4608

94C/5E, 6W

GEOPHYSICAL REPORT

on the

GROUND ELECTROMAGNETIC SURVEY

on the

BURN CLAIMS

SWANNELL RIVER AREA, B. C.

OMINECA MINING DIVISION

Lat. 56°28'N
Long. 125°30'W

on behalf of

SEREM LIMITED

Claim Name	Record Number	Anniversary
Burn 1 - 10	114351 - 114360	August 9
Burn 11 - 20	116061 - 116070	September 14

by

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

and

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

Atled Exploration Management Ltd.
Vancouver, B. C.

August, 1973

NTS 94C 5 & 6

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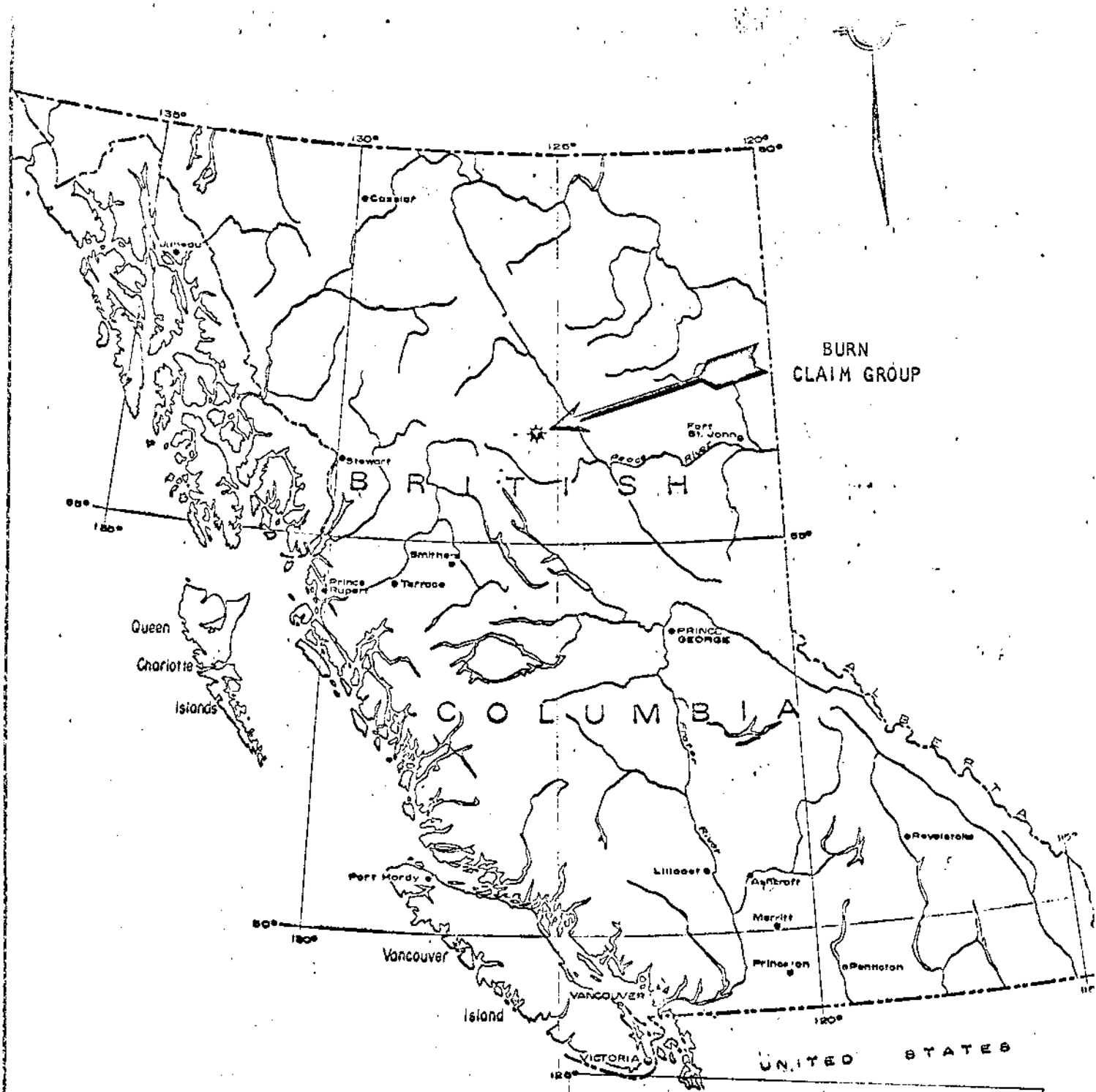
INTRODUCTION

