

File 92 N/14

Report on:

Mineral deposit

MOUNTAIN KING and MOUNTAIN CITY GROUPS

Perkins Peak

Quesnel Mining Division

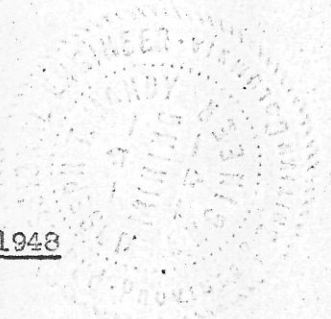
by

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October, 1948



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INDEX

<u>Subject</u>	<u>Page</u>
Purpose of Report . . . . .	1
Basis of Report . . . . .	1
Summary and Conclusion . . . . .	1, 2
References . . . . .	1
Property . . . . .	3
Location . . . . .	3
Adjoining properties . . . . .	4
Accessibility . . . . .	4
Transportation costs and facilities . . . . .	5, 6
Camp . . . . .	6
Topography . . . . .	6
History . . . . .	6, 7
Climate . . . . .	7
Timber . . . . .	8
Water . . . . .	8
Waterpower . . . . .	8
Geology . . . . .	9, 10
Mineral Deposit . . . . .	10, 11
Workings . . . . .	11, 12
Sampling . . . . .	12
Values . . . . .	12, 13, 14
Tonnage and value . . . . .	14
Milling and Metallurgy . . . . .	15
Costs . . . . .	15
Economics . . . . .	16
Conclusion . . . . .	16, 17
Recommendation . . . . .	17, 18, 19

Appendix

Photographs - 2 pages  
Assay certificate 85079/091 - Aug. 6th, 1948, J. R. Williams & Son  
" " File No. 5740 - " 23rd, 1948, G. S. Eldridge & Co. Ltd.

Accompanying Maps

- Map No. 1 - Coast Range Batholith, Mineral Deposits,  
Eastern Contact,
- Map No. 2 - General Geology, Perkins Peak area,
- Map No. 3 - Claim map,
- Map No. 4 - Main workings, with geology, sample and assay plan,
- Map No. 5 - Commodore adit, " " " " " "

PURPOSE OF REPORT:

The purpose of this report is to determine whether the mineral deposit occurring in these groups has commercial potentiality and warrants further exploratory-development work.

If further exploratory-development is found to be warranted, a plan of initial development with estimate of the cost is to be submitted.

BASIS OF REPORT:

The examination of the property, on which this report is based, was undertaken at the request of Mr. J. N. Killas, the owner.

This report is based on my personal detailed examination of this property. The following period was used exclusively on this work: July 27th, 28th, 29th, 30th, 31st, August 1st, 2nd, 3rd, 4th. Of this period, 5 days were spent in detailed examination of the workings and area of the showings.

SUMMARY AND CONCLUSION:

The property is located in the geologically favourable area of the Eastern Contact Zone of the Coast Range Batholith. The majority of the commercial mineral deposits discovered in Western British Columbia are in this mineral belt (see Map No. 1).

The area of the claims is embraced by a pronounced embayment in the batholith contact about 5 miles deep and 3 miles wide (see Map No. 2). This is a very favourable structural form associated with the most promising mineral deposits on the Eastern Contact Zone.

The mineral deposit on this property occurs in a wide zone of silicification (quartzite) occurring between impervious sediments. These overlying and underlying impervious sediments probably have acted as a structural control that has confined, dammed or trapped the mineral solutions in the channel between them.

This structure is indicated to be appreciably continuous both horizontally and vertically.

Mineralization is probably related to the end phase of the Coast Range Batholith and more specifically to a spur-stock of quartz diorite which outcrops about 1 mile south-east of the claims. A dike of this intrusive rock also forms the foot-wall of the mineral zone in the Commodore adit (see Map. No. 5).

Mineralization is mainly arsenopyrite in stringers, veinlets and patches. The gold content of this mineral is indicated to be sufficiently high to produce a concentrate of high gold and arsenic content that should be marketable without a smelter penalty.

The developed width and length of the mineral zone indicates a possible appreciable tonnage potential.

The property is comparatively easily accessible. Transportation costs for preliminary developments are not excessive. In the event of extended development being warranted, road construction from the present road at One Eye Lake to an operating camp in the Miner Lake Valley about  $\frac{3}{4}$  mile north of the showings, presents no exceptional technical difficulty. Road and truck haulage could be economically introduced.

