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GEOPHYSICAL REPORT

ON

AIRBORNE MAGNETIC AND VLF-EM SURVEYS

OVER THE

SIGMA 2 & 3 CLAIMS

SARITA RIVER, ALBERNI INLET AREA

ALBERNI MINING DIVISION

BRITISH COLUMBIA

SIGMA 2 : On South Sarita River, 13.5 km N70°E of Bamfield
: 48°53'N, 124°57'W
: N.T.S. 92C/15W

SIGMA 3 : At Christie Bay, 9 km N70°E of Bamfield
: 48°52'N, 125°01'W
: N.T.S. 92C/14E

WRITTEN FOR : AMVIC RESOURCES LTD.
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SURVEYED BY : COLUMBIA AIRBORNE GEOPHYSICAL SERVICES (1984) LTD.
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DATED : May 6, 1985

GEOTRONICS SURVEYS LTD.
Engineering & Mining Geophysicists
VANCOUVER, CANADA

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SUMMARY

Airborne magnetic and VLF-EM surveys were carried out over the Sigma 2 and 3 claims owned by Amvic Resources Ltd. of Vancouver, B.C., on April 20th, 1985. The claims are located 9 and 13.5 km N70°E of the village of Bamfield, B.C., respectively, in the Alberni Inlet area on Vancouver Island. The terrain consists of gentle slopes in the valleys and steep and rugged slopes on the mountains. They are forested with moderately dense coniferous trees with much salal and alder at lower elevations. Access is easily gained by a two-wheel drive vehicle. The purpose of the surveys was to aid in the mapping of geology as well as to locate probable areas for exploration of gold mineralization.

The oldest rocks on the two properties are sediments of the Quatsino Formation. However, most of each property is underlain by volcanics and possibly some sediments of the Bonanza Group. Also covering a large part of the Sigma 3 claim are rocks of the Westcoast Complex, which consists primarily of acid volcanics. Occuring in close proximity to each of the two claims are acid intrusives of the Island Intrusions.

There is no known mineralization to date on either of the claims. However, on the Crown Grants in between the two properties, occur gold, silver and copper mineralization.

The airborne surveys were flown at about a 50-meter terrain clearance on east-west contour lines with a separation of 200 meters. The instruments used were a Sabre Electronics proton precession magnetometer and a Sabre Electronics VLF-EM receiver. The magnetic data were picked from the strip charts and hand contoured. The contours were drawn on a survey plan on which the VLF-EM anomalies were plotted as well.

CONCLUSIONS

1. The magnetic survey has verified that much of each claim is underlain by Bonanza volcanics. Also there appears to be no difference in the magnetic signature of these rocks with those of the Westcoast Complex which underlies a large segment of the Sigma 3 claim.

2. A strong magnetic high within the northwest corner of each claim may be reflecting massive magnetite. An alternative interpretation is that the high is reflecting a more magnetic rock-type such as basic volcanics or intrusives.

3. The VLF-EM survey revealed four conductors on the Sigma 2 claim and five on the Sigma 3 claim. Because of their lineal shape, in all likelihood, some are reflecting geological structure. All or parts of some of the conductors could be reflecting mineralization.

4. Both the VLF-EM and magnetic surveys revealed lineations within the Sigma 2 survey area that are likely caused by fault, shear and/or contact zones. These can be important indicators of sulphide and native gold mineralization especially where the lineations cross.

RECOMMENDATIONS

The airborne geophysics has revealed some target areas throughout each property such as the magnetic highs and the VLF-EM highs. It is recommended to check these out by prospecting, geological mapping and possibly soil geochemistry. Soil geochemistry lines could be run in the areas of interest, such as across the VLF-EM conductors. Ground VLF-EM and magnetic surveying may be quite useful as well in finding and delineating more accurately the target areas.

It is not expected, however, that all gold-sulphide mineralization in the area will be reflected by the airborne magnetic and VLF-EM surveys. It is simply a start as far as defining target areas.