During the periods from June 19 to 25 and from July 2 to 5, 1973 a Horizontal Shootback Electromagnetic survey was executed on the Burn claim group in the Aiken Lake area, B. C., Omineca Mining Division.

The survey was performed by Atled Exploration Management Ltd. on behalf of Serem Ltd.

The purpose of the survey was to explore for bedded lead-zinc sulphide mineralization and to delineate favourable rock types and important structures over an area mainly covered by overburden. 13.3 line miles of reconnaissance coverage was executed on a cut grid using a coil separation of 200 feet, an operating frequency of 1830 Hz, a station interval of 100 feet and a line spacing of 400 feet.

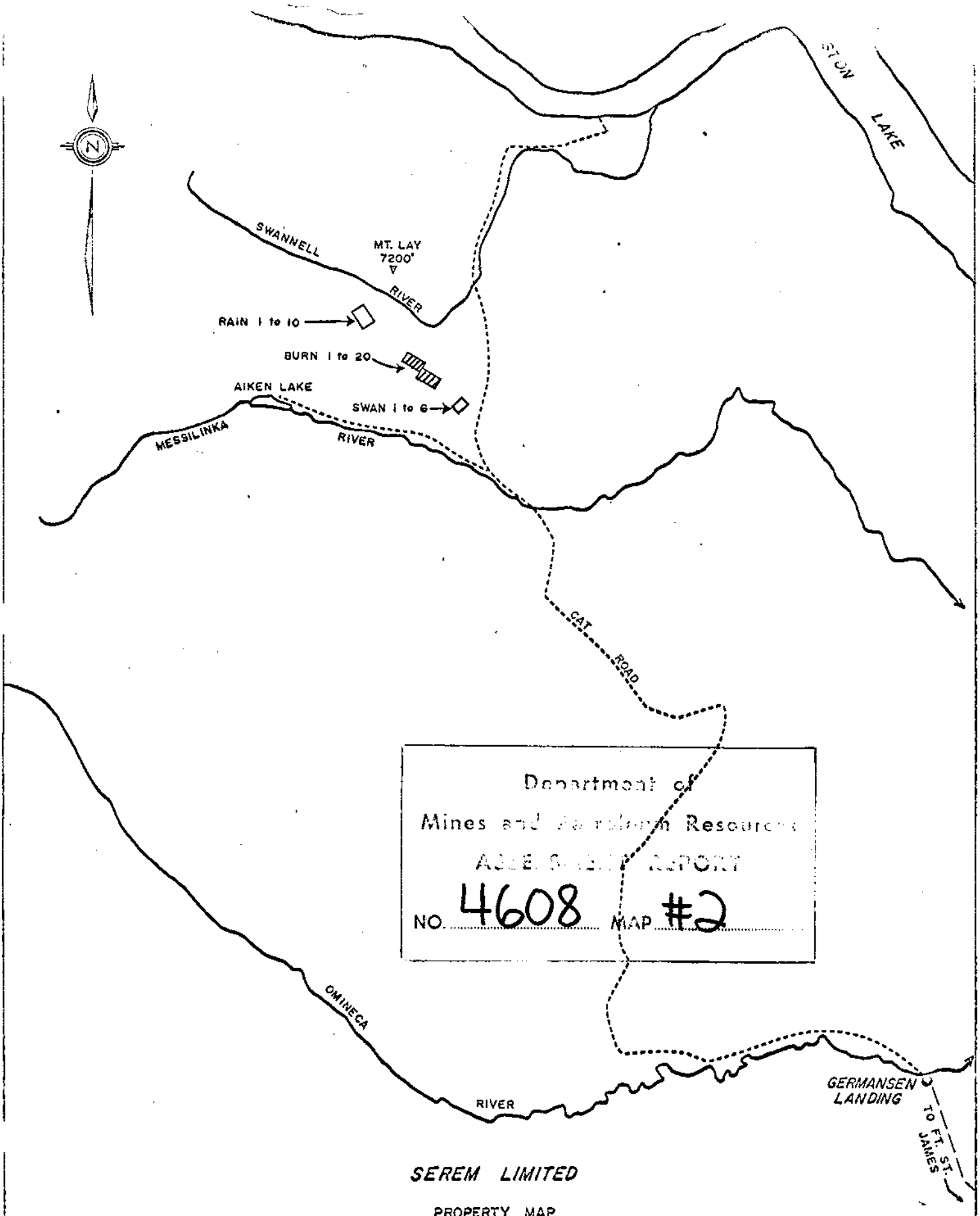
An additional 3,000 feet of detail coverage using a station interval of 50 feet was carried out on L50NW, L54NW and L58NW. A total of 13.8 line miles was surveyed in 11 days.



