

**Ministry of Energy, Mines & Petroleum Resources**  
Mining & Minerals Division  
BC Geological Survey

**Assessment Report**  
**Title Page and Summary**

TYPE OF REPORT [type of survey(s)]: Geological

TOTAL COST: \$ 7,500.00

AUTHOR(S): Laurence Sookochoff, PEng

SIGNATURE(S): *Laurence Sookochoff*

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): \_\_\_\_\_ YEAR OF WORK: 2014

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 5528299 October 28, 2014

PROPERTY NAME: Independence

CLAIM NAME(S) (on which the work was done): 402839

COMMODITIES SOUGHT: Silver Copper Gold Lead Zinc

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 104A033 / 034 / 037 / 038 / 040 / 073 / 131 / 132

MINING DIVISION: Skeena

NTS/BCGS: 104A.001 104A.011

LATITUDE: 56 ° 05 ' 40 " LONGITUDE: 129 ° 55 ' 01 " (at centre of work)

OWNER(S):

1) Richard Billingsley

2) \_\_\_\_\_

MAILING ADDRESS:

11114 147A Street

Surrey BC V3R 3W2

OPERATOR(S) [who paid for the work]:

1) Richard Billingsley

2) \_\_\_\_\_

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11114 147A Street

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**PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):**

Middle to Upper Jurassic Hazelton Group sediments. Lower Jurassic Hazelton Group Unuk River Formation volcanics and Betty Creek Formation volcanoclastics. Regional northwesterly and northeasterly faults. Within Tenure 402839, major north-northeasterly, northeasterly, and northwesterly structures; three cross-structures. At the Independence (104A038) silicified wall-rocks adjacent to a vein oriented at 135/ 80W hosts pyrite, sphalerite, galena, and argentite. Average assay of 54.2 grams Ag

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 8968 12973 15581 16082 21367 21950

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
<b>GEOLOGICAL (scale, area)</b>			
Ground, mapping			
Photo interpretation	500 hectares	402839	\$ 7,500.00
<b>GEOPHYSICAL (line-kilometres)</b>			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
<b>GEOCHEMICAL (number of samples analysed for...)</b>			
Soil			
Silt			
Rock			
Other			
<b>DRILLING (total metres; number of holes, size)</b>			
Core			
Non-core			
<b>RELATED TECHNICAL</b>			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
<b>PROSPECTING (scale, area)</b>			
<b>PREPARATORY / PHYSICAL</b>			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other			
		<b>TOTAL COST:</b>	\$ 7,500.00

**RICHARD BILLINGSLEY**

*(Owner & Operator)*

**BC Geological Survey  
Assessment Report  
35249**

**GEOLOGICAL ASSESSMENT REPORT**

*(Events 5528299 & 5528841)*

*on a*

**STRUCTURAL ANALYSIS**

*of*

**Tenure 402839**

*of the 12 Claim*

**Ind 402839 Claim Group**

**Skeena Mining Division**

**BCGS 104A.001/.011**

*Centre of Work*

**6,216,967N, 442,952**

*9V (NAD 83)*

*Author & Consultant*

**Laurence Sookochoff, PEng**

*Sookochoff Consultants Inc.*

*Submitted*

**March 25, 2015**

*(Amended September 16, 2015)*

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## SUMMARY

The 12 claim 2197 hectare Ind 402839 Claim Group is situated within a geologically favourable area for the location of diverse types of mineral deposits resulting from the complex and episodic nature of mineral deposition. Of the six past productive mineral zones within seven kilometres of the Ind 402839 Claim Group (Figure 3a), the most significant deposit was the Premier which was in production from 1918 to 1996 and 5,876,992 tonnes of ore were milled, with a recovery of 1,332,915,406 grams of silver, 62,206,610 grams of gold, in addition to lead, zinc, copper, and cadmium.

The mineralization at the Premier is one of the episodic mineral deposits with mineralization as epithermal gold and silver (bonanza ore), polymetallic veins of silver-lead-zinc+/-gold, and intrusive related gold/pyrrhotite veins. Mineralization occurs along two trends with a combined en-echelon strike of 1,800 metres with most of the production coming from an area within 500 metres of the intersection of these two zones. These trends are believed to represent structural controls to mineralization and emplacement of dacite porphyry intrusions. It is reported that a hybrid ore genesis model combining epigenetic vein and porphyry copper characteristics compare well with the features observed.

The four past producers west of the Ind 402839 Claim Group and Bear Ridge are indicated to be associated with major northerly trending structures with two of the three largest past producers possibly related to a deep-seated porphyry deposit based on the intrusion related gold-pyrrhotite veins.

The structures on the included Minfile mineral properties within the Ind 402839 Claim Group and the two past producers, all east of Bear Ridge, are indicated to be predominantly associated with north-northeasterly and east-southeasterly structures. This structural orientation is indicated topographically by the river and the structural analysis as shown in Figure 6.

Within and adjacent to the structurally analyzed Tenure 402839, the one mineral showing and two past producers are on an indicated structure, or projected structure, within 500 metres of an indicated cross-structure. Thus, the Tournigan mineral showing and the Independence and Red Cliffe mineral zones may be isolated zones of surficially indicated mineralization emplaced within a structurally restricted location.

Both the Red Cliffe with an inventory of 18,856 tonnes of 3.19% copper and the Independence with an inventory of 177,809 inferred tonnes of 240 grams per tonne silver warrant an expanded area of exploration to and on the proximal cross structure where the structural settings should be more expansive to accommodate the deposition of any mineral bearing hydrothermal fluids. A cross-structural location could be the mineral zone of greater production value as was the case at the Premier orebody.

However, mineral showings such as 4.5 grams per tonne gold and 58.3 grams per tonne silver at the Tournigan should not be overlooked. The Sebakwe orebody which formed part of the Premier orebody, stemmed from the progressive exploration of an initial discovery of silver-bearing stringers in tuffs.

The three cross-structural locations delineated on Tenure 402839 would be prime areas in the exploration for geological indicators of a concealed potentially productive mineral resource. These geological indicators may be revealed as minerals and/or alteration products and would be subject to interpretation as economic mineral indicators.

## INTRODUCTION

In September and October 2014 a Structural Analysis was completed on Tenure 402839 of the 12 claim Ind 402839 Claim Group (“Property”). The purpose of the program was to delineate cross-structures which may be integral in geological controls to potentially economic mineral zones that may occur on Tenure 402839, or other claims of the Property.

Information for this report was obtained from sources as cited under Selected References and from the structural analysis of Tenure 402839.

This report combines Event 5528299 (11 claims) Event 5528841 (1 claim). The work was done on Tenure 402829 for each Event.

Figure 1. Location



## PROPERTY LOCATION AND DESCRIPTION

### Location

The Property is situated 915 kilometres north of Vancouver and 17 kilometres north of Stewart within BCGS Maps 104A.001/.011 of the Skeena Mining Division.

### Description

The Property is comprised of 12 claims covering an area of 2197.073 hectares. Particulars are as follows.

Table 1. **Mineral Tenures of the Ind 402839 Claim Group**  
(From MtOnline)

<u>Tenure Number</u>	<u>Type</u>	<u>Claim Name</u>	<u>Good Until</u>	<u>Area (ha)</u>
<a href="#">402839</a>	Mineral	BUNTING 1	20151031	500
<a href="#">584059</a>	Mineral	BUNTING 1A	20151031	90.2344
<a href="#">593857</a>	Mineral	BUNTING 2B	20151031	397.1848
<a href="#">593858</a>	Mineral	BUNTING 2A	20151031	379.0055
<a href="#">593872</a>	Mineral	BUNTING 2C	20151031	18.0459
<a href="#">593875</a>	Mineral	BUNTING 2D	20151031	54.1499
<a href="#">597281</a>	Mineral	INDEPENDENCE 2	20151031	325.0926
<a href="#">597282</a>	Mineral	INDEPENDENCE 3	20151031	162.5247
<a href="#">597283</a>	Mineral	INDEPENDENCE 4	20151031	36.1172
<a href="#">597896</a>	Mineral	INDEPENDENCE 1	20151031	108.3423
<a href="#">597897</a>	Mineral	INDEPENDENCE 1A	20151031	90.2779
<a href="#">600001</a>	Mineral	BUNTING 1A	20151031	36.0978

## ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

### Access

Access from Stewart to the southeast corner of Tenure 402839 is for 18 kilometres via Highway 37A. Access to the Independence, the Tournigan workings, and the “B” and “C” cross-structures, which are designated by UTM location on Table II, would be by foot from the highway.

Helicopter access may be the easiest, although a helicopter pad or area may have to be built or cleared.

### Climate

Moderate to heavy annual precipitation as seasonal rain and heavy snowfall would prevail in the Property area with cool summers and cold winters. Seasonal surface exploration would be from mid-June to mid-October.

### Local Resources and Infrastructure

All resources and infrastructure for an initial exploration program would be available at Stewart.

### Physiography

Topography on Tenure 402839 ranges from forested gradual slopes in the Bear river valley at an elevation of 107 metres, to steep, rugged, and snowy alpine terrain where elevations reach 1,460 metres.

## HISTORY: PROPERTY AREA

The history on some of the more significant mineral MINFILE reported showings, prospects, and past producers peripheral to the Ind 402839 Claim Group are reported as follows. The distance is relative to the 12 claim Ind 402839 Claim Group.



Figure 2. Claim Location  
(base map from MapPlace & Google Earth)

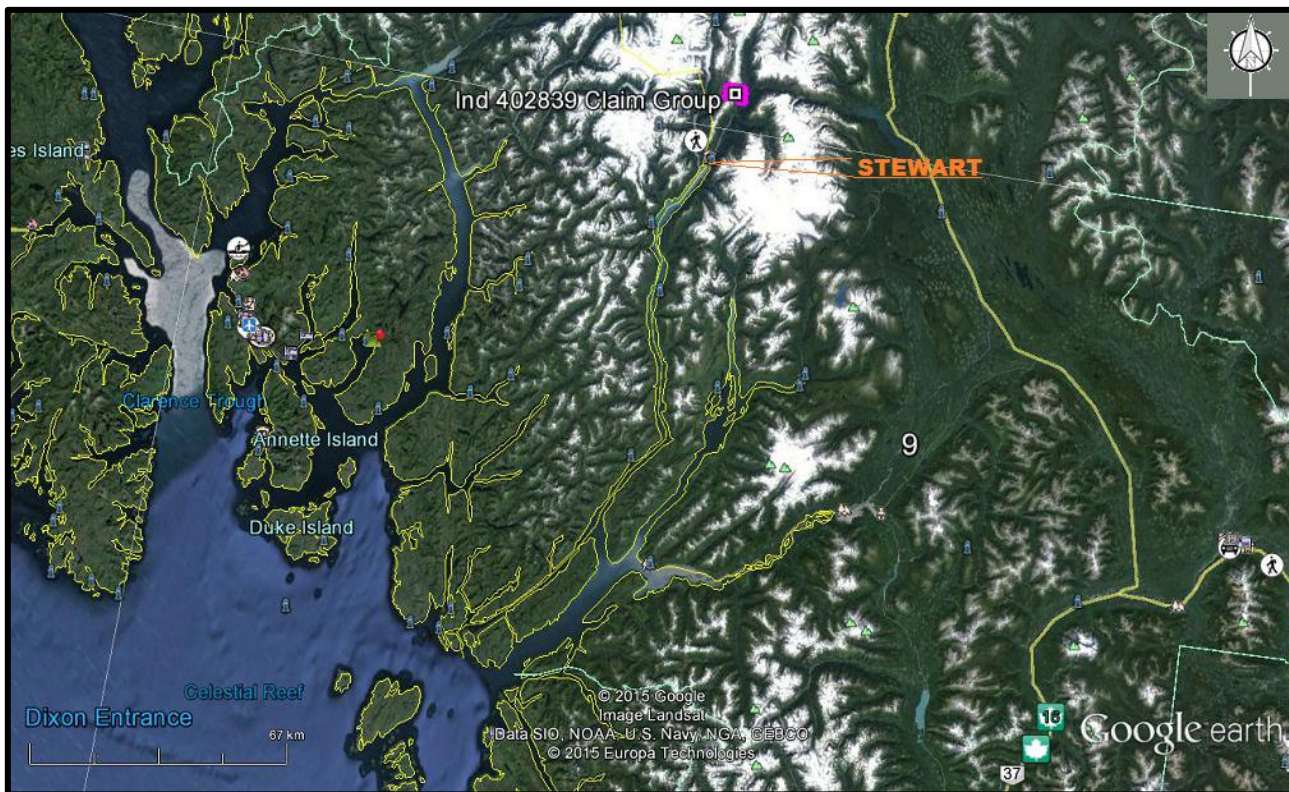
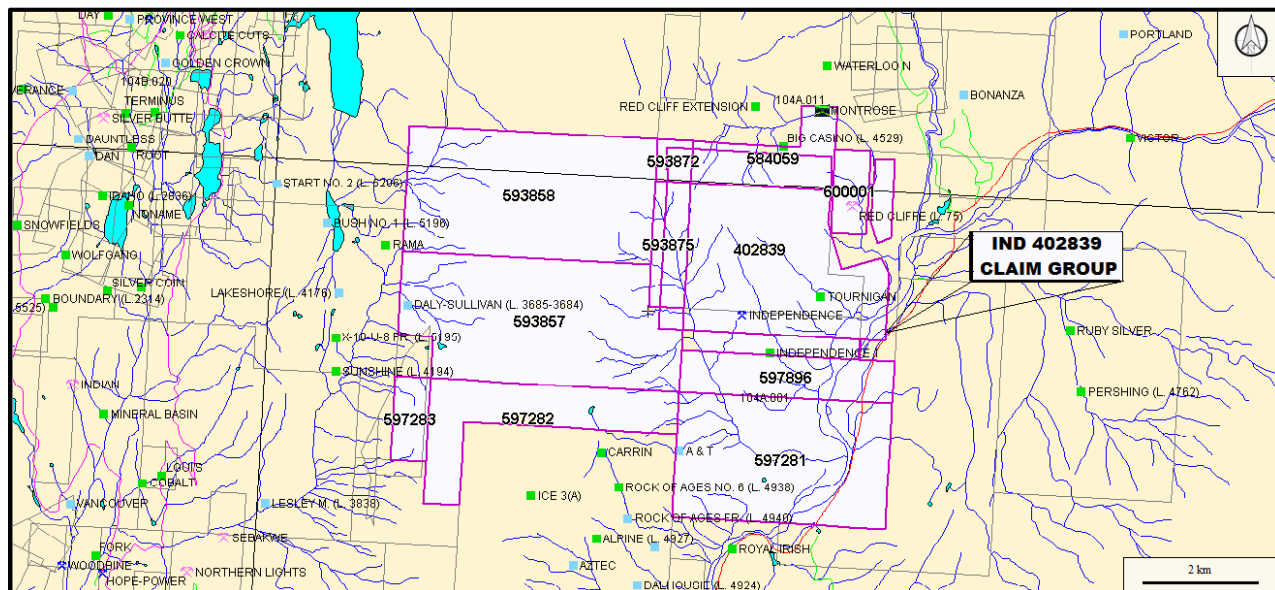


Figure 3. Claim & Minfile  
(Base map from MapPlace)



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**History: Property Area (cont'd)****TERMINUS** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 016

Three kilometres north

*The Terminus (and Vancouver) occurrences are located on the east side of American Creek, about 5.5 kilometres north-northeast of the confluence with the Bear River, about 24 kilometres north of Stewart.*

**RUBY SILVER** showing (Subvolcanic Cu-Ag-Au (As-Sb), Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 039

Two kilometres east

*The Ruby Silver showing is located on the east side of a tributary of Le Sueur (Mosquito) Creek, about 1500 metres east of the confluence of American Creek and the Bear River.*

*In 1910, the Portland Dreadnought Mining Company carried out tunnelling and open cutting on a group of 3 claims which presumably covered the showing. In 1920, Le Sueur held the Ruby Silver group over the showing and conducted further work. In 1924, Ruby Silver Mines was formed and acquired the Ruby Silver claims (Ruby, Ruby 1, Star, Stirling, Pershing and Pershing 1) and Ruby Silver Extension claims (Ruby 2-5). That year the Ruby Silver adit, on the Ruby claim, had been driven at least 46 metres; several crosscuts were also driven. Further work was done the following year; this work probably included extension of the adit to about 62 metres. The company name was changed in 1929 to Ruby Silver Copper Mines. No further work was reported until 1984 when D. Brownlee acquired the Ruby Silver group and conducted an evaluation the following year. In 1986, Thios Resources Inc. acquired the property and subsequently entered into a joint venture with Adrian Resources Ltd. The joint venture conducted geological, geochemical and geophysical (VLF-EM and magnetometer) surveys on the property in 1990.*

**AZTEC** prospect (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 043

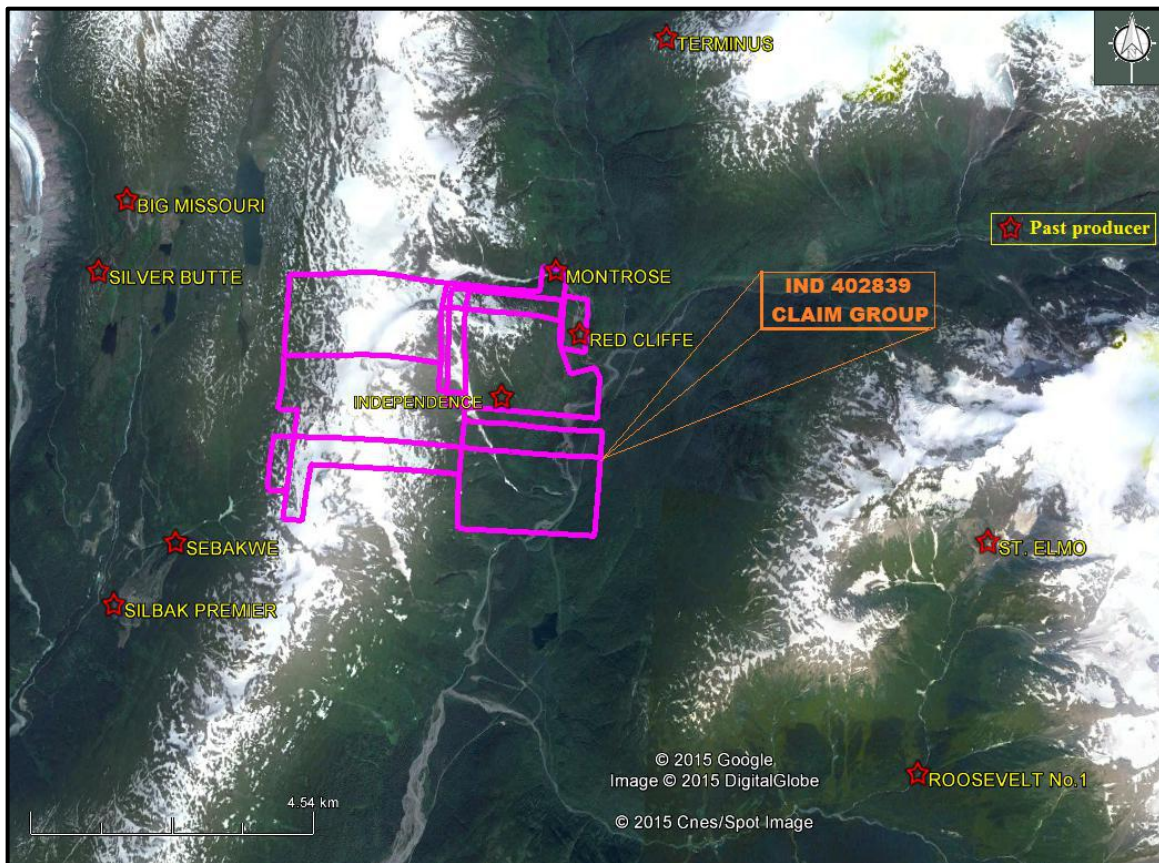
One kilometre southwest

*The exact location of the Aztec showings is not known; the showings may be the same as the Dalhousie showings (104A 041) located 733 metres southeast. The showings are assumed to be within 1 kilometre of the centre of the Tillamook claim (Lot 4926), which is located on the east side of the Bear River Ridge about 2.5 kilometres north-northwest of the junction of Bitter Creek and the Bear River, 14 kilometres north of Stewart.*

