REPORT ON THE GEOLOGY, RECONNAISSANCE GECHEMISTRY AND PROPOSAL FOR DEVELOPMENT OF THE MUSTANG MINERAL CLAIM GROUP; MUSTANG 1, 2 AND 3 (4671, 4672, 4673).

Yuzkli and Mustang Creeks Area
Cariboo Mining Division, British Columbia
N.T.S. Map Area 93H/4
Latitude 53°12'      Longitude 121°46'

for

J. BOUTWELL
325 St. Laurent Ave.
Quesnel, B.C.

GEOLOGICAL BRANCH
ASSESSMENT REPORT

by

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January 1984
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1 INTRODUCTION

The Mustang mineral claim group consists of fifty-two (52) modified grid units located in the Cariboo Mining Division of central B.C. and owned by Mr. J. Boutwell of Quesnel, B.C. It is the intention of Mr. Boutwell to explore for and develop gold, silver, lead and zinc mineralization on the claim. The purpose of this report is to review the history of the claims area, describe what is known of the geology of the area and present the results of reconnaissance geochemical sampling and prospecting performed in 1983.

The geological setting is such that there is a potential for the occurrence of three types of mineral deposits; gold-quartz veins, gold-bearing pyritic replacement deposits and shale-hosted lead and zinc. To date only gold-quartz veins have been explored by surface workings (c.1930). In 1983, at the request of Mr. Boutwell, ten man-days were spent on the collection of 62 stream sediments samples and prospecting the major drainageways and old workings. Two quartz samples were collected from the latter for assay. No other modern hard-rock exploration or development on this property is known of.

1.1 Location and Access

The Mustang Group is located 16 km northwest of the village of Wells in central British Columbia (Figure 1). The claims are situated within National Topographic System area 93H/4 and are centered at approximately 53°12' latitude and 121°46' longitude.

Two roads can be used to reach the confluence of Mustang and Sugar Creeks, 1 ¼ km east of the property. The better of these is the Beaver Pass route which branches northwest of Highway 26, the Quesnel - Barkerville highway, about 25 km west of Wells. This gravelled logging road is fairly well maintained. It is about 40 km from Highway 26 to roads-end on Sugar Creek. An abandoned mining road also reaches Mustang Creek via Wells and Hardscrabble Creek. This route is about 15 km long but there are
several washouts along the way.

From the mouth of Mustang Creek a hiking trail goes along the south side of the valley to a trapper's cabin on Yuzkli Lake in the north central part of the property. There are several meadows in the valley of Yuzkli and Mustang Creeks where helicopters could land. A float plane could land on Yuzkli Lake.

1.2 Ownership and Claims Status

Figure 2 is a recent claim plan of the area, copied at the Quesnel sub-recorders office on March 14th, 1983. Table 1 summarizes particulars of the claims. A Notice to Group the claims was recorded on March 14th, 1983.

Table 1. Summary of claim information

<table>
<thead>
<tr>
<th>Claim Name</th>
<th>Record No.</th>
<th>Units</th>
<th>Recording Date</th>
<th>Recorded Holder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mustang 1</td>
<td>4671(2)</td>
<td>20</td>
<td>Feb. 25, 1983</td>
<td>J. Boutwell</td>
</tr>
<tr>
<td>Mustang 2</td>
<td>4672(2)</td>
<td>12</td>
<td>Feb. 25, 1983</td>
<td>J. Boutwell</td>
</tr>
<tr>
<td>Mustang 3</td>
<td>4673(2)</td>
<td>20</td>
<td>Feb. 25, 1983</td>
<td>J. Boutwell</td>
</tr>
</tbody>
</table>

1.3 References

The following is a list of publications relevant to the area of the Mustang group.

- B.C. Minister of Mines Annual Report, 1934; pages 26, 27
- B.C. Minister of Mines Annual Report, 1947; pages 117-123
- Hanson, G., 1935; Barkerville Gold Belt, Cariboo District, B.C., Geological Survey of Canada, Memoir 181
- Hanson, G., 1938a; Geological Map, Willow River, West Half, Geological Survey of Canada, Map 335A.
1.4 History

1.4.1 Regional

The Cariboo district is one of the oldest gold mining camps in British Columbia, the first prospectors arriving c. 1853. The early miners focused on placer deposits but by the 1880's gold-quartz veins were being mined.

The property lies at the northwest end of the Barkerville Gold Belt, a northwest alignment of gold-quartz veins, gold-bearing pyrite ore bodies and placer deposits. Historical lode gold mines located along this belt 15 to 22 km east-southeast of the Mustang group were the Island Mtn., Cariboo Gold Quartz, Canusa and Williams Ck. Gold Mines. Gold was won from both gold-quartz veins and pyritic replacement bodies in limestone. The only active mine in the area is the Mosquito Creek Gold Mine, 13 km southeast of the property and which had a continuous production from October 1980 to October 1983 of about 2,000 tons per month of replacement ore with a head grade of 0.45 oz gold per ton (Northern Miner, December 16, 1982). Burns Mtn., 15 km south-southeast of the claims, was the site of one of the earliest gold-quartz mines in the Cariboo. In the period 1875-1895 several hundred tons of ore were mined. The ore consisted of free gold in quartz veins which assayed up to 2.65 oz gold.
per ton (Bowman, 1888).

Figure 3 shows the location of gold occurrences and gold mines of the Cariboo district. The axis of the Barkerville Gold Belt is shown on this figure, extending through Mt. Tom, Island Mtn. and Barkerville. The belt extends southeast of the area shown in Figure 3. Most of the gold occurrences shown in Figure 3 were discovered before 1940.

1.4.2 Property

Table 2 lists the known mineral occurrences on and near the Mustang Group. The reference numbers are those shown on the geology maps, Figures 6 and 7.

There are two known gold occurrences within the Mustang Group that received some prospecting and surface development in the 1930's. The more developed of these is the Cosalite prospect (No.1), ¾ km north of Yuzkli Lake. Yuzkli Lake was at that time known as Mustang Lake, and Yuzkli Creek known as Mustang Creek. What is now known as Mustang Creek used to be called Little Mustang Creek. Appendix I contains the description of the Cosalite claims (B.C. Minister of Mines Annual Report, 1934). Quartz veins in quartzite are reported to have contained pyrite and galena bearing a trace of gold. There are at least four places where quartz veins were exposed by shallow surface workings. The veins are described as being from 9 inches to 4 feet wide and up to 100 feet in length.

The second known gold occurrence on the Mustang Group is that at the headwaters of South Yuzkli Creek. This occurrence (No.3) is shown by Hanson (1938a) on his geological map of the area and briefly referred to in his accompanying notes. The occurrence is summarized together with a number of other quartz vein prospects as being from a few inches to 10 feet wide and mineralized with pyrite and galena with low gold values.

