82-#648 - #11104

9

GEOPHYSICAL REPORT

ON

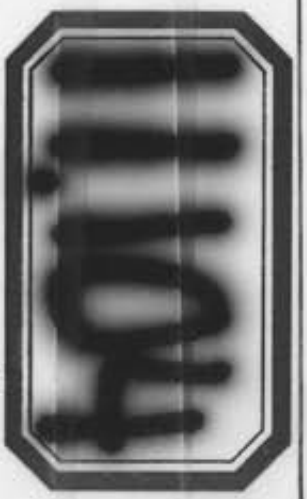
VLF-EM AND MAGNETOMETER SURVEYS

KAZ AND ASPEN CLAIMS

ASPEN GROVE AREA

NICOLA M.D., BRITISH COLUMBIA

CLAIMS	: 4 km S25°E of Aspen Grove and 2 km W of Kentucky Lake
	: 49° 120° NW
	: N.T.S. 92H/15E
WRITTEN FOR	: NU-START RESOURCE CORPORATION Vancouver, B.C.
WRITTEN BY	: David G. Mark, Geophysicist GEOTRONICS SURVEYS LTD. Vancouver, B.C.
DATED	: July 7, 1982



GEOTRONICS

GEOTRONICS SURVEYS LTD.
Engineering & Mining Geophysicists
VANCOUVER, CANADA

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SUMMARY

During much of February, 1982, a combined magnetic and VLF-EM survey was carried out on the Kaz and Aspen claims. The legal post of the Aspen Claim is located 4 km S25°E of Aspen Grove and about 2 km due west of Kentucky Lake. Access to much of the property is easily gained by a 2-wheel drive vehicle. The terrain consists of mainly moderate slopes forested with moderately dense coniferous trees. The purpose of the surveys was to map lithology and structure as well as locate potential areas of sulphide mineralization.

There is no known previous work.

The property is mainly underlain by Upper Triassic Nicola Group volcanics. The rock types are grey feldspar porphyry, massive green andesite, amygdaloidal and massive red andesite, and lahar deposits with a division into a red sequence and a division into a green sequence. Faulting on the property is predominantly north-south and northeast. Mineralization in the area occurs as chalcopyrite, chalcocite, malachite and bornite within fracture or shear zones within the green and red volcanics. There is also molybdenite and silver mineralization.

The VLF-EM and magnetic readings were taken every 25 meters on 100-meter separated east-west lines. The VLF-EM readings were then Fraser-filtered, plotted and contoured and the magnetic readings, diurnally corrected, statistically analyzed, plotted and contoured.

CONCLUSIONS

1. The VLF-EM anomalies on the Kaz and Aspen claims probably have reflected mainly geological structure such as faults, shears and lithological contact zones. The long, lineal anomalies are more indicative of faults.

2. Most of the anomalies, however, are fairly short, some being quite intense. This is more indicative of the causative source being sulphides. At the very minimum, it would appear the geology is fairly complex, which is also more indicative of the existence of sulphide mineralization.

3. Many of the VLF-EM anomalies indicate zones of cross-structure, which are areas that consist of a greater potential of sulphide mineralization.

4. The magnetic survey has revealed three, or perhaps four, different rock-types which are characterized by the following magnetic traits: (a) high frequency highs and lows (one belt prominently strikes northwesterly across the property). This rock-type appears to occur in three areas and is probably a relatively young basic volcanic.

   (b) highs and lows not as high frequency as in (a). This rock-type would be an intrusive and occurs in one area within the Kaz claim.

   (c) quiet magnetics that are relatively low to the rest of the survey area. This rock-type may be sedimentary

and occurs in mainly three areas. One area in the south-west corner of the Aspen claim has a lower magnetic field and therefore may reflect a fourth rock-type.

RECOMMENDATIONS

1. A soil geochemistry survey should be carried out over the whole property using the same grid. The samples should be tested for molybdenum, silver and copper.

2. The property should be geologically mapped, not only for prospecting purposes, but to aid in the interpretation of the geophysical and geochemical surveys.

3. Further work that may be recommended is an induced polarization survey and a diamond drilling program but these are contingent upon the results of the soil geochemistry survey and the geological mapping.

GEOPHYSICAL REPORT

ON

VLF-EM AND MAGNETOMETER SURVEYS

KAZ AND ASPEN CLAIMS

ASPEN GROVE AREA

NICOLA M.D., BRITISH COLUMBIA

INTRODUCTION AND GENERAL REMARKS

This report discusses the survey procedure, compilation of data and the interpretation of a very low frequency electromagnetic (VLF-EM) survey and a total field magnetic survey carried out on the Kaz and Aspen claims during the month of February, 1982.

The survey was done under the supervision of the writer and under the field supervision of Chris Basil with the aid of a helper. A total of 39 line km of VLF-EM survey and 41 line km of magnetic survey were carried out across the two claims.

The primary purpose of the VLF-EM survey was to delineate faults and/or shear zones and that of the magnetic survey was to map lithology as well as structure. The results would aid in the subsequent geological mapping and soil geochemistry survey.

PROPERTY AND OWNERSHIP

The property consists of two claims totalling 16 units as shown on Figure 2 and as described below:

Claim Name	No. Units	Record No.	Tag No.	Expiry Date
Aspen	12	1214(12)	17140	Dec. 18, 1982
Kaz	4	1215(12)	17141	Dec. 18, 1982

It is proposed to use the work under discussion within this report for assessment credits which will therefore add six years to the expiry date to bring it to 1988.

The property is owned by Nu-Start Resource Corporation of Vancouver, British Columbia.

