SIBOLA MINES LTD.

M93E/15W

REPORT ON GEOLOGICAL MAPPING, PHYSICAL WORK, AND GEOPHYSICAL SURVEYING

TETS CLAIM GROUP

Latitude: 53°51'N Longitude: 126°57'E

by

JAMES G. AGER

January 26, 1979

CLAIMS: Tets Group: Tets 1 - 15; John-Boy 1 - 5; Jim Bo 1-10; Lake 1-5; South 1-5.

LOCATION: Omineca Mining Division

Five miles (8.05 km) northeast of Twinkle Lake and two miles southeast of Nadina Lake (which is 40 miles south of Houston, B. C.).

DATES: June 23 - December 28, 1978.

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APPENDICES

ILLUSTRATIONS

STATEMENT OF COSTS INCURRED

I. Access Trail Construction (See Appendix 1)

Larry Palmer, Collymount, B. C., Sept. 27, 28, 29 D-6 Bulldozer Work; 13.25 hours @ $35/hour		$ 463.75
Valnor Trucking Ltd., Box 939, Burns Lake, B. C. Sept. 27, Oct. 3, Haul Bulldozer and Return transport, total, 12 hours (½ cost allotted to Road, ½ cost to Stripping) Total: $459.00 x .5		229.50
Labour:		
Stan Beal, Jr., 23251 Dyke Road, Richmond, B. C. Sept. 26, 27, 28, 29, Road layout and supervision, Slashing; 3.5 days @ $75/day		262.50
Tom Shelford, Collymount, B. C., Sept. 29, Oct. 4, Skidding timber; 2.75 hours @ $28/hour		77.00
N. K. Lindroos, Box 221, Burns Lake, B. C. Oct. 25, 26; Slashing; 2 days @ $75/day Saw Supplies	$ 150.00 3.36	
	153.36	153.36
Nick Ukrainez, Burns Lake, B. C., Oct. 25, 26 Slashing; 13.5 hours @ $9/hour		121.50
TOTAL, ACCESS CONSTRUCTION		$ 1,307.61

II. Stripping (See Appendix I)

Larry Palmer of Collymount, B. C. D-6 Bulldozer work, 13.25 hours @ 35/hour Sept. 30, Oct. 1, 2.		$ 463.75
Valnor Trucking (⅓ Transport)		229.50
Labour		
Stan Beale, Jr., Sept. 29, 30, Oct. 1, 2 Slashing, 3.5 days @ $75/day		262.50
Tom Shelford, Oct. 5 Skidding timber, 2.75 hours @ $28/hour		77.00
Harry Hewitt, Collymount, B. C., Oct. 5 Blasting rock, 8 hours @ $7.50/hour		60.00
Nick Ukrainez, Oct. 4, 5 Slashing, 13.5 hours @ $9/hour		121.50
Meals, Lodging & Travel		
Part of Total to Stripping Total: $934.66 Allotment to Stripping		275.69
	TOTAL STRIPPING	$ 1,489.94

TOTAL PHYSICAL WORK

Access Construction	$ 1,307.61
Stripping	1,489.94
TOTAL	$ 2,797.55

III. Geological Mapping (See Appendix I)

James Ager, Geologist, of 5829 Barker Avenue, Burnaby, B. C.

June 23 - July 1	7 days property work @ $100/day	$ 700.00
	2 days travel @ $50/day	100.00
July 21 - Aug. 3	12 days mapping @ $100/day	1,200.00
	2 days travel @ $50/day	100.00
Sept. 26 - Oct. 3	6 days property work @ $100/day	600.00
	2 days travel @ $50/day	100.00
Oct. 15 - Oct. 26	10 days mapping @ $100/day	1,000.00
	2 days travel @ $50/day	100.00
Nov. 1 - Dec. 31	20 days Mapping; report writing; rock inspection under microscope	1,000.00
		$ 4,900.00
Geotex Consultants, P. Read of 100 W. Pender St. Vancouver, B. C.; Petrographic Report		300.00
Mapping Supplies		261.86
Petrographic Services		207.00
Ron Stokes, Consulting Engineer		802.78
Field Camper and Truck Rental from James Ager of 5829 Barker Ave., Burnaby; 2 months @ $500/month		1,000.00
Field Meals, Lodging and Travel $934.66 less $275.69		435.40
Assays		50.00
		$ 7,957.04

IV. Geophysical Surveying (Appendix I)

Mauro G. Berretta, Geophysicist, of 26935 - 100th Avenue, Whonnock, B. C., surveyed:

21.4 km Induced Polarization @ $420/km	$ 8,988.00
24 km V.L.F. @ $75/km	1,800.00
6.3 km C.E.M. Shootback @ $100/km	630.00
Mobe - Demobe	450.00
Grid re-establish	450.00
TOTAL FOR GEOPHYSICAL SURVEYING	$ 12,318.00

LIST OF CLAIMS AND DISTRIBUTION OF WORK

Tets Claim Group

Claim No.		Record No.	Record Date	Years of Work Applied
Tets	1 - 15	796	September	4
Jim-Bo	1 - 5	1210	June	3
Lake	1 - 5	1212	June	4
South	1 - 5	1211	June	3
John Boy	1 - 5	1209	June	3

The TETS claims were first staked in July, 1969, by John Shelford (6 claims, TETS 1 - 6). Additional claims were added later. These claims were relocated under the Grid System as 15 units, the TETS group and Z units, the CINDY group on September 14th to 18th, 1977. Further perimeter claims were recorded in June, 1978; John-Boy, 5 units; Jim-Bo, 10 units; South, 5 units; and Lake, 5 units.

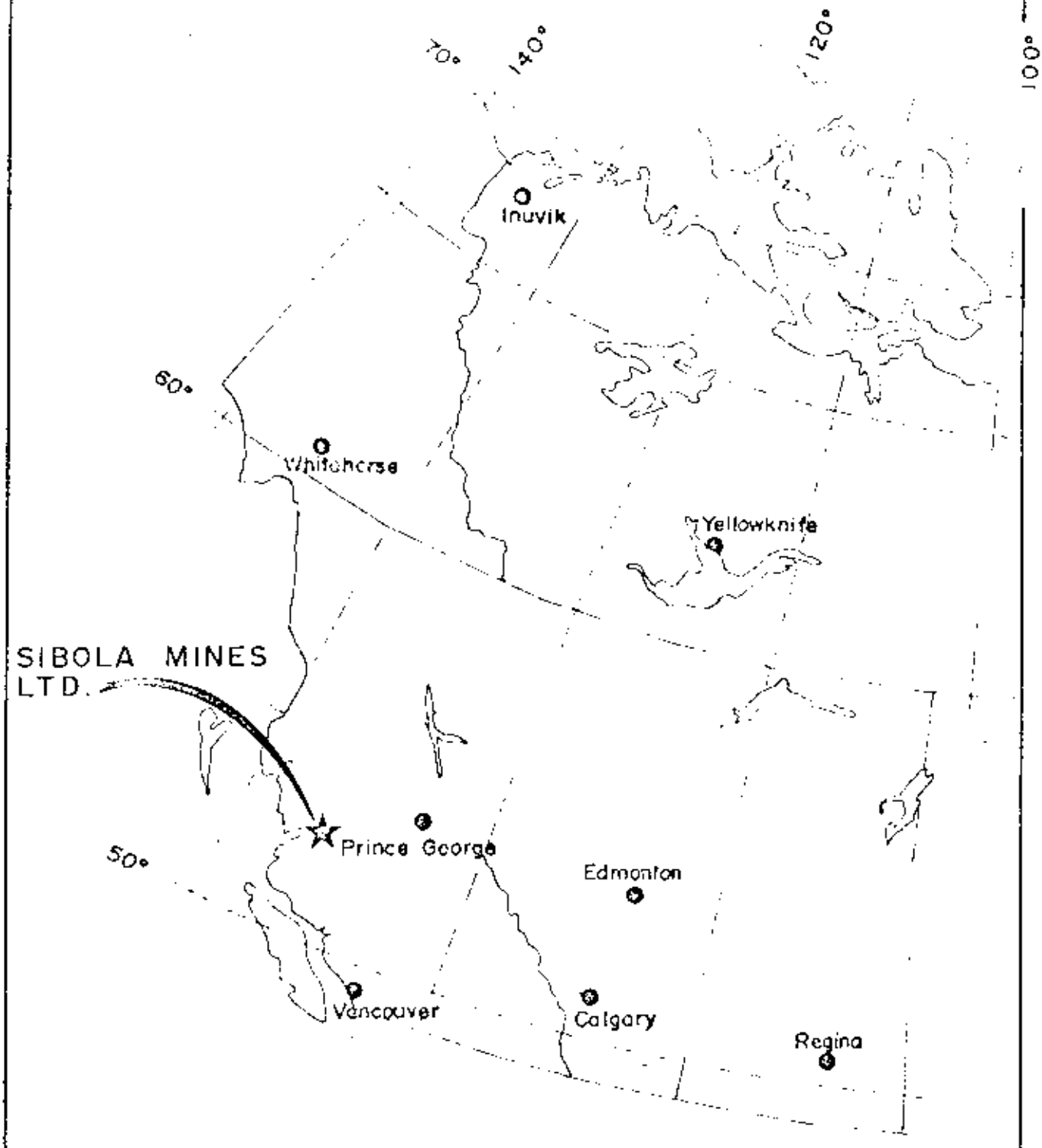


FIG. 1

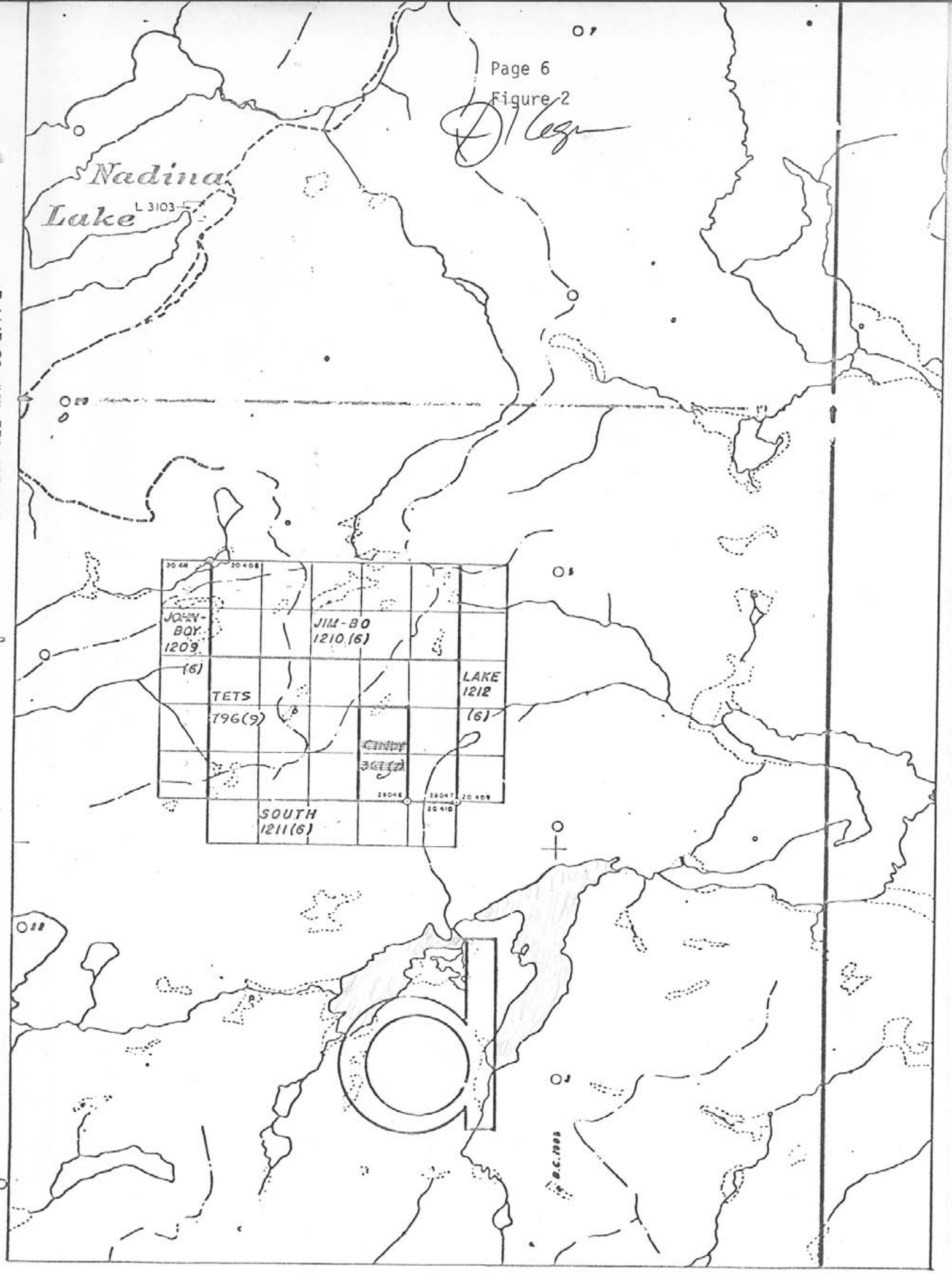
LOCATION MAP

TETS GROUP

DATE: JAN./79

JAMES G. AGER
BURNABY, B.C.

Figure 2


Nadina Lake
L 3103
TO WEST SEE MAP 93 E/14 E
JOHN-BOY 1209 (6)
JIM-BO 1210 (6)
TETS 796 (9)
LAKE 1212 (6)
CINDY 3611
SOUTH 1211 (6)
20 408
20 409
20 410
B.C. 1908

INTRODUCTION

The TETS claim group consists of forty full sized mineral claims owned by Sibola Mines Ltd. In 1978, the Company build access into the southwest part of the Property, 2.4 kilometers (1½ miles); performed approximately 610 meters of cat stripping, 24,400 cubic meters (2,000 ft., 80,000 ft.^{3}); collected 210 rock samples for analysis; prepared geological map of the claims; and contracted Geophysical Surveys consisting of 23 km EM VLF, 6.3 km EM Shootback and 21.4 km Induced Polarization.

LOCATION

The TETS claims are located about 8.05 km (five miles) northeast of Twinkle Lake and two miles southeast of Nadina Lake (which is forty miles south of Houston, B. C.).

ACCESS

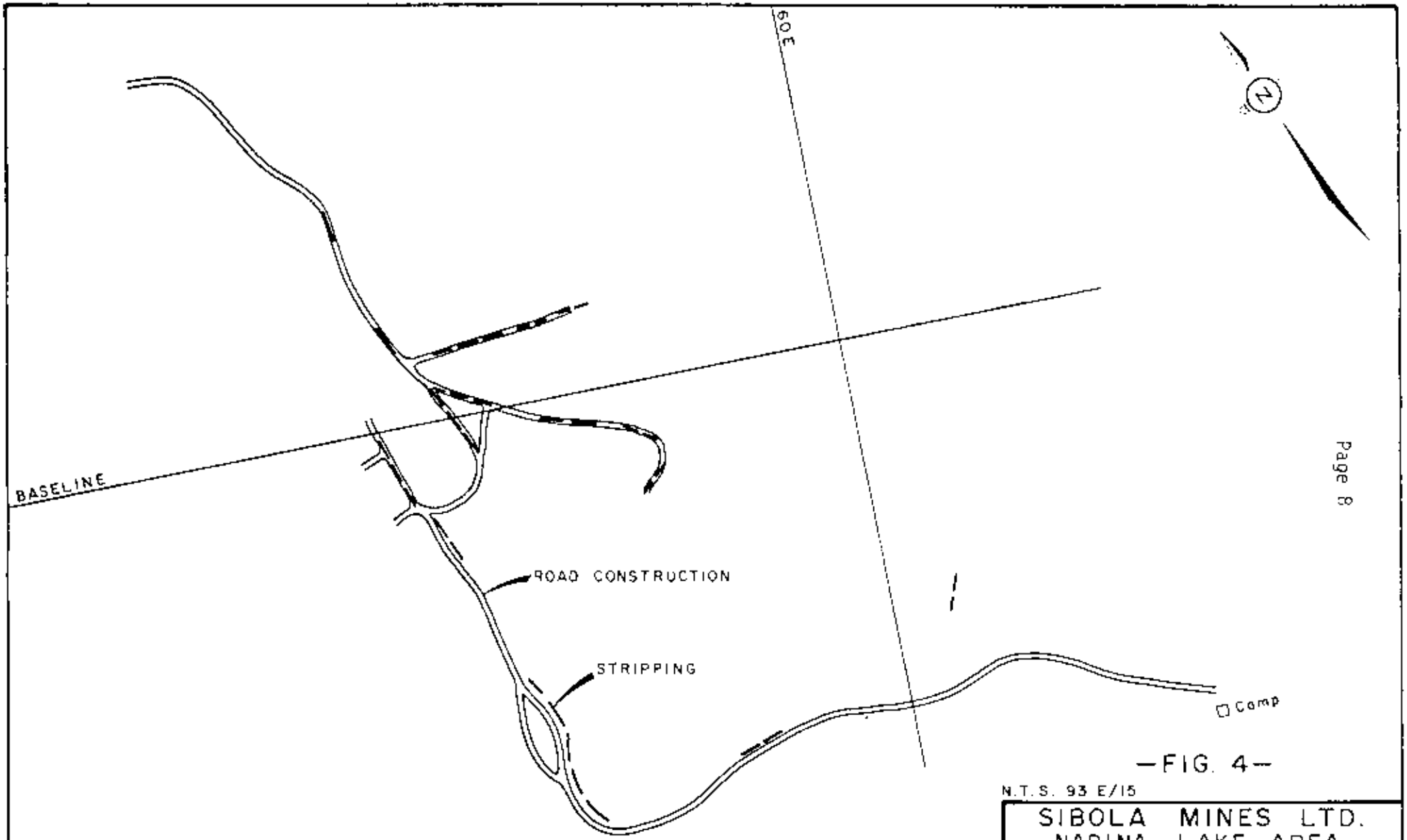
Access to the TETS Property is provided by 63 miles of good gravel road from Burns Lake to the Eurocan Ootsa Lake Division Logging Road, 13 miles to Main Camp, and a further 16 miles down Wisteria Main to Mile 16 (total 92 miles from Burns Lake).

At Mile 16, a logging cut covers part of the south corner of the claims and provides the access to camp.

A "cat" road from camp has been built approximately 2.4 kilometers onto the central part of the TETS claims.

STRIPPING

Stripping was carried out in most areas to parallel the road access and save both general cost and destruction of the local marketable timber.



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—FIG. 4—

N.T.S. 93 E/15

SIBOLA MINES LTD.
—NADINA LAKE AREA—

ROAD CONSTRUCTION
&
STRIPPING

JAMES G. AGER
BURNABY, B.C.

DATE: JAN./79

Some stripping was tried in the Log Cut, at 8S + 62E and 10S + 55E but generally the overburden was too deep to uncover rock. These areas are at the contact of High-Low Magnetic Anomalies but no conclusions were thus reached. At 12S + 50E the road turns to follow what appears to be a fault lineament, 015°N. Rock found at this area was completely shattered, difficult to sample, completely altered, and displayed large sinuous slickensides. Stripping showed 3 feet of glacial till and then insitu weathered rock completely turned to mud and clay. At five feet, this clay product continued and it was not feasible to go deeper. Some malachite staining was evident on one sample, so copper mineralization is present in the zone.

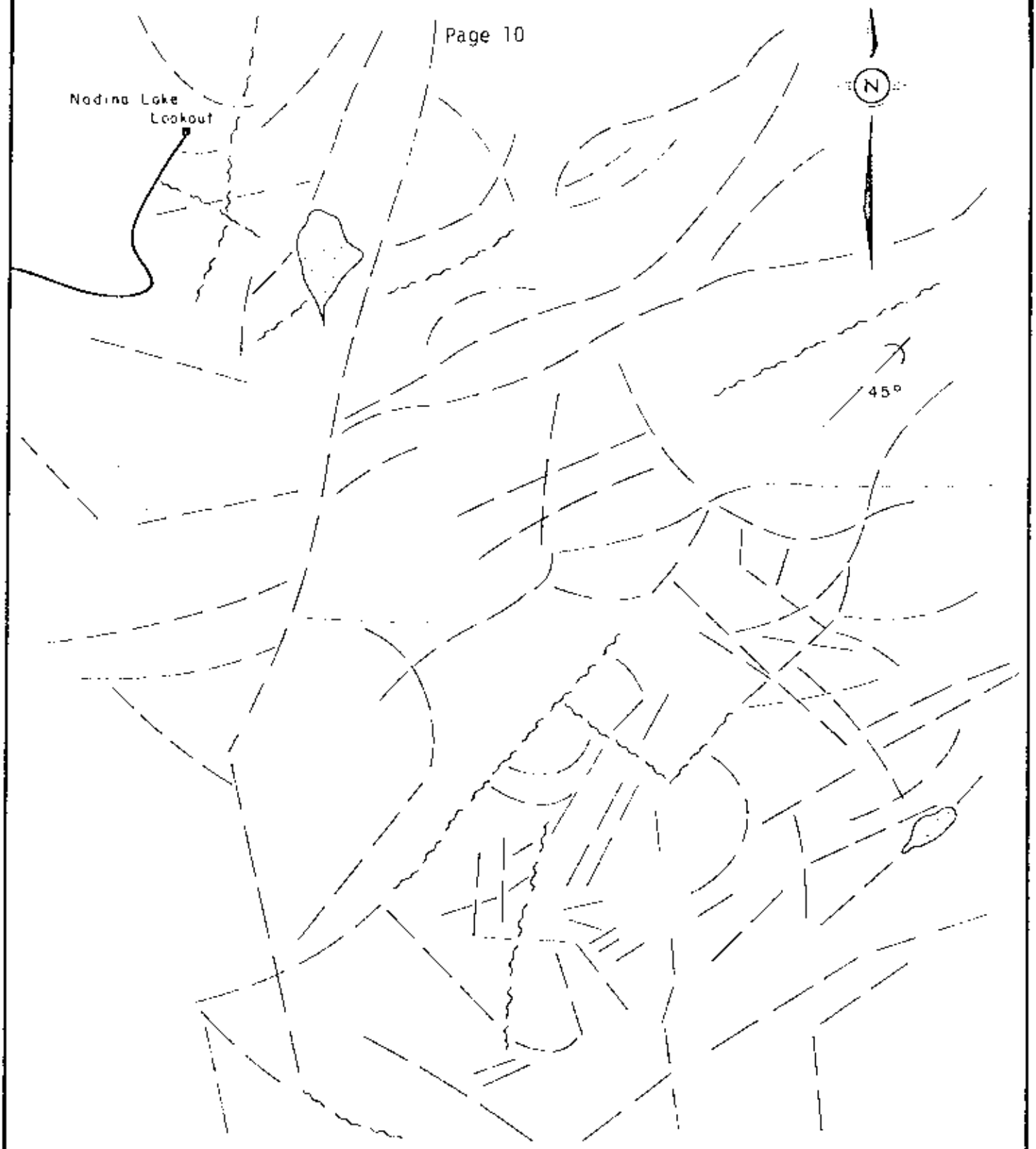
Further stripping was done in the road cut to 2S + 48E, from 2S + 48E around to BL + 46E; access and stripping from 1N + 50E to 3S + 54E; access and stripping from 2N + 48E to 2N + 53E; and from 1N + 50E to 12N + 41E; see map, figure 4.

