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9/88

Assessment Report
on
Geophysical Survey
Induced Polarization Survey

FILMED

conducted on the

SOPHIA CLAIM

NTS 92I/7E

Lat. 50° 18¹⁴' N

Long. 120° 43³⁰' W

Nicola M.D.

Owned by

Charles Boitard

Operated by

LAKWOOD MINING CO. LTD.
(Charles Boitard)

SUB-RECORDER RECEIVED
DEC 9 1987
M.R. # \$.....
VANCOUVER, B.C.

Authors:

John P. La Rue

and

Charles Boitard

November 15, 1987

Lillooet, B.C.

16,625

GEOLOGICAL BRANCH
ASSESSMENT REPORT

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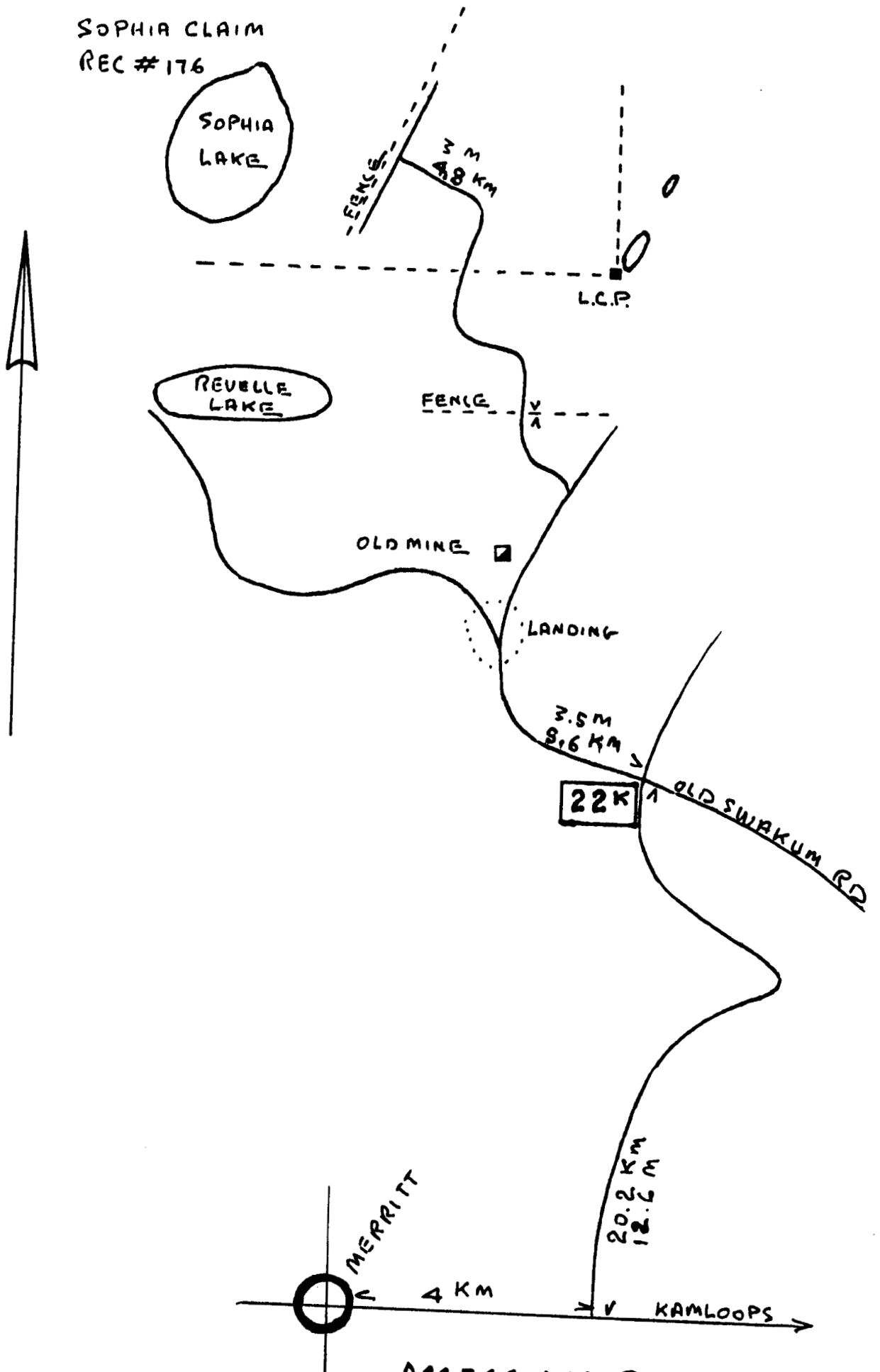
INTRODUCTION