However, if one wants to cover the property effectively, the following program is recommended:

1. Take large soil samples on a grid, say, every 50 m on lines 100 or 150 m apart. Silt, sand, and/or gravel along creeks and tributaries should also be sampled. In the lab, the total sample should be pulverized, and not screened at all in order to preclude the screening out of coarser gold. The anomalous samples should then be followed up by sampling on a tight grid, say 15 to 20 m centers on a grid, say 200 m square.

2. At the same time, careful geological mapping and prospecting should be carried out preferably by a geologist and prospector familiar with gold mineralization. One large benefit of this will be a better interpretation of any geophysics that are carried out. Special attention should

be paid to the VLF-EM conductors and magnetic highs.

3. The defined soil anomalies in gold should then be trenched, by 'cat' or backhoe if access and terrain permit.

4. Resistivity - IP mapping and/or MaxMin EM should then be considered in order to optimize drill targets.

5. Diamond drilling should then be carried out using a large diameter drill and a face discharge bit.

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SIGMA 2 AND 3 CLAIMS

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INTRODUCTION AND GENERAL REMARKS

This report discusses the survey procedure, compilation of data and the interpretation of low-level airborne magnetic and VLF-EM surveys carried out over the Sigma 2 and 3 claims within the Alberni Inlet area on April 20th, 1985. The surveys were carried out by Lloyd Brewer, instrument operator and project manager, and John Kime, navigator, both of whom are of Columbia Airborne Geophysical Services (1984) Ltd. A total of 49.7 line km of airborne surveys were done over the Sigma 2 claim and surrounding area, and 54.35 line km over the Sigma 3 claim and surrounding area.

The object of the two surveys was to aid in the geological mapping of lithology and structure for the purpose of exploration of gold mineralization. The geological environment is considered to be similar to that of the gold discoveries in the area of Kennedy and Great Central Lakes (D.P. Taylor, 1984). Gold and

silver mineralization has been discovered on the Crown Grants located between the two claims.

PROPERTY AND OWNERSHIP

Each property consists of one claim containing 20 units as shown on Map 2 and as described below:

Claim Name	No. Units	Record No.	Expiry Date
Sigma 2	20	2257	June 8, 1985
Sigma 3	20	2258	June 8, 1985

The expiry dates shown does not take into account the surveys under discussion as being accepted for assessment credits.

The properties are registered in the name of Chicago Resources Ltd., but it is understood that the claims have been sold to Amvic Resources Ltd. of Vancouver, British Columbia.

LOCATION AND ACCESS

Both claims, being about 3 km apart from each other, are located in the Alberni Inlet area near its mouth. The Sigma 2 claim is located at the confluence of the South Sarita River with the Sarita River. It also occurs on the northeast slope of a small mountain known as Poett Heights. The Sigma 3 claim occurs to the immediate southeast of Christie Bay, and to the immediate north of Frederick Lake. It also occurs on the northeast slope of a small mountain, this one known as Pachena Cone.

The geographical coordinates for the Sigma 2 claim are 48° 53'

north latitude and 124° 57' west longitude, and for the Sigma 3 claim, 48° 52' north latitude and 125° 01' west longitude. The N.T.S. for Sigma 2 is 92C/15W, and for the Sigma 3, 92C/14E.

Access is by two-wheel drive vehicle from the town of Port Alberni. One travels southerly over a series of well-maintained logging access roads which is also a public access road for the village of Bamfield. The distance to the Sigma 2 claim is 59 km, and that to the Sigma 3 claim, 65 km. Off-highway logging access roads occur on each of the claims and thus four-wheel drive is recommended.

PHYSIOGRAPHY

The properties occur within the Vancouver Island Mountains which is a physiographic division of the coastal Insular Mountain System. The terrain consists of steep, partially logged slopes throughout much of each property. The slopes at lower elevations such as are in the valleys are quite gentle.

Elevations vary from close to sea level on the northern part of each claim, to 560 meters a.s.l. within the southwest corner of the Sigma 2 claim and 440 m a.s.l. within the southwest corner of the Sigma 3 claim.

For the Sigma 2 claim, the main water source is the northerly- and northwesterly-flowing South Sarita River. That for the Sigma 3 claim is Frederick Lake and the northerly-flowing Frederick Creek.