*The Aztec group of four claims (including the Tillamook claim) was owned by Cameron, Pratt and Watt in 1920. Open cutting was conducted on the veins during 1920-22. In 1925, the Dalhousie Mining Company Limited acquired the Dalhousie group (which included the Tillamook claim) from Cameron and Pratt. The fate of the other three Aztec claims (Aztec, Bellerophon and Wallaby) is not known; they may have been restaked as part of the Dalhousie group. No further work has been reported specifically on the Tillamook claim. In 1965, Canex Aerial Exploration Limited carried out geological mapping and soil sampling on the B.G. claims which were then described as the Aztec group. Mineralization was noted in several places to the west of the tongue of the glacier, about 1 kilometre east of Mount Shorty Stevenson (on the Tillamook and adjacent Alpine (104A 136) claims). Both Rich Lode Gold Corporation and Moche Resources Inc. indicated extensive gossan zones on the Tillamook claim in 1983 and 1986, respectively.*

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

Figure 3a. **Claim Location showing some past producers**  
(base map from MapPlace & Google Earth)



**BIG MISSOURI** past producer (Polymetallic veins Ag-Pb-Zn+/-Au, Noranda/Kuroko massive sulphide, Cu-Pb Subaqueous hot spring Ag-Au)

MINFILE 104B 046

Six kilometres northwest

*A number of claims were located on the showings by prospectors Dan and Andrew Lindeborg in 1904. Included among these were the Rambler (Lot 3206) and Buena Vista (Lot 3207). Other claims subsequently located included the Province (Lot 3208), Golden Crown (Lot 3210), and Big Missouri (Lot 3217). Exploration work was begun in open cuts and short adits. In 1910 the Golden Crown group of 14 claims was under bond to the Pacific Coast Exploration Company, Limited. The Golden Crown Mining Company, which was apparently an American company may have held some of these claims under option during 1911-12. The owners, D. Lindeborg and Hiram Stevenson, resumed work on the Province and Big Missouri claims in 1913.*

*The Gastineau Mining Company, of Juneau, Alaska, held the property under bond in 1914 and 1915. The owners obtained Crown-grants to 15 full and 5 fractional claims in 1916. Late in the year, the property was bonded to H.W. Witt of Goldfields Nevada, but no work was reported at that time. In 1918, the property was again bonded to The Pacific Coast Exploration Company, Limited, and operations continued into 1920. Work by the company was done on the E. Pluribus and Laura claims, adjacent to the Mineral Hill property and included open cutting, 110 metres of underground work in one adit, and 730 metres of diamond drilling in 9 holes. In 1922-24, the property was under bond to Misters Trite and Wilson and some work done in open cuts, old adits, and a vertical shaft.*

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**History: Property Area (cont'd)****Big Missouri past producer (cont'd)**

The Standard Mining Corporation of Tacoma, Washington, bonded the property from D. Lindeborg in 1925 and formed Big Missouri Mining Company, to carry on development. Most of the work was done on the Golden Crown and E. Pluribus claims; activities ceased sometime in 1926.

Buena Vista Mining Company, Limited was formed by The Consolidated Mining and smelting Company of Canada Limited (53 per cent) and Big Missouri Mining Company (47 per cent) in September 1927. A long crosscut (Province Tunnel) was begun on the east side of the ridge and some 1463 metres of drifts and crosscuts were run to explore the Province orebody. Intensive diamond drilling was done and in December 1930 a 91 tonne per day concentrator was put into operation to test the ore. Operations were discontinued in September 1931.

Big Missouri Mines Corporation was formed in August 1933 to acquire the assets of Big Missouri Mining Company. Buena Vista Mining Company was now owned by The Consolidated Mining and Smelting Company of Canada Limited (60%) and Big Missouri Mines Corporation (40%). Work resumed in 1934. The Day Fr. (Lot 4132), on the west side of the ridge, was acquired as a site for low-level access to the Province mineralized zone. Two crosscut adits were driven northeasterly into the Province claim and a 680-tonne mill was built underground between the 2100 and 2300 foot levels, with surface access on the Salmon Glacier side of the ridge. In 1935 the Hercules property was optioned. During 1937, the 306 drift from the Province adit was extended north a further 66 metres with the objective of developing the Hercules property from this level (2800), however, this plan was apparently not followed through.

Development work continued on the Province claim and in March 1938 a 780 tonne per day underground mill was put into operation. The mill operated until the early months of 1942 when the mine was closed and abandoned.

Underground development work during the period 1935-1942 totalled over 7000 metres of drifts, crosscuts, and raises and over 4875 metres of diamond drilling. Total underground development work on the property is over 9450 metres in 4 or more adits and several shallow shafts. A tonnage and grade estimate made in 1936 as a result of several years of detailed studies suggested a probable reserve of 1,671,300 tonnes at 4 grams per tonne gold per tonne. The main or 326 orebody, located on the Province claim and included in these estimates, had a dip length of 150 metres, with mining widths from 2.3 metres at 8.91 grams 0.26 ounce gold to 16.75 metres at 6.86 gram per tonne gold (Bulletin 58, p. 126). Subsequent production during the period March 1938 to early 1942 totalled slightly less than 768,773 tonnes. Numerous other small quartz-calcite-sulphide zones occur on the Big Missouri property and on the adjacent Unicorn and Hercules properties. "In 1966, D.B. Brown's assessment of these claims and their mineral potential indicated that there was probably less than 181,000 tonnes of ore grade mineralization currently available and that the over-all grade was less than 3.43 grams per tonne gold and less than 34.29 grams per tonne silver" (Bulletin 58, p.127).

In 1952 a syndicate, name unknown, in which Gwillim Lake Gold Mines Limited held a 30 per cent interest, is reported to have held 3 of the claims but no work was reported at that time.

The property, as subsequently held by the Stewart Wilkstrom interests, consisted of the M 51, M 52, and M 118 mineral leases comprising 10 Crown-granted claims, the Province Crown grant, and the Day group of 5 Crown-granted claims. Falconbridge Nickel Mines Limited held the property under option and during 1966-67 carried out geological mapping and a geochemical survey.

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**History: Property Area (cont'd)****Big Missouri past producer (cont'd)**

Twayco Explorations, of Hyder, Alaska, optioned the property in 1969 and carried out trenching and sampling of quartz sulphide masses exposed along the ridge. El Paso Mining and Milling Company optioned the property in 1970 and carried out a geochemical soil survey over Mineral Lease Nos. 51 and 52.

An airborne geophysical survey was carried out in the area on behalf of Atna Mines in 1969 (Assessment Report 2320).

Consolidated Silver Butte Mines Ltd. in June 1972 acquired 5 claims including the Province and Big Missouri, and the Hercules group, from Thomas S. MacKay. Giant Mascot Mines Limited optioned the property late in 1973. Surface diamond drilling on the Province claim during 1974 totalled 822 feet in 11 holes. The option was subsequently given up. Northern Homestake Mines Ltd. held an option on the property for a brief period in 1975 but no work was reported. Canex Placer Limited optioned the property later in 1975. Work included a geochemical soil survey (96 samples). The option was subsequently given up.

Tournigan Mining Explorations Ltd acquired the property from Consolidated Silver Butte by an agreement of April 21, 1976. In May 1976, Tournigan optioned the property to Tapin Copper Mines Limited. Work by Tapin included an induced potential survey over 14.4 line kilometres on the Big Missouri and Unicorn properties, 177 metres of diamond drilling in 8 holes on the Creek and S-1 zones, test pitting, and underground sampling. The option was subsequently abandoned. Additional ground was acquired in 1977 to a total of 74 claims.

Tournigan during 1978 carried out adit and shaft rehabilitation, surface and underground sampling, and 670 metres of diamond drilling, including 8 holes in the vicinity of the Dago shaft. Surface mineralization on the Province claim, 650 metres west of the shaft, was sampled in 50 surface trenches.

In December 1978, Tournigan optioned a 77.5 per cent interest in 7 claims, centered on the underground workings of the Province claim, to Western Mines Limited. Work by Western during 1979-80 included geochemical and geophysical surveys and diamond drilling in 40 holes. Western changed its name in March 1981 to Westmin Resources Limited. Work during 1981 included rehabilitation of underground workings, diamond drilling in 61 holes (2622 metres) and percussion drilling in 173 holes (2932 metres). Diamond drilling in 1982 totalled 3410 metres in 86 holes. Based on this work open pit material in the Province, Dago, Martha Ellen and S-1 zones was estimated at 1,723,300 tonnes grading a gold/silver equivalent of 3.43 grams per tonne gold; individual zone estimates are: Province, 308,380 tonnes grading 2.50 grams per tonne gold equivalent; Dago, 671,180 tonnes grading 3.53 grams per tonne gold equivalent; S-1, 181,400 tonnes grading 3.19 grams per tonne gold equivalent; and Martha Ellen, 562,340 tonnes grading 3.81 grams per tonne gold equivalent (Northern Miner 12/05/1983).

Further diamond drilling included 999 metres in 17 holes in 1983, mainly on the Martha Ellen zone, and 305 metres in 6 holes on the Dago zone in 1984. Drill indicated geological reserves were reported as 1,965,469 tonnes at 3.36 grams per tonne gold equivalent (Westmin Resources, 1983 Annual Report).

Exploratory drilling in 1986-87 totalled some 9500 metres in 153 holes. The 1986 and part of 1987 work was funded by Canacord Resources Inc., the company thereby earning an 18.75 per cent interest in the interest held by Westmin.

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**History: Property Area (cont'd)****Big Missouri past producer (cont'd)**

*In order to combine the Big Missouri and Silbak Premier properties into one operation (named the Premier Gold Project), Westmin obtained an agreement whereby Tournigan Mining Explorations Ltd exchanged its 30 per cent net profits interest in the Big Missouri for a 5 per cent net profits interest in the combined operation. Interest in the project was then 50.1 per cent Westmin Resources, 40.0 per cent Pioneer Metals Corporation, and 9.9 per cent Canacord Resources. A feasibility study was carried out in 1987. Reserves at the Big Missouri in four zones were reported as open pit mineable 1,632,600 tonnes at 3.60 grams per tonne gold, 29.49 grams per tonne silver (Westmin Resources Limited, 1987 Annual Report). Construction of an 1814 tonne (2,000 ton) per day mill at the Silbak property began in April 1988.*

*In 1991, Westmin Resources had an airborne magnetic and electromagnetic survey conducted over the Premier Gold property totalling 760 kilometres (Assessment Report 21993). This survey covered an extensive area from the south end near the Premier mine area and north to the Yellowstone (104B 039) area.*

*In 1992, a program of mapping and sampling of the Salmon River and Dilworth formations in the greater Big Missouri area was conducted by Westmin (Assessment Report 22698). Several styles of mineralization were identified. Results were reported for the Silver Tip (104B 043), Silver Crest (104B 042), Bella Coala and H vein (104B 213).*

*Ascot Resources Ltd conducted exploration on the Dilworth Property in 2007 and 2008 and subsequently acquired the Premier Gold Property from Boliden Ltd under the terms of a 2009 option agreement. The 2008 exploration program of Ascot Resources Ltd conducted on the Dilworth property included diamond drilling, surface rock sampling, geological mapping, a 428.2 kilometre airborne Mag/EM survey and airborne radiometric survey, geochemical sampling including contour sampling, a soil grid and stream sediment sampling of all streams on the west and east sides of the property (Assessment Report 31000).*

*Diamond-drilling in 2008 totalled 10885.1 metres in 63 holes. Only the airborne survey extended off the Dilworth property to the south covering parts of the Big Missouri (104B 046) and further south to the Premier (104B 054). During 2009 (Assessment Report 31489) and 2010 (Assessment Report 32357) all exploration activity by Ascot was conducted on the Premier and Big Missouri Properties. In 2009 a total of 7465.3 metres were drilled in 48 holes into multiple zone including 3rd, Premier, Power, Hope, Loui's, S1, Northstar, Province, Martha Ellen, Montana, Rambler, Silver Tip, Unicorn, Golden Crown and Mudstones.*

*In 2010 a total of 21,742 metres in 68 holes were drilled into a number of zones from the combined Dilworth and Premier properties of Ascot including: Unicorn, A-Vein, S1, Creek, Calcite Cuts, Province, Day, Martha Ellen, Sparky, Bee, Forty Nine and Gerrys zones.*

**ST. ELMO** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 048

Seven kilometres east

*The St. Elmo claims were owned by Cowan, McGinnis and Watkins in 1919. The latter also owned the nearby Jutland 2-3 claims. Little work was reported during 1919-20 but, evidently, a 6 metre long adit was driven at this time. In 1946, Cameron and Robichaud held the Bingo claim group in the area; the Bingo claims may have been a restaking of the St. Elmo claims.*

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**History: Property Area (cont'd)****St. Elmo past producer (cont'd)**

The following year the owners drove a short adit on the lower of two lenses and mined 14.5 tonnes of sorted ore. A shipment of 13.6 tonnes of ore was made that year; 57,354 grams of silver, 2374 kilograms of lead and 3101 kilograms of zinc were recovered. No further work has been reported on the occurrence.

**PREMIER** past producer (Epithermal Au-Ag: low sulphidation, Polymetallic veins Ag-Pb-Zn+/-Au, Intrusion-related Au pyrrhotite veins)

MINFILE 104B 054

Six kilometres southwest

This property is located at about the 300 metres elevation on the east side of Cascade Creek, 8 miles north-northwest of Stewart. The Premier orebody was found to extend northeastward through the adjoining B.C. Silver Mines property into the Bush Mines (Sebakwe) claims. A West ore-zone was found to occur some 183 metres to the west of the original B C Silver Mines workings, the lower part of the zone extending into the adjoining Premier Border property.

The original Premier group consisted of the Cascade Falls Nos. 4 & 8, Pictou, Simpson, Essington, Rupert, and Hazelton claims (Lots 3590-3593, 3596, 3597). These claims were located O.B. Bush, in October 1910 incorporated Salmon Bear River Mining Company, Limited to carry on the exploration Westmin Resources Limited work; several adits were driven during 1911-12. In 1914 New York interests, represented by H.R. Plate, optioned the property and to February 1916 some 488 metres of underground work was done. The results were not encouraging and the option was dropped; the main Premier orebody had been missed by a few feet. The property was bonded by R.K. Neill, of Spokane, and the Trites, Wood, & Wilson interests of Fernie in 1917. Exploration work was resumed and a short crosscut from the former workings encountered the orebody. The original claims were Crown-granted to O.B. Bush in 1918; three adjacent claims, the Pat Fraction, Dalby (Lot 3595), and Trites Fraction were Crown-granted to R.K. Neill. In February 1919 the Premier Gold Mining Company, Limited was incorporated to take over the property; Messrs. Neill, Trites, Wood and Wilson acquired a controlling interest in the company.

At this time the property was expanded to 17 claims and fractions with the purchase of the Cascade Forks group of 8 claims from the Bunting Brothers this ground, lying west of and adjoining the original Premier group, was originally staked as the Cascade Falls Nos. 2, 3, and 7, Mainland, and Rapid Transit claims by Bunting Brothers and Dillsworth, who in September 1911 incorporated Cascade Falls Mining Company, Limited. Intermittent exploration work was done until 1916; the company charter was surrendered in 1919. This ground was subsequently restaked by the Bunting Bros. as the Cascade Forks group and reportedly Crown-granted to them in 1921.

The American Smelting and Refining Company, by participating in the financing of the exploration work, acquired a controlling interest in the Premier Gold Mining Company, Limited in 1919. A 100 ton per day mill was put into operation in July 1921. Additional claims were Crown-granted to Woods, Trites, & Wilson in 1922, and to the Premier company in 1923. Development work was carried out on 5 adit levels and an intermediate level. The mill capacity was increased to 400 tons per day in 1926 and to 500 tons in 1931. In 1935, the Premier Gold Mining Company, Limited reached an agreement with Selukwe Gold Mining and Finance Company, of London, England, for the amalgamation of the Premier, B.C. Silver, and Sebakwe (Bush Mines) properties under a new company, Silbak Premier Mines, Limited which was incorporated in December of that year.

