

GEOLOGICAL AND GEOPHYSICAL REPORT
ON

THE 92I/9 B GROUP
at Kamloops, B.C., 50°120° NE

by N.B. Vollo, P.Eng. June 18, 1968

1600

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GEOLOGICAL AND GEOPHYSICAL REPORT

on

THE 921/9 B GROUP

of

ROYAL CANADIAN VENTURES LTD.

at

KAMLOOPS, B.C., 50°120° NE

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N.B. Vollo, P. Eng.

June 18th, 1968

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GEOLOGICAL AND GEOPHYSICAL REPORT

on

The 92I/9 B Group

Location and Access

The B group is located on Campbell Creek, about seven miles southeast of Kamloops. It can be reached via the Rose Hill road from Kamloops, or the Campbell Creek road from Barnhartvale.

Claims

The group consists of 30 claims, all held by Royal Canadian Ventures Ltd., as follows:

B - 1 to 4, Rec. Nos. 64630-33
B - 5 to 14, Rec. Nos. 64906 - 15
B - 15 Fr., Rec. No. 64916
B-17, Rec. No. 64917
B - 19 to 28, Rec. Nos. 67460-69
B - 29 to 32, " " 68526-29

Topography

Most of the group is on the rolling plateau surface at elevations from 3000 to 3500 feet above sea level, but the southeastern part drops off very sharply to Campbell Creek at an elevation of 2000 feet.

Climate and Vegetation

Rainfall and snowfall are light and the climate could be termed semi-arid. Most of the plateau surface below about 3300 feet is open grassland. Higher elevations and north slopes are covered with a sparse growth of juniper, interior fir, ponderosa and lodgepole pine.

Water is available during the spring and early summer from several small alkaline ponds.

History and Previous Work

The area was mapped in the early forties by W.E. Cockfield and a map on the scale of 1" = 4 miles published as part of G.S.C. Memoir 249.

The property was staked by Royal Canadian Ventures in 1967 to cover a strong geochemical stream anomaly.

Field Work

A grid system with east - west lines spaced at 200 to 800 foot intervals was staked out in late November and early December, 1967, and an EM-16 electromagnetic survey partly completed. A magnetometer survey and a check electromagnetic survey, using a Ronka Mark III dual frequency horizontal loop, was done in March, 1968. Geological mapping and the EM-16 survey were completed in May, 1968. All work was done by company personnel.

Geology

Geological mapping was done by the writer, using the chained lines and air photographs as control.

Lithology

The southwestern part of the group is underlain chiefly by argillites of the Cache Creek group. These strike N 20 - 30° W and dip 60° - 80° west. They are dark grey to black, occasionally brown, in colour, very fine grained, with strongly developed slaty cleavage.

The northeastern part of the group is underlain by gabbro. It is uniform, very massive, fine to medium grained, dark grey-green in colour. The contact between argillite and gabbro is mostly covered by talus, but where seen in one outcrop, appears intrusive. Because of its massive, very uniform appearance over a large area, it is likely that the gabbro is of intrusive rather than extrusive origin.

Granite occurs along the southern margin of the group. It is light coloured, medium to coarse grained, massive. Contacts with argillite and gabbro were not seen.

Structure

Pronounced lineaments striking N 20°-30° W are apparent on air photographs. The strongest and most easterly of these separates the gabbro from the argillite and

can be traced for thousands of feet on air photos. Zones of highly oxidized fault material up to twenty feet wide, and containing abundant manganese oxide, were observed in the bed of a dry wash, directly on projection of the photo lineaments. The lineaments therefore probably represent strike faults and the gabbro - argillite contact is probably along such a fault.

Mineralization

Very little mineralization has been seen. One outcrop of argillite with abundant pyrrhotite was noted near the north end of the main lineament. Minor pyrrhotite and chalcopyrite were also noted in brecciated gabbro close to the same lineament, but 3700 feet further south. The fault exposures contain abundant rusty quartz and manganese oxide.

Geophysics

EM-16

The EM-16 electromagnetic method is a fairly recent development based on the use of VLF radio stations as transmitters. The VLF stations operated by the U.S. Navy for communication with submarines have vertical antennae and set up a concentric horizontal field. The EM-16 field unit is a sensitive receiver which can be tuned to certain VLF stations, and contains two coils, with mutually perpendicular axis, one horizontal, one vertical.

