81-#422-9250

GEOPHYSICAL REPORT

ON AN

INDUCED POLARIZATION SURVEY

AG CLAIM

MINER LAKE, NICOLA M.D., B.C.

AG CLAIM : 2.7 km S40°E of Aspen Grove

: 49° 120° NW

: N.T.S. 92H/15E

WRITTEN FOR : WESTWARD ENERGY AND RESOURCES LTD.
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DATED : April 16, 1981

GEOTRONICS SURVEYS LTD.
Engineering & Mining Geophysicists
VANCOUVER, CANADA

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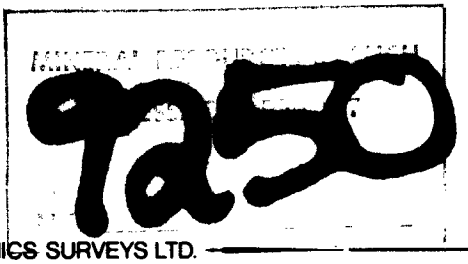

LIST OF ILLUSTRATIONS

SUMMARY

During the last week of June, 1980 an induced polarization (I.P.) survey was carried out over part of the AG Claim. The AG Claim is located 2.7 km S40E of Aspen Grove on and around Miner Lake. Access to much of the property is easily gained by a two-wheel drive vehicle. The terrain consists of mainly moderate slopes forested with moderately dense coniferous trees. The purpose of the survey was to locate potential zones of copper sulphides.

The area is underlain by Upper Triassic Nicola Group volcanics. The rock types are gray feldspar porphyry, red augite porphyry, amygdaloidal and massive red andesite and lahar deposits with a division into a red and green sequence. Faulting on the property is predominantly north-south. Mineralization occurs as chalcopyrite, chalcocite, malachite and pyrite within fracture or shear zones within the green and red volcanics.

The I.P. equipment used was frequency domain type, the array, dipole-dipole, and the dipole length, 60 m. Frequency effect and resistivity data were plotted on pseudo-sections and plan-type maps, then contoured.

CONCLUSIONS

1. The I.P. survey has revealed 4 anomalous zones that have been labelled A to D, respectively.

2. The strongest most consistent I.P. response occurs in anomaly A, though it has a minimum soil geochemistry response for copper, molybdenum and silver. The correlating

resistivity high, as with anomalies B and C, suggests an intrusive with magnetite could be at least partly the cause of the I.P. anomaly. The lack of a strong geochemical response in the metals mentioned above does not preclude that sulphides of the metals could occur at depth and or/other economic minerals may occur (for example; gold).

3. Though I.P. anomaly D is rather weak, it is of strong interest because of the correlation of 2 strong lineal-shaped copper soil geochemistry anomalies.

4. Anomalies B and C are of moderate interest because of correlation with copper soil geochemistry anomalies.

RECOMMENDATIONS

The next stage in Sookochoff's engineering report is drilling which the writer feels should be followed through on. It would be preferable to examine the I.P. anomalies in the field before drilling any one of them. Strong consideration should be given to anomalies A and D as well as possibly B.

GEOPHYSICAL REPORT

ON AN

INDUCED POLARIZATION SURVEY

AG CLAIM

MINER LAKE, NICOLA M.D., B.C.

INTRODUCTION AND GENERAL REMARKS

This report discusses the survey procedure, compilation of data and interpretation of an induced polarization survey carried out over the AG Claim near Aspen Grove in the Nicola M.D., B.C. The work was carried out from June 23rd to 31st, 1980 under the supervision of the writer and under the field supervision of R. Fassler and four assistants. A total of 7.3 km at three separations and 5.5 at one separation were completed, to give a total of 12.8 line km.

The purpose of the survey was to test the target areas as outlined by previous soil geochemistry, VLF-EM and magnetometer surveys.

PROPERTY AND OWNERSHIP

The AG Claim consists of one claim of 12 units as shown on Figure 2 and as described as follows:

Claim Name	No. Units	Record No.	Tag No.	Expiry Date
AG	12	379 (2)	37137	Feb 6, 1985

The property is owned by Westward Energy and Resources Corp. of Vancouver, British Columbia. If the work as described in this report is accepted for assessment work, then the expiry date will become February 6, 1989.

