

W.A. No. ....

NAME Cousin Jack

SUBJECT Reports

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PROPERTY FILE

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3397-8

## REPORT ON COUSIN JACK GROUP OF GOLD RIVER MINES

Similkameen Mining Division, British Columbia, Canada

By J.A. MITCHELL, P. Eng.  
West Vancouver, B.C.  
December 15, 1970.

### INTRODUCTION

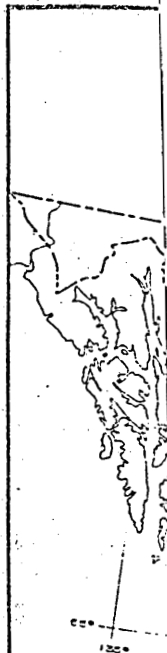
The following report is made at the request of officials of Gold River Mines Ltd. (N.P.L.). An examination of the property was made on September 7th, 1970 at which time cuts and tunnels on the Cousin Jack and adjoining Mineral Leases and on two claims staked to the south-west of the Cousin Jack were examined. Studies subsequently made of reports in the Minister of Mines Reports, specifically those for 1933, 1934, and 1937 would indicate that not all the old workings were examined. On the other hand there are no published reports on the copper occurrences that have come to the attention of the writer.

### PROPERTY

The property consists of the Cousin Jack L263, Mineral Lease M 82; Ymir L264, Mineral lease M 83, Morning L265, Mineral Lease M 83, Oshkosh L266, Mineral Lease M 83, Winibago L267, Mineral Lease M 83, Black Bird L268, Mineral Lease M 83, Berlin Fraction L269, Mineral Lease M 83, Anaconda L373, Mineral Lease M 83, Freddie Burn L270, Mineral Lease M 84, Constitution L282, International L283, and the following claims Hope # 1 and # 2, Ken # 1 and #2, Pit # 1 and # 2, and Hawk # 1 - # 4 record numbers 29022 - 29031 J.M. # 1 - # 2 record numbers 28204 - 28205. Also included are Tex # 1 - # 10. R.N. 29194 - 29203.

### LOCATION AND ACCESSIBILITY

These claims are situated in the Similkameen Mining Division immediately north-west of the north

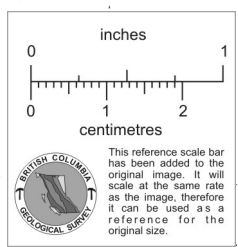
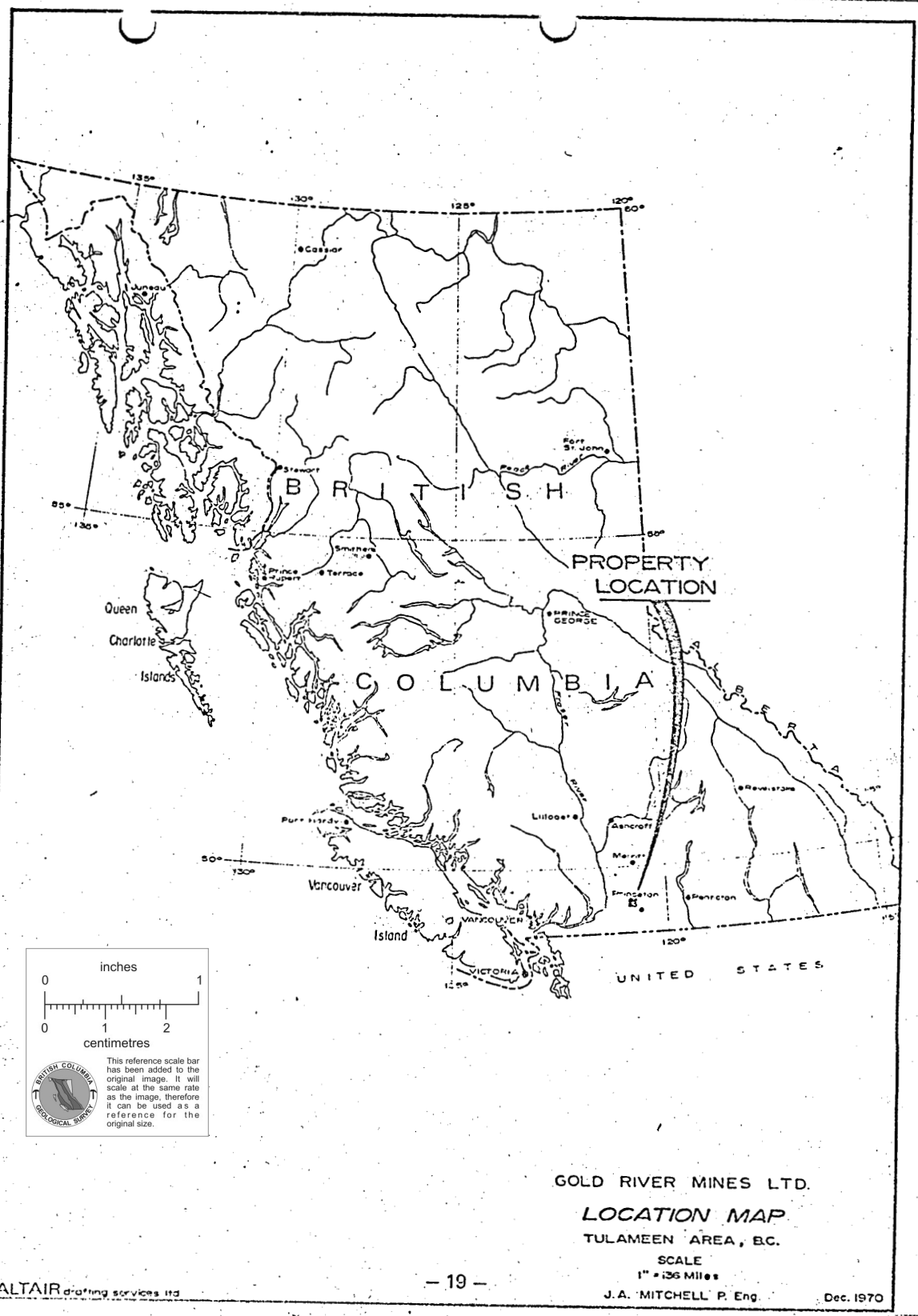


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GOLD RIVER MINES LTD.  
**LOCATION MAP**  
TULAMEEN AREA, B.C.  
SCALE  
1" = 36 Miles  
J. A. MITCHELL P. Eng. Dec. 1970

ALTAIR drafting services ltd

end of Otter L. on the railroad between Princeton and Merritt. The coordinates are 120° 48' W. longitude, 49° 37' N. latitude as shown on map 889A of the Geological Survey of Canada. Memoir 243, Geology and Mineral Deposits of the Princeton Map-Area, British Columbia by H.M.A. Rice.

The property can be reached by good motor road which parallels the railway and thence by old logging roads. The distance from Princeton where most facilities are available is about twenty miles.

#### PHYSIOGRAPHY

The area is one of gently sloping, well timbered and bushy hills. Rainfall is moderate and the temperature is moderately high in summer and moderately low in winter. The elevation of the claims is about 4,500 feet and overburden is residual soil and is not heavy.

