SIERRA IRON ORE

GEOLOGICAL ASSESSMENT REPORT

(Event 5423222)

Work done on Tenure 516705

of the 10 claim

TOM CAT 516705 CLAIM GROUP

(Work done from December 15-18, 2012)

Nicola Mining Division BCGS 092H.097/.098 British Columbia, Canada

Centred Near:

UTM (NAD: 83 Canada) 5529800N, 673500E

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ILLUSTRATIONS

SUMMARY

Sierra Iron Ore owns the ten claim, 3204.8779 hectare Tom Cat property located 200 kilometres east-northeast of Vancouver and within the historic Aspen Grove copper camp. Tenure 516705 of the Toni 51605 Claim Group, the subject of this report, is located 20 kilometres west of the formerly productive **Elk gold-silver deposit** (*Minfile 092HNE096*) and 40 kilometres west of the formerly productive **Brenda copper-molybdenum deposit** (*Minfile 092HNE047)*.

At the **Elk** property, the western area is underlain by steeply west-dipping andesitic to basaltic flows, agglomerates, tuffs and minor siltstone and limestone units of the Nicola Group. The eastern half of the property is underlain by granitic rocks of the Middle Jurassic Osprey Lake batholith. The contact between these units trends northeasterly across the property.

Gold-silver mineralization on the Elk property is hosted primarily by pyritic quartz veins and stringers in altered pyritic granitic and, less frequently, volcanic rocks. From 1992 and 1995 (inclusive) 16,570 tonnes of ore were mined and milled resulting in the production of 1,518,777 grams (48,830 ounces) of gold and 1,903,000 grams (61,183 ounces) of silver.

The **Brenda copper-molybdenum deposit** is hosted by the "Brenda Stock", a composite quartz diorite/granodiorite body which forms part of the Early Jurassic Pennask batholith. It is suggested that intermittent east-west compressional forces intensely fractured the rocks of the Brenda stock during several stages of time and tapped a hydrothermal source, either a later phase of the Brenda stock or a separate intrusive system. As each stage of fractures developed, hydrothermal fluids introduced vein material which healed the fractures. Renewed build-up of compressional forces again fractured the rocks, which were again healed. Repetition of this sequence can explain all stages of mineralization within the Brenda deposit. East-west compression continued after ore deposition ceased and produced prominent east-northeast and northwest striking shear zones.

Faults in the Brenda pit are expressed as fracture zones in which the rock is intensely altered to clay minerals, sericite, epidote and chlorite. These fracture zones range in width from a few centimetres to 9 metres.

(The above information on the Brenda copper-molybdenum deposit and on the Elk gold-silver deposit is summarized from the Minfile records which are contained in full herein).

The Aspen Grove area was recognized for its potential in developing economic mineral deposits since the late 1880's when copper mineralization was first discovered in the area. Two of the earlier discoveries, the Tom Cat and the Bunker Hill, were made on the ground covered by the Tom Cat Property which now includes ten documented mineral prospects or showings in a localized three by two kilometre area or approximately only one-quarter of the entire Property
Although the Tom Cat Property has a history of exploration, the only significant results reported prior to 2006 was a drill intersection of 45.7 metres of 0.32% copper in a 1965 Pyramid Mining drill hole on the Tom Cat showing. Exploration work by Bold Ventures in 2006 & 2007 resulted in the delineation of viable chargeability IP drill targets and copper soil anomalies associated with mineral showings. A drill hole on the Tom Cat showing confirmed the historic result in the intersection of 4.4 meters of 0.54% copper in a 40 meter section of mineralization. The entire 40 meters of mineralization was not sampled.

The 2010 Structural Analysis on Tenure 516705 of the Tom Cat property indicated eight areas of indicated structural intersections where surficial geological indicators of potentially economic sub-surface or blind mineral zones would be expressed to a greater degree.

***Summary** (cont'd)*

The intersections of these primary major structures, contingent on a host of amenable geological conditions, would be the most favorable means of tapping a deep-seated hydrothermal source and be the feeding structure for migrating mineralizing fluids to the surface.

The eight locations of intersecting major structures that are shown on Tenure 516705 *(Figure 5)* could be the means for the creation of an economic mineral zone comparable to the original Brenda mineral deposit. These locations would be the prime areas to explore for, and assess the significance of any surficial geological indicators of a potential sub-surface mineral resource.

INTRODUCTION

In December 2010 a Lineament Array Analysis was completed on Tenure 516705 of the ten claim Tom Cat 516705 Claim Group ("Property"). The purpose of the program was to delineate potential structures which may be integral in geological controls to potentially economic mineral zones that may occur on Tenure 516705 or other claims of the Property.

Information for this report was obtained from sources as cited under Selected References.

Figure 1. **Location Map**

PROPERTY DESCRIPTION AND LOCATION

The Property consists of 10 contiguous claims totaling 3204.8779 hectares. Particulars are as follows:

Table 1. **Claim Status: Tom Cat 516705 Claim Group**
(from MtOnline)

Tenure Number	Type	Claim Name	Good Until	Area (ha)
516703	Mineral		20130930	582.976
516705	Mineral		20130930	416.267
516708	Mineral		20130930	374.651
526118	Mineral	POTHOLE LAKE 3	20130930	520.302
535845	Mineral	CASPER WEST	20130930	520.39
751642	Mineral	POTHOLE LAKE 2	20130930	436.8048
751662	Mineral	POTHOLE LAKE 3	20130930	83.2297
751682	Mineral	POTHOLE LAKE 1	20130930	207.8881
846347	Mineral	POTHOLE LAKE 4	20130930	41.5712
852609	Mineral	POTHOLE LAKE 2A	20130930	20.7981

Total Area: 3204.8779 ha

The Property is located in the Nicola Mining Division of British Columbia Canada, 200 kilometres east-northeast of Vancouver and 19 kilometres south-southeast of Merritt The centre of the Property is at 5529800N, 673500E (NAD 83).

ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE and PHYSIOGRAPHY

Access is southward from Merritt via Highway 5A to the west end of the Kentucky Lake Provincial campsite junction 22 kilometres south of Merritt. From this junction a good secondary road is taken for 1.8 kilometres east and 0.5 kilometres south to the central-northern boundary of the Property. This road, traversing the central portion of the property, in addition to many other secondary roads, provides access to most of the mineral showings on the Property.

The region is situated within the dry belt of British Columbia with rainfall between 25 and 30 cm per year. Temperatures during the summer months could reach a high of 35° and average 25°C with the winter temperatures reaching a low of -10° and averaging 8°. On the Property snow cover could be from December to April which should not hamper a year-round exploration program.

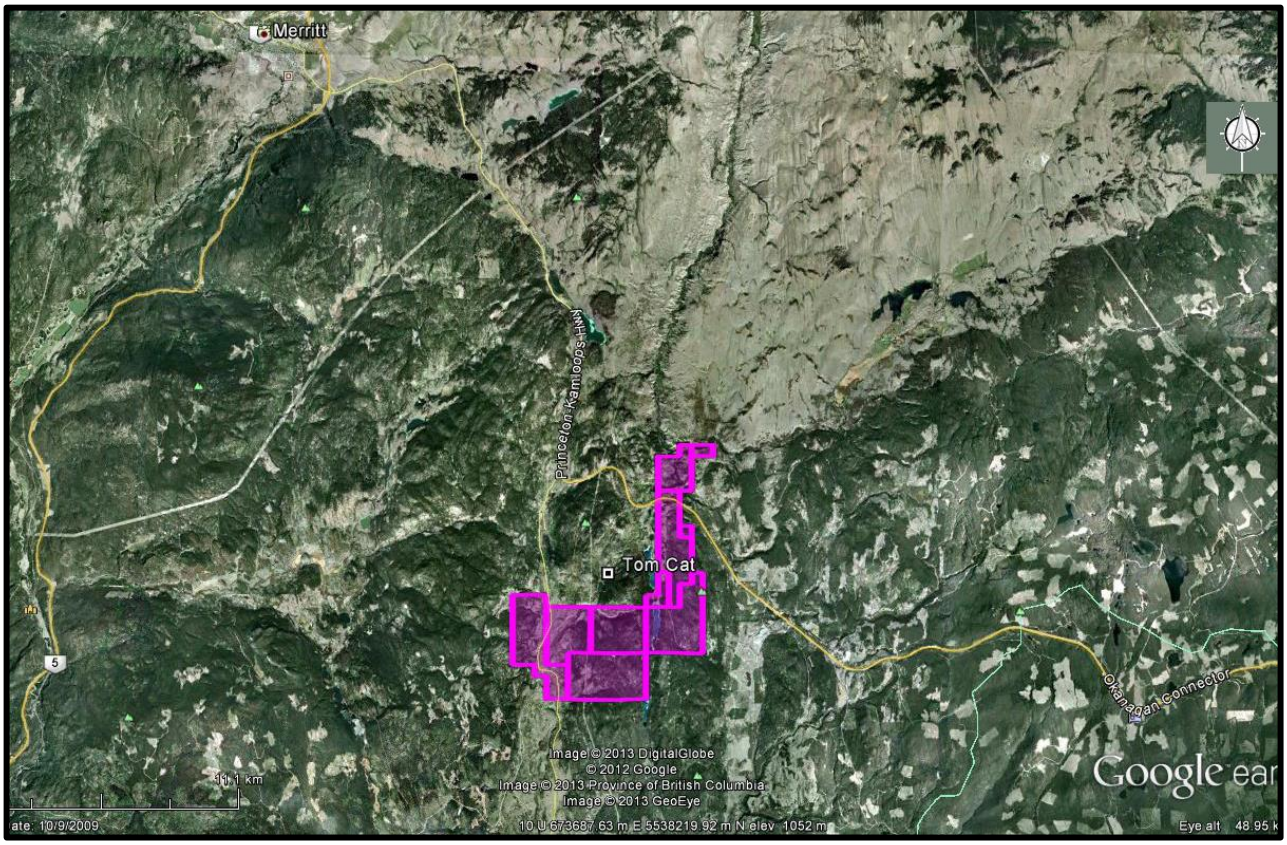
Merritt or Kamloops, historic mining centres, could be a source of experienced and reliable exploration and mining personnel and a supply for most mining related equipment. Kamloops is serviced daily by commercial airline and is a hub for road and rail transportation. Vancouver, a port city on the southwest corner of, and the largest city in the Province of British Columbia, is four hours distant by road and less than one hour by air from Kamloops.

The Property is situated at the western edge of the Douglas Plateau, which is within the physiographic area designated as the Interior Plateau of British Columbia. Vegetation is grassland with pine groves and thickets of fir at higher elevations.

Gentle to moderate slopes are the norm for Tenure 516705. Elevations range from 1020 m along Bates Creek in the northern portion to 1265 m on a knoll in the south.