LOCATION AND ACCESS

The legal post of the AG Claim is found about 0.65 km due west of Alleyne Lake and about 2.7 km S40E of Aspen Grove.

The geographical coordinates are 49° 55' N latitude and 120° 35' W longitude.

Access to the property is quite good and can be gained by a passenger car providing the road is dry (See Figure 2). One travels along Highway 5 for 30 km south of Merritt or 5 km south of Aspen Grove and then turns east on a well-used gravel road. About 2 km on this road is a second turn-off to the north-east onto a dirt road. The southern boundary of the AG Claim is about 100 meters along the dirt road.

PHYSIOGRAPHY

The AG Claim lies in the southern part of the physiographic division known as the Thompson Plateau which is part of the Interior Plateau System. The terrain is generally that of flat or rolling hills over most of the property. The general trend of the topography runs north-south. Elevations vary from 1,050 meters a.s.l. in the northwest corner to give a relief of only 250 meters.

The main water source is Miner Lake which sits within the center of the AG Claim. There are a few creeks which drain into and out of Miner Lake.

Vegetation on the property varies from a lightly dense forest on the western half to a moderately dense forest on the eastern half. It consists of pine, fir and spruce.

HISTORY OF PREVIOUS WORK

There is evidence of much physical work having been done on the property, but the writer is unsure of the dates. The trenches and several shafts, however, probably predate 1940. Since the claim was staked, a VLF-EM survey was carried out by Geotronics, the results of which are in a report by the writer dated November 25, 1978 as well as a magnetometer and soil geochemistry survey dated December 7, 1980.

GEOLOGY

The following is based upon the geology mapping and subsequent report done by L. Sookochoff in the middle of June, 1978.

The AG Claim is underlain by a sequence of Upper Triassic Nicola rocks. Preto, et al, has divided the Nicola Group into three basic belts; the Western Belt, the Central Belt, and the Eastern Belt. The AG Claim is found within the Central Belt which contains the majority of the mineral occurrences in the Aspen Grove area.

Much of the property is covered by red and green andesite, the matrix of which is comprised of a feldspar porphyry. "The red volcanic sequence occurs wholly along the eastern portion of the claim group. The green volcanic sequence occurs along

the south and to the east along a north-westerly trending contact. A separate block of green volcanics is located in the northeast corner. Limited outcrops occur to the south and west of Miner Lake. An augite porphyry horizon bisects the southern green sequence along a northwesterly trending fault structure. A continuation of the augite porphyry occurs to the north of the fault structure and to the northeast in contact with the red sequence. Massive and amygdaloidal intense red volcanics are located in the north and east of the claim area."

Sookochoff has mapped an epidote alteration zone within the eastern central portion of the claim group. Within this zone is a northerly-trending alteration zone that extends south of the epidote zone.

The major structure on the property is a northeasterly-trending fault zone that extends from south of Miner Lake to off of the property at Line 36S, 90E. Preto noted a major fault running northwesterly across the northern end of Miner Lake which Sookochoff was unable to verify. Otherwise, the second major trend appears to be northerly as both Sookochoff and Preto have mapped major faults striking in this direction.

The mineralization on the property occurs as chalcopyrite, chalcocite and malachite generally associated with a high degree of fracturing and with carbonate and/or quartz veinlets.

INDUCED POLARIZATION SURVEY

1. Instrumentation and Theory

The induced polarization equipment used was frequency-domain type manufactured by Sabre Electronic Instruments Ltd. of

Burnaby, B.C. A 12-volt lead-acid battery was used for a power source to give a power potential of 500 watts.

The transmitter output is 125, 250, 375, or 500 volts with selection by a switch. THe transmitter current varies up to 1,000 milliamperes. The self-potential buckout is operated manually by a 10-turn precision pot with a range of $\pm$ 1 volt.

There are basically two methods of I.P. surveying, frequency-domain and time-domain. Both methods are dependent upon a current flowing across an electrolyte-electrode interface or an electrolyte-clay particle interface, the former being called electrode polarization and the latter being called membrane polarization.