#### HISTORY

It is recorded that the Cousin Jack group was originally staked in 1901 and has had several owners and intermittent work in the form of trenches, short adits, and one shaft since filled in. None of this work was very conclusive and the potential of the ground has not been thoroughly tested.

The following, extracted from the Minister of Mines Reports for British Columbia and because of the authorship considered reliable and factual is reproduced here to throw light on the history but in doing so it will indicate that the author of the two reports apparently considered the property worthy of further attention. The other author made no comment regarding the property's worth.

MINISTER OF

Page A173 b

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## MINISTER OF MINES REPORT 1933

Page A173 by Philip B. Freeland

"This group of nine claims, about 2 miles directly west of Manning, on the Kettle Valley Railway, on the Elliott Creek slope of Spearing Mountain, includes the Cousin Jack, Yankee Girl, Ottawa, Homestead, Canadian Girl, Florence and Wisconsin. It has been acquired by Jack Osborne and associates, of Tulameen and Blakeburn. Development work was done on certain claims of this group prior to 1901, and from then spasmodically until 1933, when the new owners cleaned out the workings and, according to reports, found five parallel veins within a distance of 2,400 feet, striking north-west and dipping about 75° south-west into the hill, with a difference in outcrop elevation of approximately 200 feet. According to a plan, an old, crosscut tunnel, now reported to have been driven 300 feet at an elevation of approximately 4,600 feet, will intersect the downward extension of these veins, if continuous, at a depth on No. 1, 100 feet; No. 2, 125 feet; No. 3, 250 feet; No. 4, 265 feet; and No. 5, 325 feet, at a distance in from the portal of 600 feet, 1,200 feet, 2,200 feet, and 3,000 feet respectively. No. 1 vein is 4 feet wide and has a shaft of unknown depth sunk on it. No. 2 vein is 4 feet wide and contains some galena. No. 3 vein is 2 feet wide, mostly quartz, and a 75 foot tunnel across it. No. 4 vein is reported to be 6 feet wide and contains values in gold, silver, lead, and zinc in a quartz gangue, amounting to \$37.66 per ton. A 75 foot crosscut tunnel has been driven through this vein close to the surface. About No. 5 vein there is no record of widths or values. The veins occur in and conform to the bedding of the schistose rocks, which are assigned by Camsell to the Tulameen series (Triassic (?)). Other similar types of veins are found on the Ottawa, about 4,000 feet west of the above outcrops, and may be an extension on the strike. When this area was visited in 1922, a cursory examination was made of the Cousin Jack group, and although the workings were caved the amount of oxidation was impressive. Samples taken by the Provincial Mineralogist in 1901, presumably over a 6 foot width, assayed: Gold, 0.12 oz. per ton; silver, 0.60 oz. per ton; so it seems likely that recent samples taken by the owners included fairly high percentages of lead and zinc. The latter mineral apparently carries the gold, because all samples containing a high percentage of zinc are correspondingly high in the precious metal. The attention of those interested has been called before to the strong indications of mineral following the contacts of the Otter, Boulder granite, and Eagle granodiorite, and the Tulameen series of rocks (see Camsell's map 46A), which make their appearance on Rabbitt mountain, Spearing mountain, and at Law camp, as well as in other sections throughout this region that appear to warrant some exploration".

## MINISTER OF MINES REPORT 1934

Page D21 by Philip B. Freeland

"The rocks exposed on the claims (see map) consist of chloritic schists of the Tulameen series mentioned in Geological Survey of Canada Memoir No. 36, 1911, which strike generally in a northerly and southerly direction and dip from 15 to 25 degrees westerly. Conforming to the strike and dip of the rocks, two or more parallel quartz veins with free walls occur, varying from 2 inches to 6 feet in width and containing pyrite, galena, and sphalerite.

On the surface for about 2,500 feet numerous open-cuts, shallow shafts, and two crosscut adits, 75 and 100 feet long respectively, have been driven along the strike of the veins. On an adjoining claim south and about 1,000 feet from the Cousin Jack workings the same vein system has been uncovered by a 100-foot crosscut and 70-foot drift. All the underground workings except the shaft on the Berlin Fraction are crosscuts. The flat-dipping schists do not permit drifting on the vein from the surface except to the north.

A general sample of the ore taken from the 75-foot adit on the Cousin Jack assayed: Gold, 0.20 oz. per ton; silver, 0.10 oz. per ton; lead, 0.70 per cent. A sample taken across 18 inches of vein-matter at the collar of the Berlin Fraction shaft assayed: Gold, 0.20 oz. per ton; silver, 0.50 oz. per ton; as well as lead and zinc.

The general mineralization in the Tulameen series of rocks adjacent to the Otter and Boulder granite and the Eagle granodiorite, which often carries gold as well as base metals, appears to warrant attention."

#### MINISTER OF MINES REPORT 1937

Page D27 By M.S. Hedley

"The rocks are members of the Tulameen series, intruded by Boulder granite. The showings lie 1,000 feet to 1,500 feet north-west and west of the granite-contact, in greenstone which is more or less sheared. The shearing, the planes of which dip westerly at angles between 15 and 25 degrees, is locally so intense as to produce a chlorite-sericite schist, and when most intense the rock is pyritic. Mineralization is in four well-defined zones that strike west of north and in part follow the dip of the schistosity and in part are nearly vertical. Two isolated exposures may indicate two additional zones which have not been traced.

The most westerly zone is traceable for some 1,200 feet and is opened up by two adits and a number of open-cuts. No. 1 adit (1), elevation 4,235 feet, is 70 feet long, in addition to which there is an 18-foot open-cut at the portal. Mineralization includes chiefly pyrite and sphalerite and a little galena in varying proportions in quartz and silicified greenstone. It occurs as impregnation and replacement of the schistose greenstone and only to a minor extent as fissure-filling by quartz. Some of the material is banded, evenly, or warped and convoluted. Width and attitude are uncertain, because the mineralization both cuts across and follows the planes of schistosity. The strongest section is at the portal and is lost in the bottom of the adit; throughout the adit are bands, stringers, and masses, individually up to 2 to 4 feet wide, with predominating flat westerly dips. In No. 2 adit (2), elevation 4,190 feet, 122 feet long, there is a rib of quartz across the back 65 feet from the portal that is 20 inches wide, and this widens downward irregularly to several feet in width. The dip is steep to the west and the mineralization is not heavy. Some irregular white quartz occurs near the portal and some at 70 to 90 feet from the portal. The open-cuts on this zone show apparent widths of 4 to 5 feet or more of quartzose material more or less strongly mineralized; there is apparently variation represented between the extremes of habit seen in the two adits. It is difficult, if not impossible, to judge the width and attitude in these or in most open-cuts on the property; the strike seems quite uniform and the dip is westward at a high angle, but there is a tendency everywhere for the mineralization to penetrate along the planes of shearing, so that in cross section any body is seen to consist of an irregular stem with branchlike offshoots, principally on the west side.

An open-cut a sheared greenstone posed.

A zone (4) no vertical lead of quartz mineralized with quartz, apparent

An adit at (6) greenstone containing mineralization above the

The next main open-cuts. These disclose seams, some dip mineralization. It is variable and o

The easternmost three open-cuts, mineralization is very irregular widths up to 6 feet ton; lead, 12.9 per cent. Most galena secondary mineral except per cent. More dimension and

The results of the accompanying showings them it is not gressed slowly showings."

