BLACK GOLD RESOURCES INC.

GEOPHYSICAL REPORT ON AN
AIRBORNE MAGNETIC AND VLF-EM SURVEY

TAURUS CLAIM

VICTORIA MINING DIVISION

LATITUDE: 48° 58'30"N LONGITUDE: 124° 25'00"W

NTS: 92C/16W

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GEOLOGICAL BRANCH
ASSESSMENT REPORT

17,422

Part 2 of 2

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ILLUSTRATIONS

INTRODUCTION

On February 27, 1987 an airborne magnetic and VLF-EM survey was conducted over the **Taurus claim** for **Black Gold Resources Inc.** The claim is situated approximately seven kilometres north of the western end of Cowichan Lake on Vancouver Island.

The intention of this survey is to direct further exploration to any favourable anomalous zones and assist in the geological mapping of the area. Approximately 40 line kilometres of magnetic and VLF-EM data was gathered over the claims. The airborne magnetic and VLF-EM data has been examined in detail to evaluate the subject property.

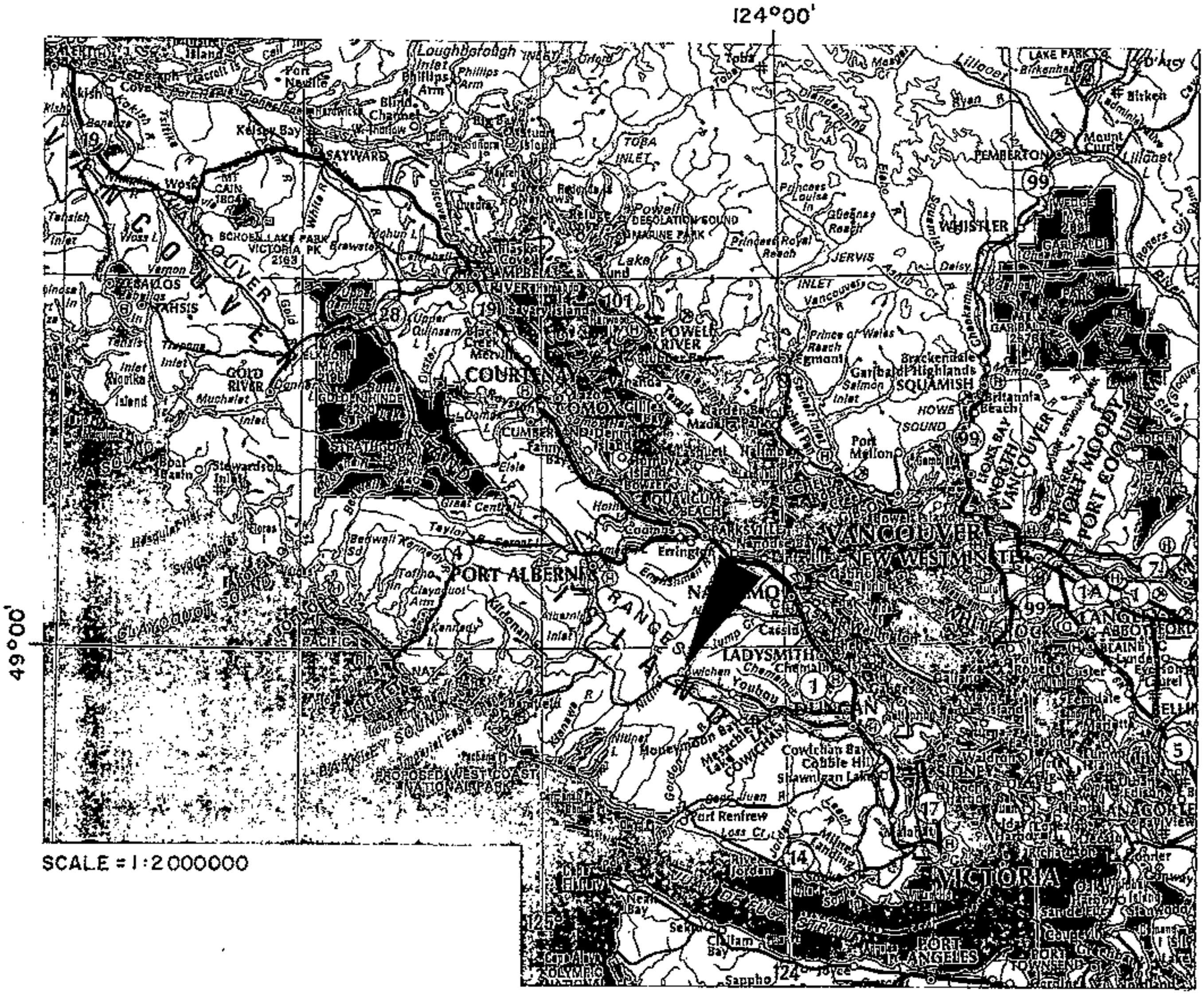
PROPERTY

The **Taurus claim** is owned and operated by **Black Gold Resources Inc.** The claim was staked by Jaroslav Ruza and recorded March 4, 1987. The claim is described in the table below and illustrated in Figure 2.

Claim Name	Units	Record No.	Record Date
Taurus	12	1839	March 4, 1987

LOCATION AND ACCESS

The **Taurus claim** is located on Vancouver Island near the western end of Cowichan Lake. The nearest town, Nitinat, is eight kilometres southeast of the claim. The claim is located four kilometres east of Heather Lake and six kilometres north of the mouth of Shaw Creek. The claim is situated within the Victoria Mining Division of B.C. The NTS map co-ordinates of the **Taurus claim** is 92C/16W. The approximate geographical coordinates are a latitude of 48° 58'30"N and a longitude of 124° 25'00"W.



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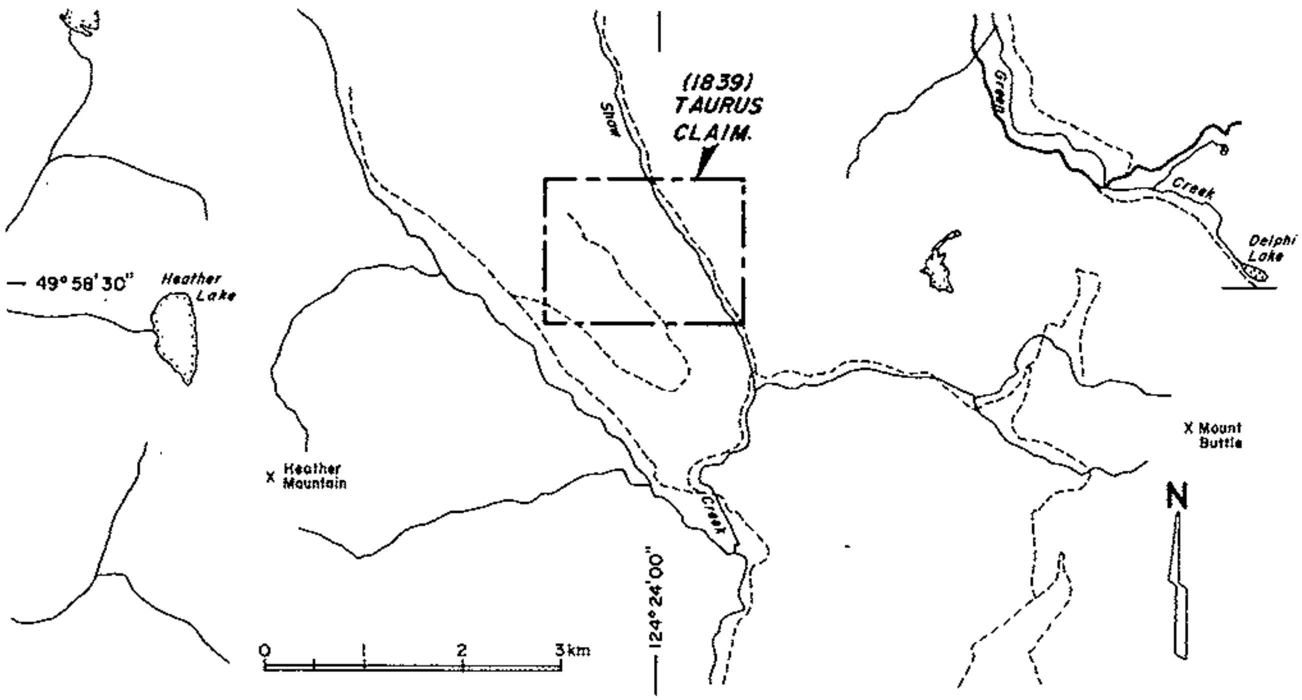
TAURUS CLAIMS