The primary VLF field will induce a current in a conducting body, which current will in turn generate a secondary field. The vertical component of this secondary field is measured. The vertical coil is first tilted until a null is reached and the tilt angle recorded as per cent. A measured portion of the signal from the horizontal coil, now parallel to the primary field, after a phase shift of 90° is used to balance out the remaining signal from the vertical coil. The tilt angle measurement is then a measure of the vertical real component and the compensation a measure of the quadrature vertical component.

The VLF transmitter at Seattle was used as the

primary field source for this survey. This was not ideal, since the primary field direction is at a considerable angle to the structure. Alternative stations with a better field direction, located in Colorado and Panama, do not yield a sufficiently strong signal in this location to be accurately read.

The survey was carried out by the writer, using a chained grid as horizontal control, a pocket altimeter for vertical control. The direction of the primary field was determined for each reading, and the instrument appropriately orientated. All readings were taken facing the same direction.

The primary field is not strictly horizontal, but tends to parallel the topography. This strongly affects the tilt angle measurement but has little effect on the quadrature measurement. Slope must therefore be considered in interpretation, but this is not a serious handicap.

Numerous crossovers were obtained, with a very strong set corresponding to the east or main lineament and minor but consistent ones with other lineaments. A strong conductor is indicated between lines 68 + 00 N and 82 + 00 N.

It may be of interest to note that barb wire fences had no discernible effect on readings.

Ronka Mark III

As an aid to interpretation of the EM-16 survey, a limited survey was done with a Ronka Mark III dual frequency horizontal loop. This is an established and standard electromagnetic method and theory and methods will not be described. Results were closely comparable to those obtained with the EM-16 and a strong conductor indicated in the same place.

The fairly low ratio of low frequency to high frequency response as well as the low in-phase to out of phase ratio suggests a discontinuous or disseminated mineralization, rather than massive sulphides or graphite.

Magnetic Survey

A magnetometer survey was done using a Sharpe MF-1 fluxgate magnetometer. The instrument was arbitrarily set at 800 gammas at the intersection of line 76 + 00 N and the base line, and substations then established along the base line. Readings were taken at 100 foot intervals along lines 400 feet and 800 feet apart, with all traverses

looped and correction made for diurnal variation.

Magnetic relief is low with a weak trend parallel to the strike of the formations. A very slight high is associated with the electromagnetic anomaly. A small high on line 96 + 00 N is close to an outcrop containing 10-15% pyrrhotite.

Conclusions and Recommendations

The occurrence of an electromagnetic conductor along a strong lineament separating gabbro from sediments, taken in conjunction with a strong Cu Zn Mo geochemical anomaly in a stream draining the area, is suggestive of a concentration of copper-zinc sulphides. This is supported by the occurrence of minor sulphide mineralization near the lineament. The low magnetic response suggests that the conductor is not due, at least entirely, to pyrrhotite. The conductor could be a graphitic fault zone.

The anomaly should be tested by diamond drilling. A hole, located at 8 + 00E on line 80 + 00N, should be drilled east at -60° to a depth of 250 feet. If the gabbro has not been intersected at this point a hole, located on the same line at 10 + 00E should be drilled west at -60° to a depth of 250 feet.

N.B. Vollo, P.Eng.
June 18th, 1968

ASSESSMENT DATA

Personnel

- N.B. Vollo, P.Eng., geologist.
Photogeology, drafting, etc., -Dec. 4, 6, 7, 21, 1967
Field mapping ---May 9th, 10th, 1968
EM-16 survey ----Nov. 21-27, Dec. 1, 6, 1967
Ronka Mark III survey -- Feb. 14, 15, 26, Mar. 5, 7, 1968
Report preparation -- June 15, 18, 1968
- R. Zimmerman, prospector.
Line cutting, chaining, ---Nov. 21st -Dec. 8th, 1968
Ronka Mark III ----Feb. 14, 15, 26th 1968
- L. Loranger, Instrument Operator.
Magnetometer Survey --- March 8-14th, 1968
Ronka Mark III ---- March 5, 7, 1968
Line cutting, chaining, May 7, 10th, 1968
- M. Hjelt, prospector.
Drafting, -----May 3rd, 1968
- C. Mohn, Student
Line cutting, chaining, --- May 7th, 10th, 1968

Ronka Mark III rented from Huntec Ltd., 1450 O'Connor Drive,
Toronto, Ont.