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**History: Property Area (cont'd)****Premier past producer (cont'd)**

*Selukwe owned Sebakwe and District Mines, Limited and also owned the British Canadian Silver Corporation, Limited which held a controlling interest in B.C. Silver Mines, Limited.*

*After the success of the McNeill-Trites interests in locating a major orebody in 1917 a large number of claims were staked in the area. In November 1919 B.C. Silver Mines, Limited was incorporated by O.B. Bush to acquire two groups of claims adjoining the Premier, one to the north and the other to the south. These claims were Crown-granted to the company in 1921; at the same time, 3 claims adjoining the north group, the Oakville Fraction, Oakville No.2 Fraction, and Oakwood, were Crown-granted to C.H. Lake. The exploration and development work, carried on until May 1931, succeeded in locating and partially developing the northeasterly extension of the Premier ore zone. This work was in part financed by The British Canadian Silver Corporation, who by 1922 had acquired control of B.C. Silver Mines, Limited.*

*The Lesley group of 6 claims, located north of and adjoining B.C. Silver, was owned by G. Mahood in 1916. The claims were subsequently acquired by O.B. Bush who incorporated Bush Mines, Limited in November 1918. Three adits were driven in the initial exploration but little mineralization was found and work ceased in 1919. Additional claims were acquired to a total of 16, all of which were Crown-granted to the company in 1921. Control of the company was sold by O.B. Bush to National Silver Mines Limited in about 1923. Sebakwe & District Mines, Limited registered in British Columbia in February 1926, acquired the property from National Silver and underground exploration was resumed. Mineralization was located along the northeast extension of the Premier ore zone in 1927 and development work was continued into 1930.*

*Exploration, development, and production by Silbak Premier from 1935 was confined mainly to the newly acquired ground. In 1940 an agreement was reached with the Premier Border Gold Mining Company, Limited for the exploration and development of the lower part of the newly discovered West ore-zone which extends into the Northern Light No.1 claim. The Northern Light group of 8 claims and fractions, owned by the Bunting Bros. from about 1917, was Crown-granted in 1922. The claims adjoin the B.C. Silver property on the west. Northern Light Mines, Limited was incorporated in January 1928 to purchase the claims*

*This company was absorbed on a share for share basis by Premier Border Gold Mining Company, Limited which was incorporated in February 1928. Exploration and development work by the company was suspended in June 1930.*

*The combined Silbak Premier workings were described (1947) in terms of the names of the former mines. The original Premier mine was developed by six main levels, five of which were adits, located at elevations of 609, 536, 474, 410, 326, and 240 metres. The levels were numbered in sequence downward. The lowest, No.6, is now known as the 790 level. No.4, now known as 1,350 level, was the main haulage-adit. Levels above No. 4 were served by two internal shafts, and a third internal shaft, known as 601, provided service and ore-hoisting facilities to levels below No.4. The B.C. Silver mine, immediately north of the Premier workings, had five levels between elevations of 631 and 411 metres, and two internal shafts, one of which extended down to 1350 level. The Sebakwe mine, which adjoined the B.C. Silver on the northeast, had three levels between elevations of 508 and 411 metres and one internal shaft extending down to 1,350 level. The main haulage-level, 1350, finally attained a length of about 2133 metres. Prior to 1930 the Premier Border property had been developed by an exploration crosscut adit at the 344 metres level and some short lateral workings.*



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**History: Property Area (cont'd)****Premier past producer (cont'd)**

The adit was driven about 550 metres in an easterly direction towards the B.C. Silver Mines property, the face of the adit stopping about 91 metres from the B.C. Silver.

The Granby Mining Company Limited optioned the property in December 1969. Work during 1970 included geological and induced polarization surveys. An anomaly outlined on the Bell and Loser claims was tested in 1971 by drilling in 10 holes. In addition drilling was done in the hanging wall of the main Premier replacement zone in 3 holes; the 1971 drilling totalled 1877 metres in 18 holes. The option was subsequently given up.

The company name (Silbak Premier) was changed in January 1977 to British Silbak Premier Mines Limited. From the work done in 1963, there were also indicated 6,350,000 tonnes grading 1.03 grams per tonne gold per ton and 25.89 grams per tonne silver (Northern Miner, July 10, 1980).

Local operators under the name Spring Investments Ltd. held a lease during 1978-79 and shipped 94 tonnes of clean up lead concentrate and 256 tonnes of hand-sorted ore from the floor of the old glory hole (No.1 level).

British Silbak during 1980-81 carried out surface exploration, underground rehabilitation, cross-cutting and diamond drilling. In September 1981 the company signed a letter of intent to option a 50 per cent interest to Westmin Resources Limited; the agreement was finalized in March 1983; in the meantime the controlling interest in British Silbak was acquired from Mining Investment Corporation, of London, England by a Canadian group represented by the H.J. Block interests.

Exploration drilling in 1986 and early 1987, funded by Canacord Resources Inc., earned that company an 18.75 per cent interest in the interest held by Westmin. In 1986, 1737 metres in 10 holes were drilled. Exploration concentrated on the Simcoe-Pictou (SP) zone, a 700 metres long poorly exposed target on trend and south of the Glory Hole zone.

Pioneer Metals Corporation in mid-1987 purchased from John Block and associated companies the controlling interest in British Silbak; the latter name was changed in July 1987 to Silbak Premier Mines Ltd.; in May 1988, the company was amalgamated with Pioneer Metals Corporation under the latter name.

A feasibility study was carried out in 1987. Reserves at Silbak Premier were reported as open pit mineable 5,890,000 at 2.16 grams per tonne gold, 80.23 grams per tonne silver (Westmin Resources Limited, 1987 Annual Report). Westmin, as operator in 1988 unitized the Silbak Premier, Big Missouri and Martha Ellen properties under the name "Premier Gold Project". Interest in the project was Westmin 50.1 per cent, Pioneer Metals 40.0 per cent, Canacord Resources 9.9 per cent, with Tournigan Mining Explorations Ltd. holding a 5 per cent net profits interest. Stripping of the initial open pit and construction of a 2000 ton per day mill at the Silbak Premier property began in April 1988, and it was put into operation in May 1989.

In 1991, a 760 Airborne geophysical survey was conducted from the Premier area North to the Yellowstone (104b 032).

During the summer of 1992 a geological field mapping project was completed by Westmin in order to test whether a major break occurred in the stratigraphy somewhere north of Lesley Creek and, if so, where. Mapping in 1992 was successful in locating the break, now known as the North Fault, which is occupied by an intrusion of Premier Porphyry.

**History: Property Area (cont'd)****Premier past producer (cont'd)**

In 1993 a program of diamond drilling was carried out by Westmin (on the Climax claim) consisting of 3 holes. Three holes totalling 1,752.1 metres were drilled, all of which intersected the favourable stratigraphic package, and all of which contained alteration and sulphide mineralization in the target interval. None of the mineralization contains commercial values of precious or base metals.

Ascot Resources Ltd conducted exploration on the Dilworth Property in 2007 and 2008 and subsequently acquired the Premier Gold Property from Boliden Ltd under the terms of a June 12, 2009 option agreement. During 2009 all exploration activity was conducted on the Premier and Big Missouri Properties.

The 2008 exploration program of Ascot Resources Ltd conducted on the Dilworth property included diamond drilling, surface rock sampling, geological mapping, a 428.2 kilometre airborne Mag/EM survey and airborne radiometric survey, geochemical sampling including contour sampling, a soil grid and stream sediment sampling of all streams on the west and east sides of the property (Assessment Report 31000). Diamond-drilling in 2008 totalled 10885.1 metres in 63 holes. Only the airborne survey extended off the Dilworth property to the south covering parts of the Big Missouri (104B 046) and further south to the Premier (104B 054).

During 2009 (Assessment Report 31489) and 2010 (Assessment Report 32357) all exploration activity by Ascot was conducted on the Premier and Big Missouri Properties. In 2009 a total of 7465.3 metres were drilled in 48 holes into multiple zone including 3rd, Premier, Power, Hope, Loui's, S1, Northstar, Province, Martha Ellen, Montana, Rambler, Silver Tip, Unicorn, Golden Crown and Mudstones.

In 2009, Ascot drilled 7 of its 48 holes on the on the Premier Pit. Eleven holes (P09-001 to 011) were drilled from five pads constructed along the access ramp at the bottom of the Premier Pit. Targets were designed to confirm the previous results of Westmin Resources, and to test for the possible extension of additional resources below the existing pit. In 2010 a total of 21,742 metres in 68 holes were drilled into a number of zones from the combined Dilworth and Premier properties of Ascot including: Unicorn, A-Vein, S1, Creek, Calcite Cuts, Province, Day, Martha Ellen, Sparky, Bee, Forty Nine and Gerrys zones.

**ROOSEVELT** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 069

Seven kilometres southwest

The Roosevelt occurrence lies approximately 15 kilometres northeast of Stewart and consists of the Silver and Copper adits. The Silver adit is on the west bank of Roosevelt Creek, a tributary of Bitter Creek, about 1.5 kilometres upstream from the confluence of Roosevelt and Bitter Creeks. The Copper adit is also on the west bank, about 200 metres further upstream than the Silver adit.

The Grizzly group of four claims, the first claims to be staked in the Stewart area, was staked over the occurrence by Connor and partners in May, 1899. The property was subsequently acquired by the Grizzly Mining Company who carried out extensive exploration and shipped about 10 tonnes of ore to Tacoma in about 1900. The claims were then allowed to lapse and were restaked as the Roosevelt group of four claims by Chambers, Stark and Rainey in 1901.

During 1901-10, intermittent exploration, primarily on the Roosevelt No. 1 claim (Lot 896), comprised open cutting and three short adits. The Roosevelt Mining Company was formed in 1910; the company charter was surrendered in 1932.

**History: Property Area (cont'd)****Roosevelt past producer (cont'd)**

A shipment of about 13.5 tonnes, probably from the Silver adit, was sent to Trail in 1915. Assays from the shipment were 8.9 grams per tonne gold, 3462.9 grams per tonne silver, 34 per cent lead and 8 per cent zinc (Assessment Report 8095). The claims were purchased by Feezey and Oliver in 1933. Minor exploration, including some drifting, was done during 1934-35. The claims were subsequently acquired by Rufus-Argenta Mines, formed in 1955. In 1966, the company name was changed to Crest Ventures Limited. During 1966-67, Crest Silver Company Limited, a subsidiary of Crest Ventures, acquired the claims and carried out geological mapping and cleaned out the old adits. In 1968, a 45 kilogram bulk sample from the Silver adit assayed 56.2 grams per tonne gold, 3737.2 grams per tonne silver, 1.03 per cent copper, 23.42 per cent lead and 12.28 per cent zinc (Assessment Report 8095). During 1970-73, Ardo Mines Ltd. optioned the property and carried out prospecting, magnetometer and electromagnetic surveys and surface drilling near the Silver adit (3 holes, totalling 40 metres), underground drilling in the Silver (7 holes, totalling about 285 metres) and Copper (5 holes), adits and underground development on both the Silver and Copper adits.

The latter work included the emplacement of two drifts, for mining and haulage, about 7.5 metres below the Silver adit. An estimated 5000 tonnes was mined from a single shrinkage stope in the Silver adit during 1972-73. An unknown quantity was shipped to the Adams Milling Ltd. mill at the mouth of Bitter Creek in 1973. The operations ceased in mid-1973 due to severe dilution in the stope. During 1979-80, Beaver Gold Resources Inc. optioned the property and carried out mapping, rock and soil sampling, and drilled 3 holes (totalling 95 metres) from the haulage drift to test the mineralization below the lower drift.

In 1984, the property was owned by Grey Silver Mines Ltd. That year Maralgo Mines Limited optioned the property and flew an airborne VLF-EM and magnetometer survey over the area and conducted geological mapping, prospecting and sampling near the occurrence. No further work was reported until 1989 when Grey Silver Mines performed geological mapping, sampling and soil surveys in the area. The following year Varitech Resources Ltd. conducted a program of geological mapping, prospecting, sampling and soil, VLF-EM and magnetometer surveys in the area. This work included resampling of the Silver and Copper adits.

**ROCK OF AGES** prospect (Noranda/Kuroko massive sulphide Cu-Pb-Zn, I05:

Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 134

One kilometre east

The Dalhousie Mining Company Limited acquired the Rock of Ages claim group and conducted work during 1925-28. The showing, or the nearby Glacier showing, was probably discovered during this time and may be the vein referred to as the No. 4 vein in the Minister of Mines Annual Report 1929 (page 92). No further work was reported until 1979 when Tournigan Mining Explorations Ltd. carried out geological mapping, prospecting, trenching and sampling. In 1983, Rich Lode Gold Corporation entered into an agreement with Tournigan and performed some prospecting near the showing. In 1986, Moche Resources Inc. acquired the Rock of Ages claims and conducted a program comprising airborne and ground VLF-EM and magnetometer surveys, soil and silt geochemical surveys and geological mapping.

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**History: Property Area (cont'd)****Rock of Ages prospect (cont'd)**

*In 2010, geological mapping, geophysical surveying and rock and soil sampling was carried out on the MC claims on behalf of REC Minerals Corp. and included 95 soil and 22 rock samples and total field magnetometer surveying along 1.9 kilometres.*

**SILVER BUTTE** *past producer (Polymetallic veins Ag-Pb-Zn+/-Au, Epithermal Au-Ag: low sulphidation, Subaqueous hot spring Ag-Au, Intrusion-related Au pyrrhotite veins, Noranda/Kuroko massive sulphide Cu-Pb)*

**MINFILE 104A 150**

*Four kilometres west*

*In 1904, the Big Missouri claim was staked over a large mineral showing on steep bluffs overlooking the Salmon River.*

*In 1911, an 18.3 metre crosscut was driven towards a large surface showing on the Big Missouri claim. In 1914 a sample taken across a 13.72 metres cut returned 3.42 grams per tonne gold and 205.68 grams per tonne silver (as reported in Assessment Report 32699). In 1915, the crosscut tunnel was extended 6.09 metres. In 1916, a composite sample taken from 120 boulders of a large slide located on the Big Missouri claim gave an average grade of 4.45 grams per tonne gold and 16 grams per tonne silver (as reported in Assessment Report 32699)*

*In 1930, Buena Vista Mining completed limited trenching on the Big Missouri claim.*

*In 1939, Buena Vista Mining conducted a surface sampling program on the Missouri claim. A series of surface samples near the west corner the Big Missouri claim returned values averaging 14.39 grams per tonne gold and 11.65 grams per tonne silver across a width of 16 metres (as reported in Assessment Report 32699)*

*In 1969, Lockwood Survey Corporation conducted an airborne EM and magnetometer survey of the Salmon River Valley.*

*In 1971, El Paso Mining and Milling Company conducted a soil geochemical survey over the Winer claim. 1975 Canex Placer Limited prospected the property area.*

*In 1978, Consolidated Silver Butte Mines Ltd. prospected and trenched the property. Two previously undiscovered mineralized outcrops were found.*

*In 1979, Consolidated Silver Butte Mines Ltd. conducted a widespread IP geophysical survey over the property.*

*In 1980, Esso entered into an agreement to explore the Silver Butte property and completed a soil survey in that year over portions of the Big Missouri, Packers Fraction and Winer claims. A 400 metres by 500 metres soil area was sampled along east-west lines located 100 metres apart. The samples were taken at 25 metres intervals, except in the area overlying the geophysics anomaly, where samples were taken at 10 metres intervals. The samples yielded up to 2.6 grams per tonne gold, up to 27.2 grams per tonne, up to 0.43 per cent lead, and 0.24 per cent zinc. (as reported in Assessment Report 32699).*

*In 1981, Esso continued surface exploration consisting of geological mapping and sampling.*

*In 1982, Esso drilled 22 diamond drill holes totaling 1,375 metres and excavated 17 trenches (the total length of the trenches is unknown). The soil survey area was extended and combined with other Esso soil surveys in the Salmon River valley.*

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**History: Property Area (cont'd)****Silver Butte** past producer (cont'd)

The combined survey contained approximately 1,720 samples. Lloyd Wilson, an Esso geophysicist, ran an induced polarization survey over the Winer claim. A total of 2 km of lines were surveyed. A chargeability anomaly was measured over heavy mineralization in the Face Cut #2 trench area (Facecut-35 Zone) and near diamond drill holes SB-15 and -16.

In 1983, a total of 1,680 metres of diamond drilling in 14 holes and 210 metres of trenching in 5 trenches was completed. L. Wilson conducted an induced polarization survey over the Anomaly Creek – North Gully fault block. The anomalies detected in 1982, near the Granduc Road (near drill holes SB-15 and -16), were confirmed in the 1983 survey. However, the anomalies decrease rapidly with depth. Downhole resistivity was tested in several holes from the 1982 drill program; namely holes SB-15, -16, -20, -21 and -22. These drill holes showed a poor resistivity contrast down the hole. The possibility of a successful charged potential survey over the Facecut-35 Zone was considered small. The GENIE system was used to conduct an electromagnetic survey over the grid area. No anomalous responses were found.

In 1985, Esso purchased the Kansas Crown granted claim. Subsequently, Tenajon Resources (formerly Tenajon Silver) entered into an option agreement with Esso, whereby Tenajon could earn a 50% interest by spending \$1,200,000 over a four-year period.

In 1986, Tenajon drilled 4 surface diamond drill holes totaling 996 metres. In 1986, Tenajon collared and drove an adit 20 m in overburden before abandoning it. In 1987, Tenajon collared an adit and completed 90 m of drifting. In 1987, Tenajon conducted a surface diamond drill program totaling 3,810 metres in 23 holes. In 1988, underground drifting and diamond drilling commenced. Surface works including road building, diamond drilling, geological mapping and surveying were completed. Thirty-six underground diamond holes were completed for a total of 3,064 metres and 23 surface diamond holes for a total of 4,443 metres. During 1988 the drift was extended 773 metres on the 810 level with 63.5 m of crosscut on the Facecut Zone, 39.7 metres of crosscut on the 35 Zone and 17 m of sub-drift on the Facecut Zone. Road construction included 2.9 km of new roads.

In 1989 Tenajon continued the drilling program and drilled 2,826.5 metres in 15 surface holes and 1,510.4 metres in 17 underground holes.

In 1990, Tenajon completed 2,544.9 metres in 16 surface holes and 899.4 metres in 16 underground holes. Westmin Resources entered into an option agreement with Tenajon and subsequently completed 1,833.7 metres in 13 surface holes and 643.3 metres in four underground holes.

In 1993, work included major underground development including a 19 metre extension to the 810 level, followed by a program of underground drilling which totalled 1,967 metres of AQ size core in 85 holes.

In 1994, Westmin continued a major program of underground development including 168 metres of development drifting on the 895 sub-level at the south end of the drift developed in 1993 followed by 3,507 metres of drilling in 62 underground holes.

Between 1987 and 1994, the previous operators of the property completed approximately 1,220 m of underground drifting on three levels, 103.2 m of crosscutting on one level and 130 m of Alimak raising. This included: 883 m of drifting and 17 m of sub-drifting on the Facecut zone on the 810 level; 250 m of drifting on the 895 level; 70 m of drifting on the 917 level; two crosscuts from the 810 level to the Facecut and 35 zones.