LOCATION AND ACCESS

The legal post of the Aspen claim is found 4.0 km S25°E of Aspen Grove and the eastern boundary is 20 km west of Kentucky Lake.

The geographical coordinates are 49° 53' N latitude and 120° 36' 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. The northern part of the Aspen claim is about 2 km along this road. Highway 5 also cuts across the south-western corner of the Kaz claim, as shown on Figure 2.

PHYSIOGRAPHY

The property 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 1,000 meters a.s.l. along the southwestern corner of the Kaz claim to 1,250 meters a.s.l. in the southeastern part of the Aspen claim to give a relief of only 250 meters.

The main water source would be Miner Lake, 0.5 km to the north, or one of the smaller lakes/swamps which sit within the Aspen claim, or to the immediate east of the claim. One creeks drains westerly through the northern part of the Aspen claim.

Vegetation on the property varies from lightly dense to moderately dense forest which consists of pine, fir and spruce. There are also areas of grassland.

HISTORY OF PREVIOUS WORK

There is evidence of much physical work having been done in the area, but the writer is unsure of the dates. The trenches and several shafts, however, probably predate 1940. Soil geochemistry and induced polarization surveys have been done in the area as well. No work has been done on the Kaz and Aspen claims, however, since they were staked.

GEOLOGY

The property 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 Kaz and Aspen claims are found within the Central Belt which contains the majority of the mineral occurrences in the Aspen Grove area.

The rock-types found within the Central Belt are red and green feldspar porphyry volcanics, both units containing clasts up to 25 cm in diameter; amygdaloidal and massive red andesite; massive green andesite; and grey feldspar porphyry.

The major faults strike mainly north-south and are associated with splay faults. Shear fracture zones occur throughout the area.

Epidote is the primary alteration mineral and occurs as disseminations, veinlets and predominantly along the fractures.

Mineralization in the area occurs as chalcopyrite, chalcocite, bornite and malachite, and is generally associated with a high degree of fracturing and hematite-carbonate-epidote association. It is not restricted to any one sequence and is found in the red clastic volcanics, the massive red andesites, and the massive green andesites. There is also reported molybdenite and silver mineralization.

VLF-EM SURVEY

Instrumentation and Theory

A VLF-EM Receiver, Model 27, manufactured by Sabre Electronic Instruments Ltd. of Burnaby, B.C. was used for the survey. This instrument is designed to measure the magnetic component of a very low frequency (VLF) electromagnetic field. The U.S. Navy submarine transmitter located at Seattle, Washington

and transmitting at 24.2 KHz was used for the Aspen claim and that located at Annapolis, Maryland and transmitting at 21.4 KHz was used for the Kaz claim.

In all electromagnetic prospecting, a transmitter produces an alternating magnetic field (primary) by a strong alternating current usually through a coil of wire. If a conductive mass such as a sulphide body is within this magnetic field, a secondary alternating current is induced within it which in turn induces a secondary magnetic field that distorts the primary magnetic field. It is this distortion that the EM receiver measures.

The VLF-EM uses a frequency range from 16 to 24 KHz. whereas most EM instruments use frequencies ranging from a few hundred to a few thousand Hz. Becuase of its relatively high frequency, the VLF-EM can pick up bodies of a low conductivity and therefore is more susceptible to clay beds, electrolyte-filling fault or shear zones and porous horizons, graphite, carbonaceous sediments, lithological contacts as well as sulphide bodies of too low a conductivity for other EM methods to pick up.

Consequently, the VLF-EM has additional uses in mapping structure and in picking up sulphide bodies of too low a conductivity for conventional EM methods and too small for induced polarization (in places it can be used instead of IP). However, its susceptibility to lower conductive bodies results in a number of anomalies, many of them difficult to explain and, thus, VLF-EM preferably should not be interpreted without a good geological knowledge of the property and/or other geophysical and geochemical surveys.

Survey Procedure

The VLF-EM survey was run on a grid in which the lines run east-west at 100-meter intervals from a baseline running due south from the Aspen legal claim post. Dip angle readings were taken every 25 meters with the instrument facing towards the transmitter. Fluorescent pink flagging was placed at each 25-meter station with the grid coordinates marked thereon.

The north-south power line which runs through the center of the Aspen claim probably was turned off since it did not appear to affect the VLF-EM readings.

Compilation of Data

The readings were reduced by applying the Fraser-filter and plotted at a scale of 1:3,000. Filtered data, as shown on Sheets 1 and 2, are plotted between the reading stations. The positive filtered values were contoured at intervals of 5^{o} starting at 0^{o}.

The Fraser-filter is essentially a 4-point difference operator which transforms zero crossings into peaks, and a low pass smoothing operator which reduces the inherent high frequency noise in the data. Therefore, the noisy, non-contourable data are transformed into less noisy, contourable data. Another advantage of this filter is that a conductor that does not show up as a cross-over on the unfiltered data quite often will show up on the filtered data.

MAGNETIC SURVEY

Instrumentation and Theory

The magnetic survey was carried out with a model MP-2 proton

precession magnetometer, manufactured by Scintrex Ltd. of Concord, Ontario. This instrument reads out the total earth's field in gammas, over a range of 20,000 to 100,000 γ's to an accuracy of ± 1 γ.

Only two commonly occurring minerals are strongly magnetic; magnetite and pyrrhotite. Hence, magnetic surveys are used to detect the presence of these minerals in varying concentrations. Magnetic data are also useful as a reconnaissance tool for mapping geologic lithology and structure since different rock types have different background amounts of magnetite and/or pyrrhotite.