LOCATION MAP

N.T.S. 92C/16W

FIG. 1



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TAURUS CLAIMS

CLAIMS MAP

N.T.S. 92C/16W

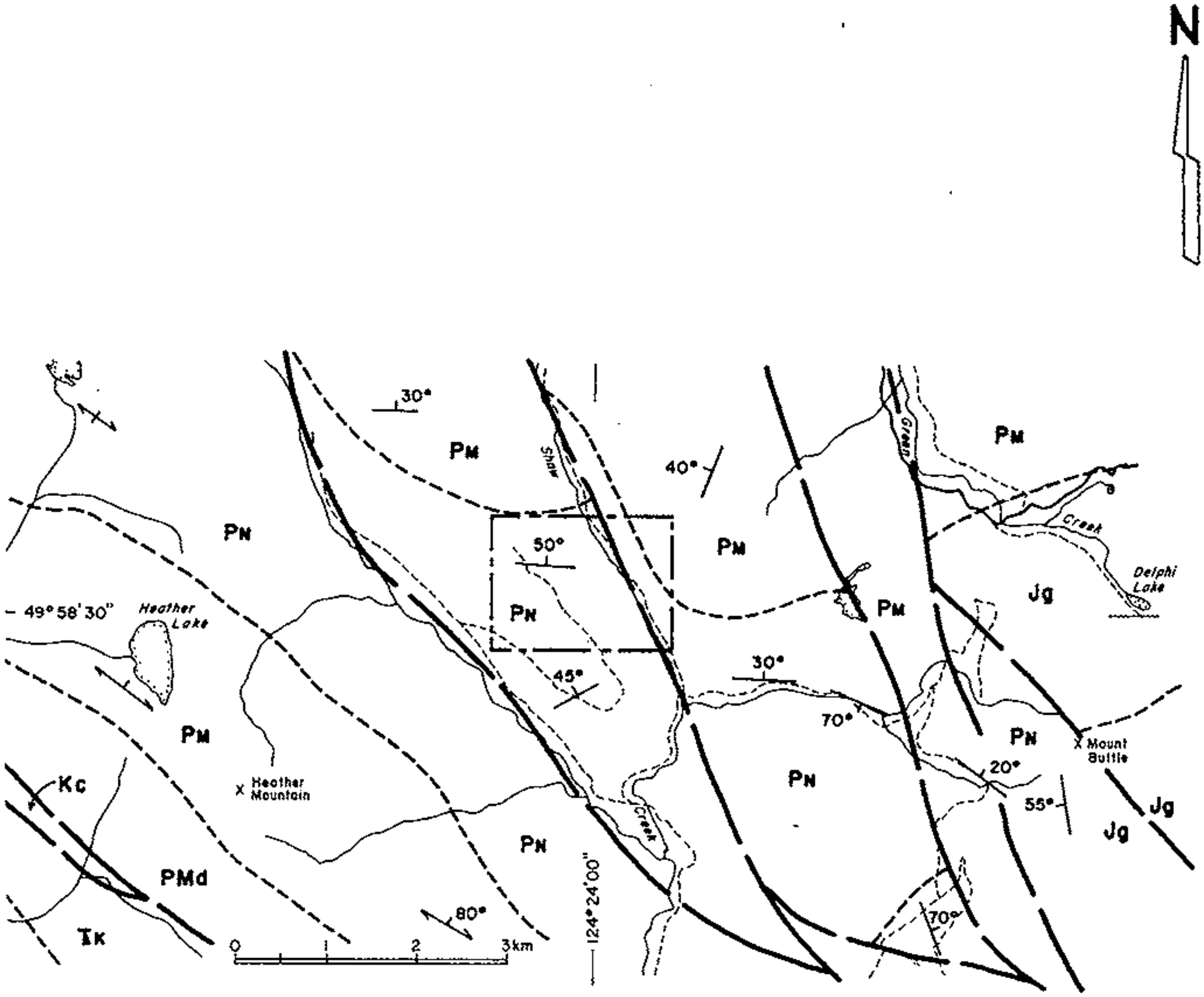
FIG. 2

Access to the area is usually achieved by logging roads from Lake Cowhichan. The most direct route is via an all weather logging road along the north side of Cowhichan Lake and then turning north onto a dry weather logging road just before Shaw Creek.

GEOLOGY

The geology of the **Taurus claim** and the surrounding area is extensively summarized from J.F. Fyles (1955) Report on Saanich Granodiorite (Coast Intrusives) in Cowichan Lake Area dated in 1955 and is as follows:

> "Granitic rocks (Quartz diorite to siliceous granites) intrude the Vancouver and Sicker Groups. The plutons of grandiorite in the Cowhichan Lake Area are steeply dipping, irregular dyke-like bodies, the long axes of which are approximatelyt parallel to the fold axes of older rocks. In cross-section the plutonic masses cut across the complex structures of pre-granitic rocks. In composition the Saanich granodiorite ranges from quartz diorite to aplogranite. Aplogranite is a type of light-coloured granite containing more potash feldspar (orthoclase) than albite (light plagioclase) and a very small proportion of dark minerals.
>
> Quartz diorite is more common in the eastern part of the area than in the western near Mount Buttle, whereas aplogranite occurs only as a roof facies in protrusions into the volcanic rocks near the top of Mount Buttle. The grandodiorite is massive and everywhere contains a low proportion of small, rounded, mafic inclusions.
>
> The pre-granitic basic volcanics have undergone a low grade of regional metamorphism. In the lowest grade of metamorphism, actinolitic hornblende and minor amounts of clinozoisite have developed, and in somewhat higher grade ragged hornblende, biotite, epidote, and probably a more sodic, plagioclase have formed. In contact metamorphism the basaltic rocks have been recrystallized and changed in composition so that they exhibit granoblastic textures and contain minerals characteristic of the granodiorite. The regionally metamorphosed rocks appear to be spatially related to granitic masses. They may be regarded as "basic Front", whereas the zone of contact metamorphism is one of granitization.
>
> The Saanich granodiorite is probably of magmatic origin. It appears to have been emplaced by passive processes involving stoping, small mafic intrusions and larger fragments of wallrock in the granodiorite are regarded as remnants of



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TAURUS CLAIMS

GEOLOGY MAP

N.T.S. 92C/16W

FIG. 3

LEGEND FOR FIGURE 3

QUATERNARY

[illegible] Unconsolidated sediments

TERTIARY

EOCENE AND OLIGOCENE

CARMANAH GROUP

[illegible] SOOKE FORMATION: sandstone, shale, conglomerate

[illegible] HESQUIAT FORMATION: siltstone, shale, sandstone, conglomerate

EOCENE (AND OLDER?)