The forest cover consists of fir, cedar and hemlock(?) and varies from closely growing, immature stands to more widely

spaced, mature stands. On the lower elevations occur thick salal and alder.

HISTORY OF PREVIOUS WORK

Since the two claims have been staked, no previous work has been done.

However, work on the Crown Grants between the two claims has been carried out since 1895. Early work has consisted of drifting, trenching and other physical work. More recent work has consisted of soil geochemistry, magnetic surveys and percussion drilling.

GEOLOGY

The following is taken from the Map of the geology of the Nitinat Lake map area by Muller.

The oldest rocks on both properties are those of the Quatsino Formation of Middle (?) and Upper Triassic age. It consists of limestone, minor calcareous siltstone, shale, cherty limestone, and chert. This formation occurs in the extreme corner of the Sigma 3 claim and a small wedge-shaped part on the western edge of the Sigma 2 claim.

The Bonanza Group of Lower Jurassic age covers the rest of the Sigma 2 claim, and the southeastern half and the northern boundary area of the Sigma 3 claim. This group consists of basaltic to rhyolitic tuff, breccia, flows, sills and dykes, minor argillite and greywacke.

Covering most the northwestern half of the Sigma 3 claim are rocks of the Westcoast Complex. The age is Upper Paleozoic and (?) or Triassic and Jurassic. The rocks are quartz diorite, diorite, tonalite, amphibolite and agmatite as well as minor metavolcanics and metasediments.

Island Intrusions of Lower to Middle Jurassic age occur on the northern boundary of the Sigma 2 claim, a few hundred meters east of the eastern boundary of the Sigma 2 claim, and a few hundred meters southwest of the southwestern corner of the Sigma 3 claim.

The prominent direction for both faults and contacts on and around the two properties is predominantly northeasterly and east-northeasterly .

To date, there is no known mineralization on either of the two properties. However, on the Crown Grants, in betweeen the two properties, J.W. McLeod (1979), as reported by D.P. Taylor, noted the surface mineralization to be of three types; (1), replacement of fine-grained volcanics by chalcopyrite, (2) replacement of limestone by massive magnetite, and (3) mineralized shear zones in highly silicified fractured limestone. Assays in two percussion drill holes indicated significant amounts of gold and silver.

INSTRUMENTATION AND THEORY

a) Magnetic Survey

The magnetic data are detected using a nuclear free precession proton magnetometer, manufactured by Sabre Electronic Instruments Ltd. of Burnaby, B.C. The magnetometer measures the total

count of the earth's magnetic field intensity with a sensitivity of one gamma. The data are recorded on magnetic tape and 12 cm analog strip chart.

The magnetic patterns obtained from a regional airborne survey are directly related to the distribution of magnetite in the survey area. However, the geology cannot be deduced from iso-magnetic maps by simply assuming that all magnetic highs are underlain by gabbro or ultramafic rocks, and that all magnetic lows are caused by limestone or chert. The problem with such a simplistic approach is that magnetite is not uniformly distributed in any type of rock. Other problems arise from the fact that most geologic terrains have rocks of high susceptibility superimposed on less 'magnetic' rocks, and vice versa. Cultural features such as powerlines, pipelines and railways also complicate matters. So many variables can be involved that it may be impossible to make a strictly accurate analysis of the geology of an area from magnetic data alone. It is preferable to use other information such as geological, photogeological and electromagnetic in combination with magnetic data to obtain a more accurate geological analysis.

b) VLF-EM Survey

A two-frequency omni-directional receiver unit, manufactured by Sabre Electronic Instruments Ltd., of Burnaby, B.C., was used for the VLF-EM survey. The transmitters used are NLK Arlington (Seattle), Washington, operating on 24.8 KHz, and Annapolis, Maryland, transmitting at 21.4 KHz. These signals are used due to their ideal orientation with respect to easterly and north-easterly geological structures, and their good signal strengths.

