

REPORT ON GEOLOGICAL AND GEOCHEMICAL
SURVEYS OF VM #1 AND #2, VA #1 AND #2 GROUPS

KAMLOOPS MINING DIVISION

OWNER: ROYAL CANADIAN VENTURES LTD.
OPTIONED BY THE CARIBOO SYNDICATE

LOCATION: VAVENBY, BRITISH COLUMBIA 51° 119° NW

AUTHORS: H. NAYLOR, B.Sc.
L. G. WHITE, P. Eng.

82 M / 12 E

DATED: DECEMBER 1, 1971

CLAIM GROUPS

CLAIMS

VM #1

VM 2,
4 to 10
13 to 22
25 to 36

VM #2

VM 61 - 88
VM 99 -102

VA #1

VA 44,46,48,50,52,108,110,112
VA 53 to 76
VA 123 to 124
VA 137 to 138

VA #2

VA 125 to 136
VA 77 to 90
VA 139 to 152

3525

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INTRODUCTION

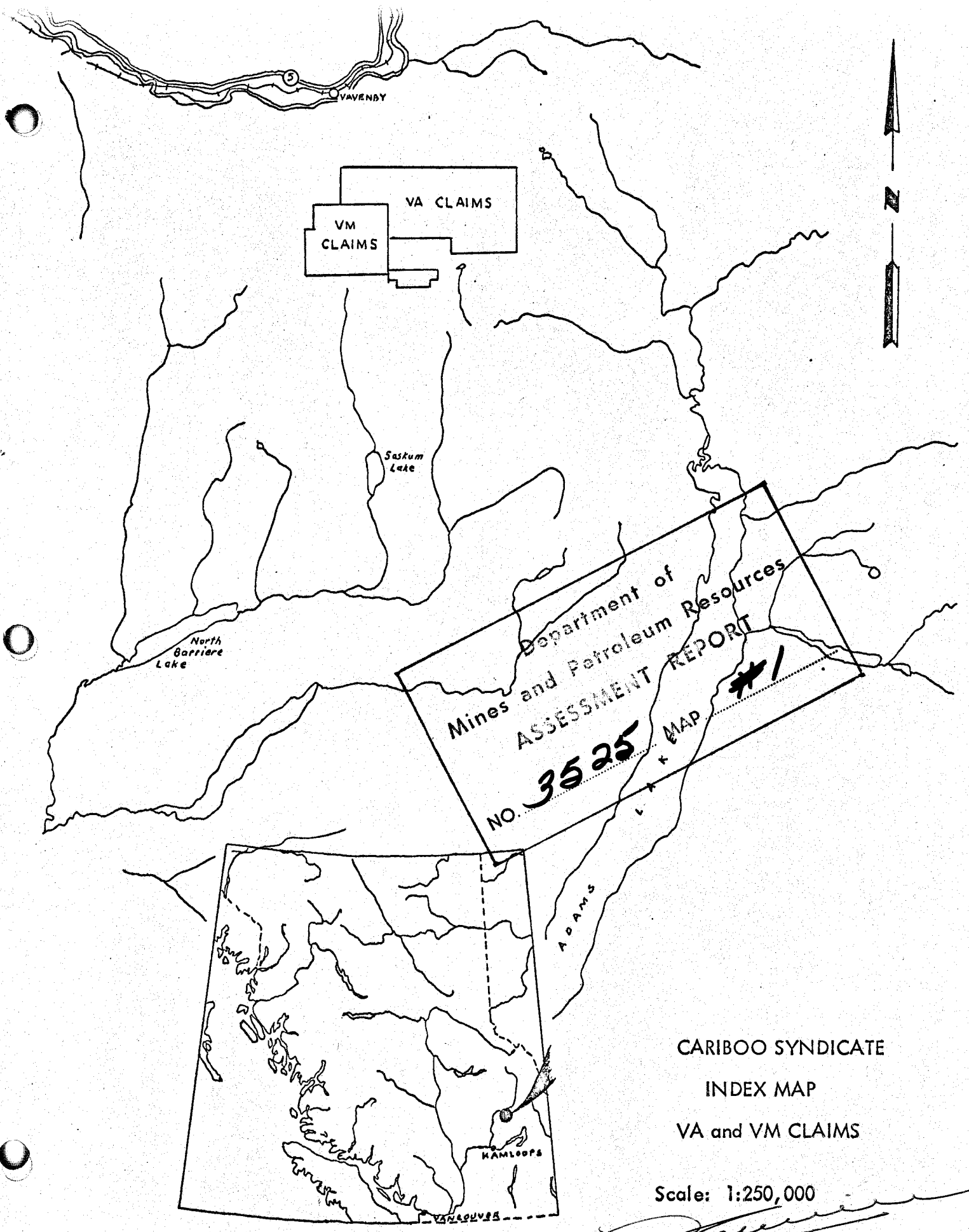
The VA claim group comprising 152 full-size, contiguous mineral claims, was staked during June of 1971. The VM claims consist of 62 contiguous, full-sized claims staked in the summer of 1970 and 1971. Both adjacent groups were staked by Royal Canadian Ventures Ltd. of Kamloops in July, 1971. H. Naylor, while on a routine examination of the properties in the area, investigated the claims. The Cariboo Syndicate of companies under the overall direction of L. G. White, P. Eng., general manager and consultant, subsequently negotiated an option agreement for the property. Results of the field mapping, soil sampling and trenching are summarized in this report.

The mapping was carried out during late September and October 1971 by P. Folk and H. Naylor of Western Geological Services Ltd. [under the supervision of J. Buchholz]. Soil sampling as partial fulfillment of assessment requirements was carried out by employees of W.G.S. during the same period. Results of the previous geochemical surveys undertaken by Royal Canadian Ventures Ltd. are incorporated into this report.

In mid-October, 28 additional VA claims were staked on the basis of a few geological observations. No further work was done on these claims.

LOCATION AND ACCESS

The property [see Fig. 1] is located about five miles south of Vavenby, a village on the North Thompson River, and is about 70 air miles northwest of Kamloops. Good logging roads from either Vavenby or Barriere pass through the property.



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3525
MAP #1

CARIBOO SYNDICATE
INDEX MAP
VA and VM CLAIMS

Scale: 1:250,000

[Handwritten signature]
Dec. 11/71

FIG. 1

TOPOGRAPHY

Topography is steep in places but not rugged, the area having been glacially scoured. Cliffs and inaccessible areas are few with elevations ranging from 4,500 to 5,800 feet above sea level.

Precipitation is moderately high resulting in a thick growth of bush and some fine stands of timber. Consequently, much of the region has been logged, slashed and burned. Some of these devastated areas, particularly those recently logged and not yet burned, are very difficult to traverse. Snow can be expected at higher elevations from mid-October to the end of June. Snow cover may exceed ten feet.

