92B096 SIRIUS E'N

CANPAC MINERALS E'N

005629

CanPac MINERALS LIMITED

INTRODUCTION - H.G. Rushton
GEOLOGICAL REPORT - P.W. MacFarlane
MAGNETOMETER REPORT - D.C. Douglas

Sirius Claims 1-27, Victoria Mining Division
Mount Richards Area
(Lat. 48°51' N., Long. 123°40' W.)

May 20, 1970

E.N. 101

CanPac MINERALS LIMITED

INTRODUCTION - H. G. Rushton

GEOLOGICAL REPORT - P. W. MacFarlane

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with accompanying maps

Sirius Claims 1 - 27, Victoria Mining Division

Mount Richards Area, Lat. 48°51' N., Long. 123°40' W.

May 20, 1970

INTRODUCTION

The work described in the following reports by P. W. MacFarlane and D. C. Douglas was carried out under the writer's overall supervision on the Mount Richards area near Duncan, Vancouver Island.

The area was selected on the basis of its position at the eastern termination of a shear zone which was known to carry commercial quantities of base metals further to the west, and on the basis of old reports which mentioned areas of base metal deposition within the boundaries of the present investigation. Apart from isolated work in the early part of the century, there are no records of any recent work in this area using modern exploration methods.

In order to establish survey control, which would be a requirement for any follow-up by sophisticated electro-magnetic methods, a grid of lines at four hundred foot intervals was established. Level control was obtained by the use of hand levels in chaining and by stadia and transit control along the network of existing old logging roads. The lines were established normal to the regional strike, as determined from photo-geological studies. Line-cutting proved to be slow and arduous, owing to the thick second growth and slash from previous logging operations. Surface access also proved expensive, as the present timber owners were severe in their assessment of timber damages caused by the line cutting.

The geological and magnetometer surveys presented herein have demonstrated that there is no obvious deposit of commercial sulphides present, although some further work is planned in some areas of low outcrop density.

An examination of the records of CanPac Minerals Limited shows the following costs which are applicable to the surveys described in the reports:

	Geological Survey	Magnetometer Survey	
Subsistence	1,285.21	-	
Salaries	2,500.00	4,000.00	
Transportation (local)	30.00	255.70	
Maps & Reproductions	13.00	16.27	
Telephone (Nanaimo)	50.00	52.77	
Portion of office rent	100.00	37.35	
Equipment	25.00	25.29	
		255.70	- Magnetometer rental
TOTAL -	4,003.21	4,401.03	

No allowance is made in the above costs for line-cutting and surveying.

H. G. RUSHTON, P.GEOL.
Chief Geologist

CanPac
Minerals Limited

May 19, 1970

H. G. RUSHTON

Statement of Qualifications

1. B.Sc. Degree with Honours in Geology, University of Aberdeen, 1953.

2. Fellow of the Geological Association of Canada, 1960.

3. Registered Professional Geologist, Province of Alberta, 1967. (Transferred from P.Eng., Ontario, 1957).

4. Seventeen years continuous experience in all phases of exploration and mining geology.

I, Henry Glen Rushton, Chief Geologist, CanPac Minerals Limited, hereby certify that the above is a true representation of my experience and education in geology, and submit the above as my statement of qualifications to the Department of Mines and Petroleum Resources of British Columbia.

H. G. Rushton.

H. G. RUSHTON,
Chief Geologist

P R E L I M I N A R Y G E O L O G I C A L M A P P I N G

SIRIUS CLAIMS #1 TO #27 INCLUSIVE,

MOUNT RICHARDS AREA (LAT. 48°51' N., LONG. 123°40' W.)

Held by CanPac Minerals Limited

Carried out by P.W. MacFarlane Under Supervision of D.C. Douglas

February 16, 1970 - April 8, 1970

CanPac MINERALS LIMITED
205 Ninth Avenue S. E.
Calgary 21, Alberta

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1. INTRODUCTION

The area under consideration consists of mineral claims Sirius #1 to 27, held by CanPac Minerals Limited within the area held under mineral agreement MA 59 with Canadian Pacific Oil and Gas Limited. See map No. 1 . The claims are located to the west, south, and northwest of Crofton Lake, reservoir for the town of Crofton, approximately one mile to the east, in the Victoria Mining Division. Crofton is approximately 25 miles south-southeast of Nanaimo, on the east coast of Vancouver Island.