The VLF (Very Low Frequency) method uses powerful radio trans-

mitters set up in various parts of the world for military communications. These powerful transmitters can induce electric currents in conductive bodies thousands of kilometers away from the radio source. The induced currents set up secondary magnetic fields which can be detected at surface through deviations in the normal VLF field. The VLF method is inexpensive and can be a useful initial tool for mapping structure and prospecting. Successful use of the VLF requires that the strike of the conductor be in the direction of the transmitting station so that the lines of magnetic field from the transmitter cut the conductor. Thus, conductors with northeasterly to southeasterly strikes should respond to both Seattle and Annapolis transmissions.

It is impossible to determine the quality of conductors with any reliability, using field strength data alone. The question of linearity is in doubt if the conductor does not appear to cross the adjacent flight lines. The relatively high frequency results in a multitude of anomalies from unwanted sources such as swamps, creeks and cultural debris. However, the same characteristic also results in the detection of poor conductors such as faults, shear zones, and rock contacts, making the VLF-EM a powerful mapping tool.

SURVEY PROCEDURE

A two-meter bird was fitted with a magnetometer coil and two omni-directional EM receivers and towed beneath the helicopter on a 10-meter cable. The terrain clearance for the bird was 50 m.

The surveys were straight-line flown at a line spacing of 200 m. Navigation was visual, using 1:50,000 scale maps blown up to

1:10,000.

The aircraft used to conduct this survey was a Bell Jet Ranger helicopter. Airspeed was a constant 60 KPH so that creek valleys and canyons were penetrated thoroughly. The slow airspeed provided safety, detailed coverage of boxed-in areas, and consistency of data retrieval, which is critical in rugged terrain, such as within this survey.

The number of line km flown as shown on Map 3 for the Sigma 2 claim is 49.7 and for the Sigma 3 claim as shown on Map 4 is 54.35.

The project supervisor, Mr. L. Brewer, has over 4 years of experience in conducting aerial magnetic and electromagnetic surveys from rotary-wing aircraft, under all types of terrain conditions.

DATA REDUCTION AND COMPILATION

The observant magnetic total field was recorded on analogue strip charts. These were played-back together with audio recordings containing fiducial markers, and the fiducial markers were transferred to the strip charts. The fiducial markers were identified with topographic features along the flight lines.

The magnetic data were taken from the strip charts and plotted at a scale of 1:10,000 (1 cm = 100 m). The data were then contoured at a 100-gamma interval onto Map 3 for the Sigma 2 claim and onto Map 4 for the Sigma 3 claim.

The VLF-EM survey measured the field strength. The resulting

anomalies were taken from the strip charts and plotted on the sheet with the magnetics.

DISCUSSION OF RESULTS

a) Magnetics

What is readily seen on the Sigma 3 map sheet is a severe herring-bone effect with the magnetic contours. That is, going from south to north, a magnetic high occurs on one flight line, a magnetic low on the next, a magnetic high on the next, and so on. This is a problem with straight-line flying in steep terrain. There is no real solution since the alternative is to contour fly which then results in a problem with noisy EM data.

Some herring-bone effect can also be seen on the Sigma 2 map sheet.

For the Sigma 2 claim, the magnetic intensity over almost the entire property varies from 900 gammas to 1,400 gammas and thus is considered to be the background. The variation is moderate and is typical of volcanics (Bonanza) of this age.

At the extreme northwestern corner is a strong magnetic high reaching an intensity of 2,000 gammas. This could be reflecting massive magnetite mineralization since it is known to occur in this area. It could also be reflecting a very magnetic rock-type such as basic volcanics or intrusives.

Also in the northwestern corner is a northeasterly-trending magnetic high of rather low intensity (1,500 gammas). This high is probably reflecting a volcanic flow that happens to contain more magnetite than the surrounding flows.

The magnetic background over the Sigma 3 claim is similar to that of the Sigma 2 claim, that is 900 to 1,400 gammas. This is not surprising since the claim is mostly underlain by the same rock-type. There appears to be no difference in magnetic signature between the Bonanza volcanics and the Westcoast Complex rocks.