GEOLOGICAL MAPPING

Approximately 7.5 square kilometers of the TETS claims were prospected and rock sampled. Outcrop was more readily available in the "Central Area" but often difficult to find in heavy overburden in the other areas.

Rock collection was related to the established Location Grid and samples can be located on the Geological Map by coordinate number. Air photographs and a ground Magnetometer Survey of the area (Granges Exploration, November, 1973) aided in identifying different rock types on a large general scale.

In order to classify the different rock units, a petrographic study was done by Peter B. Read, Ph.D., from nineteen selected samples. This report was used as the basis for naming rock samples from the area and is attached as Appendix II.



— FIG. 3 —

NTS. 93 E/15

SIBOLA MINES LTD.
— NADINA LAKE AREA —

FAULTS — LINEAMENTS
&
GLACIATION DIRECTION

JAMES G. AGER
BURNABY, B.C.

DATE JAN / 79

0
Km

1/2 0
MILES

The rock samples were cut and examined under the microscope. A brief description is given under: General Rock Samples (Appendix III), Rock Samples, Numbered Locations (Appendix IV), and Rock Samples, Mineralization (Appendix V). Location maps of each of these are given within each Appendix.

INTERPRETATION OF RESULTS

Air Photo Faults and Lineaments:

Major lineaments, faults, and possible fault expressions into overburden are drawn on overlay and given in Figure 3. They are taken from visible features on air photos BC 7744 - 098 to 100 and BC7744 - 169 to 172.

The map shows a regional trend, generally N - W, N and N - E, and locally in the TETS Central Area as 040°N, 353°N, and 305°N. Lineaments are somewhat masked from a north and north-west direction and accented to the North East because glaciation has advanced over this area from the Coast Mountains in a general north-east direction.

Evidence from the air photos indicated younger faults displacing older ones, rock units uplifted (often in a building block fashion) and displaced horizontally (or both with a strike-slip action). A number of faults and lineaments seem to radiate or converge on one area, (BL. ! 48F area) and may indicate a possible volcanic collapse.

GEOLOGICAL SUMMARY

1. The central area contains a series of steep cliffs and flat benches in a "building block" fashion from a low of 3,500 ft. to a high of 4,700 ft. These benches and troughs are mainly overburden filled, and the sampling was thus directed to the barren, steeper cliffs.

2. The rock units on the claims are volcanic or volcanic derivative and consist of: volcanic flows, volcanic tuffs, volcanic breccias, and possible hypabyssal intrusions.

3. All the rocks in the area have been subjected to an intense, low grade metamorphism with many zones of a higher alteration where the mineralogy is completely altered but often with an unreconstituted texture.

4. These rocks are grouped with the Hazelton Series of Middle Jurassic age (Glen Woodstock, Geological Survey of Canada).

5. The units in the central area strike generally 018°N and dip near vertical; the last period of glaciation was a movement from south-west to north-east, with a direction of 045°N (S. Duffell, Whitesail Lake Map Area, No. 2456).

6. Central Area Rock

a) Centrally a completely altered grey-maroon porphyritic (plagioclase) flow striking 018°N and dipping 80°W; this rock is distinct from the other rocks and appears to be cut and dislocated by numerous faults.

b) In contact on both sides of the porphyry are a complex mixture of highly altered tuffs, flows and breccias, light grey to dark grey and maroon with up to 50% of green alteration Chlorite-Montmorillonite, Pumpellyite, and Calcite. These rocks also exhibit a high magnetic character and dominate most of this central area.

c) Encircling this "volcanic island" are a series of more flat lying grey to buff, highly altered tuffs with some intermixed volcanic flows. Fossils were found at three different locations and indicate a marine environment and possible volcanic venting in some of the regions.

d) A small, highly altered gabbro "plug" was found in the north part of the property at 48N + 40E area and a diabase at 28N + 58E are deemed to be hypabyssal intrusions. Both rocks have been through the same regional metamorphism as the volcanic rocks.

e) A map of the General Geology has been prepared and is given in Figure 8 on a scale of 1 cm: 96 meters (1 inch: 800 feet).

Interpretation of Results:

A. Mineralized Samples

1. The main metals present are copper, silver and zinc; also occurring are an unknown amount of lead, tungsten and cadmium.
2. Sulphides occur in nearly all the rock types and do not seem to favour any distinct rock unit.
3. A pulsating of the "ore" solutions has occurred; pyrite was formed first, then replaced by chalcopyrite; both of these minerals are rimmed by sphalerite; a late galena-calcite phase cuts all.
4. Copper minerals have been found throughout the property and indicate a mineral rich source, or ....
5. "All rocks have undergone prehnite-pumpellyite facies metamorphism and this event is probably important in concentrating copper mineralization." P. Reid.
6. Sulphides occur in breccia zones, in fractures and as open space fillings within a wide volcanic suite.
7. Assessing the economic potential of the area is difficult. The sulphides are often camouflaged by a similar rock colour and the more compatible zones are often deeply gouged and filled with overburden. The best detection method now appears to be in combination with geophysical methods, especially in the detection of pyrite as a forerunner to later ore solutions.

INTERPRETATION OF RESULTS

GEOPHYSICS

The intent of these surveys was to detect the presence of semi-massive to massive copper, zinc, silver mineralization of possible volcanogenic origin. Its probable occurrence had been indicated by previous geochemical and magnetic surveys, as well as by geological prospecting.

Resistivity

Values observed are in the range of about 150 ohm-m, to about 2,700 ohm-m. The most obvious features are two zones of high resistivity in the west half of the survey area. These are indicative of competent rock units or possibly the same unit disrupted by a NW-SE fault. North trending lows at the extreme west end of the grid may be representative of more conductive sediments and/or fractured, altered volcanics.

Percent Frequency Effect

Background is in the range 0-2%. Readings larger than 4% are tentatively considered anomalous. Main feature is a NNE trending narrow anomaly from the baseline to 16S, at about 42E, which appears connected to a second anomalous zone on lines 8N to 12N, at about 48E. Lack of a shootback or VLF response over this arcuate zone, indicates that the source of the anomaly is probably disseminated metallic mineralization, minor pyrite, or chalcopyrite, or possibly disseminated magnetite.

Flanking this anomalous region, are two sub-anomalous, small features. One is within a region of resistivity low, and correlates well with a VLF conductor, and an anomalous shootback response, both on lines 8S to 12S. It thus appears that this anomaly may be due to semi-massive to massive mineralization.

VLF Results

Nearly a dozen, narrow, long conductors, roughly parallel to each other, were detected within the survey area. Most of these, especially in the western end of the grid, are indicative of faults and/or geological contacts which trend roughly N to NNE. This general structure appears to be evidenced by magnetic data and geological observations. The most intensive conductive zones occur within the central part of the survey area.

C.E.M.

The majority of the readings taken are negative. This is normally indicative of near surface flat-lying conductivity. Although this could in part be caused by highly fractured, altered rocks, it appears more likely that conductive overburden is the source. An anomalous response is evident on lines 4S, 8S and 12S, and correlates fairly well with VLF and I.P. results, from stations 40E to 50E.

A full report, as given by Mauro G. Berretta, Geophysicist, is contained in Appendix VI.

I, James G. Ager, B.Sc., of Vancouver, British Columbia, do hereby state:

1. I am a Consulting Geologist. I graduated from the University of British Columbia, Canada, in 1972.

2. I have worked in the exploration field as follows:

   - Jayco Syndicate; summer season, 1967.
   - Magnetron Mining Ltd.; May, 1968 - September, 1970.
   - Magnetron Mining Ltd.; summer season, 1971.
   - Sibola Mines Ltd.; May, 1972 - October, 1974.
   - Self-employed Geologist; October, 1974 to present, as Geologist and Project Supervisor for various Major Mining Companies throughout British Columbia and the Yukon.

3. My report is based on my experience on the property since May, 1972; the data was collected in the 1978 field season, under the supervision of R. B. Stokes, P. Eng.

Dated at Vancouver, British Columbia, the 26th day of January, 1979.

James G. Ager, B.Sc.
Consulting Geologist

APPENDIX I

Invoices:

1. Physical work
2. Geological Mapping
3. Geophysical Surveying
4. Meals & Lodging

PHYSICAL WORK:

Bulldozer Rental		927.50
Trucking		459.00
Labour:		
Stan Beale	525.00	
Tom Shelford	154.00	
N.K.Lindroos	153.36	
Nick Ukrainez	243.00	
Harry Hewitt	60.00	
Total	1,135.36	1,135.36
Meals, Lodging & Travel		275.69
		$2,797.55

SIBOLA COPPER MINES LTD. (N.P.L.)

No. 29

PAY TO THE ORDER OF [illegible] $ 927.50

Nine hundred [illegible] DOLLARS

Vancouver City Savings Credit Union
858 WEST PENDER STREET
VANCOUVER, B.C. V6C 1G7

SIBOLA COPPER MINES LTD. (N.P.L.)
ACCOUNT NO. 12021

VANCOUVER CITY SAVINGS CREDIT UNION

"000009 2750"

DATE Jan. 1928

M Sibola Mines Ltd.

		ACCT. FWD.
1	26½ Ag @ 35	
2		
3		27 50
4		
5		
6		
7		
8		
9		
10		
11		
12	$ 927.50	
13		
14		
15	8	

CROWN ZELLERBACH PAPER COMPANY LIMITED

SIBOLA COPPER MINES LTD. (N.P.L.)

OCT 27 78

VANCOUVER CITY SAVINGS

PAY TO THE ORDER OF [illegible] $ 459.00

Four hundred fifty nine [illegible] 00/100 DOLLARS

Vancouver City Savings Credit Union
805 WEST PENDER STREET
VANCOUVER, B.C. V6C 1J8

VANCITY

SIBOLA COPPER MINES LTD. (N.P.L.)
ACCOUNT NO. 1202-1

PER [signature]

PER [signature]

⑆16300⑈809⑆ 10⑈001⑈202⑈6⑈ ⑈0000045900⑈

19

VALNOR TRUCKING LTD.

HI BOY, LOWBED, HEAVY HAULS, GRAVEL
LOG HAULING — Box 939, BURNS LAKE, B.C.
Phone Kal-Tire 692-3365, 692-3335 or 9R-279

[illegible] LTD.
[illegible] B.C.

Terms. [illegible]

Sept 27/78	[illegible]			
Hrs	6 @ 38.00 per	228.00		
	moved D6 cat & blade [illegible]			
	[illegible]			
	[illegible]			
	Oversize permit	3.00		
October 3/78				
Hrs	6 @ 38.00	228.00		
	D6 cat & blade from [illegible]	459.00		
	[illegible]			
	to [illegible]		[illegible]	
			Thank you	
	[illegible]		K [illegible]	
	Total Claim	459.00		

([illegible])

SIBOLA COPPER MINES LTD. (N.P.L.)

PAY TO THE ORDER OF Stan Beale $ 750.00

Seven hundred & fifty DOLLARS

Vancouver City Savings Credit Union
675 WEST PENDER STREET
VANCOUVER, B.C. V6C 1V3

SIBOLA COPPER MINES LTD. (N.P.L.)
ACCOUNT NO. 1202-1

VANCOUVER CITY SAVINGS CREDIT UNION

"00000?5000"

Re Stan Beale

SOLD TO Sibola Mines

SHIPPED TO

ADDRESS 510 W. Hastings Vancouver

CUSTOMER'S ORDER

SALESMAN

TERMS

F.O.B.

INVOICE

For work on the
Tetis Group of Claims
Sept 26 - Oct 2, 1978

7 day @ 75.00 525.00

Geological Assistant

3 days @ 75.00 225.00
Oct 22, 23, 24. /78

Stanley D. Beale 750.00

Dec 5/78
Ck #156

DATE Oct 1978

CONTRACTOR

TOM SHELFORD

	ACCT. NO.
1 SNOWSHOEING	
2 RIGHT OF WAY	5 HR
3 AT	$25.00 PER HR
4	
5 TOTAL	$150.00

SIBOLA COPPER MINES LTD. (N.P.L.)

PAY TO THE ORDER OF Tom Shelford $ 150.00

One hundred fifty - 00/100 DOLLARS

Vancouver City Savings Credit Union
858 WEST PENDER STREET
VANCOUVER, B.C. V6E 1J3

VANCITY

SIBOLA COPPER MINES LTD. (N.P.L.)
ACCOUNT NO. 1202-1

PER

PER

⑈16300⑈80⑈ ⑆10⑈001⑈20 2⑈1⑈ ⑈00000150⑆00⑈

736 YELLOWHEAD HIGHWAY
P.O. BOX 999
BURNS LAKE, B.C. V0J 1E0
TELEPHONE 692 - 3553
TELEX 047-7127

Nilo Lindroos

DATE May 4 1978

M Sibola Mines

ACCT. FWD.

DATE 10 78

WHEN WANTED

SIBOLA COPPER MINES LTD. (N.P.L.)

No.

19 78

$ 153.36

PAY TO THE ORDER OF Nilo Lindroos

One hundred fifty - three dollars 36/100 DOLLARS

SIBOLA COPPER MINES LTD. (N.P.L.)
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Vancouver City Savings Credit Union
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VANCOUVER, B.C. V6C 1J8

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DEC 13 '78
VANCOUVER CITY SAVINGS CREDIT UNION
898 W. PENDER ST. VANCOUVER, B.C.

⑈16300⑆809⑈ ⑈0000015336⑈

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15 12

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Culling R.W. 1st ...

$243.00 37 hours

Nick Ukraine

Ck #159

SIBOLA COPPER MINES LTD. (N.P.L.)

19 78

PAY TO THE ORDER OF Nick Ukraine $ 243.00

Two hundred forty three dollars DOLLARS

SIBOLA COPPER MINES LTD. (N.P.L.)
ACCOUNT NO. 1202-1

Vancouver City Savings Credit Union
898 WEST PENDER STREET
VANCOUVER, B.C. V6C 1J8

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... 1 '78
VANCOUVER CITY SAVINGS
CREDIT UNION
898 W. PENDER ST., VANCOUVER, B.C.

⑆16300⑆809⑆ ... ⑈00000 24300⑈

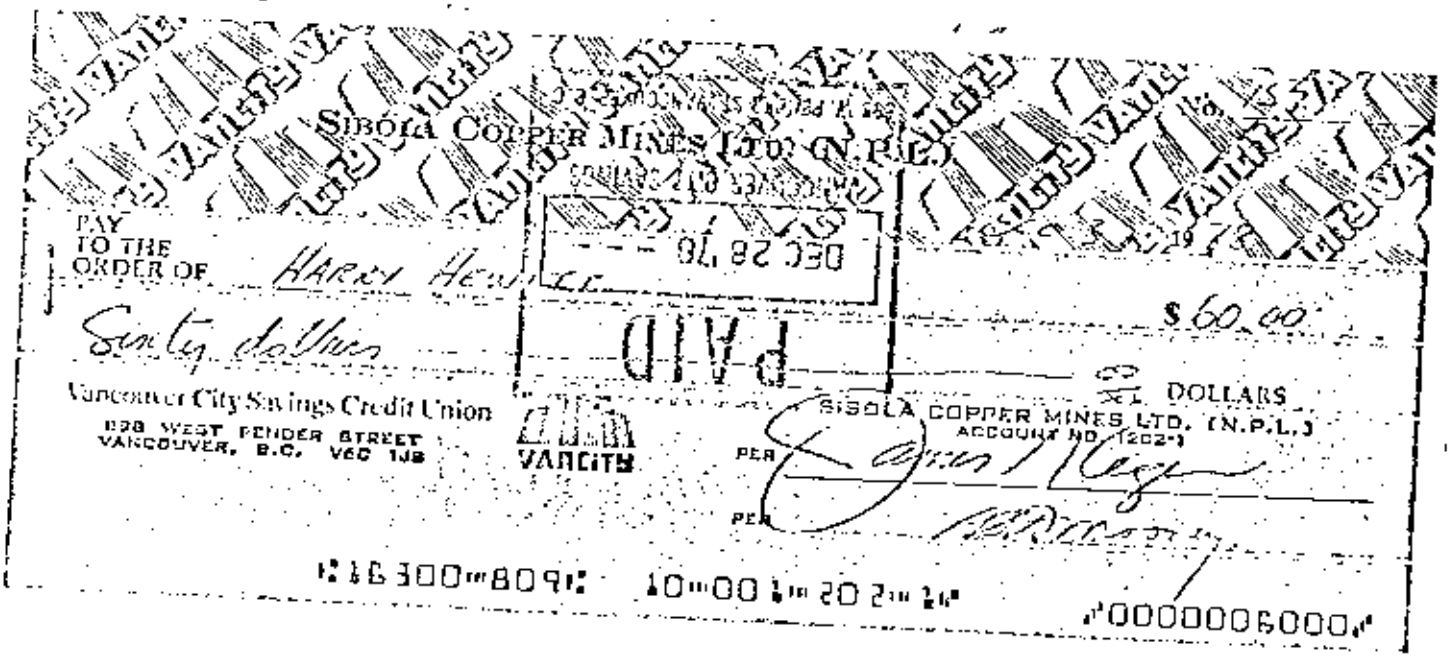
1164

H. F. Hemmett
Fr. Burns Lake.

Ent 5/75

To work on Sibola Mines Ltd.
& also $75/per drilling, blasting, mucking.
Shares at previous date or
cheque. $60.00

H. F. Hemmett



GEOPHYSICAL SURVEYING:

Contract:

MAURO G. BENELTTA	$12,318.00

MAURO G. BERRETTA

TELEPHONE (604) 462-7705

GEOPHYSICIST

20935 - 100TH AVENUE
WHONNOCK, B.C.

CANADA

December 31, 1978

IN ACCOUNT WITH : Sibola Mines Ltd.
1318-510 W Hastings St.
Vancouver, B.C.

RE : Geophysical surveys on Tets Claims, B.C., during the period September-October, 1978, and subsequent interpretation and report.

1) Induced Polarization - 21.4 km. @ $ 420/km. .....$	8988.00
2) VLF e.m. - 24 km. @ $ 75/km. .....$	1800.00
3) CEM Shootback - 6.3 km. @ 100/km. .....$	630.00
4) Mobe-demobe .....$	450.00
5) Grid re-establishment .....$	450.00
TOTAL .....$	12,318.00

Yours truly,

Mauro G. Berretta

Appendix

Meals, Lodging & Travel

Three Gables	$ 212.40
Travel	530.68
Meals	191.58
Total	$934.66

Work Distribution:

Stripping	275.69	
Access Construction	223.57	
Geological Mapping	435.40	
Total		$ 934.66

Statement

PHONE 692-3913 P.O. BOX 166

THREE GABLES SERVICE LTD.