Many old logging roads, some driveable, lead within the property, but ready access to them is only gained via Cecil Street extension, in Crofton, and from a road extending west from the entrance to the Municipality of North Cowichan garbage dump south of Crofton. Foot travel north from the Richards Trail and southeast from Nimmo road would also lead within the claim group.

The claims cover a large part of Mount Richards, and extend up the south slope of the next ridge to the north, as well as to the east over two lower ridges. Elevation ranges from about 300', in the vicinity of cultivated land to the northwest, to 1157', at the summit of Mount Richards, with Crofton Lake to the northeast, being about 400' above sea level. Relief is moderate to extreme on the south and northwest sides of the mountain.

Vegetation ranges from second growth softwood, mostly spruce, to arbutus and close stands of alder. Small highland swamps occur, and Breen Lake, west of Crofton Lake, is more of a swamp than a lake. There are few streams of any size; the large number shown on the map reflects the fact that work was done during the season of high runoff. In many places the overburden is light, but slash and low growth are very thick; deepest overburden probably occurs on the slope south of Crofton Lake, and in the valley separating Mount Richards from the ridge to the north. Outcrop can be found over about 75%

of the area, but actual exposure is much less, due to a light mantle of soil and humus. The generally thick vegetation prevents outcrop from being visible for any great distance.

Due to the relief, and thickness of vegetation, a grid was cut prior to mapping, and some surveying was done, both of lines and of the passable roads in the area. Lines were picketed every 100' in preparation for geochemical and geophysical surveying. Mapping was carried out mainly along the lines, but in the southwest area of the grid, and to a lesser extent elsewhere, the lines provided a control, and general traverses along outcrop were carried out. Most roads were also mapped but few have outcrop. All known workings were visited. In some areas, especially in the southeast, the mapping is incomplete.

2. GEOLOGY

General: The property is underlain by Sicker volcanics and tuffs of Pennsylvanian age or older, intruded by slightly younger (Permian?) porphyry and gabbro-diorite. The felsic and mafic volcanics and the cherty tuffs are of similar ages; possibly the tuffs are slightly younger, but older than the porphyries and intrusive. Just to the northeast of the area is the contact with sandstone and basal conglomerate of the Nanaimo Group, of Upper Cretaceous age.

Mafic to Intermediate Volcanics and Tuffs: Sicker volcanic rocks of probably late Pennsylvanian age underlie much of the area. Mafic to intermediate in composition, they are mainly andesites or altered related types. In the eastern and most of the southern parts of the property, the volcanics contain many olivine or olivine-and-quartz nodules ranging in diameter from less than 1" to approximately 1'. The porphyritic volcanics containing many amphibole

(probably hornblende) crystals set in a fine-grained, dark to medium green groundmass of plagioclase, amphiboles, chlorite and minor quartz make up the second most common variety and are found throughout, but most strongly developed to the west of the grid. Less common is non-porphyritic andesite without nodules and the least common variety is both porphyritic and nodule-bearing.

Generally the rock is a fine-grained, dark to medium green, foliated andesite, with obvious feldspar, chlorite amphiboles and, rarely, quartz. Feldspars occur as phenocrysts in the mafic matrix at times. The texture is often tuffaceous, but the particles are very small. Quartz, in the form of veins or masses, is scarce; what veins do occur are usually more than 5' long. Lighter green to grey, very fine grained, siliceous bands occur in places and usually seem related spatially to the bands or zones of nodules.

The nodule-bearing volcanics are not sharply differentiated from any of the types with regard to their general lithological characteristics. However, the nodule-bearing zones persist for distances of over two thousand feet along strike of foliation. The nodules are round to oval, or occasionally angular, very fine-grained, light green, often with sugary texture, and usually of olivine, but less commonly of olivine and quartz, or of unknown but probably felsic composition. Where found they are usually very common; in a few locations they are more sparsely distributed. Just north of the logging road at the south of line 76 W., the nodules are larger and approach pillows in shape.