In time-domain electrode polarization, a current is caused to flow along electrolyte-filling capillaries within the rock. If the capillaries are blocked by certain mineral particles that transport current by electrons (most sulphides, some oxide, and graphite), ionic charges build up at the particle-electrolyte interface, positive ones where the current entered the particle, and negative ones where it leaves. This accumulation of charge creates a voltage that tends to oppose the current flow across the interface. When this current is stopped the created voltage slowly decreases as the accumulated ions diffuse back into the electrolyte. Thus is produced the induced polarization effect.

In membrane polarization a similar effect occurs. A charged clay particle attracts opposite charged ions from the electrolyte in the capillary around the particle. If a current is forced through the capillary, the charged ions are displaced.

When the current is stopped, the ions slowly diffuse back into the same equilibrium state as before the current flow. This explains I.P. anomalies where no metallic-type minerals exist.

Frequency-domain I.P. is based on the fact that the resistance produced at the electrolyte-charged particle interface decreases with increasing frequency. The parameter commonly used for measuring frequency-domain induced polarization is frequency effect. The one used for time-domain is chargeability.

In the process of carrying out an I.P. survey, two other physical methods are used and measured. These are self-potential and resistivity. The S.P. must be nulled by the I.P. receiver in order to obtain accurate I.P. measurements and this is a measure of the 'battery action' of the ground. The resistivity value is calculated from the voltage and current readings obtained while measuring the I.P. effect and therefore can be utilized to determine how resistive (or conductive) the ground is.

2. Survey Procedure

The dipole-dipole array was used with an electrode spread (or dipole length) of 60 meters and a dipole separation of n = 1 on lines 100 meters apart over selected anomalous areas. Anomalous I.P. areas were further surveyed with a dipole separation of n = 2 and 3. The two frequencies used were 0.3 Hertz and 10 Hertz.

COMPILATION OF DATA

1. Percent frequency effect (P.F.E.) - this is the actual measure of the induced polarization effect in a frequency domain survey. The term is derived from the percentage charge in the electrode-electrolyte transfer impedance at the two different frequencies. A disseminated sulphide body would cause a large change. This property is measured directly in the field.

The P.F.E. was plotted in pseudo-section form on Sheet 8 for the 3 separations as well as in plan form on Sheet 6. The maps were drawn at a scale of 1:3,000. The contour interval was somewhat logarithmic beginning at 4.5%. The 4.5% contour was dashed since the writer felt that it was only possibly anomalous. Contours 6.5% and 9% were drawn in solid meaning these contours were definitely anomalous.

2. Resistivity - this is a measure of how resistive, or inversely, how conductive the overburden and/or bedrock is. Most often a disseminated sulphide body is expressed by a resistivity low. The resistivity values in ohm-meters were arrived at by dividing the receiving voltage by the transmitter current and multiplying by a geometric factor peculiar to the dipole-dipole array with a dipole length of 60 m and a dipole separation of n = 1 (or 2, or 3 as the case may be).

The resistivity was plotted in pseudo-section form on Sheet 8 for the 3 separations with the P.F.E. data, as well as in plan form on Sheet 7. The maps were drawn at a scale of 1:3,000. The contour interval was logarithmic beginning at 7 ohm-meters/2π.

DISCUSSION OF RESULTS

The writer has labelled 4 I.P. anomalies which he considers are worthy of further discussion.

I.P. anomaly A is by far the most interesting considering its size, depth extent and number of anomalous values. The anomaly is up to 600 m wide, at least 480 m long and open to both the north and south. It strikes northerly and has several values above 10%.

The correlation with other surveys is as follows:-

1.	VLF-EM	none
2.	Magnetics	background with some small highs & lows.
3.	Copper	sub-anomalous I.P. values with small copper anomaly H.
		anomalous I.P. values with 2 copper values barely above background.
4.	Molybdenum & Silver	none
5.	Resistivity	highs

The resistivity high correlation suggests an intrusive containing magnetite exists which could be at least partly causing the I.P. anomaly.. The anomaly is likely also caused by pyrite and/or other sulphides. There is some copper soil correlation, though over the strongest part of the I.P. there is no copper correlation at all. However, it should be remembered that soil anomalies reflect only the top of the buried bedrock and not the bedrock at depth, whereas, the I.P. method can "see" at depth.

Anomaly B occurs on the north side of Miner Lake. Only the

sub-anomalous part of the anomaly has depth extent. The anomaly appears to strike northerly as well, is 150 m wide; at least 360 m long and is open to the south where Miner Lake is located.