CLAIMS

The Ventures and Cariboo Syndicate claims, record numbers and expiry dates are listed below:

	<u>Name</u>	<u>Record Number</u>	<u>No.</u>	<u>Expiry Date</u>
VA	1 - 152 incl.	97918 - 98069	152	July 8, 1972
VM	2	88372	1	May 4, 1972
VM	4 - 10 incl.	88374 - 88380	6	May 4, 1972
VM	13 - 22 incl.	88383 - 88392	10	May 4, 1972
VM	25 - 36 incl.	88395 - 88406	12	May 4, 1972
VM	61 - 80 incl.	91573 - 91592	20	Sep. 21, 1972
VM	81 - 85 incl.	98070 - 98074	5	July 8, 1973
VM	86 - 88 incl.	98075 - 98077	3	July 8, 1972
VM	99 - 102 incl.	99846 - 99849	4	Sep. 20, 1972
VA	153 - 180 incl.	Unavailable	28	Oct. 26, 1972

HISTORY

Exploration in the general area bounded by the North Thompson River on the west and north, and Adams Lake on the east has been actively carried out since 1965 and to a lesser extent in the early 1960's. In 1964 the G.S.C. published a regional geological report which recommended the area for modern grass-roots exploration techniques. In subsequent years numerous prospects were located and a few old workings re-examined along the northern and southern margins of the Barriere Intrusion.

The most significant of these prospects so far has been the copper mineralization discovered simultaneously by Noranda and Quebec Cartier south of Vavenby. The two companies have merged their respective showings under Noranda's management.

In 1970 Royal Canadian Ventures, who have been actively prospecting the area since 1965 acquired some lapsed ground on strike to the east of Noranda's stratabound deposit. In the course of staking, a new showing in similar rock was discovered and more claims were added to the original group in stages to make up the present group of 61 VM and 152 VA claims.

The ground was recommended for acquisition by the Cariboo Syndicate after an examination in July and work described in this report was instigated in late September after negotiations with Royal Canadian Ventures. The recommendation was based on the property's location with respect to the regional stratigraphy and proximity to the intrusive contact, the presence of copper mineralization in terrain almost devoid of outcrop, and the lack of a history of previous exploration on the claims.

To the south east of the VM-VA claims recent logging opera-

tions exposed mineralization in place in an area in which skarn float occurrences had been known for some time. Dynasty examined and optioned these claims in September 1971.

Other companies doing exploration in 1971 in the area are Canadian Superior Explorations, Ducanex, Cambridge, Echo Bay and Texacal.

REGIONAL GEOLOGY

The VA-VM claims are situated approximately in the center of the Adams Lake map sheet. [G.S.C. map 48] To the north and east the region is underlain by the Shuswap metamorphic complex. The remainder of the area contains younger [Permian or earlier] metamorphics intruded by the Barriere Intrusion and the Raft Batholith. These two major granodiorite and granite intrusions are elongated in an east-west direction roughly parallel to the foliation of the surrounding rocks. All the metamorphic rocks are intensely deformed. Rocks of the Shuswap complex have suffered at least two periods of folding:

- 1] Recumbent folds with axes a little north of east.
- 2] More open folds with north-west axes. The younger rocks have probably been isoclinally folded along north-west axes and later refolded locally and in broad warps.

Numerous mineral occurrences and a few significant deposits have been found in the schistose rocks not far from the Barriere Intrusion. The VA-VM property is one of these showings situated in the Permian or earlier metamorphic rocks near to the northern contact of the Barriere Intrusion.

GEOLOGY OF THE VA-VM PROPERTY

Introduction

Geological mapping of the property was completed using:

- 1] Aerial photographs at a one inch to one mile scale.
- 2] Pacing from known positions such as roads and grid lines and recording diagrammatically the data in notebooks.

The data [rock types, foliation, etc.] was then plotted on an enlarged aerial photograph at a scale of 1" = 1,000 feet. Approximate contours, or form lines, were plotted in the office of Western Geological Services using a stereoscope and aerial photographs. These methods of plotting and map-making have in fact proved economical compared with the cost of an accurate base map of such a large area and are well within the accuracy necessary for a preliminary study such as this.

The accompanying geological map shows the geology of the area as seen in the field. Nine distinct rock types were recognized and mapped. Since sedimentary structures have been destroyed by ancient metamorphism, the relative age relationships between the various rock units are unknown, i.e. it is not known if the strata is upright or has been overturned. The lithologic sequence is given below:

	<u>Rock Unit</u>	<u>Approx. Thickness</u>	<u>Age</u>
9]	Brown basalt flows, dykes and agglomerate		Tertiary
8]	Barriere Intrusion - Granite		Jurassic-Cretaceous

	<u>Rock Unit</u>	<u>Approximate Thickness</u>	<u>Age</u>
7]	Undifferentiated metasediments, characteristically granular and limonitic. Limonitic quartzites, grey phyllites	?	Permian and earlier
5]	Green chlorite schists to massive greenstone	?	do.
	Massive white-grey limestone	50 - 500'	do.
5]	Green chlorite schists to massive greenstone	1,000' +	do.
4]	Dark grey graphitic phyllite	100 - 500'	do.
3]	Quartz sericite schists underlain by quartzo-feldspathic augen schists	100 - 300'	do.
2]	Grey massive quartz feldspar augen gneiss	1,500 - 2,000'	do.
1]	Brown quartzite and thinly laminated chloritic fine grained metasediments	150'	do.

Description of Rock Units

Unit 1

Quite likely a local facies, this unit is distinct from the gneisses which overlie it. The rocks are characteristically soft, fine grained, green to brown and grey, thinly laminated, and probably contain a high percentage of fine grained chlorite and clay minerals. In one creek bed, these soft rocks were conformably overlain by about thirty feet of massive, brown, fine grained quartzite with sericite on the fractures. Disseminated pyrite and pyrrhotite are common locally and minor chalcopyrite was noted along one small fracture plane.

In both areas where rocks of unit one are evident, they contact the Barriere Intrusion. Some sericite bands and limon-

ite were noted close to the contact which is abrupt and appears to be roughly conformable with the compositional layering of the contact rocks. Rocks at the intrusive contact do not appear to have been greatly altered by the intrusion of the batholith. In other words, the metamorphic grade of the rocks near the contact appears to be similar to that of rocks far from the contact. Paragenetically, original impure sediments were subject to regional and some contact metamorphism to produce the rocks in unit one.

Unit 2

Overlying the strata described above is a thick mass of quartz feldspar chlorite or biotite augen gneiss. These foliated rocks are characteristically massive, medium grained and have round and subround quartz grains sometimes $\frac{1}{4}$ inch in diameter or larger. A blocky fracture is common as opposed to other metamorphic units which fracture along foliation planes. The chlorite and sericite content of the gneisses may reach about 30% giving the rock a grey-greenish appearance. In some instances fine grained biotite [secondary?] predominates over the chlorite, while in other places particularly near the top of the unit, thin bands of sericite-chlorite are interbedded with the gneissic material. A thin section study of a sample concluded that these rocks were originally intrusive [see Appendix].