- (i) The SOPHIA Mineral Claim is located at Lat. $50^{\circ}18.5'$ Long $120^{\circ}44'$, 22 air kilometers $N10^{\circ}E$ of the town of Merritt, B.C. within the Nicola Mining Division NTS Map 92I/7E.

Access to the property is gained by two wheel drive vehicle from the Merritt-Logan gravel road where a spur road is taken running easterly past Tolman Creek, some 20/2 km. out of Merritt. The SOPHIA property lies approximately 10 km. along this road. Several N-S sub-grade logging and mining roads facilitate access to the interior portions of the property itself.

The property is located within the Thompson Plateau, a physiographic division of the Interior Plateau System. Topography is typically gently rolling terrain with elevation relief of approximately 100 meters varying from 1,460 meters to 1,560 meters. Vegetation is primarily open to moderate jack pine cover with local areas of grassland; topographic depressions are commonly marshy. Water supply for all phases of exploration and development is adequate with Sophia and two smaller lakes and their drainage systems within the property boundaries.

SOPHIA CLAIM
REC # 176



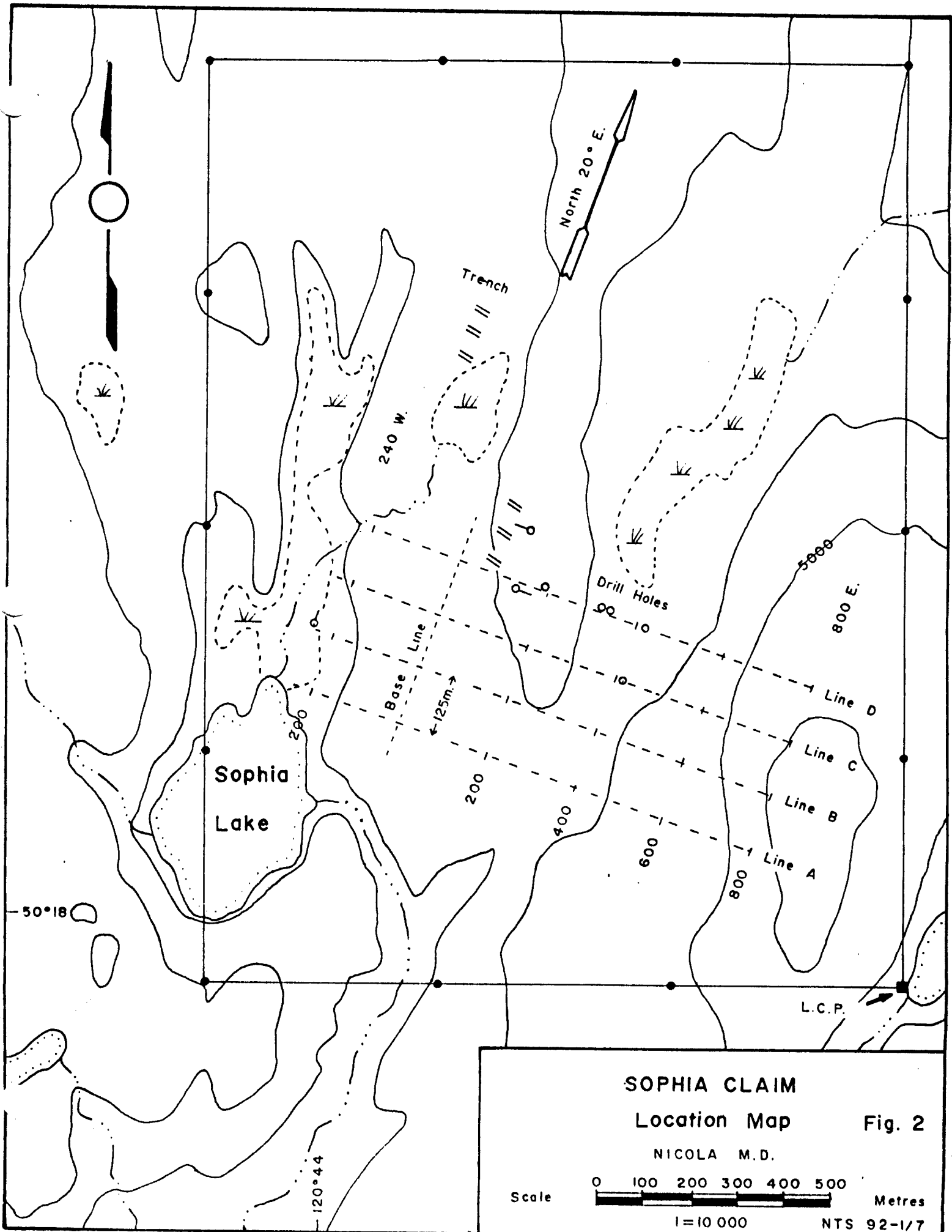
ACCESS AND ROAD MAP FIG. 1

- (ii) The SOPHIA Mineral Claim is a 12 unit Modified Grid Claim wholly owned by Charles Boitard, of Vancouver, B.C.:

<u>Claim Name</u>	<u>Units</u>	<u>Record No.</u>	<u>Expiry Date</u>
SOPHIA	12	176 (9)	Sept. 10/87