There are six other known mineral occurrences east of the Mustang property. The nearest of these was known at different times as the Moonlight and Comstock claims (No.2, Appendix I) or the Big Twelve and Tyee claims (Hanson, 1935; in Appendix II).
<table>
<thead>
<tr>
<th>Reference No. (Figs. 6,7)</th>
<th>Prospect Name or Location</th>
<th>Publication</th>
<th>Description</th>
<th>Assays</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cosalite</td>
<td>BCDM Ann. Rept. 1934</td>
<td>Quartz veins in sheared sediments, A and B types, pyrite, galena</td>
<td>Au - trace</td>
</tr>
<tr>
<td>2</td>
<td>Moonlight, Comstock, Big Twelve</td>
<td>BCDM Ann. Rept. 1934; Hanson, 1935</td>
<td>Quartz veins in schistose sediments, A and B types, pyrite, galena, sphalerite</td>
<td>Au - trace, Ag - 10.2 oz/t, Pb - 25.1%</td>
</tr>
<tr>
<td>3</td>
<td>South Yuzkli Creek</td>
<td>Hanson, 1938a</td>
<td>located on map only, noted as quartz vein</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>K.V.</td>
<td>BCDM Ann. Rept. 1934</td>
<td>Quartz vein, A type, pyrite</td>
<td>Au - trace</td>
</tr>
<tr>
<td>5</td>
<td>Confluence of Cooper and Stave Cks.</td>
<td>BCDM Ann. Rept. 1947</td>
<td>Quartz vein in black phyllite, B vein, pyrite, galena</td>
<td>Au - 0.09 oz/t, Ag - 0.90 oz/t</td>
</tr>
<tr>
<td>6</td>
<td>Upper Cooper Ck.</td>
<td>BCDM Ann. Rept. 1947</td>
<td>Quartz vein in quartzite, pods of galena, sphalerite, pyrite, B type</td>
<td>Au - 0.10 oz/t, Ag - 47 oz/t, Pb - 56.7%</td>
</tr>
<tr>
<td>7</td>
<td>Sugar Ck, 140 m south of Stephens Gulch</td>
<td>personal observation by author</td>
<td>Quartz veins in schistose sediments, A and B types, to 30 cm thick, pyrite</td>
<td>Au - 0.01 oz/t, Ag - trace</td>
</tr>
<tr>
<td>8</td>
<td>Sugar Claims, Sugar Creek</td>
<td>personal observation by author</td>
<td>Quartz vein in schistose sediments, 10 m wide with coarse free gold</td>
<td>?</td>
</tr>
</tbody>
</table>
The Comstock occurrence lies about ½ km east of the Mustang 1 claim. Quartz veins mineralized with pyrite, sphalerite and galena were prospected by open-cuts, a 50 foot adit and an 18 foot shaft. A compact seam of galena and sphalerite assayed 10.2 oz/ton silver, 25.1% lead and a trace of gold.

One-half km east of the Mustang 2 claim is the K.V. occurrence (No. 4, Appendix I). Open-cuts and a 30 foot adit were made along a quartz vein several feet in width. The vein was mineralized with pyrite which assayed a trace of gold.

Along Cooper and Stave Creeks, tributaries of Sugar Creek, are several galena, sphalerite and pyrite-bearing quartz veins (B.C. Minister of Mines Annual Report, 1947). The highest gold assay reported is 0.12 oz/ton in pyrite-bearing vein quartz float. Selected samples of galena and pyrite assayed up to 0.10 oz/ton gold, 102.5 oz/ton silver in 25.7 % lead. Two of the occurrences where open-cuts have been made are Nos. 5 and 6. These are both along rusty, vuggy quartz veins with localized segregations of sulphides. Reported gold assays in these are up to 0.10 oz/ton gold.

Occurrence No. 7 is on Sugar Creek, upstream from Stephens Gulch. Here pyrite in vein quartz assayed 0.01 oz/ton gold with a trace of silver.

Occurrence No. 8 is on the Sugar claims along Sugar Creek. Here a north-northeast trending quartz vein, up to about 10 m wide, carries coarse free gold. These claims are currently being developed by a joint venture between Noranda Exploration Co. and Canadian-United Mineral Inc.
2 GEOMORPHOLOGY

2.1 Regional

The property lies within the Quesnel Highland physiographic region. A characteristic of this region are upland areas which are remnants of a highly dissected plateau of moderate relief at an elevation of 5,500 to 6,300 ft (1,675 to 1,920 m). The plateau was formed in Tertiary times prior to the formation of Pleistocene ice which covered most of the high areas during the Continental Ice Sheet Stage of glaciation. Most summits in the region are rounded. Incipient and weakly developed cirques formed on the northern slopes of most of the higher hills during interglacial and/or late stages of the glaciation. Valley glaciers truncated spurs and deposited materials over most of the area. In many places glacial drift or till mantles the sides of the valleys up to more than 1,000 ft (300 m) above the valley floor. The till is mostly local in origin though foreign boulders do occur.

The regional drainage pattern indicates pronounced structural control by bedrock fractures. There are two main alignments; (1) trending northwest, for example Yuzkli Creek and upper Sugar Creek (Figure 3), and (2) northeast, for example lower Sugar Creek and Norwood Creek (Figure 2).

2.2 Local

Figure 4 is a topographic map of the Yuzkli Creek area. Relief is about 1,300 ft (395 m) from the rounded summit of the hill in the central part of Mustang 3 (5,200 ft, 1,585 m) to Yuzkli Creek (3,900 ft, 1,189 m). The north side of Yuzkli Lake is dominated by a rock bluff rising some 600 ft (180 m) above the lake.

The north facing slopes in the southern part of the property, Mustang 2 and 3, are deeply cut by north-northeasterly trending gullies formed by meltwater streams from a wasting ice cap that lay on the upland surface. This surface was part of the pre-
glacial Tertiary plateau. There are other gullies of similar origin near the top of the hill in this area and these are presently dry. The Yuzkli Creek - Mustang Creek valley was not formed by the present water courses. Its size and character of glaciofluvial deposits, which include a moraine ridge and kame moraine complex with interspersed kettles, indicate that it formed during the stagnation and wasting of a valley glacier occupying the valley. The valley ice flowed to the northwest through the Mustang - Yuzkli Creek valley. There was also local transport of materials into the valley from the surrounding hills.

The ice sheet that lay on the upland surface, the gentle rolling hills north and south of Yuzkli Lake, did not transport materials any great distance as it was static. The till deposited on the slopes and hills away from and above the valley glacier complex is mostly a lodgement till. This consists of gravelly boulder clay with angular gravels and boulders of local origin. There are occasional sand and gravel layers within this till.

The property has several water courses that could be exploited for development purposes, with the exception of the gentle slopes of the hill in the south part of the claims. There are numerous thickets of slide alder, willow and Devil's Club.
3.1 Regional

Figure 5 illustrates a recent interpretation of the regional geology (Struik, 1981a) with a tentative stratigraphy outlined in the legend. The area lies along the western part of the Omineca Tectonic Belt, known for its prevalence of gold and tungsten mineral occurrences. Two regional tectonostratigraphic sequences are shown in Figure 5. These are (1) Upper Ordovician to Permian shale, dolostone, basalt, conglomerate and limestone (units 1 to 6 and 8, Figure 5) and (2) Permian and Pennsylvanian oceanic chert and mafic and ultramafic volcanic and intrusive rocks (unit 7, Figure 5). The latter sequence, the Antler Formation, has been thrust from the west over the basinal sequence. A third tectonostratigraphic sequence, Hadrynian to Cambrian quartzite, carbonate and shale, representing a continental terrace wedge is exposed to the east of the area shown in Figure 5.