Transportation

Private automobiles, 12¢/mile
4wd truck, Tilden Rent a Car, Kamloops.

AFFIDAVIT ON EXPENDITURES

Geological

N.B. Vollo, geologist	
Photogeology, 1/2 day @ \$70 -----	\$ 35.00
Field mapping, 2 days @ \$70 -----	140.00
Drafting, report preparation, 2 days @ \$70 -----	140.00
Printing, air photos -----	41.29
Car rental, 62 miles @ 12¢ -----	7.44
	<u>\$363.73</u>

EM-16 Survey

N.B. Vollo, operator, 6 1/4 days @ \$70 -----	\$437.50
Car rental, 150 miles @ 12¢ -----	18.00
	<u>\$455.50</u>

Ronka Mark III Survey

N.B. Vollo, operator, 2 days @ \$70, -----	\$140.00
L. Loranger, assistant, 2 days @ \$35 -----	70.00
Instrument rental \$309.75/2 -----	155.00
Car rental, 50 miles @ 12¢ -----	6.00
Truck rental -----	13.40
	<u>\$384.40</u>

Magnetic Survey

N.B. Vollo, supervision, 1/2 day @ \$70 -----	35.00
L. Loranger, operator, 4 1/2 days @ \$35 -----	157.50
Car rental, 150 miles @ 12¢ -----	18.00
M. Hjelt, drafting, 1 day @ 35 -----	35.00
	<u>\$245.50</u>

Line cutting, chaining

R. Zimmerman, 9 days @ \$35.00 -----	\$315.00
	<u><u>\$1764.13</u></u>

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".

N.B. Vollo

Declared before me at the City of Kamloops, in the Province of British Columbia, this 20 day of June, 1968, A.D.

James

A commissioner for taking affidavits for British Columbia

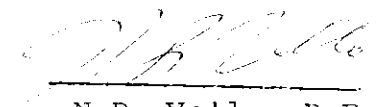
QUALIFICATIONS OF MAGNETOMETER OPERATOR

Leo Loranger is 39 years of age and completed Grade IX at Englehart, Ontario.

He was employed for four years, from 1962 to 1966, by the Noranda Exploration Company at Matagami, Quebec, as a geophysical instrument operator and assistant.

He was employed for two years by Scurry Rainbow Oils, Calgary, Alberta, as a geophysical assistant and instrument operator.