Further exploration of this deposit is certainly warranted.

A diamond-drilling in the bedded sediments and volcanics of the area would be expensive and productive of poor core-recovery, this form of exploration is at this stage not considered applicable to this locality. Consequently preliminary exploration should be confined to underground work.

A plan of preliminary exploratory development with cost estimate, is submitted herewith.

REFERENCES:

- Annual Report, Minister of Mines, B.C. - 1916  
(J. D. Galloway)
- Geological Survey Summary Report, 1925 - Part A  
(V. Dolmage)

PROPERTY:

The property consists of two groups of 8 mineral claims each, as follows, (see Map No. 3).

<u>Claim name</u>	<u>Record No.</u>	<u>Recorded Owner</u>
Mountain King No. 1	6291	Kosta James Killas
" " 2	6292	" " "
" " 3	6293	" " "
" " 4	6294	" " "
" " 5	6295	" " "
" " 6	6296	" " "
" " 7	6297	" " "
" " 8	6298	" " "
" City 1	5949	James N. Killas
" " 2	5950	" " "
" " 3	5951	" " "
" " 4	5952	" " "
" " 5	5953	" " "
" " 6	5954	" " "
" " 7	5955	" " "
" " 8	5956	" " "

These claims are owned by the registered owners by virtue of the location under the Mineral Act of British Columbia.

At the time of examination they were in good standing by virtue of completed assessment work up to the recording dates (June 27th and July 6th) in the year 1949. It is understood that the required assessment work to place the claims in good standing for an additional year has been completed.

LOCATION:

The property is located in the Province of British Columbia, Canada, in the Perkins Peak area of the Coast Range mountains, at about Latitude  $51^{\circ} - 49' - 30''$  north and Longitude  $125^{\circ} - 4' - 50''$  west, (see Maps Nos. 1 and 2).

The claims are located on the north slope of Perkins Peak, and extend from about elevation 5000 feet towards the valley bottom, to about elevation 7500 feet at the crest of the north-easterly ridge from Perkins Peak. The showings are around elevation 6500 feet, (see Photographs Nos. 1, 3, 4). The camp is at elevation 6075 feet, about  $1\frac{1}{2}$  miles east of the workings.

The property is located in a straight line, about 13 miles south  $42^{\circ}$  west from Clarence Mac Kill's lodge at One Eye Lake, or about 17 miles by pack-horse trail.

ADJOINING PROPERTIES:

The Last Chance claim, owned by James Tibbles of Quesnel, adjoins Mountain King No. 2 on the north and is recorded as in good standing to October 11th, 1948.

Although many other claims have been staked around the Mountain King and Mountain City groups in past years, there are at present, excepting Last Chance, no other mineral claims adjoining or in the vicinity of these two groups.

ACCESSIBILITY:

The property is reached by railway, bus and highway to Williams Lake. From there a fairly good, unsurfaced auto road (Chilcotin road) extends for 160 miles to Clarence Mac Kill's Klina Klin Lodge at the southerly end of One Eye Lake. Regular freight and passenger stage and trucking service from Williams Lake to Klina Klin is operated by Hudson Brothers, Williams Lake.

From One Eye Lake, elevation 3000 feet, a good pack-horse trail, locally badly located and circuitous, extends to the Mountain King camp located in a protected cirque at elevation 6075 feet. Pack-horses and guides are available from Clarence MacKill, Klina Klin Lodge. Aeroplanes could also land and take-off from Miner Lake, elevation 4615 feet.

From the property camp, elevation 6075 feet, a trail extends for  $1\frac{1}{2}$  miles to the workings. For the first  $\frac{3}{4}$  mile this ascends the steep north rim of the cirque, to its crest at 6450 feet and for this distance is negotiable by pack-horse. From this point a narrow foot-trail follows along the steep, bluffed faces of two scarps, to the workings, (see Photos Nos. 2, 3, 4). This trail can only serve a limited preliminary hand-exploratory operation at the present workings. Any extended operation with machinery would require improved trail or road facility to a crosscut adit-site at a more accessible location at a lower altitude towards Miner Lake valley.

" Snow Valley "

TRANSPORTATION COSTS & FACILITIES:

Freight per P. G. E. Railway, Vancouver - Williams Lake.

