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PRELIMINARY GEOLOGICAL REPORT

on the

"REN" MINING CLAIMS

RENATA (LOWER ARROW LAKE), BRITISH COLUMBIA

by

F.L. CROTEAU, B.Sc.
P.Eng. P. Geol.

49° 25' N
118° 06' W

82 E / 8E

Vancouver, B. C.
August 5, 1970

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ILLUSTRATIONS

INTRODUCTION

Acting under instruction from Mr. I. Wiebe and associates in Grand Forks, British Columbia, I have carried out a geological survey of a mining claim group located near Renata, British Columbia. The examination was carried out on the 2nd and 3rd of August, 1970. The writer was accompanied by Mr. Wiebe during the reconnaissance survey and weather conditions were satisfactory throughout the period.

The town of Renata has been abandoned due to the flooded area that will exist when the hydro project on the Arrow Lake system is in full operation; a few old time residents still live in the area above projected high water level.

LOCATION AND ACCESS

The claim block is located on a prominent mountain about 1 mile from the former townsite of Renata on Lower Arrow Lake. The site can be reached by road and necessitates travelling 30 miles east of Grand Forks on Highway No. 3 and then northward for 17 miles on a forestry road. A four-wheel drive vehicle is both advisable and necessary for the latter portion of the trip. Specific location of the claim group is 49° 25'N Latitude and 118° 06'W Longitude.

Grand Forks is approximately 530 miles east of Vancouver, B. C. on Highway No. 3 and is serviced by railway facilities and will in the near future have an airfield capable of handling smaller type aircraft.

Mining supplies would be available at Vancouver and to a limited extent from Trail, B. C.

The claim area can also be reached by water travel on Lower Arrow Lake from Castlegar. In this latter case it would be necessary to station a four-wheel drive vehicle at Renata in order to ascend the mountain road to the claims.

CLAIMS

There are 12 full claims and one fractional claim in the group. There is one Crown Grant numbered L 2393 and eleven located claims known as Ren No. 1 to Ren No. 11. No record numbers are available for these claims which are newly staked.

ACREAGE

There are 625 acres, more or less, in the claim group.

TITLE

The Crown Grant claim is under agreement to Mr. Wiebe and the balance of the claims are under his control by right of location under the Mining Act of British Columbia. There are no encumbrances against the property and work commitments are in good order at this time.

The claims are held in part by option agreement and the balance

by right of location under the Mining Act of British Columbia. A portion of the claim block is covered by Crown Grant title.

HISTORY

The area is one that has been prospected and explored since the turn of the century and there still remains plentiful evidence of this fact in the form of pits, rock trenches, adits and old shafts. The Mountain Chief deposit was worked as an economic copper ore producer until the early 1920's but little has been done since that time. The last operator of consequence was The Consolidated Mining and Smelting Company of Canada Limited, whose final year of production amounted to 120 tons of shipping ore.

A great deal of primary exploratory work was done on the Mountain Chief ground and on the claims immediately abutting the main showing.

The Crown Grant acreage has been held for many years by the present owner and has largely remained idle because of demands for an unrealistic cash payment. This situation has now changed.

TOPOGRAPHY

The claim area is quite variable in nature but essentially must be described as rugged. The block is located at an elevation approximating 3500 feet above Mean Sea Level on the northwesterly slope of a

mountain that rises above 5000 feet. The lake level at Renata approximates 1500 feet.

The mountain slope is quite heavily covered with spruce, some fir, birch and aspen. There are numerous sharply incised water courses. Cliff like topography is common and often gives way to gently sloping, park like expanses. It must be said, however, that the present road gradient is quite steep in most places; this could be readily remedied with more judicious application of switchback construction. It must be kept in mind that the present access road is simply for the convenience of the forest service and is not for general or commercial usage.

Water might present some problem at various seasons, but presently is well up in the shafts on the Mountain Chief so that water may be originating from formational sources. There is no power in the immediate area. Ore or concentrate shipments would advisedly be made by water to Castlegar. Railway facilities are available a distance of 7 miles away but this would essentially involve a pronounced up-hill haul or considerable new road construction along the bed of Dog Creek.