Unit 3

Above the massive gneissic material is a unit of rocks which are dominantly composed of:

- a] Quartz feldspar augen schists.
- b] Coarse grained sericite-quartz feldspar schists.

Both of these rock types exhibit low grade copper mineralization. The former is similar to the gneissic material in grain

size, composition and origin, but is less massive. These augen schists exhibit a distinct schistose character with sericitic foliation planes which serve as the main fracture plane. The contact between gneisses below and augen schists above is defined as the first appearance of multiple sericite bands and schistose character. If an intrusive origin for the gneisses is accepted, then the augen schists represent the metamorphosed contact between a granodioritic [?] body and intruded sediments.

The quartzo feldspathic sericite schists are coarse grained sericite with thin bands of granular quartz and feldspar. Quartz porphyroblasts in the order of a couple millimeters in diameter are often found and small, elongate, euhedral green hornblende crystals were noted. This soft, friable, light brown, recessively weathered rock-type is often stained with manganese dendrites.

A characteristic feature of these rocks are crenulations with wavelengths of a few millimeters. These and other minor structures suggest polyphase deformation, however, the rarity of outcroppings prevented a detailed study of these structures. Similar rocks appear to be the main host rock for important copper mineralization on the Noranda property to the west. Minor chalcopyrite mineralization was in fact found in some of the few exposures of these rocks on the VM claim group.

Sericite schists are produced from the metamorphism of pelitic sedimentary rocks.

Unit 4

Above the sericite schists lie variable thicknesses of graphitic, dark grey, locally pyritic [euhedral pyrite] phyllites. This is an easily recognized unit which contains some large

pyrite crystals and produces a dark grey soil upon weathering. The rocks are fine grained, well foliated and generally friable although some tougher, more slaty material can be found. The phyllites were probably formed from the metamorphism of pelitic, fine grained sediments.

Unit 5

A series of dark green chlorite schists and greenstones overlie the phyllites. These are generally soft, well foliated, and contain a high percentage of chlorite and sometimes carbonate. Some of these schists have on their foliation planes a characteristically mottled appearance with dark green freckles of chloritic material a few millimeters in diameter. Similar rocks from Britannia Mines near Vancouver are described as metamorphosed tuffs.

In some of the less foliated material, sub-rounded volcanic particles appear in a fine grained matrix. Either sedimentary bedding or volcanic flow textures can be seen, the original structures having been nearly destroyed by subsequent metamorphism. Outcrops of very massive, fine grained, originally igneous greenstone can be found both above and below the thick limestone member. Disseminations of magnetite and frequently pyrite were found in the more massive parts of this unit. The massive rocks overlie the well foliated chlorite schists.

The nearby copper showings of Dynasty Explorations Limited are apparently found in the lower, well foliated portion of this unit. No such mineralization or accompanying alteration was detected in these rocks on the VA-VM claims.

Unit 6

A conspicuous white to grey crystalline limestone layer of over 100 feet in thickness is interbedded with the green-

schists. This clean massive unit appears to decrease in thickness to the east before it is presumably faulted off to reappear about two miles south. East of the forestry lookout, parts of the limestone have been dolomitized, limonite has been formed, and traces of galena were detected.

Near the projected fault on the VA claims a few small bands and isolated outcrops of limestone were found. Unfortunately a lack of outcrop in the area conceals the relation of these small limestone bodies to the main layer.

Unit 7

An undifferentiated sequence of metasedimentary rocks occurs to the north of the limestone and is evident particularly to the east of the previously mentioned projected fault. A high percentage of limonite is characteristic and pyrite is common in this unit. The rocks are generally soft, fine grained, granular, slightly to well foliated with sericite on the foliation planes. Some of the original material may have been arkosic with the feldspars subsequently forming soft clay minerals and the quartz grains remaining to give a granular appearance. Grey graphitic phyllites, quartz sericite schists and minor chlorite schists are present. Rocks of this undifferentiated sequence lie above the other units.

Unit 8

The Barriere intrusion consists mainly of pink medium to coarse grained, biotite granite. A medium grained, pinkish muscovite rich phase occurs locally at the edge of the batholith. Limonite, reddish [K-spar ?] alteration and some sericitization can be found in this phase. No copper mineralization was found in these intrusive rocks.

Unit 9

The youngest rocks in the area are grey to brown, slightly porphyritic, non-metamorphosed magnetic basalt dykes and flows with associated agglomerate. These are probably related to other basalts in the region which are pliocene or miocene in age.

Structure

The metamorphic rocks have suffered at least two periods of deformation. Primarily, the strata was foliated and folded in a northerly plunging fashion to produce parallel minor structures. Secondly, there was folding with a roughly northwest plunge. On the VM part of the geology map this deformation has resulted in a fairly obvious bending of the foliation planes into an antiform around a northwest plunging axis. An axial plane cleavage may accompany one of these periods of folding, unfortunately due to few and poor bedrock exposures no conclusion on this subject may be made at this time. A careful analysis of the sericite schists in the recent trenches could probably provide the necessary information.

Where observed, the contact of the Barriere Intrusion appears to be conformable with the metamorphic strata. On a regional scale the metamorphic foliation appears to parallel the intrusive body. Both of these observations indicate that the intrusion is of a concordant nature.

No unconformities were noted in the various strata.

A north trending fault has been projected through the middle of the map to account for the jog in the intrusion and the apparent displacement of the lithologies. Several minor faults and shear zones were seen but are not important.

ECONOMIC GEOLOGY

Surface Showing

Low grade chalcopryrite mineralization is found on fractures and along the foliation planes in both rock types of Unit 5. Different selected grab samples from the original VM showing assayed 0.4%, 0.34% and 0.29% Cu and only traces of Ag and Au. The mineralization in quartz augen schists is visible along a small creek bed for about 140 feet along strike. Small intimately associated disseminations of chalcopryrite and pyrrhotite are dispersed throughout the micaceous and feldspathic bands between the quartz augens. Copper also occurs in cracks in the quartz grains and along fracture planes at right angles to the foliation planes. The mineralized rocks of this type have a characteristically light brown, slightly limonitic weathered surface.

Widespread chalcopryrite mineralization in the sericite schists has been found in all the trenches where bedrock has been exposed. In these rocks, chalcopryrite, malachite, and limonite occur along fractures and foliation planes. Subeuhedral pyrite occurs in areas near the copper mineralization and manganese dendrites are common.

Trenching

Five trenches aggregating 1900 linear feet in the vicinity of the showing, and an access road are shown on the geology map. Four of these trenches intersected visible low grade copper mineralization. No outcrop was uncovered in the last [T5].