1st class (Groceries, etc.) . . . . .	\$2.01 per 100 lbs.
2nd " (Processed goods, pickles, etc.) . . . . .	1.68 " " "
3rd " (Canned goods, etc.) . . . . .	1.34 " " "
4th " (Sugar, etc.) . . . . .	1.01 " " "
Commodities (Eggs, Butter, etc.) . . . . .	1.21 " " "

Machinery, etc.

Set-up machines . . . . .	1½ times 1st class rate
Knocked-down machines . . . . .	1st class rate
Machine parts . . . . .	2nd " "
Steel, fittings, etc. . . . .	3rd " "
Explosives (dynamite) min. \$6 . . . . .	1½ times 1st class rate
Blasting caps . . . . .	2 times " " "
" fuse . . . . .	1st class rate

Freight rates are plus 5¢ per ton harbour dues.

P. G. E. Passenger fare Vancouver - Williams Lake & return	- \$26.15
" " " " " " Upper berth	- 3.10
" " " " " " Lower berth	- 2.50
Bus passenger fare Lake & return	- 21.45

Concentrates per P.G.E. (7th class) Williams Lake - Squamish - @ \$9 per ton.  
(Minimum 50,000 lbs.)

Concentrates per Frank Waterhouse & Co., of Canada Ltd.

Squamish - Tacoma Smelter . . . . .	\$5.10 per ton
(Minimum 15 tons, released to value of \$50 per ton)	

Freight -Williams Lake - Klina Klin per truck - 1.25 cents per lb.  
" -Klina Klin - Perkins Peak Camp per pack-horse 3.00 cents per lb.

Passenger stage fare - Williams Lake - Klina Klin - \$9.00.

Pack and saddle horses can be hired from Clarence MacKill, Klina Klin Lodge.

For continuous contract trucking from Williams Lake to Klina Klin and thence to Perkins Peak, the cost of 1.25¢ and 3¢ per pound, respectively, would probably be considerably reduced .

In the event of warrant for an enlarged operation and continuous road haulage by truck from Williams Lake to the property, the freighting cost to and from the property could be reduced to about 15 cents per ton-mile or a total of \$24.00 per ton from Williams Lake to and from an operating camp in Miner Lake Valley.

These costs compare very favourably with those prevailing in other mineral areas of Northern and North-central British Columbia and Yukon Territory.

CAMP:

There is no permanent camp on the property. At timber-line, at elevation 6075 feet, a tent-frame is available in a protected camp-site in the vicinity of good water and sufficient timber for a small camp (see Photo No. 2).

This camp-site, with extra tents, is suitable to preliminary exploratory-development with a crew of about 5 men operating one shift.

For extended and permanent operation a permanent operating camp-site could be located in the Miner Lake Valley, at about elevation 4500 and about 1 mile due north of the workings, (see Map No. 2 - Photo No. 3).

TOPOGRAPHY:

Perkins Peak, elevation 9380 feet, is the highest mountain of the area and rises prominently at the easterly edge of the Coast Range Mountains bordering on the Interior plateaux country. The showings and workings are on the steep north-easterly slope of the mountain to the Miner Lake Valley (head-waters of Klina Klin River), (see Map No. 2 and Photos Nos. 1 and 4).

The immediate area of the property is rugged and featured by steeply-bluffed cirques and scarps with talus-covered slopes. The crests of the cirques, ridges and scarps are generally rounded by glacial action and shattered by frost (see Photos Nos. 2, 3, 4).

The topography of the Perkins Peak section is typically "Mature" bordering the "Old" features of the plateaux lying to the east.

HISTORY:

This property, formerly known as the Mountain Boss Group, was staked several years ago and later acquired by J. N. Killas and associates of Prince Rupert and Vancouver.

The owners subsequently incorporated the Central Chilcotin Mines Ltd., which carried out a small amount of exploration with limited finances.

The claims were re-staked by the present owners in 1940 and 1944.



The early work was concentrated on open-cutting and the "Mountain Boss" adit which was driven in 1938 to intersect the showing in the short original "Mountain Boss" adit driven at 50 feet higher elevation in 1935. Old maps show some decidedly interesting values in the "Mountain Boss" adit but these, and the structure, do not appear to have been correlated by any careful geological study.

It is indicated, however, from a study of old maps, that the depth extension of the mineralized structures exposed in the open-cuts and 1935 "Mountain Boss" adit, were intersected by the 1938 Mountain Boss adit, but were not further explored.