Figure 2. **Claim Location**

(Map from MapPlace and Google)



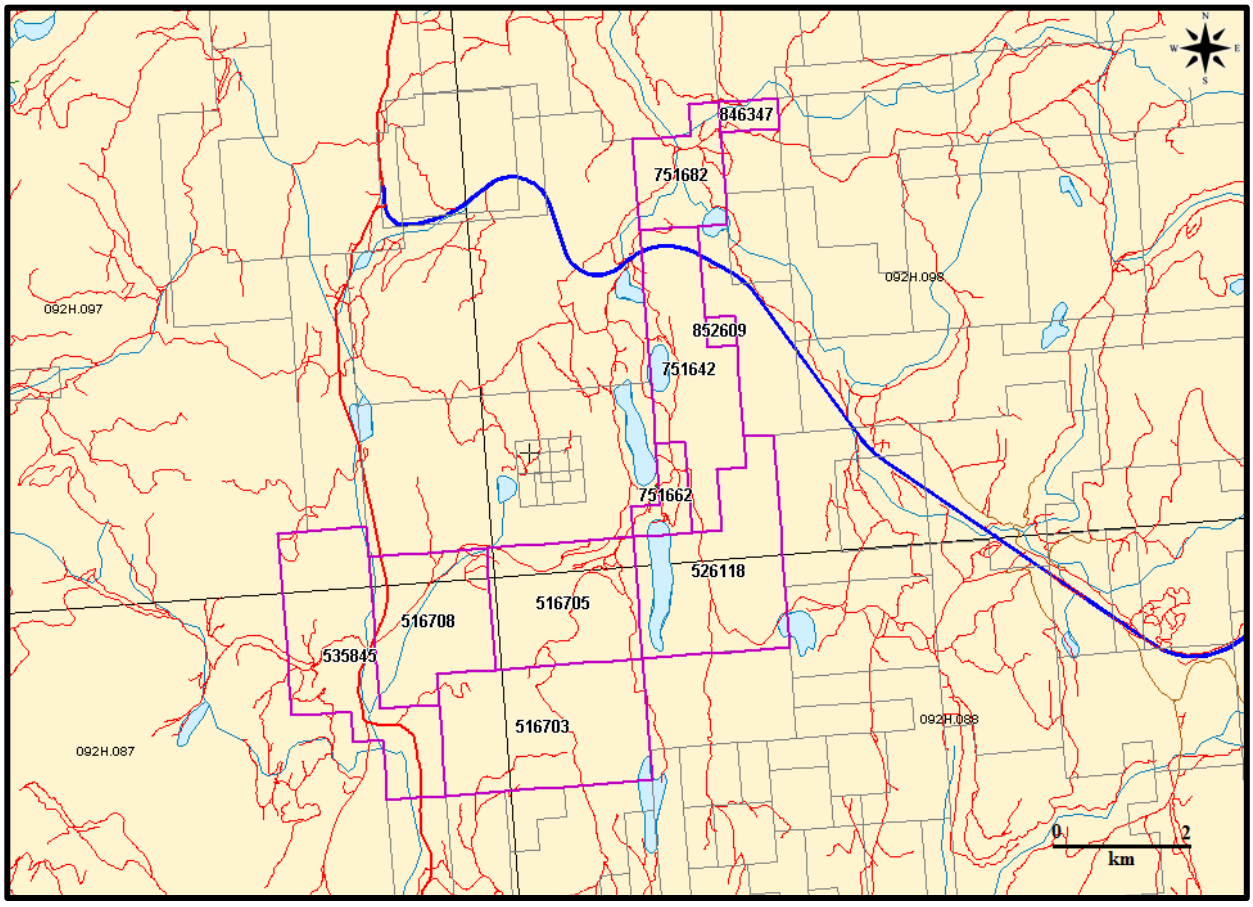
HISTORY: PROPERTY AREA

The history of exploration in the Aspen Grove copper camp dates to the late nineteenth century when copper mineralization was discovered. The history on some of the more significant mineral MINFILE reported occurrences, prospects, and past producers on and peripheral to the Property ***(Figure 3)*** are reported as follows; the distance is from Tenure 516705, the subject of the Structural Analysis.

BRENDA *past producer (Porphyry Cu +/- Mo +/- Au)*
MINFILE 092HNE047
Forty kilometres east

> *The Brenda mine began production in early 1970 with measured geological (proven) reserves of 160,556,700 tonnes grading 0.183 per cent copper and 0.049 per cent molybdenum at a cutoff of 0.3 per cent copper equivalent [eCu = % Cu + (3.45 x % Mo)]. The mine officially closed June 8, 1990.*

Figure 3. **Claim Map**
(Claim Map from MapPlace)



History: Property Area *(cont'd)*

BIG SIOUX *past producer (Volcanic redbed Cu; Alkalic porphyry Cu-Au*
MINFILE 092HNE073
Six kilometres north

This deposit was one of the first showings to be explored in the Aspen Grove copper camp. It was staked in 1899, and investigated periodically by H.H. Schmidt up to 1914. One shaft, 10 metres deep, an adit, 46 metres long, and numerous pits and trenches were excavated during this time. Forty-four tonnes of ore were shipped in 1918 grading 9.78 per cent copper and 67.9 grams per tonne silver. David Minerals Ltd., Amax Exploration Inc. and Norranco Mining and Refining completed soil and rock geochemical and geophysical surveys over the deposit between 1968 and 1978. The occurrence was restaked in 1989 after copper mineralization was exposed in a roadcut along the north side of the recently completed Coquihalla Highway (Phase 3 - Okanagan Connector). The deposit was subsequently mapped and sampled by Amex Exploration Services Ltd. in 1990, Northair Mines Ltd. in 1991 and Placer Dome Inc. in 1992. Christopher James Gold Corp. drilled the area, including the Big Kidd (092HNE074) in 1997.

History: Property Area *(cont'd)*

BIG KIDD *prospect (Volcanic redbed Cu; alkalic porphyry Cu-Au)*
MINFILE 092HNE074
Four kilometres north

This occurrence was first explored by H.H. Schmidt, with the excavation of several trenches and one adit, 69 metres long, between 1900 and 1915. An additional three adits, 12 to 90 metres long, were excavated sometime between 1916 and the 1950s. The deposit was trenched and drilled by Noranda Mines Ltd. in 1956 after completing geological and geophysical surveys. Additional geophysical and soil geochemical surveys were carried out by Norranco Mining and Refining in 1969 and Amax Exploration Inc. in 1971. Amax also mapped and drilled the deposit in 1972. David Minerals Ltd. conducted geological and self-potential surveys, trenching and 112 metres of diamond drilling in three holes between 1975 and 1980. The deposit was sampled by Northair Mines Ltd. in 1991 and Placer Dome Inc. in 1992. Drilling by Placer intersected 71 metres averaging 0.75 gram per tonne gold and 0.2 per cent copper in the north zone of the Big Kidd breccia.

Christopher James Gold Corp. drilled 10 holes, totalling 2074 metres in 1997. A 116-metre intersection graded 0.801 grams per tonne gold and 0.124 per cent copper, including a higher grade section of 19.46 metres grading 3.09 grams per tonne gold and 0.113 per cent copper (Exploration in B.C. 1997, page 38). This intersection is from the North zone. The Southwest zone, 350 metres to the south, and the Northeast zone also contained mineralization.

The next program by Christopher James Gold was a 2 staged drilling program completed during the fall in 1999. This program drilled a fan of three holes to the southwest and one parallel hole along the Big Kidd Breccia north contact. All four 1999 holes intersected significant lengths of gold-copper mineralized intrusion breccia with late porphyritic monzonite dyke and potassic (K-feldspar) alteration zones.

In 2003, Christopher James Gold Corp. drilled 9 holes and dug three trenches to test alkalic porphyry hosted by the Big Kidd breccia. Broad intervals of low-grade mineralization were encountered.

PAYCINCI *prospect (Volcanic redbed Cu)*
MINFILE 092HNE084
Two kilometres north

The Cincinnatti deposit was first explored by the Bates brothers in the early 1900s. A number of trenches, and one adit 120 metres long, were excavated between 1899 and 1913. Payco Mines Ltd. and Alscope Consolidated Ltd. conducted geological and geophysical surveys, trenching and diamond and percussion drilling between 1963 and 1967. An additional 15 holes totalling 1000 metres were drilled by Gold River Mines and Enterprises Ltd. in 1973 and Sienna Developments Ltd. in 1979. The deposit was most recently sampled by Pacific Copperfields Ltd. in 1992. In 1998, Christopher James Gold Corp. optioned the property. Reserves are estimated at 1.8 million tonnes grading 1 per cent copper (Tom Schroeter, 1998).

***History: Property Area** (cont'd)*

ELK *past producer (Intrusion-related Au pyrrhotite veins; Polymetallic veins Ag-Pb-Zn +/-Au; Au-quartz veins)*
MINFILE 092HNE096
Twenty kilometres east

From 1992 and 1995 (inclusive), 16,570 tonnes of ore were mined and milled and 1,518,777 grams (48,830 ounces) of gold and 1,903,000 grams (61,183 ounces) of silver recovered.

In 1996, Fairfield shipped all remaining stockpiles, estimated to contain 2700 tonnes and grading greater than 12 grams per tonne (Information Circular 1997-1, page 21). A total of 994 metres of ramp access and three development levels exist underground.

Reverse circulation drilling, underground diamond drilling, reclamation, road construction, water sampling and aerial photography were also undertaken during this period.

Surface and underground diamond drill programs were carried out in the Siwash Mine area from 1994 to 1996 to define the resource. Exploration surface drilling was also carried out during the 1995 and 1996 field seasons to test trench targets between the Siwash mine site and the South Showing area 2.5 kilometres to the south. Limited prospecting and environmental monitoring was undertaken from 1997 to 1999.
In 1995, Fairfield Minerals with the support from the Explore B.C. Program carried out an extensive program including geochemistry, 13,972 metres of surface and underground diamond drilling in 315 holes and reserve calculations.

HISTORY: PROPERTY

One of the ten Minfile mineral occurrences located on the Tom Cat property are described following, as copied from files of the government www.mapplace website. Eight others are copied as described by Kerr (2008) in the Geology: Property and the Mineralization: Property section of this report.

The Bunker Hill and the Tom Cat showings, two of the ten Minfiles, located within the Tom Cat property, are two of the earlier showings discovered in the area. Numerous mineral exploratory workings comprised of pits, shafts, and trenches occur on the Tom Cat property. Much of the historical information is included in the Minfile records or in Aris reports pertaining to the ground covered by the Tom Cat property. However, the Minfile records are not updated to include the most recent work; the most significant being the exploration performed by Bold Ventures in 2007 and 2008.

Bold Ventures performed exploration work on a grid covering most of Tenures 516703 which includes six Minfile locations, and Tenure 516705 which includes three Minfile locations as indicated on **Figure 4.** The Bold Venture exploration results were reported in detail by Kerr in Assessment Reports 28,732 and 29,728. Figure 6 herein is the Bold Ventures Claim Map showing the grid for the exploration programs. Figure 7 is the most significant, as it is a compilation map showing an outline of the geology, the geochemical and IP chargeability anomalies, and the location of the six diamond drill holes completed in 2007.

