2917

GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL REPORT ON THE

93 K/12 BL GROUP OF

ROYAL CANADIAN VENTURES LTD.

AT

BUTTERFIELD LAKE, B.C.

54° 125° N.W.

BY

N.B. VOLLO, P. ENG.

March 8, 1971

Mining Recorder's Office
RECORDED
MAR 18 1971
AT.....
SMITHERS, B.C.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2917 MAP.....

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SUMMARY

Geological mapping and geochemical soil sampling were completed over approximately 30 miles of grid in June, 1970. An additional 7 miles of grid was cut, and geochemical, geological, magnetic and VLF-EM surveys extended over it. Soil copper anomalies, coincident with weak to moderate EM anomolies previously defined, were outlined within a belt of basic volcanics and intrusives. An induced polarization survey, detailed geological mapping and test hole drilling are recommended.

LOCATION AND ACCESS

The group is located immediately west of Butterfield Lake, approximately 30 miles North of the town of Burns Lake. While Butterfield Lake is suitable for float aircraft, most convenient access is by helicopter from Burns Lake.

TOPOGRAPHY & CLIMATE

Elevations range from 3300 feet at Butterfield Lake to a maximum of 4600 feet. Rainfall and snowfall are moderate. A fairly heavy stand of alpine fir and spruce is present, with considerable undergrowth and devil's club in low areas.

CLAIMS

The group consists of 107 claims as follows:

BL - 1 to 28,	Record Nos. 70343 to 70370
BL - 29 to 34,	Record Nos. 82100 to 82105
BL - 35 to 50,	Record Nos. 86621 to 86637
BL - 51 to 53 FR.	Record Nos. 82106 to 82108
BL - 54 to 59	Record Nos. 86638 to 86642
BL - 60 to 107	Record Nos. 89373 to 89420

All are held by Royal Canadian Ventures Ltd. and are in the Omineca Mining Division.

HISTORY & PREVIOUS WORK

The group was staked in 1969 to cover an aeromagnetic feature (GSC Map 5313G). Areas containing weak disseminated chalcopyrate were noted and approximately 30 miles of grid, VLF-EM and magnetic surveys were completed in March, 1970.

The area was mapped in 1936 - 37 by J.E. Armstrong and a map on a scale of 1" = 4 miles published as part of GSC Memoir 2252.

FIELD WORK

Geological mapping and geochemical soil sampling was completed over the previous grid and extended over 7 miles of new grid. Magnetic and VLF-EM surveys were completed over the new grid. Five men were employed between June 8th and 26th, 1970.

GEOLOGY

Field Procedures

A moderate amount of outcrop is present and overburden is relatively shallow. Traverses were made along grid lines 400 feet apart. Four days were spent by the writer determining the general geological pattern and detailed traverses were completed by T. Mann, Student Assistant.

General Geology

The group lies within paleozoic volcanic rocks intruded by granites and ultrabasic bodies of Mezozoic (Armstrong, 1937). The volcanic rocks form a belt about a mile wide, are intruded by gabbroic sills, and are sandwiched between a quartz-monzonite to the west serpentinized peridotite to the east.

Lithology

The volcanic rocks are mainly greenstone, pyroxene porphyry and tuff. The greenstones are fine grained, dark grey-green, relatively featureless andesitic rocks. The tuffs are highly siliceous, often cherty, irregularly bedded or banded, light grey to black in color and commonly contain about 5% pyrite. Graphite may also be present. The pyroxene porphyry is fine to medium grained amphibolite with abundant 2 - 5 mm euhedral phenocrysts of pyroxene. Foliation tends to wrap around the pyroxene phenocrysts.

The gabbro is coarse grained, with euhedral pyroxene in a matrix of highly sausuritized plagioclase. Pyroxene composes from 50 to 90% and the rock therefore grades into pyroxenite. These rocks are not noticeably magnetic in hand specimen.

The serpentinized peridotite is relatively coarse textured, with a felted appearance, and composed chiefly of serpentine. Hand specimens are markedly magnetic.

The quartz monzonite is medium to coarse grained, white, composed of approximately equal parts of quartz and plagioclase, less than 10% biotite and little detectable orthoclase.

Structure

The greenstone and tuffs trend north 30° west, parallel to the contacts with intrusive rocks. Foliation dips consisently 40° to 70° west and the gabbro sills and tuff beds probably have a similar attitude. The contacts shown on the accompanying map (in pocket) have been interpreted largely from the VLF-EM and magnetic data.