GROCERIES — SHELL GASOLINE

Schola Mexico Paid Sept 11/78

Date 78	Invoice No.	Debit	Credit	Balance
July 21	38/441	57.85		
27	14/443	11.24		
29	38/444	8.75		
30	45/445	6.52		
July 21	48/455	13.21		
24	5/456	94.49	-	
29	9/459	6.66		
30	10/459	2.50		
31	20/459	5.68	5.05	
Aug 2	3/461	22.16		212.40

Field Meals
12.55

Guest Check

J. F. AGER
CONSULTANTS LTD.

AMOUNT
12.75

Account of Dealer Assigned to
GULF OIL CANADA
LIMITED

DAY MO YR

5532884

	112	10.86
MOTOR OIL		
AUTHORIZATION 02 97 AC BC	TAX	
	TOTAL	10.86

CUSTOMER'S COPY

RETAIN FOR STATEMENT VERIFICATION

Chief ... June 24 78

TAX

Please Pay Cashier

CHECK NO. 055644

WAITER 2.55

AMOUNT OF PURCHASE

SOLD TO

SOLD BY

DATE

PRODUCT			AMOUNT
EXTRA	ESSO	2000	52 96.35 5.06
Motor Oil			
TAX			
TOTAL			5.06

Thank you

CUSTOMER'S SIGNATURE

IMPERIAL OIL LIMITED

7785322

VVV 01154

1099 02/80

JAMES G AGER
05022900
... HOME
SUPPLIES
NIXON BC

0671 DH. BC.

030518 5436229

PRODUCT - PRODUIT	QUANT.	PRICE	AMOUNT MONTANT
GASOLINE - ESSENCE	16.3	72.4	10.72
3a.			1.35
TAX - TAXE			.47
TOTAL			12.54

X

CUSTOMER'S COPY - COPIE DU CLIENT

PLEASE KEEP THIS COPY
VEUILLEZ CONSERVER CETTE COPIE

Esso

6825040

TICKET NUMBER

PRINCE GEORGE BC

BURNS LAKE BC

CALGARY, ALBERTA, CANADA

PLACE OF ISSUE

NOT GOOD FOR TRANSPORTATION

ERASURES OR ALTERATIONS ON ANY PART OF THIS TICKET RENDERS THIS NULL AND VOID.

ENDORSEMENTS

IDENTIFICATION CHECK

IMPORTANT - HOLD UNTIL TRIP COMPLETED
NOT TRANSFERABLE - NOT GOOD FOR TRANSPORTATION

Passenger Ticket and Baggage Check, Subject to Conditions of Contract on Page 1 / Billet de passage et bulletin de bagages Soumis aux conditions de la page 1

CP Air

018 4101 632353

Name of Passenger: MR J AGER
Date of Issue: 1 JUL 79

From / De	Carrier	Flight	Class	Date	Time	Status
PRINCE GEORGE Y	2P CP	424	Y	01 JUL	500 PM	OK

To / A: VANCOUVER

Fare: 62.00
Tax: 4.95
Total: 66.95

61 9 9035
PR GEORGE CAN

Form of Payment: 519 2422 0327 225
1099 02/80
JAMES G AGER

Passenger Ticket and Baggage Check, Subject to Conditions of Contract on Page 1 / Billet de passage et bulletin de bagages Soumis aux conditions de la page 1

CP Air

018 4101 617784

Endorsements: CJJ28D

Name of Passenger: AGER J.
Date of Issue: 23 JUN 79

From / De	Carrier	Flight	Class	Date	Time	Status
VANCOUVER Y	2P CP	404	Y	23 JUN	0730	OK

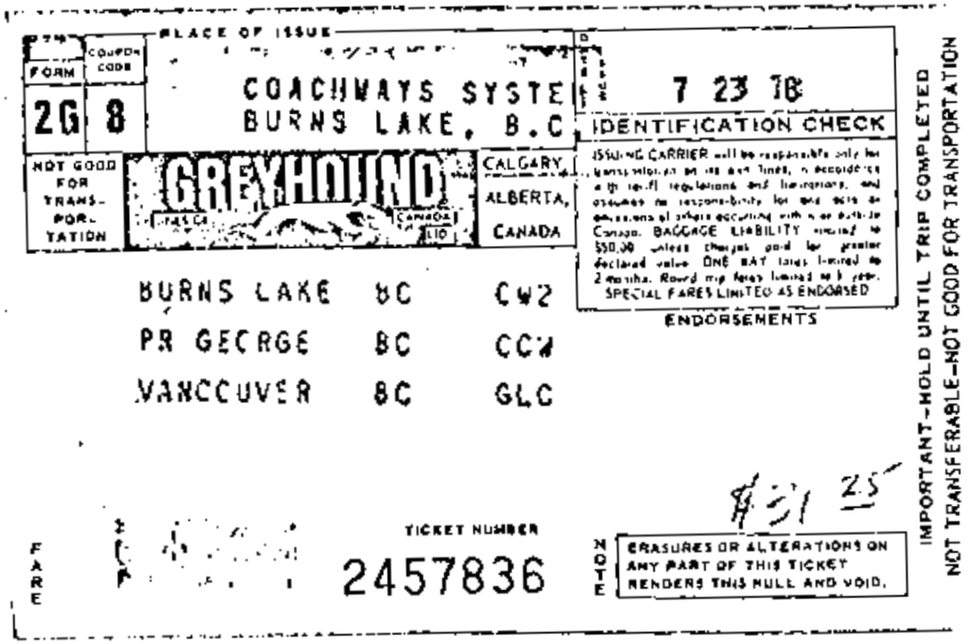
To / A: PRINCE GEORGE

Fare: 62.00
Tax: 4.95
Total: 66.95 (PD)

VANCOUVER, CAN
AP

Form of Payment: 519 2422 0327 225
1099 02/80
JAMES G. AGER

Field Travel #150 29



FORM 26 8 — COUPON CODE

PLACE OF ISSUE
COACHWAYS SYSTE
BURNS LAKE, B.C

DATE OF ISSUE 7 23 78

IDENTIFICATION CHECK

NOT GOOD FOR TRANSPORTATION

GREYHOUND — CALGARY, ALBERTA, CANADA

ISSUING CARRIER will be responsible only for transportation on its own lines, in accordance with tariff regulations and limitations, and assumes no responsibility for acts or omissions of others occurring while not on its lines in Canada. BAGGAGE LIABILITY limited to $50.00 unless charges paid for greater declared value. ONE WAY fares limited to 2 months. Round trip fares limited to 1 year. SPECIAL FARES LIMITED AS ENDORSED

ENDORSEMENTS

BURNS LAKE	BC	CW2
PR GEORGE	BC	CCW
VANCOUVER	BC	GLC

#31 25

FARE

TICKET NUMBER
2457836

NOTE: ERASURES OR ALTERATIONS ON ANY PART OF THIS TICKET RENDERS THIS NULL AND VOID.

IMPORTANT—HOLD UNTIL TRIP COMPLETED
NOT TRANSFERABLE—NOT GOOD FOR TRANSPORTATION

J. C. Ager Consultants Ltd.

EXPLORATION MANAGEMENT

[illegible] P.O. Box 292 • Pemberton, B.C. • Telephone [illegible]
[illegible] Pacific Pavilion Centre Vancouver, B.C. [illegible]

December 31, 1978

IN ACCOUNT WITH:

Sibola Mines Ltd.
#1618 - 510 West Hastings St.
Vancouver, B.C. V6B-1L8

For Geological Services:

June 23 to July 1 Property examination; grid inspection; collect rock samples,	7 days @ $100/day	$700.00
Travel	2 days @ $50/day	100.00
July 21 to Aug 3 Geological mapping; aerial photo interpretation, fault and lineament inspection; rock collection,	12 days @ $100/day	1,200.00
Travel	2 days @ $ 50/day	100.00
Sept 26 to Oct 3 Road construction and stripping layout; collect rock samples,	6 days @ $100/day	600.00
Travel	2 days @ $ 50/day	100.00
Oct 15 to Oct 26 Geological mapping; rock collection; rock prospecting in heavily overburden areas,	10 days @ $100/day	1,000.00
Travel	2 days @ $50/day	100.00
Nov 1 to Dec 31 Office mapping; inspection of rock samples under microscope; rock descriptions; polished sections and analysis:	20 days @ $50/day	1,000.00
Total		$4,900.00

James G. Ager

GEOTEX CONSULTANTS LIMITED
1103 - 100 WEST PENDER STREET, VANCOUVER, B.C. V6B 1R8, CANADA
TELEPHONE (604) 681-4643

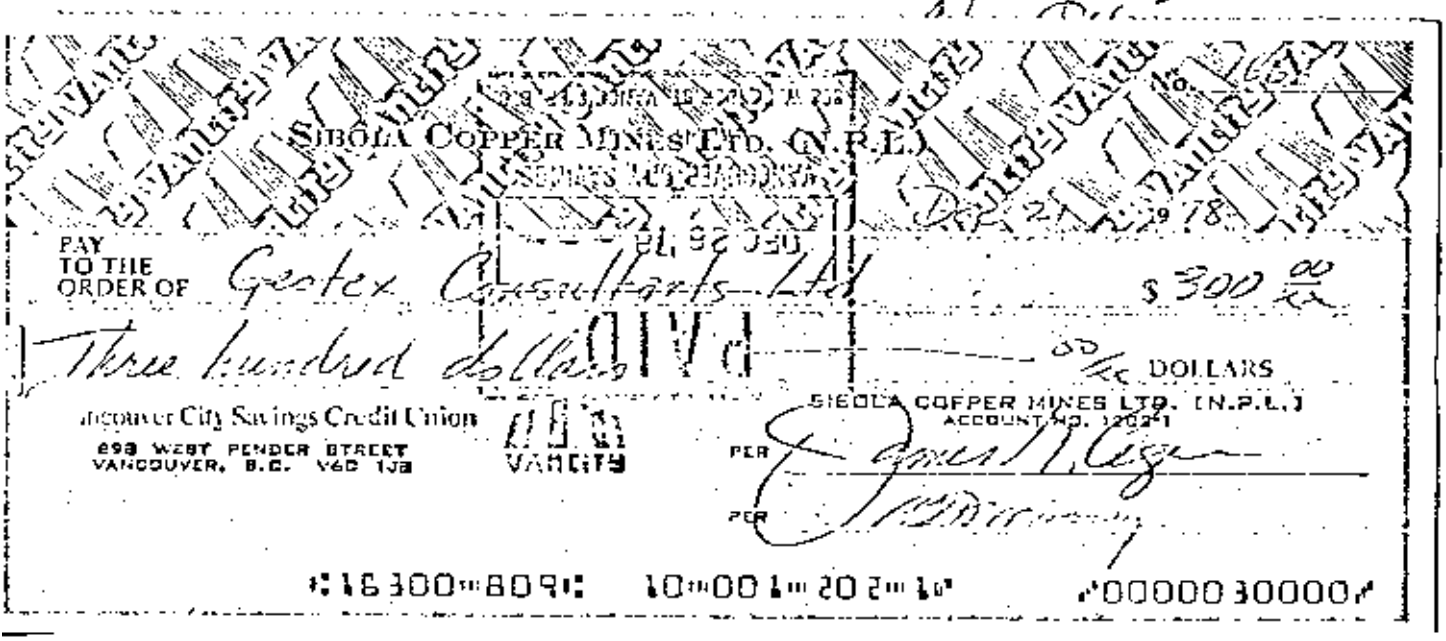
December 21, 1978

IN ACCOUNT WITH:
J. Ager,
Sibola Mines Ltd.,
#1 - 319 W. Pender St.,
Vancouver, B. C.

Petrographic study of 19 hand specimens and thin sections

Preparation of report entitled;
"PETROGRAPHY OF SAMPLES FROM SIBOLA MINE'S PROPERTY,
WHITESAIL LAKE AREA, BRITISH COLUMBIA"

TOTAL $300.00



Field Supplies & Mapping TOTAL $39.22

DOMINION BLUEPRINT & REPROGRAPHICS

A DIVISION OF DIETERICH - POST CO. OF CANADA LTD.

MAIN BRANCH	1531 WEST PENDER ST.	681-2504	DOWNTOWN	1050 WEST PENDER ST.	683-3641
D.P. NORTH SHORE	1348 MARINE DRIVE	980-6912	SOUTHSIDE	1616 WEST 3RD AVE.	732-1491
D.P. DOWNTOWN COPY CENTRE	714 W. HASTINGS ST.	683-1536			

CHARGE TO Cash

ACCOUNT NO. CCCO

PICK-UP & DELIVERY 681-7501

P.O. NO.

DATE 05/01/79

TIME WANTED WAIT

ORDERED BY

PHONE NO.

SIGNATURE

BLACK-LINE	BROWN-LINE	REPRO	3288 XEROX	PHOTO	NEGATIVE	VELLUM	MYLAR	PAPER	16 MM	OTHER	NO. OF ORIGINALS	NO. OF EACH	PROJECT NO.
☒											2	1	Blueline
											3	1	Xerox 8½x11 Bond

DESCRIPTION (OR SPECIAL INSTRUCTIONS)

Pd in Cash
05/01/79

TOTAL SQ. FT.	PRICE	AMOUNT	CODE NO.
5	.14	70	
3	.25	75	
		2 00	Min Chg
		2 00	TOTAL
		18	FED. TAX
		2 18	TOTAL
		11	PROV. TAX
		2 29	TOTAL
			MAIL DELIVERY, LABOR EXPENSE
		2 29	TOTAL

2 - 2K - Min. Chg
3 Xerox 8½x11 on Bond

REMARKS OR DELIVER TO

YOUR WORK ORDER NO. 116934

THIS IS YOUR WORK ORDER

TERMS: NET 30 DAYS
OVERDUE ACCOUNTS SUBJECT TO INTEREST

$ 39.22
26.83

519 2422 0327 225

5709544

1079 03/80

BEAVER LUMBER CO LD
BURNABY BC

X [signature] 433 4604

QTY	DESCRIPTION	AMOUNT / MONTANT
	Dept. 241	10.63
	fishing stand	
	SUB TOTAL / SOUS TOTAL	
	TAX / TAXE	0.53
	TOTAL	11.16

DATE 11/13/78

SALES SLIP - FACTURE DE VENTES
CUSTOMER COPY - COPIE DU CLIENT

PLEASE KEEP THIS COPY

VEUILLEZ CONSERVER CETTE COPIE

CASH SALE RECEIPT

9688

VANCOUVER
BURNABY
SURREY
RICHMOND
PRINCE GEORGE

NAME
ADDRESS
DATE ... 1978

QUANTITY	DESCRIPTION	PRICE	AMOUNT
2	2x4		18.00
	TAX		
	TOTAL		15.90

DOMINION BLUEPRINT & REPROGRAPHICS

26.83

A DIVISION OF DIETERICH - POST CO. OF CANADA LTD.

MAIN BRANCH	1531 WEST PENDER ST.	681-7504	DOWNTOWN	1050 WEST PENDER ST.	683-3641
D.P. NORTH SHORE	1348 MARINE DRIVE	980-6912	SOUTHSIDE	1616 WEST 3RD AVE.	732-1491
D.P. DOWNTOWN COPY CENTRE	714 W. HASTINGS ST.	683-1536			

CHARGE TO

Cook.

ACCOUNT NO. 0000

PICK-UP & DELIVERY 681-7501

P.O. NO.

DATE Sept 5/78

TIME WANTED

ORDERED BY

PHONE NO.

SIGNATURE

BLUE LINE	BLACK LINE	BROWN LINE	SCRAP	DIAZO	X-RAY	SCRAP	PHOTO	NEGATIVE	POSITIVE	PAPER	SCRAP	NO. OF ORIGINALS	NO. OF EACH	PROJECT NO.	DESCRIPTION (OR SPECIAL INSTRUCTIONS)
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	2	1		Reduce half size on Velum
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	3	6		Wade Cinda

	TOTAL NO. FT.	PRICE	AMOUNT	CODE NO.
3 - 1860 on Velum 2 each	6	140	840	0102
18 @ 2½	45	12	540	0101

REMARKS OR DELIVER TO

YOUR WORK ORDER NO.

112266

$	1380	TOTAL
$	166	FED. TAX
$	1546	TOTAL
$	77	PROV. TAX
$	1623	TOTAL
$		MAIL DELIVERY, LABOR EXPENSE
$	1623	TOTAL

TERMS: NET 30 DAYS
OVERDUE ACCOUNTS SUBJECT TO INTEREST

THIS IS YOUR WORK ORDER

4503 370 431 313

5 703

09/78 BVG

JAMES G AGER

DOMINION
BLUEPRINT
VANCOUVER BC
722553 CX0030
7400

300878

SALES DRAFT / FACTURE

DATE 8/31/78

2 1860 Bond 1/2 960

63

TAX 63

$ CDN CAN 423

CHARGEX

VISA

PLEASE RETAIN THIS COPY AS A RECORD OF YOUR TRANSACTION

Thank you
Merci

CONSERVEZ CETTE COPIE COMME PREUVE DE VOTRE TRANSACTION

CHARGEX

CUSTOMER COPY - COPIE DU CLIENT

INVOICE

PACIFIC SURVEY CORPORATION

1409 WEST PENDER STREET VANCOUVER, B.C., CANADA V6G 2S4 TELEPHONE: 683-6501

Sibola Mines Ltd.,
319 West Pender Street,
Vancouver, B.C.

Attn: Mr. Jim Ager

INVOICE No.	4555-C
DATE	26 June 1978
YOUR ORDER No.	Verbal
JOB No.	C-9502
PACKING SLIP No.	5685-C
SHIPPED VIA	Picked up

QUANTITY	DESCRIPTION	UNIT PRICE	TOTAL
	TO:		
	Lay 6 prints into a mosaic and copy it to a scale of 1-inch equals 800 feet approximately, and produce one print - Nadina Lake area:		
	Lump sum	$100.00	
	12% Federal Sales Tax	12.00	
		$112.00	
	5% Provincial Sales Tax	5.60	
			$117.60

SIBOLA COPPER MINES LTD. (N.P.L.)

No. 19

PAY TO THE ORDER OF Pacific Survey Corporation $ 117.60

One hundred seventeen dollars 60 DOLLARS

Vancouver City Savings Credit Union
890 WEST PENDER STREET
VANCOUVER, B.C. V6C 1J8

VANCITY

SIBOLA COPPER MINES LTD. (N.P.L.)
ACCOUNT NO. 1202-1

PER _____

PER _____

⑆16300⑈809⑆ 10⑈001⑈202⑈1⑈ ⑈00000117⑆60⑈

INVOICE

PACIFIC SURVEY CORPORATION

1409 WEST PENDER STREET VANCOUVER, B.C., CANADA V6G 2S4 TELEPHONE 683-6501

Sibola Mines Limited,
#101 - 319 West Pender Street,
Vancouver, B.C.

Attention: Mr. Jim Ager.

INVOICE No.	4849-C
DATE	16 November 1978
YOUR ORDER No.	
JOB No.	C-9822
PACKING SLIP No.	6002-C
SHIPPED VIA	Pickup

QUANTITY	DESCRIPTION	UNIT PRICE	TOTAL
One	2X enlargement of a portion of a mosaic at an approximate scale of 1" = 400'		
	Lump Sum	$60.00	
	12% Federal Sales Tax	7.20	
		67.20	
	5% Provincial Sales Tax	3.36	$70.56

paid 17th Nov. 78
(151)

SIBOLA COPPER MINES LTD. (N.P.L.)

No. 151

17th November 19 78

PAY TO THE ORDER OF Pacific Survey Corp. $70.56/xx

Seventy dollars 56/xx DOLLARS

PAID

Vancouver City Savings Credit Union
898 WEST PENDER STREET
VANCOUVER, B.C. V6C 1J9

VANCOUVER CITY SAVINGS CREDIT UNION

SIBOLA COPPER MINES LTD. (N.P.L.)
ACCOUNT NO. 12021

⑆16300⑆309⑈ 10⑈00 12 28 2⑈ 151⑈ ⑈0000007056⑈

DOMINION BLUEPRINT & REPROGRAPHICS

A DIVISION OF DIETERICH - POST CO. OF CANADA LTD.

MAIN BRANCH	1531 WEST PENDER ST.	681-7504	DOWNTOWN	1050 WEST PENDER ST.	683-3641
D.P. NORTH SHORE	1348 MARINE DRIVE	980-6912	SOUTHSIDE	1616 WEST 3RD AVE.	732 1491
D.P. DOWNTOWN COPY CENTRE	714 W. HASTINGS ST.	663-1536			

CHARGE TO

ACCOUNT NO. 1000

PICK-UP & DELIVERY 681-7501

P.O. NO.

DATE Nov. 24/78

TIME WANTED Monday Noon

ORDERED BY James Ager

PHONE NO. 685-1914

SIGNATURE

Sibola Mines
#101 - 319 W. Pender

NO. OF ORIGINALS	NO. OF EACH	PROJECT NO.	DESCRIPTION (OR SPECIAL INSTRUCTIONS)
1	1		twice the size on bond (black & white colour) image area only

	TOTAL SQ. FT.	PRICE	AMOUNT	CODE NO.
1 ... film neg P.574	1	4.60	4.60	03
1 KPS @ 10.5 ft	10.5	3.25	28.88	

TOTAL 4 7.65
FED. TAX
TOTAL
PROV. TAX
TOTAL
MAIL DELIVERY, LABOR EXPENSE
TOTAL

SIBOLA COPPER MINES LTD. (N.P.L.)

Nov 27 1978

PAY TO THE ORDER OF Dominion Blueprint $7.65

Seven dollars 65/100 DOLLARS

Vancouver City Savings Credit Union
898 WEST PENDER STREET
VANCOUVER, B.C. V6C 1J8

PAID
NOV 28 '78
VANCOUVER CITY SAVINGS CREDIT UNION

SIBOLA COPPER MINES LTD. (N.P.L.)
ACCOUNT NO. 1202-1
PER

⑆16300⑈809⑆ 10000 20 2⑈ ⑈0000000765⑈

Vancouver Petrographics Ltd.

8887 NASH STREET - P.O. BOX 39 - FORT LANGLEY, B.C. V0X 1J0
Telephone (604) 533-1155

INVOICE

Customer Order No.
Customer Charge Code
Ordered By:

FOR

QUANTITY	DESCRIPTION	COST
	THIN SECTIONS $4.00 ea	
	POLISHED THIN SECTIONS	
	POLISHED ORE MOUNTS	
	GROUND & LABELLED THIN SECTION REJECT SLICES	
	POLISHED MINERAL GRAIN MOUNTS	

SIBOLA COPPER MINES LTD. (N.P.L.)