The first three trenches uncovered erratic low grade chalcopryrite mineralization over two to three hundred feet. Before the trench terminated in thick overburden, the third trench

[T3] encountered the most encouraging mineralization, over 50 feet in sericite schists. A selected grab sample assayed 0.43% Cu. Associated with the mineralization was a 25 foot exposure of massive to weakly foliated medium grained crystalline rock in which the mafics have been completely altered to chlorite. This is assumed to be a sill intruded conformably with the bedding. The last trench [T5] encountered no bedrock, however, near its termination float chalcopryrite mineralization grading roughly .3% Cu was found in the creek bed. Number four trench was spotted roughly 7,000 feet north of the original showing in a region without outcrop. Erratic traces of chalcopryrite and pyrite mineralization were found in quartzo-feldspathic sericite schists.

The trenching was carried out under winter weather conditions and detailed mapping of the trenches has not been completed.

Genesis

Several origins for the mineralization have been hypothesized. They can be divided into two groups:

a] Synqenetic Origin

This hypothesis assumes an original stratabound sedimentary deposit has been subsequently metamorphosed and intruded. This popular concept accounts for the mineralization occurring in a particular strata whose extent can be traced for 3 miles from the Noranda property to the west through the VM claims and possibly further. The proximity of the Barriere Intrusion and the possibly originally plutonic gneiss found at the VM showing are incidental to this theory of ore genesis except possibly to provide heat for the remobilization of the original copper minerals. If this theory is correct then perhaps the long neglected Shuswap metamorphic complex should be explored for similar deposits.

b] Epigenetic Origin

This theory would have the correct strata [a permeable one] altered and mineralized by fluids emanating from an intrusive body. The intense alterations and mineralization on the property of Dynasty Explorations Ltd. suggest such an origin for that deposit. On the Dynasty ground adjacent to the VA claims on the south, the chalcopyrite and alteration occur in close proximity to the Barriere intrusion. Such is not the case on the VM group where no such alteration was seen. The discovery that the important mineralization occurs on or near the metamorphosed contact between gneiss which may have been originally an igneous body and schists which were sedimentary, suggests that an ancient epigenetic ore body has been metamorphosed and remobilized to form the present deposit. The presence of a sill-like body in the mineralized part of T3 is evidence in favour of an epigenetic mode of formation.

The genesis of the deposit continues to be the source of much debate.

Geochemistry

On the VA group 1,233 soil samples were collected at 200 foot intervals along N-S lines 800 feet apart. A total of 239 soil samples were also collected on the VM claim group to fill in the grid previously sampled by Royal Canadian Ventures Ltd. The results of soils previously taken are included on the geochemical map enclosed. Flagged lines were compassed and chained simultaneously with the extraction of the soil samples. Soil Augers were employed to recover soil from depths of one to three feet in the typically light reddish brown "B" soil horizon. Samples were not taken in some places where black humus extended past depths of three feet.

The soil profile consists of a variable thickness of organic material above a dark brown layer which grades into a foot thickness of light reddish brown soil at depths of about one to two feet. Below this horizon is commonly variable thicknesses of light grey unconsolidated glacial till. Where bedrock is not far below the surface, the soil sampled was residual, formed from the weathering of the bedrock. Soils above the grey graphitic strata were characteristically dark grey and rusty colored soils were taken above limonitic meta-sediments.

Samples were placed in kraft paper envelopes and sent to Acme Analytical Laboratories in Vancouver for semi-quantative Cu and Zn analyses. In the laboratory, the samples were screened to -80 mesh, weighed, digested with mixed nitric and perchloric acids and analyzed by atomic absorption.

To analyze the distribution of copper in the soil, sample results were plotted as a frequency histogram and as a cumulative plot on logarithmic probability paper [Figs. 2 and 3]. The histogram gives a pictorial demonstration of the distribution of Cu in the samples, while the probability graph shows that this distribution is approximately log-normal. A break in the curve of the probability graph at about 93 ppm Cu is interpreted as being the point where the anomalous population of results is contributing equally to the distribution. In other words, results above 93 ppm Cu are anomalous. This includes about 2.5% of the values not including 34 erratic highs above 130 ppm Cu which were not included in the statistics.

High soil results for Cu appear to be erratically distributed over the claim groups. Other than a small zone outlined by the detailed grid of Royal Canadian Ventures over the original showing, no consistently anomalous zone is present. It was