This expiry date does not take into account the surveys under discussion as being accepted for assessment surveys. Regionally, SOPHIA is located within the Nicola Volcanic belt which extends from the U.S. border south of Princeton north to Kamloops; this area has been the object of continued mineral exploration since the late 1800's. Following the discovery of gold and platinum placer deposits in the Similkameen and Tulameen Rivers, ongoing exploration led to the discovery of numerous viable copper-gold-silver occurrences within the Thompson Plateau among which number the more significant Copper Mountain, Craigmont and Afton deposits.

Local geological history is centered around Swakum Mountain deposits which lie approximately two miles east of the Sophia property and were originally discovered in 1916. Several small high grade shipments of precious/base metal ore were shipped from the Last Chance (Lucky Mike), Thelma and Alameda Claims. Of geological interest, a scheelite showing averaging .25% over an average width of 34 feet, occurs on the Last Chance Claim.



The following information concerning a history of previous work on the SOPHIA and localized Geology is taken in context from a "Report on a Percussion Drill Program on the SOPHIA Claim" by L. Sookochoff, P. Eng. Dec '83:

" GEOLOGY AND MINERALIZATION

The Nicola map-sheet 886 A shows the claim area to be underlain by the Nicola Group of rocks comprised of greenstone, volcanics and tuffs intercalated with minor limestone, argillite and conglomerates. The northerly trending Nicola rocks are bounded to the east and west by intrusives of granite composition. An intrusive plug not indicated on the map-sheet, outcrops at Rey Lake. Regionally an asymmetrical anticline with the axis plunging to the south is indicated at the Swakum Mountain deposits. An aplite dyke and one outcrop of granitic rock was found near the Last Chance property.