A magnetic high reaching an intensity of 1,900 gammas occurs within the northwestern part of this claim as well. However, here, the underlying rocks are those of the Westcoast Complex. Nevertheless, the causative source could be massive magnetite, or a highly magnetic rock member of the Westcoast Complex.

Magnetic lows often occur along creek valleys, and/or areas of low topography. The reasons for this are as follows:

1. Valleys almost always contain deeper overburden which means the detecting element is further from the bedrock causing the magnetic field.

2. If the survey is flown across the valley or gully, then the detecting element is also further from the bedrock.

3. Gullys and valleys are often caused by faults or shear zones which are often reflected by magnetic lows.

b) VLF-EM

The major cause of VLF-EM anomalies, as a rule, are geologic structure 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.

There is some variation in intensity from one VLF-EM anomaly to the next. This is not only 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 close to the same direction as the direction to the transmitter 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.

Four EM conductors have been mapped within the Sigma 2 claim, and five within the Sigma 3 claim. The more lineal-shaped ones are more indicative of geological structure. But mineralization as a causative source should not be ruled out, especially considering that mineral deposits often occur along structural zones such asfaults, shears and contacts. Thus any conductor, or any part of any conductor could be reflecting economic mineralization.

c) Lineations

Lineal trends considered to be indicative of geological structure have been drawn on Map 3 taking into account:

a) Magnetic lows which are often caused by the magnetite within the rocks being altered by geological structure processes.

b) VLF-EM anomalies which more often than not are reflecting structure.

c) Topographic depressions such as creek valleys which are usually caused by structure.

Four lineations that are indicative of faults and contacts have been mapped across the property striking in different directions. One lineation which strikes northeasterly across the northwestern part of the property could be reflecting a northeasterly-trendin fault as mapped by Muller.

Because of the severe herring-bone effect, lineations could not be drawn on Map 4 (Sigma 3 claim).

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

David G. Mark,
Geophysicist

May 6, 1985

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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. That 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 16 years and have been active in the mining industry for the past 19 years.

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

4. This report is compiled from data obtained from airborne magnetic and VLF-EM surveys carried out by Columbia Airborne Geophysical Services (1984) Ltd., under the supervision of L. Brewer on April 20th, 1985.

5. I have no direct or indirect interest in any of the claims mentioned within this report, nor in Amvic Resources Ltd., nor do I expect to receive any interest as a result of writing this report.