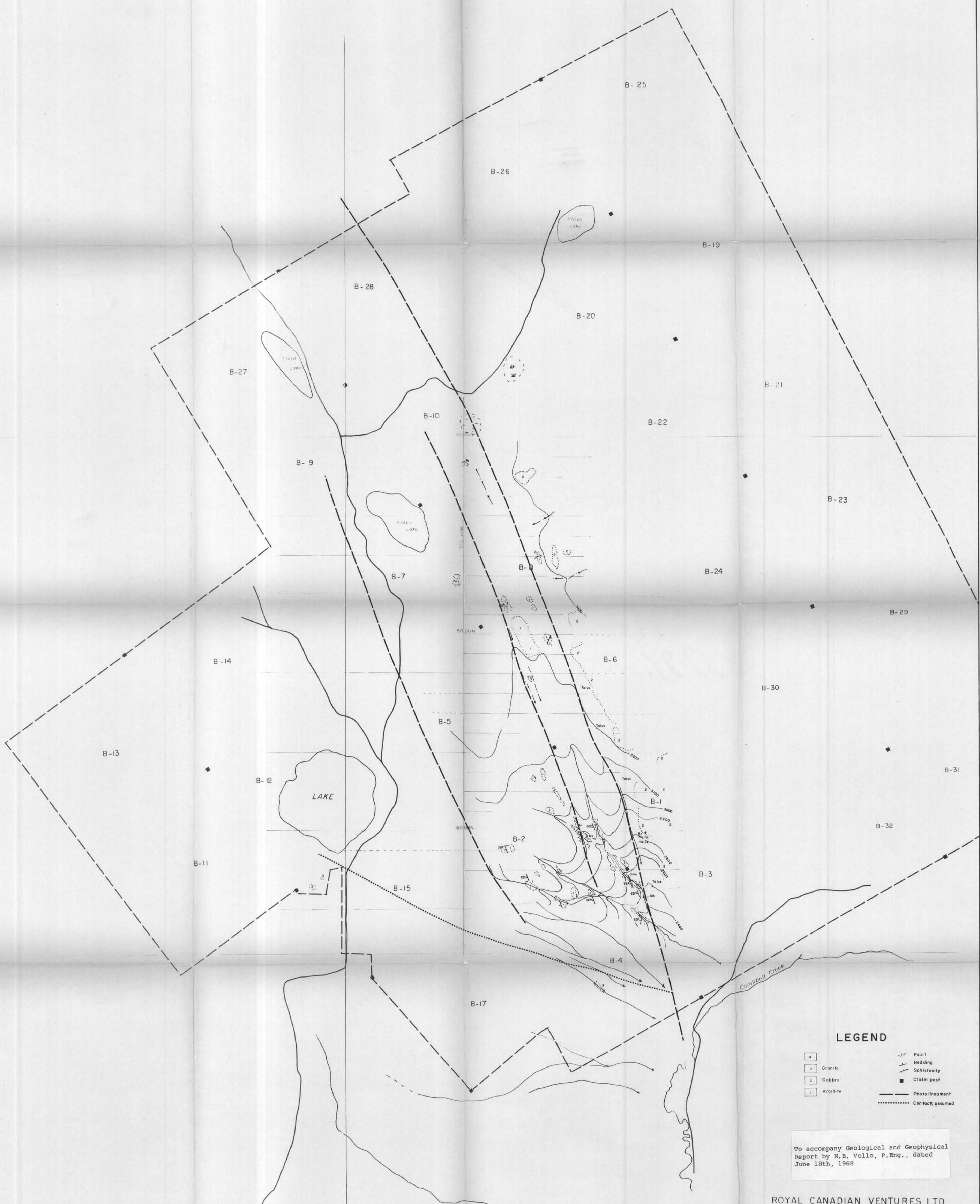
He has been carefully trained in the operation of the Sharpe MF-1 Magnetometer by the undersigned, who knows his work to be carefully and reliably done.



N.B. Vollo, P.Eng.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
MAP / NO 1600