The most recent work, however, has been done in the "Commodore" adit, and definitely intersects the depth extension of the mineralized structure with appreciable width and values, (see Maps Nos. 4 and 5).

CLIMATE:

The area is on the margin between the heavy snow and rain belt of the Coast Range mountains and the dry belt of the Interior Plateaux.

It is probable that on the higher elevations of Perkins Peak in the area of the workings, snow may fall between September 1st and October 1st, and remain on the ground up to about June 1st. There is no evidence of snow-slides in the area of the workings and along the scarp slope extending to Miner Lake Valley. ??

The operating season at high altitudes for preliminary exploratory-development work would consequently be from 3 to 4 months. ✓

For permanent work with an operating camp and tunnel-site at lower elevations in the Miner Lake Valley, continuous all-year operation would offer no difficulty.

Average total annual precipitation in the lowlands based on records of the Big Creek Station, would approximate 15 inches.

The mean annual temperature would be about 37 degrees Fahr. The coldest month is January with a mean of 11.5 degrees. The warmest month is July, with a mean of about 60 degrees. The mean annual snowfall in the lowlands, between October and May is about 43 inches, with the heaviest snowfall of about 11 inches in the month of November.

TIMBER:

The workings are above timber line, Mining timber, if required, would have to be transported to the "Commodore" adit site at elevation 6475 feet, from lower altitudes in the Miner Lake Valley, where there are good stands of timber for mining, building and fuel purposes.

In the vicinity of the present temporary camp-site at timber-line, there is sufficient fuel timber for a small camp.

WATER:

There is a good supply of running creek-water for all camp requirements close to the present camp-site.

In the event of an extended mining and milling operation, with working sites on the slope to Miner Lake Valley, and a permanent camp-site located in this Valley, there is water for all requirements from creeks on this slope and in the Valley proper, (see Map No. 2).

WATER POWER:

Three water-power sites with appreciable power rating are located on the Klina Klin River south-westerly of the Mountain King. The horse-power rating of these is estimated by the Canadian Commission of Conservation to be as follows:

<u>Site</u>	<u>Headfeet</u>	<u>Horsepower</u>
Klina Klin River, "Grand Canyon" -	100 - 150	15,000
Mussel Creek (trib. to Klina Klin) -	- - 300	300
Slide Creek ( " " " " ) -	- - 360	3,000

Of these, the closest to the claims is the Slide Creek site, about 25 miles south-westerly of the property.

The Klina Klin "Grand Canyon" site is about 40 miles from the claims.

No survey has been made for sites of smaller rating which may be located closer to the property.

GEOLOGY: (see Maps Nos. 1, 2, 4 and 5).

The area in general is embraced by the "Eastern Contact Zone" of the Coast Range batholith. This zone contains most of the important lode mineral deposits of Western and North-western British Columbia. The source of these is the mineral-bearing solutions which have emanated from the rocks of the batholith.

The rock formation of the locality consists mainly of sedimentary beds varying in composition from shale to argillite, sandy argillite, sandstone and quartzite. Some volcanic rocks (andesitic flows and breccias) also occur towards the crest of Perkins Peak. The predominating rock in the region of the workings is sandy argillite, generally altered to quartzite along the mineralized zone. The sedimentary beds are locally gently folded, strike generally N77°E and dip 60 degrees south-easterly. The argillites are generally ferruginous and weather to a rusty-brown colour.

In the locality of the claims the sediments and volcanics are embraced in a very pronounced U-shaped embayment of intrusive granodiorite and quartz diorite of the batholith, the boundaries of which are  $2\frac{1}{2}$  miles south,  $4\frac{1}{2}$  miles south-west and  $1\frac{1}{2}$  miles north-west of the mineral deposit, (see Map No. 2).

The granitic batholith is most probably the source of the mineralizing solutions that have penetrated openings in the sediments to form the mineral deposit.

This embayment structural form is characteristically associated with important mineral deposits along the Eastern contact zone. It can be readily visualized how such trough-like intrusive contact embayments form traps or congenial areas of lingering for mineral gases and solutions accumulating or segregating around the roof or margin of the intrusive granitic rock. The older rocks lying within the embayment form a ready host for the reception in openings within them of these mineral gases and solutions. These contact embayment structures are consequently very favourable localities for the concentration of mineral deposits.

