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RAFUSE-MCKINNON PROPERTIES.

SQUAMISH

BRITISH

COLUMBIA

By: H. L. BATTEN

CONSULTING MINING ENGINEER.

VANCOUVER, B.C.

November 15,
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PRELIMINARY REPORT.

RAFUSE-MCKINNON PROPERTIES

SQUAMISH

B. C.

SUMMARY.

The Rafuse-McKinnon properties, consisting of twenty-eight (28) mineral claims, located near Squamish, B. C., cover a prospectively important mineralized shear zone.

Size and continuity of this zone have been demonstrated, the zone, where exposed, is heavily pyritized and in places, the zone shows good values in copper. It is not yet proven that mineable ⁿtonages of ore occur in the zone, and its value is ^epurely prospective.

The size of the zone and the occurrence of good values in Copper warrant preliminary prospecting of the area described as the "Basin", which lies between the granite of the Coast Range and the sedimentaries, at an elevation of about 4200 feet on the Contact Group.

This area is covered by heavy overburden and cannot be economically prospected by ordinary surface prospecting.

We recommend that a complete electrical survey be made of this area. The time required to make this survey will be from two to three weeks and the cost will be about \$3500.00

This survey should be complete, all the information being obtained that the method can supply. This will be the location in plan of possible conductors, their strike, direction of dip and whether the sulphide minerals are disseminated or solid and the depth below the surface of these conductors.

If this survey gives positively favourable results a comprehensive diamond drilling campaign of the area will be warranted. If diamond drilling is decided on from \$50,000.00 to \$75,000.00 should be provided for this purpose. If negative results are obtained from the electrical survey no further expenditure should be incurred.

Diamond drilling of the rest of the zone should be contingent on satisfactory results from the drilling in the "Basin".

We recommend that an option should be obtained on these properties allowing sufficient time for the electrical survey to be made and considered. There should be no cash payment required on the property until sufficient time has elapsed to allow drilling the "Basin", say in the early winter 1929.

PURPOSES OF THIS REPORT.

The writer received instructions from interests who proposed financing preliminary prospecting of the Rafuse-McKinnon properties to make a preliminary examination on these properties with a view to advising them on the desirability or otherwise of the proposal.

The work suggested on the properties was to make a geophysical survey of the area known as the "Basin" on the Contact Group, and if this work indicated possibilities to follow by a diamond drilling or other exploratory campaign as might be recommended by the writer.

The examination was supplementary to a previous examination of the properties made by the writer in 1925 since which time the properties have been under bond and have been subjected to preliminary exploration by one of the larger operating companies.

Both times when the writer inspected the properties the upper part of the Contact Group has been under snow which prevented detailed examination of the surface. This fact is not material to this report as the area under particular consideration is covered by heavy overburden and the underlying rocks can be seen only where exposed in the bed of Ray Creek.

These exposures considered in conjunction with the topography and the known geological conditions supplied the information required.

This preliminary report must not be considered as a complete description of the properties. It is merely a preliminary report summarizing the salient features that affect consideration of the proposed exploration.

PROPERTY.

The property under consideration consists of twenty- eight mineral claims in four groups, namely:

1. The Radiant Group of six mineral claims owned by Rafuse and Perdue.
2. The Bruce Group of four mineral claims owned by McKinnon Brothers et al.
3. The McKinnon Group of four mineral claims owned by McKinnon Bros. et al.
4. The Contact Group of fourteen mineral claims owned by Rafuse and Pardue.

None of these claims have been surveyed. All are held by location and annual assessments.

Assessments for the current year have been recorded on the Radiant Group. On all other claims assessments are recorded up to 1930.

Recording office for the district is Vancouver, B.C.

Titles have not been searched by the writer.

The above information has been supplied by the owners.

LOCATION AND ACCESSIBILITY.

The properties are located on Ray Creek a tributary of the Stawamus River and are reached from Squamish, B. C. by a trail about four and a half miles in length.

The elevation of the North West end of the property (McKinnon Group) is about 1200 feet above sea level. The elevation of the camp on the Bruce Group is 3200 feet and the elevation of the "Basin" on the Contact Group is about 4200 feet above sea level.

The most South Easterly claim of the Contact Group is on the divide between Ray and Goat Creeks and rises to an elevation of about 4600 feet above sea level.

At present the supplies are packed on horses to the camp on the property at a cost of 3 cents per pound. By improvements on the trail, costing about \$750.00, this cost could be reduced to about $2\frac{1}{2}$ cents per pound.

If the property is developed to the production stage transportation would not be a difficult problem and power could be obtained from the B. C. Electric Railway Company.

While this matter has not been investigated the writer can foresee no difficulties in obtaining an excellent mill site, probably, on the Stawamus River.

GEOLOGY AND MINERAL SHOWINGS.

The area under consideration consists of a belt of quartz diorite, volcanic tuffs and some slate lying between a mass of Coast Range granodiorite on the South and South East and a mass of fragmental rocks consisting of conglomerates, slates, etc., to the North and North West.