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**History: Property Area (cont'd)****Silver Butte** past producer (cont'd)

*In 1995, Westmin initiated various ore reserve studies on the Kansas and West Kansas ore zones.*

*In 1996, due to the closure of the Premier Gold Mine in April 1996, all activity ceased on the Silver Butte property.*

*In October 2003, Uniterre Resources Ltd, which was the registered owner of the Big Missouri, Winer and Packers reverted Crown grants allowed them to expire. Subsequently, Mountain Boy Minerals staked these claims, taking control of all 22 claims of the Silver Coin asset.*

*From 2004 to 2010, a total of 50,305 metres of drilling from 324 surface holes was completed by Mountain Boy Minerals and Jayden Minerals to expand and infill the known mineral resources in the Main Breccia zone of Silver Coin property.*

*In 2011, 17,468 metres were drilled in 109 holes. Drilling focused on filling gaps for resource calculations, presumably focusing on the Main Breccia zone ([www.jaydenresources.com](http://www.jaydenresources.com)).*

**SEBAKWE** past producer (Intrusion-related Au pyrrhotite veins, Subaqueous hot spring Ag-Au)

MINFILE 104A 153

Two kilometres southwest

*The Sebakwe orebody, part of the Silbak Premier mine (104B 054), is located 250 metres north and slightly east of the B.C. Silver orebodies (104B 155) 22 kilometres north of the community of Stewart. Mineralization was first discovered as silver-bearing stringers in tuffs and the orebody was intersected 300 metres along a tunnel driven from the east fork of Cooper Creek in 1926. The property along with the B.C. Silver Mines holdings and the Premier mine was amalgamated into British Silbak Premier in 1935. For a more extensive capsule geology and bibliography refer to the Silbak Premier mine (104B 054).*

**HISTORY: PROPERTY**

The history on MINFILE reported showings, prospects, and past producers within the Ind 402839 Claim Group are reported as follows

**MONTROSE** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 033

Within Tenure 584057

*The Mocatrose and Waterloo claims were originally held by Lydden, Pederson, McDonald and Peardon as part of the Red Cliff group in 1908. The Montrose, Waterloo and Waterpump zones were likely discovered at that time. That year the claims were sold to Smith who formed the Red Cliff Mining Company. No further work was reported on the Mocatrose and Waterloo claims until 1921 when Trites, Woods and Wilson purchased the claims and conducted minor work on the Montrose and Waterloo occurrences. During 1939-41, Haywood purchased the claims and worked on the Montrose occurrence, including the emplacement of two (?) adits. The following shipments were made from the Montrose zone during 1939-41 (Assessment Report 17465): a) 4.8 tonnes grading 102.5 grams per tonne gold, 349.7 grams per tonne silver and 0.2 per cent copper, b) 35.4 tonnes grading 91.9 grams per tonne gold, 95.7 grams per tonne silver, 0.69 per cent copper, 4.98 per cent lead and 4.53 per cent zinc, and c) 19.3 tonnes grading 65.5 grams per tonne gold, 49.4 grams per tonne silver, 1.50 per cent copper, 1.80 per cent lead and 5.30 per cent zinc. In 1941, a shipment of 31 tonnes produced 2537 grams of gold, 1190 grams of silver and 248 kilograms of copper.*

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**History: Property Area (cont'd)****Montrose past producer (cont'd)**

*In 1946, the Yale Mining Company Limited sampled the Montrose and Waterloo zones. In 1950, Yale Lead and Zinc Mines Limited conducted about 600 metres of drilling, mainly on the Montrose zone. In 1959, Oro Fino Mines Ltd. optioned the property but no work was reported. In 1968, the claims were owned by International Mogul Mines Limited. In 1972, Citex Mines Ltd. acquired a three year lease on the property. No further work was reported on the Montrose and Waterloo zones until 1979 when Page and Skimming sampled the zones. In 1987, Joutel Resources Ltd. carried out a comprehensive program on the zones comprising trenching, mapping, soil, silt and rock geochemical surveys and diamond drilling (3 holes totalling 581.1 metres) on the Montrose zone.*

**BIG CASINO** showing (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A.034

Within Tenure 584069

*In 1908, the Big Casino group (Big Casino (Lot 4529), Jack of Clubs (Lot 4530), Little Casino (Lot 4532), Lookout Fr. (Lot 4531) and Ouray Fr. (Lot 4533) claims) was owned by Neff, Carpenter and Rabb. During 1910-11, the Big Casino Mining Company Ltd. explored the property in a series of opencuts and a 33 metre long adit. The claims were Crown granted to A.J. Martin in 1925. No further work was reported. Leemac Mines Ltd. acquired the claims in 1973.*

**RED CLIFFE** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 037

Within Tenure 600001

*The Red Cliff mine is on the west bank of Lydden Creek, immediately west of the confluence of American Creek and the Bear River, 19 kilometres north of Stewart. The portal to a lower, 425 metre long access tunnel (700 level) is at an elevation of 146 metres and is located on the east bank of Lydden Creek, about 700 metres west of the Stewart highway. Two portals (North and South) access the 1000 level and are located on the west bank of Lydden Creek, about 500 metres north-northwest of the portal of the lower tunnel. A fourth portal (Upper portal) lies about 30 metres above the North and South portals.*

*The Red Cliff group (Red Cliff, Montrose (104A 033), Mount Lyell (Lot 77), Little Pat (104A 062), Waterloo (104A 033) and Mac and Dot Fractions) were originally held by Lydden, Pederson, McDonald and Peardon who did some open cutting and drove tunnels in 1908. Apparently, other zones were discovered at the same time (Montrose, Waterloo). That year the property was sold to A.E. Smith, who formed the Red Cliff Mining Company. Between 1908-12, about 2385 metres of underground development was carried out on five (?) levels on the Red Cliff mineralization, including four portals, a long access tunnel and raises. The Red Cliff mine was the first significant mine in the Stewart area; it was linked to Stewart by road and rail. About 200 tonnes of ore grading 5 per cent copper was stockpiled in 1910; an additional 1.4 tonnes was shipped to the Tyee smelter and yielded 8.25 per cent copper, 83.7 grams per tonne silver and \$5 per ton gold (1910 prices). In 1912, upon completion of the railway, a further 1133 tonnes of ore was shipped to the Tacoma smelter and another 2030 tonnes was placed on ore dumps. A total of 2411 grams of gold and 40,100 kilograms of copper was recovered. The mine closed in 1912. The property remained idle until 1921, when Trites, Woods and Wilson purchased the property and carried out minor work on the Montrose and Waterloo zones. Little further work was reported until 1939, when H.D. Haywood purchased the claims from the estate of Wilson.*

**History: Property Area** (cont'd)**Red Cliffe** past producer (cont'd)

That year a camp and trail were built and during 1939-40 Haywood worked on the Montrose zone; about 40 tonnes of ore were shipped from the Montrose zone during this period. In 1941, 10 tonnes (averaging 9.23 per cent copper, 1.09 per cent zinc, 8.9 grams per tonne gold and 75.4 grams per tonne silver) was high graded from the 700 level(?) of the Red Cliff deposit and a 19.3 tonnes of ore was high graded from the Montrose zone. In 1946, the Yale Mining Company, Limited optioned the property and sampled the Montrose and Waterloo zones. In 1950, Yale Lead and Zinc Mines Limited completed about 600 metres of drilling on the Montrose (?) zone. In 1959, Oro Fino Mines Ltd. optioned the property; no work was reported. In 1968, International Mogul Mines Limited acquired the property through amalgamation of several companies, including Yale Lead and Zinc.

In 1972, Citex Mines Ltd. acquired a three year lease on the property from International Mogul and subsequently entered into an agreement with Adam Milling Ltd. The latter company built a 110 tonnes-per-day mill at the mouth of Bitter Creek and reopened the Red Cliff mine in April, 1973. The 700 level was rehabilitated and open stoping commenced. However, due to unsafe conditions, the Ministry of Mines closed the mine in September, 1973. Apparently, 3768 tonnes of ore were shipped to the mill from the mine and old dumps (this tonnage may include some ore from the Roosevelt deposit (104A 069)). Some drilling was also reported in area of the Red Cliff deposit that year. Little further work has been reported since 1973.

In the late 1970s, limited work was done underground and, in 1979, Page and Skimming carried out sampling on the Red Cliff, Montrose and Waterloo zones. In 1987, Joutel Resources Ltd. entered into a joint venture agreement with B.L. Carlson and V.N. Harbinson on the Red Cliff claim group and staked two grid claim blocks. That year Joutel conducted a comprehensive program, focusing mainly on the Montrose and Waterloo zones, comprising trenching, geological mapping, soil, silt and rock sampling and diamond drilling (six holes totalling 1007 metres) on the Montrose and Ridley Road zones.

**INDEPENDENCE** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 038

Within Tenure 402839

The area of the showing may have originally been covered by the Initial claim group (Geological Survey of Canada Map 28A), located before 1913 (Geological Survey of Canada Memoir 32, page 51). The Independent and Independent 1-5 claims were owned by the Fitzgerald brothers from about 1919. The Algunican Development Company Ltd. optioned the property in 1920 and drilled two holes; results were disappointing. In 1921, the owners commenced an exploration adit. In 1924, the Independence Gold Mining Company was formed. Revenue Mining Company Ltd. acquired a majority interest in the company in 1926. In 1928, about 1000 metres of drilling was done on the main vein; the results are not known. Several (four?) exploration adits were driven before 1929.

Two adits were driven on the main area; two other adits were emplaced about 220 metres to the northeast. Several opencuts were made above adits 1 and 2 on the main vein. Canex Aerial Exploration apparently did some work in 1965; the results are not available. No further work was reported until 1980 when Tournigan Mining Explorations Ltd. conducted geological mapping in the area of the showings, and underground work on the Independence claims.

In 1984, Tournigan conducted further geological mapping and stream sediment surveys in the area; no work was reported on the showing.



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**History: Property Area (cont'd)****Independence past producer (cont'd)**

In 1986, Moche Resources Inc. acquired the Rock of Ages (104A 133-135, 137) group, including the Big Casino and Independence claims. The showings were included in the Big Casino claim. That year Moche Resources flew a heliborne VLF-EM and magnetometer survey over the area and carried out soil, silt and rock sampling and conducted geological mapping. In 1988, Moche conducted follow-up exploration to increase the strike length of the veins. In 1990, Remington Creek Resources Inc. subsequently acquired the Independence-Big Casino property and entered into an agreement with Armeno Resources Inc.-Armenex Resources Canada Inc. Further exploration work, including diamond drilling, was conducted in 1990. Armenex drilled 11 holes, mapped and sampled the area in 1991.

**A & T** prospect (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 040

Within Tenure 579281

The A & T claim group was prospected by Tooth, Armstrong and Howse in 1928. The following year Cominco carried out about 470 metres of drilling; results were disappointing and Cominco terminated the option. The owners carried out prospecting in 1930. No work was reported until 1984 when Tournigan Mining Explorations Ltd. conducted geological mapping and stream sediment surveys on the Independence 1 claim, which covered the A & T showings. No work was reported on the showings. In 1986, Moche Resources Inc. acquired the Rock of Ages group (104A 133-135, 137) (which included the Independence 1 claim); no work was reported on the showings.

**DALY SULLIVAN** prospect (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 073

Within Tenure 593867

The Daly (Lot 3685), Sullivan (Lot 3684), S. and D. and Mahood Fraction claims were located in 1910. The Daly and Sullivan claims were Crown granted to McDonald and Winkler in 1917. The fractional claims (and one-half interest in the Daly and Sullivan claims) were acquired by Mahood Mines Limited in 1920(?). In 1922, the company name was changed to American Mining and Milling Company Limited. Open cutting and one adit were reported on the property. The Daly and Sullivan claims (and the Vandal Fraction, formerly the S. and D. Fraction?) were included in the Slate group in 1979. That year, Ocean Home Exploration Ltd. conducted geological mapping on the claims. Esso Resources acquired the claims from Houston Oil and Minerals in 1982.

In 1987, Claimer Resources Inc. entered into an option agreement with Esso. In 1992, an exploration program was carried out on the Shure property on behalf of Homestake Canada Ltd. The Shure property covers the Daly-Sullivan (104A 073), Lakeshore (104A 092), Bush (104A 097) and Start (104A 138) showings. Work included drill testing the Rama Vein (104A 097) in addition to a ground resistivity, induced polarization and magnetometer survey over the Rama Vein and adjacent showings. Seven diamond-drill holes were completed totalling 674.5 metres; six holes were on the Rama Vein and one on the Gully Stockwork (104A 097). In total, 10.6 kilometres of induced polarization/resistivity survey and 13.3 kilometres of magnetic survey were completed.

**TOURNIGAN** showing (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 131

Within Tenure 402839

Little is known about the early exploration work on the showing. It was probably covered by the Independence group of claims during the 1920s.

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

The old prospect pit may have been emplaced during that period. In 1984, Tournigan Mining Explorations Ltd. carried out a geological mapping program and stream sediment survey over the Independence claims and reported on the showing. In 1986, Moche Resources Inc. acquired the Rock of Ages group, including the Big Casino and Independence claims; the showing was included in the Big Casino claim.

That year Moche Resources flew a heli-borne VLF-EM and magnetometer survey over the area, carried out soil, silt and rock sampling and conducted geological mapping. In 1988, Moche conducted follow-up exploration. In 1990, Remington Creek Resources Inc. subsequently acquired the Independence-Big Casino property and entered into an agreement with Armeno Resources Inc.-Armenex Resources Canada Inc. Further exploration work, including diamond drilling, was conducted in 1990. Armenex drilled 11 holes, mapped and sampled the area in 1991.

**INDEPENDENCE 1** showing (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 132

Within Tenure 592891

The area of the showing may have originally been covered by the Initial claim group (Geological Survey of Canada Map 28A), probably on the Big Casino (104A 038) claim to the north, located before 1913 (Geological Survey of Canada Memoir 32, page 51). From about 1919, the showing was covered by the Independent and Independent 1-5 claims which were owned by the Fitzgerald brothers. In 1924, the Independence Gold Mining Company Ltd. was formed. Revenue Mining Company Ltd. acquired a majority interest in the company in 1926. A nine metre long exploration adit (No. 5 adit) was driven on the showing probably before 1929(?). Canex Aerial Exploration apparently did some work in the area in 1965; the results are not available.

In 1980, Tournigan Mining Explorations Ltd. conducted geological mapping near the showing on the Independence property. In 1984, Tournigan conducted further geological mapping and stream sediment surveys in the area; no work was reported on the showing. In 1986, Moche Resources Inc. acquired the Rock of Ages group, including the Big Casino and Independence claims, and reported on the showing. The occurrence was included in the new Big Casino claim. That year Moche Resources flew a heli-borne VLF-EM and magnetometer survey over the area, carried out soil, silt and rock sampling and conducted geological mapping. Remington Creek Resources Inc. subsequently acquired the Independence-Big Casino property and entered into an agreement with Armeno Resources Inc.-Armenex Resources Canada Inc. in 1990. Further exploration work was conducted in 1990. Armenex drilled 11 holes, mapped and sampled the area in 1991, primarily on the Big Casino claim (104A 038) to the north.

**GEOLOGY: PROPERTY AREA**

The geology on some of the more significant mineral MINFILE reported showings, prospects, and past producers peripheral to the Ind 402839 Claim Group are reported as follows. The distance is relative to the 12 claim Ind 402839 Claim Group.

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**Geology: Property Area (cont'd)****TERMINUS** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 016

Three kilometres north

*The area is underlain by north trending, east-dipping rocks of the Lower Jurassic Unuk River Formation (Hazelton Group) (Bulletin 58; 63). Green andesite tuff and agglomerate, with interbeds of siltstone and minor limestone, lie on the eastern limb of the north-northwest trending American Creek anticline. Several types of dikes and intrusions have been reported. They include quartz feldspar porphyry stockworks and dikes, siliceous dikes, andesite or basalt dikes and diorite and granodiorite stocks and/or dikes.*

*North to north-northeast trending shears are the most important structural features. They include the mineralized Terminus, Evans and Camp shears. These shears have been traced for 1000, 700 and 200 metres, respectively. East-trending shears, faults and joints appear to postdate the mineralized shears.*

**RUBY SILVER** showing (Subvolcanic Cu-Ag-Au (As-Sb), Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 039

Two kilometres east

*The immediate area of the showing is underlain by Unuk River Formation argillites and siltstones that are locally overlain by andesitic to dacitic volcanoclastics. A prominent north-northeast trending fault lies just west of the showing.*

*The area is underlain by Hazelton Group rocks of the Upper Triassic to Lower Jurassic Unuk River Formation unconformably overlain, to the east, by the Middle Jurassic Salmon River Formation (Bulletin 58, 63). An augite diorite stock intrudes the Unuk River Formation, north of the property.*

**AZTEC** prospect (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 043

One kilometre southwest

*The area is underlain by generally north striking, west dipping rocks of the Lower Jurassic Unuk River Formation (Hazelton Group) (Bulletin 58; 63). Near the Tillamook claim the andesitic volcanics are intruded by north-northwest to northwest trending lamprophyre and augite-hornblende-feldspar porphyry dikes. Several northwest and east-northeast trending faults are conspicuous in the area (Assessment Report 759).*

**BIG MISSOURI** past producer (Polymetallic veins Ag-Pb-Zn+/-Au, Noranda/Kuroko massive sulphide, Cu-Pb Subaqueous hot spring Ag-Au)