A small quartz diorite stock about 1000 feet in diameter outcrops in a cirque about  $\frac{3}{4}$  mile south east of the workings. A tongue or dyke of quartz diorite also cuts across the "Commodore" adit and forms the foot-wall of the mineral zone at this locality. These intrusive quartz diorite forms are most probably off-shoots or spurs from the main batholith.

The proximity of the intrusive quartz diorite has not only been the probable source of the mineralization but has also altered the host-rock from its original sandy argillite to quartzite.

Some faulting occurs and is indicated in the "Commodore" adit. No major faulting or dislocation of the ore body was observed, but some cross-faulting with small displacement may occur.

MINERAL DEPOSIT: (see Maps Nos. 4 and 5, Photo No. 5)

The mineral deposit consists of a mineralized zone of mainly quartzite lying between beds of argillite and locally, as in the "Commodore" adit between intrusive quartzdiorite on the footwall and black argillite on the hanging wall.

The mineralized quartzite is probably resultant from alteration of a bed of sandy argillite by contacting or nearby intrusive granitic rock. Locally, small segments of unaltered, and partly altered, argillite are contained in the quartzite zone. The degree of alteration to quartzite also varies in the zone. The most intensive mineralization favours the areas of most complete alteration to quartzite.

The mineralized zone is conformable in strike and dip to the sedimentary beds on its hanging and footwall sides, which strike north westerly and dip between 50° and 60° southerly (into the hill). The zone is also locally folded in conformity to the gentle folding of the sedimentary beds.

Mineralization is mainly arsenopyrite occurring in seams, stringers, veinlets, patches and dissemination in the quartzite. The seams and veinlets occur both in fractures and veinlets parallel to the strike and across the strike of the zone. On surface, as at the "McConnachie", "Crosby" and old "Mountain Boss" cuts, stringers, veins and lenses of massive arsenopyrite up to 6 inches wide occur. In the wide exposure of the mineralized zone in the "Commodore" adit between stations 3 and 7 (Map No. 5), mineralization is mainly in the form of a network of seams, veinlets and patches of dark arsenopyrite from a fraction of an inch to about 1 inch in width.

Locally, chalcopyrite and pyrite also in generally sparse distribution occur.

On surface the complete width of the zone is obscured by talus. In the "Commodore" adit, however, it attains an average width of 51 feet.

The mineral deposit is probably genetically related to the contacting and contiguous intrusive quartz diorite. It is medium to high temperature in character and will probably extend to appreciable depth.

WORKINGS: (see Maps Nos. 4 and 5, Photo No. 5)

The mineralized zone has been definitely traced 420 feet by eight open-cuts and 2 adits and very probably extends beyond the old "Mountain Boss" cut at elevation 6630 feet on the east, and certainly beyond the "Commodore" adit at elevation 6535 on the west. A cut (K. assay), 550 feet west of the "McConnachie" cut, with typical mineralization and conforming to the mineralized zone in strike and dip is probably the continuation of the zone. This would give a total traced length of 850 feet with possible further continuity east and west.

The interval between the cuts is obscured by talus. Sloughed talus also partly or completely obscures the zone in the cuts. The zone-width is not completely exposed in any of the surface cuts. In the "Commodore" adit, however, a zone-width of 51 feet is exposed.

The "Commodore" adit (elevation 6475 feet), 5 x 5 feet, has an accumulation of about 6 to 9 inches of ice on the floor, which will have to be cleaned out for further operation. It has been driven as a cross-cut for 157 feet on a bearing S10°W. The zone is intersected at 98 feet from the portal and extends to the face for a width of 51 feet, where it terminates on the footwall of a bed of argillite. At 29 feet from the face, drifts are run in the zone for 16 feet easterly and 16 feet westerly. The back on the mineralized zone above the "Commodore" adit is 70 feet. The ground in the "Commodore" adit is holding well and timbering has not been necessary.

The showing in the "Commodore" cut was obscured by a patch of snow. The steep slope above the cuts makes it practically impossible to keep the open-cuts permanently clear of sloughing talus.

The "Mountain Boss" adit at elevation 6630 at the east end of the workings has sloughed near the portal and was inaccessible for examination with water backed up beyond the slough. An examination of a Premier Mining Company map of this adit, made in 1938, indicates that this is a cross-cut adit driven 200 feet on a bearing of S24°E and intersects the mineralized quartzite zone at about 30 feet from the portal.