An open-cut at (3), elevation 4,150 feet, discloses stringy quartzose mineralization in weakly-sheared greenstone, dipping apparently flatly westward. This is across 8 to 10 feet but is poorly exposed.

A zone (4) north of the cabin is traced for 550 feet. At the southern end is an open-cut on a nearly vertical lead of quartz in sheared ground; the lead is here about 5 feet wide, not all quartz, and is weakly mineralized with pyrite and sphalerite. An open-cut at (5), elevation 4,105 feet, just opened up, discloses quartz, apparently flat and less than 12 inches wide, with some likely-looking mineralization.

An adit at (6), elevation 4,000 feet, 25 feet long, bearing south 55 degrees west, is in flatly-sheared greenstone containing considerable pyrite in fine scattered grains. There is a little flatly-dipping mineralization above the portal which is not encountered in the adit.

The next main zone at (7), elevation about 3,980 feet, is traced 350 feet and on it are four open-cuts. These disclose more or less sheared greenstone in which are ribs of quartz or siliceous sulphide seams, some dipping steeply and some flatly, as well as crenulated ribbons of quartz and sulphide mineralization. The apparent width of the zone in these open-cuts is about 2 feet, and mineralization is variable and only locally strong.

The easternmost zone (8), elevation about 3,915 feet, is traced for 200 feet, and is opened up by three open-cuts, a short adit-crosscut 20 feet long, and a filled-up shaft said to be 35 feet deep. The mineralization exposed by these several workings is hard to describe without going into extreme detail; it is very irregular, in flat, steep, and curving strands individually up to 2 feet wide and over apparent widths up to 6 feet and more. One sample, which assayed: Gold, 0.16 oz. per ton; silver, 1.4 oz. per ton; lead, 12.9 per cent; zinc, 18.6 per cent — was taken across a steep 18-inch band containing the most galena seen; another sample, channelled 5½ feet down the face of the adit, including little mineral except in the central 2 feet, assayed: Gold, 0.02 oz. per ton; silver, trace; lead, nil; zinc, 3.1 per cent. More opening-up accompanied by bulk-sampling would be necessary before averages of dimension and metal content could be obtained.

The results of sampling by the Resident Engineer in 1935 and 1937 are shown graphically on the accompanying sketch-map. These samples have been taken more or less at random, and from them it is not safe to estimate the average value of these quite complex deposits. Work has progressed slowly for the last four seasons towards a more extensive opening-up of the various showings."

The sketch map referred to in this report is also attached hereto. It is entitled, Cousin Jack. Sketch of principal showings from survey by W.D. Vallance. The property has been described by H.M.A. Rice in 1947 Memoir # 243, Page 96, Geology and Mineral Deposits of the Princeton Map-Area, British Columbia. He says:

"The showings occur in volcanic, tuffaceous, and argillaceous rocks of the Nicola group not far from their contact with the Boulder granodiorite body. The rocks have been subjected to regional shearing, which has largely altered them to chlorite and sericite schists. These schists have a general northwesterly strike and dip at various angles to the west. In them are four or more zones of more intense shearing in which irregular veins and bodies of quartz have been deposited. Both the quartz bodies and in places the schists themselves have been mineralized with pyrite, sphalerite, galena and chalcopyrite, but so irregularly that, although the zones have been traced for considerable distances, it is difficult to determine the continuity or grade of the orebodies. The principal value is in zinc, which is also accompanied by significant amounts of gold. A number of chip samples taken across widths of from 2 to 6 feet by the Resident Engineer returned from 2.3 to 19.1 per cent zinc and from a trace to 0.32 ounce a ton in gold.

Zone No. 1, lying to the south and west of the cabin, has been traced on the surface for some 1,200 feet, and is opened up by two crosscut adits and a number of open-cuts. So irregular has mineral deposition been in this zone that its limits have not been defined. Zone No. 2, immediately north of the cabin, has been traced by open-cuts for 550 feet, and much resembles the first. Zone No. 3 lies some 500 feet to the north and east of No. 2 Zone, and has been traced for 350 feet by four open-cuts. These have exposed ribs of quartz and irregularly disseminated sulphides. Zone No. 4, 100 feet or so to the northeast of No. 3 zone, has been traced for some 200 feet by three open-cuts, a short adit crosscut, and a shaft. It is mineralized quite irregularly, but in places the occurrences are of good grade. Several open-cuts and at least one short adit prove the existence of other zones intermediate between the four mentioned, but as yet none of these have been explored to any extent.

The showings are difficult to evaluate, owing to the irregular distribution of the ore-minerals within the comparatively regular zones. Locally, at least the deposits are of promising calibre, but further development and bulk sampling will be required to demonstrate the true size and grade of the orebodies."

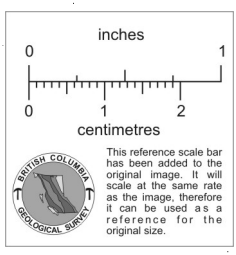
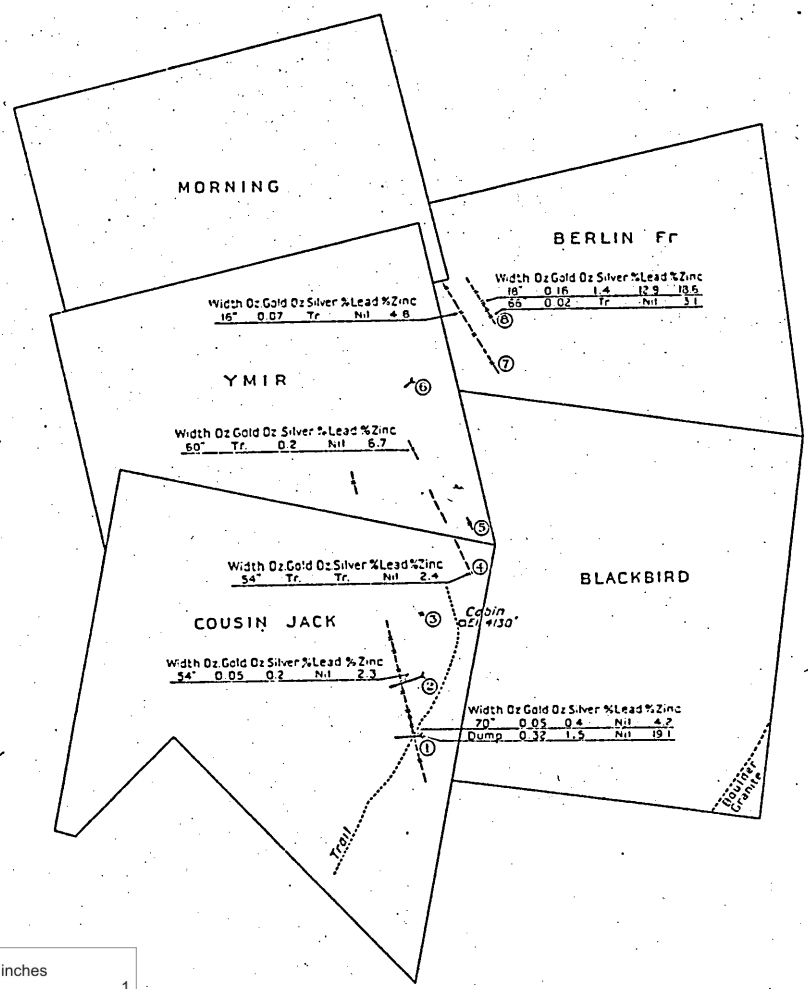


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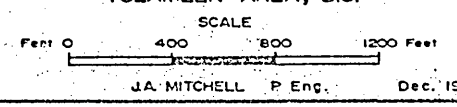
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**GOLD RIVER MINES LTD.**  
**MAP OF COUSIN JACK - L 263 AND ADJACENT CLAIMS**  
**LOTS 264, 265, 268, 269 SHOWING ASSAYS ON SAMPLES**  
**TULAMEEN AREA, B.C.**

BY RESIDENT ENGINEER -- 1937 MINISTER OF MINES REPORT.