This belt has been subjected to intense shearing the result of pressure exerted by adjustments following the Coast Range intrusion. The pressure exerted has resulted in the development of pronounced shear zones/. The quartz diorite has been the rock most affected by the forces and has been altered to a rock with, in many places, well defined schistosity. Slight shearing has developed schistose quartz diorite, more intense shearing has ~~developed~~ produced a chloritic schist and where there was maximum alteration a soft sericite schist has resulted.

In practically all exposures the schist is heavily pyritized and is silicified. In some places chalcopyrite is present with the pyrite.

This the zone has the general characteristics of the typical mineralized shear zones of the Coast Range, such as have been developed to production at Britannia and are now being prospected in similar areas nearby.

The principal types of ore bodies developed in these shear zones are comparatively high grade veins with fairly definite walls between which the ore occurs in solid streaks and stringers with only slight dissemination of ore minerals.

This type grades into a less well defined vein type in which the ore bodies occur in shoots between ill defined walls. The "Veins" are defined lanes of particular weakness within the shear zone. The third type consists of irregular ore bodies with, probably, commercial walls or with one geological wall and one commercial wall. In these ore bodies the ore minerals are usually very irregularly disseminated.

While this type of deposit, if commercial, may be expected to contain copper ore of good grade the difficulties of selective mining are such that production may be expected to be low grade, through dilution, and large tonnage production is essential.

For the development of commercial ore bodies in deposits of this type the following conditions are essential:

1. The zone must occur in an area which has been subjected to the action of valuable mineral bearing solutions.
2. The physical condition of the zone, at the time of mineralization, must have been such that the mineral bearing solutions could circulate and attack suitably replaceable rocks within the zone, at the time of mineralization, must have been such that the mineral bearing solutions could circulate and attack suitably replaceable rocks within the zone affected.
3. The zone must contain replaceable rocks in a condition suitable for replacement of the rock minerals by ore minerals.
4. Some definite structure must exist whereby the ore-bearing solutions have been confined to definite channels or have been

held in contact with the replaceable material thus causing concentration of the ore minerals into ore bodies and preventing dissipation of the valuable mineral.

Consideration of the Rafuse-McKimmon properties leads to the conclusion that conditions, 1, 2 and 3 exist. The deposit is heavily pyritized on the Bruce and Radiant Groups and on the Contact Group. On the Bruce and Radiant Groups chalcopryrite and sphalerite are sparingly present. On the Contact group chalcopryrite is more plentiful, in fact several tons of material have been broken in one place that would make good ore if this material be present in sufficient quantity.

The quartz diorite schist is a suitably replaceable rock.

With the properties in their present condition there is nothing to indicate that structure suitable for the development of ore bodies exists and the occurrence of ore bodies within this mineralized zone is purely prospective.

What may be considered ore of commercial grade, if sufficient tonnage be present, does occur on the Contact Group but to date there is no exposure justifying the conclusion that ore does occur in commercial quantities.

The possibilities or probabilities of the existence of suitable structural features are purely a matter of the opinion of the observer and whether or not such features exist can be determined only by exploration. In the writer's opinion possibilities,

certainly exist as the zone contains relatively impermeable tuffs and some slate and lies between relatively impermeable fragmental rocks and the granodiorite of the Coast Range.

Structural possibilities are also offered, we think, by the irregularities of the granodiorite contact.

It is the possibility of suitable structure combined with the demonstrated features of this zone that give the zone its prospective importance.

The most extensive exposure of the shear zone occurs on Ray and Little Ray Creeks, from the junction of these creeks for a distance of about 200 feet up the creeks. In many places the schisting is intense and a sericite schist has been developed. This schist is heavily pyritized but chalcopyrite was observed only in the face of a short tunnel driven for about 25 feet in a South East direction in the South bank to Little Ray Creek. The prevailing streak of the schistosity is North 30 degrees West, Magnetic, and the dip is very steeply to the South West. Leaching and alteration of the surface is intense.

Probable extension of this zone to the North West is shown by workings on the Bruce and Radiant Groups where similar conditions exist.

This zone outcrops on a steep hillside and an area much greater than the true cross section is exposed. On account of the open nature of the country surface waters must have sunk to considerable depths in this zone and leaching and surface alteration

may be expected to have occurred to considerable depths. Thus to determine primary conditions in this part of the zone exploration at depths considerably below the present surface should be carried on. It is doubtful if conditions above the floors of the canyons carved in this hillside will be those of the primary sections of the zone.

Going South East the zone can be followed up Ray Creek. Near the North West end of the Contact Group, on the Lena and Dorothy mineral claims, the zone is exposed in the bed of Ray Creek. In this section there is much less surface alteration. The bed rock is more solid, consisting of silicified quartz diorite seamed with quartz stringers which are well mineralized with pyrite, chalcoppyrite and sphalerited. From the surface several tones of material have been broken that, granting tonnage, would make a good grade of concentrating ore.