Eastward thrusting of the Antler Formation commenced in post-Permian time and predated the folding and regional metamorphism of Jura-Cretaceous age that affected all rock units in the area. The major folds, such as the Lightning Creek anticlinorium, 25 km southwest of Yuzkli Lake, are relatively open. The Mustang property straddles an overturned fold couplet whose axial planes dip northeast.

The principal axis of the Barkerville Gold Belt, passing through Island Mtn. and Barkerville, is located on the overturned limb of a northwest trending fold at or near the contact between Devonian-Mississippian black phyllites (unit 4, Figure 5) and micaceous quartzites containing limestone and dolomite (unit 1, Figure 5). The gold occurrences are of auriferous pyrite and free gold in quartz veins in the black metaclastic rocks or stratabound, massive auriferous pyrite lenses and shoots, termed 'replacement ore', within and at the contacts of limestone beds in micaceous quartzite (Alldrick, 1983). Of critical importance
LEGEND

TRIASSIC AND JURASSIC
1. arkose, grey slate and phyllite, sandstone, minor limestone, b-conglomerate
2. red clay slate, carbonate
3. grey slate, shale, limestone
PENNСILVANIAN
4. backshtr limestone
5. Antler Formation: dolomite, basalt, serpentinite, b-cherts, greywacke
6. amphibolite, diorite, and sheared equivalents
PALEozoIC AND/ ОLDER
7. alpin micaceous quartzite, dark grey phyllite
8. black argillite, slate, and white muddy conglomerate, limestone
9. grey slate and quartzite
10. marble, calcareous sandstone, quartzite, calcareous phyllite, phyllite
11. olive micaceous quartzite, light olive grey phyllite and slate, garnet-biotite-muscovite schist

Geological contact (apparent and assumed)
Fault (approx. and assumed)
Syncline (overturned)
Anticline (overturned)
to the mineral potential of the Mustang property is that this same structure passes through the claims area and affects the same rock units.

Several phases of faulting have affected the area. These are, listed from youngest to oldest, as follows (Struik, 1981b, 1982):

1. northerly and north-northeasterly right lateral strike slip faults,
2. transverse northeast trending normal faults,
3. east dipping high angle reverse and normal faults, and
4. east dipping thrust faults.

Quartz veins are common and widely distributed in the area. In general the sulphide content is low, but in certain areas they contain a fairly consistent quantity of pyrite with attendant gold (Sutherland Brown, 1957). Previous workers have all noted the pattern of occurrence of quartz veins. Four types of veins are recognized, as follows:

1. transverse veins; northeast strike, smallest and most numerous type, at the Cariboo Gold Quartz Mine provided 60-75% of the quartz ore,
2. diagonal veins; east-northeast strike, larger and fewer than transverse veins, at the Island Mtn. Mine only the diagonal veins were mineable,
3. northerly veins; north-northeasterly strike, occur within faults, commonly crushed and difficult to mine, and
4. strike veins; northwest strike, subparallel to foliation, largest and fewest type, normally barren.

Earlier workers termed the strike veins 'A veins' and the transverse and diagonal veins 'B veins'.

Recently (Struik, 1981b), it has been recognized that the Paleozoic sedimentary units making up most of the area contain stratigraphic equivalents of the major divisions of the Selwyn basin; the Ordovician to Devonian Road River Formation and the Devono-Mississippian Earn Group, informally called the "black
clastics". These units are hosts for stratiform lead and zinc deposits in the northern Cordillera. In the Cariboo district the Black Stuart Formation (equivalent to unit 4 in Figure 5 and the Greenberry Limestone Member (unit 8 in Figure 5) are time and lithologic correlatives of the black clastic units in the northern Omineca and Mackenzie - Rocky Mtn. belt. The recognition of this correlation gives the Mustang property the potential of having similar deposits.

3.2 Property

Figure 6 illustrates the geology of the Mustang claims area as mapped by Struik (1982). Table 3 provides an explanation of the rock units in Figure 6 and their correlation to those shown in the earlier work (Figure 5).

There are four rock units underlying the property: DMS - predominantly black phyllite; MPt - mostly olive gray micaceous quartzite, MPd - olive and gray micaceous quartzite, phyllite and schist; and MPav (Antler Formation) - diorite, basalt, gabbro and serpentinite. Units DMS and MPd are the same units that host the majority, if not all, of the gold deposits along the Barkerville Gold Belt.

The foliation of most of the exposures dips northeasterly at moderate to steep angles. The claims are crossed by an overturned, northwest trending syncline and anticline, whose approximate locations are indicated in Figure 6. The general structure is shown in the geological section B-B' of Figure 5.

Major faults in the area, as mapped by Struik, are the north-northeasterly fault in the lower course of Sugar Creek and the northwest fault that is projected into the south part of the claims group. A thrust fault marks the base of the Antler Formation. A characteristic of this fault is the flat lying shearing developed below it. Other fractures belong to the northwest and north-northeast fault and fracture sets. Recalling that many ore deposits in the region are controlled or spatially related to north-northeasterly faults (Sutherland-Brown, 1957),
MUSTANG GROUP

(SEE TABLE 3 FOR EXPLANATION)

mineral occurrence

(Table 2)

PROPERTY GEOLOGY

(after Struik, 1982)
Table 3. Explanation of Figure 6 - Property Geology

<table>
<thead>
<tr>
<th>Rock Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PERMIAN</strong></td>
<td></td>
</tr>
<tr>
<td>Pc</td>
<td>gray crinoidal limestone, minor gray chert</td>
</tr>
<tr>
<td><strong>MISSISSIPPIAN (?)</strong>, PENNSYLVANIAN and PERMIAN</td>
<td></td>
</tr>
<tr>
<td>Antler Formation</td>
<td></td>
</tr>
<tr>
<td>MPav</td>
<td>diorite, basalt, serpentinite, gabbro</td>
</tr>
<tr>
<td>MPas</td>
<td>olive and gray chert, black and green slate</td>
</tr>
<tr>
<td>MPau</td>
<td>serpentinite, sheared mafic rocks</td>
</tr>
<tr>
<td><strong>MISSISSIPPIAN (?) to PERMIAN (?)</strong></td>
<td></td>
</tr>
<tr>
<td>MPt</td>
<td>Tom Creek Succession; olive gray micaceous quartzite, phyllite and schist</td>
</tr>
<tr>
<td>MPd</td>
<td>Downey Creek Succession; olive and gray micaceous quartzite, phyllite, gray olive and green slate, limestone, marble</td>
</tr>
<tr>
<td>MPa</td>
<td>amphibolite</td>
</tr>
<tr>
<td>db</td>
<td>diabase</td>
</tr>
<tr>
<td><strong>DEVONIAN (?) and MISSISSIPPIAN (?)</strong></td>
<td></td>
</tr>
<tr>
<td>DMs</td>
<td>black siltite, phyllite, gray micaceous quartzite, limestone</td>
</tr>
</tbody>
</table>

---

Fracture
Thrust fault
Geological contact (approximate, assumed)
Anticline, overturned
Syncline, overturned
Known mineral occurrence (see Table 2)

<table>
<thead>
<tr>
<th>Correlation to Figure 5:</th>
<th>Figure 5</th>
<th>Figure 6,7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 8</td>
<td>Pc</td>
<td></td>
</tr>
<tr>
<td>Unit 7</td>
<td>MPav,MPas,MPau</td>
<td></td>
</tr>
<tr>
<td>Unit 6</td>
<td>db</td>
<td></td>
</tr>
<tr>
<td>Unit 5</td>
<td>MPt</td>
<td></td>
</tr>
<tr>
<td>Unit 4</td>
<td>DMs</td>
<td></td>
</tr>
<tr>
<td>Unit 1</td>
<td>MPd</td>
<td></td>
</tr>
</tbody>
</table>
fractures with the latter orientation should be prospected.