Survey Procedure

The readings were taken on the same grid as that for the VLF-EM survey, that is, every 25 meters on east-west lines 100 meters apart. On some days the survey could not proceed due to magnetic storm activity.

The magnetic diurnal change was monitored in the field by the closed loop method and double checked by a series of base stations.

Compilation of Data

The magnetic data were plotted on Sheet 3 and 4 at a scale of 1:3,000 (1 cm = 30 meters). For ease of plotting and discussion, 56,000 gammas was subtracted from all values and contours.

The contour interval was chosen to be 100 gammas. The contours, 1,200 gammas and below were dashed in, and the contours 1,300

gammas and above were drawn in solid. The 1,200/1,300 gamma division was estimated to be the mean background level.

DISCUSSION OF RESULTS

VLF-EM Survey

The major cause of VLF-EM anomalies, as a rule, are geologic structures such as fault, shear and breccia zones. It is therefore logical to interpret VLF-EM anomalies to likely be caused by these structural zones. Of course, sulphides may also be a causative source. But in the writer's experience, when VLF-EM anomalies correlate with sulphide mineralization, the anomalies are usually reflecting the structure associated with the mineralization rather than the mineralization itself.

Many of the anomalies on the Kaz and Aspen claims are very long and linear in shape which is also suggestive of structure being the causative source.

The major trend of the VLF-EM anomalies, as seen on Sheets 1 and 2 is primarily north. Considering the VLF-EM anomalies are likely reflecting structure, the major strike of structure on this property is concluded to be in this direction. This is in agreement with the geological maps produced by Preto, et al.

There is considerable variation in intensity from one VLF-EM anomaly to the next. This may not only be due to the conductivity of a causative source, but also the direction it strikes relative to the direction to the transmitter. In other words, those conductors lying closer to the same direction as the direction to the transmitter (S25^{o}W in this case for Seattle), can be picked up easier than those that are lying

at a greater angle. Depending upon its conductivity, a conductor may not be picked up at all if it is at too great an angle.

Though some of the anomalies are long and lineal and can be traced for over 2 km, the general appearance of the survey, as shown on Sheets 1 and 2, is the anomalies being rather short. This, in the writer's opinion, is a positive feature enhancing the possibility of sulphide mineralization being the causative source. It also indicates that the geology may be rather complex which is common in areas of mineralization.

The anomalies of high amplitude are of greater economic interest since these reflect zones of greater conductivity, It is hoped that the greater conductivity is caused by massive sulphides and/or severe alteration and fracturing associated with the sulphides. This is rather speculative, of course, and it may be found that mineralization found on the property may be associated with VLF-EM anomalies of lower amplitude. One of the higher amplitude anomalies is centered on L22S between 7 and 8E. Another three are located in the northeast corner of the Aspen claim.

Some of the anomalies indicate cross-structure. These are areas of higher economic interest as well since areas that have been faulted, fractured and/or sheared in two different directions are more amenable to mineralizing fluids during are genesis.

The anomalous zones on the Kaz claim are, in general, of lower amplitude than those on the Aspen claim. It is quite likely the result of using the Annapolis transmitter which is at a more oblique direction to the general strike of the anomalies

than the Seattle transmitter.

There appears to be no definite correlation between the VLF-EM anomalies and the topography, as there is in some areas. While some anomalies correlate with ridges and some correlate with gullies, most anomalies correlate with neither The anomaly in the northwest corner of the Aspen claim that correlates with a ridge is felt to be much too intense to be solely caused by terrain. Furthermore, in a survey located a few km to the north and interpreted by the writer, there was a strong indication that a ridge-correlated VLF-EM anomaly was in fact reflecting sulphide mineralization.

Some of the anomalies are found along the power line (shown on Sheet 1 as the B.C. Hydro right of way), and therefore may be partly caused by the hanging wires. Power could not have been transmitting through the power line since, in the writer's experience, the VLF-EM readings for 50 to 100 m on either side of the power line would have been severely affected.

Magnetic Survey

The magnetic relief as is shown on Sheets 3 and 4 is somewhat high. The values vary from as low as 380 gammas to as high as 2,890 gammas which gives a relief of 2,510 gammas.

The magnetic field over much of the property is quite variable, consisting of a series of highs and lows, many of them thumb-print in size. The magnetic field is not as highly variable, however, as that to the immediate north on the AG claim where the magnetic relief is over three times as much. (Geotronics carried out that survey in 1980). The contour interval was four times greater at 400 gammas. And yet the magnetic field over the Kaz and Aspen claims appears to be just as noisy

because of the 100-gamma contour interval.

The magnetic survey appears to be reflecting at least three different rock-types.

The first is characterized by a magnetic field that is highly variable (that is, relatively speaking on this property), containing anomalies that vary considerably from highs to lows. The rock-type is probably a fairly basic volcanic that is relatively young in age. It occurs in three different areas of the property: (1) northwestern corner of the Aspen claim, (2) along the eastern boundary of the Aspen claim to the north, and (3) along a 400-to 500-meter wide belt striking northwesterly through the center of the Aspen claim.

The second occurs almost solely within the Kaz claim. It is characterized by magnetic highs and lows that are not as intense as those of the first group. It may be a different volcanic rock-type or possibly a Coast Intrusive.

The third is characterized by relatively quiet magnetics and occurs between the first two types in three difference areas: (1) the western edge of the Kaz claim, (2) the southwestern part of the Aspen claim, and (3) the north central part of the Aspen claim. The quiet zones probably reflect sedimentary rock types and/or less magnetic members of the volcanic series.