David G. Mark
Geophysicist

May 6, 1985

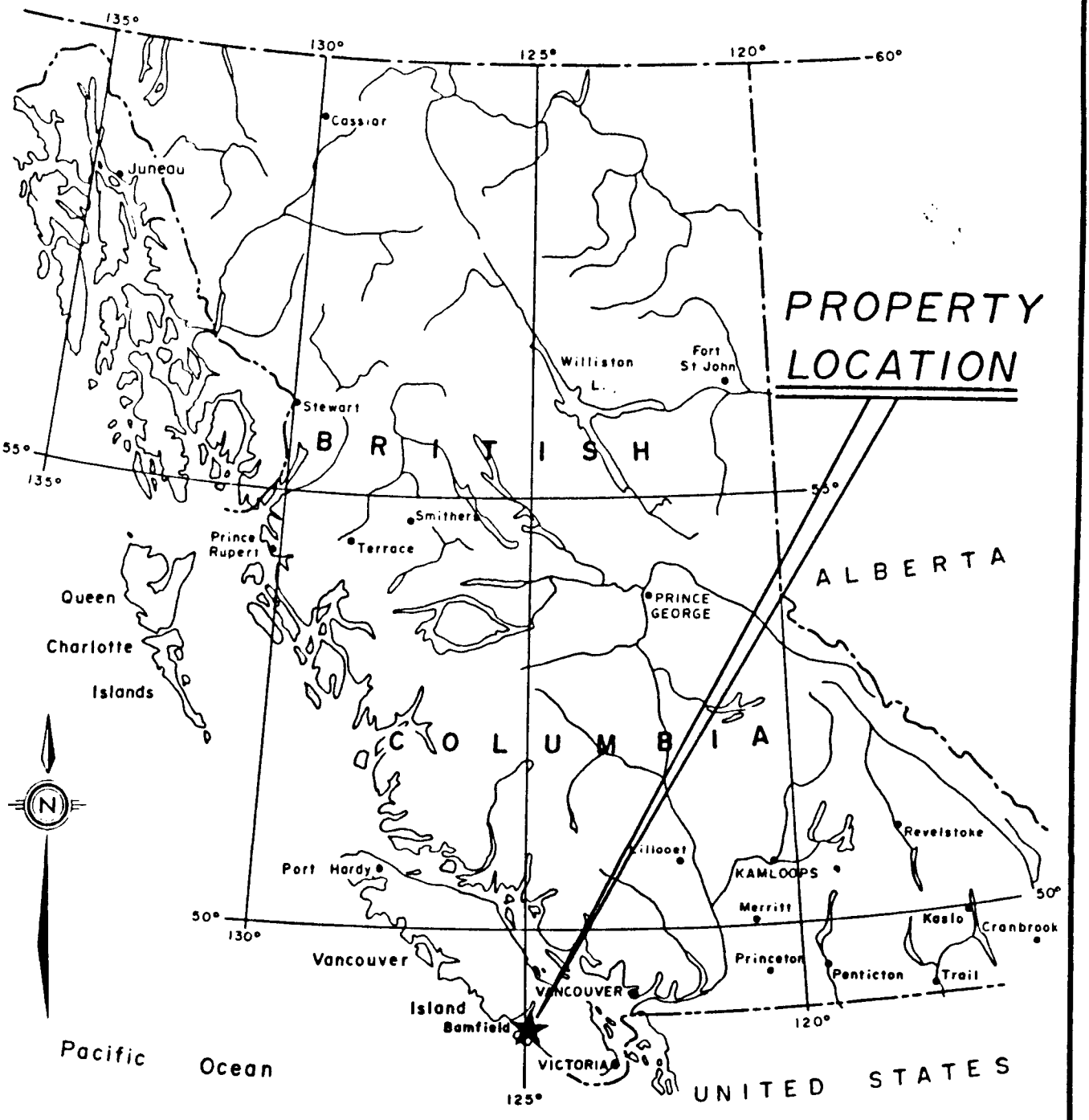
AFFIDAVIT OF COSTS

Sigma 3 Claim

I, Lloyd Brewer, president of Columbia Airborne Geophysical Services (1984) Ltd., certify that the airborne magnetic and VLF-EM surveys were flown on April 20th, 1985, and that they were flown at a cost of $100/km, the total number of km being 54.35 to give a total cost of $5,435.00.