Figure 7 shows the geology at a larger scale than Figure 6 and incorporates an air photo interpretation by the author and the results of the 1983 prospecting. All of the major drainageways were prospected during the reconnaissance silt sampling work. The only area of widespread outcrop are the bluffs of black siltite and phyllite north of Yuzkli Lake. Here the historical workings (Cosalite property) were seen to consist of bedded and transverse quartz veins to 3.5 m wide exposed up to 4 m along their strike. Sample R-2, with visible galena, assayed 0.52 oz/t Ag and 0.001 oz/ton Au with 1.81% Pb. The phyllites strike along the bluffs, trending northwestwards into the Yuzkli Creek valley. Coarse galena, sphalerite and pyrite were found in vein quartz float in the stream northwest of the bluffs. The bluffs fade out to the southeast and the author suspects that the more resistant rocks, which make up the bluff, are truncated by a north-northeast fault along the stream gully east of the Mustang 1 claim.

Abundant black and white marble float was found along the east side of Mustang 1. It is similar in appearance to the fine marbles that control replacement ore deposition along the Barkerville Gold Belt. It is noteworthy that the float is near the supposed contact between the black siltite unit (DMS) and the quartzite unit (MPd), a contact of critical exploration interest.

The second old working on the property, on the south fork of Yuzkli Creek, is also a quartz vein prospect. A 10 cm wide vein, with some pyrite, was found here. The ground has mostly sloughed in and it is probable that the vein system is more extensive. The quartz sample assayed from this location had minimal gold (0.001 oz/ton) and silver (0.01 oz/ton) values.

One stream in particular had abundant vein quartz float with galena and pyrite. This is the north-northeast creek passing through the central part of Mustang 2 and 3 claims. A fracture is interpreted to lie along this gully. It could be that the fracture continues to the north side of Yuzkli Creek. The most
significant float sample was also found in this stream. It consisted of angular boulders of coarse grained, gray dolomite with fine disseminated pyrite. A very similar rock occurs in the ore zones on Island Mtn.

3.2.1 Geological Features Relevant to Exploration

Also shown in Figure 7 are glacial features. The situation of the glaciofluvial complex in the Yuzkli Creek - Mustang Creek valley effectively rules out stream sediment or soil sampling in that area, as much of the material has travelled some distance. On the upper slopes, however, meltwater channels reach through the till and the depth to bedrock is not great.

From observations elsewhere in the area, the author estimates the depth to bedrock in areas underlain by the lodgement till to be up to 6 m. The depth to bedrock in the Yuzkli Creek valley could be up to 30-40 m.
4 GEOCHEMISTRY

4.1 Introduction

In 1983 10 man-days were spent on collecting silt samples along some 15 km of streams on the property. Samples were taken at nominal 200 m intervals and at every tributary entering the major streams. In all, 62 silt samples were collected.

Earlier work in the area has shown that arsenic, silver, lead and zinc are the best pathfinder elements for gold deposits, particularly the pyritic type, and samples were analysed for these elements. In addition, tungsten was analysed because of the close association of scheelite with carbonate in the area. However, in all samples tungsten had the same low value, 2 ppm, and it is not discussed further.

4.2 Sampling Method

Conventional sampling practices were followed. Samples were collected at nominal 200 m intervals along the major drainageways and from tributaries. All sample locations were flagged. Only the minus 80 fractions of the samples were analysed and therefore coarse gravel and rock fragments were removed before bagging. Samples were dried before sending to the laboratory.

4.3 Analytical Procedure

The silt samples were analysed by Acme Analytical Laboratories Ltd., 852 E. Hastings St., Vancouver, B.C. An ICP (inductively coupled plasma) technique was chosen because of its low cost and suitability for low sulphide and metal contents. The sample preparation procedure is notated on the assay certificates, Appendix III. Detection limits are 0.1 ppm for silver, 1 ppm for lead and zinc, and 3 ppm for arsenic and tungsten.

4.4 Results

Figure 8 shows the silt sample locations. Appendix III lists the analytical results. Figures 9 to 12 show the plotted
results. Figures 9 to 12 show the plotted results for arsenic, silver, lead and zinc, respectively. Histograms of the results are given in Appendix IV. Those sample sites with As, Ag, Pb and Zn values considered to be anomalous are compiled on Figure 13. The major drainageways have been referenced with the letters (a) to (h) for convenience.

Statistics of the data set are summarized in Table 4. The local threshold was calculated on a statistical basis and is equal to the mean plus 2 standard deviations.

**Arsenic (Figure 9)**

Two samples with arsenic above the threshold (27 ppm) lie on the south side of the Yuzkli Creek drainage basin, in the vicinity of stream (c). Stream (b) is very unusual in that its silts carry less than the mean arsenic value (15 ppm). This is more unusual when one considers the abundant mineralized float found along its course.

Geochemical gradients are not well expressed, except possibly along stream (f) where there is a tendency for higher values to occur downstream.

**Lead (Figure 10)**

All four of the anomalous sites (more than 60 ppm Pb) lie in the Yuzkli Creek drainage, both on the north and south sides of the valley. Those anomalies on stream (f) are downstream of mineralized quartz float and on strike with galena and pyrite-bearing quartz veins at the Cosalite workings. Streams (c) and (d) also appear anomalous in their lower sections.

**Silver (Figure 11)**

Stream (g) and the stream immediately to the south are the most anomalous on the property. It appears that the source of the silver anomalies lies well within the Mustang 1 claim. This same area is where limestone float was found. As in the case of arsenic, stream (b) is marked by low values of silver. This was not expected considering the presence of galena-bearing quartz
Table 4. Summary of geochemical statistics. Values in ppm.

<table>
<thead>
<tr>
<th>Element</th>
<th>No. Samples</th>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Threshold (1)</th>
<th>No. Samples Greater than Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>As</td>
<td>62</td>
<td>4 - 33</td>
<td>14.9</td>
<td>6.4</td>
<td>27</td>
<td>2</td>
</tr>
<tr>
<td>Pb</td>
<td>62</td>
<td>11 - 97</td>
<td>27.6</td>
<td>16.3</td>
<td>60</td>
<td>4</td>
</tr>
<tr>
<td>Ag</td>
<td>62</td>
<td>0.1 - 1.8</td>
<td>0.37</td>
<td>0.4</td>
<td>1.1</td>
<td>3</td>
</tr>
<tr>
<td>Zn(2)</td>
<td>62</td>
<td>53 - 384</td>
<td>104</td>
<td>35</td>
<td>174</td>
<td>7</td>
</tr>
</tbody>
</table>

(1) Mean + (2 standard deviations)
(2) Samples with 268, 341, 360 and 384 ppm Zn deleted from calculations.
float (galena usually contains some amount of silver in the Cariboo district).