Ascending Ray Creek another outcrop of similar nature is exposed. In the "Basin" the bed rock is buried under heavy overburden and there are no exposures until nearly the upper end of the "Basin" is reached where another exposure carrying chalcoppyrite occurs.

There are thus outcrops, well mineralized with chalcoppyrite, occurring on the Lena, the Dorothy and the Cora mineral claims. with heavy overburden between these outcrops. This area certainly warrants prospecting and a geophysical survey is suitable for this purpose and is warranted by the possibilities.

If important conductives are indicated by this work there is a good probability of their being economic as the mineral exposed in this section is largely chalcopyrite.

It is recommended that this area known as the "Basin" should be thoroughly prospected by electrical methods, starting from the known occurrence on the Lena mineral claim and working South East.

The area to be covered is bounded by the granite on the South West and the sedimentaries to the North East and the survey should be carried to the upper end of the "Basin". This work should be done very thoroughly and all the information it is possible to get should be obtained by the method chosen. Particular attention should be paid to the area in proximity to the bounding rocks namely the granite and the sedimentaries.

On the results of this survey a decision should be made whether or not to proceed with a diamond drilling campaign.

Further prospecting by diamond drilling will be warranted only if positively favorable results are obtained by the geophysical survey.

Prospecting the zone North West of the "Basin" should be left in abeyance until exploration work in the "Basin" is completed. If diamond drilling in the "Basin" give favorable results there would be justification for continuing the drilling along the zone going North West, on the Bruce and Radiant Groups.

POLICY AND FINANCE.

It is recommended that an option should be obtained on these properties for a period long enough to allow thorough geophysical exploration of the "Basin". The cost of this work would be about thirty-five hundred dollars (\$3500.00) for a complete survey which would show any indicated ore bodies in plan, their depth below the surface, the direction of their dip and whether disseminated or solid.

If positively favorable results are obtained by this work the option might be exercised provided no cash payment is required. There would be no justification for a cash payment at this stage of the proceedings.

A complete programme of diamond drilling based on the results of the geophysical survey should then be proceeded with. To cover the cost of this further work the sum of from fifty to seventy-five thousand dollars should be provided.

Later work would be dependent on the results of this diamond drilling campaign.

These properties would require the expenditure of several hundred thousand dollars to develop them to the stage when there should be reasonable evidence that the properties might be expected to develop into a profitable producer.

It is therefore necessary that exploration should proceed in steps, the expenditure required for each step being incurred only when positively favorable results are obtained from the steps preceding.

A considerable amount of surface work has been done and several small tunnels have been driven on these properties. This work has shown the nature and extent of the possible ore zone.

In 1927 the properties were bonded to one of the larger operating mining companies of British Columbia and in addition to surface and geological exploration seven diamond drill holes were sunk in the zone.

No commercial ore was cut in any of these holes through they were all in the possible ore zone. This lack of favourable results caused the Company to drop their option.

The positions of the holes drilled are shown on the plan accompanying the report. The area it is proposed to prospect by geophysical methods is not tested out by any of these holes, also, While the diamond drilling failed to produce favorable results it certainly did not disprove the zone. Because a possible ore zone is not disproved is not argument that the zone therefore warrants expenditure but it is the writher's opinion that in spite of the unfavorable results obtained by the diamond drilling done to date the further exploration we have recommended is thoroughly warranted by the possibilities of the zone.

GENERAL.

The Radinat, Bruce, and North West part of the Contract Groups carry a stand of excellent timber. This timber, however, is included in timber limites held by private owners. In case the property be developed to the production stage it would be advisable to purchase, on the stump, timber required for operation. If an advantageous purchase of this timber could not be arranged a supply required for operations could be laid down at tidewater at a reasonable cost. There is an ample supply of water for domestic purposes, all the year round, in Ray Creek.

There is a small camp on the property that will accomodate a small crew comfortably.

Operating conditions generally are quite favorable and the properties are conveniently located for the labor and other markets of Vancouver.

Respectfully submitted,

(Signed) H. L. Batten.

Consulting Mining Engineer.

November 15, th,

1928.

LIST OF MINERAL CLAIMS.

CONTACT GROUP.

Contact	Iena	Summit Fraction
Alice	Helen	Summit
Cora	Minnie	
Ella	Sadie	
May	Lily	
Dorothy	Jane	

BRUCE GROUP.

No. 1
" 2
" 3
4

RADIANT GROUP

No. 1
2
3
4
52
68

MCKINNON GROUP.

Ruby	Flora
Maud	Newport

RECODING OFFICE,

VANCOUVER, B.C.

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GROUP OF CLAIMS ON RAY CREEK, SQUAMISH INLET,

B. C.

Owned by D. A. McKinnon, 229 12th Avenue, East,
Vancouver, B.C.

They are five miles from the head of Howe Sound.

The Merrill & Ring Logging Railway passes within

$1\frac{1}{2}$ miles of lower end of claims.

Elevation 3,100 ft.

There is a large showing of copper with some
zinc.

Very little work seems to have been done.