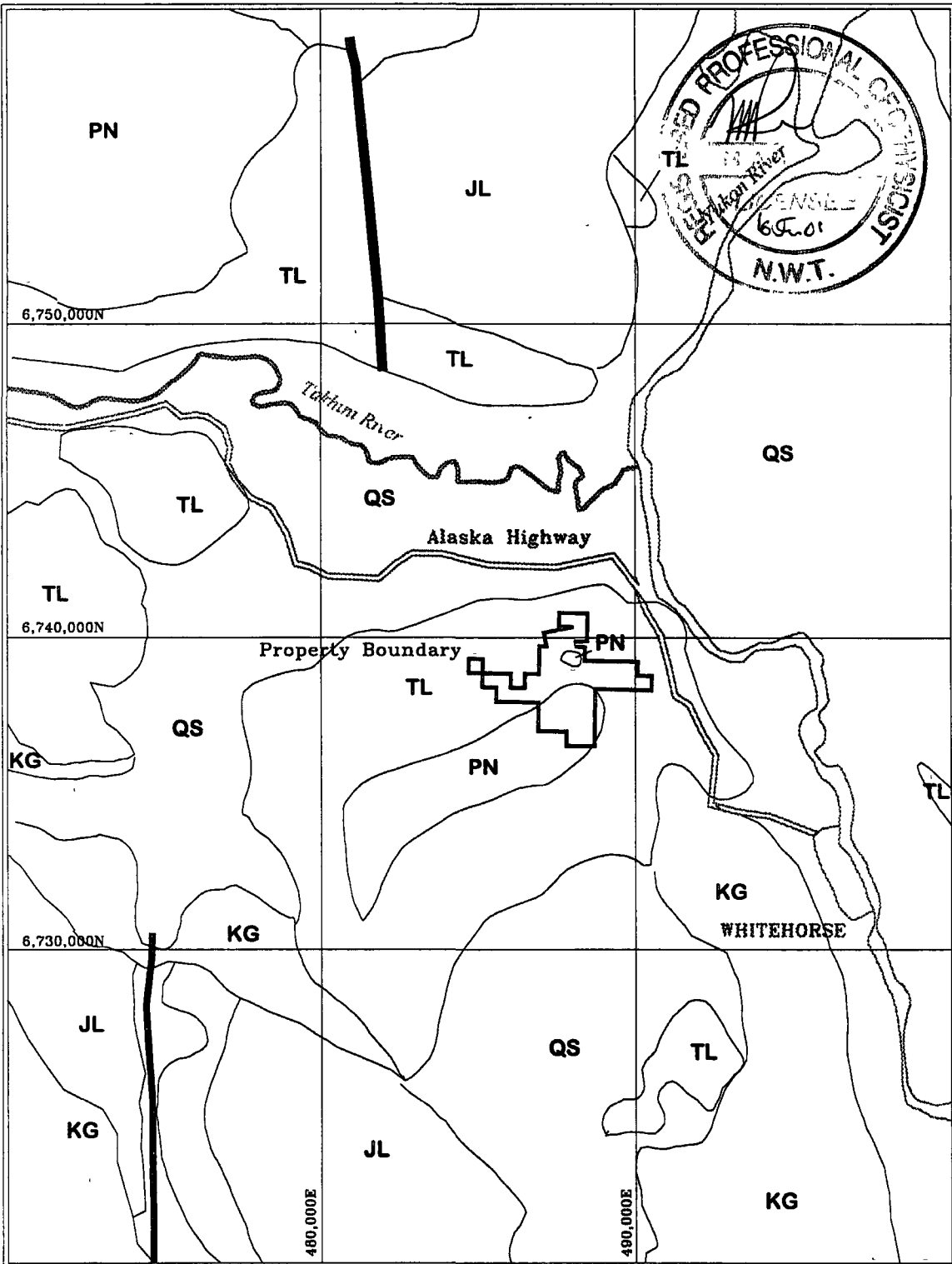
**Table I. Regional Stratigraphy**  
(after Wheeler (1960) and Hart (1997))

<b>Formation (Age)</b>	<b>Description</b>
Overburden (Quaternary)	Till and colluvium
Nisling Range Plutonic Suite (Late Paleocene)	Medium to coarse grained hornblende-biotite granite and granodiorite.
Whitehorse Plutonic Suite (Mid-Cretaceous)	Biotite- and biotite-hornblende granodiorite
Laberge Group (Lower to Mid-Jurassic)	Greywacke, arkose, quartzite, conglomerate
Lewes River Group (Upper Triassic)	Greywacke, siltstone, argillite; limestone and limestone breccia; andesite, basalt and pyroclastic rocks.

The Haeckel Hill Property is underlain by Lewes River Group metasedimentary rocks. In the area of the property, these dip generally to the northeast although they are locally folded about northwest trending axes. Large scale northwest trending folds with wavelengths of up to 10 km are mapped north of the property. Intrusive bodies appear to have steeply-dipping discordant contacts with surrounding sedimentary rocks. The Haeckel Hill Pluton intrudes Lewes River Group rocks on and to the south of the Haeckel Hill Property. There is a small satellite stock north of the main pluton which has been a focus of exploration work on the Haeckel Hill Property.

Rock units mapped on the Haeckel Hill Property are summarized in Table II. The property is predominantly underlain by argillite, limestone, conglomerate and grit assigned to the Upper Triassic Aksala Formation of the Lewes River Group (Units 1 and 2). These include clastic rocks mapped as undifferentiated Aksala Formation or





**QS**

Quaternary Sediments - Till, sand, alluvium, volcanic ash, loess.

**PN**

Nisling Plutonic Suite (Paleocene) - Granite, sub-volcanic rhyolite, dacite.

**KG**

Coast Intrusions (Cretaceous) - Granodiorite, granite, quartz monzonite, quartz diorite

**JL**

Laberge Group (Jurassic) - Greywacke, arkose, argillite, conglomerate, quartzite

**TL**

Lewes River Group (Triassic) - greywacke, siltstone, argillite, limestone, andesite, basalt, pyroclastics.



metres  
Scale: 1:200,000

- Fault or shear zone

SILVER SABRE  
RESOURCES LTD.

HAECKEL HILL PROPERTY

NTS: 105 D14 | Datum: NAD27

REGIONAL  
GEOLOGY  
FIGURE 3.

Mining District: Whitehorse

Job 00-06 | Date: 12 Dec 00

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Geology after Wheeler (1960), Hart (1997)

the Mandana Member of the Aksala Formation, and limestones mapped as Hancock Member (Hart, 1997). The metasedimentary rocks are in turn intruded by granite, rhyolite and dacite assigned to the Nisling Range Plutonic Suite. Extensive colluvium, loess and till blankets the property and bedrock exposures are quite scarce.

**Table II. Rock units - Haeckel Hill Property**  
(Regional classification following Hart (1997))

<b>Property Scale Rock Unit (Regional Unit)</b>	<b>Description</b>
Overburden	Tan to light brown till and grey-black colluvium
Unit 3 (Nisling Range Plutonic Suite) (NRPS)	Granite, rhyolite and dacite.
Unit 2 (Lewes River Group -Mandana Member)	Greywacke with lesser conglomerate and argillite
Unit 1 (Lewes River Group -Hancock Member)	Limestone and marble, limestone conglomerate and minor interbedded argillite.