SEREM LTD.

LOCATION MAP

Scale: 1" = 100 miles



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4608 MAP #2

SEREM LIMITED

PROPERTY MAP

Scale: 1" = 8 miles

LOCATION AND ACCESS

The Burn claims are situated in the Omineca Mining Division, 56 air miles northwest of Germansen Landing, 200 miles northwest of Fort St. James and 132 miles northeast of Smithers, B. C.

Co-ordinates are 125°30'W longitude and 56°28'N latitude. Access is by float plane to Aiken Lake and thence by helicopter a distance of 10 miles east-northeast to the centre of the property.

A tote road from Germansen Landing crosses the northeast corner of the claims and can be negotiated by four-wheel drive truck at certain times depending on local weather conditions.

TOPOGRAPHY AND GROUND CONDITIONS

The property lies at about 5,000 feet above sea level near the summit between the Swannell River two miles to the north and the Mesilinka four miles to the south.

Terrain is rolling with local creek drainage to the northeast.

The claims are primarily covered by thick spruce and overburden thicknesses are thought to be less than 75 feet. Outcrops appear to occupy less than 10% of the total claim area.

The highest peak in the area is Mt. Lay (7,200') about six miles to the north-northwest.

GEOLOGY

(after "A Report of Geological Activities in the Ingenika Area of North Central B. C." by P. Tegart--January, 1973)

Regional

The area is underlain by a northwest striking, southwesterly dipping sequence of sedimentary rocks spanning in age from the Proterozoic and Lower Cambrian (Tenakiki and Ingenika groups respectively) to Devonian and Paleozoic rocks.

The older units occur to the northeast with the younger successions overlying them to the southwest.

An unconformity separates the Ingenika from the Devonian rocks and a disconformity appears to separate the Devonian from the Upper Paleozoic rocks.

Basal quartzites and calcareous phyllites were deposited on a migeosynclinal platform. Latter stages of deposition of the Ingenika group appear to be associated with uplift creating a shallow water environment for calcareous deposition.

The whole sequence was tilted westward in Middle Cambrian time. Middle Devonian and possibly Silurian rocks overlie Ingenika slates and quartzites.

More intense tectonic activity in Mississippian and Permian times resulted in major faulting in the form of thrust, strike-slip and block faults within or across competent rock units and folding or dragging associated with the more incompetent members.

Detail

The majority of the claims are underlain by upper Ingenika rocks. These consist of quartzitic rocks and a thick bedded limestone or dolomite overlain to the southwest by thin sequences of black carbonate or slate and graphitic agillite beds.