The porphyritic volcanics contain phenocrysts of hornblende (amphibole) or chloritized hornblende, up to ½" in diameter, usually about 1/4 - 1/8" in diameter and resistant enough to stand out well on the weathered surface. The trend of increasing size and number of phenocrysts to the west continues west of the grid to the point that the phenocrysts produce a good lineation

and some are extremely large and elongated in the plane of foliation. Though the matrix does not bear any definite distinctive characteristics, it is often more grey except on a very fresh surface--i.e., it weathers more readily than does that of the other varieties. Although this variety of volcanic is elsewhere generally marked by feldspar phenocrysts, in this area, the feldspar, while present to the extent suggested--i.e., almost as common as the hornblende--is much less obvious, and often occurs in smaller phenocrysts, with less well-defined surfaces. This variety is common in the southern part of the property.

The non-porphyritic, non-nodule-bearing volcanic is more obviously tuffaceous than the other types, but is not common and is found in outcrops scattered over the property. The porphyritic nodule-bearing volcanic is usually--perhaps solely--found along the contacts between porphyritic and nodule-bearing types.

Local bands of chlorite schist occur, but chloritization, though it also is evident in non-schistose areas, is not extensive, and is poorly developed.

Felsic Volcanics and Tuffs: In the north and northwest parts of the property are found two bands of more felsic volcanics, dacitic or rhyolitic, generally pyritized, and very siliceous. In hand specimen, the rock is grey-green to light green, very fine grained, very siliceous, and compact. The rock is strongly foliated, and in places, tuffaceous. The northern band includes a band of hornblende porphyry, locally sericitic. Except for four occurrences elsewhere, the rock type is confined to a band on the north of the grid, one extending east from west of Breen Lake toward Crofton Lake, and a band--possibly a branch of the last--extending from Breen Lake east to a point about 600' southwest of Crofton Lake. Of its other occurrences,

in two places it is found on the contact between normal Sicker andesite and intrusive gabbro-diorite to the south. Due to its similarity in general character to the mafic volcanics and the occurrence of hornblende porphyry, it is included as part of the Sicker group; possibly it represents an altered variety of the regular mafic volcanic, the alteration being related to the higher than usual pyrite content.

Hard Cherty Tuff: Hard cherty tuff (of Cooke) occurs in a band extending from just north of Breen Lake to the main inlet of Crofton Lake, following the inlet stream for about a quarter of a mile. Its only other occurrence is within the felsic volcanic band on the north of the grid. The rock is cryptocrystalline, very hard, usually white or light coloured, sericitic, pyritized, often sheared. Cooke, (1917, page 128), states that feldspar and quartz, with sericite, are the main constituents. He further states (page 142) that the tuffs are often fractured, but not schistose. In this area, the tuffs are somewhat schistose, however.

Quartz-feldspar Porphyry: Two types of quartz-feldspar porphyry were found. One type, from its contacts and general features such as grain size seems to be intrusive. The other type may be, or it may represent an altered tuff. The latter type has a felsic matrix; the former, a mafic chloritic matrix. It also is usually a feldspar porphyry, with quartz phenocrysts less common. The feldspars on occasion are rounded and olivine-green in colour as opposed to the usual white colour. The non-intrusive variety of porphyry usually has both quartz and feldspar phenocrysts, though quartz only may be present.

In addition to the above varieties of quartz-feldspar porphyry, a few thin bands of porphyry which have a very limited strike length and widths

of less than 50' were found within the Sicker volcanics in the south part of the area; they are probably intrusive.