Mineralization on the property occurs in two settings. The Main Showing occurs in Hancock Member limestone, west of the Unit 3 stock. The showing consists of sheeted galena-sphalerite-pyrite bearing quartz veins, and has returned assays of 6-20% lead-zinc, 144 gpt Ag and 5480 ppb Au (Schulze, 1995). Best assays reported in the Minfile are 8% Pb, 5% Zn and 171 g/t Ag from a selected specimen and a drill intersection of 34 g/t Ag, 0.34 g/t Au, 1.8% Pb and 1.6% Zn across 1.5 m. This style of mineralization is largely confined to the intersection of a shear zone and Unit 1 limestone approximately 400 m west of the margin of the Unit 3 stock. Individual veins extend for approximately 30 m and are exposed in several blast trenches over a distance of 60 m. In 1999, a 10 cm wide vein with similar mineralization was found 200 m east of the Main Showing along the base line.

The second style of mineralization is low grade gold within and adjacent to the Unit 3 rhyolite stock (East Showing). Exploration by Noranda in the 1980's focussed on the shear zone within the stock. Quartz veins containing pyrite with rare galena and sphalerite returned up to 2180 ppb Au from trench chip samples (Doherty and Clarke, 1997) and the best drill intersection was 280 ppb over 3.3 m in a drill hole beneath an anomalous trench sample (MacKay and Reid, 1986). Drilling during 1997 intersected the rhyolite at depths of 14 to 47 m, 500 m west of the exposed stock and returned 1206 ppb Au from a 1.52 m sample from 30.5 to 32.0 m. The results from this hole suggested that the rhyolite intrusion may contain significant low grade gold mineralization and merited additional investigation.

## 5.0 SURVEY GRID

The geophysical surveys were conducted on a flagged grid centred on the Unit 3 stock (Figure 2). The grid consists of 14 line-km of survey lines turned from a 1.0 km base line oriented at 90°. The base line was cut and slope corrected. Some of the survey lines were cut for an induced polarization survey in 1999 but most were not. None of the survey lines were slope corrected. The grid had been established during the summers of 1999 and 2000 but required re-establishment and chaining in many areas. Line 1000E was a new line cut prior to the survey through thick alders.

## 6.0 PERSONNEL AND EQUIPMENT

The surveys were conducted by the following personnel:

Gary Lee, P.Eng.	Technician
------------------	------------

He was equipped with the following instruments and equipment:

<u>Field magnetometer:</u>	GEM Overhauser GSM-19 magnetometer
<u>Base magnetometer:</u>	GEM GSM-19T proton precession magnetometer
<u>VLF receiver:</u>	Geonics EM-16
<u>Data processing:</u>	P-200 laptop computer, HP340C printer. Data processing with Geopak software.
<u>Other equipment:</u>	F250 4x4 truck.

The technician spent a total of 12 man-days on the property. The work was conducted intermittently over the period described because of the short daylight hours. The geophysical survey log is attached as Appendix B.

## 7.0 SURVEY SPECIFICATIONS

The magnetometer and VLF-EM surveys were conducted according to the following specifications:

<u>Station spacing:</u>	5 m (magnetometer) 12.5 m (VLF)
<u>Base station magnetometer:</u>	Installed on the grid and cycled at 10 s throughout the survey
<u>VLF facing direction:</u>	Grid North
<u>Primary VLF station:</u>	NAA - Cutler, Maine - 24.0 KHz Apparent azimuth - 95 <sup>0</sup>

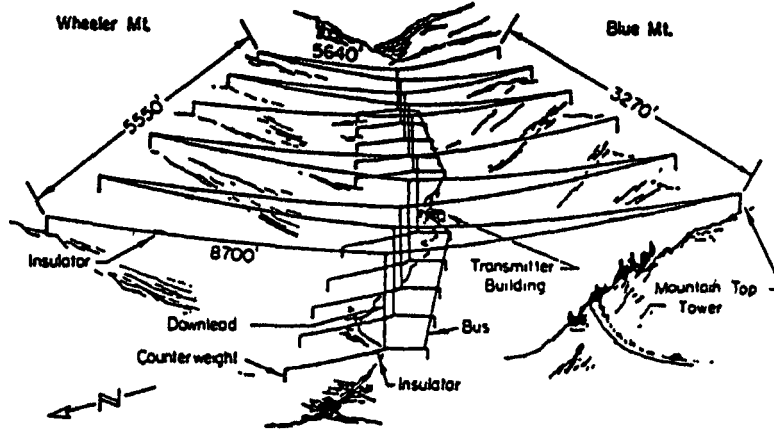
## 8.0 VLF-EM THEORY

The VLF-EM method is well described in standard texts (eg. Telford *et. al.* 1990) and by McNeill and Labson (1990). Modulated radio waves in the range of 15.0 to 25.0 KHz are used to communicate with submerged submarines and are useful in mineral exploration. The antennas from which the signals are radiated are vertical wires, commonly located in valleys or craters to permit longer wire length (Figure VLF-1(a)). This antenna configuration generates a wave with a vertical electrical field and a horizontal magnetic field propagating away from the source. The wave propagates between the ionosphere and the earth's surface, reflecting off both at a shallow angle (Figure VLF-1(b)). At a great distance, the radius of curvature is so large that it is effectively a plane wave.

A steeply-dipping conductor with a strike in the direction of the transmitter will be optimally coupled to the horizontal magnetic flux. This magnetic flux will induce a secondary field in the conductor ( $H_s$ ) which opposes the primary or source field. This is generated by circulating eddy currents which tend to concentrate at the top of the conductor (Figure VLF-2(a)). The current distribution can be considered to be a linear source located at the top of the conductor and consequently, the anomaly shape is relatively insensitive to the dip of conductor. The current at the top of the conductor produces a cylindrical magnetic field centred on the current axis. The primary horizontal magnetic field and the secondary field induced in the conductor add vectorially to produce a resultant magnetic field whose attitude traces out a sine wave or cross-over as shown in Figure VLF-2(a).

The Geonics VLF-EM receiver used in this survey was oriented facing grid north so that a normal in-phase component cross-over consists of a positive to negative response moving from grid south to north. The wavelength of the response in a general sense is proportional to the depth of the target. Deep targets tend to produce longer wavelength anomalies while shallow anomalies have a shorter wavelength. Half the distance between the peak and trough of the response is roughly equal to the depth to the current source except where the depth to the top of the target is much less than the skin depth. In this situation, the separation tends to

(a)



(b)

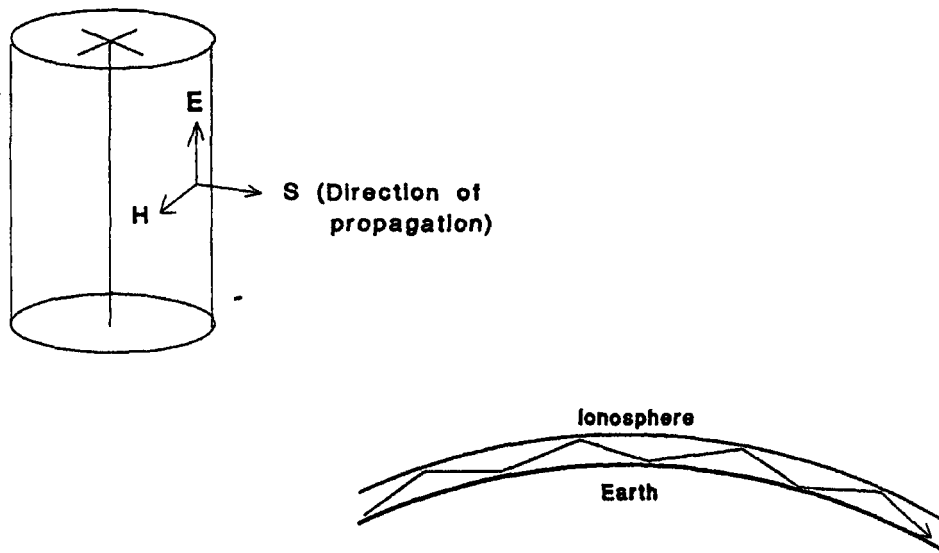


Figure VLF-1. VLF source fields and propagation. (a) Diagram showing Jim Creek, WA VLF transmitter (McNeill and Labson 1990). (b) Propagation of VLF field at a distance from the antenna. The VLF wave propagates between the earth's ionosphere and the surface with a vertical electrical field and horizontal magnetic field. At great distances the signal forms a plane wave.