Number of
Samples

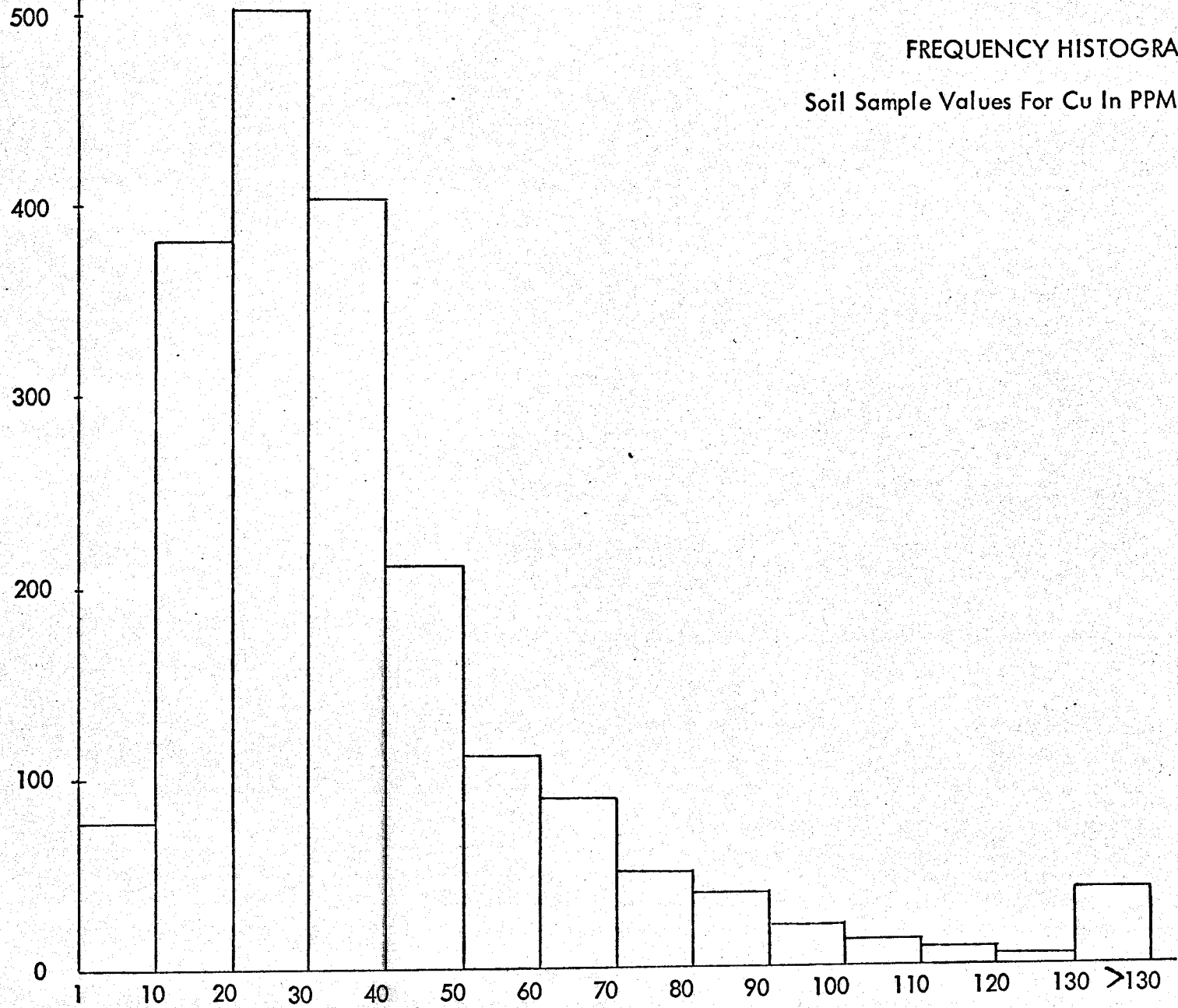


FIG. 2

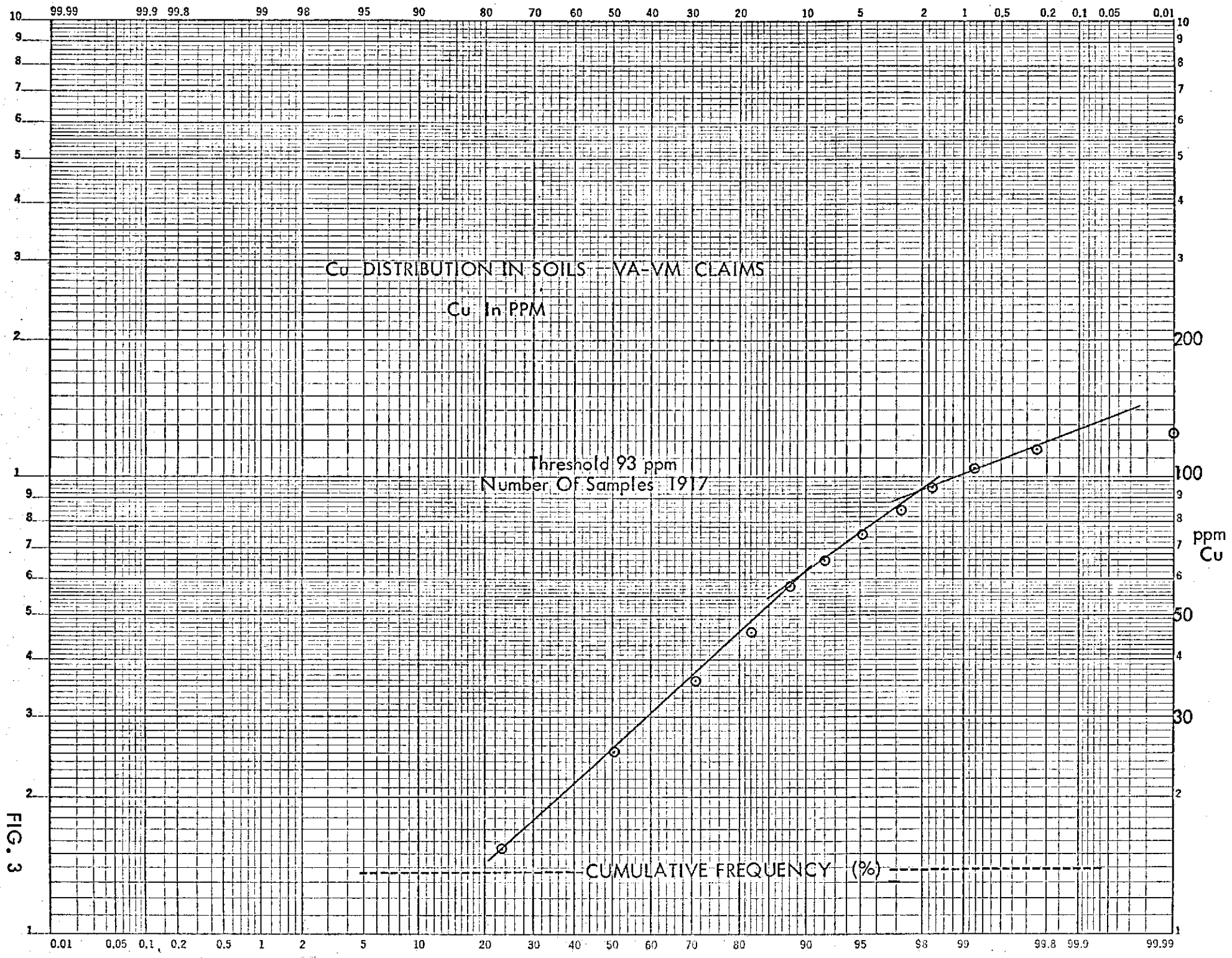


FIG. 3

not feasible to contour the reconnaissance results. Since on the large scale of the reconnaissance grid only two anomalous values were found in the region of the showing, it must be concluded that erratic anomalous values may represent important mineralization. Two reasons for the relative impotence of the technique on a large scale grid are:

- 1] Layers of glacial material with impermeable clay bands restrict the percolation of water through underlying mineralized zones.
- 2] Since the metamorphic terrain is largely composed of material [e.g. micas] which is easily converted to clay by normal processes of weathering, thicknesses of impermeable clay have been formed over some favourable strata. The Copper is thereby rendered immobile, does not disperse throughout the overlying soil, and is relatively absent from a sample of the soil.

Since high zinc values do not correlate well with high copper results, little useful information can be gleaned from the assays, and statistical studies have not been carried out. Values of over 110 ppm Zn are estimated to be anomalous and only those values over 100 ppm Zn have been plotted on the geochemical map. Some high zinc results are concentrated in areas near the Barriere Intrusion and also near the thick limestone unit. A "pH halo" causing the precipitation of zinc in the limestone environment could be the cause of the high zinc values in the region. A slight enrichment in the concentration of zinc in the rocks of the Barriere Intrusion may account for anomalous zinc values in the contact area. However, poorly developed organic rich soils were noted in the area; these probably give erroneously high values when sampled.

It is well known that the mobility of many metals including copper and zinc is in some areas limited by organic activity resulting in "swamp anomalies". Unfortunately, organic material in the soil samples taken does have the effect of increasing both the Cu and Zn assays. A few of the highest values of Cu are from samples noted by the samplers as having some organic material. It may be significant that some of the zinc anomalies occur adjacent to swampy areas. On the geochemical map, stations with no sample results indicate that a swampy area was traversed. High zinc values can be seen to be associated with these areas.