These reports will indicate that the showings are difficult to evaluate because of the erratic distribution of ore along quite continuous zones. This is not at all unusual in the vicinity of orebodies and it seems that past work has been rather haphazardly done. Nothing seems to have been done since Rice's map of the area was made available. This map provides valuable information which should be acted on. Also, nothing has been done using modern techniques and equipment. These aids to exploration should be used on this property.

#### GENERAL GEOLOGY

The claims described heretofore are underlain by Nicola Volcanics and sediment immediately to the west of an outcrop of Coast Range intrusives. The rocks in which they occur are frequently intensely sheared and silicified. They vary from soft intensely schistose to hard brittle lightly schisted rocks. A major fault is mapped by H.M.A. Rice (Map 888A Princeton Map Area) passing along Elliot Creek immediately east of the claims and follows closely a wedge of Nicola rocks lying between the Coast Range Intrusives and a stock of the younger Otter Intrusions. This would be a particularly favourable geological setting and the claim holdings should be extended easterly to cover the wedge of Nicola rocks and the adjoining intrusives so that all the contact areas and fault structure between are covered. It appears that the vein structures may be subsidiary breaks related to the major fault. The mode of occurrence is important and considerable attention will have to be devoted to it.

By looking at the geological map of B.C. one will note that many ore deposits, particularly copper ore deposits, for example, Rossland, Copper Mountain, Britannia, Anyox, and others; if one looks at more detailed maps, are sandwiched between intrusives, usually of different ages. Gold properties such as those at Hedley may be found in similar positions. The host rocks are usually Triassic in age and may extend from Permian to Jurassic, seldom beyond those limits. The intrusives are usually of two ages, both younger than the host rocks which would be the surface rocks at the time of the intrusions.

Geological details will be different but the above generalization appears to be a good starting point in looking for orebodies. Favourable host rocks are first conditioned by the multiple intrusions to receive the mineralization which is then injected or remobilized into the conditioned rocks.

A look at Rice's map shows the favourable Nicola formation intruded by Coast Range and Otter Intrusives both juicy and of different ages. It also shows a fault zone passing through a wedge of Nicola rocks lying between these intrusives and shows the Cousin Jack group with its multiple vein structure close to this situation.

Gold River Mines, at the writer's suggestion, has staked most of this ground between the Cousin Jack group and the Otter intrusives. It has also staked additional ground to the south and west to cover other copper showings not seen by the writer.

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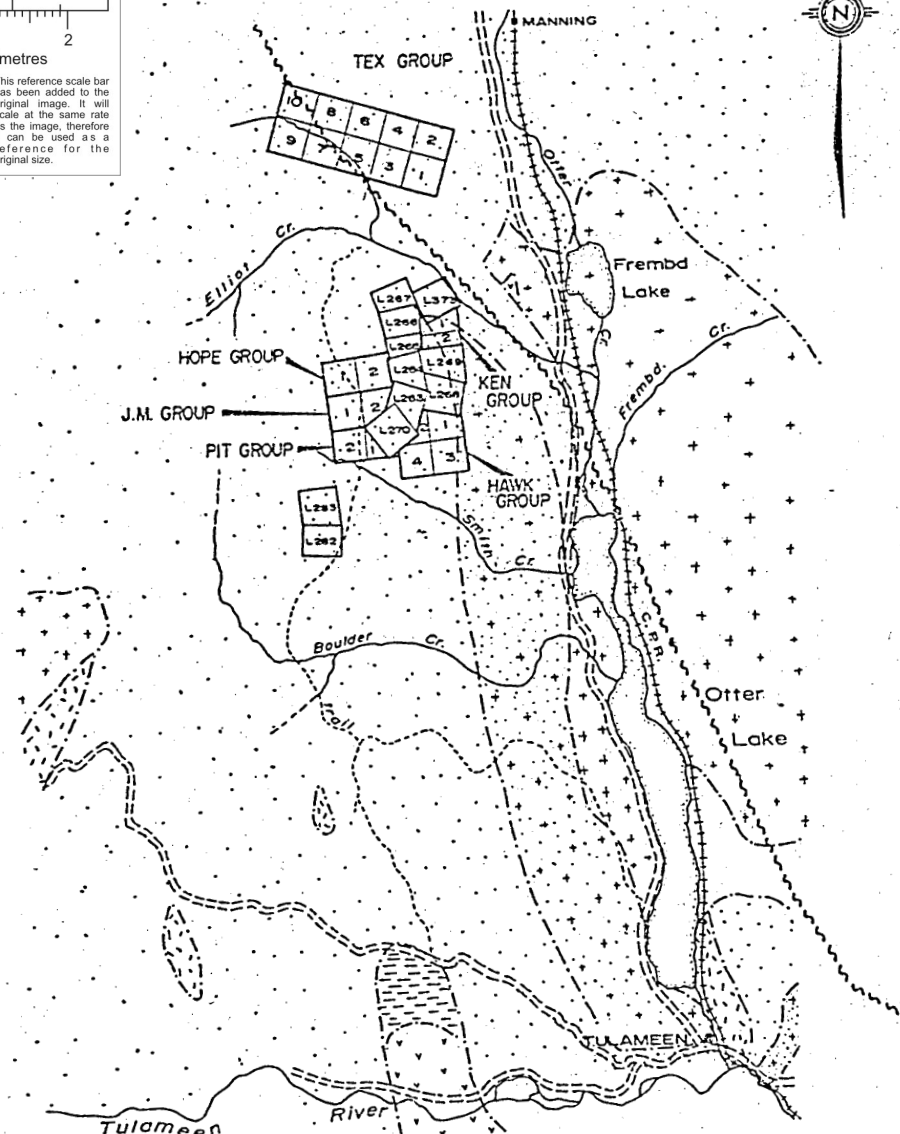
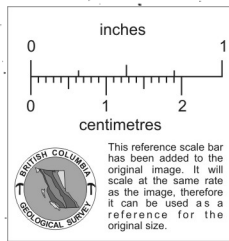
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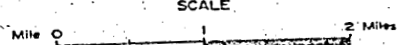
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- LEGEND**
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    - Coast Range Intrusives
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    - Nicola Group

GOLD RIVER MINES LTD.  
**GEOLOGY MAP SHOWING CLAIMS**  
 TULAMEEN AREA, B.C.