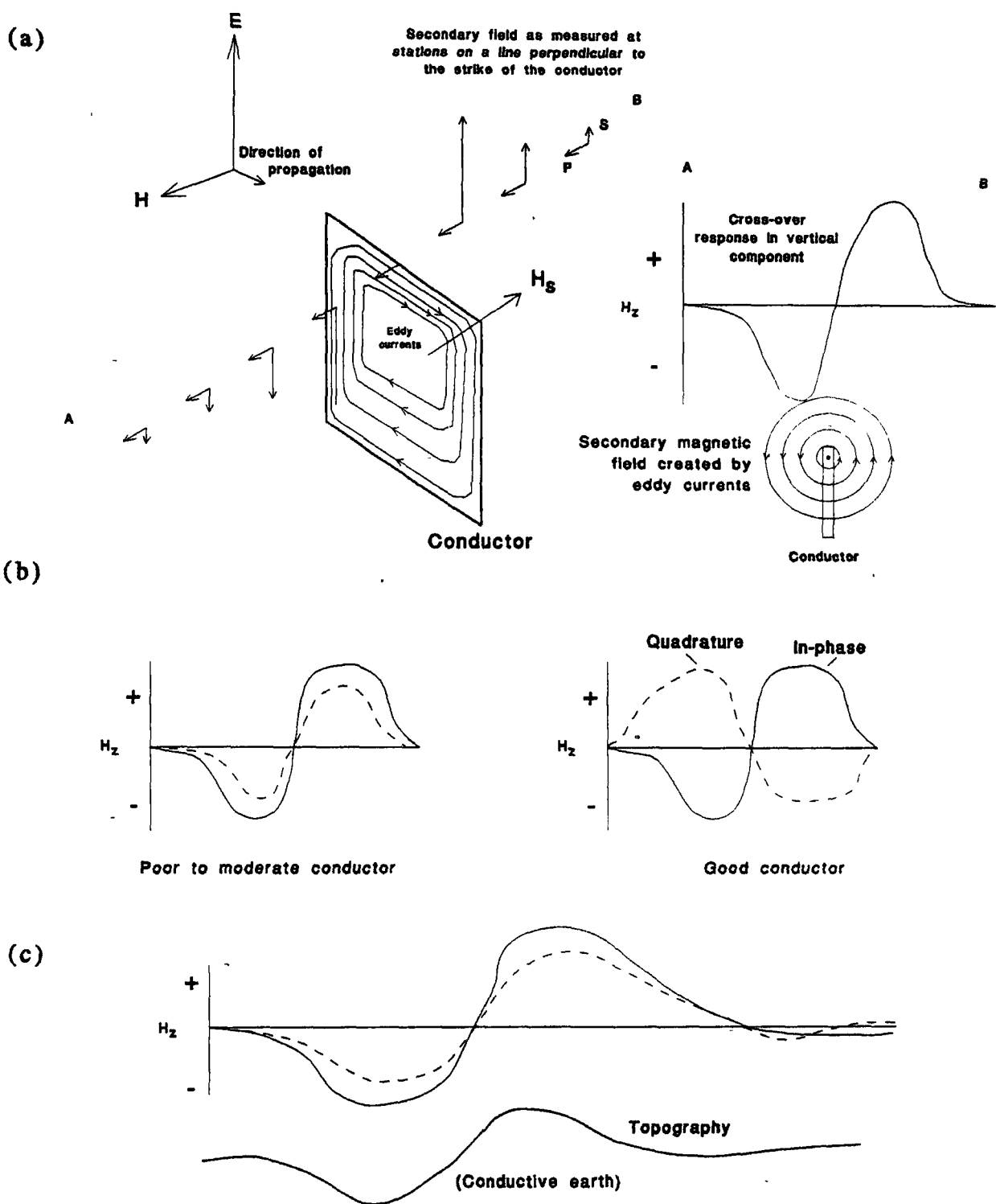


Figure VLF-2. VLF responses. (a) The horizontal magnetic flux from a VLF signal induces a secondary field in a conductor. This, together with the primary field, produces a cross-over response. (b) Quadrature sign can be determined by target conductance (c) If the ground is conductive, topography can induce VLF responses similar to those expected from bedrock conductors.

be in the order of the skin depth.

Using the horizontal component as a phase reference, it is possible to partition the secondary vertical field into in-phase and quadrature components. If the conductor is a poor to moderate conductor, the sign of the quadrature will follow that of the in-phase component. If the target conductance is high, the quadrature will display a sign opposite that of the in-phase component (Figure VLF-2(b)).

Cross-over responses may also be induced by interfering responses from nearby conductors, sometimes producing reverse-crossovers with senses opposite to that normally occurring over a discrete conductor. In addition, topography can generate false cross-over responses resembling those from bedrock conductors. VLF-EM waves follow the surface topography to some extent with the degree of correlation determined by the conductivity of the local earth. In very conductive ground, the VLF wave follows topography quite closely and cross-over responses similar to those expected from a bedrock conductor can be generated by undulating topography with suitable spatial wavelengths (Figure VLF-2(c)). In poorly conductive ground, the wavelength of the topographic effect is much longer, reflecting the greater depth of penetration by the VLF-EM wave. In these situations, it is relatively easy to discriminate between bedrock conductors and topographic anomalies.

Rough estimates of target conductances or conductivity-thickness products ( $\sigma t$ ) can be made if the host rock resistivity can be measured or estimated. Saydam (1981) developed an algorithm based on characteristic curves employing measurements of the tilt angle and ellipticity. The tilt angle can be calculated from the percent vertical tilt measured by the Omni Plus system using:

$$\alpha = \text{atan}\left(\frac{H_z}{100}\right) \quad (1)$$

The resultant field, traced out by the interference of the primary horizontal field and the variably oriented secondary field, is an ellipse with its principal axis parallel to the field tilt and the secondary axis perpendicular to the primary. The ellipticity is the ratio of the secondary to the primary axis length. It can be calculated from the vertical quadrature component and the tilt angle:

$$\varepsilon = H_z^Q \cdot \cos(\alpha) \quad (2)$$

Additional inputs to the algorithm are the distance between tilt and ellipticity cross-over peaks (ie. peak to trough distance in metres). Using the cross over distances, ellipticity and tilt values, estimates of the target  $\sigma t$  can be made. These should be treated with great caution given the assumptions in the algorithms but are nonetheless useful as a preliminary estimate of target conductance. In cases where

the survey lines are not roughly orthogonal to the target, where the bedrock resistivity cannot be reliably estimated or where the response is from a shallow dipping target, the results of this algorithm will be in error.