In order to test the effects of clay and depth of sample on the distribution of Cu in the soil, samples from depths of up to four feet were taken in the vicinity of Avery Lake. Results showed a small copper anomaly with no corresponding zinc highs. It is interesting to note that each of the anomalous samples were taken from areas of:

- 1] Shallow bedrock with rock particles in the sample.
- 2] Greyish soil of the "C" soil horizon.
- 3] Gravelly till.

No samples consisting of clay or silty clay, regardless of depth yielded anomalous values. A trench over the north part of the anomaly uncovered minor chalcopryrite mineralization. Similarly, on the detailed grid previously sampled by Royal Canadian Ventures, overburden conditions were noted after trenching and roadbuilding. The northeast termination of the geochemical anomaly coincided with a change from a shallow loose brown soil to a deep impervious grey black clay-till which masked the mineralization. On the basis of these two examples it can be concluded that clay layers can effectively shield mineralized ground.

SUMMARY AND CONCLUSIONS

During the period from September to October 1971, geological and geochemical examinations of the VA and nearby VM claim groups were carried out by employees of Western Geological Services. The area was deemed favourable because of the proximity to the important showing of Noranda, the occurrence of several mineral showings adjacent to the Barriere intrusion and a copper showing on the property.

Geological examinations and limited trenching show that chalcopyrite mineralization is low grade, widespread, and is contained within a certain mappable metamorphic unit. Mineral occurrences such as those found on the Dynasty property to the south were not discovered.

Since open pit methods of mining are the only practical means for the development of this property into a mine, a serious restriction is placed on the likely areas for further exploration. Specifically, only large areas where the correct stratum is near the surface should be seriously considered. Such a condition can only exist where the dip of the strata is roughly parallel to the slope of the land. Fortunately this condition is encountered in two fairly large areas:

- 1] The area near Avery Lake and trench T4.
- 2] Near the original showing.


Both of these areas and possibly some of the intervening ground merit closer inspection.

Geochemical soil sampling is of limited use over clay or organic rich terrain common on some parts of the property. No large anomalies of copper or zinc occur, however, erratic anomalous values may warrant investigation.

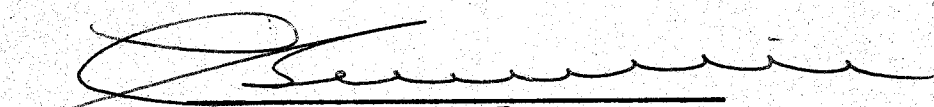
From a geological and geochemical point of view, the VM claims and those VA claims west of or in the vicinity of the projected fault hold more promise than those claims to the east of that area.

The extreme east end of the recently staked VA claims [VA 153 to 180] cover strata such as is found on the Dynasty property to the southeast. Otherwise, these claims cover granites and gneisses in which no mineral occurrences have as yet been found.

In view of the widespread mineralization exposed during the 1971 program further trenching, detailed mapping and subsequent diamond drilling of selected targets within the host stratum is recommended.



H. Naylor, B.Sc.



L. G. White, P. Eng.

Vancouver, B. C.
December 1971

EXPENDITURESVM #1 and #2 GROUPS

Personnel

H. Naylor	Sept. 20 - Dec. 1/71 17 days @ 45.00/day 17 days supervision, mapping, reporting, interpretation	765.00
P. Folk	Sept. 20 - 26/71 7 days @ 40.00/day 1 day soil sampling 6 days mapping	280.00
G. LeBrun	Sept. 20 - 21/71 2 days @ 30.00/day 2 days soil sampling	60.00
G. Beyco	Sept. 21 - 26/71 5 days @ 35.00/day 5 days soil sampling	175.00
L. G. White, P. Eng.	Sept./71 1 day field examination	150.00
J. Buchholz	Sept. 20 - Dec. 1/71 10 days general supervision @ 125.00/day	1,250.00
H. Buchholz	Sept. 23 - 26/71 3 days @ 30.00/day 3 days soil sampling	90.00

On Site Transportation

Rented vehicle [Charter Truck Rentals]	480.00
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Analysis

Acme Analytical Laboratories Ltd. 230 samples: Cu, Zn analysis @ 1.25/sample	287.50
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Declared before me at the

VANCOUVER, B. C.

of

, in the

Province

FEB 16 1972

day of

Sub - Mining Recorder.

VM #1 and #2 GROUPS [Continued]

Accommodation Meals

Dutch Lake Resort 24 man-days @ 15.00/day 360.00

Draughting

Versatile Industries Ltd. 450.00

Trenching

E. Kashluba, Kamloops, B. C. 700.00

Road Building

J. Sallenback, Vavenby, B. C. 500.00

SUB-TOTAL 5,547.50

Overhead [.25 of payroll of field Crew] 342.50

TOTAL \$5,890.00

Declared before me at the

of
Province of British
Columbia

VANCOUVER, B. C. in the
Province of British Columbia, this

FEB 16 1972, A.D.

J. Hughes
Sub - Mining Recorder.

[Handwritten Signature]
A. Eng

EXPENDITURESVA #1 and VA #2 GROUPS

Personnel

H. Naylor	Sept. 19 - Dec. 1/71 30 days @ 45.00/day 30 days supervision, mapping, reporting and interpretation	1,305.00
P. Folk	Sept. 28 - Dec. 1/71 13 days @ 40.00/day 4 days mapping 3 days soil sampling 6 days draughting	520.00
T. McCrory	Sept. 20 - Oct. 6/71 16 days @ 30.00/day 16 days line cutter	480.00
M. McCrory	Sept. 20 - Oct. 6/71 16 days @ 30.00/day 16 days line cutter	480.00
G. Beyco	Sept. 28 - Oct. 21/71 17 days @ 35.00/day 7 days surveying 10 days soil sampling	595.00
H. Buchholz	Sept. 28 - Oct. 21/71 20 days @ 30.00/day 7 days surveying 13 days soil sampling	600.00
D. Angus	Oct. 10 - Oct. 15/71 4 days @ 25.00/day 4 days soil sampling	100.00
R. Hartfield	Oct. 8 - 21/71 11 days @ 25.00/day 11 days soil sampling	275.00
J. Buchholz	Sept. 20 - Dec. 1/71 10 days general supervision @ 125.00/day	1,250.00

VA #1 and VA #2 GROUPS [Continued]

On Site Transportation	
Rented vehicle [Charter Truck Rentals]	1,180.00
Analysis	
Acme Analytical Laboratories Ltd.	
1,032 samples @ 1.25/sample	1,290.00
Accommodation and Meals	
Dutch Lake Resort	
105 man-days @ 15.00/day	1,575.00
Draughting	
Versatile Industries Ltd.	200.00

