4749

104B/10W

GEOPHYSICAL REPORT

on the 104B/10W

GROUND ELECTROMAGNETIC AND MAGNETOMETER SURVEYS

on the

PINS CLAIMS

SNIPPAKER CREEK AREA, B.C.

LIARD MINING DIVISION

Lat. 56°33'N
Long. 130°45'W

on behalf of

COBRE EXPLORATION LTD.

Claim Name	Record Number	Anniversary
Pins 1 - 40	57488 - 57527	October 15

by

P. P. Nielsen, B.Sc., Geophysicist
and
G. B. Phelps, M.Sc., P.Eng.

Nielsen Geophysics Ltd.

September, 1973

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ILLUSTRATIONS....

INTRODUCTION

During the period from August 30 to September 6, 1973, a ground electromagnetic and magnetometer survey program was conducted on the Pins mineral claims in the Snippaker Creek area, Omineca Mining Division.

The electromagnetic survey was executed by Nielsen Geophysics Ltd. using the C.E.M. Horizontal "Shootback" method, and the magnetometer survey was performed by M. J. Fitzgerald of Min-Ex Services under the supervision of P. P. Nielsen, geophysicist on behalf of Cobre Exploration Ltd.

The purpose of the surveys was to test for a possible massive sulphide deposit indicated by previous geological and geochemical investigations.

A total of 4.56 line miles of E.M. coverage was carried out using various coil separations and operating frequencies. The magnetometer survey totalled 3.16 line miles or 179 stations.

LOCATION AND ACCESS

The Pins #1 - #40 claim groups is located approximately 55 air miles north-northwest of Stewart, B. C., and 2.5 miles southwest of the Snippaker Creek gravelled airstrip. The property straddles a flat-topped ridge which lies between two forks of Snippaker Creek, a south tributary of the Iskut River.

Access to the claims was by a chartered Otter aircraft from Terrace, B. C. to the Snippaker Creek gravelled airstrip and thence by helicopter 2.5 miles to the grid area.

CLAIMS

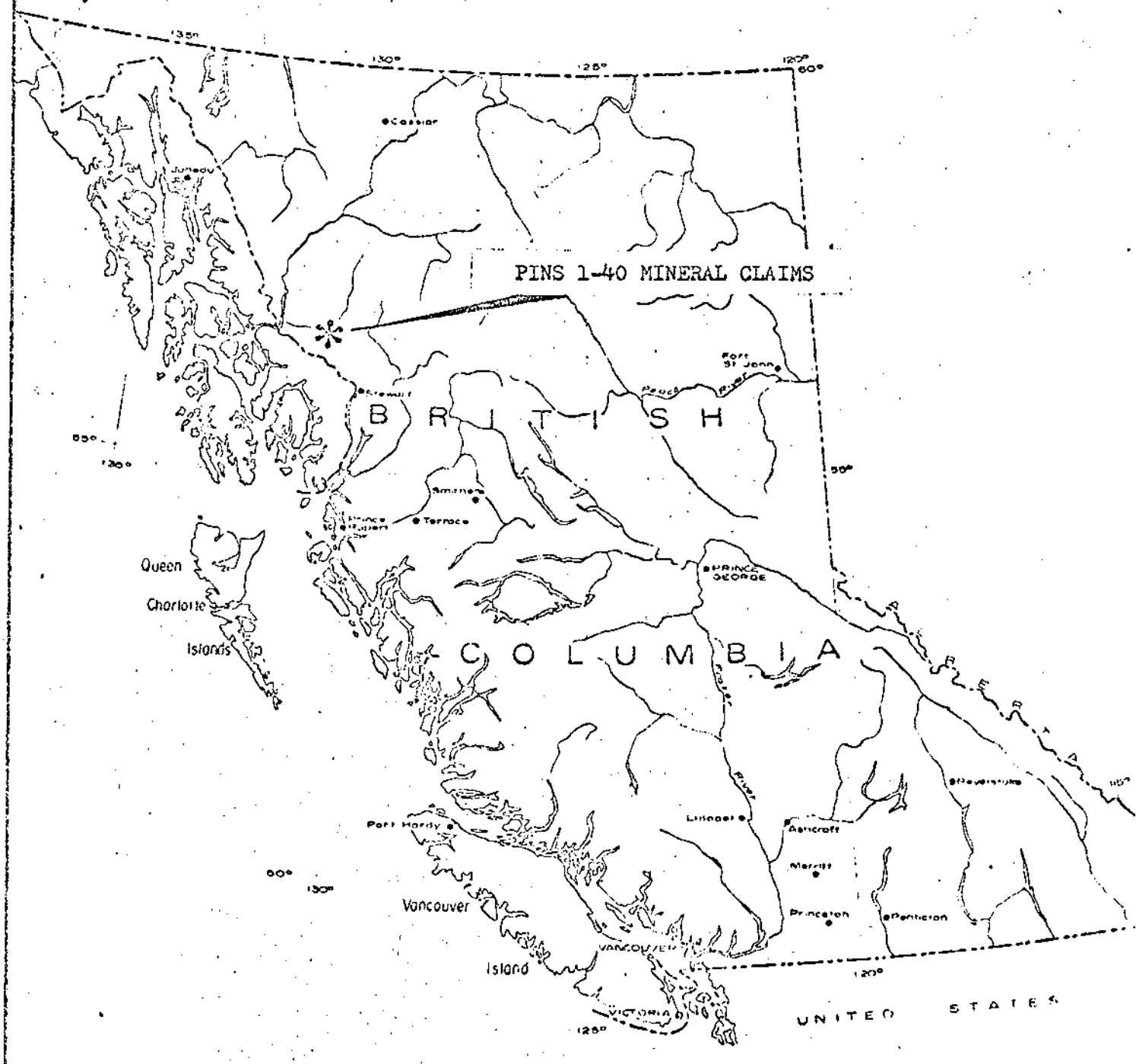
The Pins claim group consists of 40 contiguous mineral claims which were staked in 1971 and are presently owned by Cobre Exploration Ltd.