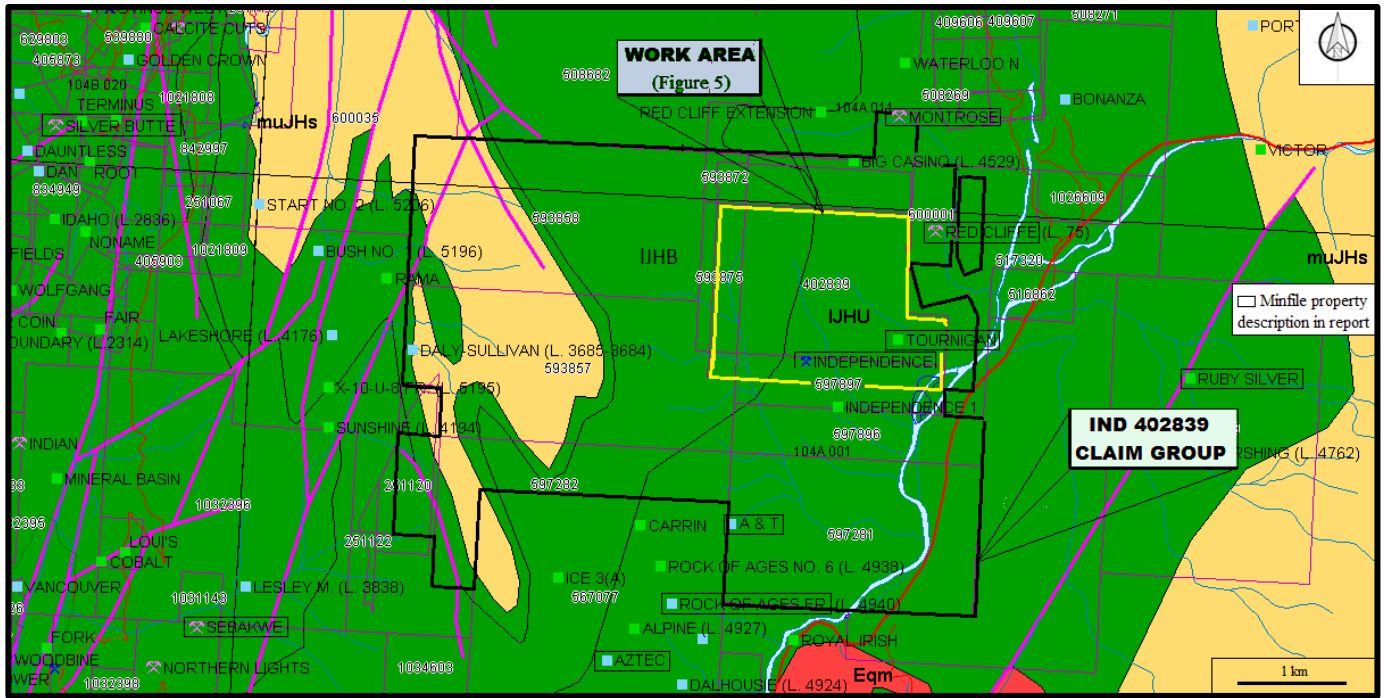
MINFILE 104B 046

Six kilometres northwest

*The Big Missouri deposit lies within the Stewart Complex, a belt of deformed volcanic, sedimentary and metamorphic rocks belonging to the Lower-Middle Jurassic Hazelton Group. The complex is situated between the Coast Crystalline Belt to the west and the Bowser Basin to the east. The Hazelton rocks are intruded by granodiorite of the Early Jurassic Texas Creek Plutonic Suite and are cut by andesite, granitic and lamprophyre dykes of Tertiary age. The Portland Canal dyke swarm occurs to the north.*

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

**Figure 4. Property Geology, Index, Claim, & Minfiles**  
(Base map from MapPlace)



**GEOLOGY MAP LEGEND**

**Eocene**

**Eqm**

- Coast Plutonic Complex(?)
- Quartz monzonitic intrusive rocks

**Lower Jurassic**

**IJHU**

- Hazelton Group
- Unuk River Formation
- Andesitic volcanic rocks

**Lower Jurassic**

**IJHB**

- Hazelton Group
- Betty Creek Formation
- volcaniclastic rocks

**Middle Jurassic to Upper Jurassic**

**muJHs**

- Hazelton Group
- Undivided sedimentary rocks

**Middle Jurassic to Upper Jurassic**

**muJHM**

- Hazelton Group
- Mount Dilworth Formation
- Calc-alkaline volcanic rocks

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**Geology: Property Area (cont'd)****Big Missouri** past producer (cont'd)

The host rocks consist of south-southeast striking, moderately dipping andesite, agglomerate and lapilli tuff with interbedded cherty tuff of the Unuk River Formation (Hazelton Group). The rocks are weakly schistose and have undergone several periods of faulting. To the east, the andesites are overlain by sediments, tuffs and siltstones of the Betty Creek, Mount Dilworth and Salmon River formations respectively, all of the Hazelton Group.

Three mineralized horizons, consisting of several cherty tuff bands with disseminated sulphides to semi-massive sulphide lenses, occur within the andesites. The cherty tuff horizons are silica-rich beds containing sericitized and silicified (bleached) andesite fragments, occasional rounded chert fragments, variable amounts of carbonaceous material, carbonate and sulphide minerals. North striking vertical faults locally juxtapose the mineralized cherty tuff with the bleached andesite horizons. The Lower Horizon contains the Dago Hill zone (104B 045), the Middle Horizon contains the S-1 (104B 084) and Big Missouri zones, and the Upper Horizon contains the Province East (104B 147) and Province West (104B 136) zones.

Stratabound semi-massive to massive lenses, pods and stringer zones of pyrite, sphalerite, galena and chalcopyrite with gold and silver occur within and at the contact of thin cherty tuff beds. The massive sulphides are well laminated in beds up to 0.3 metres thick, generally at the base of the cherty horizon. Electrum, acanthite, native silver, native gold, tetrahedrite, argentite, polybasite, pyrrhotite and freibergite occur as small grains on grain boundaries and fractures in the sulphides and within quartz gangue.

The footwall andesites are silicified and contain abundant sericite, chlorite, carbonate minerals and fine disseminated pyrite. Andesites overlying the cherty tuff beds are more intensely sericitized and silicified. The Middle Horizon contains abundant calcite and iron carbonate.

In addition to the stratabound mineralization, numerous late quartz-carbonate-chlorite veins containing coarse-grained pyrite, sphalerite and galena crosscut the altered andesites and cherty tuffs.

**ST. ELMO** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 048

Seven kilometres east

The area is underlain by northeast striking, southeast dipping argillites of the Middle Jurassic Salmon River Formation (?) (Hazelton Group). These rocks are intruded by grey-green, medium grained sill-like intrusions (Minister of Mines Annual Report 1947, page 91).

**PREMIER** past producer (Epithermal Au-Ag: low sulphidation, Polymetallic veins Ag-Pb-Zn+/-Au, Intrusion-related Au pyrrhotite veins)

MINFILE 104B 054

Six kilometres southwest

The mine is located in the Intermontane Belt bounded on the west by the Coast Crystalline Complex and on the east by the Bowser Basin, in the volcanic arc assemblage of the Stikinia Terrane. The Premier deposit is hosted by Lower-Middle Jurassic andesitic to dacitic volcanic rocks, correlated with the Hazelton Group, Unuk River Formation. The Hazelton Group is a northwest trending belt of folded andesitic to dacitic metavolcanic rocks containing a thick sequence of argillites and siltstones infolded along a synclinal axis.

**Geology: Property Area (cont'd)****Premier past producer (cont'd)**

The orebody is hosted in aphanitic andesite, monolithic andesite breccia and lapilli tuff of the Unuk River Formation. The andesite, at least 750 metres thick, is intruded by Early Jurassic Texas Creek Plutonic Suite dacitic porphyry dykes and is unconformably overlain by volcanoclastic and epiclastic rocks. The mixed green and maroon heterolithic volcanoclastic rocks form the bulk of the Bear River ridge directly east of Silbak Premier. There are three varieties of porphyritic dacite: 1) potassium feldspar porphyry, 2) hornblende-plagioclase porphyry and 3) maroon porphyry. They are hypabyssal members of the Texas Creek Plutonic Suite. These porphyries are characteristically blocky weathered and less foliated than the andesite or tuff.

The potassium feldspar porphyry, historically known as the "Premier Porphyry", is spatially associated with the ore. This association is believed to indicate a Lower Jurassic mineralization age. Hornblende-plagioclase porphyry is texturally similar to potassium feldspar porphyry but contains few or no quartz or potassium feldspar phenocrysts. Maroon porphyry, distinct with a maroon to purple groundmass, is higher structurally and all known mineralization lies stratigraphically and structurally below it.

The dominant structures at Silbak are pencil lineations, extensional white barren quartz veins and joints. Bedding attitudes are limited; an overall moderate northwest dipping section has been established based on drill results and sparse, controversial surface data. A pervasive northwest dipping phyllitic chlorite-sericite foliation is best developed in andesites. The ore is predominantly discordant but locally concordant with the moderately northwest dipping andesite flows, breccias and dacite flows. Narrow zones (less than 2 metres wide) of easterly striking, steeply dipping planar fabrics are exposed locally. Heterolithic epiclasts in a few outcrops are elongated and are collinear with the pencil lineations.

Hydrothermal alteration zones related to the mineralizing system are represented by a proximal silicification/quartz stockwork and potassium feldspar and/or sericite facies potassic alteration. Peripheral to mineralization is a propylitic alteration assemblage of carbonate, chlorite and pyrite. The variable intensity and type of alteration is partially controlled by fracture intensity and host lithology, and presumably, elevation in the hydrothermal system. The green weathering andesites are propylitically altered with ubiquitous disseminated pyrite, chlorite and sericite. The least altered samples contain small (less than 1 millimetre long) plagioclase and hornblende phenocrysts in an aphanitic groundmass. Rare amygdules are evident in drill core (P. Wodjak, personal communication, 1986). The most characteristic feature of the andesite package is the pervasive carbonate, chlorite and clay alteration around the deposit.

**ROOSEVELT past producer (Polymetallic veins Ag-Pb-Zn+/-Au)**

MINFILE 104A 069

Seven kilometres southwest

The area is underlain by north to north-northwest striking, predominantly west dipping slates and argillites of the Middle Jurassic Salmon River Formation (Hazelton Group) (Bulletin 63). These rocks are commonly deformed by north trending folds and faults. Dikes are conspicuous in the area. Granite, granodiorite and quartz monzonite dikes, typically up to 30 metres wide, trend northwest and dip west. Crosscutting, much narrower diabase or lamprophyre dikes are less common.

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

**ROCK OF AGES** prospect (Noranda/Kuroko massive sulphide Cu-Pb-Zn, I05: Polymetallic veins Ag-Pb-Zn+/-Au)  
MINFILE 104A 134  
One kilometre east

*The area is underlain by north striking, west dipping Lower Jurassic Unuk River Formation (Hazelton Group) volcanics (Bulletin 58; 63). These rocks comprise mainly andesitic tuffs, breccias and flows; a unit of porphyritic rhyolite to dacite flows and tuffs, about 150 metres thick, lies at or about the stratigraphic level of the mineralization (Assessment Report 7841). North-northwest trending andesite porphyry dikes and associated faulting cut the felsic rocks near the showing (Assessment Report 16082). Both andesitic and felsic rocks are extensively pyritized near the mineralization.*

**SILVER BUTTE** past producer (Polymetallic veins Ag-Pb-Zn+/-Au, Epithermal Au-Ag: low sulphidation, Subaqueous hot spring Ag-Au, Intrusion-related Au pyrrhotite veins, Noranda/Kuroko massive sulphide Cu-Pb)

MINFILE 104A 150  
Four kilometres west

*The property lies within the Stewart complex located in the Intermontane tectonic belt, on the western edge of the Stikinia terrane adjacent to the Coast Plutonic Complex. The region contains rocks ranging in age from late Paleozoic to Quaternary. Permian carbonates and Triassic volcanics form the basal units and are overlain by volcanics and sedimentary rocks of the Lower-Middle Jurassic Hazelton Group. Bowser Lake Group sediments of late Jurassic age overlie the Hazelton Group. Late Triassic to early Jurassic intrusive activity was followed by moderate deformation and regional metamorphism in the Cretaceous. Stocks and dykes intruded the region in the early to middle Eocene (Exploration in British Columbia 1988).*

*Three main rock types are exposed at the Silver Butte occurrence: argillites and andesites of the Hazelton Group and granodiorite of the Jurassic Texas Creek Plutonic Suite. The argillite is carbonaceous and thinly bedded with occasional intercalations of black chert and grey lapilli tuff. These black argillites are thought to be east dipping and may be complexly deformed. The andesites lying above the argillites are the principal unit encountered in drifting. They may be the extrusive equivalent of the Premier porphyry dykes (Exploration in British Columbia 1988). Typically the rock is a pale to dark green andesitic tuff. It varies locally from a fine to medium-grained tuff to a welded ashfall tuff, to a lapilli-stone tuff, to a flow breccia. It is often bleached pale green along fault structures. Both a fine-grained and medium-grained massive andesite was identified with the contact between them often mineralized and silicified.*

*The third rock unit is a porphyritic granodiorite, the Premier porphyry phase of the Texas Creek Plutonic Suite, which contains megacrysts of orthoclase, plagioclase and hornblende within a coarse-grained groundmass. This unit intrudes the other units on the north and to the east of the Anomaly Creek fault. The andesite and porphyritic granodiorite are associated with a subaerial volcanic centre of early Jurassic age centred in the Big Missouri-Premier area. Rocks in the southeastern part of the property are folded about a north to northwest trending axis and are affected by major post-mineral faulting. The Anomaly Creek and North Gully faults are subparallel and arcuate northwest to south trending structures.*

**Geology: Property Area (cont'd)****Silver Butte** past producer (cont'd)

Faults divide the property into three west dipping (45-60 degrees) segments. Right-lateral oblique slip along the faults does not appear to have significantly offset mineralization except on the Anomaly Creek fault. This local structure is a reflection of a larger regional right-lateral strike-slip shear regime. Five mineralized zones have been identified on the property: Facecut, 35, West Kansas, Kansas and Anomaly

**SEBAKWE** past producer (Intrusion-related Au pyrrhotite veins, Subaqueous hot spring Ag-Au)

MINFILE 104A 153

Two kilometres southwest

Located in the Intermontane Belt, the area, bounded on the west by the Coast Belt and on the east by the Bowser Basin, is underlain by the volcanic arc assemblage of the Stikine Terrane.

The deposit is hosted in Upper Triassic to Lower Jurassic Hazelton Group, Unuk River Formation. The Hazelton Group is a northwest-trending belt of folded metavolcanic rocks containing a thick sequence of argillites and siltstones infolded along a synclinal axis. The Sebakwe deposit is a blind orebody capped by barren maroon tuffs.

The ore is hosted by massive andesite, andesite breccia and lapilli tuff intruded by Early Jurassic Texas Creek plutonic suite dacitic porphyry dike. The andesite, at least 750 metres thick, is unconformably overlain by volcanoclastic and epiclastic rocks. Potassium feldspar porphyry (historically known as the "Premier Porphyry") is spatially associated with the ore; this relationship is thought to indicate a Lower Jurassic mineralization age.

**GEOLOGY: PROPERTY**

As indicated by the BC government supported MapPlace geological maps (Figure 4), the Ind 402839 Claim Group is underlain by the upper Triassic Stuhini Group of marine sedimentary and volcanic rocks (uTrSsv) in the north in an east-west fault contact with the lower to mid Jurassic Hazelton Group of marine and sedimentary rocks (lmJHsv) in the middle and early Jurassic unnamed intrusive undivided rocks (Ejgd) in the south.

The geology on MINFILE reported showings, prospects, and past producers within the Ind 402839 Claim Group are reported as follows

**MONTROSE** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 033

Within Tenure 584057

The area is underlain predominantly by north striking, west dipping andesitic tuffs, agglomerates and minor flows of the Lower Jurassic Unuk River Formation (Hazelton Group) (Bulletin 58; 63). North to northwest trending diorite and lesser quartz monzonite dikes of the Portland Canal dike swarm are conspicuous near the Montrose, Waterloo and Waterpump zones (Assessment Report 17465). The area is intensely fractured and faulted. Both north and east trending faults are present; east trending faults are especially prominent and exhibit sinistral transcurrent movement. These faults may have disrupted a previously continuous mineralized zone into the Montrose and Waterpump (and Waterloo?) zones (Assessment Report 17465).

The Montrose zone, reflected by a conspicuous 25 by 35 metre gossan zone, comprises two lenses, the Nos. 1 and 2 lenses.



**Geology: Property** (cont'd)**Montrose past producer**(cont'd)

*These are separated by a series of faults and a 3 to 6 metre wide diorite dike. The lenses contain 5 to 50 per cent fine grained disseminated to massive pyrite, lesser sphalerite and galena, and minor chalcopyrite in a quartz-sericite-carbonate alteration zone.*

*The No. 1 (Main) lens, striking 350 degrees and dipping 80 degrees west, outcrops over a length of 11 metres, height of 9 metres and width of 3 metres. The No. 2 lens lies about 10 metres northwest of the No. 1 lens (Property File - Mandy, 1939).*

*The No. 1 lens contains the best values. In 1987, sampling near the adit assayed up to 7.2 grams per tonne gold, 7.2 grams per tonne silver, 0.94 per cent lead, 0.44 per cent zinc and 0.26 per cent copper across 3.8 metres (Assessment Report 17465). A sample from the fault gouge separating the Nos. 1 and 2 lenses assayed 19.2 grams per tonne gold across 0.70 metre (Assessment Report 17465).*

*Drilling intersected subvertical quartz-pyrite veins, with minor chalcopyrite, that apparently project west of the No. 2 lens. The best drill results were from hole 87-M-2 which intersected up to 8.5 grams per tonne gold over 1.7 metres (Assessment Report 17465). Minor sphalerite-galena veins, in association with amethystine quartz, also occur near these drill intersections.*

**BIG CASINO** showing (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 034

Within Tenure 584069

*The area is underlain by north striking, steeply dipping andesitic tuffs and flows of the Lower Jurassic Unuk River Formation (Hazelton Group) (Bulletin 58; 63). Northwest trending granite and granodiorite dikes, of the Portland Canal dike swarm, intrude the volcanics.*

**RED CLIFFE** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 037

Within Tenure 600001

*The area is underlain predominantly by north striking, west dipping andesitic tuffs, agglomerates and minor flows of the Lower Jurassic Unuk River Formation (Hazelton Group) (Bulletin 58; 63). Immediately east of Lydden Creek, a conformable body of amygdaloidal feldspar porphyry, containing phenocrysts of feldspar and augite, may represent a sill or a flow. Tertiary (?) quartz monzonite, diorite and hornblende porphyry dikes are common. These trend northwest and northeast and are part of the Portland Canal dike swarm (Bulletin 58). The area is intensely fractured and faulted. North trending, west dipping dip slip faults are most conspicuous and appear to be younger than east trending faults.*

**INDEPENDENCE** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 038

Within Tenure 402839

*The area is underlain by north to northeast striking, steeply dipping andesitic flows and tuffs of the Lower Jurassic Unuk River Formation (Hazelton Group) (Bulletin 58; 63). The volcanics are intruded by several closely spaced north-northwest trending quartz monzonite and andesite dikes that form part of the Portland Canal dike swarm (Bulletin 58).*

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**Geology: Property (cont'd)****A & T** prospect (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 040

Within Tenure 579281

*The area is underlain by north striking, west dipping Lower Jurassic Unuk River Formation (Hazelton Group) rocks predominantly comprising andesitic tuffs and breccias (Bulletin 58; 63) intruded by northwest trending granitic dikes (Minister of Mines Annual Report 1930).*

**DALY SULLIVAN** prospect (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 073

Within Tenure 593867

*The area is underlain by Hazelton Group rocks of the Lower to Middle Jurassic Mount Dilworth Formation and overlying Middle-Upper Jurassic Salmon River Formation (Open File 1987-22). These rocks lie on the crumpled west limb of the north-northwest trending Dilworth syncline. Near the showing, brick red to purple volcanoclastics predominate (Assessment Report 7640).*

**TOURNIGAN** showing (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A.131

Within Tenure 402839

*The area is underlain by andesitic tuffs and flows of the Lower Jurassic Unuk River Formation (Hazelton Group) (Bulletin 58; 63).*

**INDEPENDENCE 1** showing (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 132

Within Tenure 592891

*The area is underlain by north to northeast striking, steeply dipping andesitic tuffs of the Lower Jurassic Unuk River Formation (Hazelton Group) (Bulletin 58; 63).*

**MINERALIZATION: PROPERTY AREA**

The mineralization on some of the more significant mineral MINFILE reported showings, prospects, and past producers peripheral to the Ind 402839 Claim Group are reported as follows. The distance is relative to the 12 claim Ind 402839 Claim Group.