Large scale northwesterly structures are indicated by the Hector Creek valley to the south and the Rey Creek Valley to the north. Northerly and east-west structures are suggested topographically or by smaller scale structures in the area.

On the property and east of Sophia Lake a 175 meter wide limestone bed trends northerly and forms a ridge over 600 meter strike length. The gray course granular limestone generally contains numerous random and fracture oriented

calcite stringers which average less than two m.m. Locally brecciated zones occur which contain angular fragments healed with calcite. Patchy red hematite, locally weathered increases in areas of heavier brecciation. From the northern ridge exposure, brecciation increases to an area adjacent to the south trench zone. The south trench zone, approximately 30 meters west of the limestone exposes a 10 meter wide band of highly fractured argillites with less obvious greywackes and conglomerates. The argillite strikes at 168° and dips at 70° north.

An intrusive with euhedral feldspar crystals set in a matrix of seriate textured feldspathic ground mass outcrops in the center trench. Occasional sericite up to 10 mm. long and secondary quartz eyes occur throughout the matrix. A light dusting of sericite on the feldspar is obvious.

Three trenches 500 meters to the northwest of the south zone expose an eight meter wide heavily pyritized shear zone. The shear zone strikes at 220° , dips at 30° to 60° south. Andesite porphyry in addition to a breccia predominate. Calcite and quartz occur as random stringers and cement the breccia fragments. Pyrite in addition to sphalerite, galena and chalcopyrite occurs in association with the calcite and quartz. A gray aphanitic micropegmatite occurs discordantly with the andesite porphyry

and is weakly mineralized".

"Portions of the SOPHIA property were previously known as the Sunshine Lee and Lo Claim Groups which were worked by Vastlode Mining Co. Ltd. Mineralized shear zones within Nicola volcanic rocks were the focal point of interest. In 1976, prior to the acquisition of the property by Charles Boitard, an E.M. and Magnetometer survey in addition to a preliminary geochemical survey was carried out over localized area of the property.

In 1978 a localized I.P. Survey and "587 feet" of diamond drilling in three holes was completed on the property.

In 1979, Lakewood carried out a six hole percussion drill hole program on the property. There was no work done on the property from 1979 to the 1983 percussion drill hole program reported herein.

In 1983 a percussion drilling program consisting of two holes totalling 560 feet of drilling were completed to test anomalous areas indicated in previous surveys.

In 1986 a VLF-EM and Mag. Survey carried over Lines A.B.C.D. revealed two partly correlating conductors".

- (iii) A Summary of Work performed on the SOPHIA Property for assessment purposes during the 1987 exploration season is as follows:

5.1 kilometers of Induced Polarization Survey was completed on Lines A; B; C; D of the property.

A total of 101 readings were taken at 40 meter intervals (dipole - dipole array 80 meters)

(iv) Work for assessment purposes during the 1987 exploration season was performed on Lines A;B;C;D, comprising approximately 15% of the claim.

DETAILED TECHNICAL DATA

During the period of August 31 to September 4, 1987, a total of 5.1 kilometers of Induced Polarization Survey was completed over the SOPHIA Mineral Claim on Lines A;B;C;D.

The survey lines are oriented in the easterly-westerly direction (110° - 290°). The lines were flagged and blazed.

5.1 kilometers of Induced Polarization Survey grading at 80 meter spacing n=1 readings taken at 40 meter intervals for a total of 101 readings.

The purpose of the Induced Polarization Survey was to locate disseminated sulphides which could mean locating pyritization associated with economic sulphide mineralization.

A dipole - dipole array was used with 80 meter separation between the transmitter and the receiver taking readings every 40 meters for a total distance of 5.1 kilometers of survey, n=1 101 readings. The following notes on the theory and method of field operation for the Induced Polarization method are taken from context of a geophysical report completed for McPhar Geophysics by Phillip G. Hallof, Ph.D. (Geophysics).