Claim Name	Record Number	Anniversary
Pins 1 - 40	57488 - 57527	October 15

TOPOGRAPHY AND GROUND CONDITIONS

The elevations on the grid vary from approximately 4,100 feet above sea level in the central portion (Line 8E area) to 4,300 feet at the east end (Line 44E) and to 4,500 feet at the west end (Line 28W).

Although the terrain is very rugged in the general area, the grid lies along a gently rolling, flat-topped ridge between the valley glaciers. The northern glacier occurs at the base of a precipitous cliff which determines the extent of the grid in this direction. A



Department of
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FIG.

COBRE EXPLORATION LIMITED

SNIPPAKER PROSPECT

SCALE 1" = 136 MI

ALTAIR

COBRE EXPLORATION LTD.

UNUK RIVER REGION

REGIONAL GEOLOGY

LEGEND

20	QUATERNARY	glacial drift, alluvium
18	TERTIARY	basalt
12	CRETACEOUS	argillite, greywacke
J	JURASSIC	volcanics, argillite
B	TRIASSIC	tuff, siltstone
T	PRE-TRIASSIC	phyllite, schist
G	PREMIAN	gneiss

INTRUSIVE ROCKS

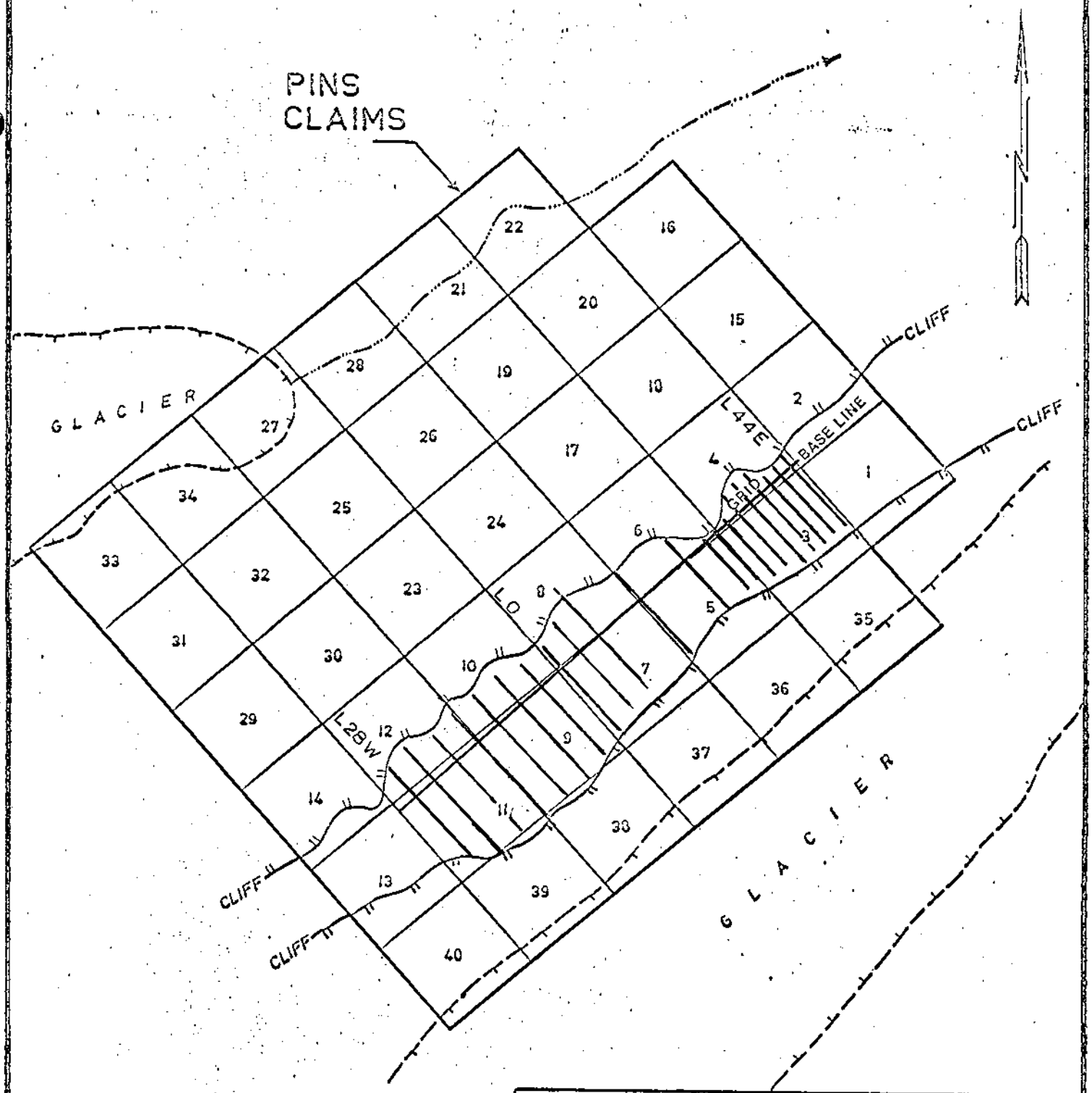
A	Feldspar porphyry
B	Quartz monzonite

Outline of PINS CLAIM GROUP

Copper Prospect

FIG. 2 Scale: 1 inch = 4 miles

REF: G.S.C. MAP 9-1957



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ASSESSMENT REPORT
NO. 4749 MAP #3

COBRE EXPLORATION LTD.

CLAIM & GRID
LOCATION MAP

PINS CLAIM GROUP

LIARD M.D., BRITISH COLUMBIA

0 2000 4000 6000
Scale in feet

slightly less severe slope covered with thick scrub is encountered on the southern extremity of the grid. The western and eastern ends of the grid are terminated by a steeply rising, ice-covered peak and bluff respectively.