Gabbro-Diorite: The second most common rock type on the claim group is an intrusive. It has been called a gabbro-diorite (by Cooke) and this is a good approximation of its apparent composition. In some places it is a leucogabbro, in many it is dioritic, and on line 36 W., to the south, in a topographic and perhaps stratigraphic low, the rock is a very dark gabbro; this is the only location in which this variety was noted. Textural variations occur, and grain size tends to increase within the larger areas of exposure, particularly within the area north of the north baseline. The major constituents are feldspar (plagioclase) and amphibole (hornblende) with lesser chlorite, and minor quartz. In the finer-grained varieties, a definite porphyritic texture occurs; this often makes distinguishing the actual contact with the porphyritic volcanics difficult since both rock types are usually chloritized in the area of the contact, and foliation is not distinctive. Quartz veining and sheared zones represented by chlorite schist were noted infrequently within the intrusive.

3. STRUCTURE

Within the intrusive, the most common feature is jointing, usually in two directions, with dips of similar magnitude. In places a poor to well-developed foliation occurs, often accompanied by more chlorite than usual. Contacts with intrusive porphyry and with the volcanics are often obscured by thin soil cover, but in general, where visible, are somewhat diffuse though abrupt, i.e., there is usually not a gradation of rock type across the contact, but the contact zone is represented by alteration, usually chloritic, of both rock types. Contacts with the porphyries are sharper and

less alteration occurred. In most cases these contacts parallel the regional trend which is very consistent across the area, a strike of 120°, with nearly vertical dip.

This trend is primarily reflected in the foliation within the volcanics and tuffs, and the porphyries. Jointing is rare. Local deviations from the trend occur, but are small; they may persist for long distances along the strike. Shearing definitely representing faulting is infrequent among the volcanics. Evidence of folding is found in small-scale folds in the chert near the inlet creek to Crofton Lake and in nearby beds to the northwest.

The topography and cover in the valleys make some structural relationships unclear. It is possible, for instance, that the valley north of Mount Richards represents a fault zone, since glaciated; the zone would extend east to Crofton Lake. This might account for the small-scale folds seen to the north, and be in part responsible for, or related to, the complicated structure around the intrusive in the area of the quarries north of the north base line between lines 64 W. and 76 W.

4. ECONOMIC GEOLOGY

The gabbro-diorite intrusive has been quarried for fill to make the dam at Crofton Lake and for fill at the Crofton millsite; it is presumed to also have been used as fill for the roads in the area and for the rail grades.

The area abounds in old workings: trenches, shafts, and a few adits. Most seem to have followed quartz veining or small shears, some of which were undoubtedly mineralized. The main sulphide found is pyrite; its distribution is well-indicated on the map as following certain zones. However, since all the percentages involved are small, it is possible that it could be actually found more often than indicated, particularly in the volcanics south of the

main baseline. Chalcopyrite, in minor amounts, occurs in the large quarry, at the Yreka shaft dump, at the north end of line 92 W., and may occur elsewhere in the southern belt. Very weak concentrations of magnetite are found locally within the mafic volcanics; two occurrences within the intrusive were noted. There appears to be no other mineralization.

P. W. MacFARLANE,
Senior Geologist

May 14, 1970

REFERENCES

1. Clapp, C. H., Geological Survey of Canada, Memoir 13, Southern Vancouver Island, 1912.

2. Clapp, C. H. and Cooke, H. C., Geological Survey of Canada, Memoir 96, Sooke and Duncan Map areas, Vancouver Island (including Map 42A), 1917.

3. Muller, J. E., and Carson, D. J. T., Geological Survey of Canada Paper 68 - 50, Geology and mineral deposits of Alberni map area, British Columbia (92 F), 1969.

Head Office: 205 Ninth Avenue S.E., Calgary 21

CanPac
Minerals Limited

May 14, 1970

P. W. MacFARLANE -

Statement of Qualifications:

1. B. A. degree in Honours Geology, University of New Brunswick, 1964.

2. Three years of post graduate training toward M. Sc. in Geology, University of New Brunswick.

3. Three and one-half years experience in exploration geology plus five summers of exploration and mapping.

I, Peter William MacFarlane, senior geologist with CanPac Minerals Limited, hereby certify that the above is a true representation of my experience and education in geology, and submit the above as my statement of qualifications to the Department of Mines and Petroleum Resources of British Columbia.