NOTE: Geology of Part of Tulameen Area from Geological Survey of Canada, Map 838 A

## MINERALIZATION

The mineralization on these Mineral leases is primarily zinc sulphide (sphalerite), with lesser amounts of lead sulphide (galena), gold, and some silver; that on the staked claims to the south-west and south is copper in the form of chalcopyrite. The first occurs in veins and the latter in shattered shear zone of apparent limited extent which hasn't been delimited on all sides but which appears to be a local swelling of the mineralization within the shear structure in metamorphosed volcanics. The zone appears to strike about North 30 degrees west and to dip at about 20 to 30 degrees to the south-west and is therefore probably following a formational trend. Along strike to the west it appeared to be restricted to a few narrow bands of mineralization, joint controlled to some extent. To the east it may be displaced by a cross fault as it appeared to swing into and follow a cross trench. More exposure is desirable to clarify the situation. A short tunnel appeared to cross into the hanging wall of it.

It is reported that more mineralization of this type was found during staking of additional ground done subsequent to the writer's examination. This is not surprising in these rocks and it is unlikely that it will all be as limited as that seen which at first appeared to be a very attractive showing and which assayed well in copper, soil samples taken along the road 1,000 feet below the showing yielded 28 to 196 p.p.m. copper.

The veins carrying the predominantly zinc mineralization varied from solid white quartz to silicified zones in the chloritic schists and similar zones or bands of mineralization appeared to branch off across the formation in an irregular manner whereas the main veins appear to follow it closely.

The amount of mineralization varies considerably from almost barren quartz in the centre tunnel to heavily mineralized quartz in a cut above the most southerly workings on the Cousin Jack which had caved. A sample #5484 across 23 inches in this cut assayed .64 ozs. Au., 1.8 ozs. Ag., 10.35% Pb., and 9.80% Zn. A rusty coating covered this mineralization which was not at first evident. Other samples taken assayed as follows:

- #5481 - 8" Berlin Fraction shaft .11 ozs. Au, .41 ozs. Ag., 1.90% Pb, 9.00% Zn.
- #5482 - 36" North trench on Cousin Jack: .12 ozs. Au, .30 ozs. Ag, 1.15% Pb, 4.60% Zn.
- #5483 - Across 2' 3" of a flat vein exposed for about 25 feet in south tunnel: .20 ozs. Au, .70 ozs. Ag, .95% Pb, 18.60% Zn.
- #5485 - Grab sample of broken material made up of numerous small pieces picked at random over all the floor of trenching on copper showing on JM # 2 claim: .02 ozs. Au, .80 Ozs. Ag, 5.93% Cu.

## CONCLUSION

The mineral grade of ore but geological setting major fault the

It can therefore done on the pre volcanics and cl

Anomalous graphite in bad to detail anomalies available to warranted.

## CONCLUSION AND RECOMMENDATIONS

The mineralization as exposed in old trenches and tunnels does not demonstrate a continuous good grade of ore but does indicate that a mineral deposit is a possibility and when this is coupled with the geological setting of favourable host rocks of variable character two intrusives of different age, and a major fault the possibility is greatly enhanced.

It can therefore be recommended that a detailed geological mapping and soil sampling program be done on the property and extension to the east with special attention to the area in the wedge of Nicola volcanics and close to it along the major fault. Elliot Creek and all its tributaries should be silt sampled.

Anomalous areas can then be checked by E.M. surveys as there does not appear to be any sign of graphite in badly crushed or sheared zones. Because of the variable mineral content it will be advisable to detail anomalous readings or crossovers to insure that a sufficiently large section or shoot of ore is available to warrant drilling or tunnelling. This work can be deferred however until soil results are obtained.

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Preliminary Report

PROPERTY FILE

on the

F H P Explorations Ltd. ,

Cousin Jack Property,

Tulameen, B. C.

- 1. SUMMARY - The F H P Explorations Ltd. "Cousin Jack" property consists of 28 staked claims and 8 leased claims approximately 4 miles North of Tulameen, B. C.

Old workings indicate a potential tonnage of 31,000 tons valued at \$698,000.00.

It is recommended that \$35,000.00 be expended on exploration to establish the total extent and value of the ore on this property.

- 2. PROPERTY - The property consists of 28 staked and recorded claims numbered 1 to 28 inclusive and 8 leased (former Crown Granted) claims as follows:

- L - 264 Ymir
- L - 265 Morning
- L - 266 Oshkosh
- L - 267 Winibago
- L - 268 Blackbird
- L - 269 Berlin Fr.
- L - 270 Freddie Burn
- L - 373 Anaconda

These claims are all in the Similkameen Mining Division. F H P Explorations Ltd. , does not hold the Cousin Jack Claim L - 263.

- 3. GEOGRAPHIC CONDITIONS - These claims lie immediately West of Otter Creek between Otter Lake and Frembd Lake approximately 4 miles North of the town of Tulameen, which is 16 miles North-West of Princeton, B. C. There is a good gravelled road from Tulameen up the west side of Otter Lake (elev. 2450').

The very steep, narrow road from here to the main workings (elev. 4150') is 2 1/2 miles long. (Average grade 13%). This area is in the Cascade Mountains.

Climate and snowfall are moderate. There is ample timber for mining purposes and water for domestic use can be obtained from a small spring near the workings. (It is suggested that Water Rights on Elliott Creek be applied for).

4. HISTORY - Most of the leased claims were staked and recorded in 1901, except the Anaconda which was staked in 1900, and work has been intermittent since then. There is no record of production. Most of the work done is written up in B. C. Minister of Mines Reports for 1901, 1905, 1908, 1933, 1934 and 1937 and Geological Survey of Canada Memoirs No. 26 (1909) and No. 243 (1960).

There are two adits (70' and 122') on the Cousin Jack claim, a 75' adit on the Ymir, a shaft on the Berlin Fr., a 300' adit on the Oshkosh and a 100' crosscut and 70' drift 1000' south of the Cousin Jack workings. Numerous open cuts indicate at least 6 ore-zones. The original property was worked by the Boulder Mining Co.

5. GEOLOGY - The rocks are Triassic greenstone (andesite) of the Tulameen Series intruded by Jurassic Boulder granite. The granite contact is less than 1000' from the main workings. Shearing has altered some of the greenstone to chlorite and sericite schist and the ore lies in the sheared zone or zones which appear to extend over a width of 800'. The shearing may have been caused by the Otter Lake Fault which passes through the North-East portion of the claims.

The schists strike Northwesterly and dip Westerly at varying angles into the mountain. The old workings have shown up four major and two minor ore zones which consist largely of banded and convoluted quartz mineralized with pyrite, galena and sphalerite with lesser amounts of chalcopyrite. The gold values appear to be in the sphalerite. The ore zones strike North-westerly and the dip appears to be Westerly at varying angles mostly around 70 degrees. The widths vary from less than a foot to 8 feet and average about four feet.

6. ORE - Showings of ore extend over a length of 4000 feet of which 2300 feet are on the F H P Explorations Ltd. property.

Eight samples listed below are in the 1937 B. C. Minister of Mines report and their locations are designated on the map of circled numbers. The first three locations are on the Cousin Jack.