The majority of the grid area is open alpine meadows, rock and snow-covered hills and low-relief ridges. These small ridges are invariably covered by stunted balsam.

GRID

The survey grid, which was established in the 1972 field season consisted of a 7,600-foot long baseline installed on a bearing of 040° with crosslines normal to this direction using flagging, chain, compass and pickets. The lines were originally spaced 800 feet apart from Line 24W to Line 28E. A line-spacing of 200 feet was used from Line 28E to Line 44E. Station interval on all above lines was 200 feet.

Contemporaneously with the present survey work, many existing lines were rehabilitated due to the numerous snow patches still remaining from the previous winter. Intermediate lines and stations were installed resulting in a 400 by 100-foot sampling grid from Line 28W to Line 8E. At the eastern end of the grid, the existing lines were used for the geophysicial surveys although intermediate stations were placed resulting in a 200 by 100-foot sampling grid in this area.

GEOLOGY

The following brief geological description is based on preliminary mapping conducted by Mr. M. J. Fitzgerald discussed in his "Report on Geological and Geochemical Surveys", November 13, 1972.

The property is mainly underlain by Triassic volcanics consisting of rhyolite (latite?), andesite and a chlorite-epidote-pyrite altered rock intruded by a diorite porphyry stock observed at the extreme west-southwesterly portion of the grid and dikes elsewhere. Younger intrusive dikes of andesite porphyry occur along the edges of the diorite porphyry.

