

4561

VLF - ELECTROMAGNETIC SURVEY

on the

"RED" GROUP OF MINERAL CLAIMS

"RED" GROUP

Northeast side of the Guichon Batholith,
Kamloops Mining Division.

Western Longitude: 120°54'24"
Northern Latitude: 50°32'38"

Claims included: BCD #1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 29, 30,
31FR, 32, 33, 34, 35, 36, 37, 39, 40, 41, 42, 43,
44, 45, 46, 47, 49, 50.

OWNER: Comet Industries Ltd. (N.P.L.), Vancouver, B.C.
WORK BY: Arpad Fustos, B.S.F./For.Eng., B.Sc., P.Eng., Geologist.
SURVEY: July 1973
INTERPRETATION: August 1973
REPORT: August-September 1973

Department of	
Mines and Technical Resources	
ASSESSMENT REPORT	
NO. 4561	MAP

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
LOCATION, ACCESS and PROPERTY	1
LOCATION MAP	2
PROPERTY MAP	3
PHYSIOGRAPHY	5
HISTORY	6
GEOLOGY	6
VLF-ELECTROMAGNETIC SURVEY	7
SURVEY DATA - TABLES	11
DATA PROFILES	13
GEOPHYSICIST'S INTERPRETATION	16
CONCLUSIONS and RECOMMENDATIONS	18
SUMMARY OF COSTS	19
CERTIFICATE	20
SURVEY MAP	21

MAPS

- #1 Location map
- #2 Claim "
- #3 VLF-AM traverse
- #4 Profiles
- #5 "
- #6 VLF-Electromagnetic Survey

INTRODUCTION

Comet Industries Ltd. (N.P.L.) owns the Red Group of mineral claims, of which the approximate geographic center (W 120°54'24", N 50°32'28") is in the northeast rim area of the Guichon Batholith. The property, covered by transported overburden of glacial origin, underwent sporadic exploratory examinations in the past decade.

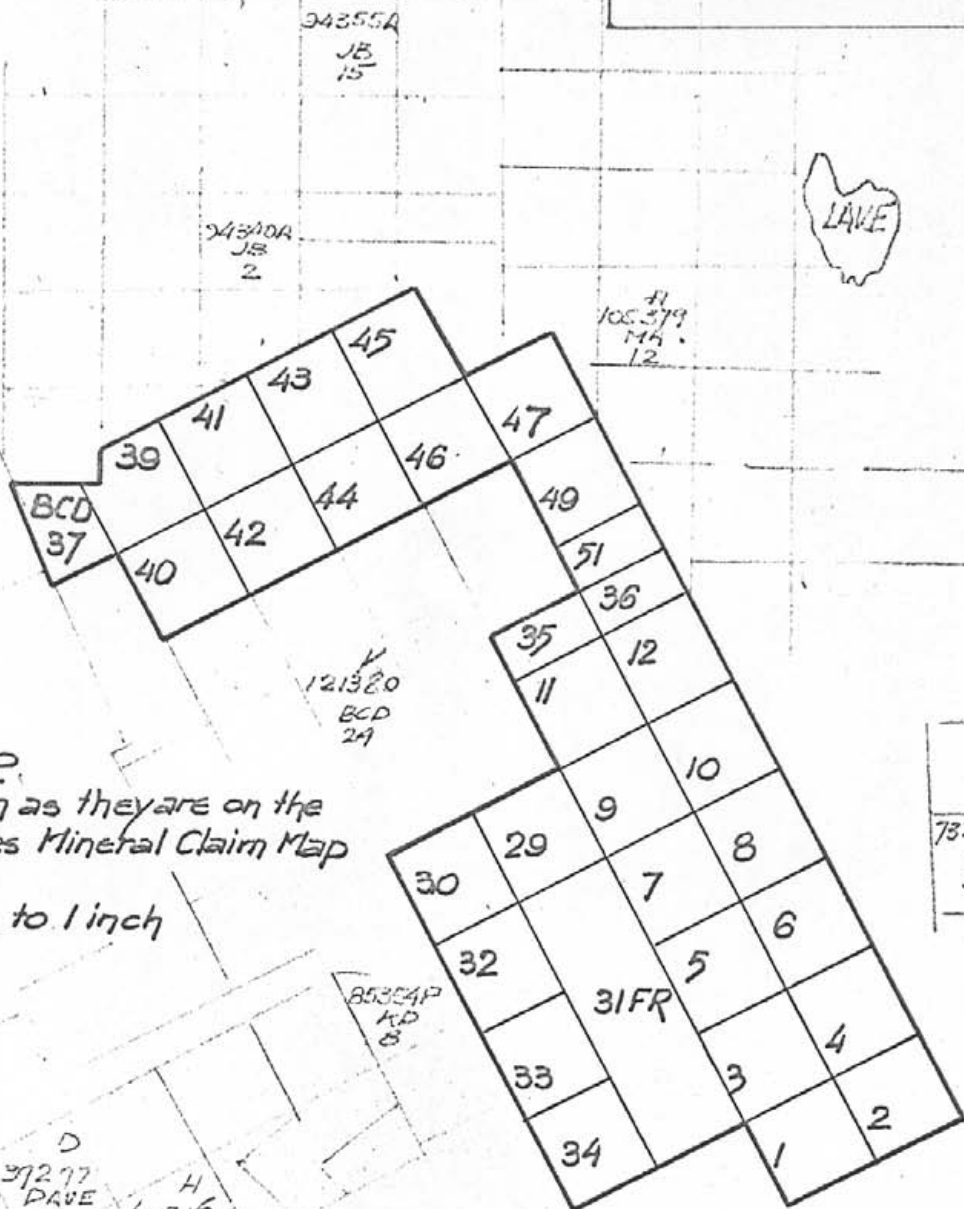
The owners acquired the property in 1972. In order to clarify systematically the possible merits of the Red Group, it was decided that as an initial step a VLF-Electromagnetic reconnaissance survey should be conducted over the area. The present report discusses the reconnaissance survey, conducted by the writer during the month of July. The discussion of the survey results and deductions based on their interpretation, form the second part of the report.