Olsson (1983) analysed the quadrature and in-phase relations in some detail. The response of an inductively thin steeply dipping dyke in a medium with finite conductance can be examined in terms of the inductive characteristics of the target. It is useful to calculate an induction number  $L$  for a thin target:

$$L = \frac{\sigma_1 t_1}{\sqrt{\frac{2\sigma_2}{\mu_0 \omega}}} \quad (3)$$

where  $\omega$  is the signal radial frequency,  $\mu_0$  is the magnetic susceptibility of free space,  $t$  is the thickness of the dyke and  $\sigma_1$  and  $\sigma_2$  are the electrical conductivity of the dyke and host respectively. For induction numbers up to  $L=3$ , the quadrature response has the same phase as the in-phase response; for  $L>3$ , the quadrature has the opposite sense to the in-phase response. This criteria can be used to establish a method of estimating the  $\sigma t$  at which the sense of the quadrature is likely to invert from positive to negative with respect to the in-phase response. By substituting  $L=3$  into the previous equation, the inversion point occurs when:

$$\sigma t = \frac{10.7}{\sqrt{\rho_2}} \quad (4)$$

This threshold  $\sigma t$  can be used to differentiate between "good" and "poor" VLF conductors, within the limited sensitivity of the VLF method. Full saturation occurs when the  $\sigma t$  is 16.8 times this value. The central problem with conductivity estimates using VLF is that the method operates at the inductive limit - a frequency so high that most conductors of geological interest have saturated responses which cannot be used to quantitatively determine the target conductance.

## 9.0 RESULTS

Digital data is appended to this report on disk. The magnetic field data is in the following format:

```
Line Station  UTM_E  UTM_N  Corr_field
```

where Corr\_field is the corrected magnetic field. The VLF-EM data is in the following format:



Line Station UTM\_E UTM\_N IP Q Slope

where IP and Q are the in-phase and quadrature components in percent and slope is the terrain slope in percent.

The following plots at 1:2500 are appended to this report in the back pockets:

- Figure 4. Total magnetic contour map
- Figure 5. Total magnetic first vertical derivative
- Figure 6. VLF-EM stacked profiles - Cutler

These plots show the location of survey lines in nominal grid coordinates.

The general trend of the total magnetic field consists of a NE sloping field with a gradient of approximately 1000 nT / km. The Unit 3 rhyolite stock is expressed as a dipolar southern high / northern low superimposed on the regional gradient. The magnetic field data appears to be of little use in directly mapping the intrusion.

The VLF-EM data was interpreted by examining the stacked profiles to identify responses which appeared to arise from bedrock conductors. The conductors were classified as being either "poor" or "good" based on the criteria described in equation 4. Using an estimated host conductance of 500 ohm-m, the threshold for the inversion of the quadrature response sign with respect to the in-phase occurs when  $\sigma t = 0.48$  S and full saturation would occur when  $\sigma t = 8$  S. The conductors are described in terms of peak-to-trough in-phase response and the sense of the quadrature response. Positive quadrature refers to a quadrature response following the same sign as the in-phase response. Negative quadrature is the inverse. All of the anomalies show positive quadrature responses and are presumed to originate from very weak conductors with  $\sigma t \leq 0.48$  S. Four conductors labelled **A-1** to **A-4** are identified in Figure 6 and anomaly locations are tabulated in Appendix E. The conductors are discussed in turn.

Conductor **A-1** extends from L1600E 1038N to L1950E 1075N and consists of a 10% to 24% in-phase peak response. The shape of the in-phase response is that expected near or over a fault or contact separating two rock units with different electrical conductivity. The quadrature response is weak and generally has a shape similar to the phase response. On L1650E and L1750E, the quadrature response crosses over at the in-phase peak suggesting that the boundary may be locally very weakly conductive. There is no associated magnetic field response.

Conductor **A-2** extends from L1750E 1000N to L1950E 988N and consists of a 12% to 40% in-phase cross-over response with an associated 0 to 6% positive quadrature response. The quadrature response on L1900E is -8% but this may be caused by a nearby interfering response. This is a very poor conductor ( $>0.5$ S) and has no

associated magnetic field response.

Conductor **A-3** extends from L1600E 920N to L1650E 925N and consists of an 8% to 20% in-phase cross-over response with an associated 8 to 11% positive quadrature response. This is a very poor conductor ( $>0.5S$ ) and is associated with a magnetic field high containing both this conductor and **A-4**.

Conductor **A-4** extends from L1750E 850N to L1900E 890N and consists of a 4 to 21% in-phase cross-over response and a 8% to 16% positive quadrature response. The source appears to be a very poor conductor ( $>0.5S$ ) and the conductor is coincident with a magnetic field high.

## 10.0 DISCUSSION

The magnetic field survey failed to define a definite signature associated with the rhyolite intrusive (Unit 3). There is a relative total magnetic field strength high imposed on the regional gradient in the southern portion of the area in which the rhyolite plug outcrops. North of this anomaly is a region of anomalously low magnetic field response. The magnetic field data could be interpreted as arising from weak horizontal field remnant magnetism within the intrusive or the magnetic field pattern might be caused by magnetite skarn in hornfels adjacent to the intrusion. In the vertical gradient map, there is a narrow northwest trending high which appears to cut through the intrusion as mapped and is coincident with VLF-EM conductors **A-3** and **A-4**.

There is no known bedrock feature associated with the contact anomaly **A-1**. It is possible that this may be of surficial origin as it occurs near the toe of a north-facing slope defined by the levelling off of the terrain slope curve north of the low associated with the hill side.

Anomaly **A-2** is roughly coincident with the trend of the anticlinal fold axis and with the intermittent shearing exposed in the trenches at the East Showing. The East Showing produced no discernible VLF-EM response suggesting that the intense silicification found in the centre of the shear zone has suppressed any conductivity response.

None of the features identified by the VLF-EM and total magnetic field surveys are directly associated with the known mineralization. Also, unfortunately, the tenor of the known bedrock gold mineralization is low and the geophysical results failed to point to any obvious nearby targets.

## 11.0 CONCLUSIONS

The results of the magnetometer and VLF-EM surveys conducted on the Haeckel Hill Property suggest the following conclusions:

- a. There is no obvious total magnetic field response associated with the Nisling Range Plutonic Suite intrusion hosting gold mineralization in the East Showing.
- b. The VLF-EM survey identified 4 anomalies of which 3 appear to arise from very weak (<0.5 S) tabular dipping conductors and one anomaly appears to originate at a non-conductive contact. None of the anomalies are associated directly with known gold mineralization and none of the anomalies directly indicate the presence of additional mineralization.
- c. Gold mineralization in the East Showing has no electromagnetic or total magnetic field response.

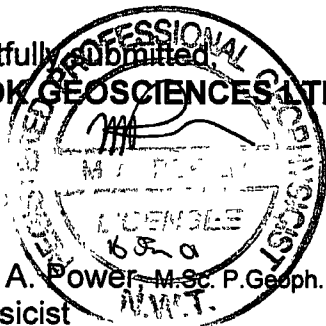
## 12.0 RECOMMENDATIONS

The following recommendations are made based on the conclusions of this work:

- a. No further geophysical work is required or warranted in the area of the East Showing.

Respectfully Submitted  
AMEROK GEOSCIENCES LTD.