[illegible] CATFACE INTRUSIONS: quartz diorite, agmatite

[illegible] [illegible] METCHOSIN VOLCANICS, : basaltic lava, pillow basalt, breccia, tuff,
: schistose metavolcanic rock

Tsb SOOKE GABBRO: gabbro, minor quartz diorite

CRETACEOUS

UPPER CRETACEOUS

NANAIMO GROUP

[illegible] HASLAM FORMATION: shale, siltstone; minor sandstone

[illegible] COMOX FORMATION: sandstone, conglomerate; minor siltstone, shale

TRIASSIC TO CRETACEOUS

LEECH RIVER FORMATION

[illegible] METAGREYWACKE-SCHIST UNIT: metagreywacke, meta-arkose, quartz-feldspar-(garnet-) biotite schist

[illegible] ARGILLITE-METAGREYWACKE UNIT: thinly bedded greywacke and argillite, slate, phyllite, quartz-biotite schist

[illegible] CHERT-ARGILLITE-VOLCANIC UNIT: ribbon chert, cherty argillite, metarhyolite, metabasalt, chlorite schist

PACIFIC RIM COMPLEX

[illegible] ARGILLITE-METASILTSTONE UNIT: metasiltstone, argillite, minor conglomerate

[illegible] CHERT-ARGILLITE-VOLCANIC UNIT: ribbon chert, cherty argillite, basaltic lava tuff, volcanic breccia, chlorite schist

JURASSIC

LOWER JURASSIC

BONANZA GROUP

[illegible] basaltic to rhyolitic tuff, breccia, flows, sills and dykes, minor argillite, greywacke

LOWER TO MIDDLE JURASSIC

ISLAND INTRUSIONS

[illegible] granodiorite, quartz diorite

UPPER PALEOZOIC AND ? OR TRIASSIC AND JURASSIC

[illegible] WESTCOAST COMPLEX: quartz diorite, diorite, tonalite, amphibolite, agmatite; minor metavolcanic and metasedimentary rocks

[illegible] recrystallised limestone, skarn

TRIASSIC

(MIDDLE? AND UPPER TRIASSIC)

VANCOUVER GROUP

[illegible] QUATSINO FORMATION (includes PARSON BAY FORMATION): limestone; minor calcareous siltstone, shale, cherty limestone, chert

[illegible] KARMUTSEN FORMATION: pillow basalt, breccia, tuff, minor flows

PALEOZOIC

SICKER GROUP (Pn - Pb)

PENNSYLVANIAN AND PERMIAN

[illegible] BUTTLE LAKE FORMATION: limestone, greywacke, argillite, chert

PENNSYLVANIAN AND MISSISSIPPIAN

[illegible] SEDIMENT-SILL UNIT: argillite, greywacke, chert, diabase sills

LOWER DEVONIAN AND OLDER

[illegible] MYRA FORMATION: well-bedded silicic tuff and breccia, argillite, rhyodacite in flows and sills, minor basic tuff, quartz-sericite schist, phyllite, massive sulphides

[illegible] NITINAT FORMATION: pillow lava and breccia of augite (uralite) porphyry, basic tuff; chlorite-actinolite schist

Geological boundary, approximate............

Fault, approximate............................

Anticlinal axis................................

Synclinal axis.................................

bedding, inclined, vertical, overturned......

Foliation.......................................

Foliation, with plunge of lineation..........

Gneissosity....................................

Geology by J. E. Muller, 1973 - 1981

stoped blocks. Crystallization of the granodiorite and its facies probably involved basification of the original magma by contaimination, migration of late felsic differentiate to form the aplogranitic facies, and development of relatively large crystals of orthoclase in the granodiorite, mafic inclusions and wallrock, largely by replacement of plagioclase.

Structure:
On Mount Buttle a cross-section of the upper part of a granodiorite pluton is exposed and approximate form lines on the surface of the granodiorite can be shown-inferred from observed attitude of the contact on the mountain, from the shape of trace of the contact on surface, and from the assumption that the granite on the ridge north of Delphi Lake was not far below the volcanic roof rock being uncovered by erosion. On Mount Buttle, volcanics overlie the granodiorite along the ridge between Peaks 2 and 3. The upper contact of the granodiorite is essentially horizontal on the north side of the ridge, and forms a shallow trough on the south side. West of Peak 2, irregular dyke-like protusions cut through the volcanic capping. West of Peak 3 a similar northerly trending apophysis extends upwards into the volcanics and is exposed on both side of the ridge. To the east, the eastern side of the pluton strikes north and dips eastward more steeply than the east slope of Peak 3. To the west, the western side appears to be vertical or to dip steeply westward.

From these observations, in longitudinal section the crest of this body of granodiorite appears to be relatively gently curved, and in cross-section the top is irregular and the sides dip steeply outward.

It has therefore been concluded that in the rest of Cowichan Lake area alongate bodies forming a fairly continuous belt "along strike" are probably continuous at depth. Continuits in depth perpendicular to the long axes is less certain.

The large dyke-like plutons near Cowichan Lake have small dykes associated with them. A few of these extending upward and outward from granodiorite are seen on Mount Buttle, penetrating volcanics to distances of several tens of feet from granodiorite contacts and commonly dipping steeply and striking about parallel to the long axes of the main body of granodiorite.

The plutons appears to have been emplaced after the main period of deformation of the older volcanic and sedimentary rocks. The massive character of granodiorite and the attitude of overlying upper Cretaceous sediments (Nanaimo Group) indicate that the plutons have been no more than slightly deformed since emplacement. The granodiorite is massive and displays no linear or planar structures. Poorly developed joints have no obvious pattern and do not show any systematic variation in attitude from place to place, but combined they fall into what are probably two sets at right angles to each other. The nearly vertical; one strikes about N35° W and the other N45° E. No slikensides were seen on any of the joint surfaces. The granodiorite has been epidotized adjacent to a few joints of both sets. Quartz-sulphide veins that cut the granitic rocks NW of Peak 2 are approximately parallel to the NW trending joints. The quartz veins are thought to be genetically related to the granodiorite, and if so, the NW trending joints developed soon after the crystallization of the granodiorite.

Characteristics of the aplogranites: At several places in vicinity of Mount Buttle the granodiorite grades into granite, which in turns grades into aplogranite (the last two are referred to as aplogranitic facies.)