Tenure 516705, the subject of this report, covers three Minfile properties, historical exploration work which is available in from the Aris numbered reports that can be displayed utilizing www.mapplace or www.mtonline ,and two of the six Bold Venture diamond drill holes. The Minfile names on the Bold Venture map **(Figure 4)** and the current map (Figure 6) can be used as a reference point.

History: Property *(cont'd)*

The following table summarizes the work on the ground of the Tom Cat property since 1964.

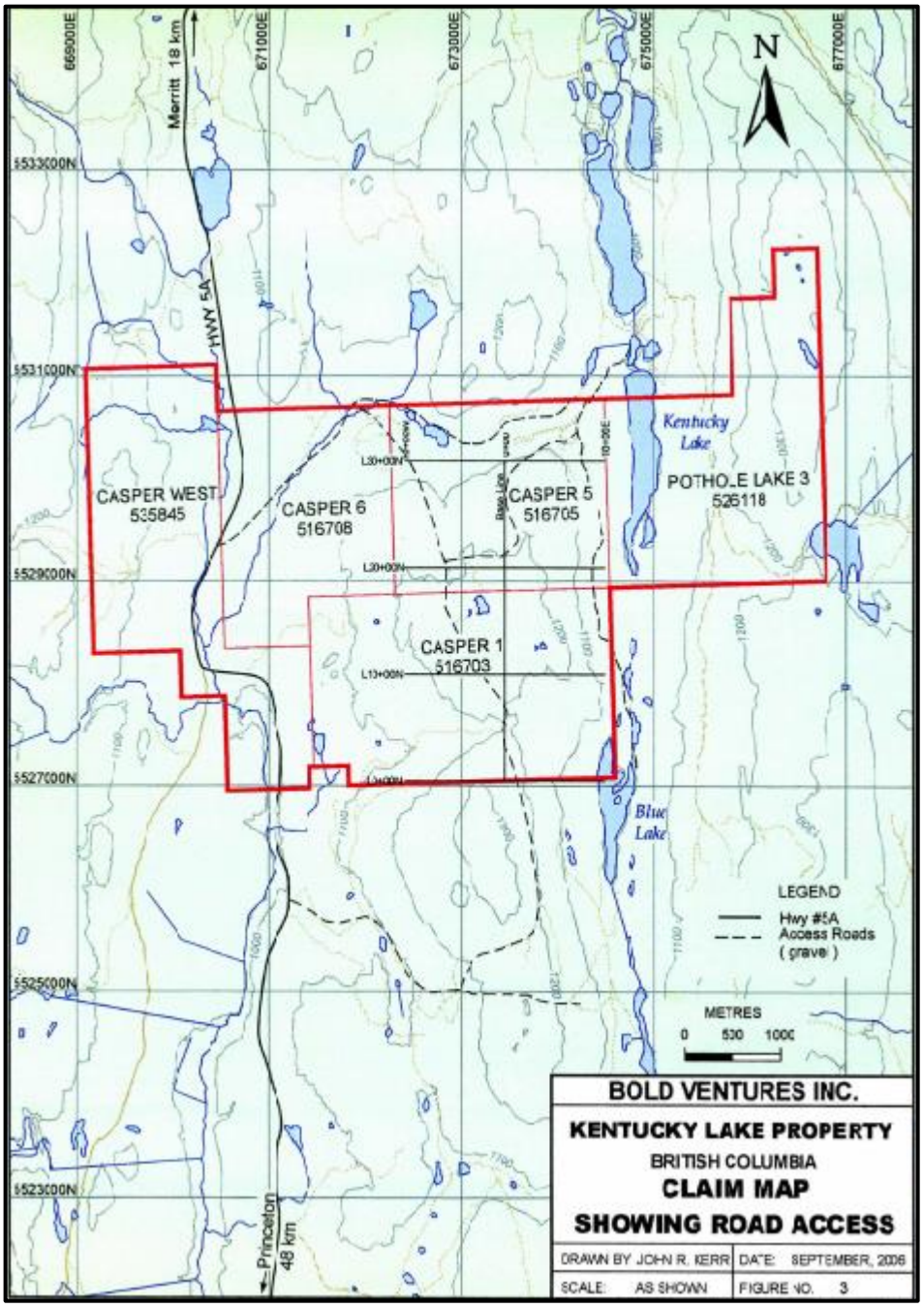
Year of Work	Owner and/or Operator	Work Completed	Results
1964-1974	Scope Development Ltd.	Geological mapping, geophysical	Unknown
	Alscope Consolidated Ltd.	surveys, geochemical surveys & trenching	Unknown
1965	Pyramid Mining	1,042 metres drilling in 13 drill holes	45.7 metres of 0.32% Cu
1975-1981	Fred Gingell	Geochemical & geophysical surveys	Unknown
1983-1985	Vanco Explorations Ltd.	Localized geological mapping	Unknown
1986-1989	Laramide Resources Ltd.	Geochemical & geophysical surveys	Unknown
2005-2006	Bold Ventures Inc.	3D IP survey & soil sampling	Viable chargeability IP drill targets in areas associated with mineral showings. Copper soil anomalies associated with mineral showings * see Figure 5
2007	Bold Ventures Inc.	1,018 metres drilling in 6 drill holes	4.4 metres of 0.54% Cu

GEOLOGY: REGIONAL

Kerr provides an excellent account of the regional geological setting in a 2006 assessment report (AR 28,782).

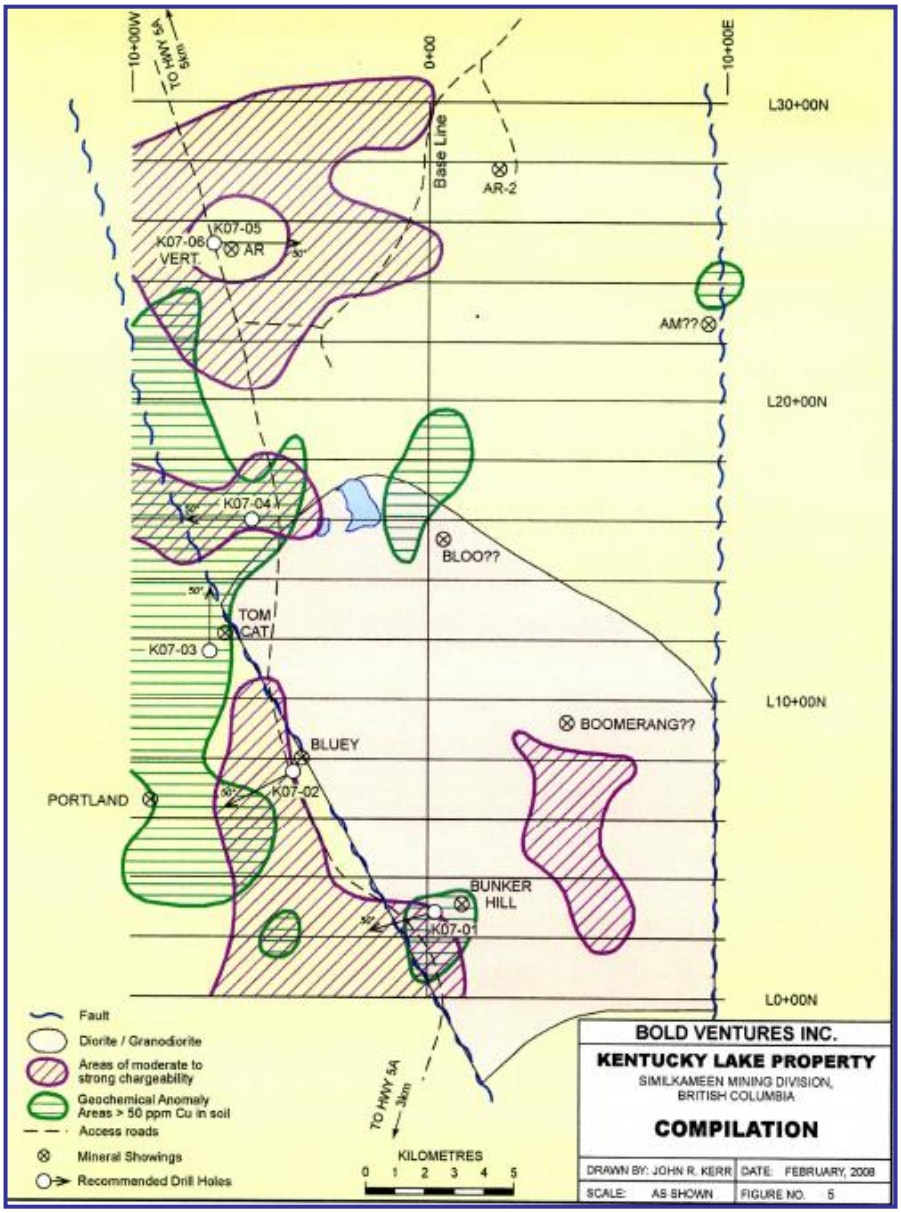
> *"The project area lies within the Intermontane belt of Mesozoic rocks between Princeton and Merritt. This belt of rocks carries south into the United States and north into the Yukon Territory. The distinguishing and oldest rock group in this belt is the volcanic and sedimentary rocks of the Triassic Nicola group.*
>
> *Preto (Bulletin 69) has subdivided this group into the western, central, and eastern facies. The eastern facies is dominantly intermediate purple/gray/green flows, breccias, tuffs, lahar breccias, with minor sandstones and siltstones. The central facies is intermediate to basic flows, breccias and tuffs, with more dominant limestone, siltstone, argillite, and conglomerate. The western facies is acidic to intermediate flows, breccias and tuffs, with minor limestone. Intruding the Nicola volcanics are numerous stocks, sills, small plutons, batholiths and dikes of various ages and of a varied composition.*
>
> *The more sizeable intrusions are the Jurassic Pennask batholith, the lower Jurassic Allison Lake pluton, and the Cretaceous Summers Creek stocks. The intrusive rocks are acidic to basic in composition, however most are alkalic in nature. The most dominant rock descriptions are diorite, monzonite and granodiorite. The lower Cretaceous Kingsvale group of dominantly volcanic rocks unconformably overly the Nicola group and earlier intrusions. These rocks are intermediate to felsic flows, tuffs, ash flows and lahar breccias. The Summers Creek stocks intrude rocks of the Kingsvale group, Overlying all rocks are Tertiary basalts and andesites of the Princeton group and sedimentary rocks of the Coldwater beds."*

Figure 4. **Bold Ventures (2008) Claim & Grid Map***
(From Kerr, 2008)



- *Showing Grid for Diamond Drill Holes- Figure 5*

Figure 5. **Bold Ventures (2008) Compilation Map***
(From Kerr, 2008)



GEOLOGY: PROPERTY AREA

The geology on some of the more significant mineral *MINFILE* reported occurrences, prospects, and past producers peripheral to the Tom Cat Property are reported as follows; the distance is from Tenure 516705, the subject of the Structural Analysis.