Lloyd Brewer

May 6, 1985

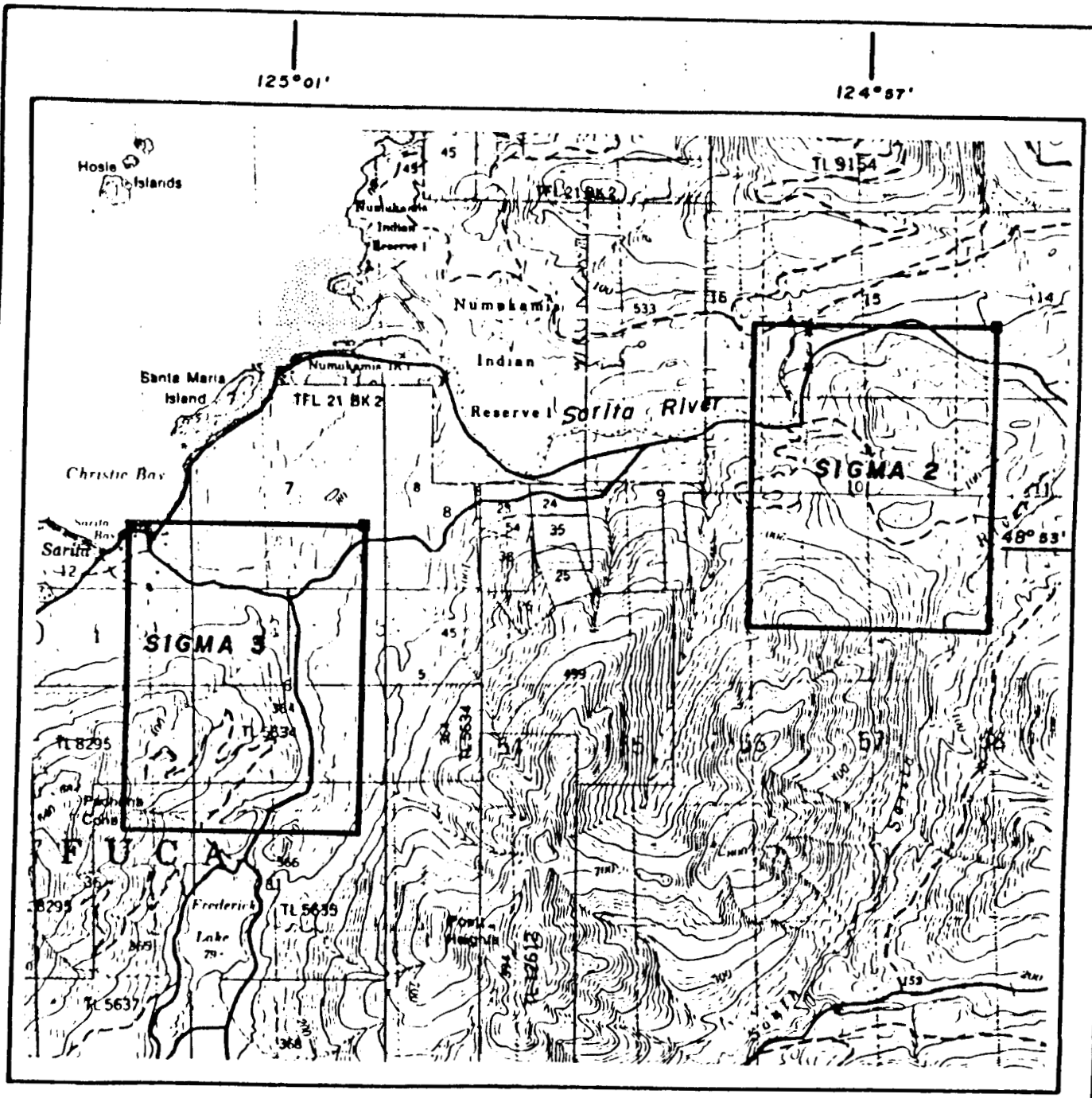


SIGMA 2 & SIGMA 3 CLAIMS

100 0 100 200 300 400 Km.

100 0 100 200 Mi.

MAP 1 BRAD'S DRAFTING SERVICES



AMVIC RESOURCES LTD.