It occurs in 3 irregular masses between the granodiorite and volcanics on Mount Buttle, in an isolated mass in the granodiorite on the ridge north of Delphi Lake, and in a small body surrounded by volcanics NW of Mount Buttle.

The two masses of aplogranite exposed on each side of the ridge west of Peak 3 are almost certainly continuous beneath the volcanics, forming an elongate apophysis above the granodiorite. The contact between the granodiorite and granite is gradational, distinguished by a change in dark minerals from hornblendes and biotite in the granodiorite to biotite only in the granite. Biotite granite above the granodiorite is 10 to 20 feet thick. It grades upward into aplogranite which makes up most of the aplogranitic facies; this change takes place over a distance of a few tens of feet, and the rock maintains its massive character across the contact zone. The trace of this contact zone appears to be horizontal and at about the same elevation on each side of the ridge, - hence the contact zone is probably relatively flat and almost horizontal.

The dyke-like masses of aplogranite between Peaks 1 and 2 form apophyses above granodiorite. SE of the pass (col) between Peaks 1 and 2, the contact zone is horizontal but 300-400 feet higher than that SW of Peak 3. North of Peak 2 the contact zone is horizontal but about 300 feet lower than on SE slope beneath Peak 2 and, NW of Peak 2 it probably dips NE. The form of the band of aplogranite extending north along the granodiorite contact west of Delphi Lake is uncertain as the aplogranite is poorly exposed and none of the contacts are seen. The presence of aplogranite in the depression about 3,500 feet NW of Peak 2 suggests that the volcanic contact dips gently westward and the granite may form a relatively thin tabular body dipping and tapering NW.

<u>Quartz-sulphide veins</u> cut this body of aplogranite as well as the granodiorite west of Delphi Lake between elevations of 2,800 and 3,800 feet. Most of the veins are within 700 feet of the edge of the plutonic mass; they range from a fraction of an inch to about 4 1/2 feet wide, striking between north and NW, dipping steeply eastwards. They contain white, commonly vuggy quartz with sulphides, mainly flakes and rosettes of molybdenite and clusters of pyrite. The quartz veins are thought to be genetically related to the granodiorite because the aplogranite contains molybdenite as a minor accessory and because in all the Cowichan Lake area quartz-molybdenites veins are found only in or very close to granodiotic plutons.

Aplogranite on the ridge north of Delphi Lake may overlie the granodiorite in the same way and the aplogranite on Mount Buttle (there is lack of outcrop in confirm this), in a gently dipping tabular body.

Thus the aplogranitic facies near the top of Mount Buttle is a roof facies in apophyses at the top or upper most end of a large dyke-like mass of granodiorite. North of Delphi Lake it probably occupies a similar position. West of Delphi Lake it appears to follow the margin of granodiorite but it may form a gently dipping tabular mass below the volcanics and may also be a roof facies.

Aplogranite has not been seen elsewhere in Cowichan Lake are, though very small masses of leucogranite (a light coloured granite containing more albite than orthoclase) occur at the ends of narrow dykes in some contact zones.

(At this point reader's attention is drawn to mineral occurrences #22, Second Lake "Moly" showing, and to #24, Mount Hayes "Moly" showing - H.L.).

In the field, aplogranite is a white, commonly rust-stained siliceous rock; equigranular, anhedral, and "sugary". Minerals present are quartz, orthoclase-microperthite and sodic plagioclasse; biotite is present in sparce flakes. Magnetite and apatite are common accessories, pyrite is a minor accessory, and molybdenite is rare.

<u>Metamorphism related to the granodiorite</u>

Volcanic and sedimentary rocks commonly as far as 50 feet from masses of granodiorite have undergone changes genetically related to the granodiorite. Contact metamorphism has involved recrystallization and the development of minerals characteristic of the granodiorite. Further from granitic masses, volcanics and sediments have been altered, generally to hornblende-bearing rocks, and their original textures and structures have been modified, but not completely obliterated, by recrystallization. This regional metamorphism appears to be spatially related, and may also be genetically related to the granodiorite. Both the contact and regional metamorphism are described here as metamorphism associated with plutonic activity.

The basaltic (volcanic) rocks appear to have undergond two types of metamorphism: (1) The, development of hornblende, epidote minerals and minor biotite with the preservation of original textures and structures until masked by secondary minerals; and (2) the development of minerals similar to those in the granodiorite with recrystallation tending to give granitic textures. The first is the more widespread change, whereas the second appears to be superimposed on the first and restricted to zones adjacent to grandiorite. On Mount Buttle, the second or contact type is missing.

The clastic sedimentary rocks have not been metamorphosed due to regional metamorphism except, near masses of granodiorite; in general they are blocky and not schistose. Biotite, hornblende, chlorite and epidote are present in all feldspathic tuffs and tuffaceous graywackes but in general amount to less than 10% of the rock; fragments of basic igneous rocks, clastic crystals of andesite, hornblende or pyroxene and siliceous or argillaceous matrix, are the main constituents.

The metamorphism of mafic clastic sedimentary rocks appears to parallel the contact metamorphism of mafic volcanics to some extent, - both having undergone a low grade, metamorphism that has resulted in development of ragged hornblende and minor amounts of epidote minerals.

On the east slope of Peak 3 thinly bedded sediments of Sicker group are in contact with granodiorite; they include cherty and feldspathic tuffs and fine-grained argillaceous or tuffaceous sediments. The cherty rocks have been re-crystrallized near the contact without formation of new minerals, whereas impure sediments have been converted to hornfels. Bedding is well preserved, and rocks are blocky and not schistose.

Cherty sediments contain mostly quartz, with less than 5% other minerals (biotite, plagioclase, hornblende, epidote, and magn.tite in minute crystals).

(Limestone and clacareous sediments in contact with granodiorite are not known to be exposed in the Cowichan Lake area. Deposits of skarn typical of metamorphosed calcareous rocks are found at two places, - Blue Grouse Hill and Comego property)."

HISTORY AND PREVIOUS WORK

The property lies within the area of the original Esquimalt and Nanaimo Railway Land Grant on which intermittent prospecting and mineral exploration has been conducted over the period of the grant.

From 1963 to 1965 Gunnex Limited had a joint venture with the Canadian Pacific Group and carried out mineral exploration across the E & N Land Grant, including the **Taurus claim.** Their approach to exploration was a regional one including reconnaissance airborne magnetic surveys. Follow up surveying in the area included ground magnetometer work, self-potential, soil sampling, geological mapping and some electromagnetic surveying.

No work is known by the authors to have been undertaken since the 1965 field season.

AIRBORNE VLF-ELECTROMAGNETIC AND MAGNETIC SURVEY

This survey simultaneously monitors and records the output signal from a Devlco tri-axis ringcore magnetometer and a Herz Totem 2A dual frequency VLF-EM receiver. The sensors are installed in an aerodynamically stable bird which is towed thirty metres below a heliocopter. A shock and gimbal mounted TV camera, fixed to the helicopter skid, provides an input signal to a video cassette recorder allowing for accurate flight path recovery by correlation between the flight path video cassette and air photographs of the survey area. A KING KRA-10A radar altimeter allows the pilot to continually monitor and control terrain clearance along any flight path.