BRENDA *past producer (Porphyry Cu +/- Mo +/- Au)*
MINFILE 092HNE047
Forty kilometres east

The Pennask Mountain area is mainly underlain by a roof pendant comprising westerly younging, Upper Triassic sedimentary and volcaniclastic rocks of the Nicola Group. These are intruded and enclosed to the north, east and south by plutonic rocks of the Early Jurassic Pennask batholith and Middle Jurassic Osprey Lake batholith. Both the Nicola rocks and the Pennask batholith are unconformably overlain by Tertiary sediments and volcanics of the Princeton Group.

The Brenda copper-molybdenum deposit is within the "Brenda stock", a composite quartz diorite/granodiorite body which forms part of the Pennask batholith. Several ages and compositions of pre and post-ore dikes cut the stock. The deposit is approximately 390 metres from the contact with Nicola Group rocks to the west.

Nicola Group tuffs, volcanic breccias and flows adjacent to the Brenda stock have been altered to "schistose hornfels".

This hornfels, which is as wide as 450 metres, is characterized by the development of bands and aligned lenses of felted brown to black biotite. Schistosity generally strikes roughly parallel to the intrusive contact and dips west at 30 to 70 degrees. The schistose hornfels grades westerly into recognizable west-dipping volcanic rocks which in turn are overlain by greywacke, argillite and shales.

The Brenda stock is a composite, zoned quartz diorite to granodiorite body which can be divided into two units. Unit 1 is of quartz diorite composition and contains abundant mafic minerals (hornblende > biotite) and angular quartz grains, whereas unit 2 is porphyritic granodiorite and contains fewer mafic minerals (biotite > hornblende), well-defined biotite phenocrysts and subhedral quartz grains. The contact between units 1 and 2 is generally gradational, but locally sharp. At sharp contacts, unit 2 is chilled against unit 1.

Dikes of several ages and compositions cut the Brenda stock. At least four types, aplite-pegmatite, andesite, trachyte porphyry and basalt, have been identified in the Brenda orebody. Similar dikes, as well as felsite, dacite and quartz diorite have been mapped beyond the limits of economic mineralization. The aplite-pegmatite dikes are cut by all other dikes and by all mineralized fractures. The andesite dikes have been altered and mineralized during ore formation. Two types of quartz diorite dikes are found and both are cut by quartz-sulphide veins. Dacite porphyry and felsite dikes are also cut by quartz-sulphide veins.

A trachyte porphyry dike up to 4.5 metres wide and 300 metres in strike length is exposed in the Brenda pit. A weakly mineralized vein was observed in the dike which suggested an intermineral age for the dike. Further evidence has clearly shown that the dikes cut all stages of mineralization, except some of the latest quartz veins (Canadian Institute of Mining and Metallurgy Special Volume 15). Several post-mineral hornblende lamprophyre dikes also occur within the Brenda orebody and are probably genetically related to the trachyte porphyry dikes.

Irregular, branching basalt dikes, probably related to Tertiary volcanism, have been intruded along pre-existing fault zones. They cut all phases of mineralization and alteration. Initial potassium-argon dating of two samples from the Brenda mine area resulted in different ages for hornblende (176 Ma) and biotite (148 Ma). Interpretation of these results suggests that the Brenda stock crystallized about 176 million years ago.

***Geology: Property Area** (cont'd)*

***Brenda** past producer (cont'd)*

Biotite samples from the pit area have been dated at about 146 Ma, which probably represents the age of mineralization (Canadian Institute of Mining and Metallurgy Special Volume 15).

Faults in the Brenda pit are expressed as fracture zones in which the rock is intensely altered to clay minerals, sericite, epidote and chlorite. These fracture zones range in width from a few centimetres to 9 metres. Most strike 070 degrees and dip steeply south. Northwest-striking faults exhibit left-lateral movement. The faults transect all mineralization, except some calcite veins. Sulphides, especially molybdenite, have been smeared along fault planes. Shear zones are wider and more numerous in the north half of the pit, where they control bench limits.

BIG SIOUX *past producer (Volcanic redbed Cu; Alkalic porphyry Cu-Au*
MINFILE 092HNE073
Six kilometres north

The Fairweather Hills region is underlain by the Central volcanic facies of the Upper Triassic Nicola Group, comprising intermediate, feldspar and feldspar augite porphyritic pyroclastics and flows, and associated alkaline intrusions. The intrusions vary from diorite to monzonite in composition and are thought to be comagmatic with the Nicola Group, ranging in age from Late Triassic to Early Jurassic.

Locally, the area is underlain by red and green laharic breccias, augite andesite porphyry and minor sediments of the Nicola Group (Central belt, Bulletin 69). The units generally strike north-northwest and dip east. This sequence is broken up into a series of tilted fault blocks trending north.

The occurrence is hosted in variably amphibole, augite and feldspar porphyritic basaltic andesite, subjected to extensive fracturing, shearing and faulting. Alteration minerals include abundant epidote, and minor silica and chlorite. Some microdiorite and diorite are also present.

BIG KIDD *prospect (Volcanic redbed Cu; alkalic porphyry Cu-Au)*
MINFILE 092HNE074
Four kilometres north

The deposit is located along the northern margin of an area of hilly upland situated in the centre of the Aspen Grove copper camp, known as the Fairweather Hills. The Fairweather Hills region is underlain by the Central volcanic facies of the Upper Triassic Nicola Group, comprising intermediate, feldspar and feldspar augite porphyritic ash flows, and associated alkaline intrusions. The intrusions vary from diorite to monzonite in composition and are thought to be comagmatic with the Nicola Group, ranging in age from Late Triassic to Early Jurassic.

Locally, the area is underlain by red and green laharic breccias, augite andesite porphyry and minor sediments of the Nicola Group (Central belt, Bulletin 69). The units generally strike north-northwest and dip east. This sequence is broken up into a series of tilted fault blocks trending north.

A vertical or subvertical breccia pipe, nearly circular in outline and about 300 metres wide, is developed in a body of fine- grained diorite, which may in part be recrystallized volcanics. The pipe consists of angular to subrounded clasts of volcanics, fine- grained diorite (microdiorite) and pinkish grey monzonite and syenomonzonite porphyry in a matrix of altered diorite intrusive material and finely comminuted rock. The fragments are 1 centimetre to several metres in diameter.

***Geology: Property Area** (cont'd)*

PAYCINCI *prospect (Volcanic redbed Cu)*
MINFILE 092HNE084
Two kilometres north

The deposit is located in the southern portion of an area of hilly upland situated in the centre of the Aspen Grove copper camp, known as the Fairweather Hills. The Fairweather Hills region is underlain by the Central volcanic facies of the Upper Triassic Nicola Group, comprising intermediate, feldspar and feldspar augite porphyritic pyroclastics and flows, and associated alkaline intrusions. The intrusions vary from diorite to monzonite in composition and are thought to be comagmatic with the Nicola Group, ranging in age from Late Triassic to Early Jurassic.

Locally, the area is underlain by red and green laharic breccias, augite andesite porphyry and minor sediments of the Nicola Group (Central belt, Bulletin 69). The units generally strike north-northwest and dip east. This sequence is broken up into a series of tilted fault blocks trending north.

Hypogene and supergene copper mineralization occurs in green laharic breccia, near the contact with red laharic breccia to the east. This mineralization consists primarily of disseminated and fracture controlled chalcocite and native copper, accompanied by lesser malachite and azurite, and minor chalcopyrite, bornite, cuprite and pyrite. Drilling indicates chalcopyrite becomes more abundant at depth at the expense of chalcocite. This mineralization is exposed along the crest and east flank of a small northerly trending ridge, over a north-south distance of 400 metres.

ELK *past Producer (Intrusion-related Au pyrrhotite veins; Polymetallic veins Ag-Pb-Zn +/-Au; Au-quartz veins)*
MINFILE 092HNE096
Twenty kilometres east

The Elk property is underlain by Upper Triassic volcanics and sediments of the Nicola Group and by Middle Jurassic granites and granodiorites of the Osprey Lake batholith. The contact between these units trends northeasterly across the property. Early Tertiary feldspar porphyry stocks and dikes of the Otter intrusions occur throughout the property. The western property area is underlain by steeply west-dipping andesitic to basaltic flows, agglomerates, tuffs and minor siltstone and limestone units of the Nicola Group. The eastern half of the property is underlain by granitic rocks of the Osprey Lake batholith.

AU-WEN prospect (Intrusion-related Au pyrrhotite veins; Polymetallic veins Ag-Pb-Zn+/-Au)
MINFILE 092HNE144
Seven kilometres northeast

The AU occurrence is hosted in the Upper Triassic Nicola Group, which regionally consists of alkalic and calcalkalic volcanics and intrusions of island arc origin, and which is the principal component of the Quesnel Terrane in southern British Columbia (Geological Survey of Canada Maps 41-1989, 1713A). This belt has been of major economic interest because of its potential for porphyry copper-gold mineralization.

The occurrence lies in the northern assemblage of the Eastern belt of the Nicola Group (after Preto, Bulletin 69). This assemblage mainly consists of well-bedded submarine volcaniclastic rocks, ranging from tuffaceous volcanic siltstones characteristic of the lower part, to coarse volcanic conglomerate and laharic breccias in the upper part.

Geology: Property Area *(cont'd)*

Au-Wen *prospect (cont'd)*

The assemblage is characterized by a paucity of intrusive rocks in comparison to the main Aspen Grove copper camp in the Central belt a few kilometres to the west, separated by the Kentucky-Alleyne fault system (Bulletin 69).

The AU occurrence is centred on the main gold showing, a small stripped, drilled and trenched area just off a gravel road south of Quilchena Creek (Assessment Reports 5766, 16008). This and most of the surrounding area is underlain by andesitic to dacitic tuff, cherty tuff, black argillite, and volcanic sandstone and siltstone. The rocks are strongly fractured in a variety of orientations. Bedding in the tuff has been measured to strike 060 degrees and dip 54 degrees northwest, but it varies.

About 1 kilometre to the north of the main showing is biotite hornblende granodiorite and quartz monzonite of the Early Jurassic Pennask batholith, and about 500 metres to the west are porphyritic andesitic and basaltic volcanic rocks (Bulletin 69; Assessment Report 16008). Small bodies of diorite and micromonzonite, possibly subvolcanic, are quite common in the area, on the surface and in drill core (Assessment Report 16008).

GEOLOGY: PROPERTY

Kerr (2007) provides an excellent account of the Tom Cat property geology in a 2006 assessment report on the geophysical and geochemical surveys completed of the Tom Cat property (AR 28,782).

"The dominant rock types of the property are volcanic and sedimentary rocks of the central facies of the Triassic Nicola group, and stocks and small batholiths of Triassic diorites and monzonites. The eastern facies is present along the eastern property boundary. The central facies of the Nicola group has been subdivided into three basic units; flows, pyroclastics and sediments. The flows are most abundant and are described as purple/green amygdaloidal augite andesite with interbedded trachyandesite feldspar porphyry. The pyroclastic units are massive to finely bedded crystallithic andesite tuffs with interbedded siltstone and light gray/green dacite tuff. Graded bedding is locally identified, with occasional diagnostic lapilli sized fragments, common to explosive breccias and lahars.