LOCATION, ACCESS and PROPERTY

The Red Group is in the northeast part of the Guichon Batholith, where the eastern slope of Bose Hill changes into the valley of Guichon Creek. There are several approach routes to it, all of them negotiable in their final stages only with four-wheel drive vehicles. The route which offers the most convenient access branches out from the Savona-Merritt road about 3 miles north of its junction with the Ashcroft-Lake La Jeune road, near the new village of

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ASSESSMENT REPORT

NO. **4561** MAP **#2**



RED GROUP
 Claims are shown as they are on the
 B.C. Dept. of Mines Mineral Claim Map
 921/10W
 Scale: 1/2 Mile to 1 inch

COMET INDUSTRIES LTD.

CLAIM MAP

Traced by: A. Füstös, P.Eng.
Date: Aug 1973

Logan Lake. Approximately two miles westwards from the branch-out of this route of the Savona-Merritt road is the starting point of a north-westerly trending cat-trail, negotiable with four-wheel drive vehicles only. The cat-trail transects the Red Group in a northwesterly direction. The B.C. Department of Mines and Petroleum Resources map "Highland Valley Project", Scale 1 inch = 1320 ft., 92I/10d, shows the cat-trail as "Cut line; visible on air photographs".

The Red Group consists of thirty-one full size and one fractional, mineral claims. The following list shows all these claims, together with their record numbers, as they were filed in a "Notice to Group" with the Sub-mining Recorder of Vancouver, B.C., on July 25th, 1973.

<u>Name of Claim</u>	<u>Record No.</u>
BCD 1	121357K
2	121358K
3	121359K
4	121360K
5	121361K
6	121362K
7	121363K
8	121364K
9	121365K
10	121366K
11	121367K
12	121368K
29	121385K
30	121386K
31 FR	121387K
32	121388K
33	121389K
34	121390K
35	121391K
36	121392K
37	121393K
39	121395K
40	121396K
41	121397K

<u>Name of Claim</u>	<u>Record No.</u>
BCD 42	121398K
43	121399K
44	121400K
45	121401K
46	121402K
47	121403K
49	121405K
50	121406K

A claim map - $\frac{1}{2}$ mile to an inch and showing the Red Group as it is shown on the B.C. Dept. of Mines Mineral Claim Map 92I/10W - is attached to this report.

PHYSIOGRAPHY

The property is on a gently eastwards-sloping hillside, which forms a transition from Bose Hill on the west to the upper Guichon Creek valley on the east. Elevations are between 3800 and 4700 feet ASL. A relatively open, pioneer forest of lodgepole pines forms the vegetation cover with groups of Interior Douglas Fir in the more moist areas. Some of these latter were logged off from the northeast quarter of the property in the recent past.

The "dry-belt" climate is moderated somewhat by the relatively high elevation. Precipitation is unable to keep up with the evaporation. The ground water table, lowered in recent years in the entire Highland Valley area, is now so far below the ground surface that the few small ponds became swamps and the swamps dried up altogether. From the two intermittent creeks which drained the area eastwards into the Guichon Creek, one completely dried up and

the flow of water in the other is drastically reduced.

The soil cover is immature due to the pioneer vegetation cover and the adverse climate. Under the active, thin soil is a regolith of haphazardly changing thickness and of ice transported origin. Southeastwards moving ice wasted away toward the north and the west in the final stage of the last ice age, leaving an irregular drumlin and Kettle-hole topography in its wake. The time interval since then was not sufficient for any significant change in the area's general physiography.

HISTORY

The area of the Red Group was repeatedly staked and owned by several mining interests in the past twenty-odd years. Sporadic exploratory activity never passed the reconnaissance stage on it, at least to the knowledge of the present owners. This fact induced Comet Industries Ltd. to start their exploration with a "grass-roots" level investigation and in this way, build their familiarity with the property on a broad foundation. The VLF-electromagnetic survey, discussed in the present report, is intended to become part of this broad foundation.

GEOLOGY

The Lower Jurassic Guichon Creek Batholith, which has taken such a prominent part in Canadian copper mining, covers nearly 400 square miles between

the Guichon Creek on the east, the Nicola River on the south and the Thompson River on the north and west. The Red Group is situated on the northeast rim of this batholith.