Continuous measurement are made of the earth's magnetic field and of two VLF-EM fields of two different frequencies. These measurements provide the magnitude of the earth's total magnetic field, the magnitude of the two VLF-EM fields, and the quadrature component of the two VLF-EM fields. This data and other pertinent survey information is recorded in three independent modes: as printed text or profiles, on three and a half inch magnetic diskettes in ASCII format, and superimposed on the video picture and recorded on video cassettes.

Control of data quality is maintained by the operator scanning a printed output of direct and unfiltered recordings of all the geophysical instrumentation output signals. A portable Compaq computer acts as a system controller for a Hewllet-Packard 3852A data acquistion unit. The computer also processes all the incoming data and survey information and records it on three and a half inch diskettes. Furthermore, the magnetic and very low frequency electromagnetic data is superimposed along with the flight line number, fiducial number, date, time and terrain clearance upon the actual flight path video recording to allow exact correlation between geophysical data and ground location. The input signals are continuously updated on the video display every half second.

Correlation between the printed output, the ASCII data diskettes and the video flight path recovery tape is controlled via fiducial marks common to all systems. Line identification, flight direction and pertinent survey information are also recorded on the audio track of the video recording tape and in the operator's field notes.

DATA PROCESSING

Field data is digitally recorded, with the line number, fiducial number, date, time and the data, on magnetic diskettes in a format compatible with the Compaq Portable II computer. The recovered flight path locations are digitized and the field data is processed to produce plan maps of each of the parameters. A variety of formats are available in which to display the data.

All the survey data is routinely edited for spurious noise spikes. The total field intensity magnetic information is also corrected for any diurnal variations recorded on a base magnetometer located in the survey area.

Both the magnitude and quadrature component of the VLF-EM total field intensity signals are sensitive to topographic changes and sensor oscillation. Oscillation effects are reduced by filters tuned to the dominant period. Long period effects attributable to topography can be removed by high pass filtering of the planimetric data.

All pertinent geophysical data is processed and plotted by computers. The processing and plotting is done in such a manner as to maximize the amount of information and detail allowed by the original data.

DISCUSSION OF RESULTS

The **Taurus claim** was surveyed on Febuary 27,1988. Approximately forty line kilometers of airborne magnetic and VLF-EM survey data has been recovered and examined in detail to evaluate the **Taurus claim.**

Survey lines were flown northeast-southwest on 200 meter centres with data being digitally recorded at half second intervals, providing an average sample spacing of 15 metres. The sensors were towed beneath the helicopter and maintained a terrain clearance of approximately 60 meters. The magnetic data is presented in contour form on a photomosaic base map of the area as Figure 4. The magnetic second vertical derivative is presented in contour form on a photomosaic base map of the areas as Figure 5. The total field VLF-EM data is presented in contour form as Figures 6 and 7 representing the Cutler and Seattle frequency information respectively.

The magnetic data is a useful tool for mapping both regional and local geological structures. Many localized magnetic variations are observed which are attributed to lithological changes.

The VLF-EM data is useful for mapping conductive zones. These conductive zones usually consist of argillaceous graphitic horizons, conductive clays, water saturated fault and shear zones, or massive conductive mineralized bodies.

There are three distinctive magnetic features observed across the survey area. Firstly, intrusions appear as magnetic highs; typically with an intensity of 100 to 200 nT greater than the surrounding magnetic data.

Secondly, major faults, fractures and shear zones appear as steep magnetic gradients. Finally, possible hydrothermal alterations appear as low magnetic responses. The combination of these three signatures are observed on the **Taurus claim.** The magnetic response is interpreted as reflecting only the general geological environment of the area and does not map any mineralization directly.

The magnetic data indicates two possible intrusive bodies, four northwest-southeast trending faults, three lithological contacts and possible hydrothermal alteration. The two magnetic highs are found in the north central portion and western edge of the survey area. The high amplitude magnetic responses in the north central portion and the western edge of the survey area may reflect Saanich granodiorite dykes or plugs.

Four northwest-southeast trending faults are interpreted from both the magnetic data and the aerial photographs as illustrated on Figure 4. These faults parallel the regional geology and two geologically mapped faults from the Geological Survey of Canada Open File 821 compiled by J. E. Muller 1973-1981.

The low magnetic responses between the two western faults and in the northeast corner of the survey area may represent hydrothermal alteration or possibly contact metamorphism. Most likely the magnetic low reflects hydrothermal alteration becuase of their proximity to the faults. Three lithological contacts are inferred from the magnetic second vertical derivative in the survey area. The lithological contacts are associated with faulting and maybe a direct result of the faulting. The contacts can also be caused by the intrusive activity usually related to faulting.

The VLF-EM data is presented in contour form on Figures 6 and 7 representing the Cutler and Seattle frequency information respectively. Anomalous conductive responses have been marked on the appropriate maps and also transferred to Figure 5 for comparison to the magnetic data.

Long wavelength VLF-EM anomalies have been marked and caused by topographic features like ridges and hill tops. The VLF-EM conductive zones trend in an northwest-southeast direction. Two VLF-EM conductive zones are found in the south central portion of the survey area. The Cutler VLF-EM signal does not show any anomalous responses from possible conductive zones because of the poor coupling angle with the general geologic strike.

SUMMARY AND CONCLUSIONS

On Febuary 27,1988 an airborne magnetic and VLF-EM survey was conducted over the **Taurus claim.** Forty line kilometres of geophysical data was gathered and processed to evaluate the **Taurus claim.**

The magnetic data indicates two possible intrusions. The intrusions appear to be made up of dykes or plugs of the Saanich granodiorites.

Four northwest-southeast trending faults are inferred from the total field magnetic data, the magnetic second vertical derivative and the aerial photographs. Three lithological contacts are also inferred from the magnetic second vertical derivative.

Two conductive lineations are mapped in the survey area. One conductive zone appears to be related to a fault and a magnetic high. The Cutler frequency signal information did not map any conductive zones this is probably because of the poor coupling angle with the general geological strike.

More detailed geological mapping is required for a more comprehensive and concise interpretation of the property geology. However, the airborne magnetic and VLF-EM survey has indicated an area of potential hydrothermal mineralization. The potential area of mineralization on the **Taurus claim** would be along the fault coinciding with the VLF-EM conductor and associated with the intrusion in the central portion of the survey area. Other areas of potential hydrothermal mineralization would be near magnetic lows associated with faulting or contacts.

The interpretation of the magnetic data, VLF-EM data and known geology indicates that faulting has occurred recently and is associated with intrusions. This combination of geological events and the presences of VLF-EM conductors and high amplitude magnetic responses offers excellent potential for mineralization.

RECOMMENDATIONS

Based on this report, and previous work in the surrounding area, the **Taurus claim** has a good potential for mineralization. The airborne survey has indicated an area where mineralization may occur, specifically along the fault system associated with the intrusion and VLF-EM conductor.

Initial follow-up work should consist of detailed and extensive geological mapping, and soil and rock sampling with geochemical analysis for precious and base metals. Efforts should be focused along the faults, especially those associated with magnetic highs and VLF-EM conductive zones. Contingent upon encouraging results from the geology and geochemistry, advanced geophysical programs utilizing induced polarization, resistivity or conventional electromagnetic techniques may be warranted to delineate anomalous zones. Eventually, trenching and diamond drilling may be justified.