No.

19

PAY TO THE ORDER OF Vancouver Petrographics Ltd $ 13.00

Thirteen dollars 00 DOLLARS

Vancouver City Savings Credit Union
698 WEST PENDER STREET
VANCOUVER, B.C. V6C 1J8
VANCITY

SIBOLA COPPER MINES LTD. (N.P.L.)
ACCOUNT NO. 1202-1
PER
PER

⑆16300⑉809⑆ 10⑉001⑉202⑉1⑈ ⑈0000001300⑈

	SHIPPING	
	TOTAL (Canadian Funds)	

Receiving Date ____________ Shipping Date ____________

Via ____________

VP

Vancouver Petrographics Ltd.

8887 NASH STREET · P.O. BOX 39 – FORT LANGLEY, B.C. V0X 1J0
Telephone (604) 533-1155

INVOICE № 1492

Pd Dec 5/78
Ch# 160

Customer Order No.
Customer Charge Code
Ordered By: Jim Ager

FOR

Sibola Mines
101- 319 West Pender Street
Vancouver, B.C.

QUANTITY	DESCRIPTION	COST
1	THIN SECTIONS ~~$X.XX~~	$ 5.00
3	POLISHED THIN SECTIONS $20.00 each	60.00
	POLISHED ORE MOUNTS	
3	Display Rocks	10.00
	GROUND & LABELLED THIN SECTION REJECT SLICES	
	POLISHED MINERAL GRAIN MOUNTS	
	MINERAL GRAIN THIN SECTIONS	
	MINERAL GRAIN POLISHED THIN SECTIONS	
	THIN SECTION K-SPAR STAINS	
	ROCK K-SPAR STAINS	
	CERAMIC PULVERIZER PLATES LAPPED	
55	Rocks for slabbing 75¢ each	41.25

SIBOLA COPPER MINES LTD. (N.P.L.)

No.

19 78

PAY TO THE ORDER OF Vancouver Petrographics Ltd $ 116.25

One hundred sixteen dollars 25/100 DOLLARS

Vancouver City Savings Credit Union
898 WEST PENDER STREET
VANCOUVER, B.C. V6C 1J8

PAID
DEC 8 78
VANCITY
VANCOUVER CITY SAVINGS CREDIT UNION

SIBOLA COPPER MINES LTD. (N.P.L.)
ACCOUNT NO. 1252-1

PER

5

78

⑆16300⑈809⑆ 10⑈00 1020 2⑈1⑈ ⑈0000011625⑈

Vancouver Petrographics Ltd.

8887 NASH STREET — P.O. BOX 39 — FORT LANGLEY, B.C. V0X 1J0
Telephone (604) 533-1165

INVOICE № 1474

Customer Order No.
Customer Charge Code
Ordered By: James G. Ager

FOR

Sibola Mines Limited
101-319 West Pender Street
Vancouver, B.C.

QUANTITY	DESCRIPTION	COST
13	THIN SECTIONS ~~$4.00~~ $5.00 each	$65.00
	POLISHED THIN SECTIONS	
	POLISHED ORE MOUNTS	
13	GROUND & LABELLED THIN SECTION REJECT SLICES 75¢ ea.	9.75
	POLISHED MINERAL GRAIN MOUNTS	
	SHIPPING	3.00
	TOTAL (Canadian Funds)	$77.75

SIBOLA COPPER MINES LTD. (N.P.L.)

19 78

PAY TO THE ORDER OF Vancouver Petrographics Ltd. $77.75/xx

Seventy seven dollars 75/xx DOLLARS

Vancouver City Savings Credit Union
698 WEST PENDER STREET
VANCOUVER, B.C. V6C 1J8

PAID
NOV 27 1978
VANCITY
VANCOUVER CITY SAVINGS CREDIT UNION

SIBOLA COPPER MINES LTD. (N.P.L.)
ACCOUNT NO. 1202-4

⑆16300⑆809⑆: 100001⑈30 2⑈1⑈ ⑈0000007775⑈

Receiving Date Nov 1, 1978

Shipping Date Nov 10, 1978

Via delivered

SEMCO

STOKES EXPLORATION MANAGEMENT CO. LTD./STE. 713 - 744 W. HASTINGS ST., VANCOUVER, B.C. V6C 1A5. TEL: 688 8541

December 1st, 1978 INVOICE NO. 777

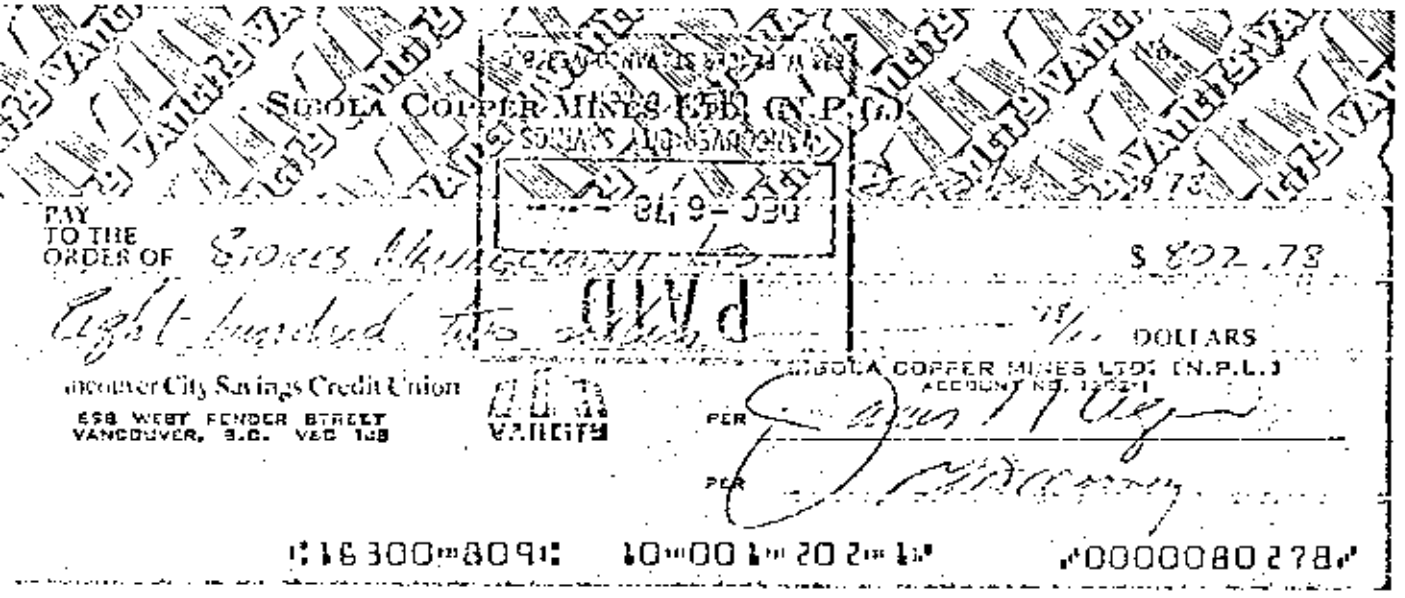
Sibola Copper Mines Ltd. N.P.L.
#101 - 319 W. Pender Street
VANCOUVER, B.C.
V6B 1T3

ATTENTION: Mr. James Ager
Director

I N V O I C E

Total Expense Report:

Air Fare	$132.00
* Car Expenses	$ 81.43
Meals & Lodging	$ 79.35
R.B. Stokes' Time	$510.00
* Min-En Laboratories Assay Report (½ will credited when we receive amount from Du Pont)	$ 82.30
TOTAL:	$885.08



J. G. Ager Consultants Ltd.

EXPLORATION MANAGEMENT

Field Office: P.O. Box 892 • Burns Lake, B.C. • Telephone: (604) 698-7369
Box 48268 Bentall Centre Vancouver, B.C. 433-4504

December 31, 1978

To: SIBOLA MINES LTD.
#1318 - 510 West Hastings St.
Vancouver, B.C. V6B-1L8

Re: Equipment Rental on the Tets Group of Claims:

3/4 Ton Fargo Truck (No milage charge)
Full Camper Unit as Field Camp; all Camp Equipment;
all Field Equipment for the 1978 Season:

July 15 - Aug 14	$ 500.00
Aug 15 - Sept 14	500.00
Sept 15 - Oct 14	500.00
Oct 15 - Nov 14	500.00
Total	$2,000.00

Total ..... $ 2,000.00

James G. Ager
James G. Ager

WARNOCK ...
WARNOCK HE...
128 ELMSLIE STREET ...

SIBOLA MINES LTD

101 - 310 WEST PENDER ST
VANCOUVER, B. C.

ACCOUNT NO. DE COMPTE
31070

DAY JOUR	MO. MOIS	YR AN	PAGE
31	10	78	01

PAYMENTS AND CHARGES PROCESSED AFTER THIS DATE WILL BE INCLUDED IN YOUR NEXT STATEMENT
TOUS LES PAIEMENTS ET ACHATS EFFECTUES APRES CETTE DATE APPARAITRONT SUR LE PROCHAIN ETAT DE COMPTE

DAY	MO.	YR	REFERENCE	AMOUNT		BALANCE
25	10	78	4512426	37.00		37.00

PLEASE MARK ITEMS BEING PAID
S.V.P. INDIQUEZ LES ITEMS PAYES

ACCOUNT NO. DE COMPTE
31070

DAY	MO.	YR	PAGE
31	10	78	01

REFERENCE	AMOUNT
4512426	37.00

SIBOLA COPPER MINES LTD. (N.P.L.)

No. 14

Oct 31 19 78

PAY TO THE ORDER OF Warnock Hersey ...

$ 37.00

Thirty seven ---------- 00/100 DOLLARS

PAID

SIBOLA COPPER MINES LTD. (N.P.L.)
ACCOUNT NO. 1202-1

VANCOUVER CITY SAVINGS CREDIT UNION

Credit Union

#0000003700#

30 DAYS

AMOUNT DUE
MONTANT DU

37.00

APPENDIX II

Petrographic Report

Geotex Consultants Ltd.

Peter B. Read , PhD.

GRID:			
30N + 53E		Sample #2	1.
4S + 48E			2.
7S + 58E			3.
28N + 64E			4.
28N + 69E			5.
32N + 52E			6.
Zinc Pit	Z-1	18N + 54E	7.
BL + 57E			8.
0 + 0			9.
BL + 76E	BL	Dome	10.
3S + 54E	#21		11.
24N + 39E			12.
4N + 36E			13.
4N + 36E			14.
4S + 45E			15.
22N + 48E			16.
BL + 44E			17.
48N + 40E	B - 1		18.
28N + 58E			19.

Nineteen Samples

I. INTRODUCTION:

This is a brief petrographic report on nineteen samples and thin sections of rocks representative of Sibola Mine's Property in the Takla-Hazelton rocks of the Whitesail map-area (Duffell, 1959). Because the specimens are not located on a geological map of the property, the rocks are subdivided on the basis of flows, tuffs, breccias, and intrusions. All rocks have undergone prehnite-pumpellyite facies metamorphism and this event is probably important in concentrating copper mineralization. Thin section BL + 44E most clearly shows this relationship where chalcocite is spatially associated with pumpellyite and calcite in what were formerly open spaces between the fragments of a volcanic breccia.

II. PETROGRAPHY OF SAMPLES:

(a) Flows:

1. Sample #2:

Dark grey, porphyritic (mafic and plagioclase) microamygdaloidal (calcite) flow

Thin Section:

The alteration has completely changed the mineralogy of the rock but has left the rock texturally untouched. Because of the complete mineralogical reconstitution, the original rock type cannot be given.

(a) Relict Mineralogy:

1. Plagioclase:

$\perp X$, $Y\wedge(010) = 16^{\circ} = An_3$ present as euhedral phenocrysts which have pumpellyite sprays in them.

2. Mafic Phenocrysts (possibly olivine):

Opaque minerals rim pseudomorphs completely composed of pumpellyite.

(b) Aleration Mineralogy

1. Quartz:

Present as xenoblastic grains up to 1.5 mm in diameter which flood matrix and has inclusions within grains which outline original undisturbed volcanic textures of the rock

2. Pumpellyite:

Present as tufts and radiating sheaves in amygdules, in the mesostasis and compose pseudomorphs of originally mafic phenocrysts.

2. Sample 4S + 48E:

Porphyritic (plagioclase), amygdaloidal (calcite) dacite flow

Thin Section:

The original mineralogy is completely altered although the texture of the rock remains unreconstituted. The presence of quartz in the matrix of the rock is taken as original quartz and not formed during alteration so that its presence is used to name the rock a dacite.

(a) Relict Mineralogy:

1. Plagioclase:

As euhedral phenocrysts up to 2 mm long with a composition given by $X'\wedge(010)\rfloor a = 16^{o}(-) = An_{0}$ and as microlaths in the matrix.

2. Quartz:

Small (0.05 mm in diameter) anhedral grains restricted to the matrix.

3. Opaque Minerals:

Present as a dusting throughout the matrix.

(b) Alteration Mineralogy:

1. Calcite:

Fills amygdules and is sparsely disseminated throughout the rock.

3. Sample 7S + 58E:

Medium grey, amygdaloidal (calcite) microporphyritic (plagioclase) flow

Thin Section:

The rock is mineralogically completely altered but is texturally unreconstituted. The alteration prevents application of a compositional name to the rock.

(a) Relict Mineralogy:

1. Plagioclase:

Weak trachytic microlaths up to 0.1 mm long of albite.

2. Opaque Minerals:

Fine dustings of opaque minerals are probably original and are not found in the amygdules.

(b) Aleration Mineralogy:

1. Calcite:

Fills amygdules.

4. Sample 28N + 64E:

Medium grey-green aphanitic flow cut by thin (4mm) calcite veinlets.

Thin Section:

The rock is mineralogically completely altered but the texture remains unchanged.

(a) Relict Mineralogy:

1. Plagioclase:

As euhedral laths up to 0.3 mm long $X'\wedge(010)\rfloor a = 16^{\circ}(-) = An_0$

(b) Aleration Mineralogy:

1. Calcite:

As veins and amygdule fillings as well as permeating the groundmass.

2. Chlorite-montmorillonite:

Amygdule filling and alteration of original glassy material between plagioclase microlaths.

5. Sample 28N + 69E:

Maroon, porphyritic (plagioclase) flow with a few (1%) volcanic fragments.

Thin Section:

The rock is completely altered mineralogically but is texturally unchanged.

(a) Relict Mineralogy:

1. Plagioclase:

Euhedral phenocrysts with $X'A(010) \perp a = 15^{\circ}(-) = An_0$.

(b) Alteration Mineralogy:

1. Calcite:

2. Quartz

6. Sample 52E + 32N:

Medium grey, porphyritic (plagioclase), amygdaloidal (calcite and pumpellyite) flow.

Thin Section:

The original mineralogy is completely altered but the rock remains texturally unchanged.

(a) Relict Mineralogy:

1. Plagioclase:

Phenocrysts up to 0.8 mm long with $X'A(010) \perp a = 12\frac{1}{2}^{\circ}(-) = An_7$.

2. Mafic phenocrysts:

Totally altered with opaque minerals rimming pseudomorphs composed of pumpellyite and calcite.

(b) Aleration Mineralogy:

1. Pumpellyite:

Pale green to bluish green fibers in amygdules and pseudomorphs.

2. Chlorite-montmorillonite:

3. Calcite:

Fills large amygdules up to 15 mm long.

7. Sample Zinc Pit (Z-1?):

Medium grey-green porphyritic (plagioclase) flow, breccia or intrusion.

Thin Section:

The rock is texturally unchanged but the mineralogy is completely altered. Uncertainty exists as to whether the rock is a flow in contact with a crystal tuff at one end of the thin section, a breccia in which the specimen represents mostly a breccia fragment sitting in a tuff matrix, or possibly a fine-grained hypabyssal intrusion.

(a) Relict Mineralogy:

1. Plagioclase:

Euhedral laths up to 1.0 mm long of complexly twinned plagioclase with $X'\wedge(010)\perp a = 14^{\circ} = An_4$.

2. Mafic Minerals:

Opaque mineral rimmed pseudomorphs composed of chlorite-montmorillonite and calcite are up to 0.8 mm long.

(b) Alteration Mineralogy:

1. Chlorite-montmorillonite:

Present as pale green matted flakes filling fractures and the major constituent of mafic pseudomorphs.

2. Calcite:

Fills fractures and amygdules and is part of the pseudomorphs of original mafic minerals

3. Quartz:

Xenoblastic quartz grains up to 0.4 mm in diameter which overprint preserved volcanic textures.

8. Sample BL 57E:

Medium grey, porphyritic (original mafics - 5%) flow cut by thin calcite veins (0.5 mm thick)

Thin Section:

The igneous mineralogy is completely altered but the igneous textures remain unchanged.

(a) Relict Mineralogy:

1. Plagioclase:

Matrix plagioclase laths up to 0.2 mm long as albite with an obvious trachytic texture.

2. Mafic minerals:

Opaque-rimmed pseudomorphs up to 3 mm long now consisting totally of calcite, chlorite-montmorillonite and opaque minerals.

(b) Alteration Mineralogy:

1. Calcite:

Forms thin veins up to 0.4 mm in thickness and as xenoblastic grains to 0.2 mm in diameter scattered throughout the mesostasis.

2. Celadonite:

Bluish green pleochroic phyllosilicate forming from what was originally glass between the plagioclase microlaths.

3. Chlorite-montmorillonite:

Pale green, very fine flakes forming in what was originally glass between the plagioclase microlaths.

(b) Tuff:

1. Sample 0 + 0:

Medium grey, fine-grained, unbedded dacite tuff.

Thin Section:

The mineralogy is completely altered except for the quartz which is considered as a possible original mineral. The textures remain unchanged.

(a) Relict Mineralogy:

1. Plagioclase:

Present as angular grains 0.3 mm in diameter

2. Quartz:

As angular grains 0.1 to 0.3 mm in diameter, clear, unaltered and uniaxial positive.

(b) Alteration Mineralogy:

1. Calcite:

Xenoblastic grains permeating rock.

2. Chlorite-montmorillonite:

Very fine-grained, pale green, felted matrix.

2. Sample BL DOME:

A nonbedded, buff, very fine-grained dacite tuff

Thin Section:

The mineralogy is complete altered, except for quartz which is considered original, but the texture remains unchanged.

(a) Relict Mineralogy:

1. Quartz:

Rounded grains 0.1 mm in diameter.

2. Plagioclase:

Subhedral grains 0.1 mm long and a few 0.4 to 0.8 mm long $X'A(010) \perp a = 16^{\circ}(-) = An_0$.

3. Sample #21:

A fine-grained maroon crystal lithic dacite tuff which is unbedded.

Thin Section:

The texture remains unreconstituted, but the mineralogy is completely altered except for quartz which is considered relict.

(a) Relict Mineralogy:

1. Quartz:

Clear grains <0.1 mm in diameter which are uniaxial positive.

2. Plagioclase:

Cloudy to clear laths <0.1 mm long which rarely pseudomorph glass shards.

(b) Alteration Mineralogy:

1. Calcite:

Fills fractures and is sparsely present throughout rock.

2. Chlorite-montmorillonite:

Pale green mats of flakes.

3. Bornite-chalcocite:

Restricted to areas which are calcite and montmorillonite-chlorite filled fractures

4. Sample 24N + 39E:

Very fine-grained medium-grey crystal (plagioclase) tuff with no bedding.

Thin Section:

Although this tuff appears very similar to the others described, quartz is absent. The mineralogy is completely altered but the textures remain unchanged.

(a) Relict Mineralogy:

1. Plagioclase:

Angular grains up to 0.2 mm long.

(b) Alteration Mineralogy:

1. Calcite:

Fine, xenoblastic grains permeating rock.

(c) Breccia:

1. Sample 4N + 36E:

Medium grey volcanic breccia composed of porphyritic (plagioclase), amygdaloidal (calcite) fragments in a matrix of calcite.

Thin Section:

Calcite ± quartz ± albite ± chalcopyrite show textures of open-space filling around the volcanic fragments. The textures of the rock remained unchanged but the original mineralogy is completely altered.

(a) Relict Mineralogy:

1. Plagioclase:

Euhedral phenocrysts up to 0.8 mm long. $\perp Z, \wedge X$ (001) = 21° = An_2 and $\perp X$, $Z\wedge$(001) = 13°, $\perp X$, $Y\wedge$(010) = 14° = An_5.

(b) Alteration Mineralogy:

1. Quartz:

Xenoblastic grains which flood rock leaving inclusions undisturbed which outline the original volcanic textures.

2. Chlorite-montmorillonite:

Fine pale green flakes which fill microamygdules along with calcite.

3. Calcite:

Replacing matrix in fragments and filling amygdules.

2. Sample 4 + 00N 36 + 00E:

Medium grey porphyritic (plagioclase) and amygdaloidal (calcite) volcanic breccia with calcite open space filling between breccia fragments.

Thin Section:

The original mineralogy is completely altered but the textures remain

untouched. The polished thin section shows that chalcopyrite is present in the calcite open-space filling.

(a) Relict Mineralogy:

1. Plagioclase:

Euhedral phenocrysts up to 1.0mm long $\perp X$, $Z\wedge(001) = 13^{\circ}$ and $\perp X$, $Y\wedge(010) = 16^{\circ} = An_3$.

(b) Alteration Mineralogy:

1. Quartz:

One small area 3 mm in diameter is flooded with quartz which has left the volcanic texture undisturbed but replaced the former minerals.