The correlation with other surveys is as follows:-

1.	Copper and Silver	-	soil anomaly C
2.	Molybdenum, VLF-EM	-	none
3.	Magnetics	-	low
4.	Resistivity	-	high

The resistivity high correlation again suggest an intrusive with the anomaly possibly being caused by magnetite. However, there is good correlation with an arm of the widespread soil anomaly C. Also favourable is the correlation with a magnetic low which sometimes is caused by alteration.

Anomaly C is very close to B and may be geologically connected. The values are sub-anomalous on surface, but anomalous at depth. It appears to be striking northwesterly, is up to 240 m wide, 240 m long and open to the southeast.

The correlation with other surveys is as follows:-

1.	Copper	sub-anomalous values of an arm of soil anomaly C.
2.	Molybdenum & Silver	none
3.	VLF-EM	eastern flank of anomaly a
4.	Magnetics	low that is barely below background
5.	Resistivity	high

Though sub-anomalous, the copper soil correlation is of interest since it indicates at least some copper mineralization which may increase with depth. As for B, the magnetic low may indicate alteration and the resistivity high, an intrusive alteration. Two shafts are located within this anomaly.

Anomaly D is a wide anomaly also composed mostly of sub-anomalous values and which may be connected to anomaly C. Some anomalous values occur at depth. The anomaly is open to the north towards anomaly C, is 240 m wide and is at least 240 m long.

Correlations are as follows:-

1.	Copper	long, lineal anomalies labelled J & K
2.	Molybdenum, Silver & VLF-EM	none
3.	Magnetics	background
4.	Resistivity	low

The copper anomalies are surrounded by the I.P. anomaly suggesting perhaps that the I.P. is reflecting pyritization associated with possible copper sulphide mineralization. The copper anomalies contain quite strong anomalous values and malachite staining has been noted to the west of soil anomaly J within the I.P. anomaly. The resistivity low could be caused by alteration and fracturing and/or a different rock type.

To the southeast of Miner Lake as well as to the north and to the northeast are bands of resistivity highs. These could be reflecting intrusives and/or differing volcanic rock-

types. The lows occurring between the highs may be reflecting more conductive volcanics.

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

David G. Mark,
Geophysicist

April 16, 1981

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GEOPHYSICIST'S CERTIFICATE

I, DAVID G. MARK, of the City of Vancouver, in the Province of British Columbia, so hereby certify:

THAT I am a Consulting Geophysicist of Geotronics Surveys Ltd., with offices at #403-750 West Pender Street, Vancouver, British Columbia.

I further certify:

1. I am a graduate of the University of British Columbia (1968) and hold a B.Sc., degree in Geophysics.

2. I have been practising my profession for the past 13 years and have been active in the mining industry for the past 16 years.

3. I am an active member of the Society of Exploration Geophysicists and a member of the European Association of Exploration Geophysicists.

4. This report is compiled from data obtained from an induced polarization survey carried out under the supervision of myself during the last part of June 1980.

5. I do not hold any interest in the AG Claim nor Westward Energy and Resources Corp. not do I expect to receive any interest as a result of writing this report.

David G. Mark,
Geophysicist

April 16, 1981

AFFIDAVIT OF EXPENSES

The induced polarization survey was carried out on the AG Claim, Miner Lake, Nicola M.D., B.C. to the value of the following:-

FIELD:

5-man crew and instrument, 8 days at $850/day	$6,800
Vehicle Rental, 11 days at $60/day	600
Room and Board	1,376
Survey Supplies	20
	$8,796

REPORT:

Geophysicist, 15 hours at $40/hour	$ 600
Geophysical Technician, 15 hours at $23/hour	345
Drafting and printing	500
Typing, xeroxing and compilation	150
	$1,595

TOTAL $10,391

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

David G. Mark,
Geophysicist

GEOTRONICS SURVEYS LTD.

WESTWARD ENERGY & RESOURCES CORP.

AG CLAIM

ASPEN GROVE AREA, NICOLA M.D., B.C.