SUB-TOTAL 9,849.50

Overhead [.25 of payroll of field crew] 1,088.75

TOTAL \$10,938.25

Declared before me at the
of **VANCOUVER, B. C.** in the
Province of British Columbia this
day of **FEB 16 1972**
[Signature]
Sub - Mining Recorder

[Signature]
[Signature]

A Commissioner of the Province of British Columbia
A Notary Public for the Province of British Columbia

CERTIFICATION

I, Leonard George White, of the City of West Vancouver, in the Province of British Columbia, hereby certify as follows:

- 1. That I am a Registered Professional Engineer of the Provinces of British Columbia and Ontario and reside at 704 Parkside Road, West Vancouver, B. C.**
- 2. That I am a graduate of Washington State University with a Bachelor of Science in Mining Engineering, having practised my profession for twenty-nine years.**
- 3. I have no interest direct or indirect in the properties described in this report.**
- 4. That I completed field examinations and investigation of the exploration work conducted on the VM 1 and 2 and VA 1 and 2 claim groups located near Vavenby, B. C., Kamloops Mining Division.**
- 5. That the field supervision was provided by H. Naylor, Geologist, employed by the Cariboo Syndicate of which I am General Manager and Consultant.**

Dated at Vancouver, B. C., this 13th day of January,

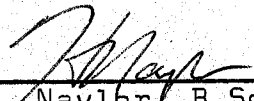
A. D. 1972.


L. G. White, P. Eng.

C E R T I F I C A T E

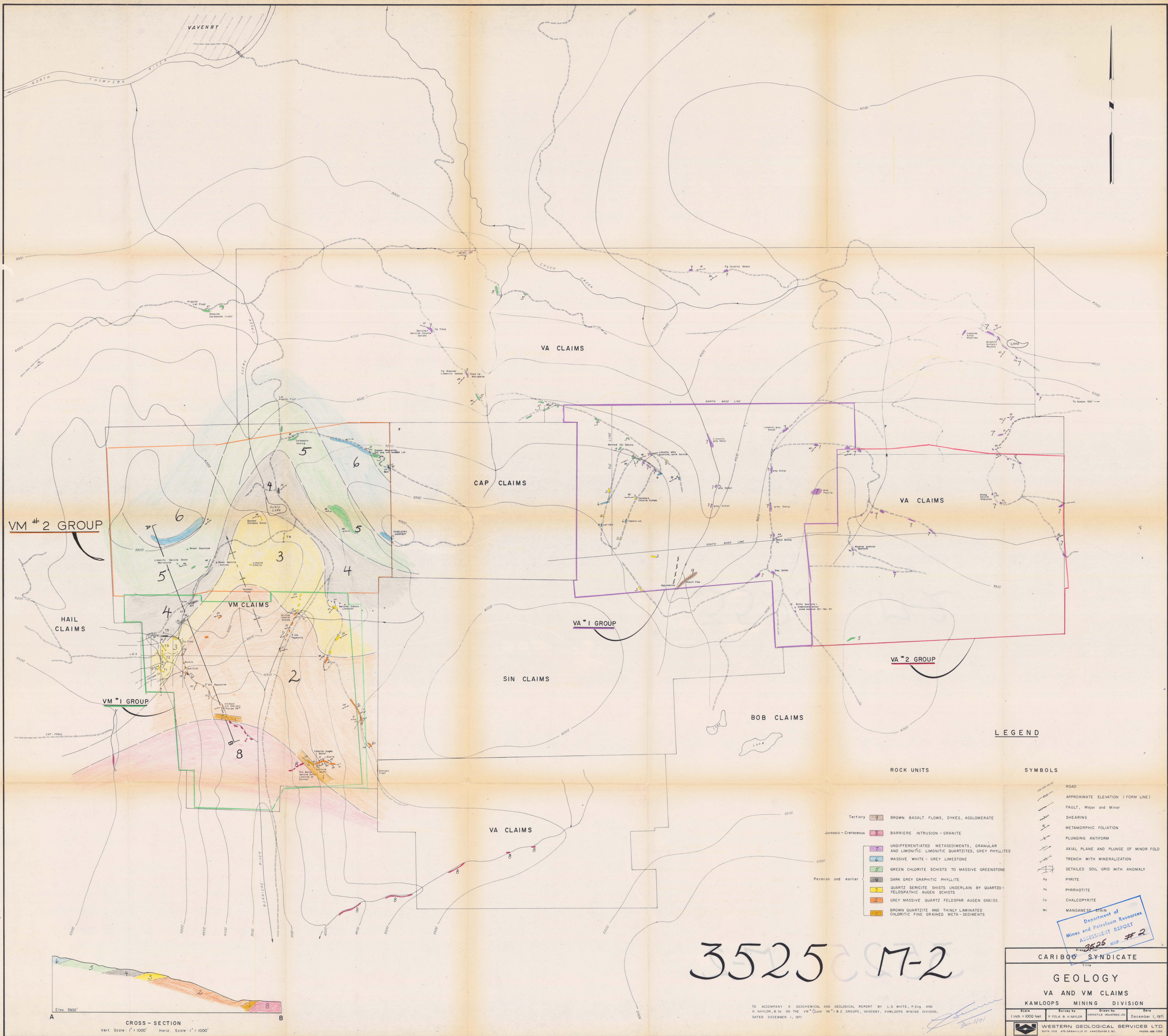
I, Hugh Naylor, do hereby certify that:

1. I am a geologist with residence at Pemberton, British Columbia.
2. I am a graduate of the University of British Columbia [B.Sc., Physics and Geology, 1962].
3. I have worked as an exploration geologist for several companies from 1962 until the present. I have been employed by Western Geological Services Ltd., since April, 1970.
4. I acted in the capacity of field supervisor pertaining to the programme described in this report as well as carrying out routine field duties.