"Induced Polarization as a geophysical measurement refers to the blocking action or polarization of metallic or electronic conductors in a medium of ionic solution conduction. This electrochemical phenomenon occurs wherever electrical current is passed through an area which contains metallic minerals such as base metal sulphides. Normally, when current is passed through ground, as in resistivity measurements, all of the conduction takes place through ions present in the water content of the rock, or soil, i.e. by ionic conduction. This is because almost all minerals have a much higher specific resistivity than water. The group of minerals commonly described as 'metallic' however, have specific resistivities much lower than ground waters. The induced polarization effect takes place at those interfaces where the mode of conduction changes from ionic in the solutions filling the interstices of the rock to electronic in the metallic minerals present in the rock. The blocking action or induced polarization mentioned above, which depends upon the chemical energies necessary to allow the ions to give up or receive electrons from the metallic surface, increases with the time that a d.c. current is allowed to flow through the rock; i.e. as ions pile up against the metallic interface the resistance to current flow increases. Eventually, there is enough polarization in the form of excess ions at the interfaces, to appreciably reduce the amount of current flow through the metallic particle. This polarization takes place at each of the infinite number of solution-metal interfaces in a mineralized rock... when the d.c. voltage used to create this d.c. current flow is cut off, the Coulomb forces between the charged

ions forming the polarization cause them to return to their normal position. This movement of charge creates a small current flow which can be measured on the surface of the ground as a decaying potential difference... The values of the percent frequency effect (%F.E.) are a measurement of the polarization in the rock mass. The induced polarization method is perhaps the most powerful geophysical method for the direct detection of metallic sulphide mineralization, even when this mineralization is of very low concentration... In the field procedure, current is applied to the ground at two points in distance (X) meters apart. The potentials are measured at two other points (X) meters apart; in line with the the current electrodes is and integer number (n) times the basic distance (X). The measurements are made along a surveyed line, with a constant distance (nX) between the nearest current and potential electrodes. In most surveys, several traverses are made with various values of (n); i.e. (n) = 1,2,3, etc. The kind of survey required decides the number of values of (n) used. The separation between sender and receiver electrodes is only one factor which determines the depth to which the ground is being sampled in any particular measurement."

Survey data has been presented in an uncounted overall map format. Additional surveying and geological mapping will be necessary before a detailed technical interpretation of the survey results will possible. With the data thus far obtained, however, it is possible to make several observations that may prove useful in future surveys:

INTERPRETATION

It would appear from the survey data thus far gathered, the Induced Polarization method of geophysical surveying may well be the most definitive tool to use in this area. The majority of the area surveyed returned fairly background data; using a FE% of 4 as the threshold, the area of greatest interest occurs on Line D, from the area of the previous trenching at 80E to 240W.

The I.P. Survey has returned three "zones", in this area, with a FE% of 4 or greater. Line D crosses the lower or southernmost of the three exploration trenches which "expose an eight meter wide heavily pyritized shear zone. The shear zone strikes at 220° , dips at 30° to 60° south. Andesite porphyry in addition to a breccia predominate. Calcite and quartz occur as random stringers and cement the breccia fragments. Pyrite in addition to sphalerite, galena and chalcopyrite occurs in association with the calcite and quartz. (L. Sookochoff, Dec. 7/83)". Directly over the trench, the I.P. data reflects a FE% of 2, with a FE% of 4 to the northwest 40 meters. Using this mineral showing and the gathered data as control, one might expect to find similar mineralization at Line D + 80W and also Line D between 160W and 240W. The zone centered at Line D + 200W is of prime interest with the data reflecting a FE% of 6, at the center of an 80 meter wide zone.

SUMMARY

Based on the data compiled to date, it would appear the next logical program would include an extension of the I.P. Survey to the north and west in an effort to delineate and possibly "peak-up" the three "zones" outlined in the '87 Survey.