Respectfully submitted,

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Consulting Geophysicist

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2) Annual Report, 1918, page 269
3) Annual Report, 1922, page 243.
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CPOG Report: The Mineral occurrences of the E & N Land Grant, page 105, (by Matthews)

Gunnex Reports:
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3) Weekly Report, Sept. 14-20, 1964, (by T.F. Schorn).

INSTRUMENT SPECIFICATIONS

DELVCO RINGCORE MAGNETOMETER

Model:	1210
Sensor:	3-axis ringcore fluxgate
Orthogonality:	±1° degree with respect to other axes and reference surface
Sensitivity:	0.0025 Milligauss (0.25 gamma)
Range:	±1000, ±300, ±100, ±30, ±10, ±3 mG
Analog Output:	±5V dc for above ranges
Output Impedance:	600 ohms
Zero Field Offset:	< ±7 mG absolute
Linearity:	±0.5%
Noise:	0.1 to 1 Hz, 0.0025 mG peak-to-peak 1.0 to 10 Hz, 0.0025 mG peak-to-peak 1.0 to 100 Hz, 0.01 mG peak-to-peak
Gain Stability:	±3%, 0 to +60° C
Field Nulling:	±0.04 mG to full scale
Low-Pass Filtering:	Switch selectable 1, 10, 100 and 500 Hz (-3 dB with -18 dB/octave roll-off, Butterworth response)
High-Pass Filtering:	Dc, 0.1, and 1Hz (-3 dB with -18 dB/octave roll-off, Butterworth response)
Notch Filter:	40-dB notch at 60 Hz, switch selectable, in or out
Battery Life:	25-hour minimum, rechargeable
AC Power:	115-230V; 1/4 A
Size:	Sensor: 3.2 cm x 3.5 cm x 10.16 cm Control Unit: 43 cm x 13 cm x 41 cm
Weight:	Sensor Probe: 0.62 kg Control Unit: 13.6 kg

INSTRUMENT SPECIFICATIONS

HERZ TOTEM - 2A VLF-EM SYSTEM

Source of Primary Field:	-Global network of VLF "OMEGA" radio stations in the frequency range of 14 KHz to 30 KHz
Number of Channels:	Two; Field selectable by 100 Hz steps. Ex: Seattle, Washington at 24.8 KHz Annapolis, Maryland at 21.4 KHz
Type of Measurement:	Total Field Strength (Location of Conductors) Vertical Quadrature (useful in interpreting the quality and depth to a conductor) Horizontal Quadrature (orientation of field & structures)
Type of Sensor:	Ferrite antennae array of 3 orthoganal coils mounted in a fiberglass bird with preamp.
Output:	-0 to ± 1000 mV displayed on two switch selectable analogue meters. -noise monitoring light. - audio monitor speaker.

Filters:	Noise blanking spherics (lightning) Anti Aliasing filters (Adjacent Stations) Crystal Controlled Phase Lock loop digital tuning. 1 sec. output Time Constant.
Sensitivity:	130 micro V/m at 20 kHz.

INSTRUMENT SPECIFICATIONS

CONTROLLER AND RECORDING SYSTEM

Type:	Compaq Portable II
	An 80286 microprocessor
	640 Kbytes of RAM
	2 three and a half inch 720 Kbyte drives
	one 20-Megabyte fixed disk drive
	Monochrome, dual-mode, 9-inch internal monitor
	Asynchronous communications interface
	Parallel interface
	Composite-video monitor interface
	RGB monitor interface
	RF modulator interface
	Two expansion slots
	Real-time clock
	An 80287 coprocessor
	A HPIB Interface Card
Data Storage:	3 1/2 inch diskettes in ASCII
	Roland 1012 printer for printed output
	Beta I video cassettes
Power Requirements:	115 Volt AC at 60 Hz
Weight:	11 kg
Dimensions:	45 cm x 25 cm x 30 cm

INSTRUMENT SPECIFICATIONS

DATA ACQUIISITION UNIT

Model:	HP-3852A
Mainframe Supports:	Eight function module slots
	Data acquisition operating system
	System timer
	Measurement pacer
	Full alphanumeric keyboard, command and result displays
Number of Channels:	20 channel relay multiplexer HP44708A/H
Voltmeter:	5 1/2 to 3 1/2 digit intergrating voltmeter HP44701A measures:

DC voltage
resistance
AC voltage
Range ±30V, ±0.008%, +300uV
Intergration Time 16.7 msec
Number of converted digits 6 1/2

Reading rate (readings/ sec)	57
Min-Noise rejection (dB) Normal Mode Rejection at 60 Hz ±0.09%	60
DC Common Mode Rejection with 1 KΩ in low lead	120
Effective Common Mode Rejection at 60 Hz ±0.09% with 1 KΩ in low lead	150

Communication:	HPIB interface with Compaq
Power Requirements:	110/220 Volts AC at 60/50 Hz
Dimensions:	45.7 cm x 25.4 cm x 61.0 cm
Weight:	9.5 kg.

INSTRUMENT SPECIFICATIONS

FLIGHT PATH RECOVERY SYSTEM

i) T.V. Camera:

Model:	RCA TC2055 Vidicon
Power Supply:	12 volt DC
Lens:	variable, selected on basis of expected terrain clearance.
Mounting:	Gimbal and shock mounted in housing, mounted on helicopter skid.

ii) Video Recorder:

Model:	Sony SLO-340
Power Supply:	12 volt DC / 120 volt AC (60Hz)
Tape:	Betamax 1/2" video cassette - optional length.
Dimensions:	30 cm X 13 cm X 35 cm
Weight:	8.8 Kg
Audio Input:	Microphone in - 60 db low impedance microphone
Video Input:	1.0 volt P-P, 75Ω unbalanced, sync negative from camera.

iii) Altimeter:

Model:	KING KRA-10A Radar Altimeter
Power Supply:	27.5 volts DC
Output:	0-25 volt (1 volt /1000 feet) DC signal to analogue meter, 0-10 v (4mv/ft) analogue signal to microprocessor.
Mounting:	fixed to T.V. camera housing, attached to helicopter skid.

STATEMENT OF QUALIFICATIONS:

NAME:	HERMARY, Richard G.
PROFESSION:	Geophysicist
EDUCATION:	University of British Columbia - B.Sc. - Major Geophysics
PROFESSIONAL ASSOCIATIONS:	B.C. Society of Exploration Geophysicist
EXPERIENCE:	Six months as field geophysicist, A & M Exploration Ltd. One year with Western Geophysical Aero Data Ltd.

COST BREAKDOWN

The geophysical data was analyzed, geological information researched and compiled, and this report prepared for an all inclusive fee of $3,960.00. This total is based on a cost of $54/km for total field magnetic and two station VLF-EM data. The survey was carried out by Ian Briadek and Bob Acheson.

Mob/Demob - truck rental,helicopter ferry	$ 800.00
40 km of Magnetometer data at $54/km	$2,160.00
Interpretation and report	$1,000.00
TOTAL	$3,960.00

TOTAL ASSESSMENT VALUE OF THIS REPORT $3,960.00

STATEMENT OF QUALIFICATIONS

NAME: WOODS, Dennis V.