SAMPLING: (see Maps Nos. 4 and 5)

Sampling of the surface and underground workings was done by both channel and 'chip-templet' methods by me personally or under my direct personal supervision. In order to minimize possible errors in sampling, large samples of from 4 to 8 pounds were taken.

Assays of these samples were done by both J. R. Williams and Son, and G. S. Eldridge and Co. Ltd., Vancouver, B.C.

These samples and assays are listed under the heading "Values". The assay certificates are appended to this report.

VALUES: (see Maps Nos. 4 and 5)

The following is a list of the samples taken, with corresponding location, description and content.

<u>Sample No.</u>	<u>Width feet</u>	<u>Description</u>	<u>Gold oz. per ton</u>	<u>Silver oz. per ton</u>	<u>Arsenic %</u>
K 1	4.5	El. 6590, 550 feet west of McConnachie cut. Open-cut 28.5 feet along x 8 feet deep along strike of zone N82W, dip 60S. Across 4.5' of quartzite with stringers, veinlets and patches of arseno-pyrite, some pyrite & chalcopyrite	1.18	0.5	-
K 2	13.5x4	McConnachie cut, face quartzite & arseno. stringers	0.35	0.2	-
K 3	13x1.3	McConnachie cut, face cross-fracture with arseno.	0.80	Trace	-
K 4	4.2	Killas cut; face; oxidized quartzite and arseno. patches	0.48	-	-

Sample No.	Width feet	Description	Gold oz. per ton	Silver oz. per ton	Arsenic %
K 5	10	Commodore adit, west side qtzite. plus arseno,	0.12	Trace	-
K 6	10	Commodore adit, west side qzite. plus aresno,	0.16	0.2	-
K 7	10	Commodore adit, west side qzite, plus arseno,	0.70	0.5	-
K 8	10	Commodore adit, west side qzite, plus arseno,	0.16	Trace	-
K 9	12.7	Commodore adit, west side qzite, plus arseno,	0.12	0.1	-
K 10	10	Commodore adit, east side qzite, plus arseno,	0.005	Trace	-
K 11	10	Commodore adit, east side qzite, plus arseno,	0.05	0.2	-
K 12	10	Commodore adit, east side qzite, plus arseno,	0.28	0.3	-
K 13	10	Commodore adit, east side qzite, plus arseno,	0.10	Trace	-
K 14	9	Commodore adit, east side qzite, plus arseno,	0.52	0.10	-
K 15	8	Commodore adit, east cross-cut, N. side	2.72	0.50	18.0
K 16	7	Commodore adit, east cross-cut, N. side,	1.76	0.70	16.04
K 17	8	Commodore adit, east cross-cut, S. side,	1.15	0.30	-
K 18	7	Commodore adit, east cross-cut, S. side,	0.16	0.10	-
K 25	3.7	Commodore adit, east cross-cut Face	0.12	Trace	-
K 19	8	Commodore adit, west cross-cut, N. side,	0.08	0.1	-
K 20	8	Commodore adit, west cross-cut, N. side,	0.12	Trace	-
K 21	8	Commodore adit, west cross-cut, S. side,	0.06	Trace	-
K 22	8	Commodore adit, west cross-cut, S. side,	0.16	Trace	-
K 23	4.3	Commodore adit, west cross-cut, Face,	0.11	0.1	-
K 24	-	Commodore adit, selected arsenopyrite from patches, streaks and veinlets,	4.12	1.20	17.03 (?)
K 26	12x4	McCormic cut, qztite, plus stringers of pyrite, plus arseno,	0.11	Trace	-
K 27	Dump	Old Mountain Boss cut, el. 6630; massive arseno. mineralization in 1 1/2 tons dump,	1.94	0.5	29.60

average → 4.24.02  
a ton in gold

These assay results indicate appreciable gold values associated with the arsenopyrite mineralization. Low silver value in comparatively erratic ratio to the gold and averaging 0.40 silver to 1.0 gold, is also indicated.

In the unoxidized arsenopyrite a gold to arsenic ratio of about 1 oz. gold to 8 per cent arsenic is indicated. The exceptionally high arsenic content of sample K 27 from a long-exposed surface dump is probably due to surface oxidization of arsenopyrite to realger and orpiment which have a much higher arsenic content than arsenopyrite.