Snow conditions are not serious in the area and would not present a serious problem.

AREA ?

AREAL GEOLOGY

The general area is one where igneous rocks are the predominant feature and these range from Lower Cretaceous to Tertiary in age and

are essentially granitoid in nature. Sedimentary formations approximating Pennsylvanian (Palaeozoic) in age occur as inliers and remnants on the main igneous intrusions. These inliers can be of considerable size and become of more specific interest when they are of limestone content. The Tertiary igneous formations seem to be more common in the Renata area.

The granitic rocks range in composition from syenite to a typical biotite granite and are from grey to brick-red in color. Granularity is variable but is generally inclined to be coarse. Some of the intrusive is almost porphyritic in nature but this is likely a contact metamorphic phenomenon rather than a dyke condition.

The main sediment to be seen in the area is limestone. This ranges from grey to black in color and varies from a clean lime to a shaly, tuffaceous type. There are minor occurrences of other sedimentary rock but these are not particularly common.

Glacial till and general overburden cover the entire area and range from a few inches over the more prominent and higher elevation areas to a depth of many feet as the lower reaches of the mountain are traversed. Talus slopes are not a common occurrence.

STRUCTURAL GEOLOGY

There may be some question whether or not topographic features in the claim area are due to formational contact conditions or whether they are the result of substantial fault action. It is the writer's opinion

that the "breaks" are too abrupt and in many cases too precipitous to be formational in nature and hence must be attributed to faulting. There is considerable evidence of minor folding in the sediments and this must be expected in an area where heavy igneous intrusion has taken place. There are no pronounced major folds although it is likely that the mountain range upon which the Mountain Chief deposit lies would have a corresponding sequence of sedimentary deposition on its southeasterly flank. This would seem to fit areal considerations better than an isolated sedimentary inlier on the northwest shoulder.

Potential faulting is also indicated by the extreme changes in rock composition. There are no gradational contacts, such as one would expect in such cases, when passing from a limestone or shaly lime to a pronounced well developed igneous intrusive. Other areas where normal intrusion has taken place show the usual sedimentary-igneous transitional changes.

CLAIM GEOLOGY

The main area of interest on the claim block is on and surrounding the "Mountain Chief" mining claim. The workings from which copper ore was produced are located in the northeasterly quadrant of the above named claim.

The zone of interest is associated with the contact area between the main limestone body and the wide spread igneous intrusive complex.

Skarn development is held to a minimum but there is a pronounced zone of contact activity where rock types range from predominantly sedimentary through various phases to those of predominantly igneous character. This condition exists within the fault bands and not across the fault areas.

There is a distinct possibility that the area may have been subjected to block faulting, in which case horizontal movement would have been in a southerly direction. There does not appear to be any major vertical dislocation, although fairly steep cliff like faces are associated with the east-west trending contact areas.

Both the limestone and granite are good representative types when encountered away from the contact area.

Metamorphic effects are noticeable but not pronounced in the vicinity of the contact areas. It appears to be quite definite that the copper mineralization is associated with and is related to the contact phase of the intrusive body. There is some possibility that the faults are pre-mineralization since similar mineral has been noted on either side of the suspected fault areas.

There are specific occurrences of lead, zinc and molybdenum occurring in sheared areas at the lower levels of the mountain and again these are apparently related to contact activity. These were examined by the writer but were not checked in detail. A noticeable occurrence of sulphides (essentially iron) can be seen on the lower portion of the mountain, again in relationship with the limestone, and it could be worthwhile running a magnetometer over this area.

ECONOMIC GEOLOGY

The mineralized deposits on the Mountain Chief claim are essentially contact-metamorphic in type. The main limestone-igneous contact dips southwesterly but the ore occurrences, on surface, dip northeast at approximately 60 degrees.