The quiet zone within the southwestern corner of the Aspen claim is magnetically lower than the other two quiet zones and therefore may possibly be reflecting a fourth rock type.

Some of the VLF-EM anomalies correlate with the eastern edge

of magnetic highs indicating that these anomalies may be reflecting contact zones. Also some VLF-EM anomalies correlate with magnetic lows indicating both surveys are reflecting structure. In some mineral areas, this particular correlation is of economic interest since the VLF-EM is reflecting structure and/or sulphide mineralization whereas the magnetic low is reflecting alteration associated with the mineralization. This particularly is true where there is an intrusive environment.

The discussion of results for both surveys as given above is to simply serve as a guide during the further exploration of the property. The interpretation of these two surveys will be greatly enhanced by the geological mapping and soil geochemistry surveys as proposed in the recommendations.

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

David G. Mark,
Geophysicist

July 7, 1982

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Rice, H.M.A., Geology and Mineral Deposits of the Princeton Map Area, British Columbia, Geol. Survey of Canada, Mem. 243, 1960.

GEOPHYSICIST'S CERTIFICATE

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

That I am a Consulting Geophysicist of Geotronics Surveys Ltd., with offices located 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 14 years and have been active in the mining industry for the past 17 years.
3. That 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 VLF-EM and magnetic surveys carried out under the supervision of myself during the month of February, 1982.
5. I am President of Nu-Start Resource Corporation and currently hold 750,000 escrowed shares.

David G. Mark,
Geophysicist

July 7, 1982

AFFIDAVIT OF EXPENSES

The VLF-EM and magnetic surveys were carried out on the Kaz and Aspen claims, Nicola M.D., British Columbia to the value of the following:

FIELD: February 6th to the 24th, 1982

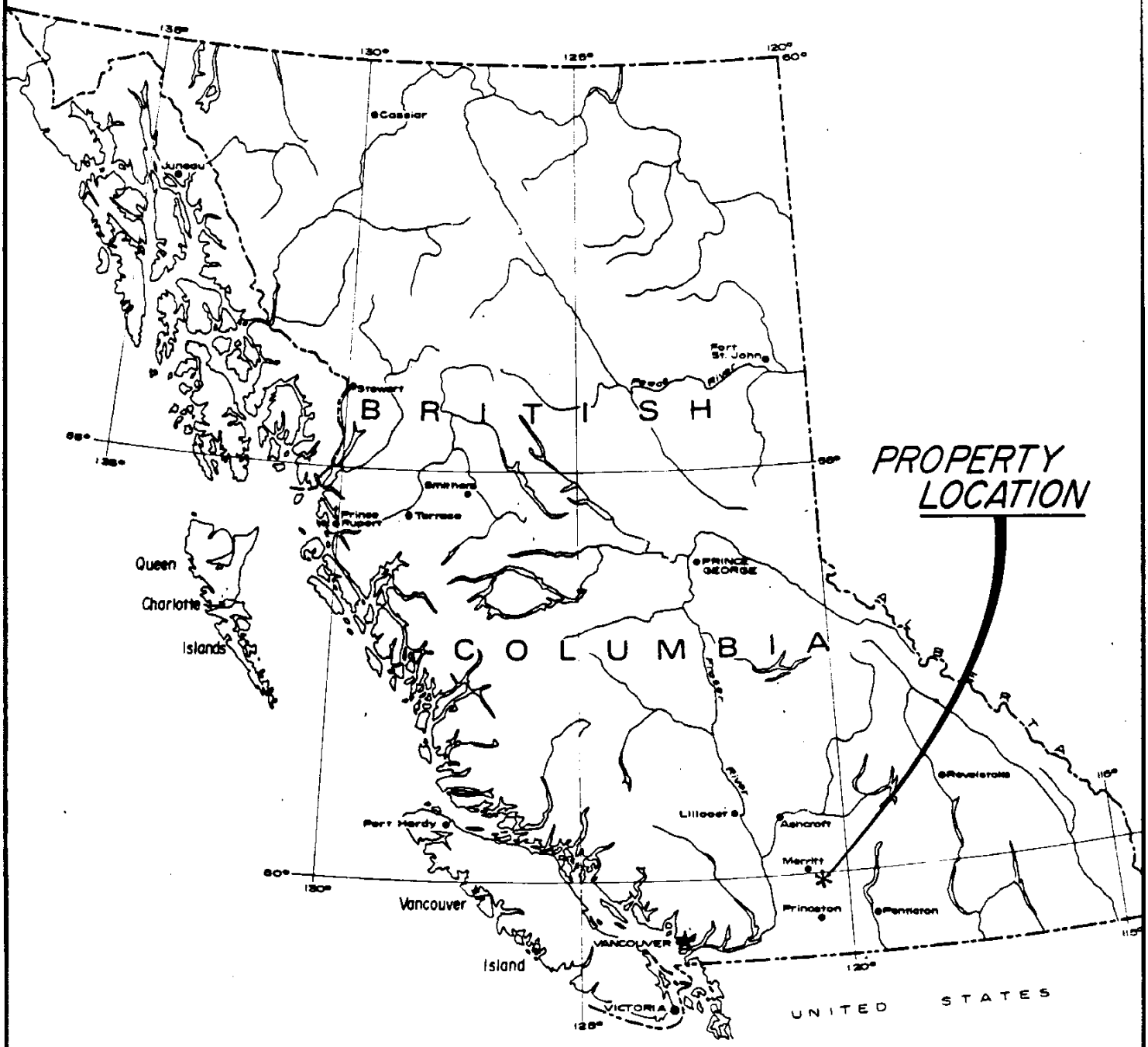
2 Geophysical Technicians, 176 hours at $40/hour	$ 7,040
Vehicle rental, 19 days at $90/day	1,710
Snowmobile rental, 7 days at $50/day	350
Room and board, 2 men at $40/man day, for 19 days	1,520
Survey supplies	110
Instrument rentals, 1 magnetometer, 1 VLF-EM 2.5 weeks at $200/week	500
	$ 11,230