2. Chlorite-montmorillonite:

Medium to pale greeen fillings of amygdule and in the calcite cement.

3. Calcite:

Fills amygdules and forms a cement around fragments along with the albite ± opaque minerals.

4. Opaque Minerals - chalcopyrite:

Blebs up to 0.4 mm diameter in calcite cement.

3. Sample 4S + 45E:

Maroon, porphyritic (plagioclase) volcanic breccia with fragments cemented by carbonate.

Thin Section:

The original mineralogy is completely altered but the texture remains unchanged

(a) Relict Mineralogy:

1. Plagioclase:

Euhedral phenocrysts up to 1.5 mm long with $\perp X$, $Z\wedge(001) = 16^{\circ}$,

$\perp X$, $YA(010) = 18\frac{1}{2}^{\circ} = An_0$ and $\perp X$, $ZA(001) = 15^{\circ}$, $\perp X$, $YA(010) = 17^{\circ} = An_0$.

(b) Alteration Mineralogy:

1. Calcite:

Fills veins and cements breccia fragments.

2. Quartz:

Fine grained outside rim on some calcite cement.

4. Sample 22N + 48E:

Porphyritic (augite and plagioclase) amygdaloidal (calcite) volcanic breccia.

Thin Section:

This rock is unusual in that augite is preserved, but otherwise the mineralogy is completely altered even though the textures remain untouched.

(a) Relict Mineralogy:

1. Plagioclase:

Euhedral phenocrysts up to 0.8 mm long $X'A(010) \perp a = 15^{\circ}(-) = An_0$

2. Augite:

Present as originally euhedral phenocrysts up to 3 mm long which are colourless, lack dispersion and have $2V_z = 55^{\circ}$.

(b) Alteration Mineralogy:

1. Pumpellyite:

Fills veins and amygdules.

2. Quartz:

Fills amygdules and partly replaces augite

3. Calcite:

Fills veins and amygdules and partly replaces augite.

5. Sample BL + 44E:

Medium grey-green microporphyritic (plagioclase) volcanic breccia with the space between volcanic breccia fragments filled by calcite with thin pumpellyite rich rims next to the fragments.

Thin Section:

Although the original mineralogy is completely altered the textures of the rock remain unchanged. The space around the breccia fragments was filled as an open space with a pumpellyite rim first, closely associated with chalcocite and them the remainder and majority filled with calcite.

(a) Relict Mineralogy:

1. Plagioclase:

As phenocrysts up to 1.0 mm long but mainly as microlaths 0.1 mm long with a weak trachytic texture. $X'\wedge(010)\perp a = 15^{\circ}(-) = An_0$.

(b) Alteration Mineralogy:

1. Pumpellyite:

Forms as a rim up to 0.3 mm thick in the open space filling next to the breccia fragments

2. Chalcocite:

Although sparsely disseminated as very fine grains within the breccia fragments, its largest concentration is closely associated with pumpellyite in the calcite filling between the fragments.

3. Calcite:

Open space filling between breccia fragments, fracture fillings, amygdule fillings, and part of the original mafic pseudomorphs.

4. Chlorite-montmorillonite:

Forms a major part of the rare pseudomorphs after original

mafic phenocrysts.

(d) Hypabyssal Intrusions:

1. Sample B-1:

Light grey-green, medium-grained (4 mm) augite (35%) metadiorite or metagabbro with a weak trachytic texture.

Thin Section:

The importance of this sample and the diabase (28N + 58E) is that both rocks have been through the same regional metamorphism as the volcanic rocks. Although the original mineralogy is partly preserved in this rock, the plagioclase composition is no longer the original composition. Textures remain unchanged.

(a) Relict Mineralogy:

1. Plagioclase:

Euhedral and subhedral laths up to 5 mm long. $\perp X$, $ZA(001) = 13^{o}$, $\perp X$, $YA(010) = 17^{o} = An_{2}$.

2. Augite:

Subhedral grains up to 2 mm diameter with $2V_{z} = 55^{o}$.

(b) Alteration Mineralogy:

1. Pumpellyite:

Pale green to colourless radiating sheaves with mixed sign of elongation and $2V_{z} = 40^{o}$. It replaces mafic minerals and plagioclase.

2. Prehnite:

Radiating "bow-tie" sheaves which are length-fast with $2V_{z}$ moderate; replaces plagioclase.

3. Chlorite-montmorillonite:

Pale green to locally oxidized orange-brown mats of fine flakes.

2. Sample 28N +58E:

Light grey-green, fine to medium grained plagioclase augite diabase cut by fractures filled with calcite and epidote.

Thin Section:

The original mineralogy remains partly in the form of augite and altered plagioclase. Although the textures have remained unchanged, uncertainty exists as to whether this rock is a porphyritic flow or an hypabyssal intrusion.

(a) Relict Mineralogy:

1. Augite:

Large colourless grains up to 5 mm long with an ophitic texture.

2. Plagioclase:

Euhedral laths with an ophitic texture; very likely albite.

(b) Alteration Mineralogy:

The alteration mineralogy is present in veins and not in the surrounding rock. It consists of the following minerals:

1. Prehnite:

"Bow-tie" sheaves which are length-fast.

2. Epidote:

Golden greenish yellow prisms up to 0.3 mm long.

3. Calcite:

4. Albite:

5. Pumpellyite:

6. Quartz:

7. Chlorite-montmorillonite:

CERTIFICATION

I, Peter B. Read, do hereby certify that:

1. I am a practicing Consultant Geologist resident at 4490 Angus Drive, Vancouver, B.C.

2. I am a graduate of the University of British Columbia in Geological Engineering BASc 1957 and MASc 1960 and from the University of California, Berkeley in Geology Ph.D 1966.

3. I have practiced my profession as a geologist continuously for 22 years since my graduation first as an employee of Texas Gulf Sulphur Co., then as a technical officer of the Geological Survey of Canada, followed by nine years of teaching with an emphasis on structural geology and petrology at the University of Otago (1965-1969), Carleton University (1969-1970) and the University of British Columbia (1970-1974), and finally as a consulting geologist (1974-).

4. This report is based on samples provided to me by Mr. J. Ager of Sibola Mines Ltd.

5. I have no interest in sibola Mines Ltd., nor do I expect to acquire any interest.

Geotex Consultants Limited,
#1103 - 100 W. Pender Street,
Vancouver, B.C.
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Peter B. Read
President

December 21, 1978.

APPENDIX III

Rock Sample Descriptions

GEOLOGICAL MAPPING

Geological Mapping: Rock Sampling

Rock Location and Description

Map: Geology Figure 8

16S + 58E - Altered, medium grey, fine grained tuff; calcite replacing rock, 30%.

16S + 57E - Very fine grained maroon tuff; pitted; calcite 25% of rock.

16S + 54E - Very fine, medium grey tuff; near colourless calcite disseminated throughout, 15% calcite.

16S + 52E - Fine,medium grey tuff; highly altered calcite, 20%.

16S + 48E - A white breccia with maroon fragments ¼ mm or less; a distinct rusty weathering, from very fine pyrite and siderite.

16S + 46E - Highly altered, light grey-green tuff.

10S + 52E - Dark grey, fine highly altered flow; some euhedral feldspar remnants.

8S + 52E - Fine, medium grey, calcarious tuff; slickensides; veinlets calcite infilled, 0.25 mm or less.

8S + 53E - Fine, light green altered tuff; some calcite infilling.

6S + 58E - Same as 7S + 58E.

7S + 58E - Fine, dark grey volcanic tuff; heavy black manganese stain; amygdaloidal 1 mm filled with brown calcite and green alteration minerals; calcite, 30%.

6S + 56E - Highly altered, medium grey tuff; 40% calcite, fine throughout, 1 mm average or less.

12S + 41E - Medium grey flow breccia; quartz/silica replacement, 40%.

8S + 40E - Medium grey volcanic flow(?); highly altered; calcite 20% replacement; green spaces coated with green sericite mica (?) and alteration minerals; infilled with calcite.

8S + 42E - Medium grey flow; highly altered; 20% green alteration minerals and calcite; very fine maroon porphyry flow; very altered; green minerals infilling 20%.

8S + 44E - Fine, light grey-green,highly altered, sugary tuff; 30% calcite replacement.

8S + 46E - Maroon,porphyritic flowwith euhedral plagioclase; hematite and specular hematite in matrix.

8S + 47E - Maroon feldspar porphyry; euhedral plagioclase, some copper (?) with black specular hematite as chalcocite (?) plagioclase 1 mm or less.

7S + 47E - Light grey porphyritic flow; highly altered; some very fine euhedral black minerals.

10S + 49E - Maroon, porphyritic plagioclase volcanic breccia, large fragments, angular, 1 cm to 0.5 cm and smaller; cemented by calcite; some shiny black, hard, metallic minerals(?).

8S + 50E - Fine, medium grey calcarious tuff; slickensides; veinlets, calcite infilled 0.25 mm or less.

4S + 52E - Highly altered, fine, light grey tuff; some chalcopyrite in calcite veinlets 0.5 cm wide.

4S + 53E - Very fine, light grey tuff; altered.

4S + 54E - Completely altered, light grey flow; veinlets cutting rock, 1 mm and finer.

4S + 56E - Medium grey, altered tuff; 30% calcite, fine, 0.25 mm or less.

4S + 60E - Medium grey tuff; 50% calcite, microscopic to 5 mm replacing rock and filling vesicules.

4S + 28E - Altered, medium grey flow; hematite euhedral crystals; altered.

4S + 33E - Highly altered, grey-green tuff, green alteration minerals; sugary texture; chalcopyrite blebs disseminated throughout (and zinc?).

4S + 41E - A maroon, dacite tuff with chlorite/montmorillonite plagioclase laths, 1 mm and less, and some chalcocite (?) in open space fillings.

4S + 45E - Very altered, medium grey tuff; calcite, 50%, larger crystals, 3-4 mm; some chalcopyrite filling amygdules.

4S + 43E - Highly altered, medium grey volcanic flow; hematite as euhedral inclusions.

5S + 48E - Medium grey volcanic flow; specular hematite riming amygdules.

4S + 50E - Highly altered, medium grey flow.

4S + 51E - A pale maroon plagioclase, porphyritic flow.

BL + 74E (BL - Dome) BL + 74E - A very fine grained dacite tuff with some very fine disseminated pyrite; see Peter Read, Petrography Report for details.

BL + 65E - Brown, mushy texture with anhedral quartz grains, 1-1½ mm and calcite in brown-grey groundmass; small outcrop of dyke (?) material.

BL + 64E - Very fine, brittle, dark grey highly calcareous tuff.

BL + 54E - Medium grey volcanic flow, highly fractured and altered; calcite infilled; near vertical fracturing; almost breccia.

BL + 49E - Completely altered volcanic flow; green alteration minerals, chlorite-montmorillinite; heavily slickensides, serpentized (?); completely altered light grey tuff, calcite, 50% green chlorite coating, open amygdaloidals; bornite-chalcocite in open space filling after chlorite-montmorillinite.

BL + 48E Base 48 - Dark grey, high porous tuff; calcite 30%; bornite infilling open spaces.

BL + 44E - Light green, completely altered tuff; calcite veins to 1 cm, with flecks of chalcopyrite on contact with host tuff rock; medium grey flow cut by calcite veinlets, 1 mm and less; rim of chalcocite on veinlet contact; euhedral hematite, some specular hematite on rims in groundmass.

BL + 47E - Red and green, highly altered, fine grained maroon tuffs with green alteration minerals.

BL + 2E 0 + 0 - See Peter Read, Petrography Report.

4N + 62E - Angular, highly silicous, volcanic breccia; silica flooding around angular fragments of light brown tuff.

4N + 59E - Completely altered, medium green-grey tuff; highly calcareous, sugary crystalline texture.

4N + 58E - Light red-green, medium to fine plagioclase diabase.

4N + 57E - Light red-green, medium to fine plagioclase diabase.

6N + 56E - Chalcocite veinlets in altered plagioclase diabase.

5N + 54E - Volcanic breccia, infilled by calcite, quartz and pink (secondary feldspar?), more than 1 cm wide; rim textures of silica, then calcite; bornite and chalcocite as blebs within calcite and with green pumpellyite (?); some rock fragments rounded and replaced by calcite and silica.

4N + 53E - Fine, light grey plagioclase porphyritic flow, 2 mm and less, highly altered; very rusty weathering; some chalcopyrite.

4N + 50E - Fine grained, red groundmass volcanic flow with highly altered, green alteration minerals; some calcite veinlets.

4N + 48E - Medium grey, fine tuff; highly altered amygdaloidals filled with calcite; green rim of chlorite-montmorillonite; calcite, approximately 25%.

4N + 44E - Fine, dark grey volcanic flow; alteration calcite amygdaloidal 15%; some green montmorillonite alteration.

6N + 61E - Very fine, dark grey dense tuff; some transparent calcite, no veinlets.

BL + 49E - Completely altered volcanic flow; green alteration minerals, chlorite-montmorillinite; heavily slickensides, serpentized (?); completely altered light grey tuff, calcite, 50% green chlorite coating, open amygdaloidals; bornite-chalcocite in open space filling after chlorite-montmorillinite.

BL + 48E Base 48 - Dark grey, high porous tuff; calcite 30%; bornite infilling open spaces.

BL + 44E - Light green, completely altered tuff; calcite veins to 1 cm, with flecks of chalcopyrite on contact with host tuff rock; medium grey flow cut by calcite veinlets, 1 mm and less; rim of chalcocite on veinlet contact; euhedral hematite, some specular hematite on rims in groundmass.

BL + 47E - Red and green, highly altered, fine grained maroon tuffs with green alteration minerals.

BL + 2E 0 + 0 - See Peter Read, Petrography Report.

4N + 62E - Angular, highly silicous, volcanic breccia; silica flooding around angular fragments of light brown tuff.

4N + 59E - Completely altered, medium green-grey tuff; highly calcareous, sugary crystalline texture.

4N + 58E - Light red-green, medium to fine plagioclase diabase.

4N + 57E - Light red-green, medium to fine plagioclase diabase.

6N + 56E - Chalcocite veinlets in altered plagioclase diabase.

5N + 54E - Volcanic breccia, infilled by calcite, quartz and pink (secondary feldspar?), more than 1 cm wide; rim textures of silica, then calcite; bornite and chalcocite as blebs within calcite and with green pumpellyite (?); some rock fragments rounded and replaced by calcite and silica.

4N + 53E - Fine, light grey plagioclase porphyritic flow, 2 mm and less, highly altered; very rusty weathering; some chalcopyrite.

4N + 50E - Fine grained, red groundmass volcanic flow with highly altered, green alteration minerals; some calcite veinlets.

4N + 48E - Medium grey, fine tuff; highly altered amygdaloidals filled with calcite; green rim of chlorite-montmorillonite; calcite, approximately 25%.

4N + 44E - Fine, dark grey volcanic flow; alteration calcite amygdaloidal 15%; some green montmorillonite alteration.

6N + 61E - Very fine, dark grey dense tuff; some transparent calcite, no veinlets.

8N + 58E - Highly altered, green-grey volcanic flow; calcite filling some shattered rock fragments.

8N + 56E - Highly altered, plagioclase augite diabase.

8N + 55E - A medium grey shattered volcanic flow; completely altered.

8N + 54E - Medium grey porphyritic (plagioclase 1 mm or less) volcanic flow.

8N + 52E - Medium grey porphyritic (plagioclase 1 mm or less) volcanic flow; some euhedral hematite and copper (?) minerals.

8N + 50E - Altered maroon feldspar (plagioclase) flow, with 40% of rocks as green fibrous shelves filling open spaces; calcite infilling; amygdules, 1 mm and less.

8N + 46E - Very fine dark grey completely altered tuff (of flow?); amygdaloidals filled with quartz, calcite, green montmorillonite, small area of chalcopyrite within calcite amygdules.

8N + 47E - Very fine, dark grey completely altered tuff (or flow?); amygdaloidals filled with quartz, calcite, green montmorillonite; small area of chalcopyrite with calcite amygdaloidals.

8N + 43E - Fine, medium grey plagioclase flow (plagioclase 0.25 mm or less); completely altered.

8N + 42E - Fine, maroon porphyritic dacite (?) flow; completely altered; amygdaloidal calcite and alteration minerals; some chalcopyrite within calcite open space filling.

8N + 41E - Completely altered, light grey plagioclase porphyritic volcanic flow, 1 mm or less; shattered, almost breccia; chalcopyrite within calcite and green montmorillonite infilling.

7N + 41E - Grey, finer grained breccia, 2 mm average, some fragments 7 mm; some disseminated pyrite.

7N + 40E - Dark grey, very fine tuff; highly altered; blebs and disseminated pyrite and chalcopyrite throughout.

8N + 34E - Light grey, coarser crystallized tuff, 1 mm or less; blebs of pyrite, very fine.

OVERBURDEN

8N + 0E - Very fine, light grey tuff; pyrite disseminated; euhedral cubes and dodecahedron; very fine grained.

12N + 64E - A buff, angular tuff breccia, some fragments bleached (?) white; marcasite occurs as open space filling (2½ cm average) rimming fractures; silica flooding and emplacement.

11N + 62E - Medium grey, fine grained tuff; cut by calcite veinlets, 3 mm or less.

16N + 62E - Medium grey, fine grained tuff; some shattering; calcite infilled.

12N + 60E - Medium grey, highly altered volcanic flow; calcite amygdules.

12N + 56E - Large fragments of a brecciated maroon tuff, cemented by calcite; chalcopyrite throughout calcite and green pumpellyite; light grey-green, medium grained plagioclase augite diabase.

12N + 52E - Native copper in quartz - calcite veinlet, 1½ cm wide at collection point.

12N + 53E - Fine maroon tuff; some amygdules; altered.

12N + 42E - Highly altered; light grey, sugary textured tuff; some green mineralization around calcite amygdules, 2 m.m. or less.

13N + 42E - Medium grey fine volcanic flow.

13N + 41E - Very altered; fine grained calcite impregnated and cementing in some rocks, to 50% calcite; medium grained tuff; green alteration minerals; disseminated chalcopyrite throughout.

24N + 64E - Medium grey, very fine tuff (?); a small amount of chalcopyrite.

24N + 67E - Very fine green-grey, highly altered and somewhat brecciated, calcarious, crystalline tuff; fractured; calcite replacing 15%.

24N + 62E - Light green tuff with very fine chalcopyrite.

24N + 51E - A completely altered red-green breccia; red ground mass; 50% green alteration minerals; calcite in circular blebs; a rusty orange weathering.

24N + 44E - Completely altered, vesicular volcanic flow; infilled and/or replaced with calcite (?) 40%; some hematite blebs, 0.5 m.m. or less.

24N + 40E - A very fine light grey tuff, weathering rusty; caused by fine pyrite or siderite?

24N + 43E - Light grey volcanic tuff; calcite infilled & with veinlets 0.5 m.m. or less; one bleb chalcopyrite, 1 m.m. and very fine dusting of pyrite (?) throughout; weathering rusty.

24N + 42E - Light grey to slightly green tuff; calcite infilled.

25N + 41E - Light grey, very fine tuff; rusty weathering.

24N + 92E - White "bleached" volcanic tuff, fine sugary texture, very fine pyrite dusting, 0.1 m.m. or less; some brecciation.

28N + 69E - Described by thin section, P. Read; euhedral; pyrite disseminated, plus some chalcopyrite (?).

32N + 38E - Fossils; light grey, very fine grained tuff; Cephalpod and Brachiopods; hard brittle rocks, baked zone?, "Belemnite of Lower-Middle Jurassic Age, Smithers Formation, Hazelton Group" (Glen Woodsworth, Geological Survey of Canada).

30N + 38E - Very fine, light grey tuff; conchoidal fracture; rusty weathering on old surfaces, some calcite, 10% (?).

28N + 39E - Fine, medium grey tuff.

31N + 38E - Very fine dusting of pyrite; some brecciation and infilling with calcite; tuff?

32N + 44E - A mushy, granular, dark green matrix tuff; calcite 40%; .25 mm or less calcite euhedral crystals.

32N + 46E - Medium grey volcanic tuff; some calcite 10%.

30N + 57E - A light maroon porphyritic (plagioclase) flow; altered; a small amount of chalcopyrite; quartz crystals intergrown into open vugs.

32N + 52E - A completely altered, medium grey, amygduloidal calcite and green alteration minerals in volcanic flow.

32N + 65E - Dense, fine, light red volcanic flow; highly altered.

35N + 65E - Dense, very fine volcanic flow (?); calcite and quartz veinlets 1 mm or less.

38N + 28E - A grey-green, rounded fragment tuff breccia; some siliceous intermixed fragments to ½ cm; 2 mm average, with fine green ground mass (alteration minerals); some visible pyrite and chalcopyrite.

39N + 61E - Fine, light maroon volcanic tuff: conchoidal fracture; dense baked zone?; cut by small calcite veinlets 0.25 mm or less; also fine disseminated calcite.

40N + 61E - Fine, light-grey-reddish volcanic tuff; same as 39N + 61E.

40N + 32E - Sample from creek bottom; rocks not far from bedrock; fine, white, very siliceous altered tuff; disseminated pyrite and chalcopyrite (?); black manganese stain on fractures and a surface coating on rocks.

50N + 34E - Medium grey, fine, siliceous tuff; conchoidal fracture; rusty surface; some fractured and fine calcite veinlets.

48N + 54E - Maroon volcanic breccia in a matrix of green alteration minerals; green radiating fibres and calcite infilling.