Mineralization observed consists of pervasive disseminated pyrite within the andesite and chlorite-epidote-pyrite rocks found throughout the grid. Narrow quartz veins and veinlets contain chlorite and pyrite and some contain small amounts of chalcopyrite, galena and sphalerite.

An area reported by Fitzgerald at Line 28W, Station 1N presently covered by snow contained chalcopyrite, malachite, and limonite as fine disseminated specks, coarse blebs and veinlets in a clay, sericite, chlorite, altered andesite. This exposure, which trends southerly is about 15 feet wide by 70 feet long.

Copper-bearing float was found in a steep gulch at the northeastern portion of the grid which appears to have originated near the north ends of the Line 40E to Line 48E area.

The geochemical survey indicates that widespread sulphide mineralization may underlie the eastern grid area. This area is also believed to be heavily faulted or sheared.

THE GROUND MAGNETOMETER SURVEY

Comment

A total of 3.16 line miles (including the baseline) was magnetically surveyed over lines spaced 400 feet apart using a station interval of 100 feet.

Method

The instrument used was a vertical force fluxgate magnetometer which is hand held and nulled using a meter and a vernier type dial.

The magnetometer was held by the aid of a harness to maintain constant height above ground and constant distance from the operator.

Loop times of less than one hour were encountered, resulting in good control of the diurnal corrections. A nearby base-station was read at the beginning and end of each day for the day-to-day correlation and to monitor any possible magnetic storms. Additional control was obtained from the baseline readings. No magnetic storms were encountered, and di-urnal variations did not exceed 20 gammas.

Instrumentation

A Sabre G 100 Model Fluxgate magnetometer was used. This unit measures the absolute value of the vertical force variations of the earth's magnetic field, displayed in gammas, on a dial having a range of $\pm$ 100,000 gammas. The G 100 is very light, is fully portable, has good temperature stability, has negligible orientation error and is of rugged construction. Sensitivity is 20 gammas per dial division.

Data Compilation and Presentation

The readings and time of readings were recorded in a metal-free field book and transferred to a planimetric map for contouring

after the necessary diurnal and day-to-day corrections were made.

The plotted gamma values are relative to a datum of 55,000 gammas.

The values - contour map accompanying this report is at a scale of 1" = 200 feet. A 50 gamma contour interval was used. Areas of relatively high magnetic susceptibility (i.e. above 600 gammas are "hachured" and lows of less than 500 gammas are shown "ticked".

Discussion of Magnetic Results and Interpretation

The magnetometer coverage of the western grid area between Line 28W and L8W indicates a total relief of 640 gammas consisting of many local dipolar anomalies.

The relatively low values (i.e. less than 500 gammas) along the southeast edge of the grid are interpreted to be due to topographic effects resulting from a "fall-off" in terrain in this direction.

The "hachured" area (greater than 600 gammas) are thought to be underlain by dike or vein-type features containing up to 1% by volume magnetite.

The dipolar anomaly at L28W; Stn. 0 to Stn. 2N is coincident with the showing mentioned on page 4 of this report. The magnetics indicate that this showing could extend to L24W.

The eastern grid area is magnetically quite uninteresting with values ranging from 360 to 490 gammas. A subtle low is observed trending northwesterly and is flanked by a small high on L42E which is open to the north-east.

THE ELECTRO-MAGNETIC SURVEY

Instrumentation

A Crone C.E.M. "Shootback" unit consisting of two identical coils capable of both receiving and transmitting at three frequencies was used.

All circuiting is housed within the coils and the batteries are mounted in an insulated box on a magnesium-aluminium packboard.

Instrument Specifications

- coil diameter 22 inches, weight per coil 8.3 pounds
- frequencies: 390, 1830 and 5010 Hz
- accuracy: $\pm$ 1/2° dip-angle at coil spacings up to 300 feet and $\pm$ 1° up to 600 feet
- dip angle determined by visual null on field strength metre or audio null on head-phones
- power supply: three only six-volt lantern batteries in series = 18 volts
- coil spacing = 25 feet to 600 feet
- no interconnecting cable
- no topographic effects
- deep penetration
- can be used as Horizontal Shootback, Horizontal loop, vertical loop and co-axial shootback methods.

Treatment of Data

Profiles for all grid lines are shown in the map pocket.

Vertical scale is 1" = 10° resultant dip-angle. Positive dip-angles are plotted above (to the northeast) and negative dip-angles

below (to the southwest) of the survey line.