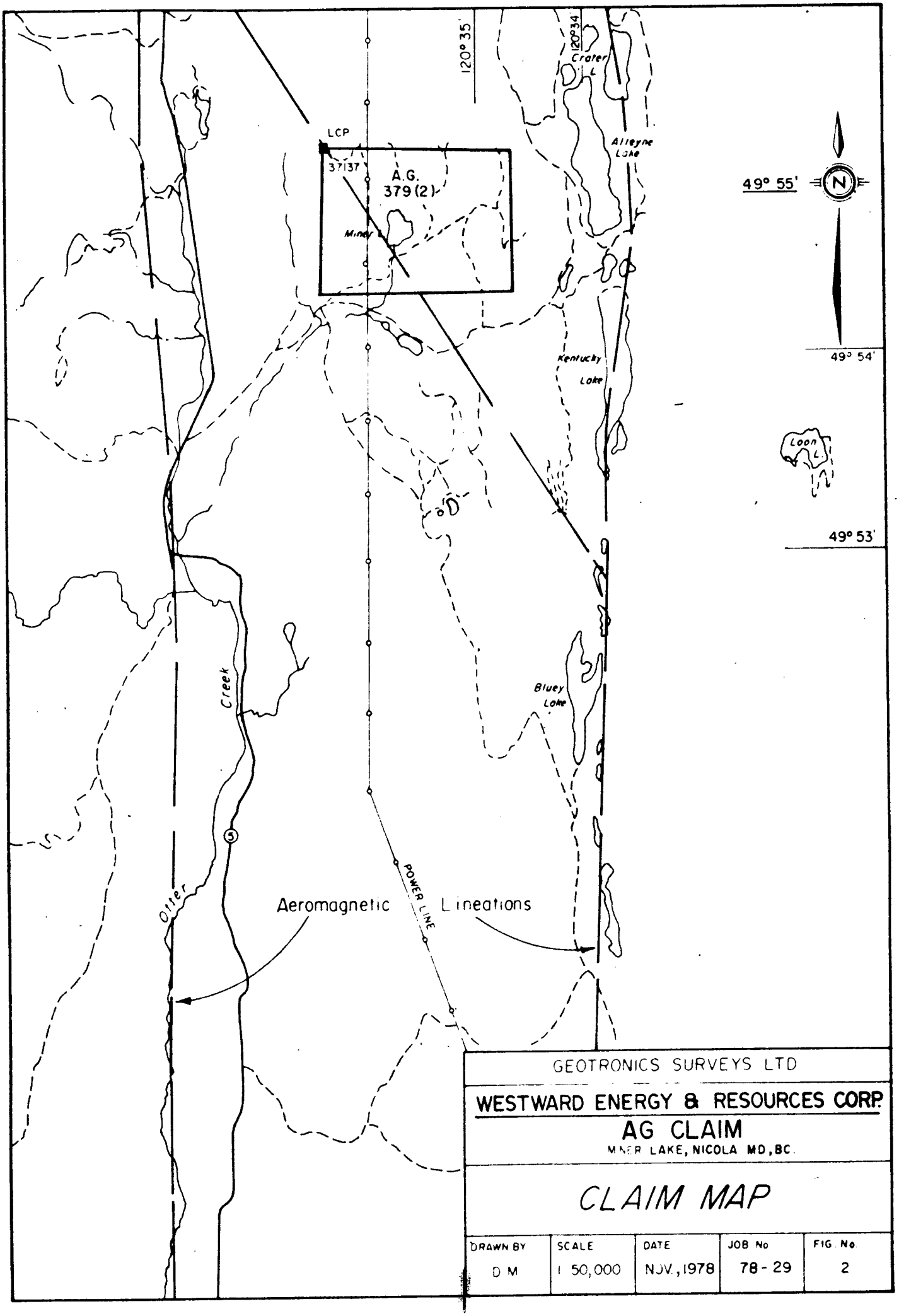
LOCATION MAP

SCALE

Miles 100 50 0 100 200 Miles

FIG. 1

ALTAIR drafting services ltd.



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WESTWARD ENERGY & RESOURCES CORP.

AG CLAIM

MINER LAKE, NICOLA MD, BC.

CLAIM MAP

DRAWN BY	SCALE	DATE	JOB No	FIG. No
D M	1 50,000	NOV., 1978	78 - 29	2

105 W. 90 W. 75 W. 60 W. 45 W. 30 W. 15 W. BASELINE 15 E. 30 E. 45 E. 60 E. 75 E. 90 E.

0 S. 12 S. 24 S. 36 S. 48 S. 60 S. 72 S. 84 S. 96 S. 108 S. 120 S. 132 S. 144 S.

LCP

A B C D

MINER LAKE

mal. cpy py cc malachite

to Hwy 5 2.5 kms.