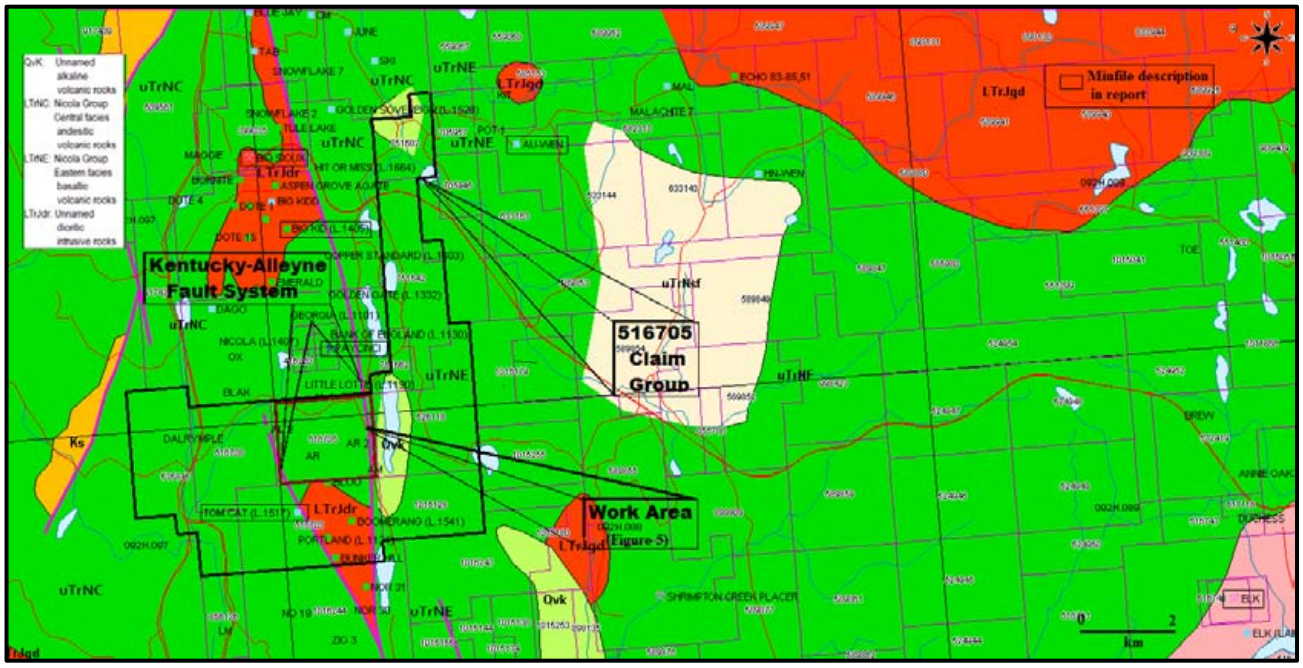
The sediments are dominantly interbedded greywacke, siltstone and minor conglomerate and massive beds of gray to light brown limestone. All Triassic rocks are hornfelsic in nature near the contact of intrusions. Some of the sedimentary horizons have developed slaty and/or schistose cleavages. The intrusive rocks on the property have been classified as alkalic late Triassic granodiorite and quartz diorite, and are located in one small batholith covering the southeastern area of the property. Late felsic and porphyritic dike swarms are found in all areas of the property, dominantly in the contact area of the batholith. The ages are unknown, however are probably related to late phase intrusive activity. Very late basic dikes are related to Tertiary vulcanism. These dikes are post-mineralization."

Structural Geology

"Bluey and Kentucky Lakes form a strong lineal feature that probably is related to the northern projection of the Summers Creek fault. This lineament passes through the eastern boundary area of the claims. A splay fault trending northwest forms the western boundary of the granodiorite intrusion. Small local shears and fault zones were noted during the time of the property examination."

Figure 6 **Geology, Index & Minfile**

(Base Map from MapPlace)



Geology: Property *(cont'd)*

TOM CAT *prospect (Volcanic redbed Cu; Subvolcanic Cu-Ag-Au (As-Sb); Porphyry Mo (Low F- type)*
MINFILE 092HNE086
Tenure 516703

This deposit is hosted in green laharic breccia or basaltic flow breccia near the contact with red laharic breccia of the Upper Triassic Nicola Group (Central belt, Bulletin 69). The unit strikes north-northwest and dips 60 degrees east. Massive basaltic flows outcrop to the northeast. Alteration of the breccia consists of some chloritization of olivine and pyroxene, and sericitization of feldspar.

MINERALIZATION: PROPERTY AREA

The mineralization on some of the more significant mineral *MINFILE* reported occurrences, prospects, and past producers peripheral to the Tom Cat property are reported as follows; the distance is from Tenure 516705, the subject of the Structural Analysis.

BRENDA *past producer (Porphyry Cu +/- Mo +/- Au)*
MINFILE 092HNE047
Forty kilometres east

The Brenda orebody is part of a belt of copper-molybdenum mineralization that extends north-northeast from the Nicola Group-Brenda stock contact. Mineralization of economic grade (0.3 per cent copper equivalent) is confined to a somewhat irregular zone approximately 720 metres long and 360 metres wide. Ore-grade mineralization extends more than 300 metres below the original surface. Lateral boundaries of ore-grade mineralization are gradational and appear to be nearly vertical.

Mineralization: Property Area *(cont'd)*
Brenda *past producer (cont'd)*

Primary mineralization is confined almost entirely to veins, except in altered dike rocks and in local areas of intense hydrothermal alteration which may contain minor disseminations. The grade of the orebody is a function of fracture (vein) density and of the thickness and mineralogy of the filling material. The average total sulphide content within the orebody is 1 per cent or less. Chalcopyrite and molybdenite, the principal sulphides, generally are accompanied by minor, but variable, quantities of pyrite and magnetite. Bornite, specular hematite, sphalerite and galena are rare constituents of the ore. Johnson (1973), in a study of 17 samples from the deposit, reported minor pyrrhotite, mackinawite, carrollite, cubanite, ilmenite, rutile and native gold (?), as well as several secondary sulphides (Canadian Institute of Mining and Metallurgy Special Volume 15). Pyrite is most abundant in altered andesite dikes and in quartz-molybdenite veins. The ratio of pyrite to chalcopyrite in the orebody is about 1:10, with the chalcopyrite content diminishing beyond the ore boundaries.

Because mineralization is confined almost entirely to veins in relatively fresh homogeneous rock, the veins are divided into separate stages, based on crosscutting relations and their mineralogy and alteration effects on the hostrock. The vein density within the orebody is not uniform.

Ranges are recorded from less than 9 per metre near the periphery of the orebody to 63 per metre and occasionally 90 per metre near the centre of the orebody. Some veins have very sharp contacts with wallrocks, but most contacts are irregular in detail where gangue and sulphide minerals replace the wallrock.

A vein may show features characteristic of fracture- filling in one part and of replacement in another. Mineralized solutions were introduced into fractures and, during development of the resultant veins, minor replacement of the wallrock ensued.

The chronological stages of mineralization are as follows: (1) biotite-chalcopyrite (oldest); (2) quartz-potassium feldspar- sulphide; (3) quartz-molybdenite-pyrite; (4) epidote-sulphide-magnetite; and (5) biotite, calcite and quartz. Stages 1 through 4 are all genetically related to a single mineralizing episode, which was responsible for the orebody. Stage 5 represents a later, probably unrelated, event(s) (Canadian Institute of Mining and Metallurgy Special Volume 15). Stage 2 veins form the bulk of the mineralization in the deposit, and are the most important source of ore.

Hydrothermal alteration at the Brenda deposit generally is confined to narrow envelopes bordering veins. These alteration envelopes commonly grade outward into unaltered or weakly propylitic-altered rock. Where veins are closely spaced, alteration envelopes on adjacent veins may coalesce to produce local areas of pervasive alteration. For the most part, hydrothermal alteration at the Brenda deposit is exceptionally weak for a porphyry copper system.

Four types of alteration are recognized in the Brenda deposit, three of which are related to the mineralizing process. Two of these are potassic (potassium feldspar) and biotite, and the other is propylitic. Later argillic alteration has been superimposed on the system along post-mineral faults.

Potassium feldspar and biotite alteration generally are separated in space, but locally occur together. Both types of alteration accompanied sulphide deposition. Potassium feldspar replaces plagioclase adjacent to most stage 2 and, to a lesser extent, stage 3 veins. These irregular envelopes range in width from a centimetre or less up to a metre, with an average of about 2 centimetres. Potassium feldspar also occurs as a minor constituent of stage 1 veins.

Mineralization: Property Area *(cont'd)*
Brenda *past producer (cont'd)*

Hydrothermal biotite replaces magmatic mafic minerals (hornblende, biotite) and, more rarely, plagioclase in hostrock adjacent to stage 2 and especially stage 3 veins. These envelopes of hydrothermal biotite range in width from less than 1 millimetre to several centimetres.

Weak to intense propylitic alteration, which is characterized by the development of chlorite and epidote, as well as less obvious microscopic sericite and carbonate, is sporadically distributed throughout the Brenda stock. Large areas within the orebody have not been propylitized and in these areas, veins with potassic alteration envelopes clearly cut across propylitized quartz diorite, indicating an early hydrothermal or even a pre-ore origin for the propylitization (Canadian Institute of Mining and Metallurgy Special Volume 15). A second period of propylitization accompanied the development of stage 4 veins and is reflected as envelopes of epidote and chlorite.

Locally intense argillic alteration is confined to post-mineral fault zones where the hostrock has been highly shattered. Kaolinite, sericite and epidote have almost completely replaced the host rocks.

Surface weathering, which is expressed predominantly by the development of limonite, extends as a highly irregular blanket over the mineralized zone for depths ranging from a few metres to greater than 30 metres. In this weathered area, limonite stains all fractures. Fault zones have been especially susceptible to surface weathering, and the argillic alteration of these zones may be primarily the result of groundwater action. Secondary minerals developed during weathering, all highly subordinate in quantity to limonite, include malachite, azurite, hematite, ferrimolybdite, powellite and cupriferous manganese oxides. Cuprite, covellite, chalcopyrite, native copper, tenorite and ilsemannite are rare constituents.

Copper-molybdenum mineralization in the Brenda deposit was developed during several sequential stages, all of which constitute one mineralizing episode.

Each stage occupies unique sets of fractures, which are filled with specific combinations of metallic and gangue minerals. Although the attitudes of veins in each stage are unique in detail, most stages include conjugate steeply dipping sets of northeast and northwest striking veins. If these veins occupy shear fractures, it is probable that they were formed by generally east-west compressive forces. Examination of the structure in the Nicola Group rocks to the west reveals that north-northwest and north trending fold axes also indicate an east-west compression.

It is suggested that intermittent east-west compressional forces intensely fractured the rocks of the Brenda stock during several stages of time and tapped a hydrothermal source, either a later phase of the Brenda stock or a separate intrusive system.