Michael A. Power - M.Sc. P.Geoph.  
Geophysicist



## REFERENCES CITED

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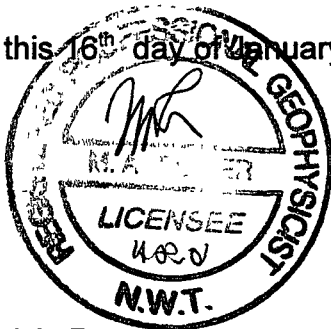
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## APPENDIX A. CERTIFICATE

I, Michael Allan Power, with residence and business address in Whitehorse, Yukon Territory do hereby certify that:

1. I hold a B.Sc. (Honours) in Geology granted in 1986 and M.Sc. in Geophysics granted in 1988, both from the University of Alberta.
2. I have been actively involved in mineral exploration in the northern Cordillera and in the Northwest Territories since 1988. I am a professional geoscientist registered with the Association of Professional Engineers and Geoscientists of British Columbia (Registration number 21131) and a professional geophysicist registered with the Northwest Territories Association of Professional Engineers, Geologists and Geophysicists (L942).
3. I supervised the geophysical surveys described in this report, interpreted the data collected and prepared this report.
4. I have no interest, direct or indirect, nor do I hope to receive any interest, direct or indirect, in Silver Sabre Resources Ltd. or any of its properties.
5. I hereby authorize Silver Sabre Resources Ltd. to use this report or extracts therefrom in connection with any filing submitted to the Vancouver Stock Exchange and the British Columbia Securities Commission.

Dated this 16<sup>th</sup> day of January 2001 in Whitehorse, Yukon Territory.



Michael A. Power, M.Sc. P.Geoph.  
Geophysicist



**APPENDIX B. SURVEY LOG**

**JOB 2000-021 Haeckel Hill Mag/VLF Survey**

Period: December 24, 2000 to January 10, 2001

Personnel: Crew: Gary Lee, P.Eng. (Technician) (GL)

24 Dec 00  
to  
03 Jan 01

Grid re-establishment and magnetometer survey. Working from grid E to W, rechaind lines, conducted survey, put in L1000E, 1550E, L1900E (south) and conducted magnetometer surveys.

Production: 14.8 line-km gridding  
13.8 line-km magnetometer surveys

07 Jan 01  
to  
08 Jan 01

VLF Survey over eastern portion of the grid.

Production: 4.8 line-km VLF

Summary: Line cutting and gridding: 14.8 line-km  
Total magnetic field: 13.8 line-km  
VLF-EM survey: 4.8line-km

Mag / linecutting: 10 days  
VLF survey: 2 days

Personnel: Gary Lee  
Box 5348  
Whitehorse YT  
Y1A 4Z2

**APPENDIX C. STATEMENT OF EXPENDITURES**

Line cutting and total magnetic field survey

Magnetometer & gridding crew:  
12 days @ \$450 \$5,400

VLF-EM surveys

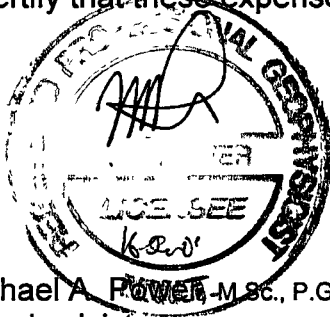
VLF-EM crew: 2 days @ \$380 \$760

Final report

Assessment report in 6 copies \$1,700

**Total project expenses \$7,860**

I certify that these expenses are correct to the best of my knowledge.



Michael A. Power - M.Sc., P.Geoph.  
Geophysicist



**APPENDIX D. INSTRUMENT SPECIFICATIONS**

## INSTRUMENT SPECIFICATIONS

### MAGNETOMETER / GRADIOMETER

<b>Resolution:</b>	0.01nT (gamma), magnetic field and gradient.
<b>Accuracy:</b>	0.2nT over operating range.
<b>Range:</b>	20,000 to 120,000nT.
<b>Gradient Tolerance:</b>	Over 10, 000nT/m
<b>Operating Interval:</b>	3 seconds minimum, faster optional. Readings initiated from keyboard, external trigger, or carriage return via RS-232C.
<b>Input / Output:</b>	6 pin weatherproof connector, RS-232C, and (optional) analog output.
<b>Power Requirements:</b>	12V, 200mA peak (during polarization), 30mA standby. 300mA peak in gradiometer mode.
<b>Power Source:</b>	Internal 12V, 2.6Ah sealed lead-acid battery standard, others optional An External 12V power source can also be used.
<b>Battery Charger:</b>	Input: 110 VAC, 60Hz. Optional 110 / 220 VAC, 50 / 60Hz Output: dual level charging.
<b>Operating Ranges:</b>	Temperature: - 40°C to +60°C. Battery Voltage: 10.0V minimum to 15V maximum. Humidity: up to 90% relative, non condensing.
<b>Storage Temperature:</b>	-50°C to +65°C.
<b>Display:</b>	LCD: 240 X 64 pixels, OR 8 X 30 characters. Built in heater for operation below -20°C.
<b>Dimensions:</b>	Console: 223 x 69 x 240mm. Sensor Staff: 4 x 450mm sections. Sensor: 170 x 71mm dia. Weight: console 2.1kg, Staff 0.9kg, Sensors 1.1kg each.
<b>VLF</b>	
<b>Frequency Range:</b>	15 - 30.0 kHz plus 57.9 kHz (Alaskan station)
<b>Parameters Measured:</b>	Vertical in-phase and out-of-phase components as percentage of total field 2 relative components of horizontal field Absolute amplitude of total field
<b>Resolution:</b>	0.1%.
<b>Number of Stations:</b>	Up to 3 at a time.
<b>Storage:</b>	Automatic with: time, coordinates, magnetic field / gradient, slope, EM field, frequency, in- and out-of-phase vertical, and both horizontal components for each selected station.
<b>Terrain Slope Range:</b>	0° - 90° (entered manually).
<b>Sensor Dimensions:</b>	140 x 150 x 90 mm. (5.5 x 6 x 3 inches).
<b>Sensor Weight:</b>	1.0 kg (2.2 lb).

9 V 1997

## APPENDIX E. ANOMALY LISTING

Anomaly	Line	Station	IP	Q	Type
A-1	1600	1038	10	n/a	Contact
A-1	1650	1050	10	n/a	Contact / Q
A-1	1700	1075	15	n/a	Contact
A-1	1750	1075	20	n/a	Contact / Q
A-1	1800	1080	18	n/a	Contact
A-1	1850	1095	24	n/a	Contact
A-1	1900	1090	20	n/a	Contact
A-1	1950	1075	10	n/a	Contact
A-2	1750	1000	18	6	DTC
A-2	1800	990	12	4	DTC
A-2	1850	963	40	6	DTC
A-2	1900	988	40	-8	DTC
A-2	1950	988	32	0	DTC
A-3	1600	920	8	8	DTC
A-3	1650	925	20	11	DTC
A-4	1750	850	20	16	DTC
A-4	1800	838	21	14	DTC
A-4	1850	790	16	13	DTC
A-4	1900	890	4	8	DTC

Notes:

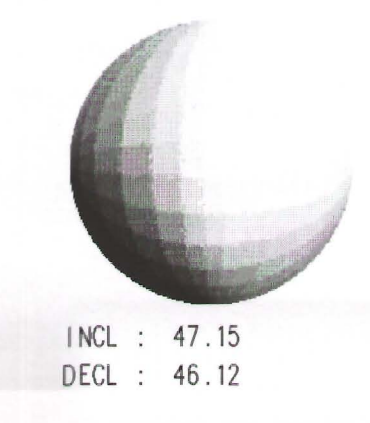
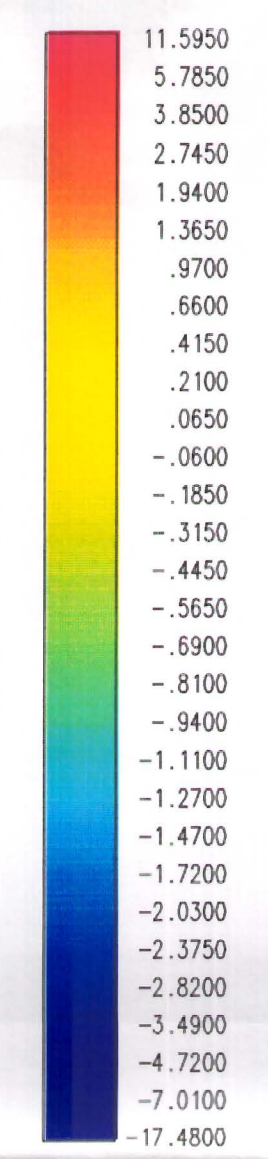
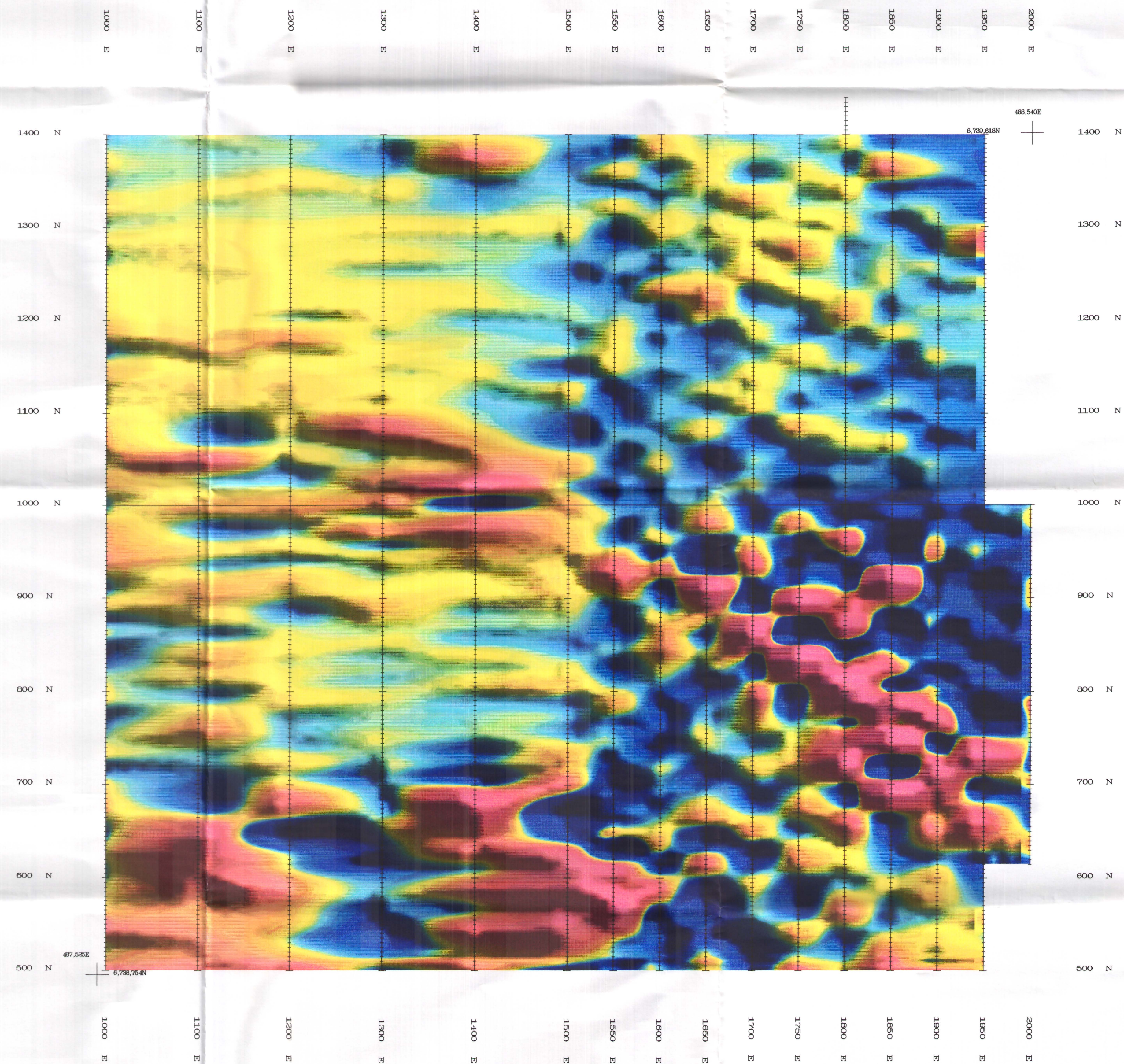
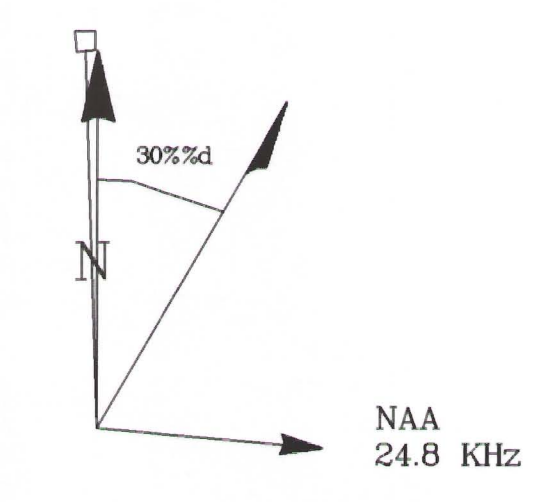
DTC - dipping tabular conductor (sheet)

Contact - non conductive contact anomaly

Contact / Q - contact with a weak quadrature crossover.

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Whitehorse, YUKON Y1A 2G8

Total Magnetic Field  
First Vertical Derivative (nT/m)  
GRID CELL SIZE: 10m (E) x 5m (N)  
CONTOUR INTERVALS: 10, 100, 1000 nT  
FILTERS: 3-Point/1 pass, column  
FFT (vertical gradient)

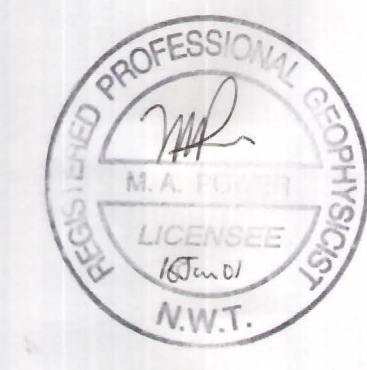
— CONDUCTOR AXIS  
+ — UTM registration point