P. W. MacFARLANE,
Senior Geologist

R E P O R T O N M A G N E T O M E T E R S U R V E Y

SIRIUS #1 TO #27, MT. RICHARDS AREA,

(LAT. 48°51' N., LONG. 123°40' W.)

by

D. C. Douglas, P.Eng.

April 6 - May 8, 1970

CanPac MINERALS LIMITED
205 Ninth Avenue S. E.
Calgary 21, Alberta

A magnetometer survey on the Sirius No. 1 to 27 mineral claims, Mt. Richards, Vancouver Island, B.C. Reference map N.T.S. 92 B/13 East Half - Duncan Sheet. Field work was carried out on:- 6, 7, 9, 13, 14, 15, 17, 20, 21, 22 and 23 April 1970.

1. Magnetometer survey procedure used

(a) A Sharpe MF-1 fluxgate magnetometer, Serial 30109, was obtained on rental from Seigel and Associates in Vancouver, who are the Scintrex (formerly Sharpe) agents in B.C.

(b) The instrument was checked out on the ground and tuned to give a reading of about 250 gammas on the 1000 gamma scale. The tuning was not subsequently touched.

(c) All readings taken were made under identical conditions as to ferrous metal about the person:- no compass; coins, nickel or otherwise; no keys or key rings and no belt as the battery was carried in back pocket of a cruiser jacket.

It should be recorded that the batteries supplied were discarded during the initial tests. They had steel jackets and end pieces and were found capable of influencing the instrument by 1900 gammas. Batteries used were of the "Transistor" type which have non-magnetic casings but steel end pieces. Their total effect on the instrument was about 40 gammas when box was moved to and from the instrument. This effect is thought to be of no significance to the results obtained as distance between battery and instrument remained near constant.

(d) A base station was selected and readings taken during start of work, whenever it was practicable to return to the base station, and at the end of each day's work. The procedure was to drive from base station to a point where the day's survey would start, read this point and complete a traverse down one line, up another, and return to the start point where another reading would be obtained. In effect, the work was a matter of making closed loops.

(e) The survey was carried out along previously cut and measured lines, readings being taken at each station, these being 100 ft. apart.

(f) Field book entries were made showing the time each reading was made, its station and the magnetometer reading. In addition, notes were made as to presence of outcrop or assumed depth of overburden and topography.

(g) Where readings below zero or above 1000 gammas were obtained it was normal to move a few feet and take a check reading. This is desirable where an area has been logged as spurious values can be obtained from wire rope concealed in ground cover.

2. Calculation of Diurnal Correction

(a) All base station readings were plotted for each day's work, using squared paper and the points connected by straight lines. In addition, a similar procedure was carried out for the "looped station s". Considering all this information, a diurnal variation line was made for each day and additions or subtractions made to the recorded values.

(b) In general, there was a rise during the day. The majority of corrections being less than 50 gammas, the greatest was 185 gammas.

(c) The time of making a loop traverse was up to two hours and there is no way to compensate for any pronounced increase and decrease in diurnal which might have taken place during this time, without a recording base station magnetometer - which was not available. The possibility of undetected variation exists but considering the recorded variations and that the total contrast in the surveyed area was about 5000 gammas, it would appear that an undetected variation could not significantly alter the resulting plot.

3. Plotting of Corrected Readings

The writer plotted the corrected readings at a scale of 1 inch to 400 feet. Contours at 0, 250, 500, 1000, 1500 and 2000 gammas were drawn. This work was completed 8 May 1970, six days having been taken in calculating the diurnal and plotting.

D. C. DOUGLAS, P.ENG.
Exploration Engineer

May 14, 1970

CanPac
Minerals Limited

May 14, 1970

D. C. DOUGLAS -

Statement of Qualifications:

1. Graduated from McGill University in 1947 with the degree of Bachelor of Engineering in Mining Engineering.

2. Member of the Association of Professional Engineers of B.C. being the holder of certificate 4450, issued February 21, 1963.

3. Between 1963 and 1966, whilst in the employ of Gunnex Limited, made at least twenty magnetometer surveys with the same make and model of instrument used on the Mt. Richards survey.