It is possible that these zones may be the southernmost expression of a larger anomaly lying to the north of the present survey grid. It is suggested that trenching has proven to be an effective exploration tool in the past, and might be used to advantage on the anomaly centered at Line D + 200W reflecting an I.P. FE% of 6, more than 3 times normal background.

MALASPINA COLLEGE

Statement of Course Completion

JOHN P. LARUE

has

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in

MINERAL EXPLORATION FOR PROSPECTORS

PRESENTED BY B.C. MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES
B.C. MINISTRY OF EDUCATION

APRIL 16 to 30, 1983 - MESACHIE LAKE, B.C.

MAY 2, 1983

Dated at Nanaimo,
British Columbia, Canada



Arthur W. Johnson

Director / Dean

John P. Larue

Registrar

H. P. Smith

Instructor

Detailed costs and expenses incurred during the year 1987
in regard to the Sophia Claim, record #176, Nicola Mining
Division:

Induced Polarization Survey, 20 man days, 5.1 km. all inclusive	\$8,160.00
Drafting	750.00
Typing and copies	250.00
Report	<u>750.00</u>
	\$9,910.00

Respectfully submitted,



Charles Boitard

REFERENCES

- Sookochoff, L, P.Eng. Report on a Percussion Drill Program
for Lakewood Mining Co. Ltd.
December 7, 1983.
- Fraser, D.C. Geophysics, Vol 34 No. 6, Dec. '69
- La Rue, John. P. Report on Magnetometer and VLF-EM
Surveys, November 1, 1986

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Legend

Instrument Sabre Model 21
Type Frequency Domain
Frequency: 0.3, 10.0 Hz
Array Dipole - Dipole
Electrode Spacing 80 metres
Dipole Separation: n = 1 80 metres

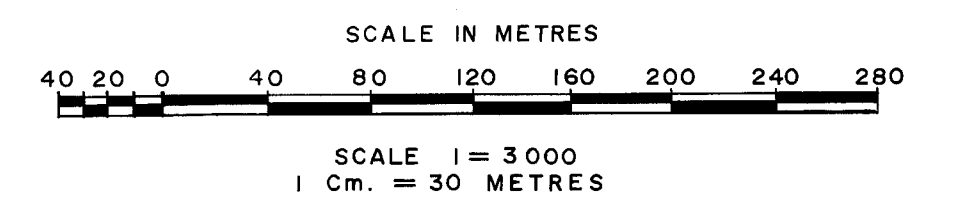
Drill Holes: ○ ○

SOPHIA MINERAL CLAIM
NICOLA M. D.