A fault, visable as a pronounced lineament on air photos, crosses the group in a north-northeasterly direction and appears to displace contacts a few hundred feet.

Mineralization

Sparse disseminated chalcopyrite is present in pyroxene porphyry on the BL - 49 claim. A small pocket containing about 10% chalcopyrite was found in coarse gabbroic pyroxenite on claim BL - 18. Chalcopyrite and malachite were noted in andesite near a projected tuff bed and weak conductive zone on claim BL-26. The tuffs beds commonly contain about 5% pyrite and float containing up to 10% pyrite was noted.

MAGNETIC SURVEY

Approximately 7 milesof magnetic survey extended the previous survey (Assessment Report, N.B. Vollo, March 20th, 1970) 2,000 feet west between lines 52 + 00 north and 120 + 00 north, using the same instrument and method. Results are shown contoured on the accompanying map (in pocket).

Narrow magnetic highs and lows which correlate fairly closely with VLF conductors appear to be due to thin sills of gabbroic pyroxenite.

VLF-EM SURVEY

Approximately 7 miles of VLF survey were extended from the previous survey, covering the same area as the magnetic survey above. The instrument and method were the same as for the previous survey (Assessment Report, N.B. Vollo, March 20th, 1970). Results are shown in profile form on the accompanying map (in pocket).

The strong northwesterly tending conductors correlate closely with outcrops of pyritic tuff. The quartz monzonite and peridotite contacts also are marked by weak but consistent EM trends.

GEOCHEMICAL SURVEY

Samples were taken at 200 foot intervals along lines 400 feet apart, with the sample interval reduced to 100 feet near known VLF-EM conductors. Soil augers were used, the samples placed in kraft paper envelopes and sent to TSL Laboratories in Vancouver. Hot aqua regia extraction was used and analysis made for total Cu, Zn, Ag, Ni, and Mo using the atomic absorption method. A total of 1,085 samples were taken.

A fairly distinct podzol type soil profile has been developed and samples were taken from the "B" horizon, except in a very few swampy areas where only humus could be obtained.

Copper background is about 20 ppm, and varies little over different rock types. Several scattered one and two reading highs are present in the north half of the survey area. They correlate poorly with VLF conductors and only the strongest, on line 108 + 00 north, need be checked on the ground. A single analysis of 1100 ppm, on line 56 + 00 north is associated with a zinc high of 5000 ppm and contamination is strongly suspected.

A somewhat discontinuous anomaly approximately 1500 feet wide by 3000 feet long is located between lines 8 + 00 north and 40 + 00 north, west of the 0 + 00 base line. It correlates fairly closely with several weak to moderate VLF - EM zones.

Molybdenum background is about 1 ppm over peridotite, gabbro and greenstone areas, rising to about 3 ppm over the quartz monzonite. Zones slightly above background are present along the quartz monzonite contact and along the strong VLF zone immediately southeast of camp.

Silver background is less than 1 ppm. Analysis of 6 and 12 ppm were obtained from adjacent lines on claim BL - 24, and correlate closely with a strong VLF - EM zone.

Zinc background is approximately 50 ppm and no anomalous zones are present. The single high of 5000 ppm near camp is suspected to be due to contaimination.

Nickel background is approximately 40 ppm over the peridotite, about 10 ppm over the greenstone and quartz monzonite. In each case, however, the range of analysis is such that the use of nickel background as a mapping tool would not be practical. No anomalous zones are present.

Cu, Ag-Mo, Zn and Ni are shown plotted on accompanying maps (in pocket).

CONCLUSIONS & RECOMMENDATIONS

1. Strong VLF - EM zones appear to be at narrow tuffaceous horizons, possibly with associated gabbro sills. Lack of geochemical response for copper suggests the conductors are due to pyrite or graphite. This should be confirmed by drilling a short "Winkie" hole across the strongest zone on line 56 + 00 north, where weak MO and Ag correlation is present.

2. The association of the large soil copper anomaly in the southwest quarter with weak conductive zones, known nearby disseminated Chalcopyrite mineralization, and an acid intrusive contact, suggests possible copper mineralization with economic potential.

The following work is recommended:

A. The anomalous area should be mapped and prospected in detail.
B. Approximately 6 miles of induced polarization survey should be done.
C. A short test hole should be drilled, if practical, at approximately 2 + 00 west on line 12 + 00north, using a "Winkie" drill.