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HAECKEL HILL PROPERTY

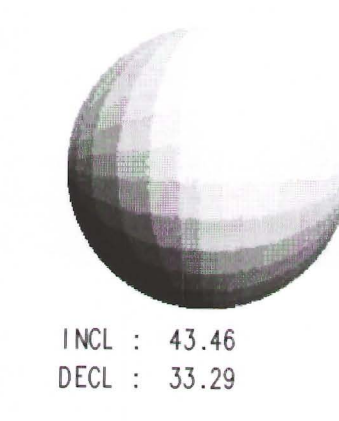
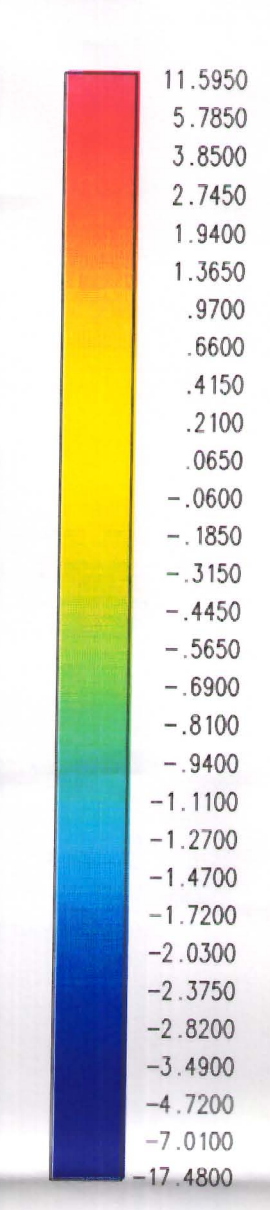
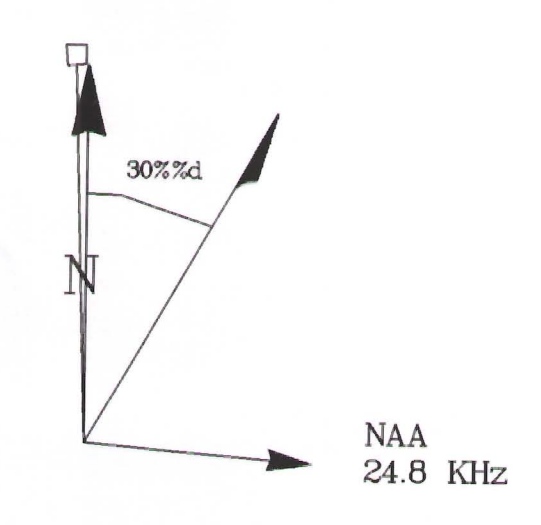
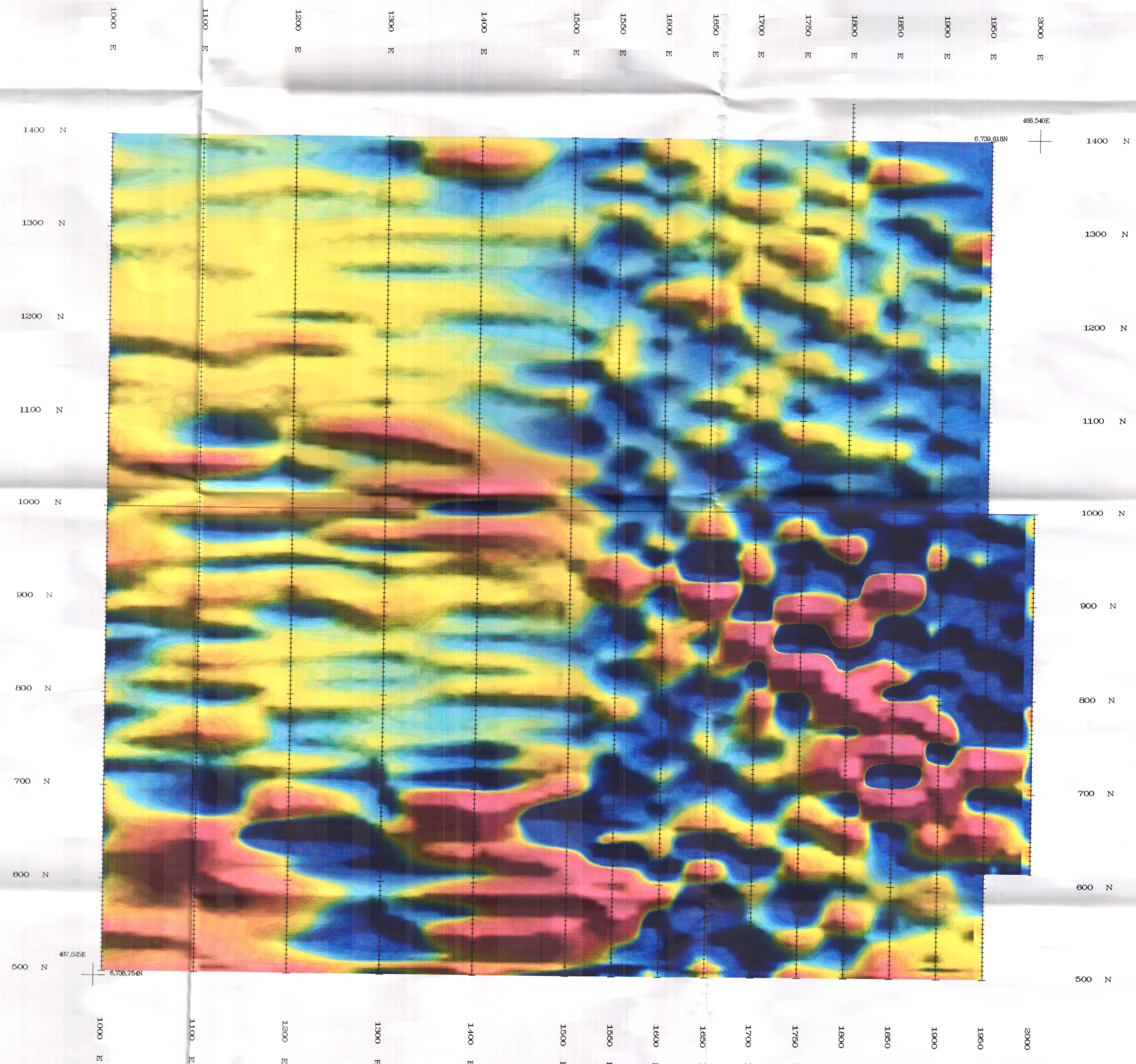
TOTAL MAGNETIC FIELD  
FIRST VERTICAL DERIVATIVE  
FIGURE 5.



NTS: 105 D/12	Datum: NAD27
Mining District: Whitehorse, YT	
Job: 2000-006	Date: 10 JAN 00

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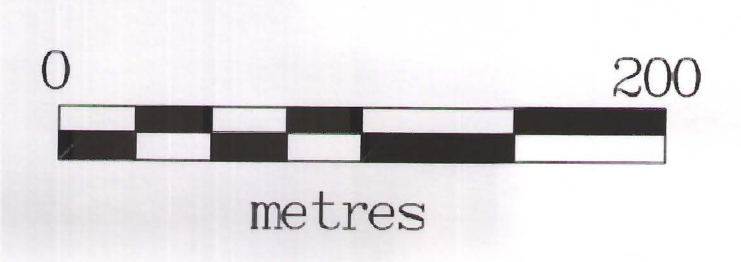


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Total Magnetic Field  
 First Vertical Derivative (nT/m)  
 GRID CELL SIZE: 10m (E) x 5m (N)  
 CONTOUR INTERVALS: 10, 100, 1000 nT  
 FILTERS: 3-Point/1 pass, column  
 FFT (vertical gradient)

— CONDUCTOR AXIS

488,540E  
 6,738,618N + — UTM registration point



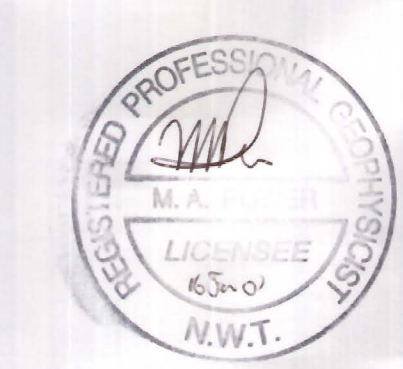
Scale: 1:2,500

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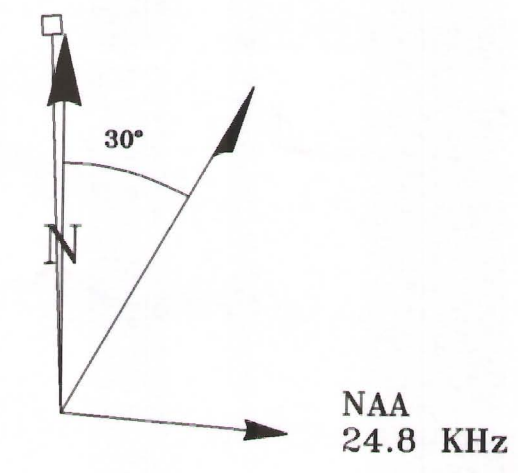
TOTAL MAGNETIC FIELD  
 FIRST VERTICAL DERIVATIVE  
 FIGURE 4.