Mineralization observed in three areas on the claim group occurs at the top of the limestone or dolomite bed primarily as scattered blebs of galena and light brown sphalerite grading approximately three percent combined lead-zinc over appreciable mining widths.

The mineralization appears stratabound in that it is either concordant with the bedding or it occurs as disseminated blebs within one common unit.

Faulting and folding have complicated the geology and seem to have cut off the mineralization at or near the showings. No volcanic or intrusive rocks have been observed in the area.

CLAIMS

The following 20 contiguous claims are owned by Serem Ltd. and were acquired by staking in 1972.

Claim Name	Record Number	Expiry Date
Burn 1 - 10	114351 - 114360	August 9, 1973
Burn 11 - 20	116061 - 116070	September 14, 1973

GRID INSTALLATION

The survey lines were installed using compass, chain, axes and marked flagging.

The baseline was established on a bearing of 315° parallel to the claim lines. Crosslines were installed using a line spacing of 400 feet and a station interval of 100 feet from Station 1 to 20 SW.

Three intermediate lines, L50NW, L54NW and L58NW, totalling 3,000 line feet were also installed.

A grand total (including the baseline) of 16.2 line miles of grid was installed.

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-aluminum packboard.

Instrument Specifications

- coil diameter 22", weight per coil 8.3 pounds
- frequencies: 390, 1830 and 5010 Hz
- accuracy: ± 1/2° dip-angle at coil spacings up to 300 feet and ± 1° up to 600 feet
- dip angle determined by visual null on field strength meter 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" = 40° resultant dip-angle. Positive dip-angles are plotted above (to the northwest) and negative dip-angles below (to the southeast) of the survey line.

Profiles of the various test traverses are also included.

Each combination of frequency and coil separation employed yields a separate profile trace.

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 number of test traverses were run over known sulphide mineralization (showings) in the area using various coil separations, operating frequencies and station intervals.

The results of these tests were discouraging probably due to insufficient concentrations of galena with the low iron-content sphalerite and/or insufficient strike-length of possible conductors.

It was decided, however, that the method would delineate a graphite shale which was deemed an important marker horizon above and down dip of the mineral-bearing dolomite and that important structural information, especially fault locations, might be extracted from the data.

The survey then was carried out over almost the entire 20 claims 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 400 feet apart.

Discussion of Results and Interpretation

The following discussion is based on a correlation of:

1. Dip-angle profiles for location of conductors on line
2. Dip-angle contours for interpolation of conductors between lines, faults and general rock unit formation (not included in report)
3. Topography
4. Geological and geomorphological information from Serem staff.

The E.M. profiles and contours indicate the presence of a highly conductive formation from southeast of Line 0 to Line 88NW where it appears to be cut off by a northeast striking fault along Line 92W.

This rock unit is due to a graphitic shale or argillite striking parallel to and to the southwest of the baseline over most of its length except at the southeast end of the grid where it crosses the baseline to the east. Higher concentrations of graphitic material occur within this broad conductive zone, and are shown as conductor axes on the map. Although no economic significance is attached to these conductors, the shale serves as a marker horizon adjacent to and down dip of a favourable zinc-bearing dolomite to the northeast.

The E.M. data indicate numerous north, northeast and easterly striking faults within the conductive zone. These faults are extrapolated out into the other rock types to the northeast and are also illustrated on the accompanying map.

The -10° dip-angle level is considered to be the trace of the argillite-dolomite contact.

A number of small positive dip-angles are observed northeast of the baseline particularly in the L28NW to L52NW area. As they are not accompanied by flanking negative dip-angles and because they are erratic on most lines and of over 400 feet wide along one line, little sense can be made from these positive readings. They generally occur in an area thought to be underlain by quartzites. A possible explanation for these readings is that the causative source(s) might be striking sub-parallel to the survey line resulting in coupling problems or that the strike-length of the conductors in this area might be too short for a clear response.