OFFICE:

Geophysicist, 10 hours at $40/hour	400
Geophysical Technician, 42 hours at $25/hour	1,050
Drafting and printing	2,170
Typing, photocopying and compilation	150
	$ 3,770
TOTAL	$ 15,000

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

David G. Mark, Manager
Geophysicist



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NU-START RESOURCE CORPORATION

ASPEN & KAZ CLAIMS

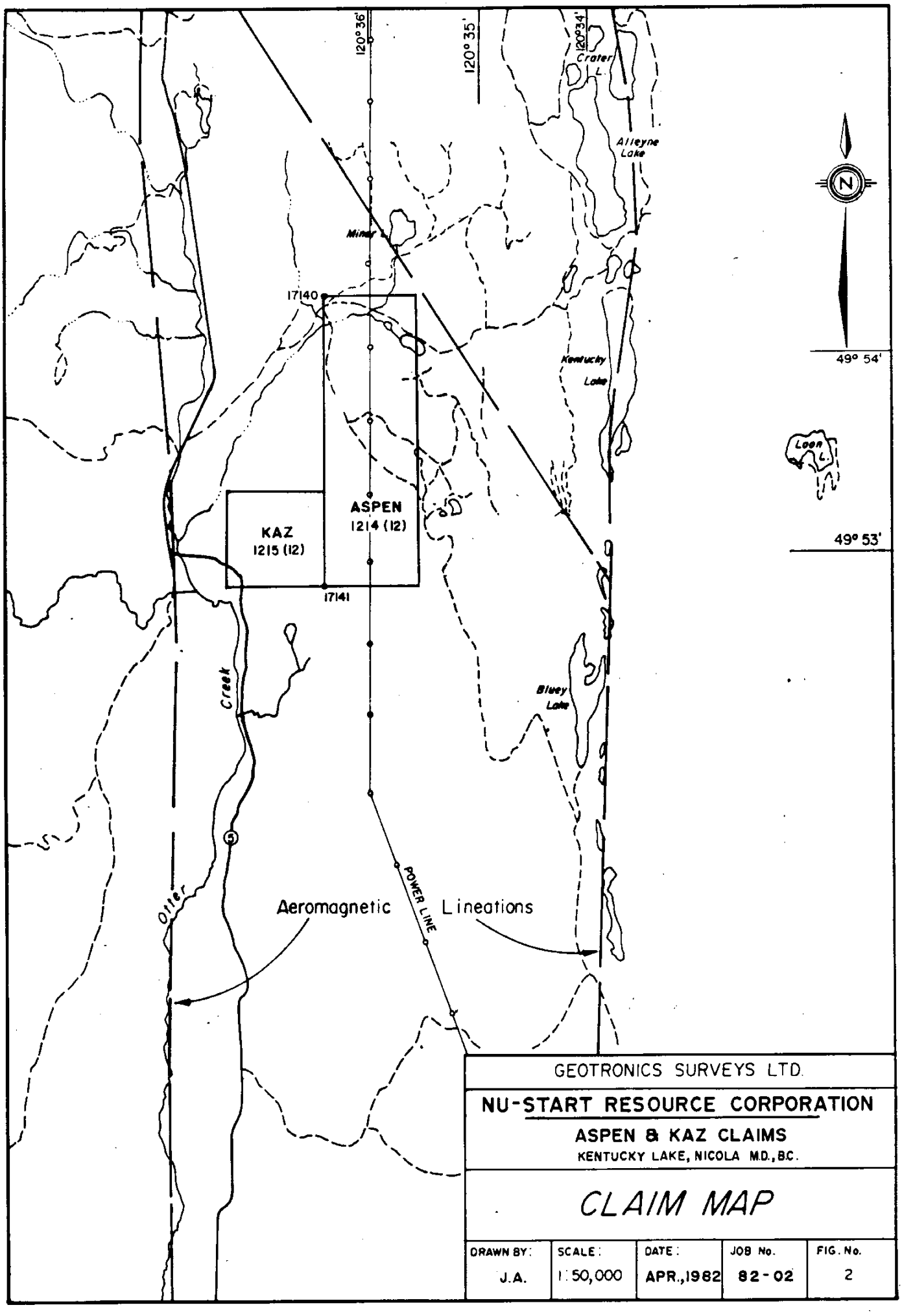
KENTUCKY LAKE, NICOLA M.D., B.C.

LOCATION MAP

SCALE

Miles 100 50 0 100 200 Miles

ALTAIR drafting services ltd.