The main mineral components are chalcopyrite, bornite, malachite, azurite and pyrite.

There are reports that approximately 1000 tons of ore were shipped in the early part of the century, after which work was very sporadic until the early 1920's.

Work commenced again in 1921 when an aerial tram-line was erected and various shafts, drifts and cross-cuts were rehabilitated or extended. A total of 244 tons was shipped in 1922 and assays reported on this were as follows:

An.	Trace
Ag.	2.5 oz/ton
Cu	3.5 per cent

A carload of ore was shipped in each of the years 1923 and amounted to about 50 tons each time. Finances seemed to be a constant problem with the operators.

All annual governmental reports on examinations of the property suggest that further work is warranted on the showing. This in the writer's opinion would, however, be contingent on developing further ore occurrences along the contact area to raise the tonnage potential of the operation.

Recent assays taken on the property showed little return from the granitic material, low copper values in the granitic contact zone and values in the ore zone material ranging from 0.22% to 2.40% copper. Silver values were all less than 1 ounce/ton. No gold values were encountered.

The skarn type material is definitely the area in which one must look for ore deposits on the property and these will be localized along the limestone-granite contact.

CONCLUSIONS

1. The ore deposits on the Mountain Chief mining claim and on adjoining claims are related to contact-metamorphic conditions.

2. There has been a limited amount of direct shipping ore taken from the main shaft area of the Mountain Chief.

3. The probable fault condition that exists on the claims should be mapped more fully and its relationship to the ore deposits should be studied.

4. It is apparent that considerable rehabilitation work would be necessary to re-open the old underground workings.

5. Short diamond drill holes would be the most satisfactory method for evaluation of the main showing.

6. There are two mineralized areas, one of iron, one of lead-zinc, molybdenite, on the lower reaches of the mountain which should be examined in more detail.

7. A gradational contact zone exists between the limestone and the igneous intrusive. This seldom produces a typical skarn but is the area which should be intensely prospected for further mineralized zones.

8. Access is currently difficult but this could be readily remedied if one was found in sufficient volume to warrant a full scale mining operation.

9. A series of North-South lines have been cut across the main mineralized area on 200 foot intervals and a basic location line cut in an East-West direction. These are very useful for orientation purposes and would be beneficial for any mapping or geophysical survey purposes.

10. The property warrants further examination in order to establish its possible potential. This must be done by physical prospecting or diamond drilling since geophysical and geo-chemical methods would serve little purpose.

RECOMMENDATIONS

1. A thorough geological mapping program should be carried out.

2. Prospecting with utilization of stripping and rock trenching should follow the mapping program over the greater part of the claim area.

3. Limited clean-up work and sampling should be done on the main shaft area. Conditions here are dangerous and adequate care should be taken.

4. Short diamond drill holes, drilled from east to west should be placed across the main shaft area. This may appear to be contrary to the associated dip of the limestone-igneous contact but is in accord with dip conditions of the ore occurrence. A roll may exist at shallow depth but this remains to be proven.

5. The cost of the above program would approximate the following:

Geological mapping	$ 5,000.00
Line cutting necessary for map program	1,500.00
Prospecting, trenching, etc.	3,000.00
Clean up and sampling shaft area	1,000.00
Diamond drilling across shaft area and contact zone east of that area. 3 holes @ 500' depth	15,000.00
Engineering and supervision	4,000.00
Camp maintenance	1,500.00
Transportation	1,000.00
	$32,000.00

Respectfully submitted,

F. L. Croteau, B.Sc.
P. Eng., P. Geol.

Vancouver, B. C.
August 5, 1970

CERTIFICATE

I, F. L. Croteau of 1055 West Hastings Street, Vancouver, in the Province of British Columbia certify that:

1. I am a graduate of the University of Saskatchewan and hold the degree of B.Sc. in Mining Geology. Year of graduation was 1936.

2. I am a Registered Professional Engineer in the Province of British Columbia and in the Yukon Territory, a Registered Professional Geologist in the Province of Alberta, and hold a license to practise Professional Engineering in the Province of Saskatchewan.