On certain lines where more than one frequency and coil separation were used, the results are shown as stacked profiles along a common axis.

Although all lines are shown in their proper relative positions, there is a constant north-south exageration of scale between lines to prevent overlapping and confusion of results.

Interpreted faults, conductor axes and conductive zones are also illustrated on the profile map.

General Comments and Theory of the Horizontal Shootback Method

In general, positive resultant dip-angles are caused by vertical or steeply dipping conductors' having primarily a vertical conductive component. The depth to the top of these conductors exhibiting a positive response is less than one-half the coil separation used and dependent upon the width of the conductor. In these cases, the positive occurs above the top of the conductor and is flanked by negative dip-angles, their amplitude, width and shape being determined by the dip, width and depth to the top of the conductor.

Negative dip-angles over the top of a conductor are primarily caused either by steeply dipping conductors at depths greater than one-half the coil separation or by conductors' having a large horizontal conductive component regardless of depth to the top. The latter include conductive overburden, sulphide lenses, pervasive pyrite concentrated in excess of 15% by volume, graphite horizons, and some

alteration products.

Within a certain range, the poorer the conductor, the higher the operating frequency must be to detect it.

The Horizontal Shootback method employs two men using identical instruments who traverse in unison along the same survey line perpendicular to the supposed strike of the conductor(s).

Both operators transmit and receive in turn, measuring the dip-angle of the field. The two dip-angles are then added and equal "0" if no conductors are present. The station measured is the mid-point between the two operators.

A combination of various operating frequencies and coil separations provides an interpretation concerning the geometry, depth to the top, and conductivity of the causative source.

The survey then was carried out over the north and south ends of the grid using the Horizontal "Shootback" mode with a coil separation of 200 feet, an operating frequency of 1830 Hz and a station interval of 100 feet along lines spaced 200 and 400 feet apart.

On Lines 32E, 36E, and 42E, additional traverses were run using coil separations of 100 and 300 feet and the lower operating frequency of 390 Hz.

Discussion of Electromagnetic Results and Interpretation

The electromagnetic coverage of the west end of the grid indicated a number of positive, low-amplitude dip-angles suggestive of near-surface, steeply-dipping, weak conductors which are generally striking north-east.

Many profile segments are quite broad or bi-modal and are thought to be caused by two or more sub-parallel weak conductors which are near enough to each other so as to cause the respective conductor dip-angles to overlap, or partially merge. These conductors could be primarily due to magnetite.

This area appears to be of minor interest geophysically and the likelihood of a massive sulphide lense or vein of economic significance occurring within 150 feet of the surface is considered remote.

The eastern grid area coverage, however, has resulted in a very encouraging but complex conductive pattern occurring from Line 28E to Line 44E.

Three sub-parallel, closely spaced, vertical, near-surface, narrow conductors are interpreted striking north-easterly and adjacent to the baseline. Their near proximity to each other makes dip, width and depth to top estimations difficult.

Detailed follow-up using one other frequency and coil separation has enhanced the interpretation on L32E and L36E but the considerable detail carried out on L42E seems to have confused the picture somewhat in this area.

A possible explanation of the complexity of the dip-angles on L44E and the general poor correlation between profiles for the various frequencies and coil separations employed might be the result of two or three different types of conductors superimposed on one another.

As shown on the profile map the area northeast of the base-line from Line 40E to past Line 44E is interpreted as a broad conductive zone striking approximately N10°E. This zone is coincident with a Pb geochemical soil anomaly determined the preceeding exploration season. The zone is flanked by two dike-like conductors which appear to continue southerly past the southern terminous of the zone.

Topographic effects east and north of L39E suggest the presence of northeast and northwest trending faults which appear to have influenced the data.

CONCLUSIONS AND RECOMMENDATIONS

In correlating all available data one finds that on the western grid the magnetics are the most interesting while on the eastern grid it is the electro-magnetics which yields the most promise. Combined with the geochemical results it is suggested that the western area is underlain by dikes, veinlets and local pockets of copper-magnetite mineralization within a larger area of pervasive pyrite.

The eastern zone appears to be underlain by a number of moderate to strong conductors which could be related to massive Pb-Zn sulphides. The magnetic response and the anomalous geochemical results in this area is encouraging. Pyrite, however, is observed throughout portions of this area as well as to the west.