INSTRUMENTATION - FREQUENCY DOMAIN

ARRAY: DIPOLE - DIPOLE

DIPOLE LENGTH: 60 meters

DIPOLE SEPARATION: n = 1

FREQUENCY: 0.3 Hz., 10 Hz.

FREQUENCY EFFECT (% F.E.)

CONTOURS

4.5 % Mean background

6.5 %, 9.0 % Anomalous values

LEGEND

Rock bluff
Claim line showing claim post
Center of power line
Creek
Intermittent stream
Logging road
Swamp
Shaft
Open Cut
mal Malachite
cc Chalcocite
cpy Chalcopyrite
py Pyrite

SCALE

METRES 0 50 100 150 200 250 METRES

9250

To accompany geochemical and geophysical report by DAVID G. MARK, geophysicist.

GEOTRONICS SURVEYS LTD.

WESTWARD ENERGY AND RESOURCES CORP.

A.G. CLAIM

MINER LAKE, NICOLA M.D., B.C.

INDUCED POLARIZATION SURVEY
PERCENT FREQUENCY EFFECT
DATA & CONTOURS

DRAWN BY:	JOB No.	DATE:	SCALE:	SHEET No.
R.R.F.	79 - 45	Dec., 1979	1: 3000	6

105 W. 90 W. 75 W. 60 W. 45 W. 30 W. 15 W. BASELINE 15 E. 30 E. 45 E. 60 E. 75 E. 90 E.

0 S. 12 S. 24 S. 36 S. 48 S. 60 S. 72 S. 84 S. 96 S. 108 S. 120 S. 132 S. 144 S.

LCP

MINER LAKE

mal. cpy py cc

72 S. malachite cc

to Hwy. 5 2.5 kms.

RESISTIVITY

CONTOUR INTERVAL: LOGARITHMIC

(7, 10, 15, 20, 30, 50, 70 ..... Ohm-meters)

READINGS IN OHM-METERS / 2 TT

INSTRUMENTATION - FREQUENCY DOMAIN

ARRAY: DIPOLE - DIPOLE

DIPOLE LENGTH: 60 meters

DIPOLE SEPARATION: n = 1

FREQUENCY: 0.3 Hz., 10 Hz.

LEGEND

- Rock bluff
- Claim line showing claim post
- Center of power line
- Creek
- Intermittent stream
- Logging road
- Swamp
- Shaft
- Open Cut
- mal Malachite
- cc Chalcocite
- cpy Chalcopyrite
- py Pyrite

SCALE

METRES 0 50 100 150 200 250 METRES

MINERAL RESOURCES BRANCH ASSESSMENT REPORT NO. 9250

To accompany geochemical and geophysical report by DAVID G. MARK, geophysicist.

GEOTRONICS SURVEYS LTD.

WESTWARD ENERGY AND RESOURCES CORP.

A.G. CLAIM

MINER LAKE, NICOLA M.D., B.C.