H. Naylor, B.Sc.

Vancouver, B. C.,
December 1971



VM #2 GROUP

VA CLAIMS

CAP CLAIMS

VA CLAIMS

HAIL CLAIMS

VA #1 GROUP

VA #2 GROUP

VM #1 GROUP

SIN CLAIMS

BOB CLAIMS

VA CLAIMS

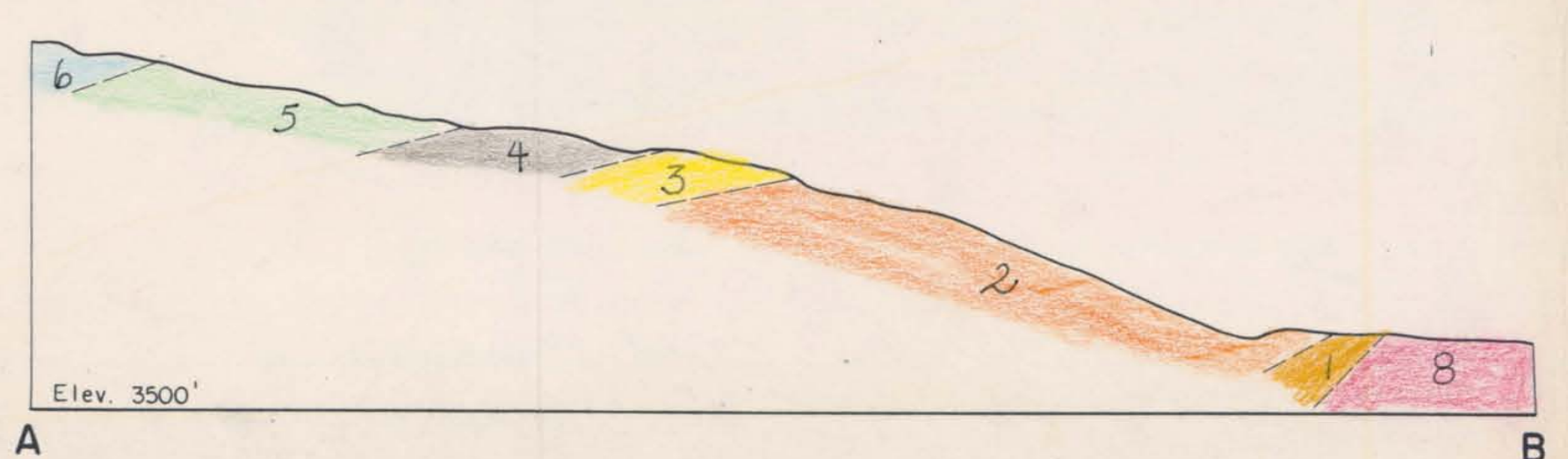
LEGEND

ROCK UNITS

SYMBOLS

- Tertiary 9 BROWN BASALT FLOWS, DYKES, AGGLOMERATE
- Jurassic-Cretaceous 8 BARRIERE INTRUSION - GRANITE
- 7 UNDIFFERENTIATED METASEDIMENTS, GRANULAR AND LIMONITIC LIMONITIC QUARTZITES, GREY PHYLLITES
- 6 MASSIVE WHITE - GREY LIMESTONE
- 5 GREEN CHLORITE SCHISTS TO MASSIVE GREENSTONE
- 4 DARK GREY GRAPHITIC PHYLLITE
- 3 QUARTZ SERICITE SCHISTS UNDERLAIN BY QUARTZ-FELDSPATHIC AUGEN SCHISTS
- 2 GREY MASSIVE QUARTZ FELDSPAR AUGEN GNEISS
- 1 BROWN QUARTZITE AND THINLY LAMINATED CHLORITIC FINE GRAINED META-SEDIMENTS

- ROAD
- APPROXIMATE ELEVATION (FORM LINE)
- FAULT, Major and Minor
- SHEARING
- METAMORPHIC FOLIATION
- PLUNGING ANTIFORM
- AXIAL PLANE AND PLUNGE OF MINOR FOLD
- TRENCH WITH MINERALIZATION
- DETAILED SOIL GRID WITH ANOMALY
- Py PYRITE
- Pb PYRRHOTITE
- Cp CHALCOPYRITE
- Mn MANGANESE STAIN



CROSS-SECTION
Vert. Scale 1" = 1000'
Horiz. Scale 1" = 1000'

3525 17-2

TO ACCOMPANY A GEOCHEMICAL AND GEOLOGICAL REPORT BY L.S. WHITE, P.ENG AND H. NAYLOR, B.Sc. ON THE VM #1 AND VA #1 & 2 GROUPS, VAVENBY, KAMLOOPS MINING DIVISION, DATED DECEMBER 1, 1971

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
3525 MAP #2

CARIBOO SYNDICATE

GEOLOGY
VA AND VM CLAIMS
KAMLOOPS MINING DIVISION

Scale: 1 inch = 1000 feet
Survey by: H. FOLK & H. NAYLOR
Drawn by: WENDELLE INDUSTRIES LTD.
Date: December 1, 1971

WESTERN GEOLOGICAL SERVICES LTD.
SUITE 1015 470 GRANVILLE ST. VANCOUVER 2, B.C. PHONE 488-2303

VAVENBY

VA CLAIMS

CAP CLAIMS

VA CLAIMS

VM # 2 GROUP

HAIL CLAIMS

VM # 1 GROUP

VA # 1 GROUP

VA # 2 GROUP

SIN CLAIMS

BOB CLAIMS

VA CLAIMS

LEGEND

Zn, Cu
 - - - - Zn and Cu VALUES in p.p.m.
 (G) SOME ORGANIC MATERIAL NOTED WHEN SAMPLE TAKEN

NOTE: SURVEY BY W.G.S. COMPRISES ENTIRE EAST VA GRID
 AND LINES 12E, 8W, 16W, 24W, 36W, 42W OF VM GRID.

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 3525 MAP # 3

Prepared for:
CARIBOO SYNDICATE

TITLE:
**Cu AND HIGH Zn VALUES IN P.P.M.
 SOIL GEOCHEMISTRY
 VA AND VM CLAIMS
 KAMLOOPS MINING DIVISION**

Scale: 1 inch = 1000 feet
 Survey by: W.G.S.
 Drawn by: HENRIK INDUSTRIES LTD.
 Date: December 1, 1971

WESTERN GEOLOGICAL SERVICES LTD.
 SUITE 103 475 GRANVILLE ST. VANCOUVER 2, B.C.
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TO ACCOMPANY A GEOCHEMICAL AND GEOLOGICAL REPORT BY L.G. WHITE, P.ENG. AND
 H. NAYLOR, B.Sc. ON THE VM # 1 AND VM # 2 GROUPS, VAVENBY, KAMLOOPS MINING DIVISION,
 DATED DECEMBER 1, 1971.

Dec 1/71

VAVENBY



VM #2 GROUP

CAP GROUP

VA #1 GROUP

VA #2 GROUP

HAIL CLAIMS

VM #1 GROUP

BOB GROUP

SIN GROUP

OPEN

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3525 MAP #4

Prepared for:
CARIBOO SYNDICATE

Title:
VA-VM CLAIMS
KAMLOOPS MINING DIVISION

Scale: 1 inch=1000
Survey by: W.G.S. P.F.
Date: DEC. 1, 1971

WESTERN GEOLOGICAL SERVICES LTD.
SUITE 103 475 GRANVILLE ST. VANCOUVER 2 BC
PHONE 684 7301

THIS MAP IS TO ACCOMPANY A BIOCHEMICAL AND GEOLOGICAL REPORT BY L.S. WHITE, P.Eng. AND
GEOLOGICAL ENGINEER H. NAYLOR, B.Sc. ON THE VM #1 AND VA #1 & 2 GROUPS, VAIVENBY, KAMLOOPS MINING DIVISION,
DATED DECEMBER 1, 1971.

[Handwritten signature]
Dec 1/71