3. I have practised my profession in Canada, the United States, Mexico and the West Indies since 1936.

4. The claims are staked legally and according to the regulations set out in the Mining Act of British Columbia.

5. I have no interest, direct or indirect, in the lands upon which this report is based.

6. The information contained in this report is based on two visits to the property, discussion with Mr. Wiebe who has had close association with the area for many years, and a study of available governmental and private maps and reports on the claim area.

F. L. Croteau, B.Sc.
P. Eng. P. Geol.

Vancouver, B. C.
August 5, 1970

F. L. CROTEAU LTD.
GEOLOGICAL ENGINEERING

Vancouver, B. C.
June 2, 1971

Mr. I. Wiebe
Grand Forks, B. C.

Re: "Ren" Mining Claims"
Trail Creek Mining District
British Columbia

Dear Sir:

I have visited the "Ren" claim group three times during the past year and have supplied you with a geological reconnaissance report related to the examination carried out during those visits. Subsequent to these visits numerous lines were cut for the purpose of carrying out detailed geological mapping and recommended soil and magnetometer surveys. It is my understanding that economic conditions precluded completion of a geological survey but a limited amount of magnetometer work was carried out.

The work embraced certain portions of Crown Grant 2393, Ren No. 2, Ren No. 9, and Ren No. 10. The main showing of consequence, seen by the writer, comprised a copper accumulation adjoining the east line of Crown Grant 2393 with general trending dip influences in a southerly direction.

I have received and reviewed all magnetometer readings taken, the times of day during which the survey was conducted and the indications of daily diurnal magnetic variations. This latter consideration can be

considered negligible since it involved readings of 4 to 5 gammas only.

Readings have been plotted on a map and show little anomalous activity. There are localized points where a limited increase in gamma count takes place but there is no relative consistency and cannot be related to the main mineral accumulation that exists on the property. There is fairly remarkable consistency in the magnetic readings when it is considered that they are about equally divided between a massive occurrence of limestone north of the "base-line" and an equally consistent mass of syenite porphyry south of the "base-line".

A conclusion would have to be drawn that the sulphide accumulations were of "background" volume and did not portray any anomalous condition of consequence when tested with a magnetometer. It could be quite conceivable that a survey using "Induced Potential" instruments would return more positive results and this factor should be considered before any abandonment of the claim group is made.

It is not possible on the basis of evidence derived from the magnetometer survey to recommend any further volume of this type of work. Likewise one cannot delineate any specific anomalous drill site, although surface geological evidence warrants a series of short diamond drill holes in the vicinity of the shaft area from which copper ore had been previously extracted on the Mountain Chief Crown Grant.

Respectfully submitted,

F. L. Croteau, P. Eng.

WORK PERFORMANCE

The Line Cutting carried out on the "Ren" claim group is on Crown Grant 2393 and Ren claims No. 2, 9 and 10 as set out in main report.

There are 20 lines all properly cut, picketed and flagged. The lines vary from 1800 feet long to 2000 feet long. Magnetometer readings were taken at 200 foot intervals along all 20 lines.

Line intervals in a north south direction are 100 feet apart and are location 900 feet north and 1000 feet south, which is clearly indicated on the accompanying sketch map.

Line cutting was performed in the last week of June 1970 and was carried out by Messrs. I. Wiebe, M. Tapp and W. R. Forrester, extending over a 5 day period.

Charges made were a very modest $40.00 per day, per man, against a general industry average of $75.00.

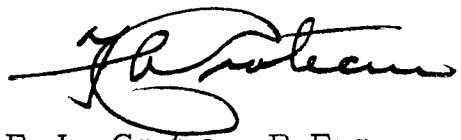
The magnetometer readings were made by Mr. I. E. Wiebe during the period May 27, 28, 29th 1971 again at a charge of $40.00 per day plus magnetometer rental of $50.00.