**TERMINUS** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 016

Three kilometres north

*The mineralized shears comprise vuggy to brecciated quartz and quartz-carbonate veins with up to 5 per cent pyrite and small blebs of sphalerite, galena and tetrahedrite. Dikes, especially light coloured siliceous ones, are commonly intimately associated with the mineralization and may also be mineralized. The Terminus vein (and accompanying dikes) dips 45 to 50 degrees east in the shear and strikes 005 degrees. Discrete mineralized veins are generally less than 0.6 metre wide. A mineralized quartz vein, breccia and gouge zone in the north stope (on the crosscut level) is up to 2.1 metres wide. The host shear zone is silicified; siliceous dikes form both the footwall and hangingwall. The better mineralization lies along the hangingwall. A sample from the surface assayed trace gold, 7753 grams per tonne silver, 2.24 per cent lead, 0.69 per cent zinc and 0.23 per cent copper across 0.15 metres (Assessment Report 20976).*

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**Mineralization: Property Area (cont'd)****RUBY SILVER** showing (Subvolcanic Cu-Ag-Au (As-Sb), Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 039

Two kilometres east

*The adit has been emplaced on a quartz-carbonate vein containing blebs and disseminations of pyrite and chalcopyrite, locally forming up to 10 per cent of the vein. Malachite and azurite staining is present (Assessment Report 20308). The vein is up to 1.5 metres wide, strikes 110 degrees and dips 68 degrees southwest. The adit follows the footwall of the vein, which, in turn, appears to follow a porphyritic dike (Minister of Mines Annual Report 1924, p. 69).*

*There is some ambiguity regarding the nature of the mineralization at the showing. Geological Survey of Canada Memoir 175 does not mention chalcopyrite, but instead describes the mineralization as comprising "pyrite, galena and sphalerite in a gangue of quartz and calcite" (p. 69). A report by P.E. Peterson, written for Ruby Silver Copper Mines in 1929 and cited in a prospectus of Thios Resources (Property File - April, 1987), mentions 3 tunnels on the property. The locations of these tunnels, presumably driven to explore an east-trending structure, are not known. Tunnel No. 3 may be the Ruby Silver adit. Samples of the vein mineralization in the tunnels assayed from 0.7 to 11.0 grams per tonne gold, 15.4 to 115.2 grams per tonne silver and trace to 9.3 per cent copper over widths of 0.3 to 1.8 metres (Property File - Cited in Thios Resources Inc., Prospectus April, 1987).*

*No significant assay values came from vein samples taken in 1990.*

**AZTEC** prospect (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 043

One kilometre southwest

*Two veins have been reported on the Aztec claims. The 2.7 metre wide Iron vein, at an elevation of 701 metres, comprises quartz containing abundant pyrite and minor chalcopyrite. In 1922, a sample taken across the vein (2.7 metres?) assayed 8 grams per tonne gold (\$4.80 per tonne), 27.4 grams per tonne silver and 1.37 per cent copper (Minister of Mines Annual Report 1922, page 70).*

*The Copper quartz breccia vein, at an elevation of 792 to 1173 metres, is 0.6 to 3.7 metres wide and is mineralized with pyrite, chalcopyrite and minor magnetite (Minister of Mines Annual Report 1922, page 70). In 1920, a sample from the 792 metres elevation assayed 2.34 grams per tonne gold (\$1.40 per tonne), 78.9 grams per tonne silver and 0.3 per cent copper across 0.9 metre (Minister of Mines Annual Report 1920, page 55). At 1173 metres elevation, a 0.6 metre wide vein contains 13 per cent copper ore (Minister of Mines Annual Report 1920, page 55).*

**BIG MISSOURI** past producer (Polymetallic veins Ag-Pb-Zn+/-Au, Noranda/Kuroko massive sulphide,

Cu-Pb Subaqueous hot spring Ag-Au)

MINFILE 104B 046

Six kilometres northwest

*Three mineralized horizons, consisting of several cherty tuff bands with disseminated sulphides to semi-massive sulphide lenses, occur within the andesites.*

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

The cherty tuff horizons are silica-rich beds containing sericitized and silicified (bleached) andesite fragments, occasional rounded chert fragments, variable amounts of carbonaceous material, carbonate and sulphide minerals. North striking vertical faults locally juxtapose the mineralized cherty tuff with the bleached andesite horizons. The Lower Horizon contains the Dago Hill zone (104B 045), the Middle Horizon contains the S-1 (104B 084) and Big Missouri zones, and the Upper Horizon contains the Province East (104B 147) and Province West (104B 136) zones.

Stratabound semi-massive to massive lenses, pods and stringer zones of pyrite, sphalerite, galena and chalcopyrite with gold and silver occur within and at the contact of thin cherty tuff beds. The massive sulphides are well laminated in beds up to 0.3 metres thick, generally at the base of the cherty horizon. Electrum, acanthite, native silver, native gold, tetrahedrite, argentite, polybasite, pyrargyrite and freibergite occur as small grains on grain boundaries and fractures in the sulphides and within quartz gangue.

The footwall andesites are silicified and contain abundant sericite, chlorite, carbonate minerals and fine disseminated pyrite. Andesites overlying the cherty tuff beds are more intensely sericitized and silicified. The Middle Horizon contains abundant calcite and iron carbonate.

In addition to the stratabound mineralization, numerous late quartz-carbonate-chlorite veins containing coarse-grained pyrite, sphalerite and galena crosscut the altered andesites and cherty tuffs.

The mineralized, stratabound cherty tuff and the silica and sericite altered andesite are interpreted to have formed on or near the seafloor, as the result of submarine exhalative activity. The quartz-carbonate-sulphide breccia and stringer zones were either remobilized from the cherty tuff beds into the overlying andesite or precipitated from ongoing exhalative activity (Canadian Institute of Mining and Metallurgy Special Volume 37).

The Big Missouri deposit was mined from 1927 to 1942 mainly from the A zone. This zone consists of an area measuring about 20 by 75 by 150 metres, along a north-northwest trend.

A total of 768,941 tonnes of ore were mined, mostly from 1938 to 1942 inclusive. (This includes 23,223 tonnes in 1931 and 5 tonnes in 1927.). Total recovery included 1,815,918 grams gold, 1,638,412 grams of silver, 1,778 kilograms of zinc and 1,230 kilograms of lead.

Measured geological combined reserves for the S-1 (104B 084), Dago Hill (104B 045), Province (104B 147), Martha Ellen (104B 092), Northstar (104B 146) and Creek (104B 086) deposits are 1,685,200 tonnes grading 3.12 grams per tonne gold and 22.98 grams per tonne silver, at a waste-to-ore strip ratio of 3.7:1 (George Cross News Letter No.102, 1988).

**ST. ELMO** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 048

Seven kilometres east

A mineralized fracture has been traced for about 150 metres in a bleached and pyritized zone, 3 to 6 metres wide. The vein strikes 070 degrees and dips steeply south. The vein is generally less than 5 centimetres wide, but is up to 0.3 metre wide where it crosses intrusive rocks. The vein comprises coarse-grained calcite, galena and sphalerite with minor quartz, tetrahedrite and chalcopyrite.

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**Mineralization: Property Area** (cont'd)**St. Elmo** past producer (cont'd)

Two opencuts expose the upper and lower lenses in the vein. The old adit was driven in the upper lens and shows that the vein decreases from a maximum width of 0.3 metre to 1 centimetre in a length of 6 metres. The adit driven in 1947 was emplaced on the lower lens. A chip sample from the upper lens assayed 2972.6 grams per tonne silver, 8.3 per cent lead, 4.6 per cent zinc, 0.8 per cent copper and 0.69 gram per tonne gold across 18 centimetres (Minister of Mines Annual Report 1947, page 91).

**PREMIER** past producer (Epithermal Au-Ag: low sulphidation, Polymetallic veins Ag-Pb-Zn+/-Au, Intrusion-related Au pyrrhotite veins)

MINFILE 104B 054

Six kilometres southwest

Mineralization occurs along two trends: 1) a steeply northwest dipping, Northeast or Main zone, (60 degrees near surface flattens to 30 degrees by the 6-level) and 2) a steep to vertical Northwest or West zone. These two zones have a combined en echelon strike of 1800 metres, a downdip extent of at least 500 metres and a width of about 10 metres. Most production came from an area within 500 metres of the intersection of these two zones. These trends are believed to represent structural controls to mineralization and emplacement of dacite porphyry intrusions. Similar showings occur in southeastern Alaska but no definite relationship has been established.

There are at least four styles of mineralization with textures ranging from stockwork and siliceous breccia to locally layered and massive sulphide-rich mineralization. Sulphide content varies, generally less than 5 per cent but can be as high as 75 per cent. Although it has not been extensively studied, there is evidence for mineral zonation. The gold content varies laterally and the silver content decreases vertically. Such ore diversity is an indication of the complex and episodic nature to ore deposition.

Ore minerals include pyrite, sphalerite, galena with minor tetrahedrite, chalcopyrite, arsenopyrite and local pyrrhotite. Bonanza ore contains native gold, electrum, pyrargyrite, polybasite, argentite and native silver. Gangue minerals are quartz, potassium feldspar, chlorite, carbonates and others.

A hybrid ore genesis model combining epigenetic vein and porphyry copper characteristics compare well with the features observed.

Production data includes ore from B.C. Silver (104B 155), Sebakwe (104B 153), Northern Lights (104B 053) and Pictou (104B 156).

In 1994, mining was from two main areas, the Northern Light and the Glory Hole zones; proven and probable reserves as of January 1, 1994 were estimated by the company at 151,200 tonnes grading 7.54 grams per tonne gold and 55.2 grams per tonne silver (Information Circular 1995-1, page 7).

Westmin Resources began operations at the Premier gold mine in late May 1989. Production was 550 tonnes per day in 1995, two-thirds from Glory Hole fill recovered via a decline from 515 bench in the open pit, and one-third from pillars and ore on 4-level (Information Circular 1996-1, page 7).

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

Westmin completed 6900 metres of drilling in 84 holes resulting in proven and probable reserves of 261,000 tonnes grading 7.9 grams per tonne gold and 35.3 grams per tonne silver; and possible reserves of 151,000 tonnes grading 8.6 grams per tonne gold and 30.9 grams per tonne silver (T. Schroeter, personal communication, 1996).

Production at the Westmin Resources Limited Premier gold mine during 1995 totalled 580 kilograms of gold and 6235 kilograms of silver from 179,500 tonnes of ore milled at a daily throughput of 490 tonnes. Reserves estimated by the company at January 1, 1996 were 260,000 tonnes grading 4.65 grams per tonne gold and 68.0 grams per tonne silver (Information Circular 1997-1, page 9). During 1996 mill feed came from the Glory Hole and other underground areas. Underground mining was suspended on April 12, 1996 due to poor grades in the developed zones and dwindling reserves. A compilation in early 1996 by the company identified a possible underground resource of approximately 1 million tonnes grading 7.9 grams per tonne gold. Metallurgical testing examined the feasibility of producing a zinc concentrate. Westmin also conducted an aggressive, two-phase exploration surface and underground diamond drilling program, estimated to total approximately 12,800 metres, testing for mineralization between the No. 4 and No. 6 levels of the mine and also for deeper mineralization in the Martha Ellen (104B 092) zone on the Big Missouri deposit to the north.

As of January 1, 1997 diluted proven/probable reserves were 350,140 tonnes grading 7.19 grams per tonne gold (cut), 37.7 grams per tonne silver (uncut) and 1.6 per cent zinc. Possible diluted reserves were 111,573 tonnes grading 8.57 grams per tonne gold (cut) and 27.42 grams per tonne silver (uncut) (George Cross News Letter No.26 (February 6), 1997).

After considering offers from Treminco, BYG, Canarc and Hunter Dickenson, Westmin placed the mine on a long term care and maintenance program on April 12, 1996, due primarily to the depressed gold price (T. Schroeter, personal communication, 1997).

In 2009, drilling by Ascot Resource found sulphide mineralization consisting of fine grained pyrite with occasional sphalerite/galena hosted in a quartz-vein breccia. Host rocks are andesites with Premier Porphyry (feldspar porphyry) in close proximity. Except for P09-005, all holes encountered gold-bearing quartz veins with individual results varying from 1.46 grams over 2.0 metres in P09-006 to 18.28 grams per tonne over 7.70 metres in P09-002 (Assessment Report 31489). Results showed continuity of the vein system both in length and grade.

**ROOSEVELT past producer (Polymetallic veins Ag-Pb-Zn+/-Au)**

MINFILE 104A 069

Seven kilometres southwest

Two mineralized veins have been developed in the past: the Silver adit vein and, about 200 metres to the northeast, the Copper adit vein. The Silver adit vein has been developed by two adits: an upper (older) one and a lower one. The latter provided access to a mining level and haulage drift. The north-northwest trending vein is in sheared and crushed argillite and slate along the hangingwall of a parallel, fresh porphyritic granodiorite dike. The dike, dipping southwest at 54 to 67 degrees, is cut by small cross faults.

The vein comprises quartz-calcite-sulphide stringers and lenses that range up to 0.5 metre wide.

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

*Sphalerite, galena, pyrite, chalcopyrite and tetrahedrite are erratically distributed. Breccia, formed by argillite clasts in a quartz-calcite-sulphide matrix, is common.*

*The Silver adit vein was mined over a length of about 35 metres from a stope about 3 to 5 metres wide and 15 to 20 metres high. A sample was collected in 1984 from a sulphide-rich lens in the back of the crown pillar, 15.1 metres from the portal. This sample assayed 0.8 gram per tonne gold, 446.7 grams per tonne silver, 10.8 per cent lead, 16.0 per cent zinc and 0.63 per cent copper across a width of 0.63 metre (Assessment Report 13352). A composite muck sample from the stope (representative of hand-sorted ore) assayed 0.5 gram per tonne gold, 429.2 grams per tonne silver, 9.6 per cent lead, 1.1 per cent zinc and 0.58 per cent copper (Assessment Report 13352).*

*The Copper adit vein has been developed by two old adits in the past: a lower adit, about 30 metres long, and a short, upper adit about 12 metres above the lower one. The west-northwest trending, steeply southwest dipping Copper adit vein comprises quartz containing disseminated pyrite and chalcopyrite. It is 12 to 48 centimetres wide, but averages 28 centimetres in width. The vein lies along the hangingwall of an intensely altered and silicified, parallel, light green dike that contains chalcopyrite and pyrite. A parallel fault zone, containing crushed and sheared argillite and quartz veinlets, forms the hangingwall to the quartz vein and separates the vein from well bedded, relatively undeformed argillite to the west.*

*The vein-dike-fault system cuts across the strike of the bedding at a shallow angle. In places, the hangingwall fault and vein transect the dike itself. The vein extends the length of the adit. The sulphide content of the vein varies from 2 to 20 per cent. A channel sample collected in 1984 from the back of the lower adit and near the face assayed 38.9 grams per tonne gold, 14.4 grams per tonne silver and 0.17 per cent copper across 40 centimetres (?) (Assessment Report 13352). The Copper adit vein contains potential reserves of 18 tonnes per vertical metre over a length of 24 metres (Assessment Report 13352).*

**ROCK OF AGES** prospect (Noranda/Kuroko massive sulphide Cu-Pb-Zn, I05: Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 134

One kilometre east

*The Glacier showing is located about 250 metres southwest of the Rock of Ages Fr. showing. Mineralization comprises irregular pods of massive sulphide in propylitized andesites. The sulphides are associated with fractures related to a northwest trending fault zone (Assessment Report 16082). Sulphide minerals comprise pyrite, sphalerite, galena, chalcopyrite and bornite; malachite and azurite have also been reported (Assessment Report 11546). A sample collected across 2.0 metres of massive sulphide assayed 5.7 grams per tonne gold, 31.7 grams per tonne silver and 28.3 per cent zinc (Assessment Report 16082).*

**SILVER BUTTE** past producer (Polymetallic veins Ag-Pb-Zn+/-Au, Epithermal Au-Ag:

low sulphidation, Subaqueous hot spring Ag-Au, Intrusion-related Au pyrrhotite veins, Noranda/Kuroko massive sulphide Cu-Pb)

MINFILE 104A 150

Four kilometres west

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

There are two styles of mineralization identified: high-sulphide, base metal-rich gold mineralization in the Facecut and 35 zones; and low-sulphide gold-rich mineralization in the Kansas zone. These are consistent with the two main vein types at Silbak Premier (104B 054). The Silver Butte mineralization is commonly spatially related to the contact between a fine-grained and a coarser grained andesite but locally is clearly discordant and occurs both above and below the contact. The surface alteration at Silver Butte is characterized by inner areas of quartz-sericite or pervasive silicification surrounded by chloritic alteration. At depth, pervasive potassium feldspar alteration is associated with the quartz-carbonate stockwork ore zones. Sulphide mineralization occurs in the Facecut zone in a quartz-carbonate stockwork associated with the contact between fine and coarser grained andesites.

The zone geometry is irregular with predominantly subvertical to steep easterly dips. Sulphides comprise 25 per cent or more of the zone and consist of pyrite, chalcopyrite, sphalerite and galena. Mineralized widths of 2 metres and greater are known to extend eastward, downdip, 100 metres to the 750-metre level, where the zone is offset by the Anomaly Creek fault. The zone trends 350 degrees, exhibits sporadic grades to the north and may merge with the 35 zone to the south. Pervasive potassium feldspar alteration is associated with the quartz-carbonate stockwork and envelopes the lenses of massive sulphide mineralization.