The indicated gold-arsenic ratio suggests a possible concentrate value of 5 ounces gold, 2 ounces silver and 40 per cent arsenic with a concentration ratio of about 12:1. It is possible, however, that gold and silver may also be combined with other sulphides, which would then reduce the arsenic content of the concentrate.

TONNAGE AND VALUE: (see Maps Nos. 4 and 5)

Sufficient work has not as yet been done to permit computation of "measured" (actual), or "indicated" ore. However, for guidance in forming a picture of tonnage potential of the ore deposit, some "inferred" tonnage can be calculated from evidence in the workings between the "Commodore" adit (elevation 6475) and the "Mountain Boss" cut, (elevation 6630), as follows:

Length of Ore structure	550 feet
Assume 50% ore-shoot	225 "
Average back	110 "
Assumed average width	16 "
(Inferred tons $\frac{225 \times 110 \times 16}{12}$ )	33,000 inferred tons)

For this stretch of the ore deposit, 300 tons of ore-shoot per 1 foot of depth is inferred, indicating a preliminary medium tonnage proposition of 150 to 200 tons per day.

To arrive at a picture of value tenor of the "inferred" ore-shoots, the weighted, uncut average of all assays (excluding K 24) from the "Commodore" adit is taken for guidance. This calculates to an average metal content of 0.41 oz. gold and 0.16 oz. silver per ton, in an average zone width of 50.8 feet. With gold at \$35 per ounce and silver at 70 cents per ounce, this would give a gross mine value of \$14.46 per ton of ore.)



MILLING AND METALLURGY:

Before any efficient milling flow-sheet which would indicate a definite mill recovery and ratio of concentration can be established, mill-tests on representative bulk samples will be necessary.

It is indicated, however, that without roasting this arsenical ore could not be economically cyanided or amalgamated for production of gold bullion on the property. Consequently, an arsenical mill-concentrate for shipment to a smelter will probably be produced.

A mill-production of a high arsenic concentrate with over 90 per cent recovery of the gold and silver should be possible from this ore. Because of an arsenic content in the concentrate of over 16 per cent this concentrate could probably be marketed at the A. S. & R. Tacoma Smelter, without imposition of an arsenic penalty, with smelter recovery schedule based on analysis of the typical concentrate.

COSTS:-

There are no mining operations in the vicinity of this property which would offer guidance in the matter of estimating definite costs.

If, however, preliminary exploratory-development results warrant permanent road and trucking facilities between the railway at Williams Lake and the property, an average overall operating cost of about \$10.00 per ton is indicated. Assuming an operation of 150 tons per day and a 12:1 concentration ratio, this is computed as follows:-

Mining . . . . .	\$ 3.75 per ton	
Milling . . . . .	1.20 " "	
Shipping . . . . .	1.60 " "	
Smelting . . . . .	0.60 " "	
Depreciation (approx.) . . . . .	1.00 " "	(\$500,000 in 10 yrs.)
Depletion ( " ) . . . . .	0.75 " "	
Taxes . . . . .	0.20 " "	
Contingencies (10%) . . . . .	1.00 " "	
<hr/>		
Total Costs . . . . .	\$10.10 per ton	

If the tonnage-potential is increased by exploratory-development, beyond the postulated 150 tons per day, the operating cost will be proportionately reduced.

ECONOMICS:

The following calculation is based on the postulation of a preliminary operation of 150 tons per day, with factors from the very limited amount of development done on the property and is made in order to procure a picture of indicated profit or loss from a mining operation on this mineral deposit.

(With gold at \$35.00 per oz. and silver at 70¢ per oz. the Mine and Smelter (Tacoma) value of the ore per ton can be postulated as follows:

<u>Metal</u>	<u>Assay</u>	<u>Gross Value</u>	<u>Mine Recovery</u>	<u>Net Mine Value</u>	<u>Conc. Value 12:1 ratio</u>	<u>Smelter Recovery</u>	<u>Net Smelter Value</u>
Gold	0.41	\$14.35	90 %	\$12.92	\$155.04	91.92 %	\$11.99
Silver	0.16	0.11	90 %	0.10	1.20	95.0 %	0.09
		\$14.46		\$13.02	\$156.24		\$11.97

Estimated net smelter value per ton of ore = \$ 11.97  
 " total cost per ton of ore = \$ 10.10

Estimated net profit per ton of ore = \$ 1.87

If exploratory-development work expands the tonnage-potential of the deposit beyond the preliminary postulation of 150 tons per day, the profit per ton of ore treated will of course be proportionately increased.