NTS: 105 D/12	Datum: NAD27
Mining District: Whitehorse, YT	
Job: 2000-006	Date: 10 JAN 00



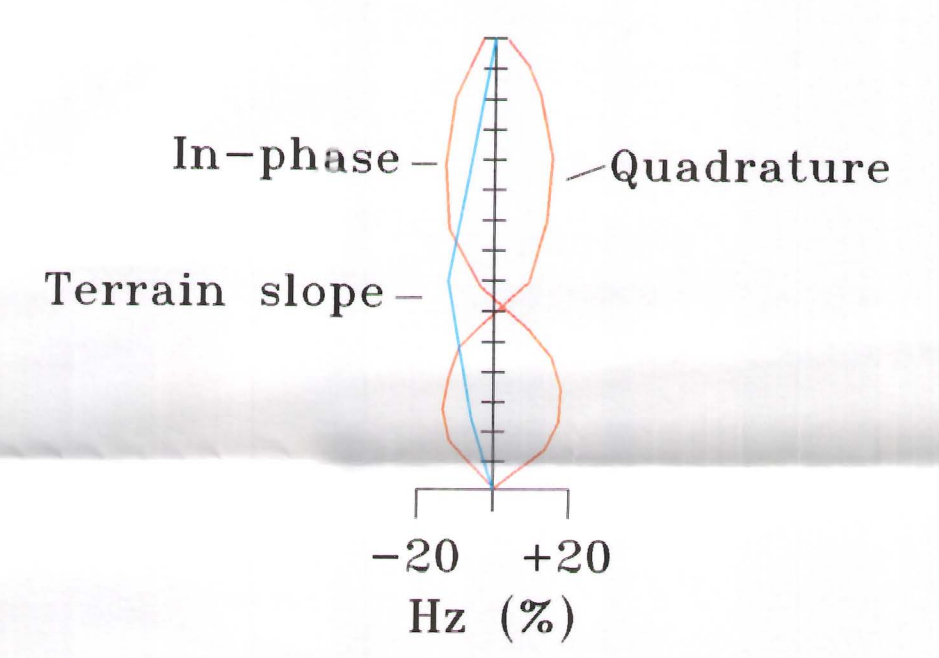
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**EM ANOMALY SYMBOLS**

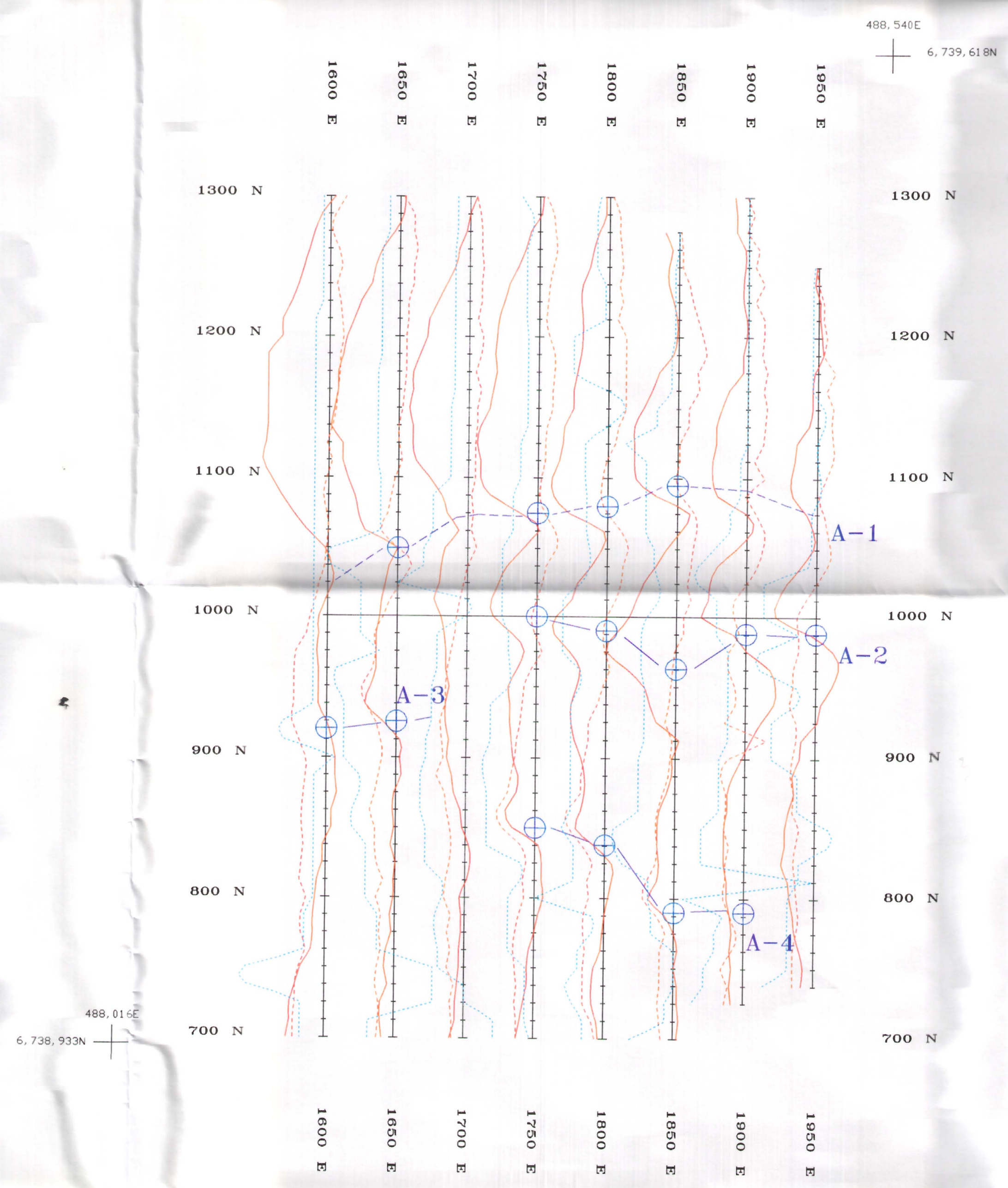
- Unknown
  - ⊕ <1 S
  - ⊕ 1-5 S
  - ⊕ 5-10 S
  - ⊕ 10-40 S
  - >40 S
- Depth (m)
- Excess width (m)



**Total Magnetic Field (nT)**

GRID CELL SIZE: 10m (E) x 5m (N)  
 CONTOUR INTERVALS: 10, 100, 1000 nT

- CONDUCTOR AXIS
- UTM registration point



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**VLF-EM SURVEY  
 STACKED PROFILES  
 FIGURE 6.**

NTS: 105 D/14	Datum: NAD27
Mining District: Whitehorse, YT	
Job: 2000-021	Date: 10 JAN 00

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