For professional engineering appraisal of the magnetometer results and preparation of the report a charge of $150.00 per day over a two day period was made. This comprised assembly of data, opinion regarding same and the necessary drafting and stenography.

In addition to the above I might add that as a professional engineer

I have seen few prospectors that apply the same diligence and attention to their claims, assessment work and attempted mapping and geological analysis as Mr. Wiebe.

Respectfully submitted



F. L. Croteau, P.Eng.

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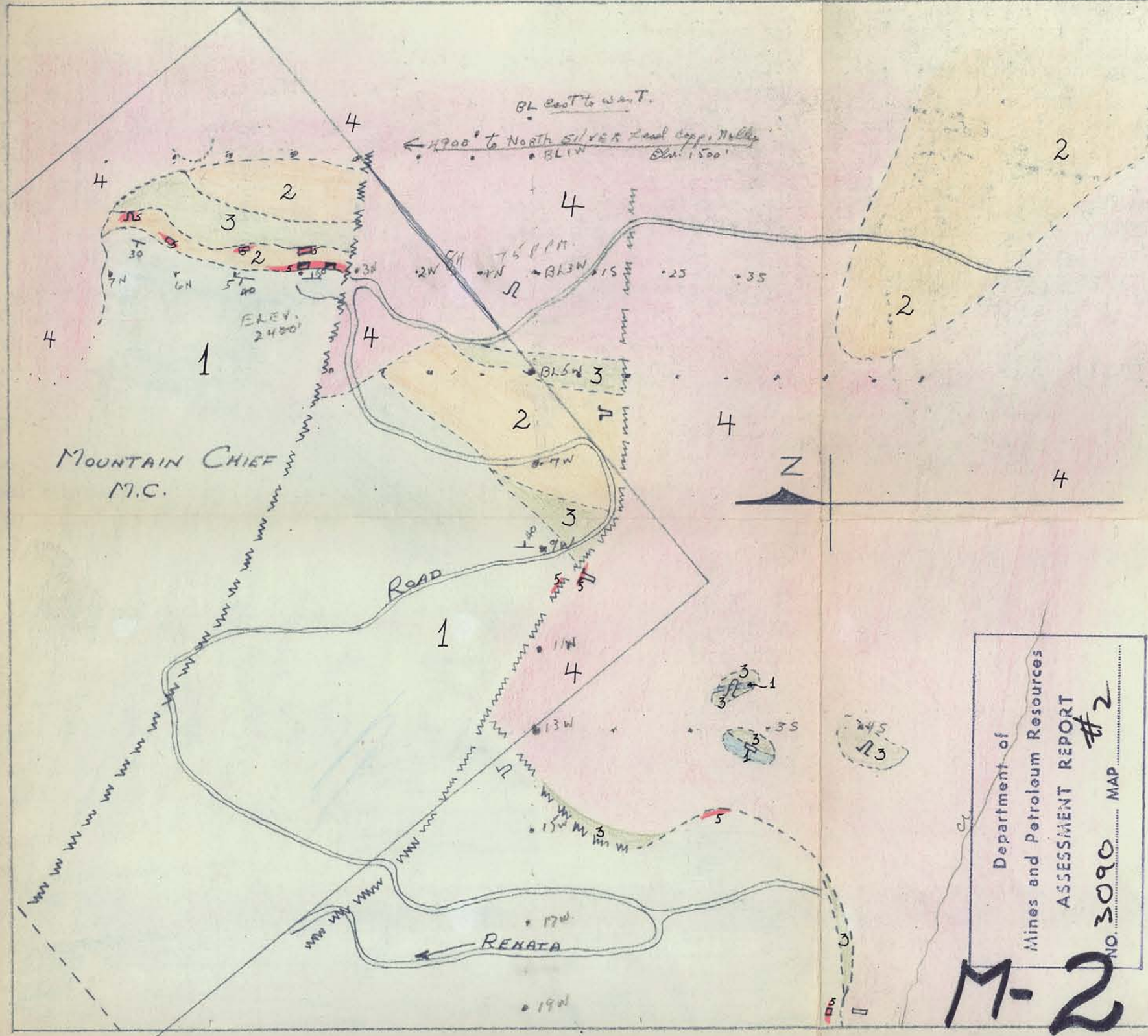
CLAIM LOCATION MAP
"REN" CLAIMS
TRAIL CREEK MINING DISTRICT

TO ACCOMPANY REPORT
BY. F.L. CROTEAU B.Sc P.ENG.