<u>ORE ZONE</u>	<u>LOCATION</u>	<u>WIDTH</u>	<u>GOLD</u> oz/ton	<u>SILVER</u> oz/ton	<u>LEAD</u> %	<u>ZINC</u> %	<u>GROSS VALUE</u>
D	1	70"	0.05	0.4	nil	4.2	\$ 14.45
D		Dump	0.32	1.5	nil	19.1	68.52
D	2	54"	0.05	0.2	nil	2.3	8.68
C	3	54"	Tr	Tr	nil	2.4	6.96

<u>ORE ZONE</u>	<u>LOCATION</u>	<u>WIDTH</u>	<u>GOLD</u>	<u>SILVER</u>	<u>LEAD</u>	<u>ZINC</u>	<u>GROSS VALUE</u>
C	4	60"	Tr	0.2	nil	6.7	\$ 19.69
B	5	16"	0.07	Tr	nil	4.8	16.37
A	6	18"	0.16	1.4	12.9	18.6	101.35
A		66"	0.02	Tr	nil	3.1	9.70

In this report only the four main zones will be dealt with and these are lettered from east to west A B C and D on the map.

The following samples were taken by the writer:

<u>ORE ZONE</u>	<u>WIDTH</u>	<u>GOLD</u> oz/ton	<u>SILVER</u> oz/ton	<u>LEAD</u> %	<u>ZINC</u> %	<u>GROSS VALUE</u>
A	48"	0.23	1.2	6.22	15.33	\$ 73.33
B	24"	0.16	Tr	0.15	1.15	9.40
B	24"	0.54	0.8	0.25	7.45	42.30

SUMMARY OF ORE ZONES - (assume 100' depth)

<u>ZONE</u>	<u>WIDTH</u>	<u>LENGTH</u>		<u>TONNAGE</u>
A	4'	200'	$\frac{4 \times 200 \times 100}{12} =$	6667
B	2'	360'	$\frac{2 \times 360 \times 100}{12} =$	6000
C	5'	360'	$\frac{5 \times 360 \times 100}{12} =$	15000
D	4'	100'	$\frac{4 \times 100 \times 100}{12} =$	3333

Potential ore 31,000 tons

Regarding the assumed depth of 100':

1. The intruding granite appears to be about 1000' from the main workings.
2. Ore zones dip Westerly away from the granite.
3. The limit of the unsheared greenstone is unknown and there appears to be "horses" of the greenstone within the shear zone.
4. Outcrops of the ore zones extend over a depth of 400' (elev. 3800' to elev. 4200').



The assumed depth of 100' therefore is considered to be a conservative figure.

Regarding the various lengths of ore zones:

1. The old workings show that the ore zones extend at least 2300' on the F H P Explorations Ltd. property and an additional 1700' south.
2. The continuity of the individual ore zones have only been traced on the property for the distances shown.
3. The ore zones could conceivably extend for 4000' on the F H P Explorations Ltd. property, but until continuity is proven the above figures will be used for calculating tonnages.

GRADE

<u>ORE ZONE</u>	<u>WIDTH</u>	<u>GROSS VALUE</u>	<u>AVERAGE</u>
A	1.5'	\$ 101.35	152.03
	5.5'	9.70	53.35
	<u>4.0'</u>	27.33	<u>309.32</u>
	11.0'		<u>514.70</u> = \$ 46.79
			11
B	1.3'	\$ 16.37	21.28
	2.0'	9.40	18.80
	<u>2.0'</u>	42.30	<u>84.60</u>
	5.3'		<u>124.68</u> = \$ 23.52
			5.3
C	4.5'	\$ 6.96	31.32
	<u>5.0'</u>	19.69	<u>98.45</u>
	9.5'		<u>129.77</u> = \$ 13.66
			9.5
D	5.9'	14.45	85.26
	<u>4.5'</u>	8.68	<u>39.06</u>
	10.4'		<u>124.32</u> = \$ 11.95
			10.4

From these figures it would appear that the values are higher nearer the granite and diminish to the West away from the granite.

SUMMARY

<u>ORE ZONE</u>	<u>TONS</u>	<u>VALUE / TON</u>	<u>TOTAL</u>
A	6667	\$ 46. 79	\$ 312,000. 00
B	6000	23. 52	141,000. 00
C	15000	13. 66	205,000. 00
D	<u>3333</u>	11. 95	<u>40,000. 00</u>
	31000		\$ 698,000. 00

7. LIMITING CONDITIONS

A. Physical - Neither climate nor snowfall present any serious obstacles.

There are at least three possible approaches to the workings:

1. A 4 1/2 mile cut-off from the Lawless Creek Camp Road approaching the workings from the south. This would be the longest and most expensive road.
2. The old road 4 miles North of Tulameen which is very steep and narrow and right-of-way would probably have to be purchased.
3. The old sawmill road which leaves the main road near Frembd Lake and can be continued to within 100 yards of the extreme north workings in the South-east corner of the Oshkosh claim. This Road appears to provide the best and shortest possible access.

The ore zones appear to be strong and persistent with no apparent faulting. There is a good possibility of additional zones between the known ones over a width of several hundred feet. The shear zone is known to extend from the south end of the Cousin Jack claim into the southern part of the Oshkosh, a distance of 4000 feet.

Sufficient drilling and mining water might be stored from Elliott Creek or pumped or hauled from Otter Creek at considerable expense.

B. ECONOMIC - A power line extends about a mile North of Tulameen but costs of an extension would probably be shared by inhabitants further up the road. Water supply will be expensive. No estimation of production costs is feasible at this time since it might be economical to haul the ore to a mill near the main road, Tulameen or Princeton.

Metal costs used in calculation are; gold \$35.00/oz, silver \$1.29/oz, lead \$0.155/lb, zinc \$0.145/lb. Smelter schedule of from 91% to 93% of gross value is partially offset by the exchange of 7% to 8%.

8. RECOMMENDED PROCEDURE - This report will deal only with exploration which is laid out in two phases; A. Preliminary, B. Secondary.

A. Preliminary Phase - It is recommended that the old sawmill road be improved and continued to the workings. The Bulldozer could then strip 5 lines (bearing N 70 degrees E) across the shear zone as shown on Map 3. The overburden does not appear to be deep. Geochemical testing (20' to 50' intervals) could then be done along the stripping to ascertain the continuity of the ore zones both laterally and longitudinally. Since the Anaconda was the first claim staked in this group, it is suggested that it be explored for old workings and outcrops.

B. Secondary Phase - From the data obtained from the Preliminary Phase it may be advisable to extend the stripping and geochemical testing to the north end of the property. The main showings could then be bulk sampled and a diamond drilling program laid out to prove up continuity in length, width and depth.