As each stage of fractures developed, hydrothermal fluids introduced vein material which healed the fractures. Renewed build-up of compressional forces again fractured the rocks, which were again healed. Repetition of this sequence can explain all stages of mineralization within the Brenda deposit. East-west compression continued after ore deposition ceased and produced prominent east-northeast and northwest striking shear zones (Canadian Institute of Mining and Metallurgy Special Volume 15).

Mineralization: Property Area *(cont'd)*

BIG SIOUX *past producer (Volcanic redbed Cu; Alkalic porphyry Cu-Au*
MINFILE 092HNE073
Six kilometres north

Pyrite, pyrrhotite, chalcopyrite and arsenopyrite are disseminated sporadically in the tuffaceous rocks and argillite, up to about 1 per cent, and also occur in fractures (Assessment Reports 11241, 16008). Native gold is associated with the sulphides in narrow quartz-filled fractures in these rocks (Assessment Report 16008). Minor malachite occurs in volcanics.

The overall extent of the mineralization has not been determined, although diamond drilling has demonstrated that minor pyrite, pyrrhotite and chalcopyrite, disseminated or associated with quartz or calcite fracture veinlets, does persist below the surface (Assessment Reports 11241, 16008).

Gold values in the area are generally low, but high values have been obtained from trench sampling and drill core at the main showing. Significant gold assays in chip samples range from 6.8 grams per tonne over 5.1 metres to 10.8 grams per tonne over 4.9 metres (Assessment Report 16008).

BIG KIDD *prospect (Volcanic redbed Cu; alkalic porphyry Cu-Au)*
MINFILE 092HNE074
Four kilometres north

Mineralization is erratic and consists of abundant magnetite, and pyrite, lesser chalcopyrite, and traces of bornite and chalcocite, as disseminations, lenses, scattered blebs and veinlets. Cuprite and native copper are also reported. This mineralization tends to favour the zones of alteration, but is not proportional to the intensity of alteration. The sulphides are in part controlled by zones of shearing and fracturing in the northeastern portion of the deposit. Limonite, malachite and azurite are present at or near surface. Pyrite occurs primarily as disseminations up to 5 millimetres in diameter. The mineral also occurs along fractures in association with chalcopyrite, orthoclase, quartz and/or carbonate. Chalcopyrite tends to be finely disseminated and is usually associated with magnetite, intimately associated with pyrite, and forms pseudomorphs after pyrite. Pyrite-chalcopyrite intergrowths are prevalent along fractures. Bornite is often found in magnetite-chalcopyrite blebs and veinlets, which often display epidote halos.

Copper content is quite variable, and precious metal values are low but anomalous. Channel sampling of an adit yielded 0.901 per cent copper, 0.141 gram per tonne gold and 13.66 grams per tonne silver over 14 metres (Assessment Report 7100, page 8, adit no. 1) Channel sampling of a trench, 90 to 190 metres west of the adit, yielded 0.237 per cent copper, 0.095 gram per tonne gold and 3.37 gram per tonne silver over 35 metres (Assessment Report 7100, page 9, trench no. 12). Trenching and sampling of the northern margin of the breccia pipe yielded gold values of up to 1.97 grams per tonne over 6 metres (Assessment Report 8743, Figure 3.)

PAYCINCI *prospect (Volcanic redbed Cu)*
MINFILE 092HNE084
Two kilometres north

Hypogene and supergene copper mineralization occurs in green laharic breccia, near the contact with red laharic breccia to the east. This mineralization consists primarily of disseminated and fracture controlled chalcocite and native copper, accompanied by lesser malachite and azurite, and minor chalcopyrite, bornite, cuprite and pyrite. Drilling indicates chalcopyrite becomes more abundant at depth at the expense of chalcocite.

Mineralization: Property Area *(cont'd)*

Paycinci *prospect (cont'd)*

This mineralization is exposed along the crest and east flank of a small northerly trending ridge, over a north-south distance of 400 metres.

Drill indicated reserves are 54,000 tonnes grading 0.876 per cent copper (Assessment Report 7654, page 1). Precious metal values are generally low. Six rock samples analysed 1.1 to 2.4 per cent copper, 0.005 to 0.010 gram per tonne gold and 1.3 to 5.7 grams per tonne silver (Assessment Report 14108, Figure 5, samples 2051 to 2056.

ELK *past producer (Intrusion-related Au pyrrhotite veins; Polymetallic veins Ag-Pb-Zn +/ Au; Au-quartz veins)*
MINFILE 092HNE096
Twenty kilometres east

Gold-silver mineralization on the Elk property is hosted primarily by pyritic quartz veins and stringers in altered pyritic granitic and, less frequently, volcanic rocks.

Crosscutting relationships indicate that the veins are Tertiary in age; they may be related to Tertiary Otter intrusive events.

To date, mineralization has been located in four areas on the Elk property: Siwash North, South Showing (092HNE261), North Showing (092HNE281) and Siwash Lake (092HNE041, 295).

The Siwash Lake zone is 800 metres south of the Siwash North deposit; the North Showing and South Showing areas are 2 and 3 kilometres south of Siwash North respectively.

In the Siwash North area, gold occurs in veins measuring 5-70 centimetres wide, hosted by a zone of strongly sericitic altered granite and, in the west, volcanic rocks. In general, the mineralized zone trends east-northeast with southerly dips from 20-80 degrees (from east to west), and appears to be related to minor shearing. Quartz veining occurs in a number of parallel to subparallel zones.

Each zone consists of one or more veins within an elevation range of 5 to 10 metres that can be correlated as a group to adjacent drill holes. In the eastern parts of the area, up to six subparallel zones occur. Five of these zones are consistent enough to be labelled the A, B, C, D and E zones.

Mineralization in the west has been identified in one or locally two zones (the B and C zones). The main mineralized zone (B) is consistent, with only minor exceptions, across the entire drill grid.

The Siwash North structure has been tested to 335 metres down dip and along a strike length of 925 metres. The zone remains open to depth and along strike.

At surface, supergene alteration has leached out most of the sulphides with some pyrite and chalcopyrite remaining. Mineralization occurs primarily as native gold, occasionally as spectacular aggregates of coarse flakes in frothy quartz (strong pyrite boxwork) or in fractures in the vein. Electrum was noted in one area as very coarse-grained flakes associated with strong manganese staining. Gold is rarely seen in boxworks in sericitic (phyllic) alteration.

In drill core, mineralization has not been affected by supergene processes. Metallic minerals in drill core include pyrite, chalcopyrite, sphalerite, galena, tetrahedrite, maldonite? pyrrhotite and native gold in order of decreasing abundance.

Mineralization: Property Area *(cont'd)*

Elk *past producer (cont'd)*

Gold is strongly associated with pyrite and with a blue-grey mineral. Photomicrographs show the gold commonly in contact with this mineral, which may be a gold-bismuth alloy (maldonite?) or a copper-bismuth- antimony sulphosalt.

Gangue mineralogy consists primarily of quartz and altered wallrock fragments. Ankerite is commonly present, with lesser amounts of calcite. Minor barite is also present. Fluorite was noted in one vein as very small (less than 1 millimetre) zoned purple cubes scattered in the quartz.

Stronger alteration generally accompanies higher grade gold mineralization. Seven main types of alteration were recognized in the granitic rocks throughout the property: propylitic, argillic, sericitic, potassium feldspar stable phyllic, phyllic, advanced argillic and silicic. Locally, potassic alteration, skarnification and silicification are evident, but are relatively minor and do not appear to be related to mineralization.

Propylitic alteration is generally light green with biotite and hornblende altered to chlorite, and plagioclase is saussuritized.

In volcanics, the colour is generally olive green, and the rock is soft. Argillic alteration is exemplified by bleached rock, with plagioclase white and clay-altered; potassium feldspar is slightly altered.

Volcanics are bleached to light green or grey. Sericitic alteration is typically pale green with a micaceous sheen, with plagioclase altered to sericite; trace disseminated pyrite may be present. This type of alteration is often associated with quartz veins and appears to be the lowest grade alteration associated with gold mineralization. It is not recognized in volcanics.

Potassium feldspar stable phyllic alteration is light pink, green or yellowish with potassium feldspar fresh and pink and blocky. Plagioclase and mafic minerals are altered to fine-grained quartz-sericite-pyrite. It often occurs with veins and is associated with gold mineralization; it is not recognized in volcanics.

Phyllic alteration is generally grey, fine-grained quartz-sericite-pyrite alteration usually associated with veins and often gradational to quartz and often auriferous. Advanced argillic alteration is exemplified by most or all of feldspar being destroyed, quartz is "free-floating". The alteration is often sheared and white in colour and is often associated with quartz veins. Volcanics are white or blue coloured. Silicic alteration is quartz veining or replacement that is hard with moderate conchoidal fracture. There is a strong symmetrical zoning of alteration around the quartz veins: vein-advanced argillic-phyllic-potassium feldspar stable phyllic-argillic-propylitic.

Measured geological reserves of the Siwash North deposit are 308,414 tonnes grading 22.17 grams per tonne gold and 24.68 grams per tonne silver using a cutoff grade of 10 grams per tonne gold.

Reserves are based on results from 107 drillholes at 50-metre grid spacings along 804 metres of strike length to 304 metres downdip. All veining intercepts have been adjusted for true width and assays diluted to 2-metre mining widths (George Cross News Letter No. 223 (November), 1991).

The revised drill indicated reserve, based on more realistic open pit and underground mining widths of 0.39 to 0.79 metre with 20.5 grams per tonne gold cutoff grade, is 122,458 tonnes averaging 54.5 grams per tonne gold (George Cross News Letter No. 65 (April 2), 1993).

Mineralization: Property Area *(cont'd)*

Elk *past producer (cont'd)*

Surface drilling was done on fences 10-50 metres apart, underground drilling on fences 10 metres apart. Reserve calculations by the company and consultant Roscoe Postle gave the following results (Explore B.C. Program 95/96 - A38):

Probable (undiluted) 16,991 tonnes at 28,200 tonnes at 50.2 g/t gold 26.6 g/t gold

Possible (undiluted) 50,260 tonnes at 66,400 tonnes at 42.0 g/t gold 31.4 g/t gold

The 1996 exploration program consisted of 6873 metres of drilling in 91 holes. The Siwash zone has been traced along a 914 metre strike length and downdip to 245 metres.

Reserves estimated by the company at January 1, 1996 were 121,350 tonnes grading 25.4 grams per tonne gold and 35.3 grams per tonne silver.

These include a diluted, probable open-pit resource of 11,340 tonnes grading 58.97 grams per tonne gold, an underground probable resource below the open pit of 20,225 tonnes grading 26.74 grams per tonne gold, and a further possible underground resource of 89,790 tonnes grading 23.66 grams per tonne gold (Information Circular 1997-1, page 21).

Surface diamond drilling totaling 1413.96 metres in 12 holes was completed on the Siwash Mining lease during 2000 testing the B, WD and Gold Creek West (GCW) zones.
A trenching program was carried out in 2001 in the Siwash East Area consisting of six trenches totaling 202 meters. Almaden Resources and Fairfield Minerals Ltd. merged into Almaden Minerals Ltd. in February, 2002.