SIGMA 2 & 3 CLAIMS

SARITA RIVER, VANCOUVER ISLAND

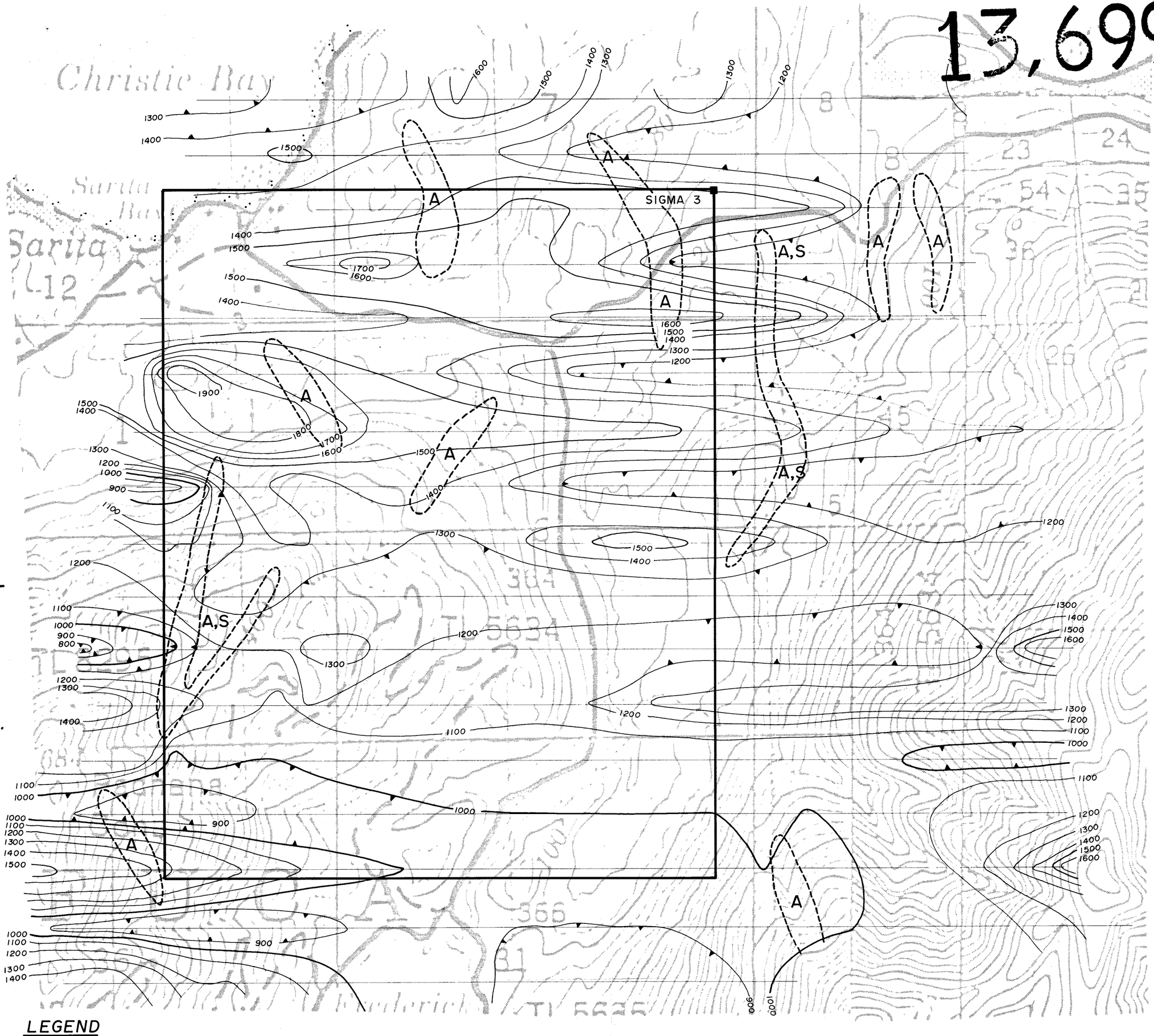
ALBERNI M. D., B. C.

CLAIM LOCATION MAP

SCALE	DATE	MAP	NTS
1:50,000	May 85.	2	92 C/14 E, 15 W

125°01'

48°52'



LEGEND

- Legal corner post
- Property boundary
- Flight line

VLF-EM

- VERY WEAK ANOMALY
- S — Denotes Seattle anomaly
- A — Denotes Annapolis anomaly

NOTE: The VLF-EM Survey measures field strength.
VERY WEAK anomalies could be caused by terrain.

VLF-EM TRANSMITTER DIRECTION

SEATTLE
24.8 KHz.

ANNAPOLIS
21.4 KHz.

MAGNETIC CONTOURS

- 1000 gammas
- 500 gammas
- 100 gammas
- Depression

Survey Carried Out By: COLUMBIA AIRBORNE GEOPHYSICAL SERVICES (1984) LTD.

To Accompany Report By: DAVID G. MARK, Geophysicist.

AMVIC RESOURCES LTD.

SIGMA 3 CLAIM

CHRISTI BAY, FREDERICK LAKE AREA

ALBERNI M.D., B.C.

AIRBORNE SURVEY

MAGNETIC CONTOURS & VLF-EM ANOMALIES

SCALE:	DATE:	N.T.S.	MAP:	DRAFTED BY:
1:10,000	May 85.	92 C/14 E	4	B.D.S / L.M.L.