EXPLORATION COSTS

a. Preliminary

Road	\$ 1,500.00	
Stripping	2,000.00	
Engineering & Geochemical Testing	1,000.00	
Contingent Expense	500.00	\$ 5,000.00

b. Secondary

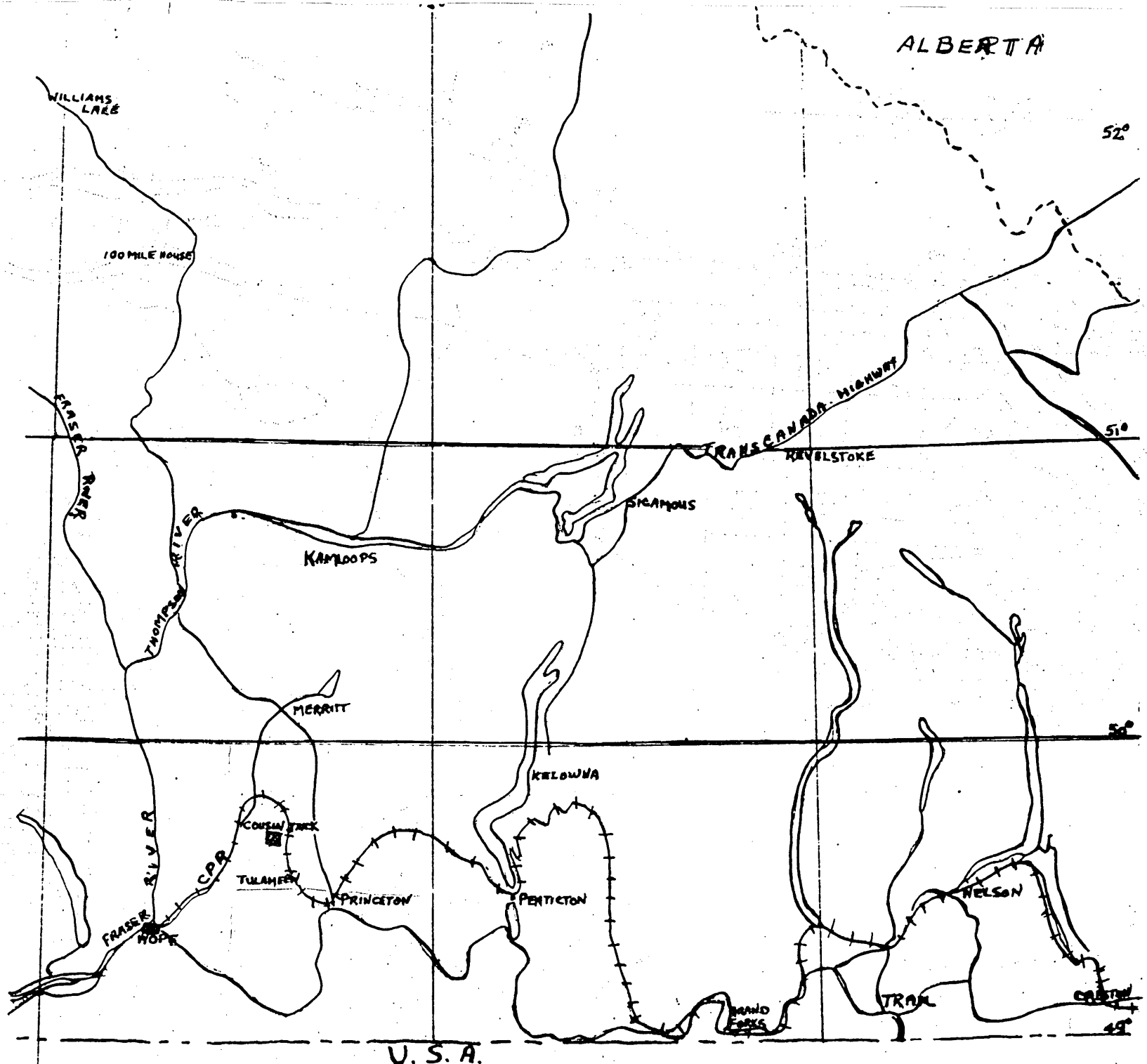
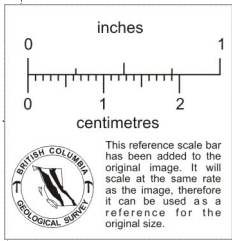
Stripping	\$ 1,000.00	
Geochemical testing	1,000.00	
Bulk Sampling	1,000.00	
Diamond drilling	20,000.00	
Engineering & Assaying (locating holes, logging & sampling core & plotting results)	3,000.00	
Contingent expense (including core shed & road maintenance)	4,000.00	\$ 30,000.00
TOTAL		\$ 35,000.00

9. CONCLUSIONS - The potential ore on this property in less than 400 feet of length is 31,000 tons valued at \$698,000.00. It could be ten times as long. Old workings indicate a length of at least 2300 feet.

It is recommended that \$5,000.00 be spent on preliminary exploration with an additional \$30,000.00 for secondary exploration to ascertain the extent and value of this ore body.

Jack A. Millican, P. Eng.

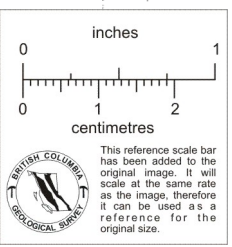
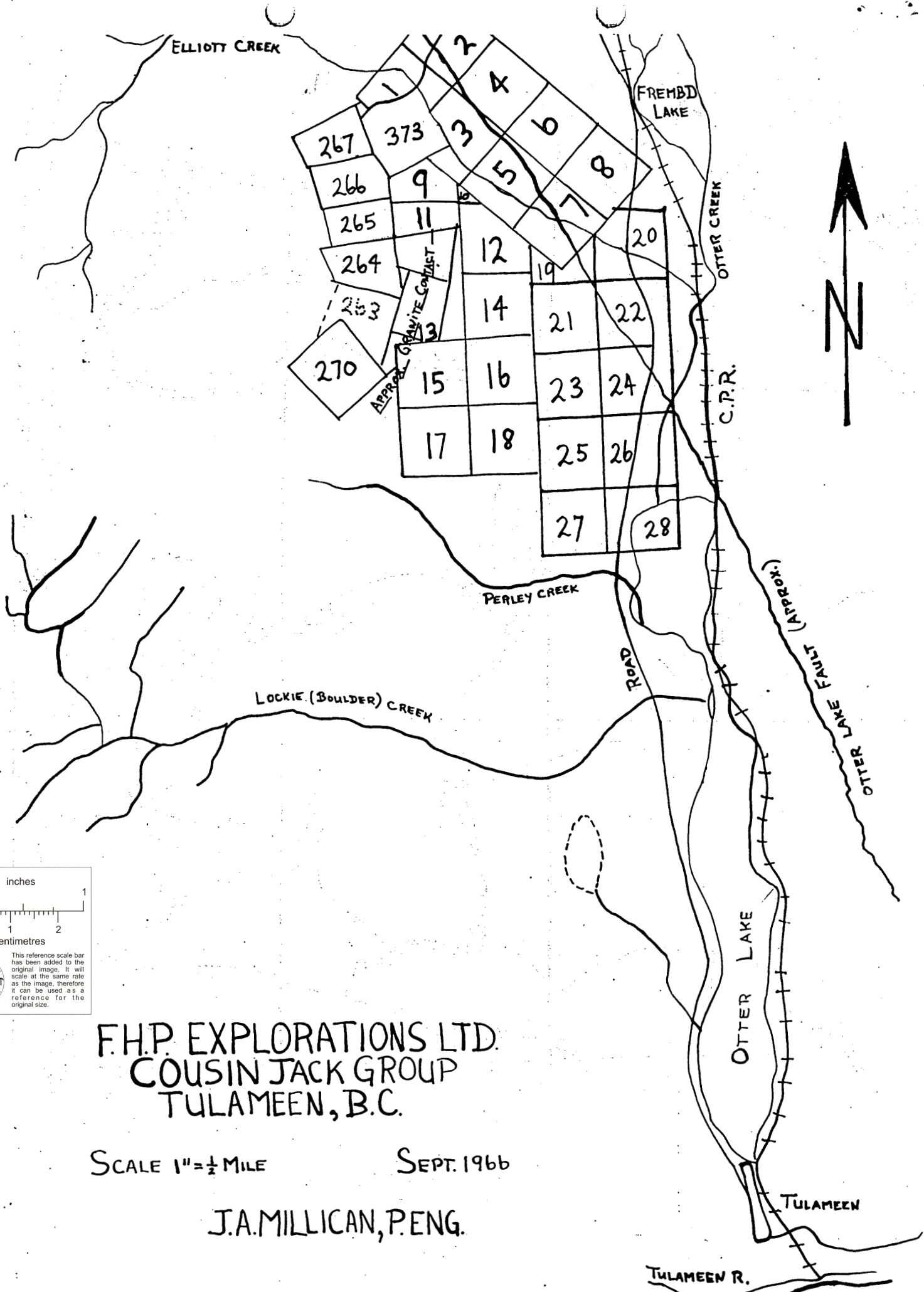
20 September, 1966.