N.B. Vollo, P. Eng.

March 8th, 1971.

AFFIDAVIT ON EXPENDITURES

PERSONNEL

N.B. VOLLO, P. Eng. Geologist.	
Field mapping, July 8 to 15/71 - 5 days @ $75.00	$ 385.00
Supervision, interpretation & report - 6 days @ $75.00	450.00
M. HJELT	
Grid chaining and magnetic survey, July 18 to 24/71 7 days @ $45.00	315.00
Plotting, drafting, 4 days @ $45.00	180.00
M. FENNELL, Assistant	
Grid Chaining, VLF Survey, July 18 - 24th/71, 7 days @ $30.00	210.00
Plotting and drafting, 6 days @ $30.00	180.00
T.MANN, Student Assistant	
Geological mapping, July 8 to 24/71, 17 days @ $35.00	595.00
Plotting, 2 days @ $35.00	70.00
J. BROWN, Student Assistant	
Sample collection, July 8 to 24th/71, 17 days @ $30.00	510.00
Plotting, 1 day @ $30.00	30.00
Geochemical analysis - T.S.L. Laboratories, 1085 samples	2531.25
Transportation - Alpine Helicopters, Burns Lake July 9th, 13, 23rd	790.00
Company vehicles - 2,009 miles @ .12¢	241.08
Camp expenses	298.20
Prints, flagging & miscellaneous	81.43
	$ 6866.96

I, Nels B. Vollo, of the City of Kamloops, in the Province of British Columbia, make the above declaration, conscientiously believing it to be true and knowing it is of the same force and effect as if made under oath and by virtue of the Canada Evidence Act.

Declared before me at the City of Kamloops, in the Province of British Columbia this 15th day of April 1971, A.D.

A commissioner for taking affidavits for British Columbia.

QUALIFICATIONS OF OPERATORS

Mauri Hjelt, is 29 years of age and completed Grade 12 at Pemberton, B.C. He graduated from the University of British Columbia in physical education in 1965. He was employed for four summers by Mining Corporation Ltd. as a prospector and has been employed for 4 years by Royal Canadian Ventures Ltd. as a prospector and instrument operator. He has been carefully instructed in the operation of the Sharp MF-1 Fluxgate Magnetometer by the undersigned, who knows his work to be carefully and reliably done.

Michael Fennell, is 21 years of age and completed Grade XI at Barriere, B.C. He has been employed by Royal Canadian Ventures for one year. He has been carefully instructed in the operation of the Ronka EM-16 unit by the undersigned, who knows his work to be carefully and reliably done.

N.B. Vollo, P. Eng.

March 8th, 1971.

BL-38 BL-35 BL-1 BUTTERFIELD LAKE BL-39 BL-36 BL-2 BL-40 BL-51 FR. BL-3 BL-15 BL-4 BL-41 BL-16 BL-42 BL-53 FR. BL-5 BL-17 BL-6 BL-43 BL-18 BL-64 BL-44 BL-52 FR. BL-7 BL-45 BL-19 BL-8 BL-66 BL-20 BL-9 BL-34 BL-46 BL-10 BL-68 BL-47 BL-21 BL-33 BL-48 BL-22 BL-70 CAMP BL-12 BL-49 BL-23 BL-71 BL-29 BL-50 BL-24 BL-30 BL-72 BL-31 BL-54 BL-25 BL-55 BL-26 BL-32 BL-73 BL-74 BL-56 BL-27 LAKE BL-57 BL-28 BL-75 BL-77 BL-76 BL-58 BL-78 BL-59 BL-79

LEGEND

- 6 QUARTZ MONZONITE
- 5 GABBRO, GABBROIC PYROXENITE, PYROXENITE
- 4 PYROXENE PORPHYRY
- 3 SERPENTINIZED PERIDOTITE
- 2 GREENSTONE, PROBABLY ALTERED VOLCANICS
- 1 TUFF

SWAMP
CLAIM LINES
GRID LINES
OUTCROPS
STRIKE AND DIP, SCHISTOSITY
CLAIM POSTS

LOCATION MAP
1: 1,000,000

BL GROUP
Babine Lake
Stuart Lake
93 K
Ft St James
BURNS LAKE
HWY 16
Vanderhoof

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2917 MAP #1

TO ACCOMPANY REPORT BY
N.B. VOLLO., P.ENG., DATED
MARCH 8th, 1971

ROYAL CANADIAN VENTURES LTD.
KAMLOOPS, B.C.