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NU-START RESOURCE CORPORATION

ASPEN & KAZ CLAIMS

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

CLAIM MAP

DRAWN BY:	SCALE:	DATE:	JOB No.	FIG. No.
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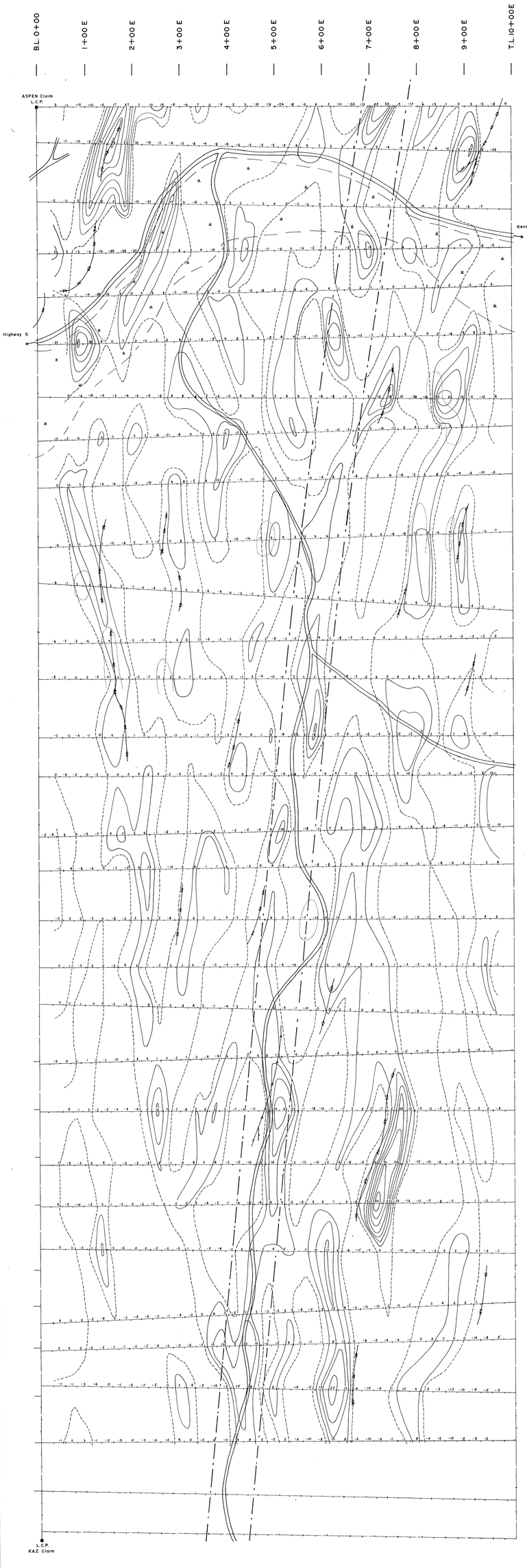

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,104

SYMBOLS

- Claim boundary
- Topofil or pace and compass survey line and stations
- Gravel or dirt road
- B.C. Hydro right of way
- Swamp and boundary
- Ridge, gully
- Outcrop area

CONTOUR INTERVAL: 5° +

Transmitter station: Seattle, Washington.

50 0 100 200 300 Metres

To Accompany Geophysical Report By David G. Mark, Geophysicist.

GEOTRONICS SURVEYS LTD.

NU-START RESOURCE CORPORATION
ASPEN CLAIM
ASPEN GROVE AREA, NICOLA M.D., B.C.

VLF-EM SURVEY
FRASER FILTERED
DATA & CONTOURS

SURVEY BY:	DRAWN BY:	DATE:	N.T.S.	JOB No:	SCALE:	SHEET No:
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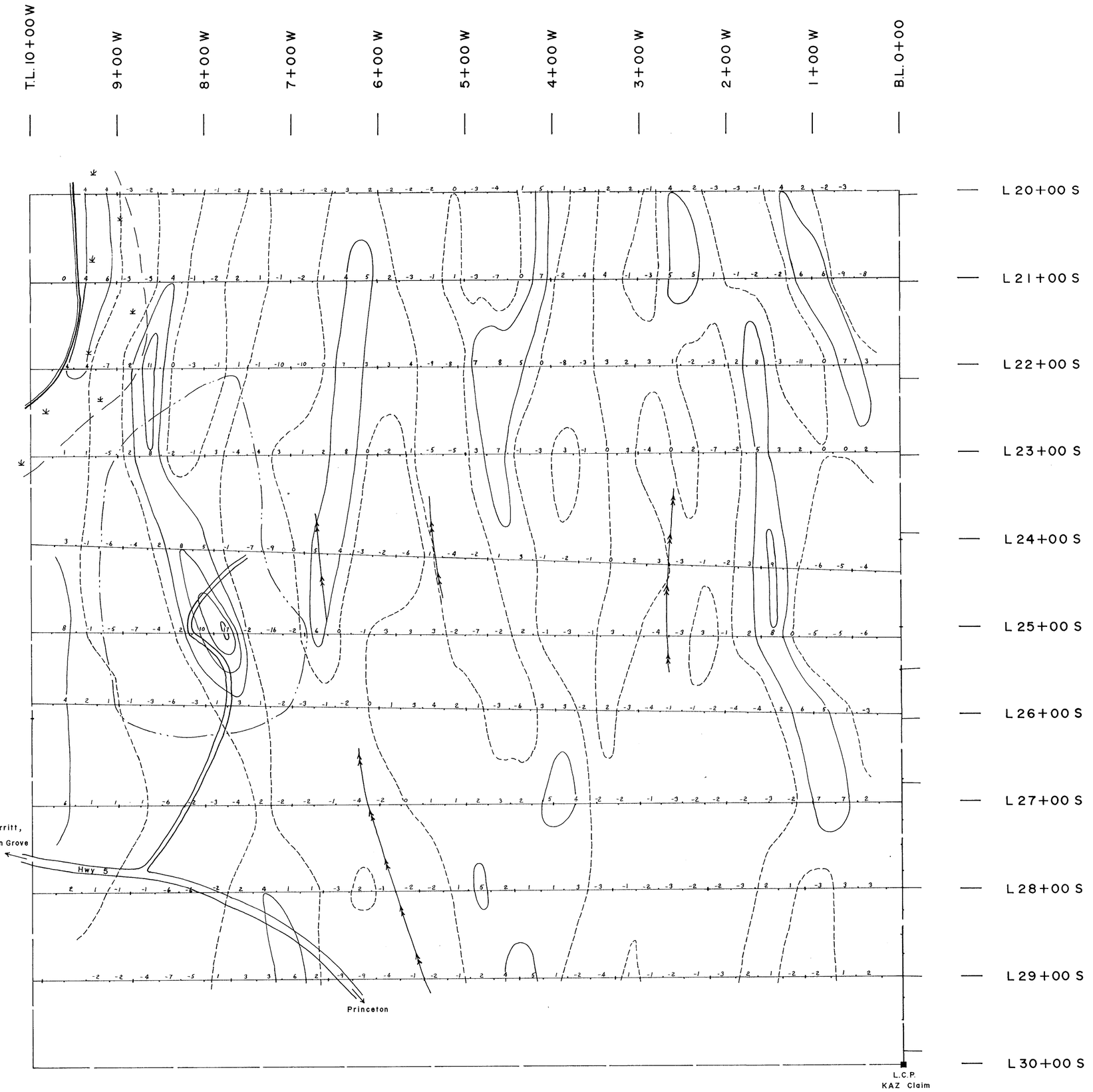