SCALE 1" = 30 MILES (APPROX)

SOUTHERN BRITISH COLUMBIA

SEPT 1966  
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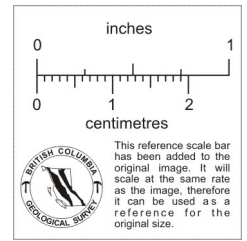
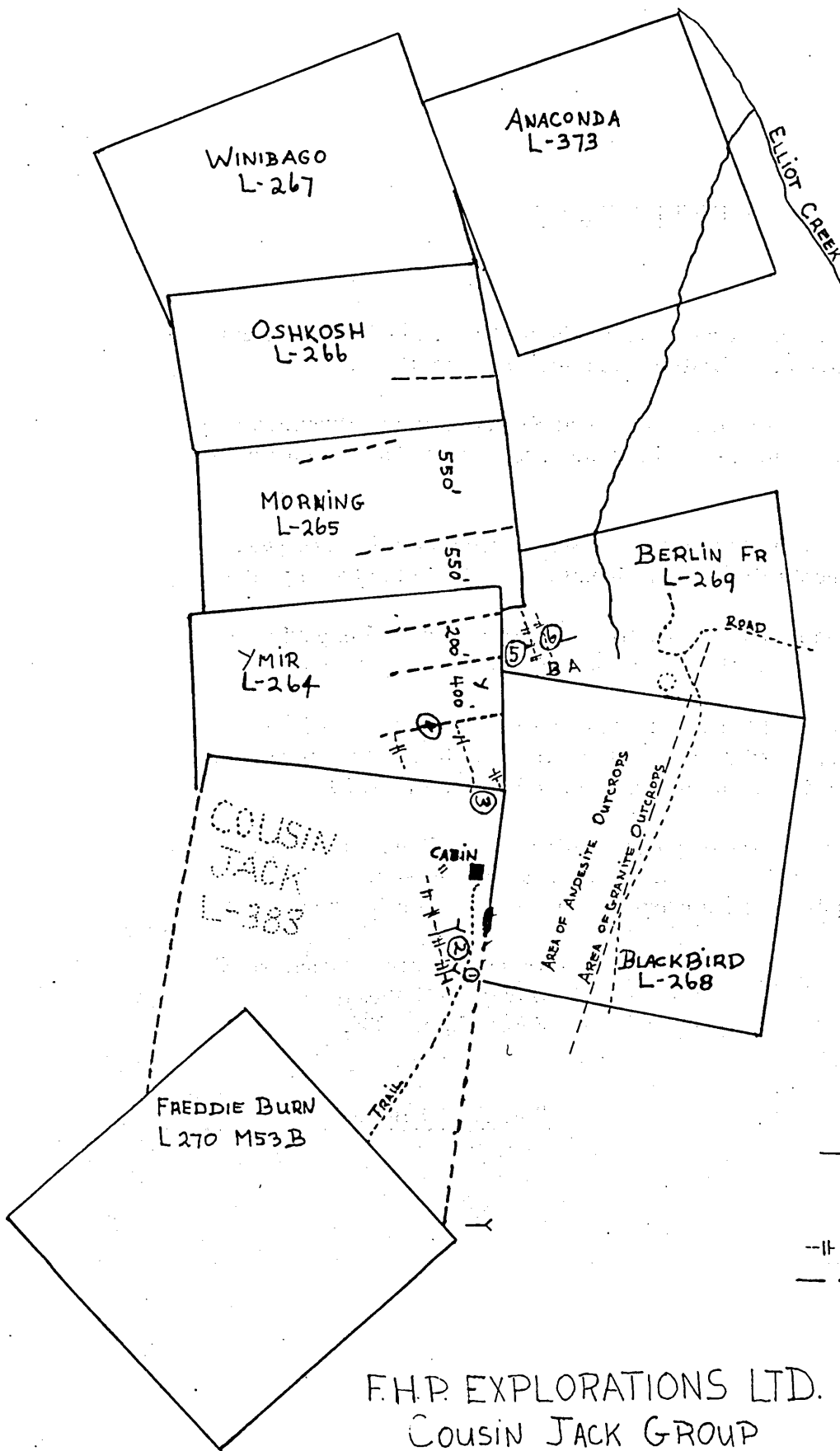
F.H.P. EXPLORATIONS LTD.  
 COUSIN JACK GROUP  
 TULAMEEN, B.C.

SCALE 1" = 1/2 MILE

SEPT. 1966

J.A. MILLICAN, P. ENG.

TULAMEEN R.



- LEGEND
- Y— ADIT
  - = OPEN CUT
  - ||-||- ORE ZONE
  - / - BULLDOZE STRIPPING LINES
  - ④ SAMPLE TAKEN

F.H.P. EXPLORATIONS LTD.  
 COUSIN JACK GROUP  
 TULAMEEN, B.C.

SEPT. 1966  
 J.A. MILLICAN, P.ENG.

SCALE 1" = 600'

CERTIFICATE

I, Jack A. Millican, Professional Engineer, of the City of Grand Forks, in the Province of British Columbia do hereby certify:

1. I am a registered Professional Engineer in the Province of British Columbia, and my address is Box 728, Grand Forks, B. C.
2. I attended the University of British Columbia for one year and Queen's University, Kingston, Ontario for three years.
3. I have had some twenty five years professional experience in mines in British Columbia and other parts of Canada.
4. My report on the F H P Explorations Ltd. . Cousin Jack property dated 20 September, 1966, is based upon personal examination of the property on 7 September, 1966.
5. I have no personal interest, direct or indirect, in the property covered by the said report nor in the shares of the company operating the property, nor do I expect to receive any.

Dated at Grand Forks, B. C.,  
this Twentieth day of  
September, 1966.

" J. A. Millican " .....