93 K/12 BL GROUP

GEOLOGICAL PLAN

Drawn by: Scale: 1"=400' Date: 15-3-70 Approved by:

2917 M-1

BL-38 BL-35 BL-1 BUTTERFIELD LAKE BL-39 BL-36 BL-2 BL-40 BL-51 FR. BL-3 BL-15 BL-41 BL-16 BL-4 BL-42 BL-53 FR. BL-5 BL-17 BL-6 BL-43 BL-18 BL-7 BL-64 BL-44 BL-52 FR. BL-8 BL-45 BL-19 BL-66 BL-20 BL-9 BL-34 BL-46 BL-10 BL-68 BL-47 BL-21 BL-33 BL-48 BL-22 BL-70 BL-12 BL-49 BL-23 BL-29 BL-30 BL-71 BL-50 BL-24 BL-72 BL-31 BL-25 BL-54 BL-32 BL-73 BL-55 BL-26 BL-74 BL-56 BL-27 LAKE BL-57 BL-28 BL-75 BL-58 BL-77 BL-76 BL-59 BL-78 BL-79

120 OON 100 OON 80 OON 60 OON 40 OON 20 OON 0 OON TL 25 OOE TL 25 OOW

CAMP

LOCATION MAP
1:1,000,000

BL GROUP
Babine Lake
93 K
Stuart Lake
Ft St James
BURNS LAKE
HWY 16
Vanderhoof

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ASSESSMENT REPORT
NO. 2917 MAP #2

LEGEND

Contours at 100, 200, 500 ppm

Extraction by hot aqua regia

Analysis by atomic absorption

ROYAL CANADIAN VENTURES LTD.
KAMLOOPS, B.C.

93 K/12 BL GROUP

GEOCHEMICAL PLAN
TOTAL Cu.

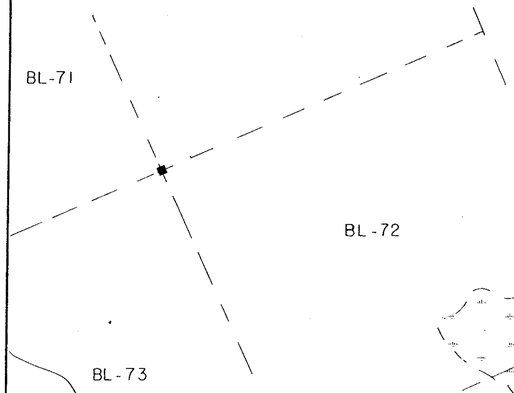
Drawn by: M.F. Scale: 1"=400' Date: 15-3-70 Approved by:

2917 M-2

BL-38
BL-35
BL-1
BUTTERFIELD LAKE
BL-39
BL-36
BL-2
BL-40
BL-51 FR.
BL-3
BL-15
BL-41
BL-16
BL-4
BL-42
BL-53 FR.
BL-5
BL-17
BL-6
BL-43
BL-18
BL-64
BL-44
BL-52 FR.
BL-7
BL-66
BL-45
BL-19
BL-8
BL-20
BL-46
BL-34
BL-9
BL-68
BL-47
BL-21
BL-10
BL-33
BL-48
BL-22
BL-70
CAMP
BL-12
BL-49
BL-23
BL-29
BL-71
BL-50
BL-24
BL-30
BL-72
BL-54
BL-31
BL-25
BL-73
BL-55
BL-26
BL-32
BL-74
BL-56
LAKE
BL-27
BL-75
BL-57
BL-28
BL-77
BL-76
BL-58
BL-78
BL-59

TO ACCOMPANY REPORT BY
N.B. VOLLO, P.ENG., DATED
MARCH 8th, 1971

LOCATION MAP
1: 1,000,000



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ASSESSMENT REPORT
NO. 2917 MAP M-3

LEGEND

Extraction by hot aqua regia.

Analysis by atomic absorption.

Mo plotted above line.

Ag plotted below line.

ROYAL CANADIAN VENTURES LTD.
KAMLOOPS, B.C.

93 K/12 BL GROUP

GEOCHEMICAL PLAN

TOTAL Ag., Mo.