Within the areas covered to date, the eastern grid from L40E to and beyond L44E holds the most promise for an economic sulphide deposit. Due to the steep terrain northeast of L44E, no further geophysics is recommended at this time to close off the electromagnetic anomaly in this direction.

A sufficient amount of geophysical coverage has been carried out to warrant a drill-program in the east grid area. An initial drilling footage of 2,000 feet is required to test the conductive zone on line 42E as well as the other vertical conductors just to the southwest.

While the drill is on the property one or two short angled holes might be contemplated to test the showing on L28W and the long dike-like magnetic anomaly near the southwest end of L16W.

Actual spotting of drill holes should be done in conference between the project geologist and the writer of this report.

Respectfully Submitted,

P. P. Nielsen, M.Sc., Geophysicist

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA

G. B. Phelps, M.Sc., Eng., Geologist

NIELSEN GEOPHYSICS LTD.

PERSONNEL

NIELSEN GEOPHYSICS LTD.

P. P. Nielsen - Consultant, E.M.operator

MIN-EX SERVICES LTD.

M. Fitzgerald (Sr.) - Geologist, Magnetometer operator

M. Fitzgerald (Jr.) - Assistant E.M. operator, line-cutter

COST

The following represent Nielsen Geophysics Ltd. charges and does not include local transportation, food and accommodation, or salaries of Min-Ex personnel.

1.	E.M. Survey and field data compilation.....	$ 900.00
2.	C.E.M. Instrument Rental.....	150.00
3.	Report.....	250.00
4.	Disbursements.....	150.48
	TOTAL CHARGES	$ 1,450.48

STATEMENT OF AUTHOR'S QUALIFICATIONS

I DO HEREBY STATE:

1. I am the author of this report.

2. I have been actively and responsibly involved in mining exploration using airborne, ground and computer applied geophysics in Canada and the United States for the past nine years.

3. I graduated with a B.Sc. degree in Geophysics from the University of British Columbia in 1969.

4. I am President, Nielsen Geophysics Ltd. with business address at 420-475 Howe Street, Vancouver 1, B. C.

5. I am a member of the Society of Exploration Geophysicists, the Canadian Institute of Mining and Metallurgy and the B. C. Geophysical Society.

Signed P. P. Nielsen

P. P. Nielsen

Date Oct 22/73

ENGINEER'S CERTIFICATE

I, GEORGE B. PHELPS, of #501-2061 Beach Avenue, in the City of Vancouver, in the Province of British Columbia, DO HEREBY CERTIFY:-

1. That I am a consulting geological engineer with a business address of 420-475 Howe Street, Vancouver, British Columbia.

2. That I am a graduate of the Montana College of Mineral Science and Technology where I obtained my B.Sc. in geological engineering in 1966 and my M.Sc. in geological engineering in 1969.

3. That I am a Registered Professional Engineer in the Geological Section of the Association of Professional Engineers in the Province of British Columbia.