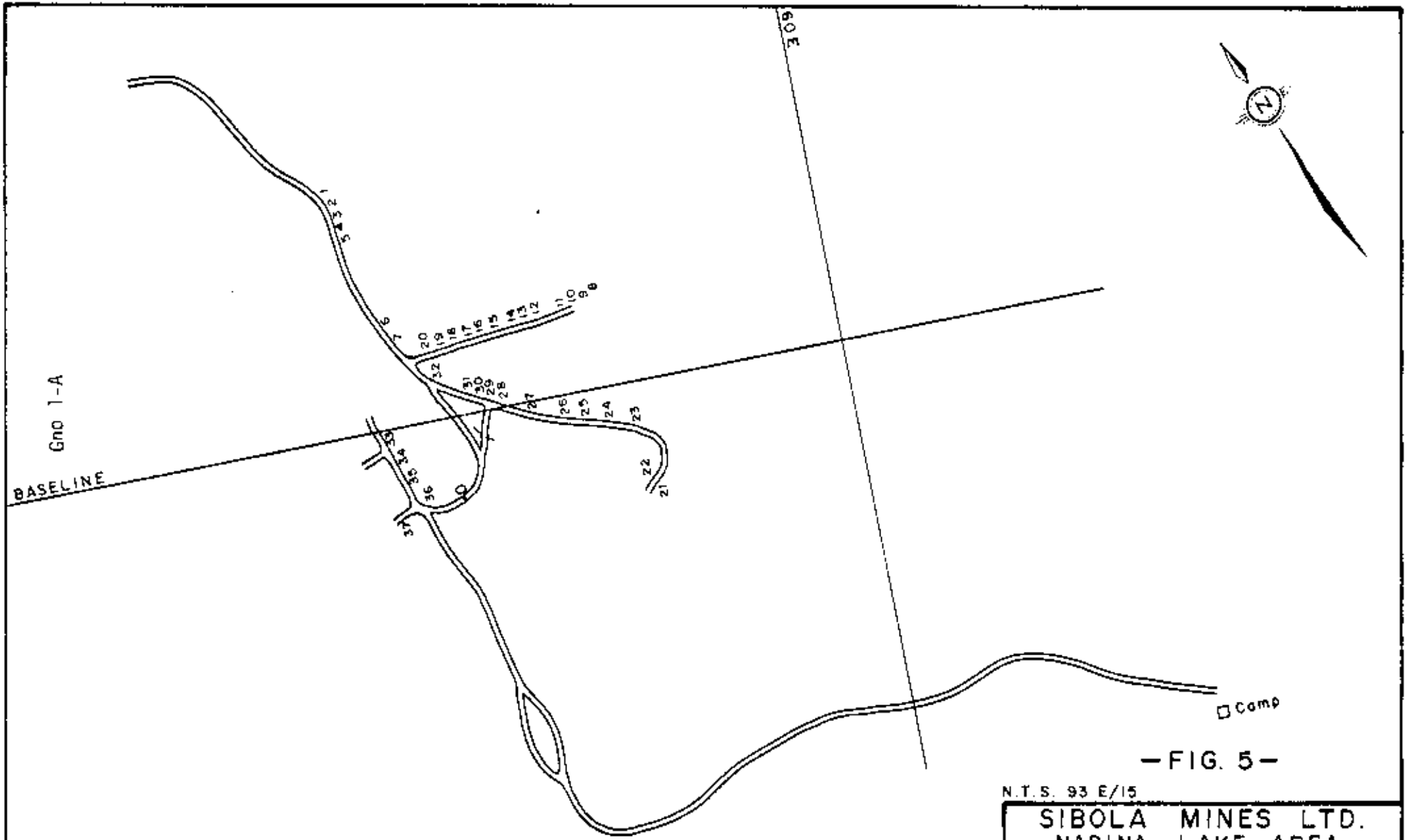
48N + 61E - Fine, medium grey volcanic tuff (?); hard, compact, fractured.

APPENDIX IV.

Rock Sampling

Numbered locations

GEOLOGICAL MAPPING



—FIG. 5—

N.T.S. 93 E/15

SIBOLA MINES LTD.
—NADINA LAKE AREA—

ROCK SAMPLE
No. LOCATION

JAMES G. AGER
BURNABY, B.C.

DATE: JAN./79

Geological Mapping: Geological Rock Sampling

Numbered Locations

Map: No. Locations Figure: 5

1. Very fine, dark grey plagioclase feldspar porphyritic flow (1 mm or less); fine parallel fractures; completely altered.

2. Very fine grey and maroon tuff; calcite inclusions, fine (1 mm or less) and veinlets 3 mm and less; green alteration minerals in open space fillings before calcite.

3. Completely altered, green volcanic rock; epidote, chlorite, montmorillonite.

4. Fine, medium grey, completely altered volcanic flow; calcite infilled; pseudomorphs of feldspar, now calcite, 0.5 mm and less; also calcite inclusions; dark green alteration mineral riming calcite opening, range 1 mm and less, up to 7 mm.

5. Similar to # 4; dark grey porous flow; completely altered; 30% calcite.

6. Very fine, dark grey flow; euhedral hematite.

7. Completely altered, fine maroon tuff; replaced 60% by calcite-sericite-silica inclusions and 0.25 mm - 2.5 mm cross-cutting veinlets.

8. Volcanic breccia; rounded fragments, 6 mm and smaller; mixture maroon tuff and grey volcanic flows.

9. Fine, completely altered, light grey volcanic flow.

10. Light grey, "bleached?" pink plagioclase flow; completely altered; very fine metallic; positive reaction to zinc test.

11. Light grey, "bleached" pink plagioclase flow; completely altered.

12. Grey groundrock pink plagioclase feldspar, 1 mm and less; volcanic flow, highly altered.

13. Fine, grey-green volcanic flow; completely altered.

14. Dark grey, plagioclase feldspar flow; completely altered; calcite infilling open spaces, 0.1 mm to2 mm.

15. Pink light grey, plagioclase feldspar porphyritic flow; completely altered; calcite replaces feldspar.

16. Fine, medium grey volcanic flow; but more altered than # 17; shattered rock, 70% replaced by calcite and alteration minerals; green montmorillonite-pumpellyite product.

17. Fine, medium grey volcanic flow; highly altered; hematite; green alteration minerals.

18. Very, very fine grained, maroon tuff; brittle fracture.

19. Fine, medium grey volcanic flow; some altered euhedral Augite (?).

20. Fine, medium grey volcanic flow; highly altered.

21. See Report; P. Read.

22. Dark grey, altered volcanic flow; euhedral hematite.

23. Very fine, maroon dacite tuff.

24. Altered, very fine, dark grey volcanic flow; fractured with fine calcite veinlets.

25. Volcanic breccia, 1 cm and less in size, rounded fragments; green alteration minerals; mainly maroon fragments plus mixture of other flows and tuffs.

26. Light grey, altered feldspar porphyritic flow, bleached to lighter colour; red rusty weathering, Siderite?; calcite replaces feldspar.

27. Volcanic angular breccia, 5 mm and less, in red groundmass; some fine, black metallic minerals (?).

28. Highly altered, plagioclase feldspar flow, 1 mm and less; medium grey groundmass.

29. White bleached tuff (?) or breccia (?) or feldspar porphyry (?) with very fine pyrite.

30. Altered plagioclase feldspar porphyritic flow; 3 mm and less in medium grey groundmass; very altered; bright rusty iron oxidation on surface; some pyrite.

31. White bleached tuff or breccia; euhedral, finely disseminated pyrite, 0.1 mm or less.

32. Altered, medium grey volcanic flow; euhedral hematite.

33. Completely altered, light grey tuff; green alteration minerals; calcite 20%; hematite forms on slickensides.

34. Completely altered, medium grey volcanic tuff; 50% calcite; some chalcopyrite-bornite in open space fillings; green alteration minerals.

35. Completely altered, medium grey volcanic tuff; 50% calcite; some chalcopyrite-bornite in open space fillings; green alteration minerals.

36. Volcanic breccia, pink plagioclase feldspar in light grey groundmass; chalcopyrite and some bornite.

37. Plagioclase feldspar porphyry; 1 mm and less; altered; in dark grey groundmass.

38. Completely altered, feldspar porphyry, black shattered fault gouge material; completely altered volcanic flow (?) or tuff (?); malachite stain on surface.

A P P E N D I X V

Rock Sampling

Mineralized Locations

Geological Mapping: Mineralized Rock Samples Located on Figure 8

Geology Map (By Co-ordinate Location)

16S + 58E - Small amount of chalcopyrite in an altered, medium grey, fine, highly calcareous tuff; calcite infilling amygdules and transparent crystals throughout the rock; approximately 40% calcite.

6S + 38E (Tets #28) - Chalcopyrite, sphalerite and galena occur in open space fillings and in fractures within a very highly porous tuff and volcanic breccia. The mineralogy is given as:

	Total %	Sulph. %	Range	Average
Chalcopyrite	4	40	.15 - .02 mm	.10 mm
Galena	4	40	.15 - micro.	.02 mm
Sphalerite	2	20	.15 - .02 mm	.10 mm
Covellite	trace amounts			
Gangue	90			

Chalcopyrite occurs as original open space filling or as a replacement. Sphalerite displays a distinct rim texture around this chalcopyrite and replaces angular rock breccia. Galena is scattered throughout the matrix of the rock as fine (0.02 mm) anhedral grains that appear later than chalcopyrite and sphalerite.

7S + 58E - Very, very fine chalcopyrite/pyrite dissemination, 0.05 mm throughout; amygdules as open space fillings; related to green alteration minerals.

3S + 54E - Sample #21; see Report: Petrography by P. Read, Page 8; bornite-chalcocite infilling of metamorphic chlorite-montmorillonite fractures and open spaces.

4S + 52E - One small amount chalcopyrite and bornite within open space calcite filling.

2S + 48E - Completely altered, fine, medium grey, highly altered tuff; calcite infilled; bornite infilling open spaces with green alteration; calcite 30%, inclusions 1½ cm down to 2 mm or less.

4S + 50E - Dark grey highly altered volcanic tuff; some very fine sphalerite.

4S + 45E - Small amount of chalcopyrite and bornite blebs, 0.5 mm or less, in highly altered grey-green tuff; calcite infilling, 3 mm or less in size.

2S + 47E - Volcanic breccia; maroon angular fragments, ¼ cm - 1 cm; suspended in completely altered chlorite-montmorillonite-calcite "cement"; chalcopyrite occurs throughout the altered groundmass, 1 mm or less.

1N + 49E - A white, bleached, volcanic breccia with surface coating of white talc (?); fine disseminated pyrite, euhedral; assay: 0.16 oz. silver.

BL + 74E (BL - Dome) - A buff, very fine, altered and bleached tuff; very, very fine disseminated pyrite, 0.1 mm or less, euhedral.

BL + 49E - Very fine, light grey, altered tuff; 50% infilled calcite; bornite occurs as amygdaloidal infillings after green alteration minerals and calcite.

BL + 47E - No mineralization visible but highly altered maroon volcanic flow with 30% green alteration minerals.

BL + 44E - Very fine, altered, medium grey volcanic flow; mafic hematite; rock shattered, with calcite infilling, open spaces with green alteration minerals and chalcocite riming the fracture; veins, ½ - 2 cm, irregular and smaller irregular blebs with chalcocite.

2N + 44E - Light grey, altered volcanic flow, mafic hematite, shattered; bornite filling after green alteration minerals and calcite; some silica flooding.

4N - 6N + 62E - 66E (Gran Show) - Buff, very fine highly altered tuff and tuff breccia; silica flooded; angular fragments rim coated with sphalerite; some cadmium and tungsten associated, some very fine disseminated chalcopyrite; fault gouge zone (?); fragments 3 cm (some larger), angular, cemented by siderite.

5N + 54E - A completely altered, maroon-green volcanic breccia (flow from or tuff?); fragments 4 cm and less, angular altered green sericite-montmorillonite open space filling with silica rim on fragments and some flooding and replacement of rocks; bornite occurs between as blebs, 2 mm and less, with green montmorillonite and sericite and calcite; also flesh pink mineral that may be secondary feldspar.

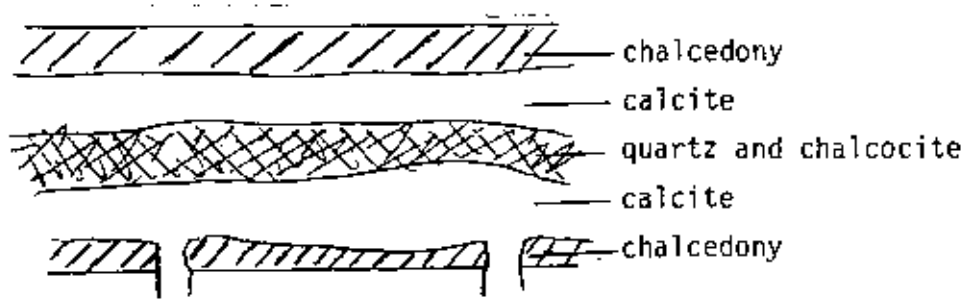
4N + 53E - Small amount chalcopyrite; very rusty weathering; rock description given.

6N + 56E - Light grey-maroon, fine to medium grained plagioclase diabase; the minerology was found to be:

	Total %	Sulph. %	Range	Average
Chalcocite (with Digenite)	21.5	85	.001 - 1 mm	0.5 mm
Bornite	2.0	8	.001 - .1 mm	0.1 mm
Covellite	1.5	7	replacing	
Gangue (quartz and calcite)	75.0			

Bornite is being replaced, as in Figure 3, with the borders fading into chalcocite. Chalcocite and digenite form lancet-shaped lamellae, suggesting a temperature above 105°. * W. Uytenbogaardt.

Proof of different fracturing and mineralizing phases can be deduced from this sample, as in the following diagram:



Fracture
1. Initial opening; chalcedony depositing on surface walls.
2. Cross-cutting; injection of calcite.
3. Widening? injection of quartz and sulphides.
4. Angular fracture of chalcocite; additional calcite in fracture.

The silver is contained in solid solution with the copper.

4N + 36E (Shovel Show) - See P. Read's rock description, page 9; pyrite and chalcopyrite disseminated finely, 1 mm or less, throughout rocks; some small amount of galena in late phase calcite cutting whole rock.

8N + 46E - See rock description; small amount chalcopyrite infilling open space in calcite; 1 mm and less.

8N + 42E - See rock description; small disseminated chalcopyrite and bornite, 0.25 mm and less within green alteration minerals.

8N + 41E - See rock description; shattered, almost completely altered rocks; 0.2 mm and less blebs, chalcopyrite within calcite and green alteration minerals.

12N + 64E - Pyrite open space filling; see rock description.

7N + 40E - See rock description; medium grey tuff; fine disseminated pyrite, 0.5 mm or less.

12N + 56E - A highly altered red-grey, volcanic breccia; calcite replacing and cementing material; fine chalcopyrite scattered throughout in calcite, 1.5 mm and less.

12N + 52E - Native copper, fine euhedral and dendritical, 0.5 mm or less, in a largely quartz veinlet, 2 cm across; rock completely altered; fine dark green, serpentized (?) volcanic flow.

12 - 13N + 41E (Swamp Show) - Highly altered, very fine medium grey tuff; vesicles infilled with calcite, 3 mm and less; chalcopyrite, 2 mm blebs and finer coating openings and fractures; green montmorillonite-chlorite alteration.

In the above samples, original pyrite has been shattered and replaced by chalcopyrite. Sphalerite, however, is the dominant mineral and exhibits a somewhat molted texture. Sphalerite is later than chalcopyrite, as sphalerite forms a rim texture around chalcopyrite.

24N + 64E - A very fine, dark grey, highly altered calcarious tuff; breaks with hard conchoidal fracture (baked?); chalcopyrite occurs on a few grains, 0.5 mm or less, through the rocks, as an infilling of open spaces.

24N + 62E - Highly altered, fine - medium grained, green, highly calcareous tuff; small amount chalcopyrite, as 0.25 or less mm inclusion, open space filling within calcite.

30N + 57E - Light maroon, plagioclase feldspar, 2 mm or less, fractured; small amount chalcopyrite filling open spaces within rocks.

28N + 69E - A light buff tuff, fractured, with pyrite infilling irregular veins, 6 mm and less; disseminated throughout as euhedral pyrite; a flesh coloured feldspar? or pink calcite? is included.

30N + 53E (#2 or Emerald Show) - See P. Read, page 1, for rock description.

A sample taken contains bornite and chalcopyrite as the dominant sulphides. They occur in fractures, replacement, and in open space fillings. The chalcopyrite occurs as large anhedral grains and as exsolution laths in bornite, as in Figure 1. Covellite borders nearly all of the grains and is a replacement of the bornite and chalcopyrite. A small amount of the minerals have also altered to malachite. The mineralogy is:

	Total %	Sulph. %	Range	Average Size
Bornite	23	56	.001 - 4 mm	1.0 mm
Chalcopyrite	15	37	microsc. - 1 mm	0.25 mm
Covellite	2	7	microsc. - .5 mm	
Hematite	10		microsc. - 1 mm	0.25 mm
Gangue	50			

32N + 42E - A very, very fine, dark grey, brittle tuff; shattered, with calcite infilling; a small amount of chalcopyrite occurs as 2 mm or less, within calcite.

48N + 40E (B-1) - Altered Gabbroic "plug"' small amount chalcopyrite, 0.2 mm or less, occurs within alteration minerals in the matrix.

17N + 51E (T-6; Jims Pit) - The TETS-6 minerals occur in a highly brecciated volcanic tuff, as injection material in the fractures surrounding fragments penetrating the host. The dominant sulphides include bornite, chalcopyrite, chalcocite and covellite. Bornite is the dominant mineral, being replaced (?) by chalcocite and covellite. Bornite also contains some chalcopyrite as exsolution material. The minerals occur as follows:

	Total %	Sulph. %	Size Range	Average
Bornite	24.0	60	microsc. - .33 mm	.33 mm
Chalcocite	12.0	30	microsc. - .33 mm	.15 mm
Covellite	3.5	9	vary replacement	
Gangue	60.0			
Chalcopyrite	0.5	1	microsc. exsolution	

18N + 54E (Zinc Pit 2-1) - See rock description, P. Read, page 5, #7. The sulphides occur within a highly altered volcanic rock. One polished section gave the following results:

	Total %	Sulph. %	Size Range	Average
Chalcocite	16.0	40	.25 - microsc. mm	.20 mm
Bornite	14.0	35	.25 - microsc. mm	.20 mm
Chalcopyrite	4.0	10	exsolution	
Covellite	6.0	15	replacement	
Limonite	5.0			
Hematite	5.0			
Gangue	60.0			

Chalcocite appears as surrounding bornite with the boundaries fading together. This indicates replacement of bornite by chalcocite. Exsolution chalcopyrite also occurs in bornite, with fat-lenses like orientations.

Another sample gave the following results:

	Total %	Sulph. %	Size Range	Average
Sphalerite	16.0	40	1.5 - microsc. mm	.5 mm
Pyrite	12.0	30	1.0 - microsc. mm	.5 mm
Chalcopyrite	8.0	20	3.0 - microsc. mm	1.0 mm
Galena	1.5	4	.05 - microsc. mm	.03 mm
Covellite	0.5	1	replacement	
Hematite	2.0	5		
Gangue	60.0			

GEOLOGICAL MAPPING:

James G. Ager - Geologist		$4,900.00
Geotex Consultants		300.00
Mapping Supplies	$ 39.22	
	26.83	
Pacific Survey	117.60	
	70.56	
	7.65	261.86
Petrographic Service	13.00	
	116.25	
	77.75	207.00
Ron Stokes, Engineer		802.78
Field Camp & Truck Rental		1,000.00
Meals, Lodging & Travel		435.40
Assays		50.00
Total		$7,957.04

APPENDIX VI

GEOPHYSICS

Report by Mauro G. BERRETTA

MAURO G. BERRETTA

TELEPHONE (604) 462-7705

GEOPHYSICIST

28935 - 100TH AVENUE
WHONNOCK, B.C.

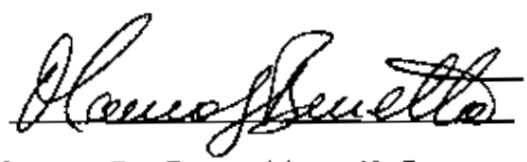
CANADA

SUMMARY

Induced polarization, VLF and CEM surveys on the TETS property of Sibola Mines Ltd., have outlined two zones of possible economic interest. It is recommended that these be drilled in order to determine their significance. Several other anomalies have also been partially defined. Additional geophysical work is required before a more diagnostic assessment can be made.