Drawn by: M.H. Scale: 1"=400' Date: 15-3-70 Approved by:

2917 M-3

BL-38 BL-35 BL-1 BUTTERFIELD LAKE BL-39 BL-36 BL-2 BL-40 BL-51 FR. BL-3 BL-15 BL-4 BL-41 BL-16 BL-53 FR. BL-5 BL-42 BL-17 BL-6 BL-43 BL-18 BL-52 FR. BL-7 BL-44 BL-8 BL-45 BL-19 BL-9 BL-20 BL-34 BL-46 BL-10 BL-47 BL-21 BL-33 BL-48 BL-22 BL-12 CAMP BL-49 BL-23 BL-29 BL-30 BL-50 BL-24 BL-31 BL-25 BL-54 BL-32 BL-55 BL-26 BL-56 BL-27 BL-57 BL-28 BL-58 BL-59

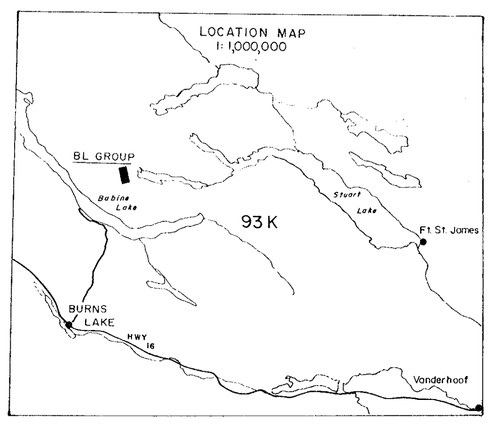
12 000N 10 000N 8 000N 6 000N 4 000N 2 000N 0 00

3600 3700 3800 3900 4000 4100 4200 4300 4400 4500 4600 4700 5000

TL 25 00W TL 25 00E

LAKE

LOCATION MAP
1: 1,000,000



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N.B. VOLLO, P.ENG., DATED
MARCH 8th, 1971

LEGEND

Extraction by hot aqua regia.

Analysis by atomic absorption.

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2917 MAP #4

ROYAL CANADIAN VENTURES LTD.
KAMLOOPS, B.C.

93 K/12 BL GROUP

GEOCHEMICAL PLAN

TOTAL Zn.

Drawn by: M.F. Scale: 1"=400' Date: 15-3-70 Approved by:

2917 M-4

BL-38 BL-35 BL-1 BUTTERFIELD LAKE BL-39 BL-36 BL-2 BL-40 BL-51 FR. BL-3 BL-15 BL-4 BL-41 BL-16 BL-42 BL-53 FR. BL-5 BL-17 BL-6 BL-43 BL-18 BL-7 BL-44 BL-52 FR. BL-45 BL-19 BL-8 BL-20 BL-34 BL-46 BL-9 BL-47 BL-21 BL-10 BL-48 BL-22 BL-33 CAMP BL-12 BL-49 BL-23 BL-29 BL-50 BL-24 BL-30 BL-31 BL-54 BL-25 BL-55 BL-26 BL-32 LAKE BL-56 BL-27 BL-57 BL-28 BL-58 BL-59

4000' 3800' 4100' 4200' 4300' 4400' 4500' 4600' 3600 3900 4000 4100 4200 4300 4400 4500 4600

120 OON 100 OON 80 OON 60 OON 40 OON 20 OON

TL 2500E TL 2500W

TO ACCOMPANY REPORT BY
N.B. VOLLO, P.ENG., DATED
MARCH 8th, 1971

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2917 MAP #5

LOCATION MAP
1:1,000,000

BL GROUP
Babine Lake
Stuart Lake
93 K
Ft St James
BURNS LAKE
HWY 16
Vanderhoof

LEGEND

Extraction by hot aqua regia.

Analysis by atomic absorption.

ROYAL CANADIAN VENTURES LTD.
KAMLOOPS, B.C.

93 K/12 BL GROUP

GEOCHEMICAL PLAN

TOTAL Ni.