INDUCED POLARIZATION SURVEY
APPARENT RESISTIVITY
DATA & CONTOURS

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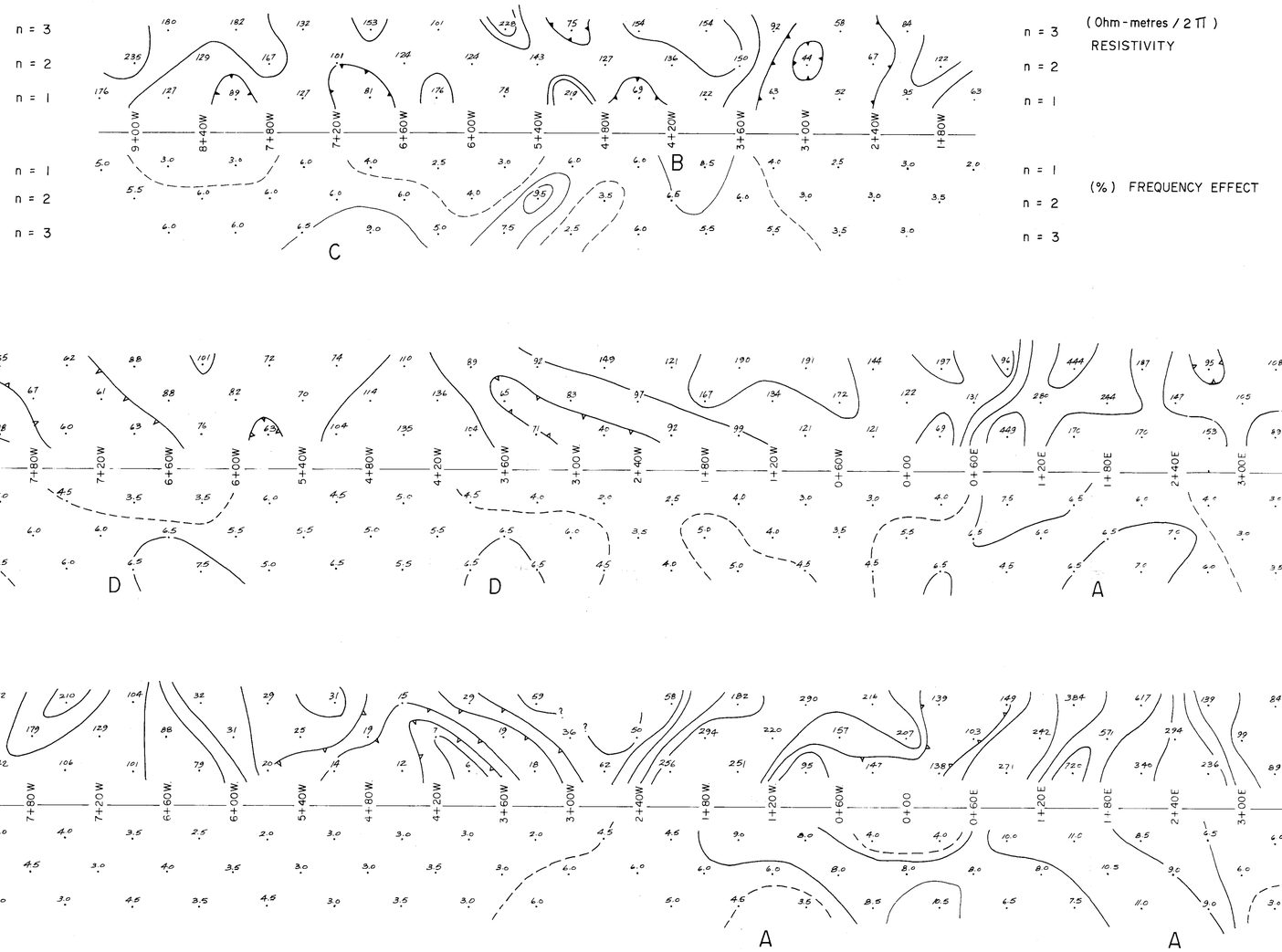

RESISTIVITY

CONTOUR INTERVAL: LOGARITHMIC

(7, 10, 15, 20, 30, 50, 70 ..... Ohm-meters)

READINGS IN OHM-METERS / 2 π

INSTRUMENTATION - FREQUENCY DOMAIN

ARRAY: DIPOLE - DIPOLE

DIPOLE LENGTH: 60 meters

DIPOLE SEPARATION: n = 1, 2, 3

FREQUENCY: 0.3 Hz., 10 Hz.

FREQUENCY EFFECT (% F.E.)

– – – – – – 4.5 % Sub-anomalous

——— 6.5 %, 9.0 % Anomalous values

SCALE

METRES 0 50 100 150 200 250 METRES

9250

To accompany geochemical and geophysical report by DAVID G. MARK, geophysicist.

GEOTRONICS SURVEYS LTD.

WESTWARD ENERGY AND RESOURCES CORP.

A.G. CLAIM

MINER LAKE, NICOLA M.D., B.C.

INDUCED POLARIZATION SURVEY

PSEUDO-SECTIONS

DATA & CONTOURS

DRAWN BY:	DATE:	JOB No.	SCALE:	SHEET No.
M.H.R.	March, 1981	80 – 37	1 : 3000	8