SYMBOLS

- Claim boundary
- Topofil or pace and compass survey line and stations
- Road
- Shoreline
- Gravel pit
- Swamp and boundary
- Ridge, gully
- Outcrop area

CONTOUR INTERVAL: 4°+ (Filtered)

Transmitter station: Annapollis, Maryland.

GEOLOGICAL BRANCH ASSESSMENT REPORT

11,104

50 0 100 200 300 Metres

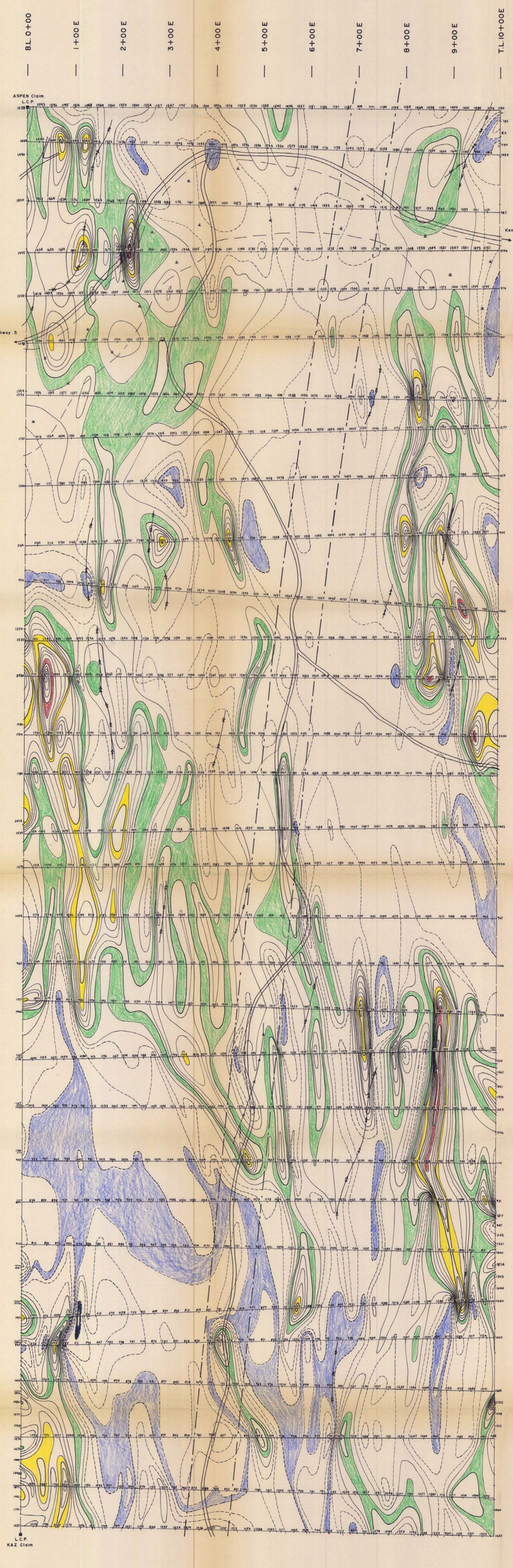
To Accompany Geophysical Report By David G. Mark, Geophysicist.

GEOTRONICS SURVEYS LTD.

NU-START RESOURCE CORPORATION
KAZ CLAIM
ASPEN GROVE AREA, NICOLA M.D., B.C.

VLF-EM SURVEY
FRASER FILTERED
DATA & CONTOURS

SURVEY BY:	DRAWN BY:	DATE:	N.T.S.	JOB No:	SCALE:	SHEET No:
K.G.	J.R.A.	April, 1982	92 H/15 E	82-02	1:3000	2



SYMBOLS

- Claim boundary
- Topofil or pace and compass survey line and stations
- Gravel or dirt road
- B.C. Hydro right of way
- Swamp and boundary
- Ridge, gully
- Outcrop area

CONTOUR INTERVAL: 100 ɣ

- ≤ 1200 ɣ
- ≥ 1300 ɣ

Add 56,000 ɣ for total field.