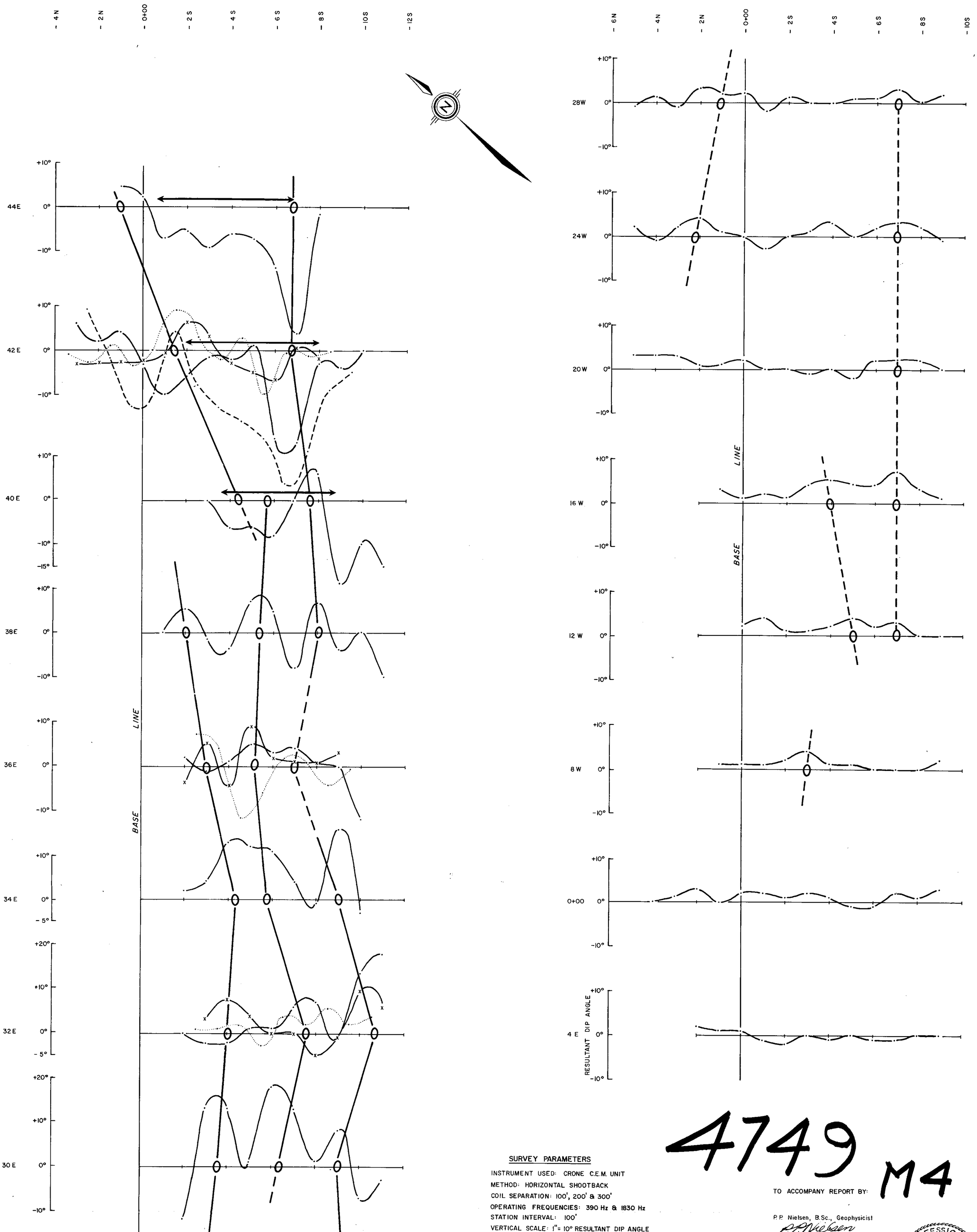
4. That I have practiced my profession as a geological engineer for the past seven years, and

5. That I have no interest, direct or indirect, in the property with which this report is concerned, nor do I expect to receive any such interest. I have no interest in the securities of Cone Explorations Ltd.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA

George B. Phelps, M.Sc., P.Eng.

DATED at the City of Vancouver, Province of British Columbia, this 27th day of October 1973.



SURVEY PARAMETERS

INSTRUMENT USED: CRONE C.E.M. UNIT
METHOD: HORIZONTAL SHOOTBACK
COIL SEPARATION: 100', 200' & 300'
OPERATING FREQUENCIES: 390 Hz & 1830 Hz
STATION INTERVAL: 100'
VERTICAL SCALE: 1"= 10° RESULTANT DIP ANGLE

NOTE: INTERLINE SPACING NOT TO SCALE

4749 M4

TO ACCOMPANY REPORT BY:

P.P. Nielsen, B.Sc., Geophysicist

P.P. Nielsen

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA

Department of
Mines and Petroleum Resources
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LEGEND

Dashed line denotes a= 300'
Solid line denotes a= 200'
Dotted line denotes a= 100'
} TRAVERSE

Dots denote 1830 Hz
"X's" denote 390 Hz
} OPERATING FREQUENCY

WEAK CONDUCTOR AXIS
STRONG CONDUCTOR AXIS
INTERPRETED FAULT
CONDUCTIVE ZONE

COBRE EXPLORATION LTD.

SNIPPAKER CREEK AREA, B.C.