PROFESSION: Geophysicist

EDUCATION:

B.Sc. Applied Geology
Queen's University

M.Sc. Applied Geophysics
Queen's University

Ph.D. Geophysics
Australian National University

PROFESSIONAL ASSOCIATIONS:

Registered Professional Engineer
Province of British Columbia

Society of Exploration Geophysicists

Canadian Society of Exploration Geophysicists

Australian Society of Exploration Geophysicists

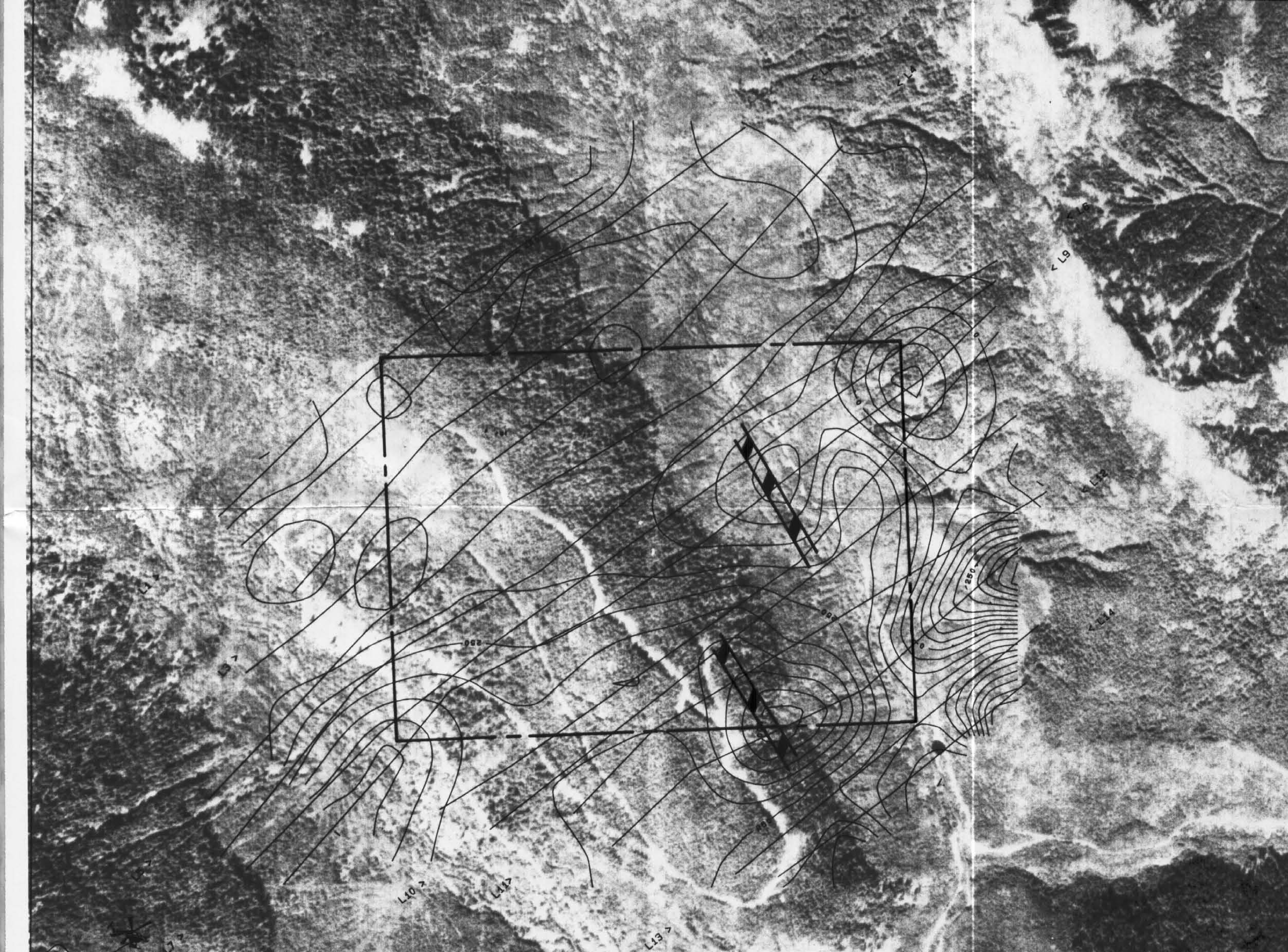
President, B.C. Geophysical Society

EXPERIENCE:

1971-79
- Field Geologist with St. Joe Mineral Corp. and Selco Mining Corp. (summers).
- Teaching assistant at Queen's University and the Australian National University.

1979-86
- Professor of Applied Geophysics at Queen's University.
- Geophysical consultant with Paterson Grant & Watson Ltd., M.P.H. Consulting Ltd., James Neilson and Assoc. Ltd., Foundex Geophysics Ltd.
- Visiting research scientist at Geological Survey of Canada and the University of Washington.

1986-88
- Project Geophysicist with Inverse Theory and Applications Inc.
- Chief Geophysicist with White Geophysical Inc.



N

To VLF - EM Station

VLF - EM CONDUCTOR

GEOLOGICAL BRANCH
ASSESSMENT REPORT

17,422

NTS 92C/16W

Part 2 of 2

BLACK GOLD RESOURCES INC.