GEOLOGICAL BRANCH
ASSESSMENT REPORT
11,104

50 0 100 200 300 Metres

To Accompany Geophysical Report By David G. Mark, Geophysicist.

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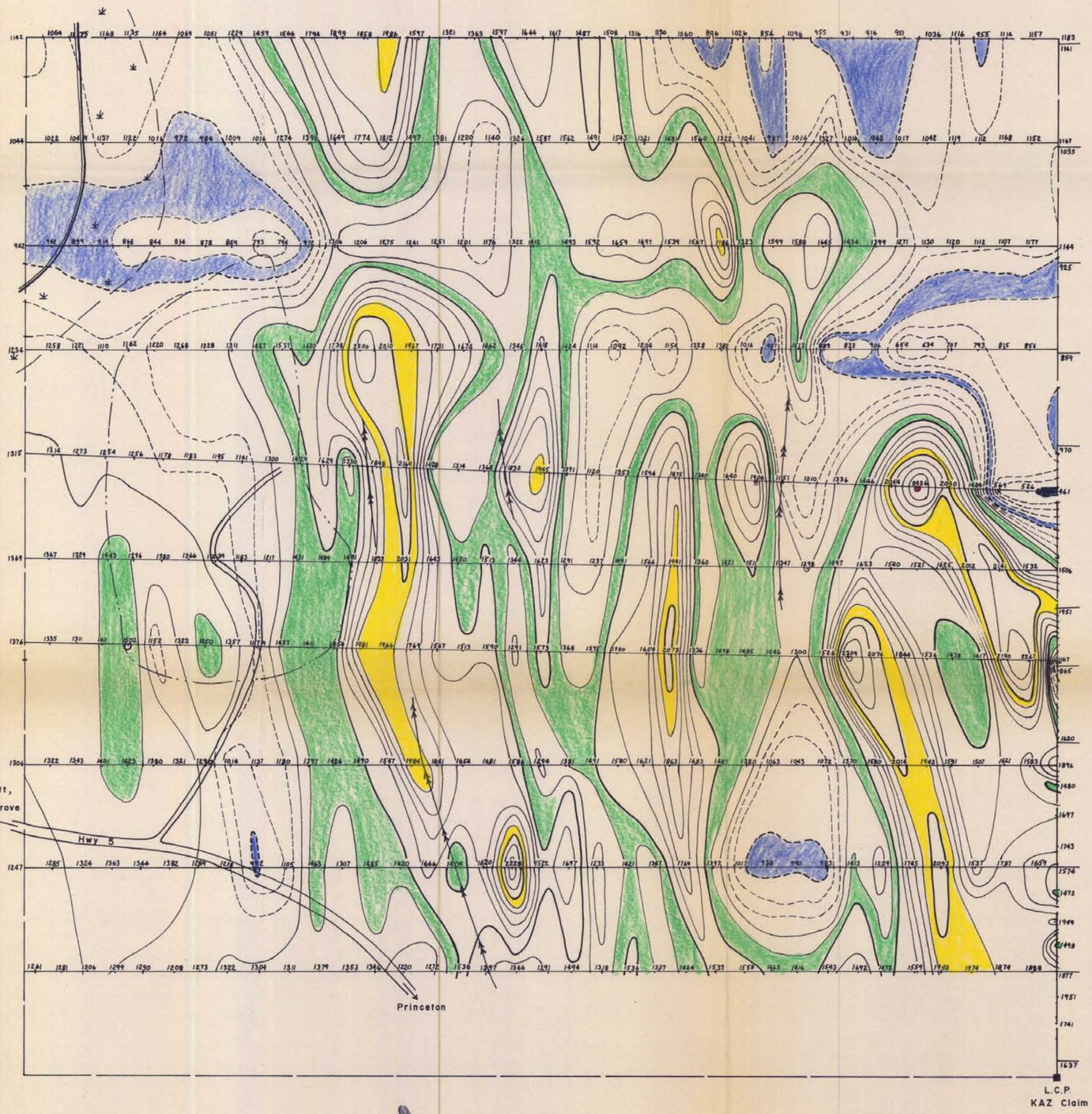
NU-START RESOURCE CORPORATION
ASPEN CLAIM
ASPEN GROVE AREA, NICOLA M.D., B.C.

MAGNETOMETER SURVEY

DATA & CONTOURS

SURVEY BY:	DRAWN BY:	DATE:	N.T.S.	JOB No.	SCALE.	SHEET No.
C.B.	J.R.A.	April, 1982	92 H/15 E	82-02	1:3000	3

T.L. 10+00 W | 9+00 W | 8+00 W | 7+00 W | 6+00 W | 5+00 W | 4+00 W | 3+00 W | 2+00 W | 1+00 W | B.L. 0+00



SYMBOLS

- Claim boundary
- Topofil or pace and compass survey line and stations
- Road
- Shoreline
- Gravel pit
- Swamp and boundary
- Ridge, gully
- Outcrop area

CONTOUR INTERVAL: 100 ɣ

- ≤ 1200 ɣ
- ≥ 1300 ɣ

Add 56,000 ɣ for total field.

GEOLOGICAL BRANCH ASSESSMENT REPORT

11,104

N

50 0 100 200 300 Metres

To Accompany Geophysical Report By David G. Mark, Geophysicist.

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NU-START RESOURCE CORPORATION
KAZ CLAIM
ASPEN GROVE AREA, NICOLA M.D., B.C.

MAGNETOMETER SURVEY

DATA & CONTOURS

SURVEY BY:	DRAWN BY:	DATE:	N.T.S.	JOB No:	SCALE:	SHEET No:
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