The mineralization and associated alteration are hosted by the andesitic tuffs which commonly contain less than 2 per cent finely disseminated pyrite. The host rocks, alteration and mineralization in the 35 zone are similar to the Facecut zone and may well be an extension of it. Widths of mineralization are between 2 and 12 metres; known strike length is about 50 metres, trending approximately 350 degrees, with an 80 degree easterly dip. At depth, the 35 zone is offset an unknown distance by the Anomaly Creek fault; it is open to the south. The Facecut and 35 zones have been explored by surface drilling and underground development.

Proven and probable geological reserves in the 35 zone (cut and diluted grades) are 95,998 tonnes grading 65.81 grams per tonne silver, 9.9 grams per tonne gold, 0.32 per cent copper, 0.67 per cent lead and 3.85 per cent zinc (George Cross News Letter No.47, 1991). Reserves calculated for a 50 metre strike length explored by sub-drifting and diamond drilling in the West Kansas zone are 312,700 tonnes grading 3.07 grams per tonne gold (George Cross News Letter No. 97 (May 20), 1994).

Diamond drilling has defined the Kansas zone which is located approximately 150 metres south of the Facecut and 35 zones. It is 200 metres long with widths varying between 1.5 and 13.25 metres. The zone has a 30 degree east dip and a known downdip extension of 100 metres. Minor sphalerite and galena, less than 1 per cent total sulphides, occur in quartz-carbonate veinlets and breccia carrying gold and silver. The fine-grained andesite host exhibits intense silicification and potassium feldspar alteration. Diamond drilling west of the Gully fault has also outlined the West Kansas zone. The zone is 170 metres long and strikes north with a 60 degree west dip.

Drill holes intersected discrete veins with quartz, carbonate, sphalerite and galena; visible native gold is also evident. The andesitic hostrock exhibits weak chloritic alteration. The Anomaly zone is located to the east of the Anomaly Creek fault. Diamond drilling intersected mineralization in a zone 70 metres long, with a steep easterly dip. Quartz, carbonate and sulphides occur in a distinctly veined zone over a 2-metre true thickness.



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

**SEBAKWE** past producer (Intrusion-related Au pyrrhotite veins, Subaqueous hot spring Ag-Au)

MINFILE 104A 153

Two kilometres southwest

*Ore minerals include pyrite, sphalerite, and galena, with minor tetrahedrite, chalcopyrite, arsenopyrite and local pyrrhotite. Bonanza ore contains native gold, electrum, pyrargyrite, polybasite, argentite and native silver. Gangue minerals are quartz, potassium feldspar, chlorite, carbonate and others. Sulphide content varies, generally less than 5 per cent but can be as high as 75 per cent.*

*The diversity of the ore is an indication of the complex and episodic nature of ore deposition. A hybrid ore genesis model combining epigenetic vein and porphyry copper characteristics compare well with the features observed.*

**MINERALIZATION: PROPERTY**

The mineralization on MINFILE reported showings, prospects, and past producers within the Ind 402839 Claim Group.

**MONTROSE** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 033

Within Tenure 584057

*The main portion of the Waterpump zone straddles Lydden Creek. Higher grade mineralization occurs on the south side of the creek where mineralization is hosted in sericitic mafic tuffs. Alteration is most intense adjacent to a north-northwest trending 2-3 metre wide diorite dike. Alteration, accompanied by 1 to 3 per cent finely disseminated pyrite, extends about 10 metres from the dike margins. Adjacent to the dike, 1 to 3 centimetre wide quartz-pyrite veins form a stockwork. Pyrite in these veins is coarse grained and accompanied by minor chalcopyrite. In 1987, samples from east of the dike assayed up to 21.2 grams per tonne gold across 4.2 metres; the high gold values are associated with high copper and elevated zinc, silver and arsenic values (Assessment Report 17465).*

*The Montrose zone, reflected by a conspicuous 25 by 35 metre gossan zone, comprises two lenses, the Nos. 1 and 2 lenses. These are separated by a series of faults and a 3 to 6 metre wide diorite dike. The lenses contain 5 to 50 per cent fine grained disseminated to massive pyrite, lesser sphalerite and galena, and minor chalcopyrite in a quartz-sericite-carbonate alteration zone.*

*The No. 1 (Main) lens, striking 350 degrees and dipping 80 degrees west, outcrops over a length of 11 metres, height of 9 metres and width of 3 metres. The No. 2 lens lies about 10 metres northwest of the No. 1 lens (Property File - Mandy, 1939).*

*The No. 1 lens contains the best values. In 1987, sampling near the adit assayed up to 7.2 grams per tonne gold, 7.2 grams per tonne silver, 0.94 per cent lead, 0.44 per cent zinc and 0.26 per cent copper across 3.8 metres (Assessment Report 17465). A sample from the fault gouge separating the Nos. 1 and 2 lenses assayed 19.2 grams per tonne gold across 0.70 metre (Assessment Report 17465).*

*Drilling intersected subvertical quartz-pyrite veins, with minor chalcopyrite, that apparently project west of the No. 2 lens.*

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**Mineralization: Property (cont'd)****Montrose past producer (cont'd)**

The best drill results were from hole 87-M-2 which intersected up to 8.5 grams per tonne gold over 1.7 metres (Assessment Report 17465). Minor sphalerite-galena veins, in association with amethystine quartz, also occur near these drill intersections.

Several other mineralized occurrences are known in the area of the Montrose prospect. The more important of these are the Waterloo and Waterpump zones.

The Waterloo zone lies about 150 metres northwest of the Montrose zone. It comprises a series of mineralized occurrences, along an east-northeast trend for 250 metres, parallel to the local faulting. The individual occurrences mainly comprise 2 to 7 per cent (locally up to 40 per cent) coarse-grained pyrite as disseminations and locally, massive veins, in silicified and sericitized volcanics.

Silicification consists mainly of quartz veining, but also includes quartz flooding. Chalcopyrite is conspicuous in the more pyrite-rich areas. Towards the east end of the zone, mineralization is formed mainly by quartz-pyrite veins and shear zones containing massive fine-grained pyrite. The main quartz-pyrite vein, 0.4 to 0.8 metre wide, can be traced for about 7 metres vertically. In 1987, samples from the Waterloo zone assayed up to 1.920 grams per tonne gold and 240.2 grams per tonne silver (Assessment Report 17465). Elevated copper, silver, lead, arsenic and bismuth values are associated with the anomalous gold values (Assessment Report 17465).

The Waterpump zone is about 100 metres southeast of the Montrose zone. The North Waterpump zone is located about 25 metres north of Lydden Creek. It comprises a 10 centimetre wide, massive pyrite vein which strikes 122 degrees and dips vertically. The vein is hosted in pyritic and sericitic mafic tuff. In 1987, a sample across the vein assayed 50.4 grams per tonne gold across 0.50 metre; silver and base metal values were negligible (Assessment Report 17465).

The main portion of the Waterpump zone straddles Lydden Creek. Higher grade mineralization occurs on the south side of the creek where mineralization is hosted in sericitic mafic tuffs. Alteration is most intense adjacent to a north-northwest trending 2-3 metre wide diorite dike. Alteration, accompanied by 1 to 3 per cent finely disseminated pyrite, extends about 10 metres from the dike margins. Adjacent to the dike, 1 to 3 centimetre wide quartz-pyrite veins form a stockwork. Pyrite in these veins is coarse grained and accompanied by minor chalcopyrite. In 1987, samples from east of the dike assayed up to 21.2 grams per tonne gold across 4.2 metres; the high gold values are associated with high copper and elevated zinc, silver and arsenic values (Assessment Report 17465).

**BIG CASINO** showing (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A.034

Within Tenure 584069

Mineralization comprises northwest trending veins, stockworks and stringers of quartz-barite-jasper-calcite mineralized with minor pyrite, sphalerite and rare galena and chalcopyrite. Discontinuous zones occur in volcanic screens between a multitude of dikes (Bulletin 58). The showing, 10.5 metres wide, has been stripped for 18 metres. On the Ouray Fr. claim (Lot 4533), a fissure zone 4.5 metres wide strikes south, dips east and is hosted in greenstone.

The hostrock is weakly silicified and mineralized with galena, pyrite and "some" chalcopyrite.

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**Mineralization: Property (cont'd)****RED CLIFFE** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 037

Within Tenure 600001

*Mineralization comprises irregular veins and pods of quartz, pyrite, chalcopyrite and minor sphalerite. The orebodies, irregular and lenticular, are commonly enclosed in weakly developed sericitic alteration. The largest orebody, 76 metres long and averaging 6 metres in width, occurs on the 700 level. Most of the mineralized pods appear to lie along locally east trending, steeply dipping shears that transect all rock types except the diorite dikes. The mineralization is most conspicuous adjacent to, and on the hangingwall of, a prominent north trending, west dipping fault along Lydden Creek.*

*Estimated reserves for the Red Cliff deposit are reported to be 18,856 tonnes of sorted ore grading 3.19 per cent copper and 2.8 grams per tonne gold (J.L. Parker, 1912; cited in Assessment Report 17465, page 35).*

**INDEPENDENCE** past producer (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 038

Within Tenure 402839

*The main vein, exposed in the 190 metre long adit 1 and in trenches above the adit, lies along the footwall(?) of an anastomosing quartz monzonite dike. The vein strikes at 135 degrees and dips 80 degrees east. The vein, 2 to 6.6 metres wide, can be traced nearly continuously for 180 metres. Mineralization comprises banded silica-jasper-barite- magnetite with up to 30 per cent pyrite and lesser sphalerite, galena and argentite (?). The mineralization is variably oxidized; wad, limonite and hydrozincite (?) have been reported from the vein; wallrocks are silicified. The average silver assay from underground samples of adit 1 was 54.2 grams per tonne silver over 2.1 metres (Assessment Report 21950). Adit 2 explored the main vein for a distance of 50 metres.*

*The main vein is exposed at surface in trench 7 and a weighted average sample assayed 604 grams per tonne silver over 5 metres (Assessment Report 21950). In 1980, one channel sample assayed 0.8 gram per tonne gold, 93.3 grams per tonne silver, 4.66 per cent copper, 0.27 per cent lead and 0.52 per cent zinc across 2.0 metres (Assessment Report 8968). Vein 2, parallel to the main vein, is exposed in trench 6. A weighted average sample assayed 133.7 grams per tonne silver over 3 metres (Assessment Report 21950).*

*About 220 metres northeast of adit 1, two other adits (adits 3 and 4) have been emplaced on a mineralized zone, flanked by two dikes, in andesitic tuff. Mineralization comprises jasper, pyrite and sphalerite. A chip sample from adit 4 (the upper adit) assayed 4.1 grams per tonne gold and 93.9 grams per tonne silver across 5.0 metres (Assessment Report 15581). Veins 1 and 2 and the parallel structure to the north were the focus of a 1990 drilling program. Veins 1 and 2 and the parallel structure to the south (104A 132?) were the focus of a 1991 drilling program.*

*The drilling programs outlined the presence of a potential "ore shoot" in the explored portion of the main vein, located in the area north of adit 2. An estimate of the reserves in the area between trench 7 on the surface and adit 1 (95 to 99 metres below surface), which is part of the "ore shoot", was made in 1990. Preliminary possible geological reserves for the main vein were 177,809 tonnes grading 240 to 343 grams per tonne silver (Assessment Report 21950).*

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**Mineralization: Property** (cont'd)**Independence** past producer (cont'd)**A & T** prospect (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 040

Within Tenure 579281

Two north-northeast trending mineralized shear zones occur. The upper zone lies at about 1070 metres elevation; the lower one occurs at about 730 to 910 metres elevation. The shear zones are irregularly mineralized with chalcopyrite, pyrite and pyrrhotite. A sample, assumed to be from the lower zone, assayed 294.9 grams per tonne silver, 0.7 gram per tonne gold and 4.6 per cent copper across a vein width of 1.7 metres (Minister of Mines Annual Report 1928). A sample from the junction of a weak cross-structure with the lower zone assayed 6.2 grams per tonne gold, 44.6 grams per tonne silver and 2.7 per cent copper across 0.9 metre (Minister of Mines Annual Report 1930).

At an elevation of 730 metres, a gossan zone up to 30 metres wide is exposed in the creek bed. Here, sericitic schist contains pyrite and a silicified zone is mineralized with pyrite and chalcopyrite (Minister of Mines Annual Report 1928).

**DALY SULLIVAN** prospect (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 073

Within Tenure 593867

The nature of the mineralization is not clear. A southeast trending quartz vein, dipping 50 degrees southwest, has been reported to be near the adit (Assessment Report 7640). On the S. and D. Fraction (now the Vandal Fraction ? Lot 3785), a 2.4 to 6.0 metre wide vein has been traced for about 200 metres. The west trending vein comprises quartz fillings and silicified schist mineralized with pyrite and arsenopyrite. Assays are reported at up to \$20 per ton in gold and silver. A second vein, striking northwest across the Daly claim (Lot 3685), is reported to have assayed high in silver (Corpfile - American Mining and Milling Company).

**TOURNIGAN** showing (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 131

Within Tenure 402839

A fissure vein is exposed in an old prospect pit about 750 metres northeast of adit 1 (104A 038). The 30 centimetre wide vein contains quartz, pyrite, chalcopyrite and malachite, strikes 080 degrees and dips 85 degrees south. A chip sample across the width of the vein assayed 4.5 grams per tonne gold, 53.8 grams per tonne silver and 1.27 per cent copper over 30 centimetres (Assessment Report 12973).

**INDEPENDENCE 1** showing (Polymetallic veins Ag-Pb-Zn+/-Au)

MINFILE 104A 132

Within Tenure 592891

Adit 5 is about 500 metres southeast of adit 1 (104A 038). The adit has been driven for 9 metres in sheared greenstone. A selected sample of sheared and silicified greenstone, mineralized with pyrite and chalcopyrite, assayed 7.78 grams per tonne gold and 40.1 grams per tonne silver (Assessment Report 15581). The mineralization is discontinuous with an average width of about 4 metres. The adit could not be found during the exploration in 1990 and 1991.

**Table II. Summary of Minfile past productive properties peripheral to the Ind 402839 Claim Group**  
(Figure 3a for property location)

Property	Dominant host rock	Type	Structure
TERMINUS	Volcanic	Polymetallic Veins	Vein in Shear @ 005/50°
BIG MISSOURI	Volcanic	Polymetallic veins Ag-Pb-Zn+/-Au, Noranda/Kuroko massive sulphide Subaqueous hot spring	Northwest trend
ST. ELMO	Sedimentary S	Volcanic	Vein 070/S
PREMIER	Metavolcanic	Epithermal Au-Ag: low sulphidation, Polymetallic veins Ag-Pb-Zn+/-Au, Intrusion-related Au pyrrhotite veins	Vein, Stockwork, Breccia, Layered 000/62°W Zone trends at 350°
SILVER BUTTE	Volcanic	Polymetallic veins Ag-Pb-Zn+/-Au, Epithermal Au-Ag: low sulphidation, Subaqueous hot spring Ag-Au, Intrusion-related Au pyrrhotite veins, Noranda/Kuroko massive sulphide Cu-Pb	Vein, Stockwork Mineralization trends @ 350° Zone strikes N and dips W
ROOSEVELT NO. 1	Sedimentary	Polymetallic veins Ag-Pb-Zn+/-Au	NNW trending vein
SEBAKWE	Metavolcanic	Intrusion-related Au pyrrhotite veins, Subaqueous hot spring Ag-Au	Northeast; 135/45°W

*Table II (cont'd). Summary of Minfile past productive properties peripheral to the Ind 402839 Claim Group*  
(Figure 3a for property location)

Property	Production	Recovery			
		tonnes	g/Ag	Kg/Pb	Kg/Zn
TERMINUS	35	152,313	5,037	3,945	
BIG MISSOURI	768,941	1,815,918	1,638,412		1,815,918
ST. ELMO	14	57,354	3,101	2,374	
PREMIER	5,876,992	1,332,915,406	24,814,217	7,961.078	62,206,610
SILVER BUTTE	108,391	2,542,238			851,741
ROOSEVELT NO. 1	5,023	46,751	4,592	1,082	122
SEBAKWE	Included with Premier				

Property	Inventory				
	Tonnes	Ag g/t	Pb %	Zn %	Au g/t
TERMINUS	5,182	391.90	0.76	0.92	
BIG MISSOURI	1,685,200	22.98			3.12
ST. ELMO	Chip	2972	8.30	4.60	0.69
PREMIER	350,140	37.70	S	1.60	7.19
SILVER BUTTE	Measured 4,372,225				1.55
	Indicated 19,759,025				0.78
	Inferred 32,443,840				2.20
ROOSEVELT NO. 1	ADIT grab: assay analysis	429.20	9.60	1.10	0.50

**Table III. Summary of Minfile past productive properties on the Ind 402839 Claim Group**  
(Figure 3a for property location)

Property	Dominant host rock	Type	Structure
MONTROSE	Volcanic	Polymetallic Veins Ag-Pb-Zn+/-Au	No 1 lens: 350/80°W
RED CLIFFE	Volcanic	Polymetallic veins Ag-Pb-Zn+/-Au	Mineralized pods along locally, east trending shears; north trending fault
INDEPENDENCE	Volcanic	Polymetallic veins Ag-Pb-Zn+/-Au	135/80E°

Property	Production tonnes	Recovery			
		g/Ag		kg/Zn	g/Au
MONTROSE	50	2,138	2,138kg Pb	1,017	3,714
RED CLIFFE	3,768	2.054	41,386 kg Cu	109	5.078