A respectable number of outcrops, large and rounded in outline due to sparse rock fracturing and the roche moutonnée-forming tendency of the advancing Pleistocene ice-cover, offer themselves to scrutiny on the property. Medium grained, pink to light-grey coloured granodiorite is the dominant rock type in the exposed outcrops. Classifiers of the Guichon Creek Batholith named this rock the Guichon variety of the Highland Valley phase within the batholith. Some sporadic mineralization, in the form of minute chalcopyrite specs in the rock texture, was observed in a few instances.

To give a detailed account of the geology of the property, a systematic geological mapping program would be necessary and the initiation of such a program seems advisable.

VLF-ELECTROMAGNETIC SURVEY

Between July 5th and 16th, 1973 (inclusive), a VLF-Electromagnetic survey was conducted on the Red Group of mineral claims.

The writer of this report, as operator, and three helpers formed the survey party. A Scopas SE-80 (S/N 10106, R/N 1216) VLF Receiver Unit was used as instrument.

The description of the instrument is as follows:

Primary Field: From any selected VLF transmitting station in frequency range between 15.4 KHz to 25 KHz.

Station Selection: By means of an eight step switch and variable control covering full range.

Measured Values: a). The azimuth of horizontal field.
b). The dip of the axis of the coil at the minimum field, measured from the vertical.
c). The amplitude of the horizontal field strength in any direction.
d). The amplitude of the vertical field strength.

The phase angle between the maximum horizontal and vertical field can be calculated from measured values.

Normal Reading Accuracy: Amplitude $\pm 2\%$
Azimuth $\pm 2^\circ$
Dip $\pm 1^\circ$ - Dependent on signal strength.

Batteries: Two 9 Volt dry cells.

Dimensions: 9.66" x 3.68" x 5.80" or
24.5 cm x 9.4 cm x 14.7 cm

Weight: 3 lbs. (1.35 Kg).

The Scopas VLF System employs VLF radio stations in the 15 to 25 KHz range as primary field sources. The undisturbed field from these remote

sources is essentially horizontal and of relatively constant strength. When conductors are present, the geometry and amplitude of the field are locally distorted and polarization of the field may occur.

With the unit all amplitudes and geometric parameters, as well as the characteristics of the polarization ellipse can be measured. For fast reconnaissance surveys, dip-angle and field directions can be rapidly determined. For detailed surveys, amplitude relations and the elliptical polarization in the horizontal and vertical planes can be determined as well. The operator can select the parameters most useful for his search problem.

A northwesterly bulldozer line was selected on the property as base line for the survey. Its direction was nearly at right angles to the maximum signal direction during trial runs. With a 300 foot chain, stations were located at every 150 ft. distance. Six 600 foot crosslines in east-west direction and a 1050 foot crossline on the same trend were laid out similarly, crossing the 7500 foot long base line. All stations on the crosslines were also located at 150 foot intervals. After repeated test runs, both the base line and the seven crosslines were traversed with the above described instrument. Fifty-three base line stations and thirty-eight cross-line stations, a total of ninety-one, were observed. At each station the following observations were taken:

- A: Azimuth of VLF field, 90 degrees to maximum signal.
- B: Value of minimum signal.
- C: Value of maximum signal.
- D: Vertical component in plane of maximum signal.

E: Tilt angle.

F: Value in plane of tilt angle.

The recorded data were tabulated and the data of "A", "D" and "E" were plotted in profiles. Sketch map of the traverses, data-tables and plotted profiles are attached to this report.

LINE "A"

Station	Distance from prev.sta., ft.	A	B	C	D	E	F	Cross- line
1		180	7	100	22	-40	2	
2	+ 150	160	7	100	12	-20	10	
3	+ 150	160	7	100	10	+ 7	7	
4	+ 150	200	7	85	7	-40	2	
5	+ 150	180	5	82	22	-40	4	
6	+ 150	180	7	100	32	-40	2	
7	+ 150	156	5	100	11	-11	1	
8	+ 150	180	16	100	5	0	5	
9	+ 150	190	9	96	11	-16	5	
10	+ 150	176	10	100	25	-40	5	
11	+ 150	166	7	100	6	0	6	
12	+ 150	160	5	100	10	-16	6	
13	+ 150	210	7	100	14	0	14	
14	+ 150	168	8	100	3	0	3	
15	+ 150	200	9	94	5	0	5	
16	+ 150	170	12	100	10	- 4	0	
17	+ 150	184	8	96	10	+12	6	
18	+ 150	184	9	96	16	+40	7	
19	+ 150	162	10	100	7	-16	5	
20	+ 150	178	9	94	18	-24	8	
21	+ 150	184	9	98	6	-25	4	
22	+ 150	186	10	98	18	-28	4	
22A	+ 58	174	11	100	10	-12	6	64N
23	+ 92	186	10	92	13	-22	8	
24	+ 150	176	8	83	14	-20	6	
25	+ 150	182	10	87	16	-22	4	
25A	+ 31	156	7	100	16	-16	1	68N
26	+ 119	186	4	89	18	-20	2	
27	+ 150	180	4	83	27	-26	1	
28	+ 160	184	4	91	18	-16	9	72N
29	+ 140	190	4	77	18	-40	7	
30	+ 150	168	4	100	32	-40	6	
31	+ 134	162	5	100	18	-22	5	76N
32	+ 166	176	6	100	28	-30	6	
33	+ 150	170	7	100	40	-40	14	
34	+ 150	160	7	100	38	-40	10	80N
35	+ 150	160	8	100	20	-40	8	
36	+ 150	160	10	100	32	-34	2	
37	+ 134	150	12	100	36	-38	2	84N
38	+ 166	158	5	100	6	- 6	4	
39	+ 150	172	6	100	28	-26	4	
40	+ 150	160	5	100	22	-18	4	
41	+ 150	162	5	100	23	-28	2	88N
42	+ 150	180	4	100	24	-28	2	
43	+ 150	164	5	100	32	-28	2	
44	+ 150	160	6	100	12	-18	1	
45	+ 150	166	6	100	22	-20	2	
46	+ 150	170	6	100	22	-26	4	
47	+ 150	162	6	100	28	-40	10	
48	+ 150	160	10	100	22	-26	4	
49	+ 150	160	10	100	26	-22	21	
50	+ 150	160	9	100	26	-18	20	
51	+ 150	160	9	100	28	-28	4	