CONCLUSIONS AND RECOMMENDATIONS

The survey has shown that the electromagnetic survey has failed to delineate sulphide mineralization directly. Disseminated sphalerite is known to occur just to the northeast of the conductive zone between L48NW and L64NW. It would appear that insufficient amounts of metallicly conducting sulphides such as galena or pyrite occur with non-conducting sphalerite to be responsive to the electromagnetic method.

However, the survey has delineated what appears to be an important marker bed to the southwest, down-dip and in contact with a dolomite bed thought favourable as a host for sphalerite of possible economic importance.

The interpreted faults might also be important in tracing this dolomite for further trenching and/or drilling.

No further geophysical work is recommended at present. Trenching and drilling should be confined to the area northeast of the interpreted argillite-dolomite contact from the southeastern end of the grid to L88NW.

Respectfully submitted,

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

George B. Phelps, M.Sc., P.Eng., Geologist
Atled Exploration Management Ltd.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
G. B. PHELPS

APPENDICES

STATEMENT OF AUTHOR'S QUALIFICATIONS

I DO HEREBY STATE THAT:

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 Western 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 presently Manager, Geophysical Division, Atled Exploration Management Ltd., at #420 - 475 Howe Street, Vancouver, 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 9 Sept. 1973

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 Serem 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 _____ day of _____ 1973.

STATEMENT OF COSTS

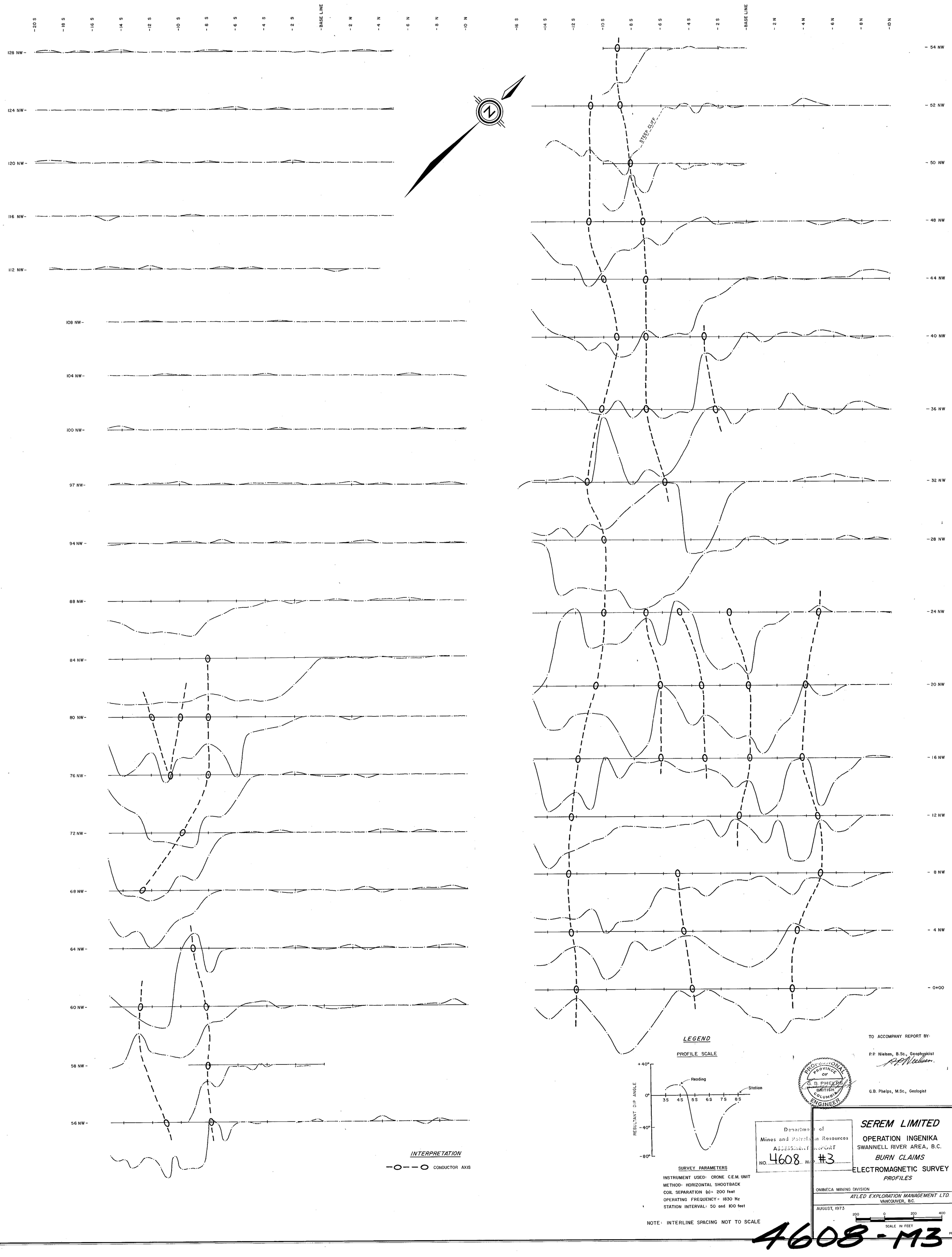
The following statement relates to Atled's charges in conducting an electromagnetic survey on the Burn Claims. Support costs including transportation, linecutting, supervision, food and accommodation borne by Serem are not included.