Zinc (Figure 12)

Most sites with zinc above the threshold (174 ppm Zn) are on the north side of Yuzkli Creek; particularly stream (f) where sphalerite-bearing vein quartz was found.

4.5 Discussion of Results and Interpretation

Figure 13 is a compilation map of the overall geology and reconnaissance silt geochemistry. Anomalous silt sites, those with metal contents above the threshold, are located on this map. With one possible exception, all anomalous sites are located over unit DMs, the black siltite and phyllite unit. Three general areas of anomalies exist; (1) stream (f), on strike with known mineralization, (2) stream (g) and the stream to the south, and (3) the north slope of the hill between streams (b) and (d). One zinc anomaly seemingly overlies basaltic rocks of the Antler Formation southwest of Yuzkli Lake. Because there are few outcrops in the area, it is possible the geological contact lies further to the southwest than is shown and the zinc anomaly is related to mineralization in the DMs unit. However, thrust faulting and shearing is a characteristic of the basal contact of the Antler Formation and it is also possible that the zinc anomaly is related to mineralization along this relatively flat-lying fracture zone (the thrust plane).

There is no clear relation between the fracture traces, mineralization and geochemical anomalies except for stream (f) and possibly the north-northeast projection of the fracture trace along stream (b) to the area of silver and zinc anomalies along the east side of Mustang 1.

Half of the silt anomalies lie between the two overturned fold axes; i.e. over the overturned limb with the contact between units MPd and DMs. This same structural situation is the location of mineralization to the southeast and the presence of geochemical anomalies here is taken to indicate similar
mineralization on the Mustang property. Further support to
this interpretation is given by the presence of mineralized
float found along stream (b).

The anomalies on the northeast side of the Mustang Creek -
Yuzkli Creek valley are interpreted to be caused by bedrock
mineralization, as shown by the close proximity of known
mineral occurrences such as the Cosalite prospect north of Yuzkli
Lake and the Comstock prospect east of Mustang 1. The sources
of the two silver anomalies in the northeast corner of Mustang 1
are not in the Yuzkli Creek drainage basin, and are probably
caused by mineralization north and east of the local drainage
divide.
5 CONCLUSIONS

5.1 Geomorphology

The higher parts of the property, characterized by gently rolling hills, are remnants of a Tertiary plateau. The melting of a static ice sheet which covered this surface in the Pleistocene resulted in a lodgement till deeply cut by meltwater gullies. Many of these are today occupied by only small, intermittent streams. In a few places these gullies extend to bedrock. The depth to bedrock in areas underlain by the lodgement till is estimated to be up to 6 m.

A valley glacier occupied the northwest trending valley of Yuzkli and Mustang Creeks. Its stagnation and wasting resulted in moraine deposits and a kettled aspect along this valley. The depth to bedrock in the valley is estimated to be up to 30-40 m.

Several creeks on the Mustang Group have alignments parallel to the regional fracture sets, particularly those trending north-northeast, northeast and northwest.

5.2 Lithology

The property is mostly underlain by Paleozoic metasedimentary and metavolcanic rocks. The metasedimentary rocks are black phyllite and siltite and gray micaceous quartzite. Quartz veining is widespread. These rocks are the host to most of the gold occurrences in the Cariboo district. The presence of limestone and dolomite on the Mustang group is suggested by abundant float of the same north and south of Yuzkli Creek.

The metasedimentary rocks are overthrust by basalt, gabbro and serpentine of the Antler Formation.

5.3 Structure

The claims are crossed by a northwest trending anticline and syncline that are overturned to the southwest. The penetrative foliation of the rocks dips mostly north and northeast. Fractures trend northwest, north-northeast and northeast. At the base of the Antler Formation in the western part of the claims is
a thrust fault below which the rocks are intensely sheared. Minor folding and complex cleavage and foliation relations can be expected throughout the area.

5.4 Mineralization

5.4.1 Known

Previous work in the area focused on gold-quartz veins and there are two such known historical mineral occurrences on the property; (1) the Cosalite prospect north of Yuzkli Lake - a number of pyrite and galena-bearing quartz veins with low gold values, and (2) a similar occurrence on the south fork of Yuzkli Creek. Representative samples of vein quartz from both these locations were sampled in 1983. The sample from the Cosalite prospect assayed 0.52 oz/ton Ag, 0.001 oz/ton Au with 1.81% Pb. The sample collected from the south fork of Yuzkli Creek assayed 0.01 oz/ton Ag and 0.001 oz/ton Au. Such minimal values are to be expected where surface leaching of fractured quartz has removed precious metals.

Several other gold occurrences lie within a few kilometers east and south of the property. Assays from these occurrences report up to 0.12 oz/ton gold and 102.5 oz/ton silver in 25.7% lead.

The exploration target that Mr. Boutwell seeks is the pyritic replacement type ore, as found along the Gold Belt to the southeast. A feature of this type of deposit is the close spatial relation to pyrite-bearing dolomite at the contact between the black clastic and quartzite rock units. Such a rock type was found as stream float in the central part of the Mustang 2 claim.

5.4.2 Potential

Two types of gold ore deposits are considered to be possible on the Mustang group; quartz vein ore and pyritic replacement ore bodies in limestone. The claims lie at the northwest end of the Barkerville Gold Belt aligned along an overturned fold developed at the contact between black phyllite and gray micaceous
quartzite. Gold-bearing pyritic replacement ore is found in a limestone member in the quartzite unit adjacent to its contact with the black phyllite. Gold-quartz veins are most common and best developed along north-northeast trending faults.

The Mustang group has an excellent potential for having deposits similar to those found to the southeast for the following reasons:

(1) continuity of lithology; presence of the same rock units that host gold deposits along the Barkerville Gold Belt.
(2) continuity of structure; the same fold structure that controls gold mineralization to the southeast extends across the property.
(3) the presence of north-northeast and northeast trending fractures that localize gold-quartz veins along the Gold Belt.
(4) the presence of several mineral occurrences on and near the property.

5.5 Geochemistry

Reconnaissance geochemical silt sampling was performed in 1983 along the major drainageways. Analyses were made for arsenic, lead, silver and zinc. Virtually all the anomalies, a total of 14, are over the black phyllite and siltite unit. Half of these are located over the overturned fold limb that involves the critical geological contact of interest, that between units DMs and MPd. This lends further support to the view that there is a good potential of mineralization in the area between the traces of the two overturned fold axes. The other half of the anomalies have a close spatial relation to known mineral occurrences including sulphide-mineralized float. These are found over the black phyllite unit (DMs).
6 PROPOSAL FOR DEVELOPMENT

6.1 Recommendations

The Mustang claim group meets all of the known geological criteria for gold mineralization in the district and the author has no hesitation in recommending that Mr. Boutwell pursue mineral exploration on the property. The type of target that is sought is pyritic replacement ore bodies in limestone. Associated gold-bearing quartz veins can be anticipated. In addition, testing the property for stratiform silver, lead and zinc deposits should be done. The program proposed here covers the Mustang 1 and 2 claims and the north half of Mustang 3 (Figure 13).

Disadvantages to any mineral exploration program in the area are that (1) there are few outcrops and (2) thick glacial deposits occupy the Yuzkli Creek valley. Accordingly, in order to explore for either pyritic replacement ore or stratiform silver, lead and zinc deposits, an approach using a combination of geophysical and geochemical techniques will be needed. A four stage program is outlined below.