Range 210 Range Range Range Range Range 21
 -150 60" 16-4-12 100 40 3 440 40 21
 27 28 22 20 20 21

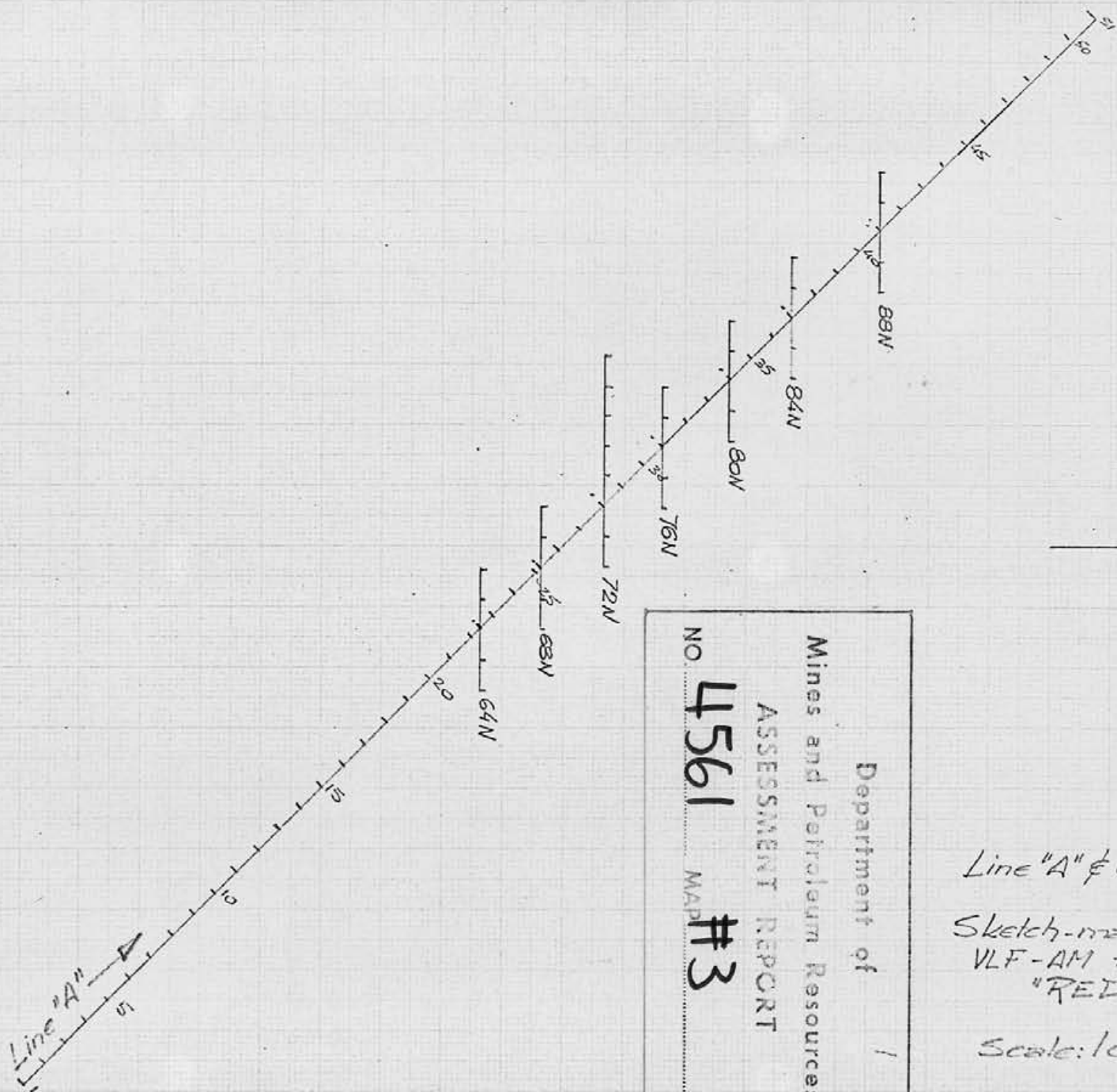
CROSS LINES ON LINE "A"