1600



LEGEND

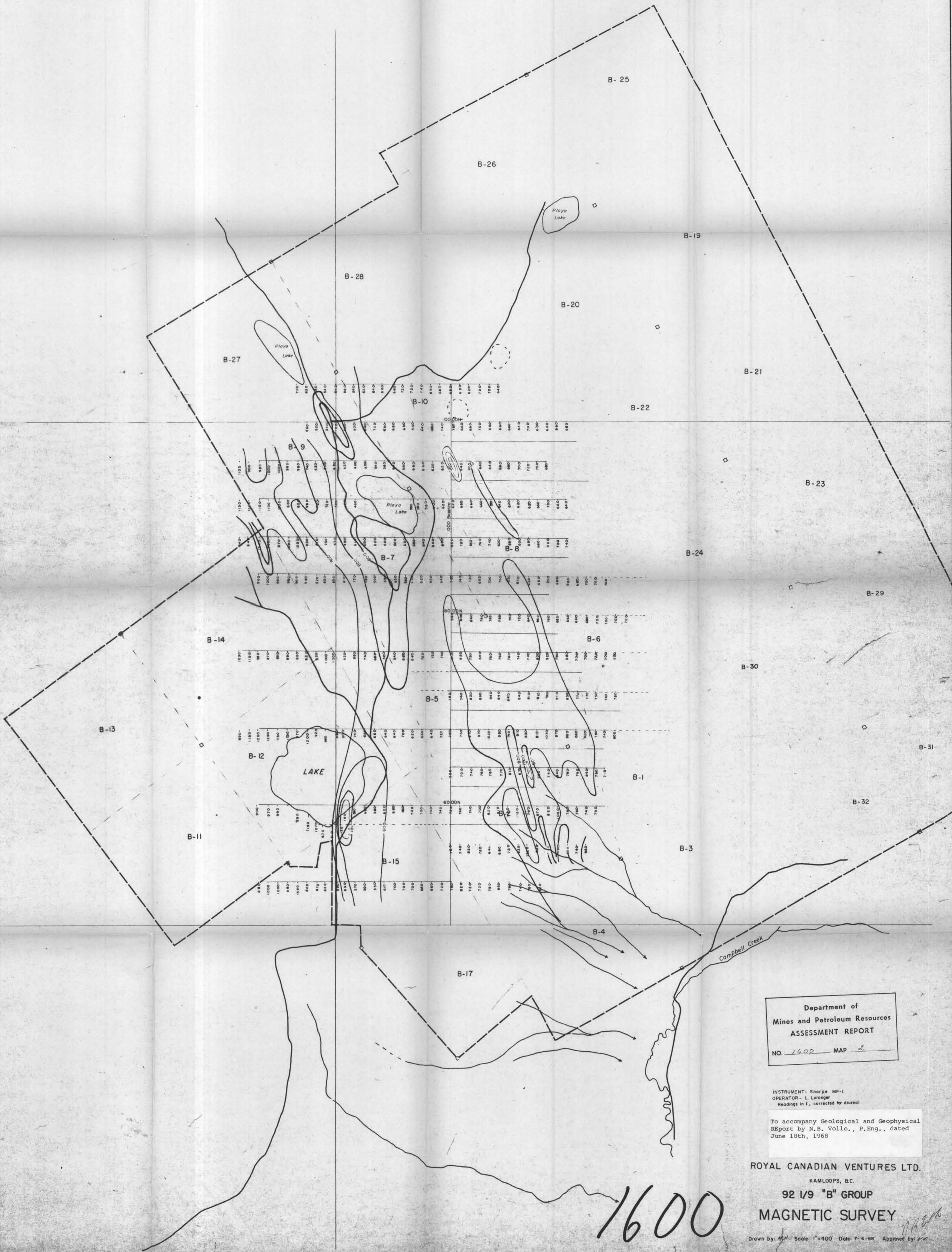
- 4 Granite
- 3 Gabbro
- 2 Argillite
- 1
- ~ Fault
- Bedding
- Schistosity
- Claim post
- Photo lineament
- Contact, assumed

To accompany Geological and Geophysical
Report by N.B. Vollo, P.Eng., dated
June 18th, 1968

ROYAL CANADIAN VENTURES LTD.
KAMLOOPS, B.C.

92 / 9 "B" GROUP
GEOLOGICAL MAP

Drawn by _____ Scale 1"=400' Date June 6-68 Approved by: *KV*



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1600 MAP 2

INSTRUMENT - Shorpe MF-1
OPERATOR - L. Lorange
Readings in G, corrected for diurnal