Stage 1 Preparatory Surveys

This stage of work includes access trail and survey grid construction. During this work geological mapping of outcrops and float can also be done.

Stage 2 Geophysical Surveys

More information needs to be acquired about the distribution of lithologies beneath the glacial drift. Two very effective and relatively inexpensive methods to achieve this are through magnetometer and VLF-EMl6R surveys. The latter survey, an electroconductivity technique, is quite suited for locating near surface disseminated sulphides and transverse fractures.

Stage 3 Geochemical Survey

It is entirely possible that the results from the geophysical
surveys will enable the targeting of prospect drill sites. Before proceeding to Stage 4 however, it is recommended that a geochemical orientation survey be done over geophysically anomalous areas to see if there is any correlation between the soil geochemistry and magnetism or conductivity. If such is the case then detailed soil sampling on a grid is recommended before proceeding with Stage 4.

Stage 4 Exploratory Drilling

Contingent upon a favorable evaluation of the geophysical and geochemical surveys a limited program of diamond drilling is recommended. It is possible that two or three holes could be sited over anomalous sites. BQ wireline is recommended to ensure adequate recovery. If the drill holes intersect fault zones, then a larger drill size (NQ) might become necessary. The objective of the Stage 4 work is to establish sufficient grounds for additional exploration on the Mustang property.

6.2 Estimated Costs

Stage 1 - Preparatory Surveys

Access trails (6 km), grid baseline and control lines (8 km) construction $ 5,000
Geological mapping $ 2,000
Mobilization, equipment rental $ 1,000
Camp cost, 4 men 1 week $ 1,200

Total Stage 1 $ 9,200

Stage 2 - Geophysical Surveys

Stage 2a - Magnetometer Survey
100 line km of magnetometer survey $ 15,000

Stage 2b - VLF-EM16R Survey
100 line km of VLF-EM16R survey $ 12,000
Camp cost, 4 men 3 weeks $ 3,600

Total Stage 2 $ 30,600
**Stage 3 - Geochemical Survey**

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<th>Description</th>
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<td>Orientation survey</td>
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<tr>
<td>Full sampling program (1000 samples)</td>
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<tr>
<td>Analyses</td>
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<td>Data analysis</td>
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<td>Camp cost, 4 men 1 week</td>
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<td><strong>Total Stage 3</strong></td>
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**Stage 4 - Exploratory Drilling**

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<th>Description</th>
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<td>Mobilization and site preparation</td>
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<tr>
<td>3 holes, BQ size, totalling 300m</td>
<td>$30,000</td>
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<tr>
<td>Supervision, core logging</td>
<td>$2,000</td>
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<td>Assays</td>
<td>$2,500</td>
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<td>Camp cost, 3 men 2 weeks</td>
<td>$1,800</td>
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<tr>
<td><strong>Total Stage 4</strong></td>
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Program Subtotal $97,300

Contingency (weather and access problems)

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<td>$19,460</td>
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<tr>
<td>Administration @ 5%</td>
<td>$4,865</td>
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<td><strong>Total Estimated Cost</strong></td>
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K.V. Campbell, Ph.D.
CAMPBELL & ASSOCIATES LTD.
ITEMIZED COST STATEMENT

In the matter of prospecting, rock sampling, geological mapping, air photo interpretation, geochemical sampling on the Mustang 1, 2 and 3 mineral claims, 93H/4, Cariboo Mining Division, B.C., on behalf of Mr. John Boutwell of 325 St. Laurent Ave., Quesnel, B.C., I, K.V. Campbell of K.V. Campbell and Associates Ltd., Wells, B.C. do declare that the following expenses were incurred during the course of the work between August 1, 1983 and September 30, 1983 and during the ensuing report preparation.

a) Wages paid; as per attached Schedule A $2,400
b) Camp costs, Yuzkli Lake
   10 man days @ $20/day ........................................ 200
c) Transportation Wells to work site
   2 day trips August 17 and 21
   Truck rental ($40.00/day), kilometerage
   (25¢/km); 120 km round trip .......................... 110
d) Assays and analyses
   Silt samples: preparation, 62 samples
   analysed for As, Ag, Pb, W, Zn .................... 292.75
   Rock assays: preparation ($5), 2 samples
   assayed for Ag and Au ($10), 1 sample
   assayed for Pb ($3.50) ............................. 28.50
e) Maps, photos, courier charges, expendable
   field supplies ................................. 150
f) Computer processing, 5 hours @ 20/hour ........... 100
g) Data compilation, drafting, report preparation,
   reprographics .................................. 2,100

Total cost ........ $5,381.25

I make this solemn declaration conscientiously believing it to be true and knowing it is of the same force and effect as if made under oath and by virtue of the Canada Evidence Act.

January 30, 1984

K. Vincent Campbell
K.V. CAMPBELL & ASSOCIATES LTD.
ITEMIZED COST STATEMENT - SCHEDULE A - Work Schedule for Mustang Group, C.M.D.

<table>
<thead>
<tr>
<th>Employee</th>
<th>Dates on Site</th>
<th>Total Days</th>
<th>Rate ($/day)</th>
<th>Total Wages Paid</th>
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<tr>
<td>K.V. Campbell</td>
<td>August 17, 18, 19, 20, 21; 1983</td>
<td>5</td>
<td>380</td>
<td>$1,900</td>
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<tr>
<td>T. Cushman</td>
<td>August 17, 18, 19, 20, 21; 1983</td>
<td>5</td>
<td>100</td>
<td>500</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td>$2,400</td>
</tr>
</tbody>
</table>
8 CERTIFICATE

I, KENNETH VINCENT CAMPBELL, resident of Wells, Province of British Columbia, hereby certify as follows:

1. I am a Consulting Geologist with an office at the corner of Dawson St. and Blair Ave., Wells, B.C.
2. I graduated with a degree of Bachelor of Science, Honours Geology, from the University of British Columbia in 1966, a degree of Master of Science, Geology, from the University of Washington in 1969, and a degree of Doctor of Philosophy, Geology, from the University of Washington in 1971.
3. I have practiced by profession for 13 years. I have been a member of the Geological Association of Canada since 1969.
4. I am a member in good standing with the following professional societies; American Society of Photogrammetry and Remote Sensing and the International Association of Engineering Geologists.
5. This report, dated January 30, 1984, is based on my study of available reports of the Yuzkli Creek - Mustang Creek area, an air photo interpretation of the same area, geochemical sampling and prospecting of the Mustang Mineral Claim Group located in the Cariboo Mining Division of British Columbia.

DATED at Wells, Province of British Columbia, this 30th day of January, 1984

K. Vincent Campbell, Ph.D.
Geologist
Mustang Group

Yuzkli

C4

Silt Samples

Assayed Rock Samples

J. BOUTWELL

Mustang Group
Cariboo Mining Division, B.C.