Station	Distance from prev.sta., ft.	A	B	C	D	E	F	Cross- line
2 E		160	8	100	20	- 8	0	88N
1 E	+ 150	172	5	100	24	-14	2	sta. on line "A"
41	+ 150	162	5	100	23	-28	2	
1 W	+ 150	154	4	100	30	-16	6	
2 W	+ 150	164	9	100	1	0	1	
2 E		170	9	100	34	-40	18	84N
1 E	+ 150	166	12	100	34	-20	4	sta. on line "A"
37	+ 150	150	12	100	36	-38	2	
1 W	+ 150	162	9	100	20	-14	4	
2 W	+ 150	166	6	100	16	-20	3	
2 E		190	10	100	24	-38	10	80N
1 E	+ 150	180	6	100	26	-40	8	sta. on line "A"
34	+ 150	160	7	100	38	-40	10	
1 W	+ 150	160	9	100	26	-20	4	
2 W	+ 150	170	9	100	20	-20	3	
2 E		160	11	100	44	-40	24	76N
1 E	+ 150	160	10	100	24	-20	6	sta. on line "A"
31	+ 150	162	5	100	18	-22	5	
1 W	+ 150	156	7	100	30	-16	2	
2 W	+ 150	158	12	100	16	-26	6	
2 E		162	7	100	12	-16	4	72N
1 E	+ 150	164	7	100	32	-32	6	sta. on line "A"
28	+ 150	184	4	91	18	-16	9	
1 W	+ 150	160	5	100	52	-40	28	
2 W	+ 150	144	6	100	16	- 9	2	
3 W	+ 150	176	8	100	6	0	6	
4 W	+ 150	170	9	100	35	-30	24	
5 W	+ 150	155	8	100	22	-30	10	
2 E		150	10	100	30	-32	8	68N
1 E	+ 150	156	11	100	8	0	8	sta. on line "A"
25A	+ 150	156	7	100	16	-16	1	
1 W	+ 150	158	5	100	45	-40	16	
2 W	+ 150	140	8	100	30	-22	4	
2 E		150	10	100	7	-16	2	64N
1 E	+ 150	160	10	100	20	-40	6	sta. on line "A"
22A	+ 150	174	11	100	10	-12	6	
1 W	+ 150	170	10	100	24	-40	4	
2 W	+ 150	164	8	100	44	-40	8	