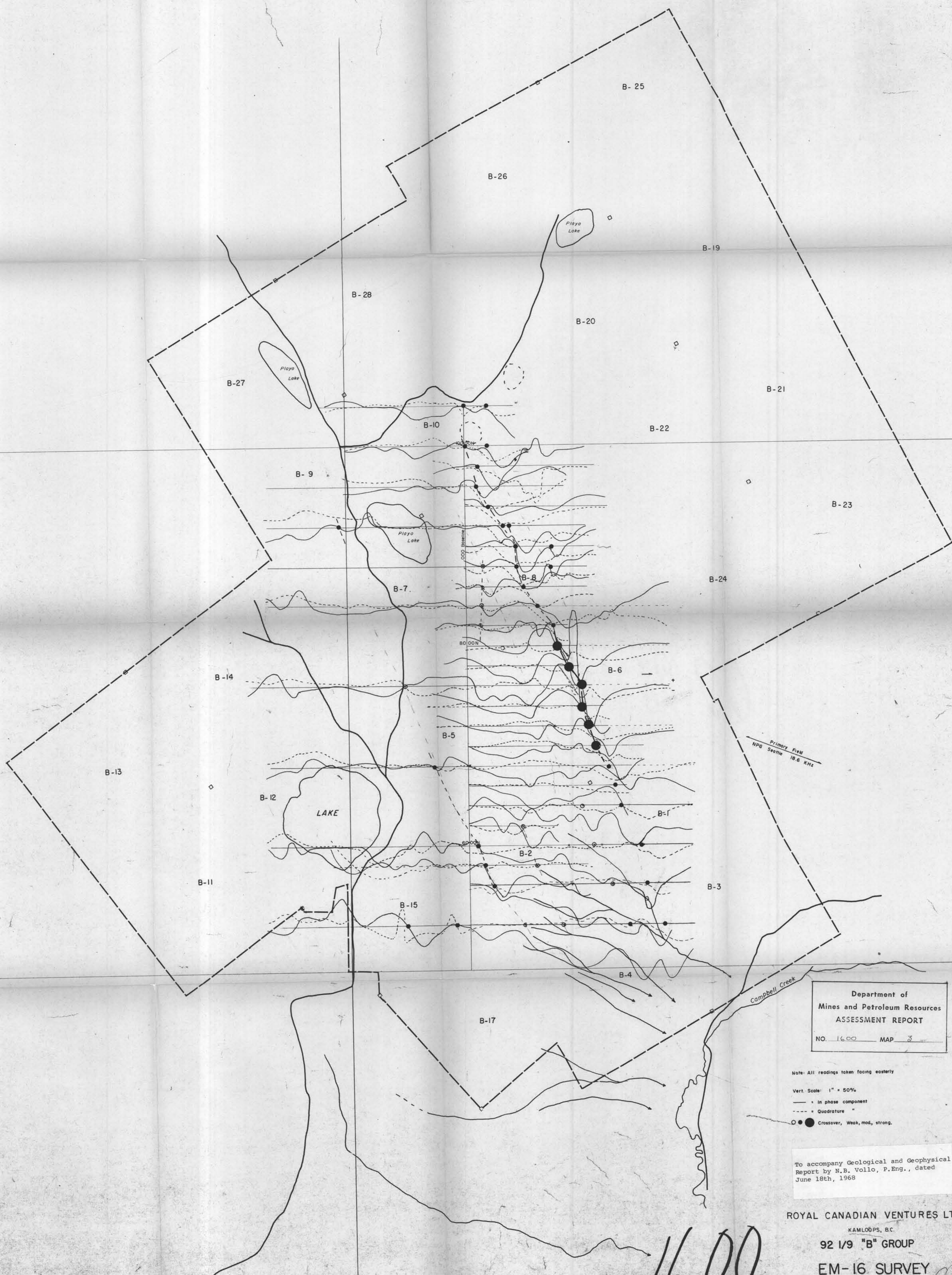
To accompany Geological and Geophysical
Report by N.B. Vollo., P.Eng., dated
June 18th, 1968

ROYAL CANADIAN VENTURES LTD.
KAMLOOPS, B.C.

92 1/9 "B" GROUP
MAGNETIC SURVEY

Drawn by: [Signature] Scale: 1"=400' Date: 7-6-68 Approved by: [Signature]