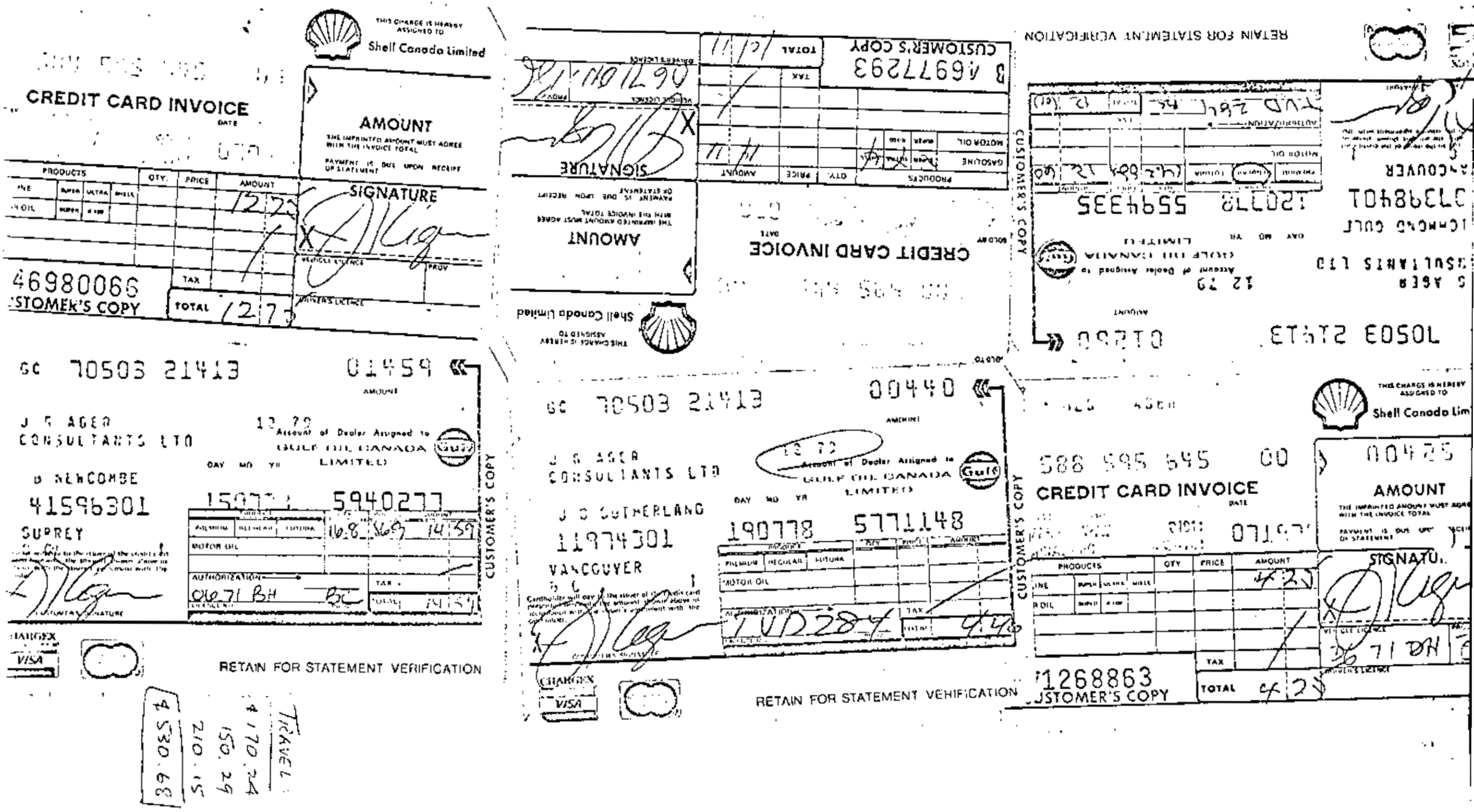
January 15, 1979
Whonnock, B.C.

Respectfully submitted



Mauro G. Berretta, M.Sc.

Geophysicist



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					TAX	
					TOTAL	12 73

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MOTOR OIL					
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PREMIUM	REGULAR	FUTURA	QTY	PRICE	AMOUNT
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			TOTAL	14.40

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MOTOR OIL	SUPER	3 YEAR				
					TAX	
B 79948640 CUSTOMER'S COPY					TOTAL	7.00

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5217048

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CUSTOMER'S COPY

5219856

RETAIN FOR STATEMENT VERIFICATION

CUSTOMER'S COPY

5847368

RETAIN FOR STATEMENT VERIFICATION

RETAIN FOR STATEMENT VERIFICATION

THIS CHARGE IS HEREBY ASSIGNED TO
Shell Canada Limited

CREDIT CARD INVOICE

AMOUNT

SIGNATURE

B 80776034
CUSTOMER'S COPY

01113

Account of Dealer Assigned to
GULF OIL CANADA
LIMITED

5345133

RETAIN FOR STATEMENT VERIFICATION

Fielá Mear.
TOTAL $65.94

-0 00.63	-0 02.97
-0 03.72	-0 00.37
-0 00.27	-0 01.19
-0 02.29	-0 04.53 CA
-0 02.12	
-0 04.62	
-0 05.24	
-0 20.73 CA	

JAMES G AGER

5 248

1 85

1 85

CUSTOMER SIGNATURE X

CHARGEX

Floods TRUCK STOP **Restaurant**

FLOODS – HOPE, B.C.

DATE: 9/26/78

029405 | WAITER | NO. SERVED | TOTAL 2

GUEST RECEIPT – THANK YOU

CHECK NO. 157310

51-13298

Guest Check

745

meal

TAX

Please Pay Cashier

CHECK NO. 085254

F-B Meals.
TOTAL $125.64

Meals:

125.64
65.94
$191.58

CANADA
SAFEWAY

• A 004346 T

• Tx 000038
Gr • 000048
Gr • 000079
Gr • 000079
Gr • 000023
Gr • 000137
Gr • 000119
Gr • 000070
Gr • 000105
Gr TI 000115
Gr • 000045
Gr • 000159
Gr • 000119
Gr • 000393
Gr • 000080
Gr TI 000109
Gr • 000099
Gr TI 000079
Gr • 000129
Gr TI 000152
Gr TI 000117
Gr • 000119
Gr • 000035
Gr • 000035
Gr • 000113
Gr • 000113
Gr • 000303
Gr • 000301
Gr • 000061
Gr • 000067
Gr • 000250
Gr • 000039
Gr • 000050
Gr • 000005
Gr TI 000179
Gr • 000065
Gr • 000205
Gr • 000100
Gr • 000327

0346 21 U

THANK YOU
PRINCE GEORGE 2

519 2422 0327 225

02/80

1099 JAMES G AGER

OLD SPAGHETTI FACTORY
0321010234 VAN
660 951 BC

170778 5075175

SERVICES	9 85
TAX · TAXE	
TIP / POURBOIRE	2 00
TOTAL	11 85

PLEASE KEEP THIS COPY
VEUILLEZ CONSERVER CETTE COPIE

ON ON TEA GARD

24 85

TOTAL

PLEASE PAY CASHIER

A No 13650

4503 370 431 313

09/78 DNG

JAMES G AGER

DATE 08/03/78

5 719081

HUSKY HOUSE
RESTAURANT
CACHE CREEK BC
631614 CX0030
0640

SALES DRAFT · FACTURE

AMOUNT / MONTANT	5 80
TAX / TAXE	75
TIPS / POURBOIRE	
TOTAL	6 55

SIGNATURE X

CUSTOMER COPY - COPIE DU CLIENT

TAX

FOOD

Guest Check

703817

Guest Check

087681

TAX

Please Pay Cashier

CHECK NO. | WAITER'S COPY | 5 20

WHITE SPOT LIMITED

VANCOUVER, VICTORIA and NANAIMO, B.C.

Oct 13 19 28

RECEIVED FROM .....

FIRM .....

2 MEALS @ ..... = 5.20

J.C

2 Lunches 5 50

2 Coffee .70

CHECK NO | COVERS | WAITER | TOTAL

157310 | | | 6.20

TABLE OF CONTENTS

LIST OF FIGURES

1. INTRODUCTION

During the summer and early fall of 1978, a series of geophysical surveys were carried out on the TETS Mineral Claims of Sibola Mines Ltd. The field work was largely done by J. Ager (geologist) and D. MacQuarrie (geologist/geophysicist), with the help of three field assistants. The project was under the overall supervision of M. G. Berretta, geophysicist.

The TETS property is located 8km. northeast of Twinkle Lake, which is about 65 km. south of Houston, B.C. Access is via gravel logging roads from Burns Lake, B.C., some 140 km. away. The topography is hilly, in places rugged, with elevations in the range 1000m. to 1450m. Forest vegetation is abundant everywhere. Bedrock is exposed primarily along fairly steep ridges, Overburden cover is more extensive at lower elevations, and in benches and ravines.

The geophysical work carried out consisted of the following.

1) Induced polarization - 21.4 km.
2) VLF e.m. - 24 km.
3) CEM shootback - 6.3 km.

I.P. instrumentation used was a Sabre Mk II frequency domain system, employing a dipole-dipole array, with a dipole of 200 ft., (61m.), n=2, and a frequency span of 0.3-10 Hz. VLF equipment consisted of a Sabre Model 27 unit, while the shootback e.m. was carried out using a Crone CEM system, employing medium and high frequencies, and a coil separation of 100 ft. (30m.).

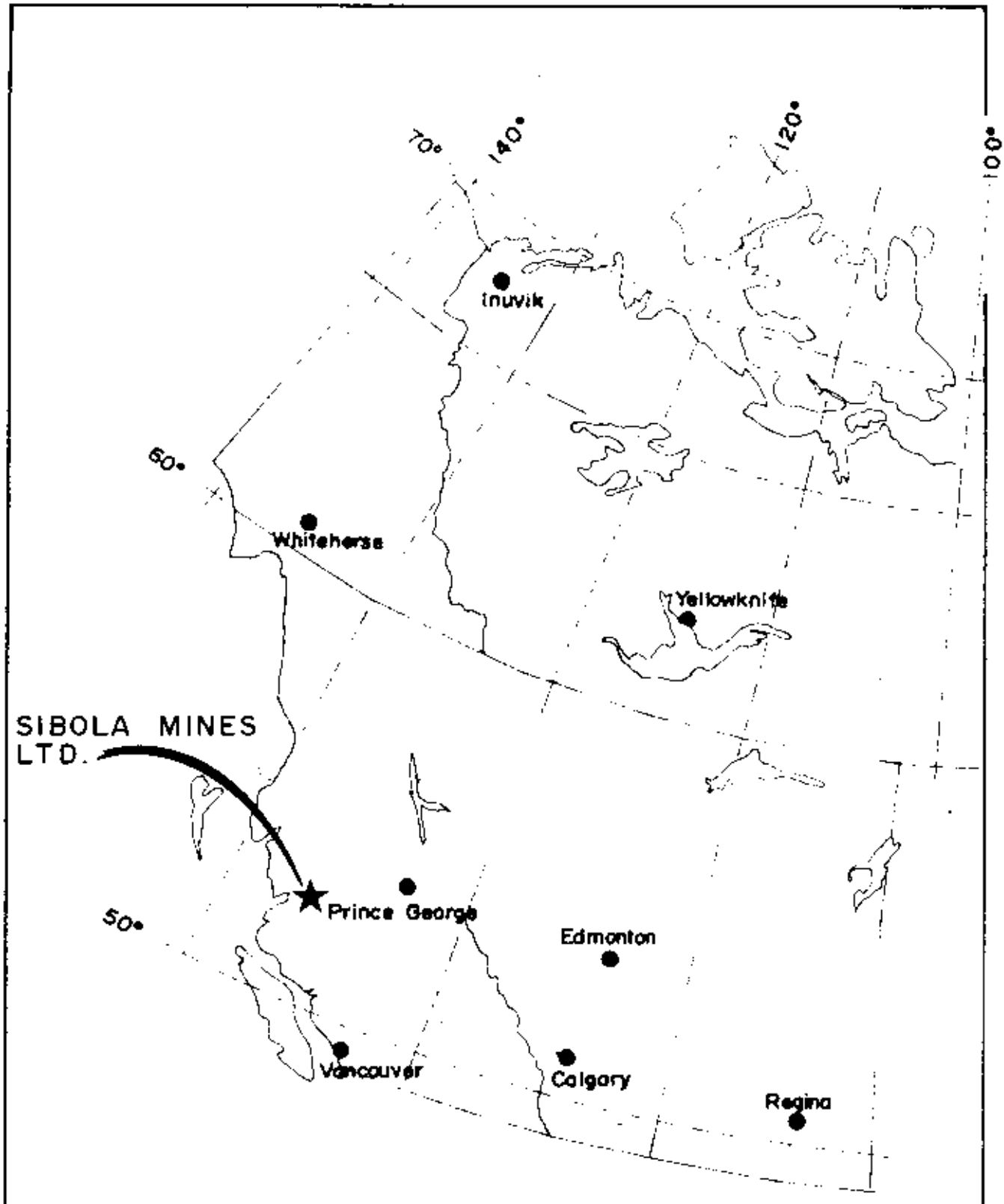


FIG. 1

LOCATION MAP

TETS GROUP

DATE: JAN./79

JAMES G. AGER
BURNABY, B.C.

2. GEOLOGY

The property is underlain mainly by Jurassic Age rocks of the Hazelton Series. These consist primarily of volcanic flows, tuffs, breccias and some intrusions. In the central part of the property, the volcanics are highly altered and are fairly magnetic. At the north end of the claims, an altered gabbro plug and a diabase dike have been mapped. Extensive faulting has been interpreted from ground observations and air photo studies.

Mineralization discovered on the property consists of pyrite, chalcopyrite, sphalerite, galena and chalcocite. These occur within nearly all of the altered volcanic rocks.

The intent of the geophysical surveys was to detect the presence of semi-massive to massive copper, zinc, silver mineralization of possible volcanogenic origin, similar to that found at Goosly and Nadina. Previous geochemical, geological and magnetic data had encouraged additional work.

3. GEOPHYSICAL RESULTS AND INTERPRETATION

3.1 INDUCED POLARIZATION RESULTS

Resistivity

The resistivity data is shown in Figure 3. Values obtained are in the range from about 150 ohm-m. to about 2700 ohm-m. The most obvious features are two zones of high resistivity in the west

half of the survey area. One is at about 40E from the baseline to 16S, while the other is located from 50E to 70E on lines 4S to 24N. These are indicative of competent rock units, or possibly the same unit disrupted by a NW-SE fault. North trending lows at the extreme west end of the grid, and at about 48E, from 4N to 16S, may be representative of more conductive sediments and/or altered volcanics. The remainder of the survey area displays mild variations from medium to low resistivities, with a few small localized highs. Here, geologic interpretation is more difficult, since such variations can be caused by variable overburden depth.

Percent Frequency Effect

The pfe data is shown in Figure 4. Background is in the range of 0-2%. In view of the small values observed over the entire survey area, readings larger than 4% are tentatively considered anomalous. The main feature is a NNE trending narrow anomaly from the baseline to 16S, at about 42E, which appears connected to a second anomalous zone on lines 8N to 12N, at about 48E. Both of these occur within regions of resistivity high. The lack of a shootback or VLF response over this arcuate zone indicates that the source of the anomaly is probably disseminated metallic mineralization such as minor pyrite, chalcopyrite, or possibly magnetite.

Flanking this region are two sub-anomalous, small features. One is on the baseline at 36E, and the other is at 49E, 8S. The

former is on the flank of a resistivity high, and adjacent to a long NE trending VLF conductor, which is probably due to a fault and/or contact. The latter is within a resistivity low, and correlates well with VLF and CEM responses, both on lines 8S and 12S. It thus appears that this anomaly may be due to semi-massive to massive mineralization.

Detail i.p. data (Figure 5) suggests that the above anomalies are due to sources that are probably within 50 ft. (15m.) of surface.

At the north central edge of the grid, at 74E, 24N, an anomalous area is partially defined . Additional work is required here in order to determine its amplitude and extent.

3.2 VLF RESULTS

The Fraser filtered VLF tilt angle data is shown in Figure 2. Nearly a dozen, narrow, long conductors roughly parallel to each other were detected within the survey area. Most of these, especially in the western end of the grid, are indicative of faults and/or geological contacts which trend roughly N to NNE. This general structure appears to be well evidenced by magnetic and geological data. The most intensive conductive zones occur within the central part of the survey area. Anomaly A is at about 40E on lines 4S to 16N. Anomaly B is at 50E on lines 8S to 16S. Anomaly C is located at 54E on lines 12N to 16N. Of these, only anomaly B displays some direct correlation with

i.p. and CEM results. Anomaly A is on the west flank of an i.p. response and is suspected to be due to a fault and/or contact. Anomaly C as well as other small, localized zones of conductivity (at 16N,80E; 30N,54E; 12N,64E; 4S,60E), do not have an associated i.p. response. However, some of these may be caused by massive sulfide lenses of dimensions small enough (less than about 10m.) so as not to have been picked up by the 200 ft. (61m.) i.p. dipole employed. The lack of CEM data over these zones renders further interpretation impossible.

3.3 CEM RESULTS

The CEM horizontal shootback data is shown in Figures 6 and A first observation to be made is that the majority of the readings taken are negative. This is normally indicative of near surface, flat lying conductivity. The source of this conductivity may be clay in the overburden, or it may be pervasive alteration within volcanic rocks.

An anomalous response is evident on lines 4S, 8S, and 12S, and as previously discussed, correlates well with VLF and i.p. results, from 40E to 50E. Additional CEM surveying is required in order to obtain a more diagnostic correlation with the other data.

4. RECOMMENDATIONS

First priority must be given to any coincident i.p., VLF and CEM anomalies. Such appears to be the case with the zone at 49E, from 8S to 12S.

A second zone of interest is the i.p. response centred at about 42E, fromm 00 to 16S. Although no em response was obtained here, the source may be minor, disseminated copper mineralization.

These anomalies should be drilled to a depth of at least 200 ft. (61m). Holes should be spotted in light of all geophysical, geochemical and geological data.

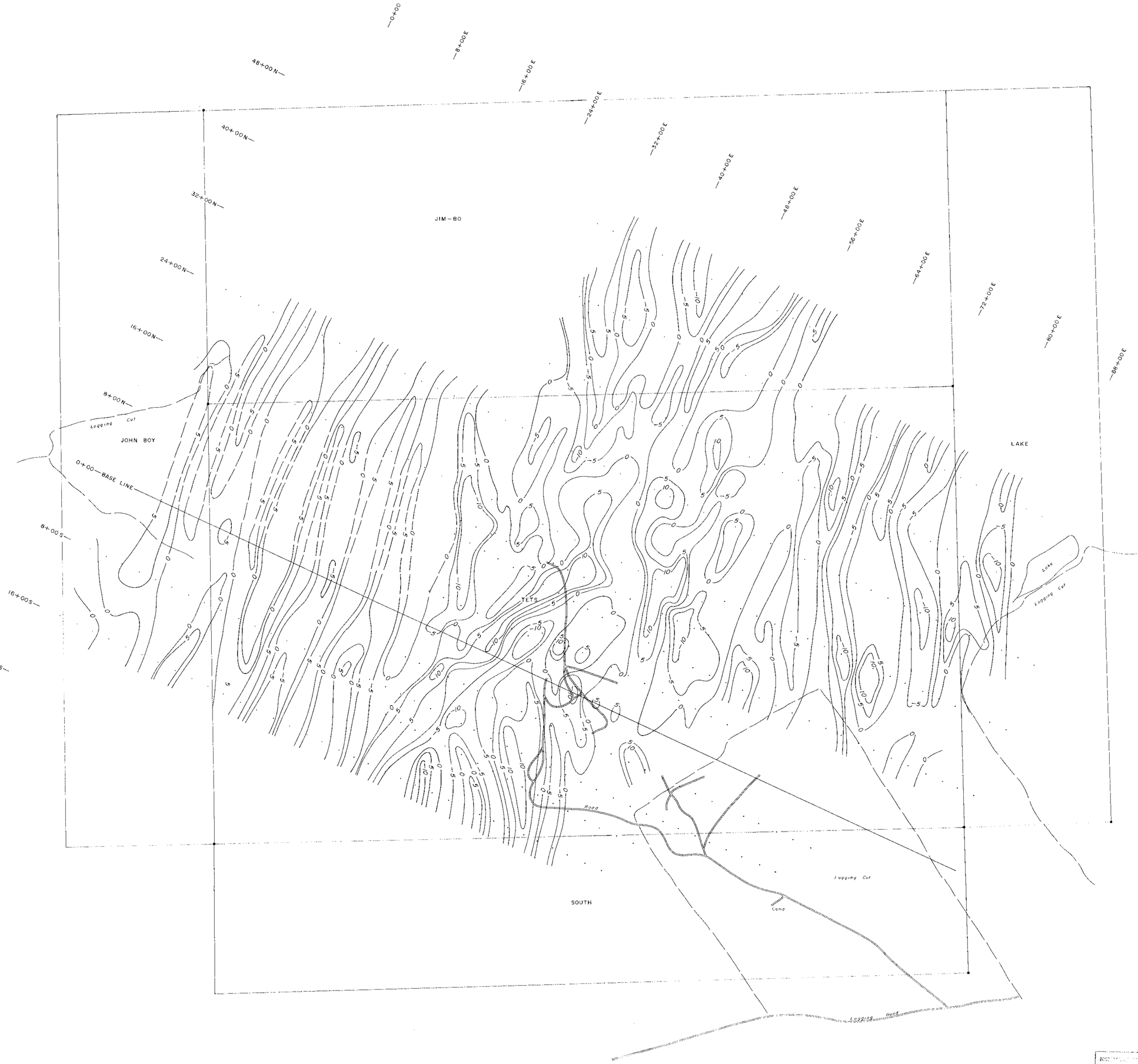
Additional CEM shootback surveying is recommended over the entire VLF grid in order to better assess the various localized zones of VLF conductivity.

Additional i.p. is also recommended to the north of the existing grid, in order to define a partially detected anomaly.