Range: 190
- 140 = 50°

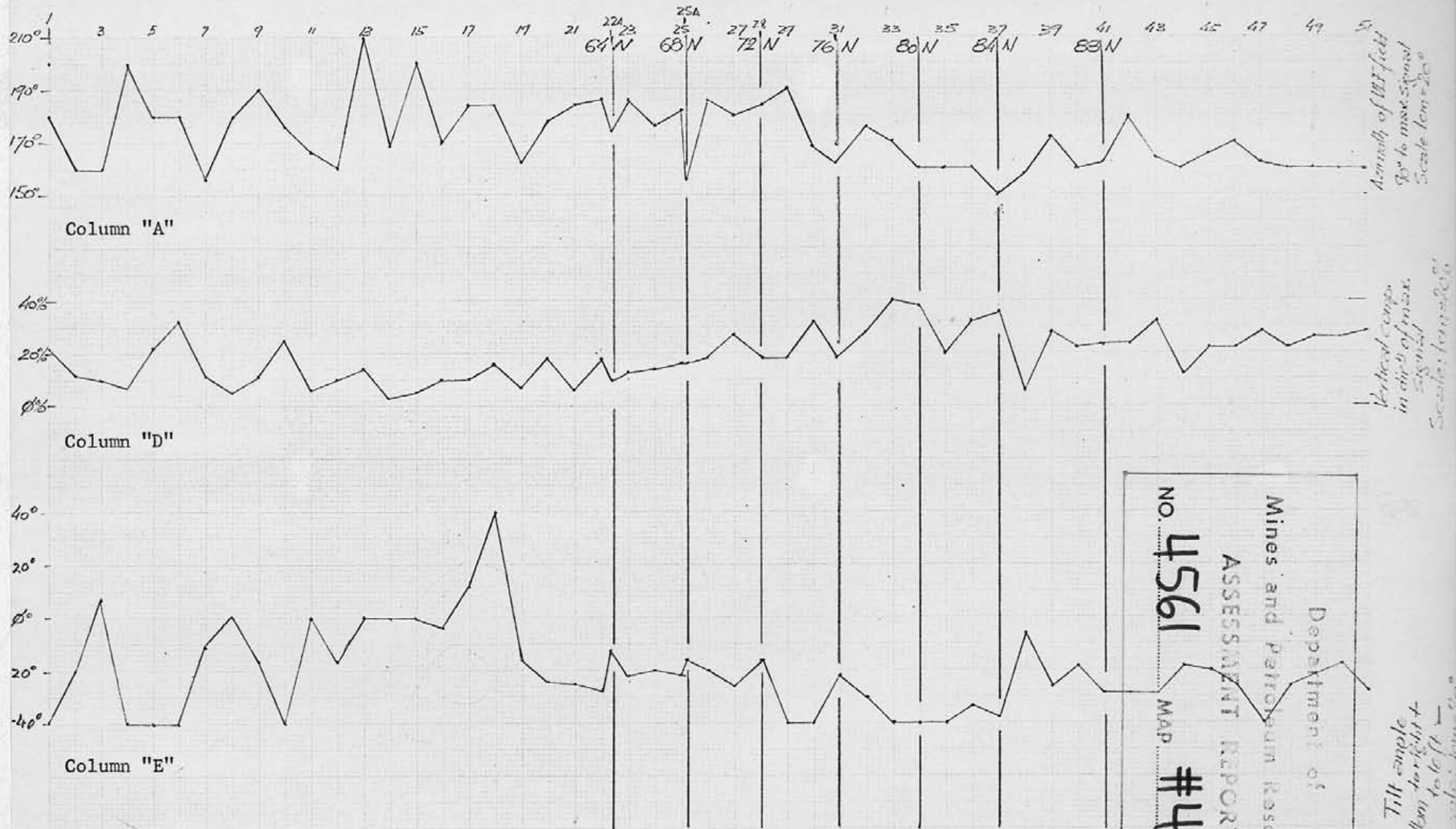
Range:
52 - 1
= 51%

Range:
0 - 40
= 40°



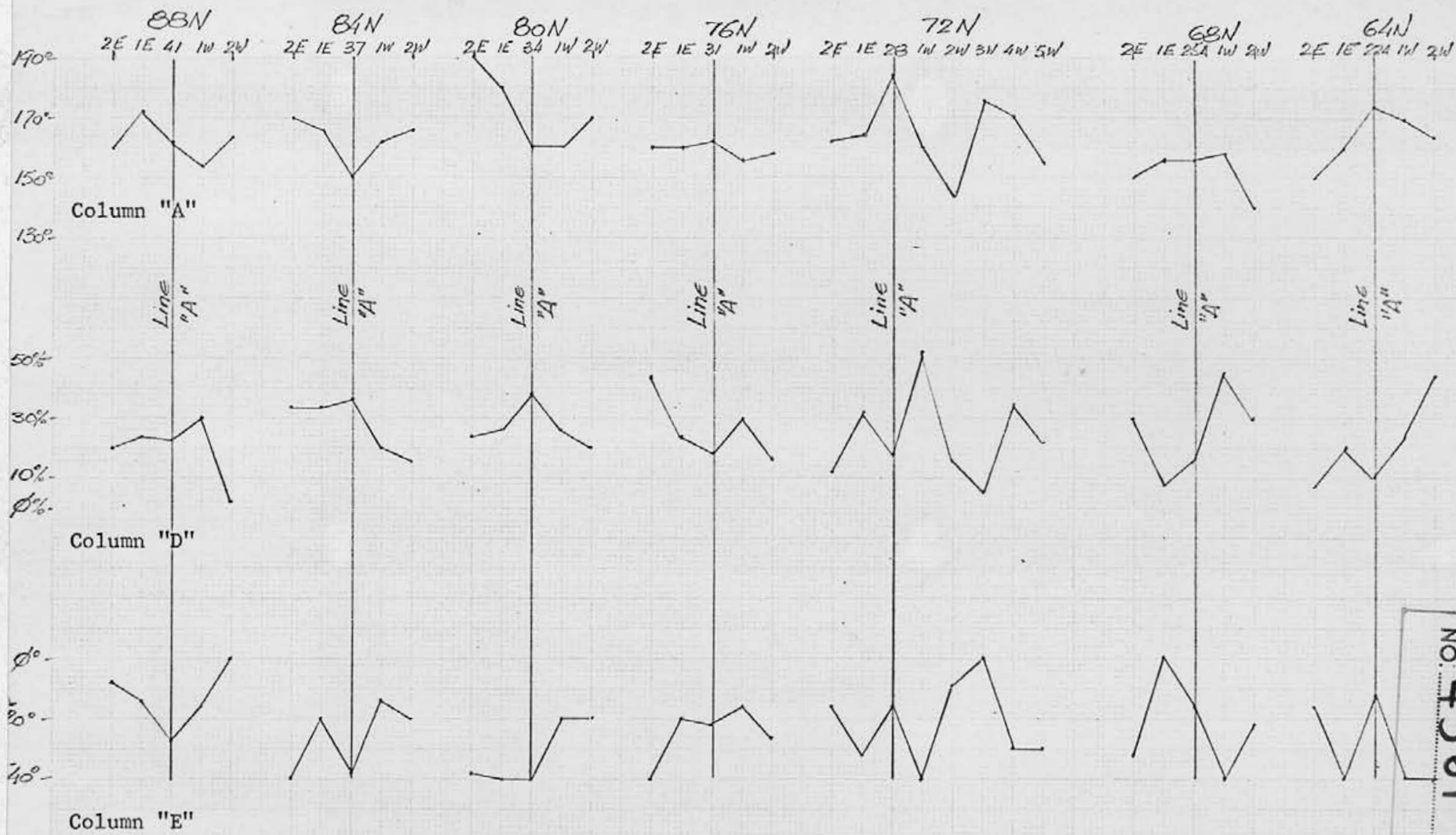
Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 4561 MAP #3

Line "A" & Cross lines.
 Sketch-map of
 VLF-AM traverse on
 "RED GROUP"
 Scale: 1cm = 300feet



Survey on "Red Group"; Line "A" from Sta. 1 to Sta. 51 bearing $N45^{\circ}W$.
 Cross lines shown at their crossing stations, their dirⁿ is east-west.
 For distances between stations see attached tables.
 Plotted as profiles, from top to bottom, columns A, D and E

LINE "A"



Survey on "Red Group"; East-west lines crossing Line "A" at stations as referenced.
 Crossing Line "A" shown in each case.
 For distances between stations see attached tables.
 Plotted as profiles, from top to bottom, columns A, D and E

NO. 4561
 ASSESSMENT REPORT
 #5
 MILES TO THE EAST
 PETROLEUM RESOURCES
 - 15

Vertical comp.
 in ch. of map.
 Azimuth VLF field
 90° to max. signal

This is true copy of the original

Arpad Fustos, P.Eng.