1600



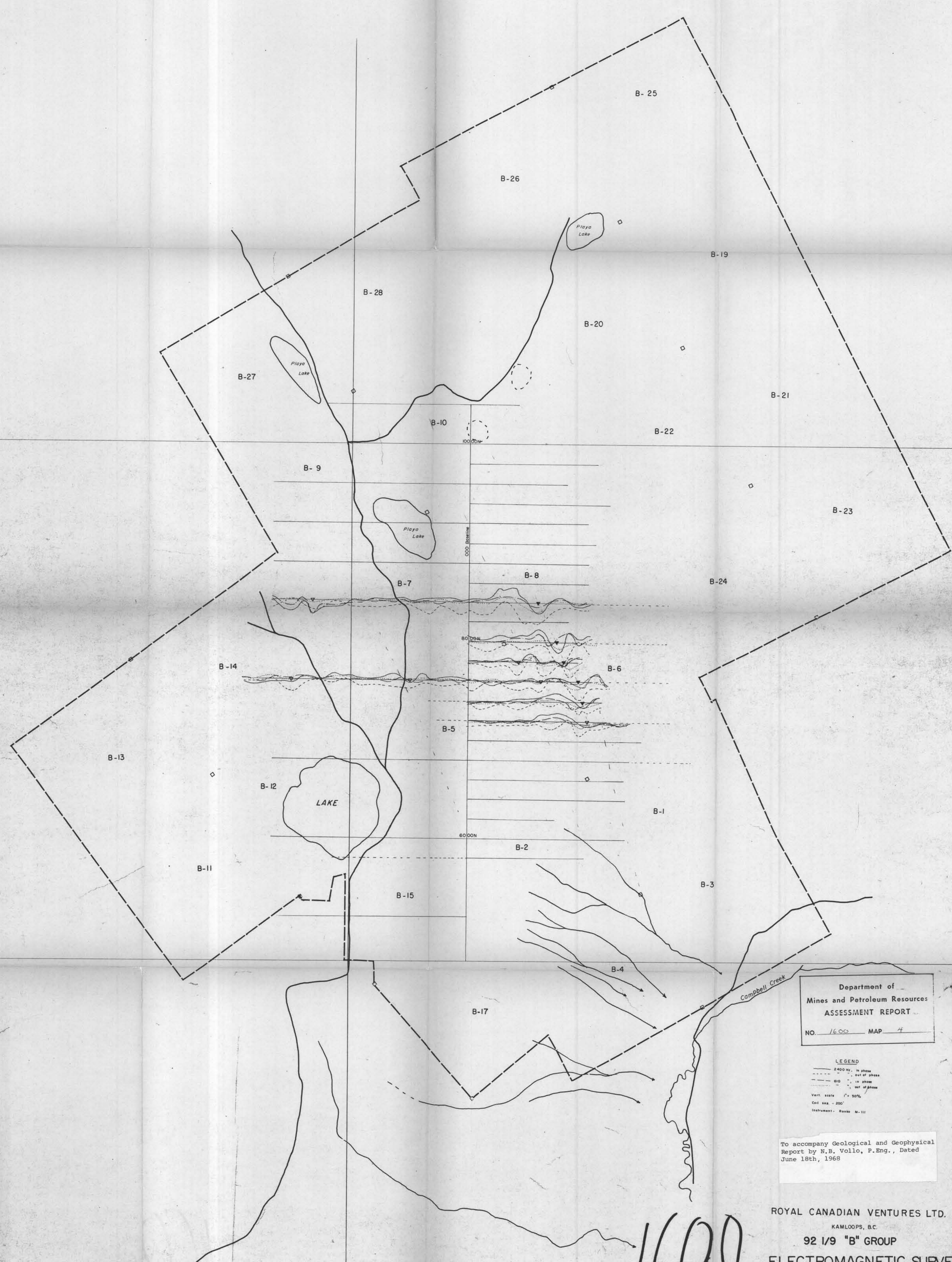
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1600 MAP 3

Note: All readings taken facing easterly
Vert. Scale: 1" = 50%
— In phase component
- - - Quadrature
● Crossover, Weak, mod., strong.

To accompany Geological and Geophysical
Report by N.B. Vollo, P.Eng., dated
June 18th, 1968

ROYAL CANADIAN VENTURES LTD.
KAMLOOEPS, B.C.
92 1/9 "B" GROUP
EM-16 SURVEY
Drawn by K.K. Scale 1"=400' Date _____ Approved by _____

1600



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1600 MAP 4

LEGEND
 - - - - - 2400 Hz. in phase
 - - - - - 610 " out of phase
 - - - - - 610 " in phase
 - - - - - 2400 Hz. out of phase
 Vert. scale 1" = 50'
 Cont. esp. - 200'
 Instrument - Resco M-111

To accompany Geological and Geophysical
Report by N.B. Vollo, P.Eng., Dated
June 18th, 1968

ROYAL CANADIAN VENTURES LTD.
KAMLOOPS, B.C.
92 1/9 "B" GROUP
ELECTROMAGNETIC SURVEY

1600

Drawn by: MK Scale: 1" = 400' Date: 12-3-68 Approved by: MK