SILT GEOCHEMISTRY
SAMPLE LOCATIONS

Scale 1:20,000
NTS 93H/4
Sept. 13/83

FIG. 8
All values in ppm

- < mean (< 15)
- mean - threshold (15 - 27)
- > threshold (> 27)
All values in ppm

- < mean (<28)
- mean - threshold (28-60)
- > threshold (>60)

J. BOUTWELL
Mustang Group
Coriboo Mining Division, B.C.
SILT GEOCHEMISTRY
-Pb-

Scale 1:20,000
NTS 93H/4
Sept. 13/83

FIG. 10
Mustang Group

All values in ppm

- < mean (<104)
- mean - threshold (104 - 174)
- > threshold (>174)

J. BOUTWELL
Mustang Group
Cariboo Mining Division, B.C.
SILT GEOCHEMISTRY
- Zn -

Scale 1:20,000
NTS 93H/4
Sept 13/83
FIG. 12
EXPLANATION

ROCK UNITS

- MPav: Antler Formation
- MPt: Tom Ck. Succession
- MPd: Downey Ck. Succession
- DMs: phyllite, siltite

- Geological contact, approximate
- Thrust fault
- Overturned fold axis
- Fracture zone
- Silt anomaly, metal content above threshold
- Mineralized outcrop
- Mineralized float
- Creek referred to in geochemical results
- Drainage divide

southern limit of proposed exploration grid

J. BOUTWELL
Mustang Group
Cariboo Mining Division, B.C.

COMPILATION MAP

Scale: 1:20,000
NTS 93H/4
Jan. 5/84

FIG. 13
APPENDIX I

B.C. Minister of Mines, Annual Report, 1934, pages 26, 27
The main working-level, situated at the divide between Mink gulch and the East fork Jack of Clubs creek at an elevation of 5,200 feet, had on May 27th (by which date operations had been suspended) been driven a total length of approximately 1,535 feet. For the first 6 feet the adit follows a bearing south 51 degrees east and thereafter a due-south course. At 2 feet from the portal some well-mineralized quartz is exposed on the west side of the working and at 317 feet a vein with a maximum width of 3 feet. Just south of the bend in the working a large vein slightly mineralized crossing the formation was intersected. Between 922 at 1,020 feet the working passes through a siliceous sill intruding the formation.

**Sugar Creek Section.**

These groups consist of a number of claims owned by T. Riley and associates. Moonlight and of Wells. The groups are situated on what is locally known as Mustang carbonatite, which lies immediately north of Little Mustang creek. The latter flows into Sugar creek close to Walker’s House, which is reached by sleigh road from Wells, about 12 miles distant. From Walker’s House a good pack-trail about 11 miles in length leads to the property. The property lies on a timbered, flat-topped summit, cut by creek-valleys. Quartz veins, both “A” and “B” types, occur in schistose sediments of the Cariboo series, sparsely mineralized with pyrite and galena, with some sphalerite.

At one point a prominent vein, upwards of 30 feet in width, striking with the sediment, very sparsely mineralized with pyrite and galena, is exposed by an open-cut on the left bank of a small creek. A sample of the selected material assayed a trace of gold. The creek mentioned flows north-westerly, and various veins are exposed at different points on its banks up-stream from the vein described. Some of these appear to be typical “B” veins, while others strike more or less with the formation but cut it on the dip.

At one point on the right bank of the creek an adit 50 feet long follows a flat-dipping vein exposed on the south side only in faulted ground. The face of the working is almost wholly in oxidized quartz, in which occurs a compact seam of galena and sphalerite a few inches wide. A sample of this upon assay yielded: Gold, trace; silver, 10.2 oz. per ton; lead, 25.1 per cent. Above this working are exposed on the surface several closely spaced veins, somewhat oxidized and sparsely mineralized. About 250 feet up-stream from the working a shaft full of water said to be 18 feet deep, is sunk on a quartz vein of the “A” type. On the foot-wall of this vein is a narrow seam of pyrite. A sample of the latter showed upon assay a trace of gold.

This group, consisting of several claims owned by P. Johnson, E. Johnson and J. T. McCay, of Wells, is situated immediately north of Mustang lake at the head of the divide between Little Mustang creek and Mustang creek.

It is reached by following the Sugar Creek trail from Wells to Walker’s House; thence a pack-trail 3 miles in length leads up Little Mustang Creek valley to the lake at the base of the property. Quartz veins of “A” and “B” types sparsely mineralized with pyrite and galena occur in sheared sediments of the Cariboo series.

A quartz vein apparently of “A” type conforming with the quartzite formation in strike and dip is exposed 750 feet above Mustang lake, at the edge of the valley-rim. It is much oxidized but shows a little galena. Gold values are stated to be low. Somewhat east and 50 feet above this vein is another, 9 inches wide, mineralized with pyrite exposed in an open-cut. A sample of the selected portions of this vein showed upon assay a trace of gold. On the steep valley-slope 75 feet below this exposure a typical “B” vein, 18 to 20 inches wide and mineralized with pyrite, is exposed in an open-cut. A sample taken across 20 inches at the face of the exposure yielded upon assay a trace of gold. About 200 feet below the last exposure a typical “A” vein from 3 to 4 feet wide is exposed for a length of a hundred or more feet on the steep valley-slope.

This group, consisting of several claims owned by V. Hulbert and Karl Anderson, of Prince George, is situated along a small creek on the south side of Little Mustang Creek valley on the slope of Tom mountain. It is reached by following the Sugar Creek trail to Walker’s House; thence by pack-trail for about a mile up Little Mustang creek; thence by blazed line up the valley-slope.

On the left bank of a small creek a quartz vein several feet in width is exposed striking with the argilites. The underground working consists of a short adit 30 feet long about 50 feet below the surface showing and a short distance north-east of it. Several small quartz veins are exposed and mineralized with pyrite crossing the formation are cut by the working. A sample of the selected pyrite assayed a trace of gold.
APPENDIX II

Barkerville Gold Belt, Cariboo District, B.C., Hanson, G.,
wide striking north 10 degrees west, dipping 30 degrees west, and lying in sheared quartzite with approximately the same strike and dip. The vein is locally split into several veins. The quartz is mineralized with some pyrite and galena.

CANYON AND TYEE GROUPS

The Canyon and Tyee groups of claims are held by A. Drinkwater and associates. The Canyon group is on Sugar creek below Little Mustang creek, and the Tyee group is about 2 miles west. Access is via the Sugar Creek trail, and the distance is about 12 miles northwest of the Barkerville road at the foot of Jack of Clubs lake. A short branch trail from Little Mustang creek leads to the Tyee group.

On the Canyon group many quartz veins are exposed on the banks of Sugar creek, either naturally or in open-cuts. They occur in rocks striking west-northwest and dipping about 40 degrees north. No vein has been traced for over 100 feet, and all are very sparsely mineralized with pyrite. Most of the veins are parallel to the strike of the enclosing rocks, but some strike north-northeast. Low values in gold are reported.

The showing on the Tyee group is a body of quartz 20 feet by 50 feet, containing some pyrite, galena, sericite, and inclusions of argillaceous schist. A small outcrop of argillaceous schist near the vein strikes west-northwest and dips 40 degrees north. The quartz body appears to strike northeast and dip 60 degrees northwest, but a cover of drift obscures relationships and it is not even certain that the quartz is in place. Low values in gold are reported.

CARIBOO CORONADO MINING SYNDICATE

In 1934 the Cariboo Coronado Mining Syndicate carried on surface and underground exploration on its holdings northeast of Willow river opposite Island mountain.