Arpad Fustos P.Eng.

SCINTREX SURVEYS LIMITED

GEOPHYSICAL CONSULTANTS & CONTRACTORS
A DIVISION OF SCINTREX LIMITED

September 14th, 1973

Arpad Fustos, P.Eng.
4165 West 11th Avenue
Vancouver, B. C.

Dear Sir:

Re: VLF Electromagnetic Survey over the
"Red Group" grid, in the Guichon Batholith
area, British Columbia

A reconnaissance survey employing the Scintrex Scopas (single coil phase, amplitude and strike) SE-80 VLF (very low radio frequency) electromagnetic receiver has been completed over the "Red Group" grid in the Guichon Batholith area of British Columbia.

The grid consisted of a base line "A", striking N 45° W for a distance of 7500', with seven short E-W lines labelled 64 N, 68 N, 72 N, 76 N, 80 N and 84 N. Line "A" consisted of consecutively numbered stations from 1 to 51 with 38 additional stations having been read on the shorter lines. The inter-station spacing averaged 150' yielding a total coverage of 12,100'.

The receiving unit was tuned into the 300 KW radio station at Jim Creek, Washington, U.S.A., which transmits at 18.6 KHz. Six parameters from this electromagnetic source were measured at each station; 534 separate measurements were made.

An initial review of the data indicated that the optimum diagnosis of the primary field could be obtained by analysis of the following three components of the primary source:-

- (1) A - Azimuth of VLF field 90° to maximum signal - vertical scale 1 cm = 20°.
- (2) D - Vertical component in direction of maximum signal - vertical scale 1 cm = 20%.
- (3) E - Tilt Angle - vertical scale 1 cm = 20°

All the components measured showed large and fairly erratic variations which has greatly hampered retrieving useful information from the data. Line "A" Exhibits

. 2


Arpad Fustos, P.Eng.
September 14th, 1973

Page 2

one mildly anomalous zone which is primarily evident on the tilt angle with only secondary corroboration on the Azimuth. The Anomaly is centered on Station 19 where the tilt angle exhibits an inflection point, with a high of $+40^{\circ}$ to the SE and a low of -28° to the NW, coincident with a minor depression in the Azimuth. Also the tilt angle and vertical component show small changes in their individual background levels near station 19. This may indicate a geological contact with a more resistive rock type to the SE of Station 19. The zone is unlikely to be a well interconnected sulphide body although should geological and geochemical indications prove favourable, delineation of the zone by Induced Polarization surveying may be warranted.

Respectfully submitted,

SCINTREX SURVEYS LIMITED



P. R. Bailey, M.Sc., D.I.C.
Operations Manager

PRB:lm

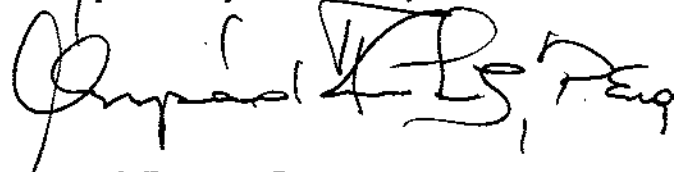
CONCLUSIONS and RECOMMENDATIONS

1. The VLF-Electromagnetic survey on the Red Group indicates a mildly anomalous zone, as outlined in the attached letter by Mr. P. R. Bailey of Scintrex Surveys Ltd.

2. To verify the above mentioned anomaly, additional geological and geochemical investigations are necessary, before any further geophysical program would be initiated.

3. It is recommended that the property should be subjected to geological mapping and at least the area indicated in the present survey should be covered by a close-grid geochemical survey.

Respectfully submitted,



Arpad Fustos, P.Eng.,
Geologist.

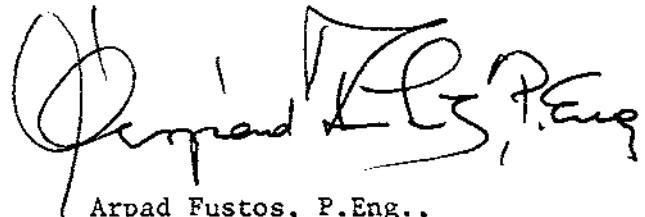
SUMMARY OF COSTS

Geophysical (VLF-AM) Survey	\$ 1,850.00
Room & Board for 23 man-days @ \$28.	644.00
Report and geophysical interpretation	1,100.00
Truck and Instrument rental	<u>400.00</u>
TOTAL:	\$ 3,994.00