The important feature of this analysis is, however, that a profitable mining operation is indicated.

CONCLUSION:

The location of the property is not remote.

It is easily accessible from the railway by road and trail. It is within six miles by trail from an aeroplane landing locality on Miner Lake.

Road construction for 17 miles to connect the property with the Chilcotin Road is through rolling plateaux country and would be comparatively cheap.

Transportation is convenient and transportation costs are normal for preliminary exploration and could be considerably reduced if permanent and productive operation is found to be warranted.

Climatic conditions are favourable to efficient operation.

Topography relative to the attitude of the deposit would necessitate some hazard in preliminary exploration in the cost of cross-cut adits required to reach the deposit. The deposit dips into the mountain at between 55 and 60 degrees, from a mountain-slope of about 40 degrees. However, the steep mountain slope gives a rapid increase in back on the deposit. Exploratory drifting east and west on the deposit from each successive level would give a high ratio of information on which to appraise the hazard from level to level.

The topography of the terrain, attitude and type of deposit would be conducive to cheap mining. Water and timber for all purposes are readily available.

The geology of the area relative to the ore deposit is favourable.

The factors of structure and geology indicate appreciable horizontal and vertical continuity of the mineral deposit.

The predominating arsenopyrite mineralization, although refractory to local bullion production without roasting, should offer no difficulty in production of a gold-arsenopyrite concentrate with good gold-silver recovery that may be marketable without penalty.

Water-power is not known to be available close-by, but could be developed on a large scale at points 25 to 40 miles distant from the property.

An analysis of the Economics of the mineral deposit indicates the potential of a profitable mining operation.

Further exploration work is definitely warranted on this deposit.

A limited amount of capital of approximately \$27,500 will be required to indicate the warrant for the appreciable expenditure that would be required to expand development to possible production.

RECOMMENDATION:

It is recommended that the following procedure of further preliminary exploratory development be initiated as soon as weather conditions permit, probably about June 1st. The objective of this work is to establish sufficient warrant, or otherwise, before embarking on a new lower-level cross-cut adit for further depth exploration of the mineral deposit.

- (1) Establish tent-camp at present camp-site at elevation 6075 feet for a crew of 4 to 5 men, including a cook, Cost - \$250.
- (2) Clean out any accumulated slough and ice from the "Commodore" adit, Cost - \$150.
- (3) Drift east on the hanging-wall side of the mineralized zone for a maximum distance of 400 feet, from the face of the present east drift in the "Commodore" adit. This will give an average back of 110 feet and a maximum back of 155 feet on the mineralized zone under the "Mountain Boss" cut, Cost - \$10,000
- (4) Cross-cut or side-swipe to the north, to the foot-wall of the zone, at intervals of 50 feet along the east drift (3), making a maximum total of about 200 feet of cross-cuts along this drift. Cost - \$5,000
- (5) Drift west on the hanging-wall side of the mineralized zone for a maximum distance of 200 feet, from the face of the present west drift in the "Commodore" adit. This will give an average back of about 100 feet on the mineralized zone for this distance. Cost - \$5000
- (6) Cross-cut to north, to footwall of the zone at intervals of 50 feet along the west drift (5), making a maximum total of about 100 feet of cross-cuts along this drift, Cost - \$2500.
- (7) Sample and assay every face. Cost - \$400
- (8) Survey and locate site of lower-level adit. Cost -
- (9) Periodic engineering supervision, mapping, check-sampling and reporting, including (8) Cost - \$2000

The underground work should be done by hand-drilling and mucking under contract with good hand miners. Working one shift and estimating an average advance of 2 feet per shift, this programme will take two seasons to complete. If the contractor can operate two shifts, it can be completed in one season.

With a contingency allowance of \$2000. this total maximum preliminary commitment of \$27,500 will definitely indicate the warrant or otherwise for deeper level exploration, and possibly indicate definitely whether a profitable productive mine is probable or not.

It is estimated that the \$27,500 is a maximum preliminary commitment and may not all be expended.

Based on the final or interim results from this exploratory programme, an extended programme can be planned, if warranted.

Respectfully submitted,

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14