I, Dennis Craig Douglas, Exploration Engineer with CanPac Minerals Limited, hereby certify that the above is a true representation of my experience and education in engineering, and submit the above as my statement of qualifications to the Department of Mines and Petroleum Resources of British Columbia.

D. C. DOUGLAS, P.ENG.
Exploration Engineer

CHEMAINUS

CHEMAINUS

IRON CORNER PIN

SOMENOS

COMIAKEN

SHAFT

IRONCLAD SHAFT

SHAFT

SHAFT

Post No 2 Sirius 27

Post No 1 Sirius 27

DDH 1

Claim line

Post No 1 Sirius II

Whittaker's E-W line

IRON PIN

DDH 2

POND

Claim line

ADIT

Trig point

DDH 3

DDH 4

GARBAGE DUMP

Access road

YREKA SHAFT

WOODEN CORNER POST

DUKE OF YORK SHAFT

SOMENOS

COMIAKEN

LAND NOT COMMITTED TO CanPac

LEGEND

PENNSYLVANIAN? PERMIAN & OLDER

- 6 — GABBRO-DIORITE
- 5 — QUARTZ-FELDSPAR PORPHYRY — intrusive
- 4 — QUARTZ-FELDSPAR PORPHYRY — tuffaceous
- 3 — HARD CHERTY TUFF
- 2 — FELSIC VOLCANICS & TUFFS — dacite to rhyolite
- 1 — MAFIC to INTERMEDIATE VOLCANICS & TUFFS — mainly andesite

LITHOLOGIC CONTACT
- DEFINITE
- INFERRED

FOLIATION

JOINTING

BEDDING

PYRITE CONTENT (Py)
- >5%
- 2–5%
- <2%

SWAMP

STREAM

ROADS
- DRIVEABLE
- BLOCKED

OUTCROP OUTLINE
- OBSERVED
- OBSCURED

OLD WORKINGS
- SHAFT
- PIT
- ADIT

inches / centimetres

This reference scale bar has been added to the original map to keep the scale at the same ratio as the image, therefore it can be used as a reference for the original size.

E.N. 101
MAP 1

Ironclad
92B049

CanPac Minerals Limited

GEOLOGICAL MAP OF MOUNT RICHARDS

date: MARCH 10, 1970
revised:
Author: P Mac
Drawn By: A.S.D.
Scale: 1" = 400'

N.T.S. 92 B/13

PROPERTY FILE P.M. MacFarlane Ltd. MAP 2

CHEMAINUS

CHEMAINUS

IRON CORNER PIN

SOMENOS

COMIAKEN

SHAFT

IRONCLAD SHAFT

SHAFT

SHAFT

Post No 2 Sirius 27

Post No 1 Sirius 27

Post No 1 Sirius II

LINE 12 WEST

LINE 9W WEST

LINE 72 WEST

LINE 48 WEST

LINE 6 WEST

LAKE BREEN

STREAM

STREAM

IRON PIN

CROFTON LAKE

Whittaker's E-W line

Claim line

Claim line

Claim line

MAIN BASELINE

BASELINE

POND

ADIT

Trig. point

GARBAGE DUMP

OSBORN BAY ROAD

Access road

YREKA SHAFT

WOODEN CORNER POST

DUKE OF YORK SHAFT

SOMENOS

COMIAKEN

N

LAND NOT COMMITTED TO CanPac

NOTE

ALL READINGS ARE IN GAMMAS

NEGATIVE READINGS ARE UNDERLINED

inches

centimetres

This reference scale bar is applicable to the original image. It will scale at the same ratio as the image, therefore it can be used as a reference for the original size.

BRITISH COLUMBIA GEOLOGICAL SURVEY

E.N. 101
MAP 2.

PROPERTY FILE

CanPac Minerals Limited	
MAGNETOMETER SURVEY OF MOUNT RICHARDS	Date: MARCH 10, 1970 Revised: Author: D.C.D. Drawn By: A.S.B. Scale: 1" = 400'
	N.T.S. 92 B/13

92B096 SIRIUS