CERTIFICATE

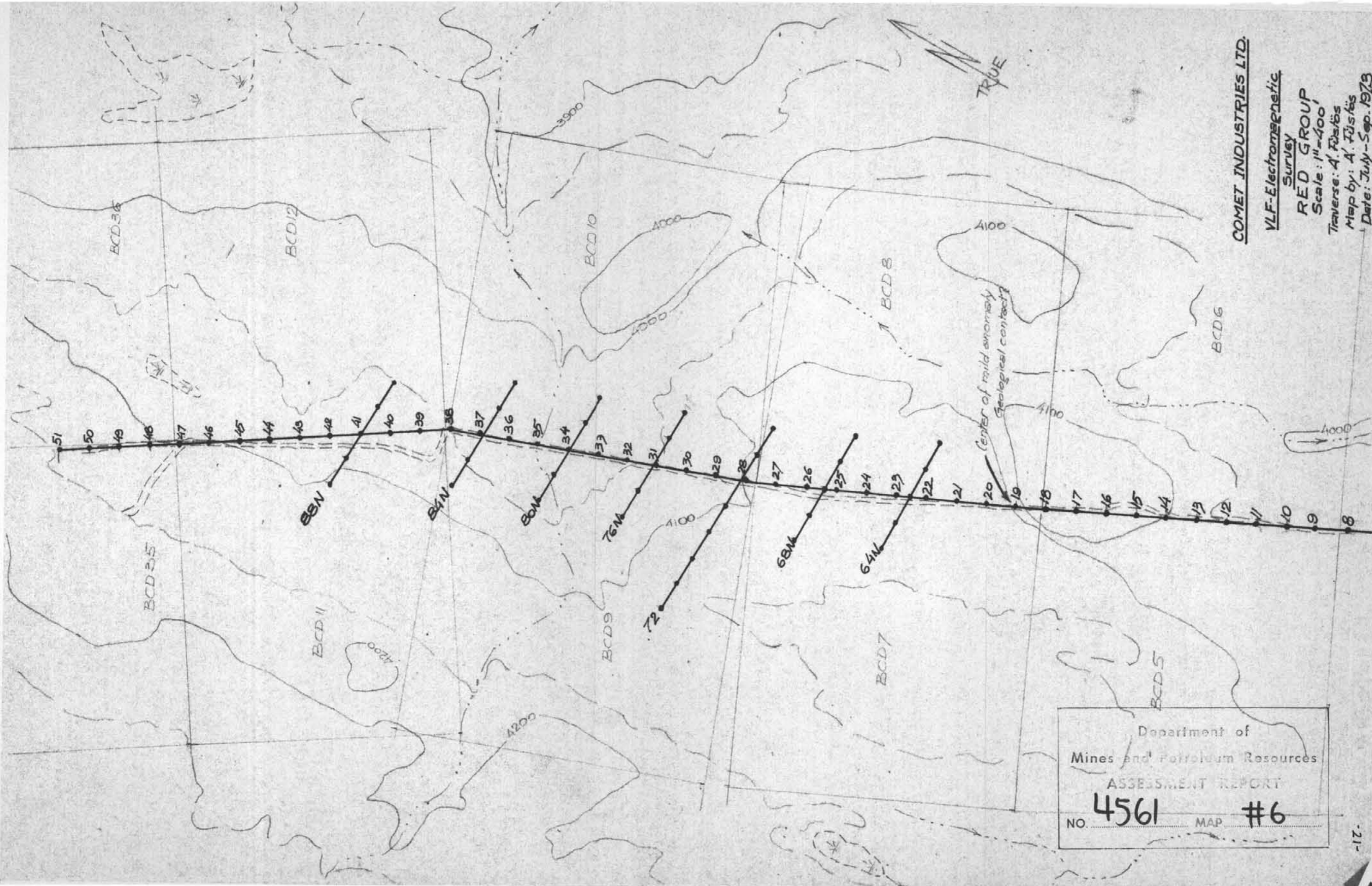
I, ARPAD FUSTOS, hereby certify that:

1. I am a graduate of the University of British Columbia and hold the following degrees:-
 1. Bachelor of Science of Forestry-Graduate Forest Engineer.
 2. Bachelor of Science (Geology).
2. I have taken post-graduate studies in Mineral Exploration at the University of British Columbia, Department of Geology, and directed studies in Application of Soil Sciences to Mineral Exploration at the University of British Columbia, Department of Soil Sciences.
3. I have taken the following courses at the British Columbia Institute of Technology:-
 1. Introduction to Geophysical Prospecting Methods.
 2. Geophysical Prospecting Tutorial.
4. I am a Registered Professional Engineer of the Province of British Columbia.
5. I have been active in mineral exploration and mine development for the past twenty years.
6. I have planned and executed the VLF-Electromagnetic survey project on the RED group of mineral claims.
7. I have no interest either in the claims of Comet Industries Ltd. (N.P.L.) or in the Company itself.



Arpad Fustos, P. Eng.,
Geologist,
Vancouver, B.C.

Dated: September 1973.



COMET INDUSTRIES LTD.

VLF-Electromagnetic
 Survey
 RED GROUP
 Scale: 1"=400'
 Traverse: A. Füstös
 Map by: A. Füstös
 Date: July - Sep. 1973

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. **4561** MAP **#6**