Scale: 1" = 5000'

F.L. CROTEAU
AUG. 5, 1970



LEGEND

- 5 Cu. Mineralization & Skarn
- 4 Igneous Granites
- 3 Quartz "Porphyry"
- 2 Alteration Phase (Contact Zone)
- 1 Limestone
- Pit or Shaft
- Open Cut
- Fault

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Department of Mines and Petroleum Resources
ASSESSMENT REPORT #2
MAP
NO. 3090

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GEOLOGICAL SKETCH PLAN

MOUNTAIN CHIEF SHOWING

RENATA AREA B.C.

TO ACCOMPANY REPORT BY
F.L. CROTEAU B.Sc. P.ENG.

Scale: 1" = 200'

F.L. CROTEAU
AUG 6. 1970

LINE No. 1

BASE LINE

MOUNTAIN CHIEF
M.C.
C.G. 2393

REN #2

REN #9

REN #10

ROAD

RENATA

N

LEGEND

- Cu. Mineralization & Skarn
- Igneous Granites
- Quartz "Porphyry"
- Alteration Phase (Contact Zone)
- Limestone
- Pit or Shaft
- Open Cut
- Fault

M.3

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Department of
Mines and Petroleum Resources
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GEOLOGICAL SKETCH PLAN

MOUNTAIN CHIEF SHOWING

RENATA AREA B.C.

Scale: 1" = 200'

F.L. CROTEAU
AUG 6 1970

1000 N					·400						
900N		·380	·380	·360	·400	·400			·340	·320	·320
800N		·400	·380	·380	·340	·380			·340	·400	·320
700N		·360	·380	·360	·340	·380	·360	·440	·340	·360	·340
600N	·340	·360	·240	·360	·260	·380	·360	·440	·300	·320	·340
500N	·340	·360	·340	·360	·360	·380	·360	·380	·300	·325	·340
400N	·360	·320	·340	·360	·340	·360	·360	·380	·360	·320	·320
300N	·340	·340	·340	·360	·360	·360	·360	·360	·380	·280	·320
200N	·380	·320	·340	·340	·340	·360	·400	·360	·380	·330	·320
100N	·320	·360	·320	·340	·360	·360	·320	·360	·360	·360	·340
BASE LINE	·300	·340	·340	·340	·340	·320	·340	·340	·360	·360	·300
100 S	·320	·340	·300	·380	·300	·320	·340	·360	·360	·340	·340
200S	·340	·320	·320	·320	·360	·400	·340	·360	·340	·320	·300
300S	·300	·360	·360	·300	·320	·320	·340	·320	·340	·340	·360
400S	·360	·340	·340	·360	·340	·380	·360	·340	·360	·340	·360
500S	·340	·360	·340	·320	·320	·340	·340	·360	·340	·320	·340
600S	·320	·340	·400	·360	·340	·360	·380	·340	·320	·320	·340
700S	·340	·280	·320	·380	·320	·380	·360	·360	·340	·320	·340
800S	·340		·340	·360	·320	·360	·360	·360	·360	·340	
900S	·340			·340	·360	·360	·360	·340	·340	·330	
1000S	·400			·360	·360	·340	·340	·360	·340		
									·340		

LINE No.1

Department of Mines and Petroleum Resources
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MAGNETOMETER SURVEY
"REN" CLAIMS
TRAIL CREEK MINING DISTRICT
ARROW LAKES. B.C.

Scale: 1" = 200'

J.H. Proteau June 2, 1971

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