In 2002, Almaden undertook a 26 hole surface diamond drill program for a total of 4995.67 metres testing the B, WD, GCW and Bullion Creek zones. During the 2003 field season a 6570 metre, 30 hole, diamond drill program was carried out by Almaden in the Siwash North area testing the WD zone. The WD vein system is located approximately 100 metres north of the Siwash B zone vein and has been tested over a strike length of 610m and down dip for 380m.

By the end of May 2004, a total of eight mineralized veins had been discovered on the property. Four vein systems had been drilled in the Siwash area: the B system with a strike length of 900 m has been tested down dip to 320 m; the WD zone with a strike length of 650 m has been tested to 370 m down dip; the GCW zone with a strike length of 300 m has been tested to 130 m down dip and the Bullion Creek (BC) zone which has been tested with two holes to a depth of 75 m.

A new 43-101 compliant resource was calculated using drill data for the Siwash B and WD veins, just two of eight known mesothermal vein structures on the property.

Global (bulk-tonnage and underground mineable) measured and indicated resources were reported to total 668,300 tonnes grading 9.66 grams per tonne gold (207,600 ounces) plus an additional 1,317,200 tonnes grading 4.91 grams per tonne gold (207,800 ounces) in the inferred category (News Release, Almaden Minerals Limited, May 28, 2004).

Included in the global figures is a higher grade, underground-mineable resource totaling 164,000 tonnes grading 33.69 g/t gold in the measured and indicated category, plus another 195 200 tonnes grading 16.38 g/t gold in the inferred category.

In 2004 a diamond drill program consisting of 10,265 meters of NQ drilling in 44 holes was completed. As reported by Almaden in 2001, a possible extension to the B and WD vein systems was found roughly two kilometres along strike to the east, on the other side of an area of overburden cover and no outcrop, as part of a trenching program.

Mineralization: Property Area *(cont'd)*

ELK *past producer (cont'd)*

Grab samples of the vein material taken at surface returned averaged analyses of 31.6 grams per tonne gold and 104.4 grams per tonne silver (News Release, Almaden Minerals Limited, March 4, 2005. This discovery added about two kilometres of prospective, unexplored strike length to the high-grade vein system.

AU-WEN *Prospect (Intrusion-related Au pyrrhotite veins; Polymetallic veins Ag-Pb-Zn+/-Au)*
MINFILE No 092HNE144
Seven kilometres northeast

Pyrite, pyrrhotite, chalcopyrite and arsenopyrite are disseminated sporadically in the tuffaceous rocks and argillite, up to about 1 per cent, and also occur in fractures (Assessment Reports 11241, 16008). Native gold is associated with the sulphides in narrow quartz-filled fractures in these rocks (Assessment Report 16008). Minor malachite occurs in volcanics. The overall extent of the mineralization has not been determined, although diamond drilling has demonstrated that minor pyrite, pyrrhotite and chalcopyrite, disseminated or associated with quartz or calcite fracture veinlets, does persist below the surface (Assessment Reports 11241, 16008).

Gold values in the area are generally low, but high values have been obtained from trench sampling and drill core at the main showing. Significant gold assays in chip samples range from 6.8 grams per tonne over 5.1 metres to 10.8 grams per tonne over 4.9 metres (Assessment Report 16008). Grab and select samples assayed between 14.4 and 91 grams per tonne gold (Assessment Reports 5766, 16008). The best drill core intersection assayed 4.97 grams per tonne gold over 1.5 metres (Assessment Report 16008).

Copper is associated with the gold mineralization; one rock sample from the main trench yielded 0.29 per cent copper (Assessment Report 7293). Another sample yielded 26 grams per tonne silver and 0.14 per cent lead (Assessment Report 7293). Silver in diamond drill core is generally under 1 gram per tonne (Assessment Report 11241).

MINERALIZATION: PROPERTY

Kerr, 2007 reports (AR 28,782) on the alteration and mineralization of nine of the ten Minfile mineral showings on ground included within the Tom Cat Property as follows:

"Alteration and mineralization noted on the property are mainly related to the main structures and to the main intrusive body. In total, nine old mineral prospects are reported on the property, seven having been found and examined and sampled. The following is a brief description of each of the prospects:

1) Tom Cat Showing: *Located in a large area of outcrop, approximately 100x100meters in the west-central portion of the property. Rock types examined included med grained granodiorite in contact with andesites of the Nicola Group. Mineralization observed is chalcopyrite, chalcocite, pyrite, magnetite and malachite disseminated in altered granodiorite. Alteration included epidote, chlorite, sericite, quartz and calcite. A chip sample (K-02) across a 2 meter face of the trench assayed 3.68% copper. 20 meters west of the trench, a well-mineralized pod (sample K-03) assayed 1.77% copper across 1.5 meters. Two old drill pads were located from drilling in the 1960s. One of these holes reports 0.32% copper over 45.7 meters of core length.*

Hole K07-03 of the 2007 program intersected a well-mineralized 41.1 meter section (20.4 – 61.5m) of copper mineralization which substantiates the historic drill hole. A 4.4 meter intercept assayed 0.54% copper from 20.4 – 26.0 meters.

Mineralization: Property Area *(cont'd)*
Kerr, 2007 (cont'd)

2) Bluey Showing: *Located in the southern portion of the property. Chalcopyrite, chalcocite, pyrite, malachite and azurite are associated with small quartz veinlets hosted by altered andesite of the Nicola Group. Alteration includes epidote, chlorite, quartz and sericite, with considerable rusting from oxidized sulphide minerals. One chip sample (K-04) across a 4 meter length indicates 9189ppm copper, 1551ppm lead, 7973ppm zinc and 10.9ppm silver. Zinc and lead minerals were not identified in hand specimens.*

The Bluey showing is located on the eastern flank of a moderate soil anomaly (ranging to 147ppmCu) and a strong chargeability anomaly. The 2007 drill hole in this showing area, K07-02, did not intersect any zones of noted copper mineralization.

3) Bunker Hill Showing: *Located in the south/central portion of the property, in volcanic rocks, very near an intrusive contact. Brown carbonate alteration and quartz veining were observed in several pits and short trenches. Chalcopyrite, chalcocite, pyrite and malachite are found in altered zones. One chip sample K-05 across a 2 meter width yielded 3.73% copper.*

The Bunker Hill showing is located within a 200x400 meter weak soil anomaly ranging to 58ppmCu, and is on the eastern flank of the same strong chargeability IP anomaly as the Bluey showing. A 2007 drill hole, K07-01, intersected a short 1.5 meter length of 0.12% copper at a depth of 181.5 meters.

4) Portland Showing: *Located in the western portion of the property and in the western fringe area of the grid. A shaft, reported to be 35 meters deep, and an old building exists at the site. Outcrops at the shaft are red and dark green laharic breccia and basaltic flows of the Nicola Group of volcanic rocks. The shaft appears to have been sunk on an altered shear zone. Mineralization was not observed in bedrock. A black mineral (chalcocite or magnetite?) was evidenced in samples from the dumps leading from the shaft. A sample (K-06) of this material yielded 1702ppmCu.*

The showing is located near a moderate soil anomaly to 148ppmCu and to the west of the strong chargeability IP anomaly near the Bluey showing. The showing was not drilled in 2007.

5) AR Showing: *Located in the northern area of the property and grid area. Two old trenches expose altered volcanic breccia and andesite/basalt flows of the Nicola Group. Chalcopyrite, pyrite and malachite are located as replacement pods and smears along fracture faces of altered volcanic rocks. Alteration includes epidote, carbonate, chlorite, minor quartz and sericite. A chip sample (K-01) over 1.5 meters length yielded 6962 ppm Cu.*

The area of the showing is associated with a very weak copper soil anomaly and in the middle of a significant donut shaped chargeability IP anomaly. Two 2007 drill holes, K07-05 and K07-06 were drilled into this showing area. Hole K07-05 intersected 7.2 meters grading 0.23% copper at a depth of 11.3 – 18.5 meters.

6) AR 2 Showing: *Located in the northern area of the property and grid area. One old pit (shaft?) is exposed in a minor shear zone of altered volcanic rocks of the Nicola Group. Pyrite, chalcocite?, and malachite are found in shears. A chip sample (K-07) across 0.5 meters yielded 5347ppmCu. The showing area is associated with only weak soil geochemistry and no chargeability IP anomalies, and was not drilled in 2007.*

Mineralization: Property Area *(cont'd)*
Kerr, 2007 (cont'd)

7) Bloo Showing: *Reported to be in the central portion of the claim area, however could not be located by crews. Reports indicate chalcopyrite and malachite in altered diorite, with assays reporting up to .483% copper.*

The reported location of the showing is 100 – 200 meters south of a moderate copper soil anomaly, with values up to 285ppmCu. There are no chargeability IP responses in the area.

8) Boomerang Showing: *Located in the southeastern area of the property and grid area. The reported showings, shafts and old trenches have not been located to date, however signs of drill pads and old buildings do exist in the area.*

Chalcopyrite, bornite and malachite are reported along fractures of altered diorite. Main alteration is chlorite. Mineralized samples are reported to range 0.18 – 14.7% copper with up to 4 g/t Au and 74g/t Ag. The reported location of the showing is associated with a moderate chargeability IP anomaly.

9) AM Showing: *Located in the northeastern area of the property and could not be located due to very steep terraine. An old shaft is reported into a shear zone of altered andesite. Reported assays range up to 2% copper over 1.5 meters. Several other alteration and shear zones were observed on the property, mainly in the southern and western portion of the grid, near the contact of the volcanic Nicola Group and diorite/granodiorite intrusion. The Nicola rocks in the TOE Claim Group area form a northeasterly-closing embayment largely surrounded by the Early Jurassic Pennask batholith, a large intrusion of medium-grained granodiorite to quartz diorite. The volcanics have been contact metamorphosed and hydrothermally altered by the intrusive activity, resulting in the formation of "metadiorite" locally (Assessment Report 1,586). These altered rocks locally contain significant disseminated magnetite and/or pyrite, with minor chalcopyrite in places."*

TOM CAT *prospect (Volcanic redbed Cu; Subvolcanic Cu-Ag-Au (As-Sb);*
Porphyry Mo (Low F- type)
MINFILE 092HNE086
Tenure 516703

The laharic breccia is erratically mineralized with chalcocite, magnetite, bornite, chalcopyrite, native copper and hematite, as disseminations and fracture coatings. Trenching and diamond drilling has intersected this mineralization over a width of 30 metres and a depth of at least 45 metres. One drillhole analysed 0.32 per cent copper over 45.7 metres (Minister of Mines Annual Report 1965, page 157, hole 1). Two chip samples assayed 2.4 and 1.6 per cent copper over 2.1 and 3.0 metres respectively (Minister of Mines Annual Report 1913, page 223).