The country rock consists of limestone and schist of the Barkerville formation and of argillite and quartz-sericite schist of the overlying Pleasant Valley formation.

An adit was driven north 13 degrees west for 1,150 feet (August, 1934) into the mountain southeast of Martin creek to cut veins exposed on the surface 500 to 800 feet higher. The objectives were not reached, but the adit cut several quartz veins a few inches to 2 feet wide and several bands of calcareous argillite and of green schist partly replaced by pyrite.

Another adit was driven north 14 degrees west for 385 feet into the mountain northwest of Martin creek. This adit cut several narrow quartz veins and many quartz gashes and stringers of irregular shape. Some of the quartz is well mineralized with pyrite. A band of replacement ore 2 inches wide cut by the adit assayed $10 a ton in gold. Open-cuts and a shaft on the mountain top expose several quartz veins a few inches to 8 feet wide mineralized with galena and pyrite. The veins strike north 30 degrees east to east. Picked samples have assayed more than half an ounce of gold a ton. The veins are mostly in argillaceous and sericitic schists, but one is in a body of undefined shape of quartz porphyry.
COMSTOCK GROUP

The Comstock or Big Twelve group adjoins the Tyee group on the north, and is about 12 miles northwest of the Barkerville road at the foot of Jack of Clubs lake. Access is provided by the Sugar Creek trail and a short trail from Little Mustang creek. The owners are Messrs. Sparling, Riley, and others of Barkerville.

The country rocks are sheared quartzites and conglomerates, probably of the Cariboo series, striking west-southwest to west-northwest and dipping about 40 degrees north. Three groups of veins are exposed in open-cuts, shafts, and tunnels.

A vein 18 inches wide is exposed in open-cuts and strikes east and dips 70 degrees south. This vein cuts across the strata making a small angle with their strike and a large angle with their dip. It has been traced for 100 feet. The western open-cuts disclose four narrow veins, indicating that the 18-inch vein either splits to the west or that other parallel veins begin there. About 100 feet north an incline shaft 10 feet or more deep exposes a 4-foot quartz vein striking northwest, dipping 45 degrees northeast, and lying parallel to the strata. About 100 feet farther north a 50-foot adit driven southeast cuts a body of quartz 8 feet or more wide. This vein appears to strike west-northwest parallel with the strike of the rock. An open-cut 200 feet northwest exposes vein quartz that may belong to this vein. The veins are sparsely mineralized with pyrite and galena and contain some sericite. Low values in gold are reported.

FOSTER LEDGE GOLD MINES, LIMITED

The property of the Foster Ledge Gold Mines, Limited, consists of the old Foster group and other claims on Chisholm creek about 2 miles north of Stanley.

The country rock consists of sericite and argillaceous schists of the Cariboo series, striking north and dipping 30 degrees east. Several narrow quartz veins striking north or slightly east of north and dipping 70 degrees west are exposed on the banks of Chisholm creek. The veins have been traced for about 100 feet and contain pyrite, galena, sphalerite, and free gold. At this locality an old shaft on Chisholm creek is reported to be 58 feet deep and to have been sunk on two 5-foot veins 4 feet apart. It is reported that samples from the shaft have assayed $700 a ton in gold. About 400 feet south of the shaft, and about 100 feet lower, an adit has been driven 315 feet north. It cuts several narrow quartz veins. Another vein a foot wide, striking northeast and dipping 75 degrees northwest, is exposed 1,800 feet southeast of the shaft. A crosscut adit has been started eastward from Chisholm creek to cut this vein at a depth of 200 feet. It is 200 feet long and will reach the projected position of the vein in another 300 feet. Open-cuts 2,400 feet southwest of the shaft expose one or more quartz veins 2 feet wide striking north 25 degrees east and well mineralized with galena.

NORTH STAR GROUP

The North Star group of claims is on Cooper creek, a short stream entering Sugar creek from the southwest. Cooper creek is 10 to 11 miles
APPENDIX III
Assay Certificates
ICP GEOCHEMICAL ANALYSIS

A .500 gram sample is digested with 3 mL of 3:1:3 HCl to HNO3 to H2O at 90 deg.C. for 1 hour. The sample is diluted to 10 mLs with water. This leach is partial for: Ca, P, Mg, Al, Ti, La, Na, K, W, Ba, Sr, Si, Cr and B. Au detection 3 ppm.

SAMPLE TYPE - SILT, P=POLVERIZING

ASSAYER: DEAN TOYE, CERTIFIED B.C. ASSAYER

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K.V. CAMPBELL & ASSOCIATES LTD
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ASSAY CERTIFICATE

SAMPLE TYPE: ROCK - CRUSHED AND PRUVERIZED TO -100 MESH.

ASSAYER: DEAN TOYE, CERTIFIED B.C. ASSAYER

CAMPBELL & ASSOCIATES - FILE # 83-1975B

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DATE RECEIVED: SEPT 2 1983
DATE REPORTS MAILED: SEPT 6 1983
APPENDIX IV

Histograms of Silt Analyses
MUSTANG GROUP - Silt Samples
Histogram of 62 As analyses.

Mean = 14.9
Standard Deviation = 6.4
Range of Analyses = 4 to 33 ppm
Threshold = 27 ppm As
MUSTANG GROUP - Silt Samples

Histogram of 62 Ag analyses.

Mean = 0.37
Standard Deviation = 0.4
Range of Analyses = 0.1 to 1.8 ppm
Threshold = 1.1 ppm Ag
MUSTANG GROUP - Silt Samples

Histogram of 62 Pb analyses.

Mean = 27.6
Standard Deviation = 16.3
Range of Analyses = 11 to 97 ppm
Threshold = 60 ppm Pb
MUSTANG GROUP - Silt Samples

Histogram of 62 Zn analyses. Not in the calculations are samples with 268, 341, 360, 384 ppm Zn.

Mean = 104 ppm
Standard Deviation = 35
Range of Analyses = 53 to 384 ppm
Threshold = 174 ppm Zn

Note: Samples 341, 360, 384 ppm Zn note shown on graph below.
Name: Cosalite, South Yukon

Mining Inventory Nos. 81-38, 44

Lat. 53° 0' 12" Long. 121° 0' 46" NTS 981/4 WA

Mining Division: Cariboo

Claims (Central Records): Mustang 1, 2, 3

Owner/Operator: J. Boutwell
Address: 335 St. Laurent Ave., Quesnel, B.C.

Operator: Same
Address:

Owner/Operator: J. Boutwell

Geological description:
- Black phyllite (Devonian), Muscoy, quartzite (Mississippian), phyllite and schist, and diorite, basalt, gabbro and augenite. Anorthosite.
- The rocks are folded into a northwest striking overturned syncline anticline.
- Terministic quartz veins are mineralized with arsenopyrite, chalcopyrite, galena, sphalerite, pyrite, pyrrhotite, and molybdenite.

Work done:
- Geology
- Geochimistry
- Uraniferous sulphides

Type
Amount
Claims Worked On

Author(s): K. N. Campbell
Aff. date: Feb 14, 1984
Year of work: 1983-1984

Attention: Information class: 3

Comments:

Value work done (from report): $381.25
Value of work approved: $381.25
Value claimed (from statement): $5200

Value credited to PAC account:

Value debited to PAC account:

Accepted: Date: 8/8/84
Report No.: 84-451 - 12383