Electromagnetic Survey

13.8 line miles @ $178.33 per line mile	$ 2,461.00

PERSONNEL

P. P. Nielsen, B.Sc., Geophysicist	Supervision and consulting
A. T. LaRose	Chief E.M. operator
D. Wright	Assistant E.M. operator


-20 S
-18 S
-16 S
-14 S
-12 S
-10 S
-8 S
-6 S
-4 S
-2 S
-BASE LINE
-2 N
-4 N
-6 N
-8 N
-10 N
128 NW
124 NW
120 NW
116 NW
112 NW
108 NW
104 NW
100 NW
97 NW
94 NW
88 NW
84 NW
80 NW
76 NW
72 NW
68 NW
64 NW
60 NW
58 NW
56 NW
-16 S
-14 S
-12 S
-10 S
-8 S
-6 S
-4 S
-2 S
-BASE LINE
-2 N
-4 N
-6 N
-8 N
-10 N
54 NW
52 NW
50 NW
48 NW
44 NW
40 NW
36 NW
32 NW
28 NW
24 NW
20 NW
16 NW
12 NW
8 NW
4 NW
0+00
STEEP CLIFF
INTERPRETATION
CONDUCTOR AXIS
LEGEND
PROFILE SCALE
+40°
0°
-40°
-80°
RESULTANT DIP ANGLE
Reading
Station
3S
4S
5S
6S
7S
8S
SURVEY PARAMETERS
INSTRUMENT USED: CRONE C.E.M. UNIT
METHOD: HORIZONTAL SHOOTBACK
COIL SEPARATION (a)= 200 feet
OPERATING FREQUENCY = 1830 Hz
STATION INTERVAL: 50 and 100 feet
NOTE: INTERLINE SPACING NOT TO SCALE
TO ACCOMPANY REPORT BY:
P.P. Nielsen, B.Sc., Geophysicist
G.B. Phelps, M.Sc., Geologist
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
G. B. PHELPS
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4608 MAP #3
SEREM LIMITED
OPERATION INGENIKA
SWANNELL RIVER AREA, B.C.
BURN CLAIMS
ELECTROMAGNETIC SURVEY
PROFILES
OMINECA MINING DIVISION
N.T.S. 94C 5 & 6
ATLED EXPLORATION MANAGEMENT LTD.
VANCOUVER, B.C.
AUGUST, 1973
DRAWN: J.R.L.
200 0 200 400
SCALE IN FEET
PROJECT No. GE 73-10
4608 - M3