2012 STRUCTURAL ANALYSIS

Hillside Shade maps obtained from MapPlace were utilized as the base map for the structural analysis on Tenure 516705. The analysis was accomplished using a stereographic projection viewing of the maps and marking the lineaments on an overlay. A total of 92 lineaments were marked *(Figure7),* compiled into a 10 degree class interval, and plotted as a rose diagram as indicated on *Figure 8.*

Figure 7. **Tenure 516705 Indicated Structures**

(Base map from MapPlace)

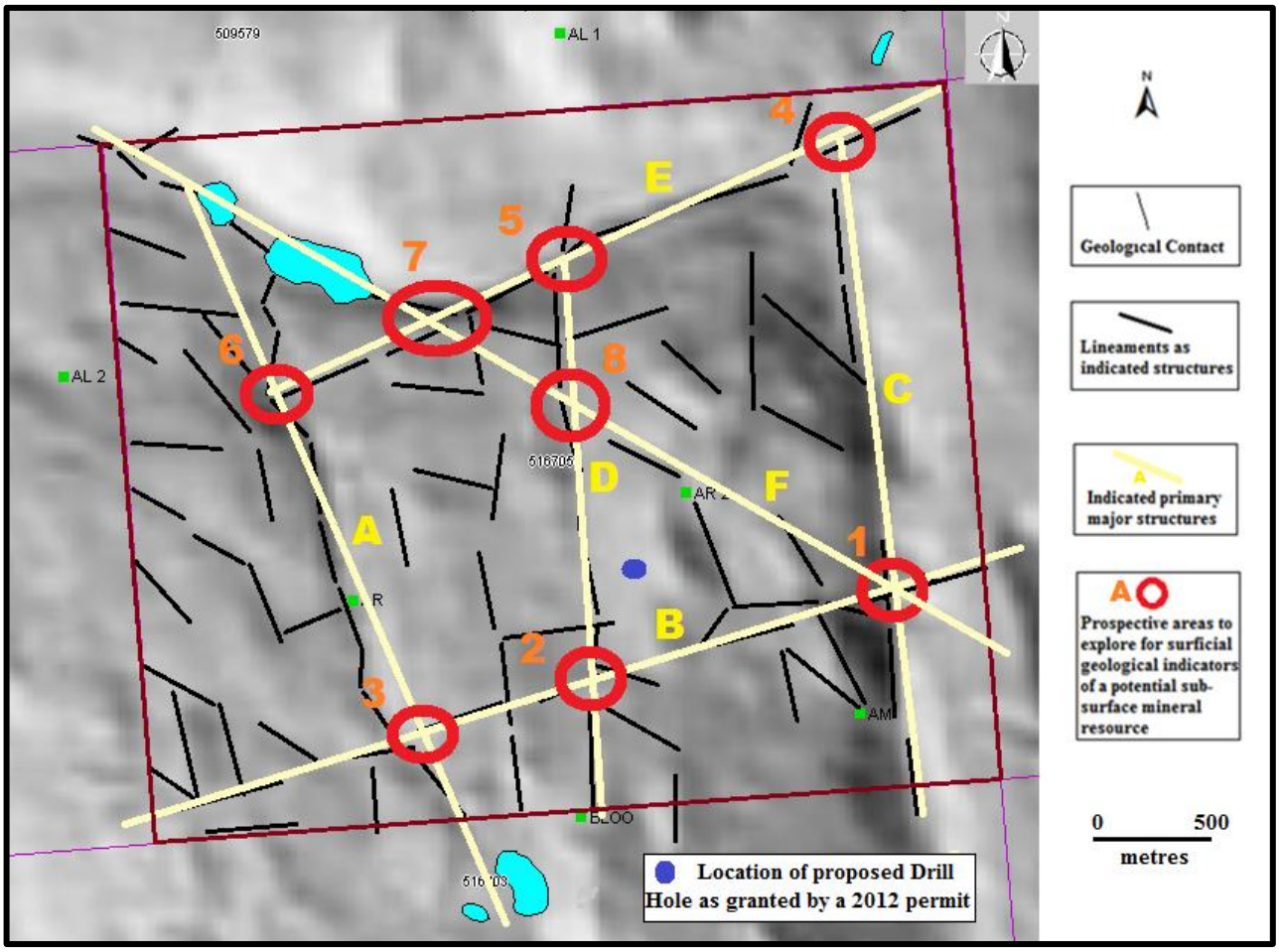
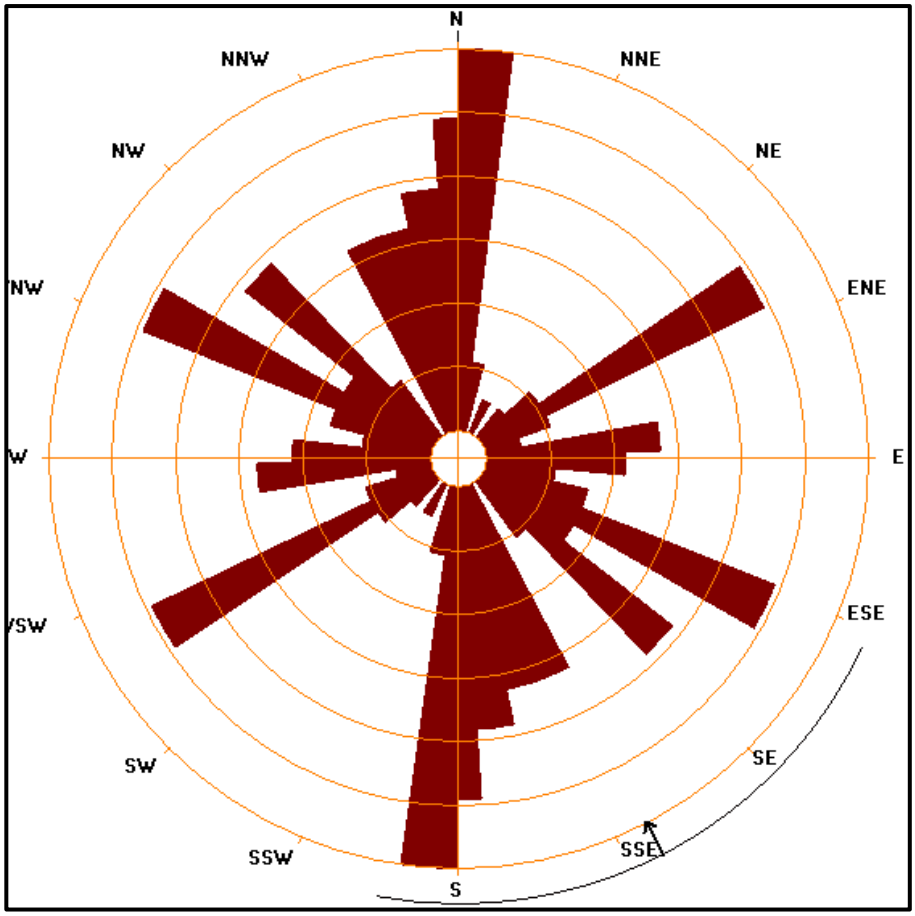


Figure 8. **Tenure 516705 Rose Diagram**
(Based on Lineaments from Figure 5)



STATISTICS

axial (non-polar) data
no. of data = 92
sector angle = 8°
scale: tick interval = 2% [1.8 data]
maximum = 12.0% [11 data]
mean resultant dir'n = 153-333
[approx. 95% confidence interval = ±37.7°]
(valid only for unimodal data)

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mean resultant dir'n = 152.7 - 332.7
circ.median = 142.0 - 322.0
circ.mean dev.about median = 38.9°
circ. variance = 0.33
circular std.dev. = 51.15°
circ. dispersion = 8.95
circ.std error = 0.312
circ.skewness = 1.38
circ.kurtosis = -1.79

kappa = 0.41
(von mises concentration param. estimate)

resultant length = 18.69
mean resultant length = 0.2031

'mean' moments: cbar = 0.1175; sbar = -0.1657
'full' trig. sums: sumcos = 10.8141; sbar = -15.2414
mean resultant of doubled angles = 0.2611
mean direction of doubled angles = 169

(usage references: mardia & jupp,
'directional statistics', 1999, wiley;
fisher, 'statistical analysis of circular data',
1993, cambridge university press)
note: the 95% confidence calculation uses
fisher's (1993) 'large-sample method'

INTERPRETATION

The Structural Analysis on Tenure 516705 of the Tom Cat 516705 Claim Group indicated a polyphase fault system. The north-south structures, A, D, & C, as displayed on *Figure 5*, appear to form an anastomosing fault array which likely resulted from the regional Kentucky-Alleyne system; the faults being more obvious and shown on the regional geological map of the immediate area *(Figure 4).* The northwesterly and the southwesterly structures, B, E, & F, as displayed on *Figure 5*, appear as a complex fault array which was probably established from intermittent east-west compressional forces.

The intersections of these primary major structures, contingent on a host of amenable geological conditions, would be the most favorable means of tapping a deep-seated hydrothermal source and be the feeding structure for migrating mineralizing fluids to the surface. In the process the fluids with any accompanying constituent would fill any accommodating fracture available that was generated by the major structures, and heal the fracture. Any movement on the major structures would create additional openings for the additional deposition. The recurrence of this process could, and did result in an economic porphyry mineral zone; one being the past productive Brenda *(Minfile 092HNE047)* deposit situated within the "Brenda stock", a composite quartz diorite/granodiorite body which forms part of the Pennask batholith.

Many of the seven Minfile mineral occurrences that occur on or in the area of the Tom Cat property; the details copied herein from the BC Government Minfile records or noted on *Figure 4*, are associated with fracture zones in the volcanics or the dioritic rocks indicating the surface mineralization may be an indication of leakage from a deep-seated mineral source.

The eight locations of intersecting major structures that are shown on Tenure 516705 *(Figure 5)* could be the means for the creation of an economic mineral zone comparable to the original Brenda mineral deposit. These locations would be the prime areas to explore for, and assess the significance of any surficial geological indicators of a potential sub-surface mineral resource.

The selected location of the 2012 permitted 500 metre vertical drill hole indicated on Figure 5 was based on the Bold Ventures drill results and the 1st Vertical Derivative Magnetic Field. The drill program is scheduled June 2013.

Respectfully submitted,

Sookochoff Consultants Inc.

Laurence Sookochoff, PEng

STATEMENT OF COSTS

The structural analysis on Tenure 516705 was completed from December 15, 2012 to December 18, 2012 for the following costs.

Laurence Sookochoff, PEng.: three days @ $1,000.00 /day ---------	$ 3,000.00
Maps ----------	750.00
Report ----------	4,000.00
	$ 7,750.00

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CERTIFICATE

I, Laurence Sookochoff, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

That I am a Consulting Geologist and principal of Sookochoff Consultants Inc. with an address at 120 125A-1030 Denman Street, Vancouver, BC V6G 2M6.

I, Laurence Sookochoff, further certify that:

1) I am a graduate of the University of British Columbia (1966) and hold a B.Sc. degree in Geology.

2) I have been practicing my profession for the past forty-seven years.

3) I am registered and in good standing with the Association of Professional Engineers and Geoscientists of British Columbia.

4) The information for this report is based on information as itemized in the Reference section of this report and from a Tom Cat property examination.

5) I have no interest in the Tom Cat property as described herein.

6) I am a director of Sierra Iron Ore

Laurence Sookochoff, PEng.