Drawn by: M.H. Scale: 1"=400' Date: 15-3-70 Approved by:

2917 M-5

BL-38 BL-35 BL-1 BUTTERFIELD LAKE BL-39 BL-36 BL-2 BL-40 BL-51 FR. BL-3 BL-15 BL-41 BL-4 BL-16 BL-42 BL-53 FR. BL-5 BL-17 BL-6 BL-43 BL-18 BL-64 BL-7 BL-44 BL-52 FR. BL-8 BL-19 BL-45 BL-66 BL-20 BL-34 BL-9 BL-46 BL-10 BL-47 BL-68 BL-21 BL-33 BL-48 BL-22 BL-12 BL-49 BL-23 BL-70 BL-29 BL-50 BL-24 BL-30 BL-31 BL-72 BL-25 BL-54 BL-32 BL-55 BL-26 BL-73 BL-27 BL-74 LAKE BL-56 BL-75 BL-57 BL-28 BL-76 BL-58 BL-77 BL-59 BL-78 BL-79

LEGEND

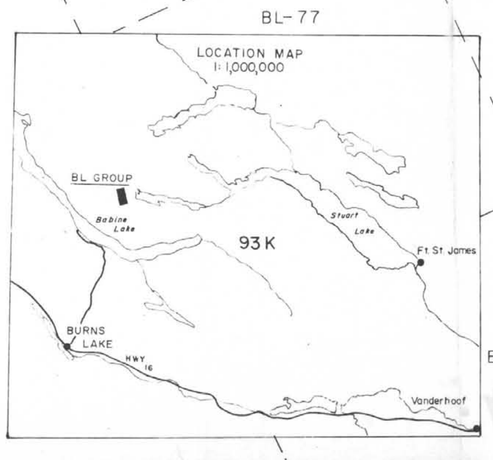
Contour interval - 200, 1000 γ

Inst. - Sharpe MF-1

Operator - M. Hjelt

Corrected for diurnal

LOCATION MAP
1: 1,000,000



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ASSESSMENT REPORT
NO. 2917 MAP #6

to accompany report by
N.B. Vollo, P.Eng., dated
March 8th, 1971

2917 M-6

ROYAL CANADIAN VENTURES LTD.
KAMLOOPS, B.C.

93 K/12 BL GROUP

MAGNETIC SURVEY

Drawn by: M.F Scale: 1"=400' Date: 15-3-70 Approved by:

BL-38 BL-35 BL-1 BUTTERFIELD LAKE BL-39 BL-36 120 00N BL-2 BL-40 BL-51 FR BL-3 BL-15 BL-41 BL-16 BL-4 BL-42 100 00N BL-53 FR. BL-5 BL-17 BL-18 BL-6 BL-43 BL-64 BL-44 BL-52 FR. BL-7 80 00N BL-19 BL-8 BL-45 BL-66 BL-20 BL-9 BL-46 BL-34 BL-10 BL-47 BL-68 BL-21 BL-33 60 00N BL-22 BL-48 NPG Seattle 18.6 KHz BL-12 BL-49 TL 25 00E BL-70 BL-23 BL-29 BL-71 BL-50 BL-24 BL-30 40 00N TL 25 00W BL-31 BL-54 BL-72 BL-25 BL-55 BL-26 BL-32 BL-73 BL-56 BL-74 BL-27 20 00N LAKE BL-57 BL-28 BL-75 BL-58 BL-76 BL-77 0 00 BL-59 BL-78 BL-79

LEGEND

4400' ——— + 50% ——— Topography

Direction faced

In phase

Line

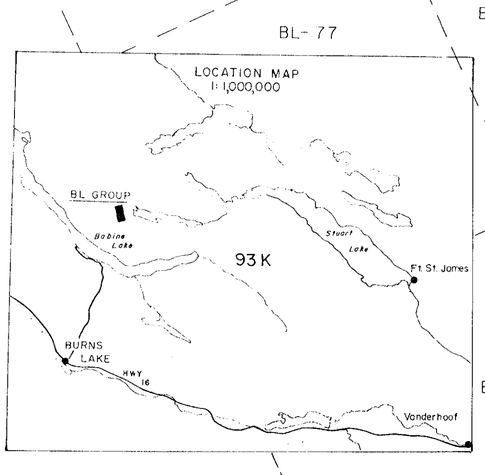
Quad.

Conductor, wk, mod., strong

4000'

3600' ——— - 50% ———

LOCATION MAP
1: 1,000,000



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NO. 2917 MAP #7

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MARCH 8th, 1971

ROYAL CANADIAN VENTURES LTD.
KAMLOOPS, B.C.

93 K/12 BL GROUP

EM-16 SURVEY

Drawn by: N.V. Scale: 1"=400' Date: 15-3-70 Approved by:

2917 M-7