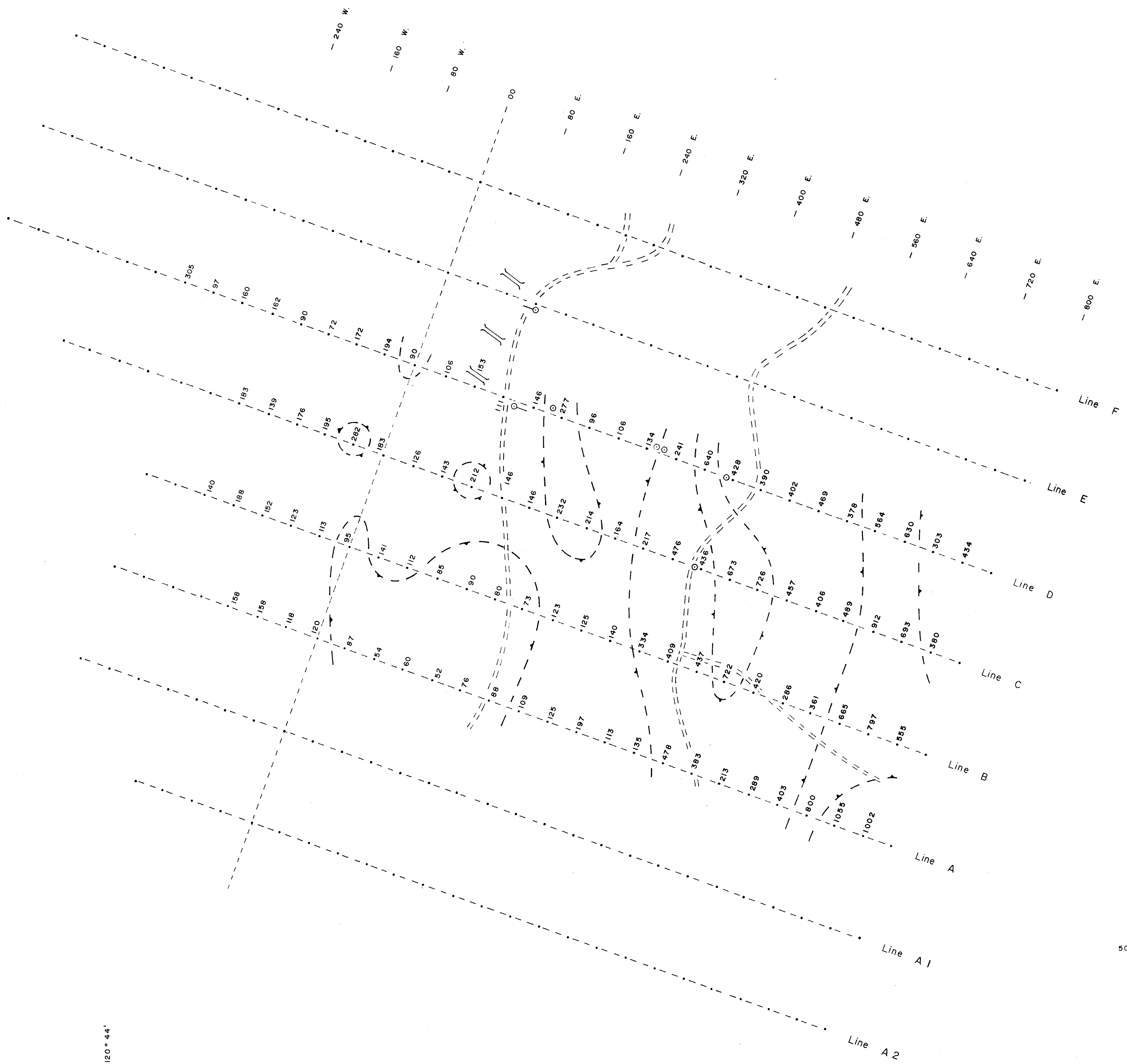
Induced Polarization Survey

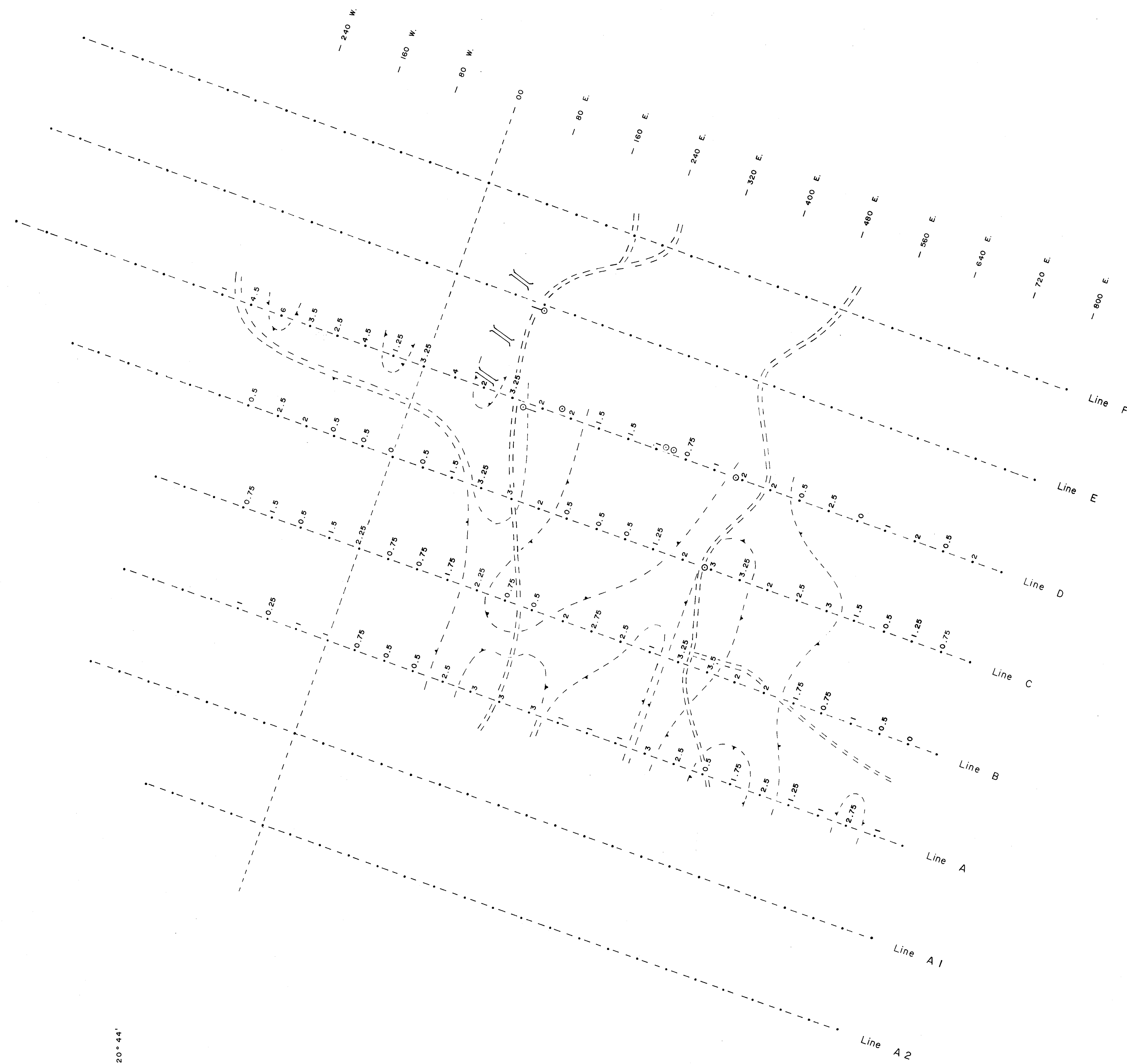
Apparent Resistivity

50° 18'



120° 44'





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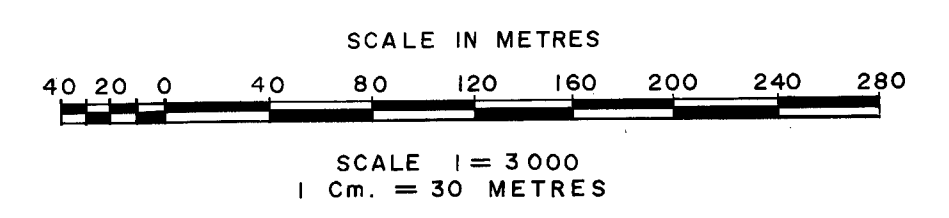
Legend

- Instrument Sabre Model 21
 - Type Frequency Domain
 - Frequency: 0.3, 10.0 Hz
 - Array Dipole - Dipole
 - Electrode Spacing 80 metres
 - Dipole Separation: n = 1 80 metres
- Drill Holes: ○ ⊙

SOPHIA MINERAL CLAIM
NICOLA M. D.

Induced Polarization Survey

Frequency Effect



120° 44'

50° 18'