Respectfully submitted,

Whonnock, B.C.
January 15, 1979

Mauro G. Berretta, M.Sc.
Geophysicist



SABRE MODEL 27
FRASER FILTERED
TRANSMITTER - SEATTLE

60 0 60 120 240 360
METRES

400 0 400 800 1200
FEET

N.T.S. 93 E/15

SIBOLA MINES LTD.
—NADINA LAKE AREA—
OMINECA MINING DIVISION—BRITISH COLUMBIA

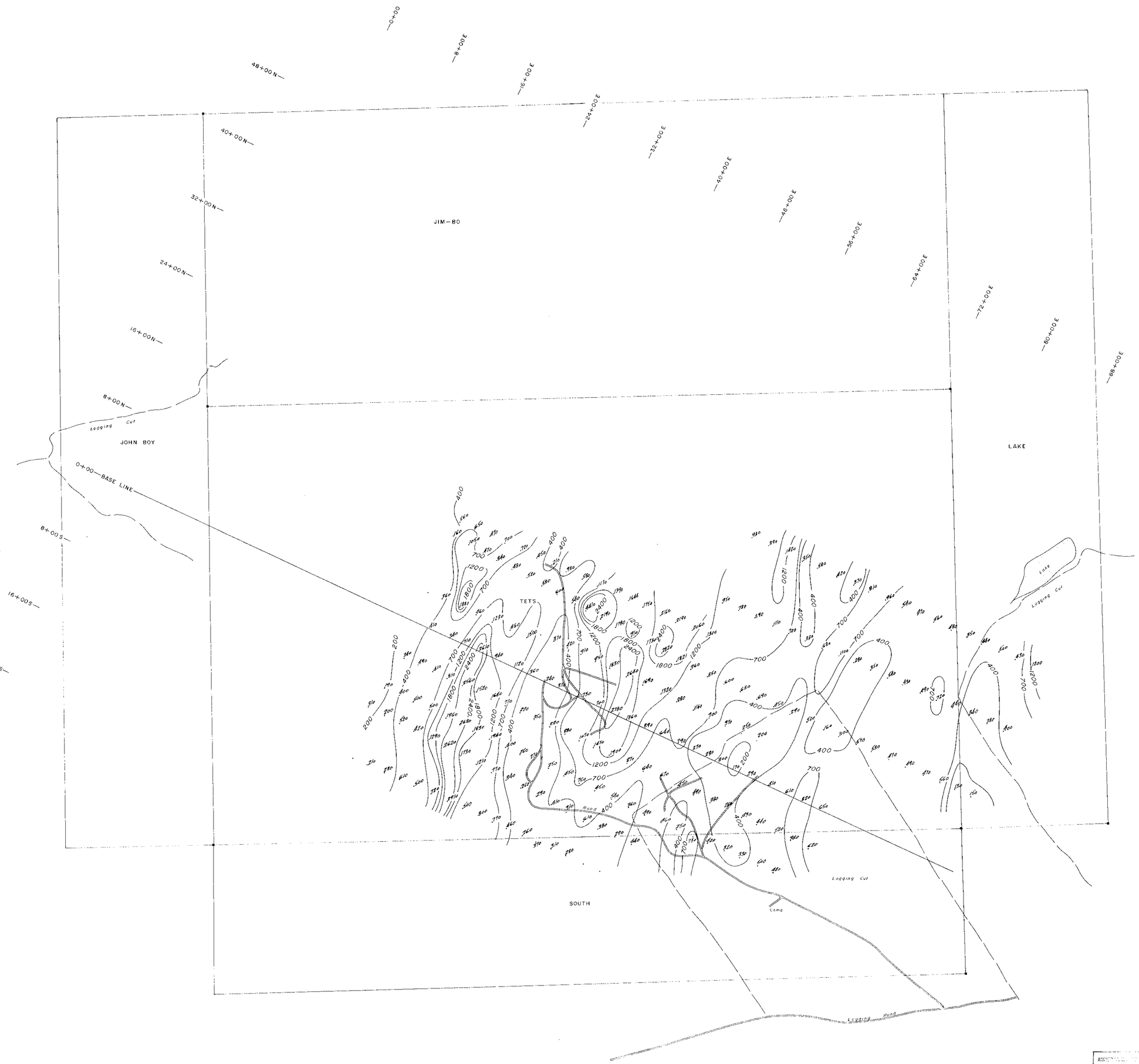
VLF—EM
CONTOUR INTERVAL - 5 DEGREES

MAURO G. BERRETTA
WHONNOCK, B.C.

DWN BY T.M.
CHK BY
DATE: JAN 1979

FIG. NO. 2

7101



SABRE MARK II
DIPOLE - DIPOLE a = 200' (60m) n = 2
0.3 - 10 Hz

120 0 60 120 240 360
METRES

400 0 400 800 1200
FEET

N.T.S. 93 E/15

SIBOLA MINES LTD.
-NADINA LAKE AREA-
OMINECA MINING DIVISION - BRITISH COLUMBIA

RESISTIVITY MAP

CONTOUR INTERVAL 200, 400, 700
1200, 1800, 2400 Ohm Metres

MAURO G. BERRETTA
WHONNOCK, B.C.

DWN BY T.M.
CHK BY
DATE JAN. 1979

FIG. NO. 3

MINFILE
7101

0+00
8+00E
16+00E
24+00E
32+00E
40+00E
48+00E
56+00E
64+00E
72+00E
80+00E
88+00E
48+00N
40+00N
32+00N
24+00N
16+00N
8+00N
0+00—BASE LINE
8+00S
16+00S
24+00S
JIM-BO
JOHN BOY
LAKE
TETS
SOUTH
Logging Cut
Road
Camp
Lake

SABRE MARK II
DIPOLE DIPOLE a = 200'(60m) n = 2
0.5 to 10 Hz

0 60 120 240 360
METRES

400 0 400 800 1200
FEET

N.T.S. 93 E/15

SIBOLA MINES LTD.
—NADINA LAKE AREA—
OMINECA MINING DIVISION—BRITISH COLUMBIA

P.F.E. MAP

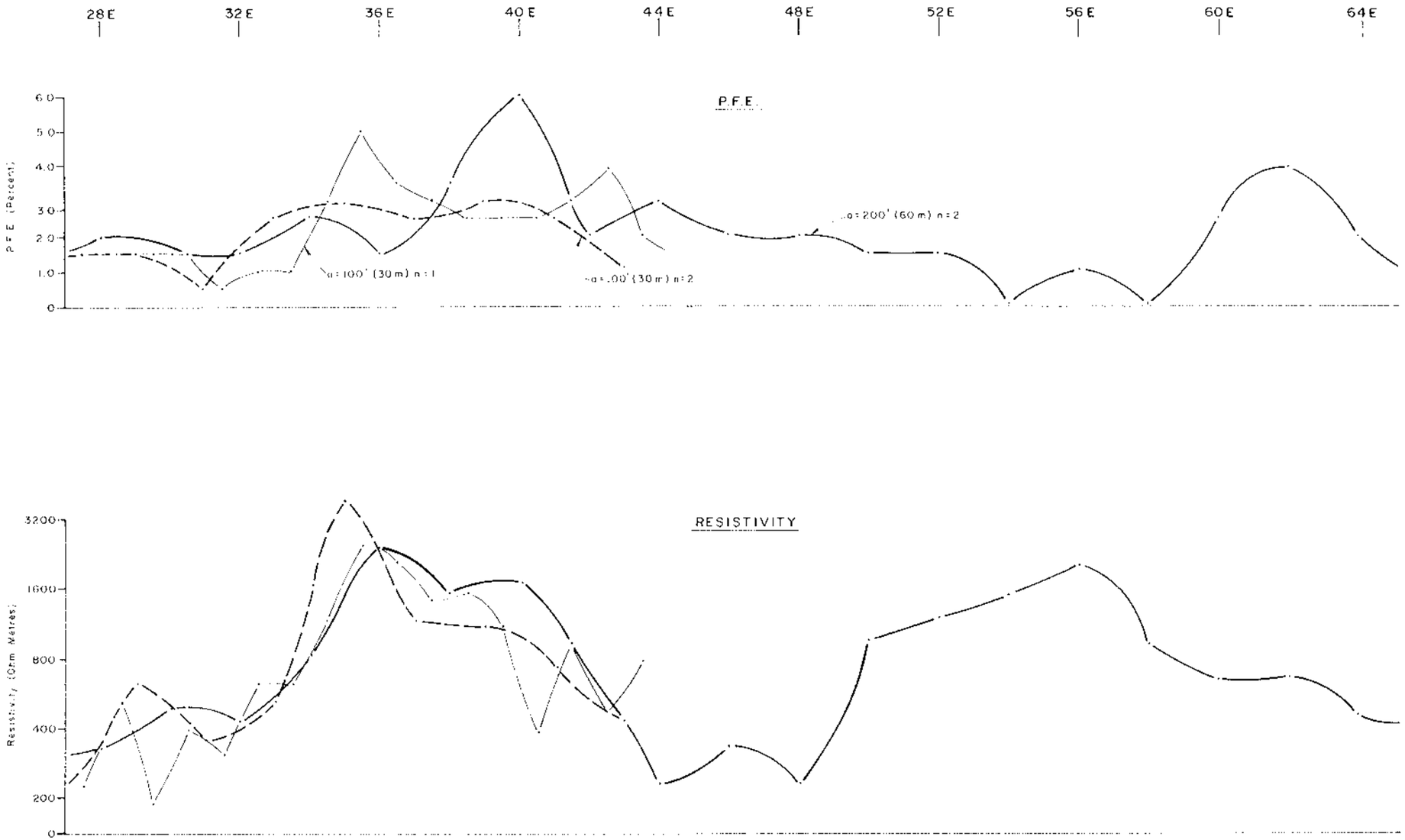
CONTOUR INTERVAL : 2.0, 3.0, 4.0, 5.0 PERCENT

MAURO G. BERRETTA
WHONNOCK, B.C.

DWN BY : F.M.
CHK BY :
DATE : JAN 1979

FIG. NO. 4

7101



7101

SABRE MARK II
DIPOLE - DIPOLE a=200' (60m) n=2
0.3 - 10 Hz

-FIG. 5-

200 100 0 200
METRES

N.T.S. 93 E/15

SIBOLA MINES LTD.
--NADINA LAKE AREA--

-I.P. DETAIL-
LINE 4+00S

MAURO G. BERRETTA
WHONNOCK, B.C.

DATE JAN./79

0+00

8+00E

16+00E

24+00E

32+00E

40+00E

48+00E

56+00E

64+00E

72+00E

80+00E

88+00E

48+00N

40+00N

32+00N

24+00N

16+00N

8+00N

0+00—BASE LINE

8+00S

16+00S

24+00S

JIM—BO

JOHN BOY

TETS

SOUTH

LAKE

Logging Cut

Road

Camp

Lake

Logging Cut

Logging Road

COIL SEPARATION 30m (100')
MEDIUM FREQUENCY

60 0 60 120 240 360
METRES

400 0 400 800 1200
FEET

N.T.S. 93 E/15

SIBOLA MINES LTD.
—NADINA LAKE AREA—
OMINECA MINING DIVISION—BRITISH COLUMBIA

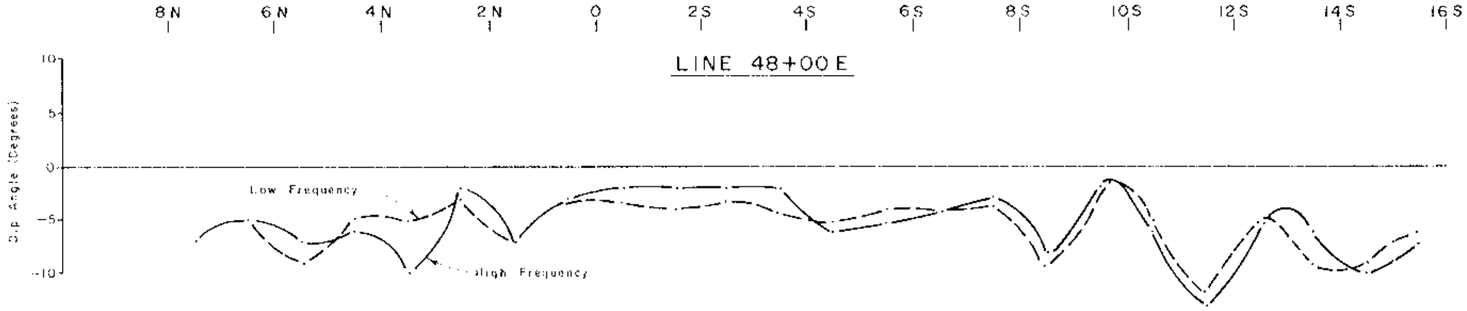
C.E.M. SHOOTBACK
CONTOUR INTERVAL - 5°

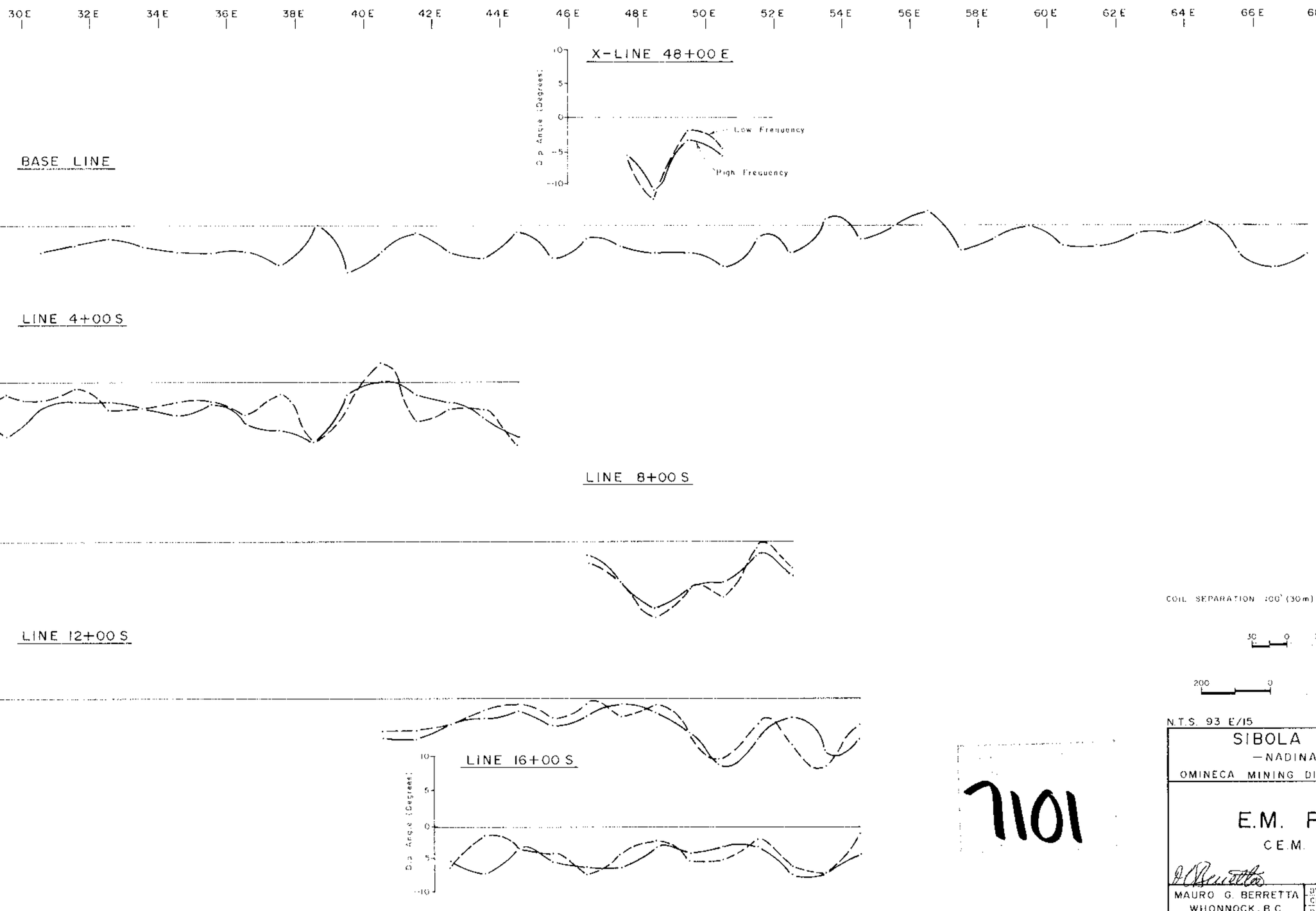
MAURO G. BERRETTA
WHONNOCK, B.C.

DWN. BY T.M.
CHK. BY
DATE JAN. 1979

FIG. NO. 6

7101





COIL SEPARATION 200' (30m)

30 0 30 60 120 150
METRES

200 0 200 400 600
FEET

N.T.S. 93 E/15

7101

SIBOLA MINES LTD.
—NADINA LAKE AREA—
OMINECA MINING DIVISION—BRITISH COLUMBIA

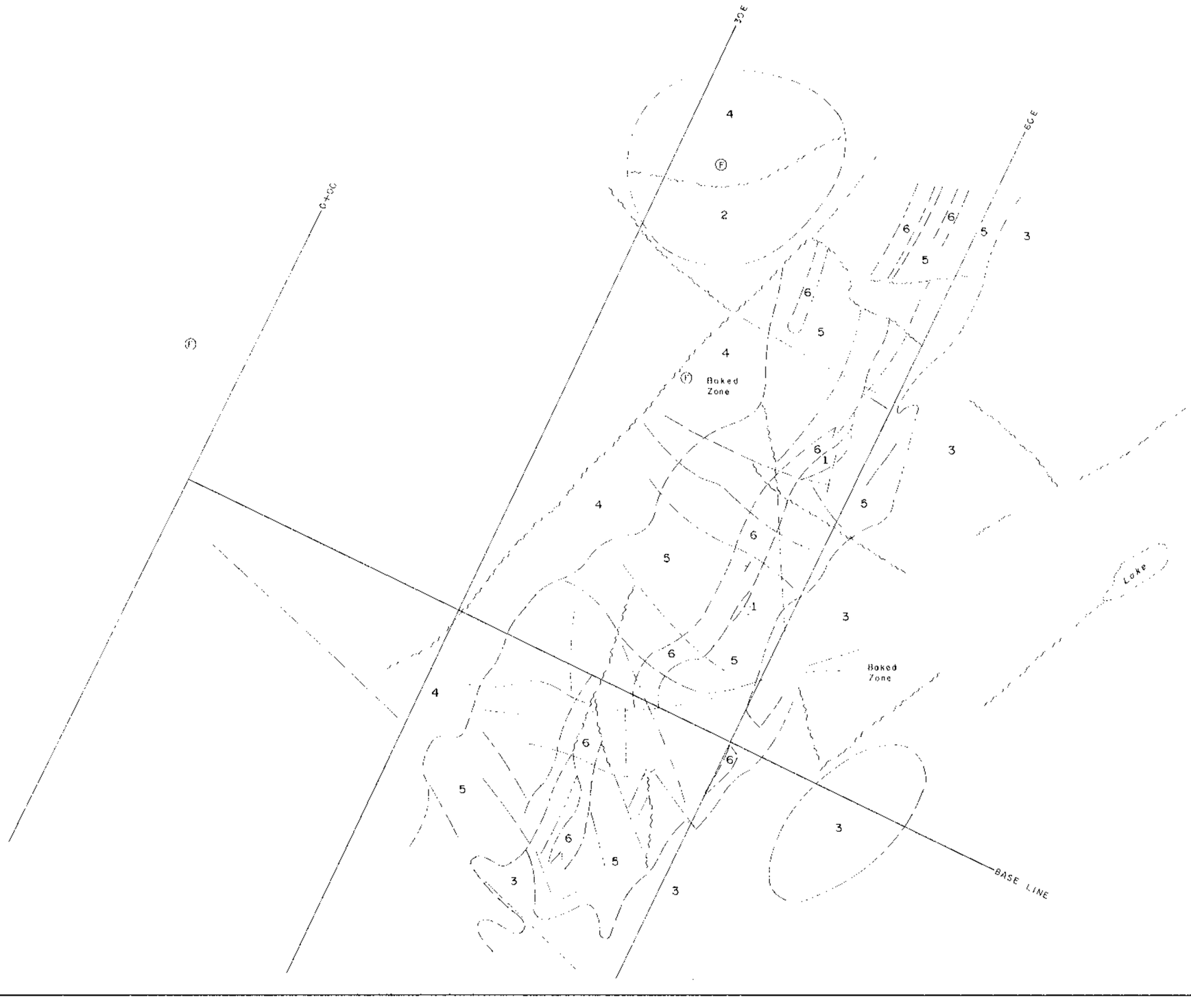
E.M. PROFILES

C.E.M. SHOOTBACK

MAURO G. BERRETTA
WHONNOCK, B.C.

DWN. BY - E.M.
CHK. BY -
DATE - JAN 1979

FIG NO
7



N

LEGEND

HAZELTON GROUP

CENTRAL AREA

6 — Light Grey Maroon Porphyritic (Plagioclase) Flows

5 — Dark (Highly Magnetic) Altered Tuffs, Flows, Breccia

WEST ZONE

4 — Light–Dark Tuffs, Water Lain Tuffs With Fossils & Volcanic Flows

EAST ZONE

3 — Compact Dark Tuffs; Light Bleached Tuffs, fine Pyrite, Light–Dark Grey Tuffs, Volcanic Flows

HYPABYSSAL INTRUSIONS

2 — Mela–Gabbro

1 — Plagioclase Augite Diabase

F — Fossils

Faults

Lineaments

MINING RECORDER
7101

120 0 120 240 360 480
METRES

800 0 800 1600 2400
FEET

NTS. 93 E/15

SIBOLA MINES LTD.
—NADINA LAKE AREA—
OMINECA MINING DIVISION—BRITISH COLUMBIA

—GEOLOGY—

James G. Ager
JAMES G. AGER
BURNABY, B.C.

DWN BY: T.M.
CHK BY:
DATE: JAN 1979

FIG NO. 8