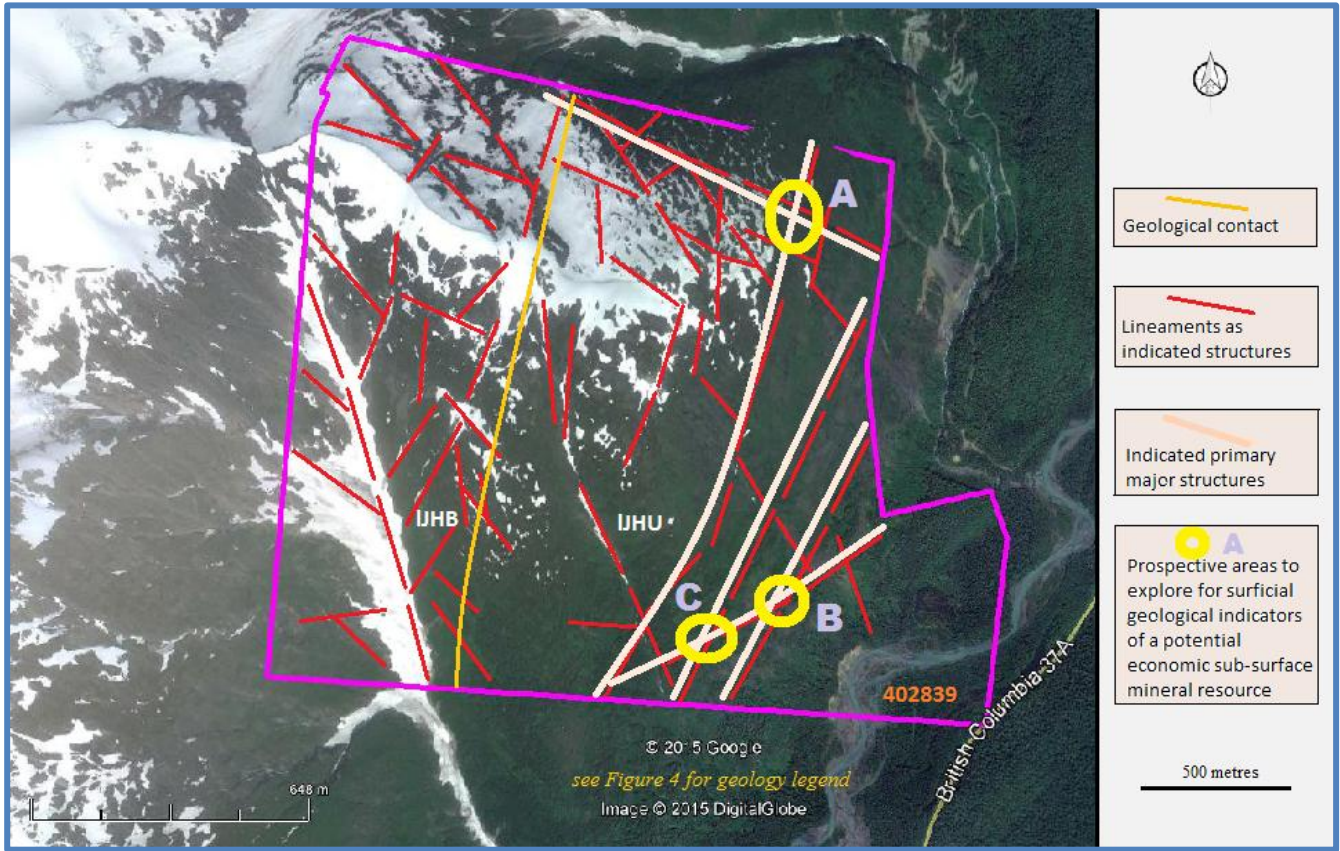
Property	Inventory				
	Tonnes	Ag g/t	Cu %	Zn %	Au g/t
MONTROSE	Drill Core of Vein				8.50
RED CLIFFE	18,856		3.19		2.80
INDEPENDENCE	177,809 Inferred	240.00			

## STRUCTURAL ANALYSIS

The Structural Analysis of Tenure 402839 was accomplished marking the observed lineaments on a Google Earth map. A total of 69 lineaments were indicated as shown on Figure 6. A Georient 32v9 software program was used to create a Rose Diagram reflecting the grouping of the 69 lineaments into an individual 10 °class sector angle interval as shown on Figure 7.

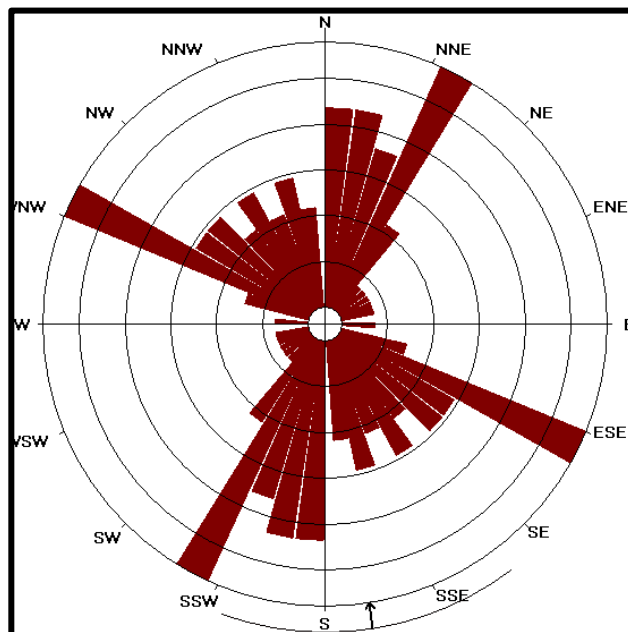
Structural Analysis (cont'd)

Figure 6. Indicated Structures on Tenure 402839  
(Base map from Google Earth)



Structural Analysis (cont'd)

Figure 7. Rose Diagram from Lineaments of Tenure 402839





## **STATISTICS** (for Figure 14)

Axial (non-polar) data

(von Mises concentration param. estimate)

No. of Data = 69

Sector angle = 8°

Resultant length = 20.25

Scale: tick interval = 2% [1.4 data]

Mean Resultant length = 0.2935

Maximum = 11.6% [8 data]

Mean Resultant dir'n = 171-351

'Mean' Moments: Cbar = 0.2793; Sbar = -  
0.0905

[Approx. 95% Confidence interval = ±28.4°]

'Full' trig. sums: SumCos = 19.2691; Sbar = -  
6.2414

(valid only for unimodal data)

Mean resultant of doubled angles = 0.298

Mean direction of doubled angles = 052

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Mean Resultant dir'n = 171.0 - 351.0

Circ.Median = 176.0 - 356.0

Circ.Mean Dev.about median = 34.6°

Circ. Variance = 0.26

Circular Std.Dev. = 44.85°

Circ. Dispersion = 4.07

Circ.Std Error = 0.243

Circ.Skewness = 1.41

Circ.Kurtosis = -7.50

kappa = 0.61

(Usage references: Mardia & Jupp,

'Directional Statistics', 1999, Wiley;

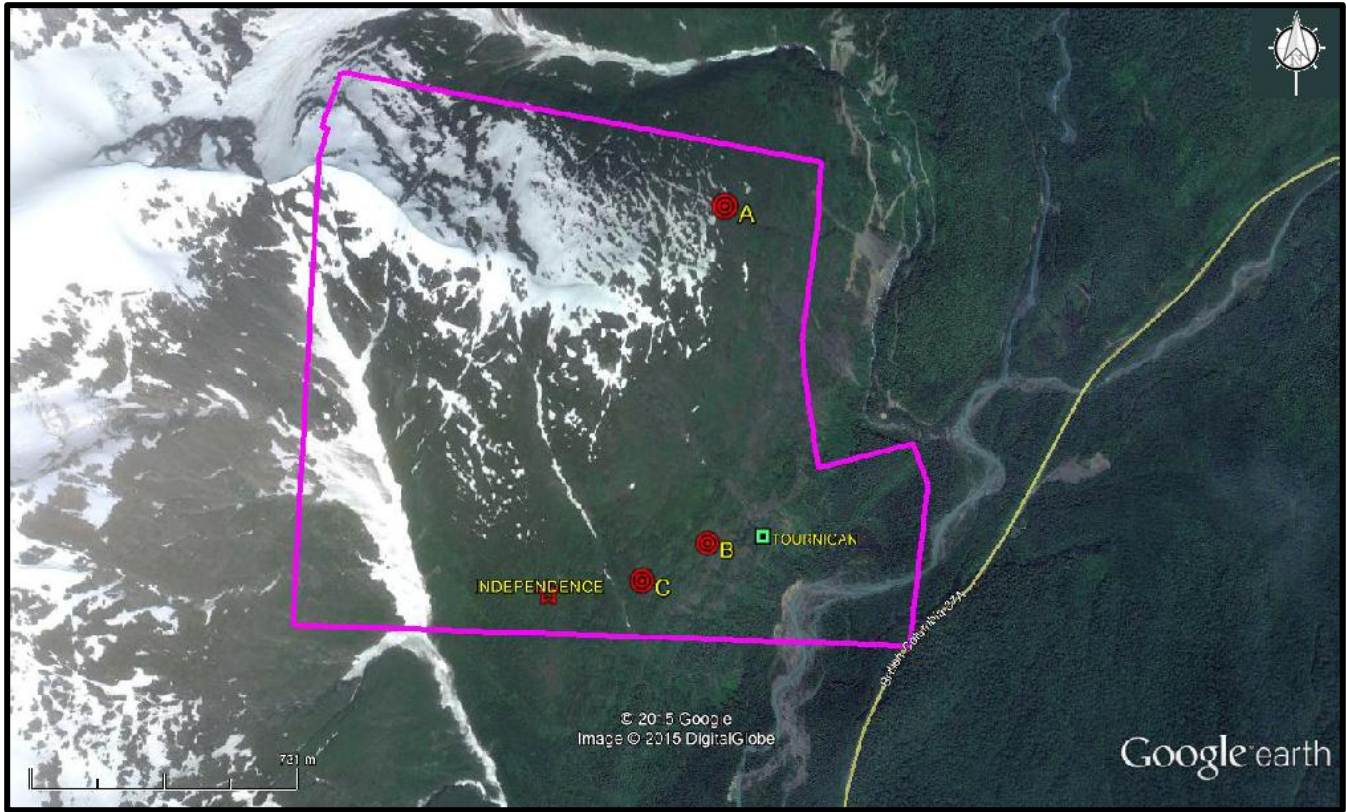
Fisher, 'Statistical Analysis of Circular Data',  
1993, Cambridge University Press)

Note: The 95% confidence calculation uses

Fisher's (1993) 'large-sample method'

**Structural Analysis (cont'd)**

**Figure 8. Tenure 402839 cross-structure and Minfile locations on Google Earth**  
 (Sample locations from Barrios, 2005\*)

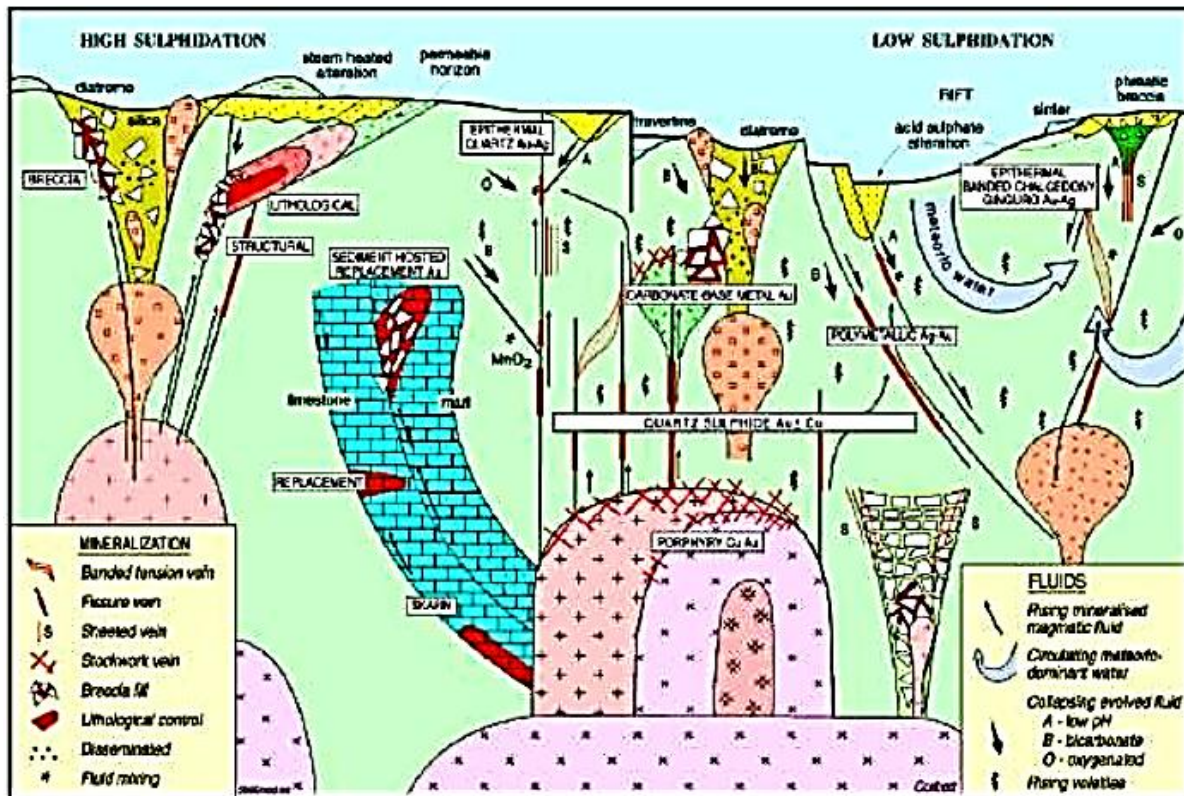


**Table IV. Approximate location of cross-structures and Minfiles on Tenure 402839**  
 (UTM-NAD 83 Zone 9)

Area	UTM East	UTM North	Elevation (metres)
A	443,482	6,217,638	1,091
B	443,558	6,216,339	578
C	443,307	6,216,186	763
Independence	442,959	6,216,135	930
Tournigan	443,809	6,216,371	330

Figure 9. Conceptual model showing potential for a deep-seated porphyry Cu-Au resource.

(Map from Bisson, 2014)



## INTERPRETATION and CONCLUSIONS

Three cross-structures that were delineated on Tenure 402839 would be the most prospective areas to explore for surficial geological indicators of a concealed potential economic mineral resource. The prime type of mineral deposit to be sought would be for a Premier type (104B 054) or for a bulk tonnage porphyry copper deposit where the potential is stated at the Sebakwe (104A 153) mineral zone which formed part of the Premier deposit and where:

*“The diversity of the ore is an indication of the complex and episodic nature of ore deposition. A hybrid ore genesis model combining epigenetic vein and porphyry copper characteristics compare well with the features observed.”*

The significant past productive mineral deposits (Figure 3a), including the Premier, all within six kilometres west of the Ind 402839 Claim Group, are primarily indicated to be associated with major northerly structures creating mineral controls for veins, stockworks, and breccias. The intrusion related gold-pyrrhotite veins related to two of the three largest past producers may be related to a deep-seated porphyry deposit. A study of the vein mineralogy, which is not part of this report, should provide some definitive information as to the source.

The included Minfile mineral properties within the Ind 402839 Claim Group and two peripheral past producers, all east of Bear Ridge, are indicated to be associated with predominant north-northeasterly structures and associated northeasterly and east-southeasterly structures. This structural orientation is indicated topographically by the river and the structural analysis as shown in Figure 6.

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***Interpretation and Conclusions (cont'd)***

At the Red Cliffe, the reported local east trending shears and northerly trending fault generally conform to the structural trend of the two A cross-structures and the mineral zone may be an isolated zone of mineralization emplaced within a structurally restricted location. It also could be an "underexplored" mineral zone from which 2,054 grams of silver and 41,386 kilograms of copper were produced and which reportedly hosts a mineral inventory of 18,856 tonnes of 3.19% copper and 2.80 grams gold per tonne.

Similarly, the Tournigan mineral showing and the productive mineral zone at the Independence, both correlating with the northeasterly trending structure BC (Figure 6), may be marginal indications of a substantial mineral zone associated with, or indicated by, cross-structures B & C. The Independence with a reported inferred inventory of 177,809 tonnes of 240.0 grams per tonne silver would certainly warrant additional exploration.

Thus, the three cross-structural locations delineated on Tenure 402839 should be prime areas in the exploration for geological indicators of a concealed potentially productive mineral resource. These geological indicators may be revealed as minerals and/or alteration products and would be subject to interpretation as economic mineral indicators.

Prior to the exploration of the three cross-structural locations, the Ind 402839 Claim Group Minfile mineral zones and the past productive properties in the area should be examined to obtain information on their geological revelations.

Respectfully submitted

Sookochoff Consultants Inc.



Laurence Sookochoff, PEng

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**SELECTED REFERENCES**

**Di Spirito, F.** – Reconnaissance Geological, Geophysical and Geochemical Surveys on the Independence Project for Roche Resources Inc. December 12, 1986. AR 15,581.

**Diakow, L.J. et al** – Geology of the Early Jurassic Toodoggone Formation and Gold-Silver Deposits in the Toodoggone River Map Area, Northern British Columbia. Ministry of Energy, Mines and Petroleum Resources Mineral Resources Division Geological Survey Branch Victoria British Columbia Canada. Bulletin 86. January 1993.

**Gewargis, W.A.** – 1991 Diamond Drilling and Geological Report on the Independence Property for Armenex Resources Canada Inc. December 10, 1991. AR 21,950.

**Grove E.W.** – Geology and Mineral Deposits of the Stewart Area, British Columbia; B.C. Department of Mines & Petroleum Resources. Bulletin No. 58. 1971

**MapPlace** – Map Data downloads

**Marshak, S., Mitra, G.** – Basic Methods of Structural Geology. pp 258-259, 264\*.Prentice-Hall Inc. 1988.

**MtOnline** - MINFILE downloads.

104A 016 – TERMINUS

104A 033 – MONTROSE

104A 034 – BIG CASINO

104A 037 – RED CLIFFE

104A 038 – INDEPENDENCE

104A 039 – RUBY SILVER

104A 040 – A & T

104A 043 – AZTEC

104B 046 – BIG MISSOURI

104A 048 – ST. ELMO

104B 054 – PREMIER

104A 069 – ROOSEVELT

104A 073 – DALY SULLIVAN

104A 131 – TOURNIGAN

104A 132 – INDEPENDENCE 1

104A 134 – ROCK OF AGE

104A 150 – SILVER BUTTE

104A 153 – SEBAKWE

**Sookchoff, L.** – Geological Assessment Report on a Structural Analysis of the Metsantan 851743 Claim Group for Richard Billingsley. October 20, 2013. AR 34,698.

**STATEMENT OF COSTS**

Work on Tenure 402839 of the Ind 402839 Claim Group was done from September 17, 2014 to October 22, 2014 to the value as follows:

Events 5528299 and 5528841

Structural Analysis

Laurence Sookochoff, PEng. 3 days @ \$ 1,000.00/day -----	\$ 3,000.00
Maps -----	1,000.00
Report -----	<u>5,000.00</u>
	\$ 9,000.00
	=====

**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 on profession for the past forty-eight 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 Selected Reference section of this report.
- 5) I have no interest in the Property as described herein.



Laurence Sookochoff, P. Eng.