PINS CLAIMS

ELECTROMAGNETIC SURVEY

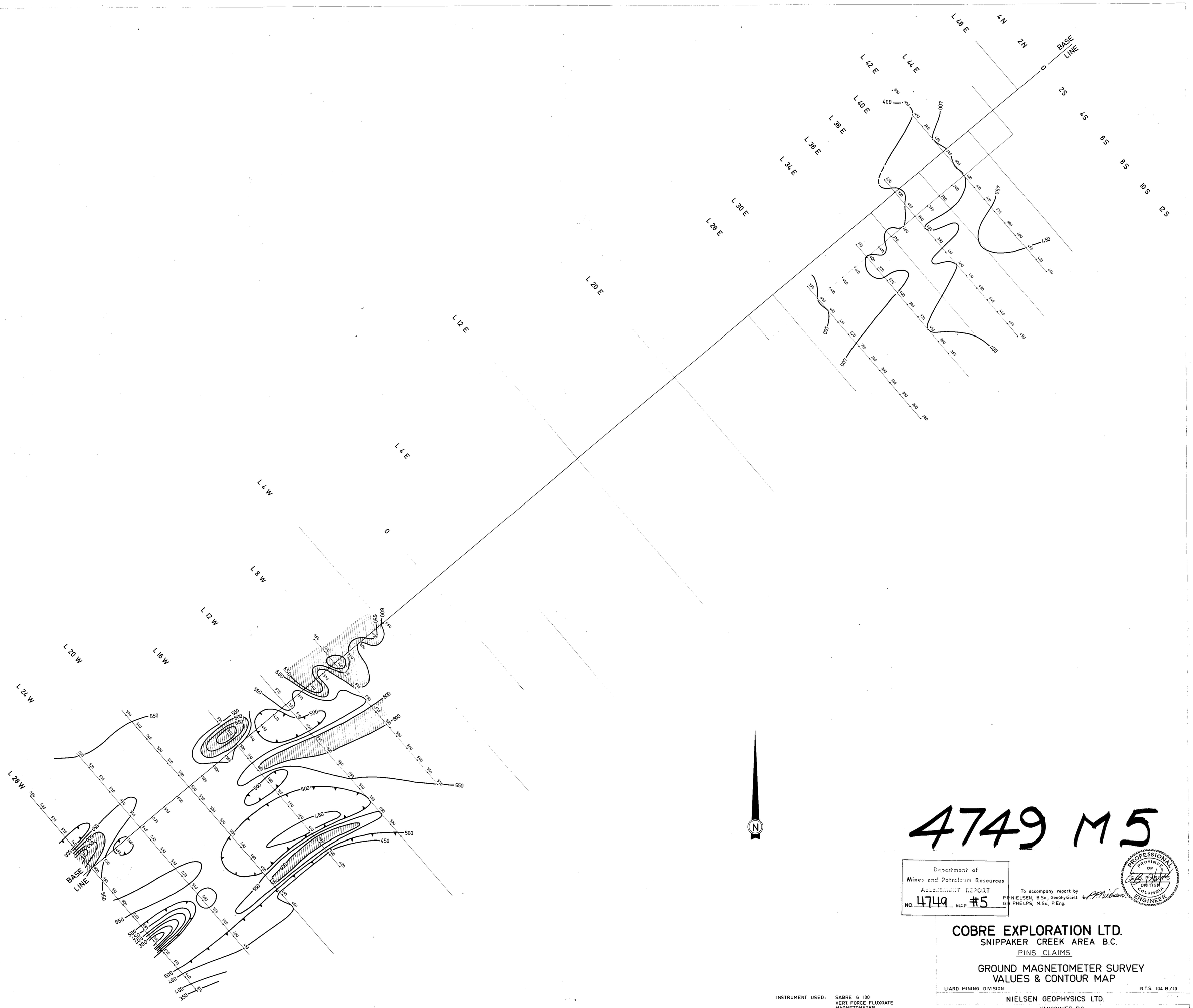
PROFILES

LIARD MINING DIVISION N.T.S. 104 B 10

NIELSEN GEOPHYSICS LTD.
VANCOUVER, B.C.

SEPTEMBER, 1973 DRAWN: J.R.L.

200 0 200 400
SCALE IN FEET



INSTRUMENT USED: SABRE G 100 VERT FORCE FLUXGATE MAGNETOMETER

CONTOUR INTERVAL: 50 GAMMAS

BASE VALUE: 55 000 GAMMAS

4749 M5

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4749 MAP #5

To accompany report by
P.R. NIELSEN, B.Sc., Geophysicist
G.B. PHELPS, M.Sc., P.Eng.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — G.B. Phelps

COBRE EXPLORATION LTD.

SNIPPAKER CREEK AREA B.C.

PINS CLAIMS

GROUND MAGNETOMETER SURVEY VALUES & CONTOUR MAP

LIARD MINING DIVISION — N.T.S. 104 B/10

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200 0 200 400
Scale in feet

DATE: SEPTEMBER 1973. — DRAWN BY: NCL