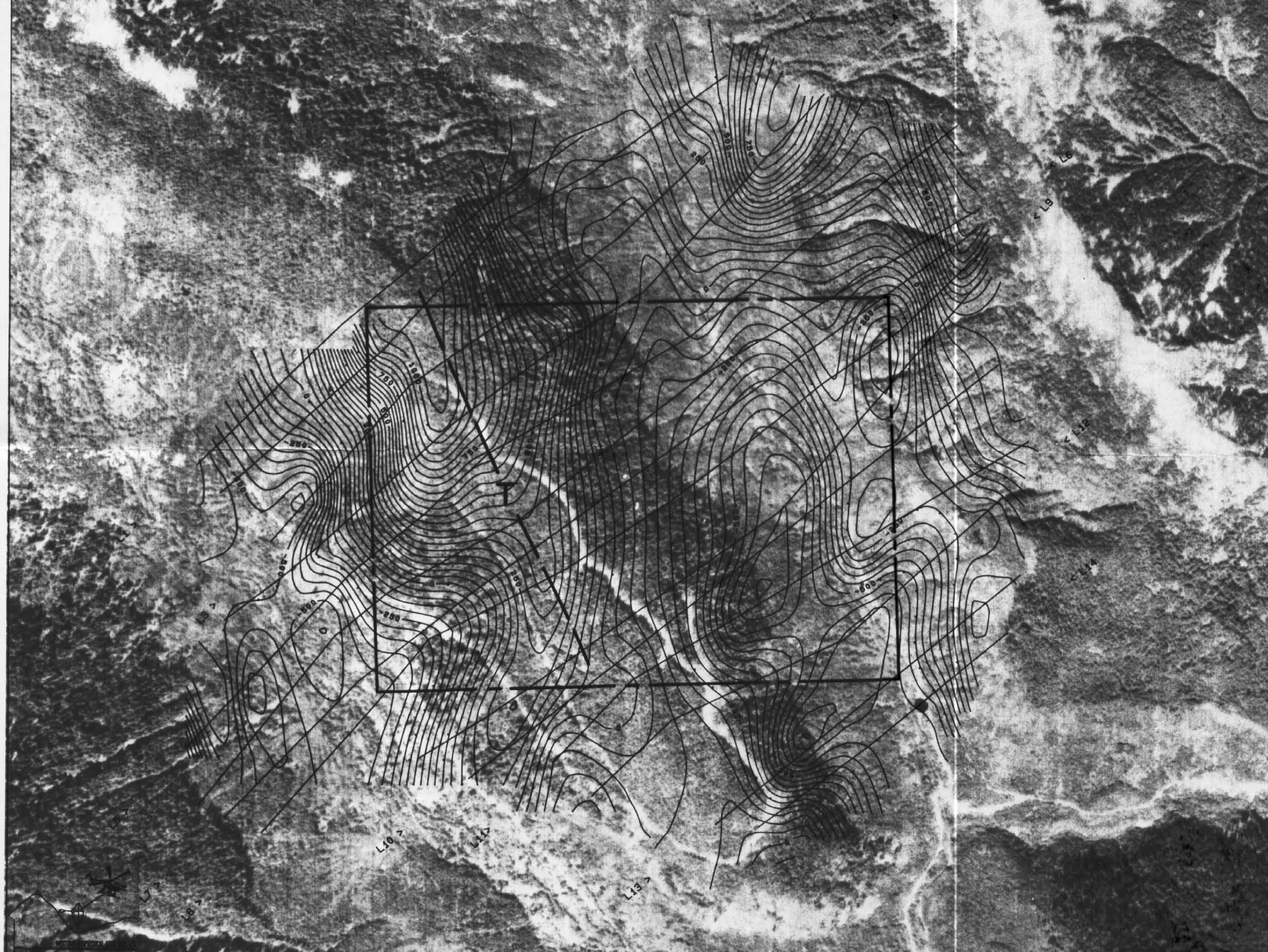
TAURUS CLAIM

AIRBORNE MAGNETIC AND VLF-EM SURVEY

CONTOURED TOTAL FIELD VLF-EM (SEATTLE 24.8 kHz)

Scale 1: 10000.0

0 200 400 600 800 1000 M



N

To VLF-EM Station

VLF-EM CONDUCTOR CAUSED BY TOPOGRAPHICAL FEATURES —T—

N.T.S. 92C/16W

TAURUS CLAIM

Part 2 of 2

BLACK GOLD RESOURCES INC.

TAURUS CLAIM

AIRBORNE MAGNETIC AND VLF-EM SURVEY

CONTOURED TOTAL FIELD VLF-EM (CUTLER 24.0 kHz)

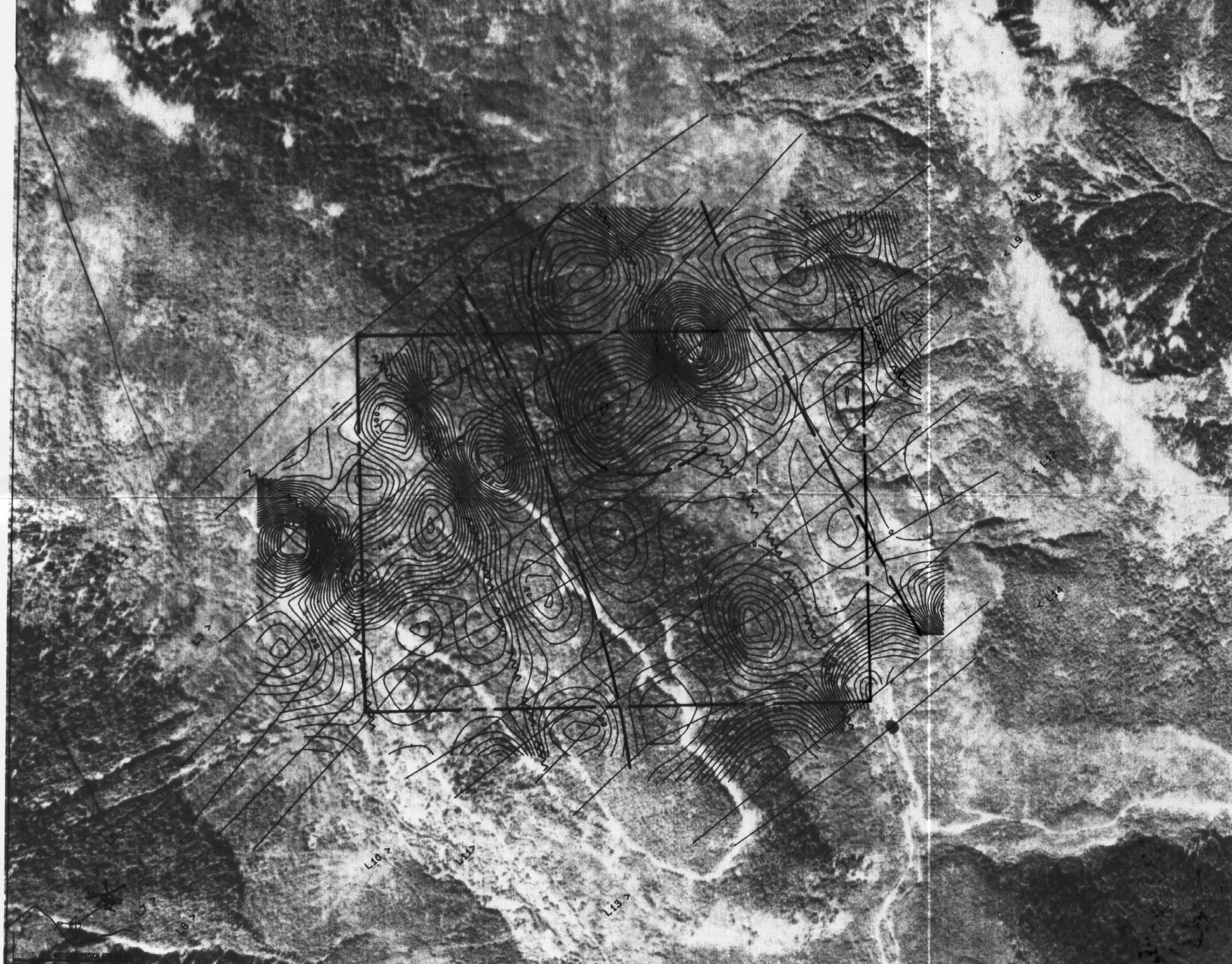
Scale 1: 10000.0

0 200 400 600 800 1000 M

Date: FEBRUARY 1988

FIG. 6

WESTERN GEOPHYSICAL AERO DATA LTD.



N

INFERRED FAULT

INFERRED LITHOLOGICAL CONTACT

N.T.S. 92C/16W

GEOLOGICAL BRANCH
ASSESSMENT REPORT

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part 2 of 2

BLACK GOLD RESOURCES INC.

TAURUS CLAIM

AIRBORNE MAGNETIC AND VLF-EM SURVEY

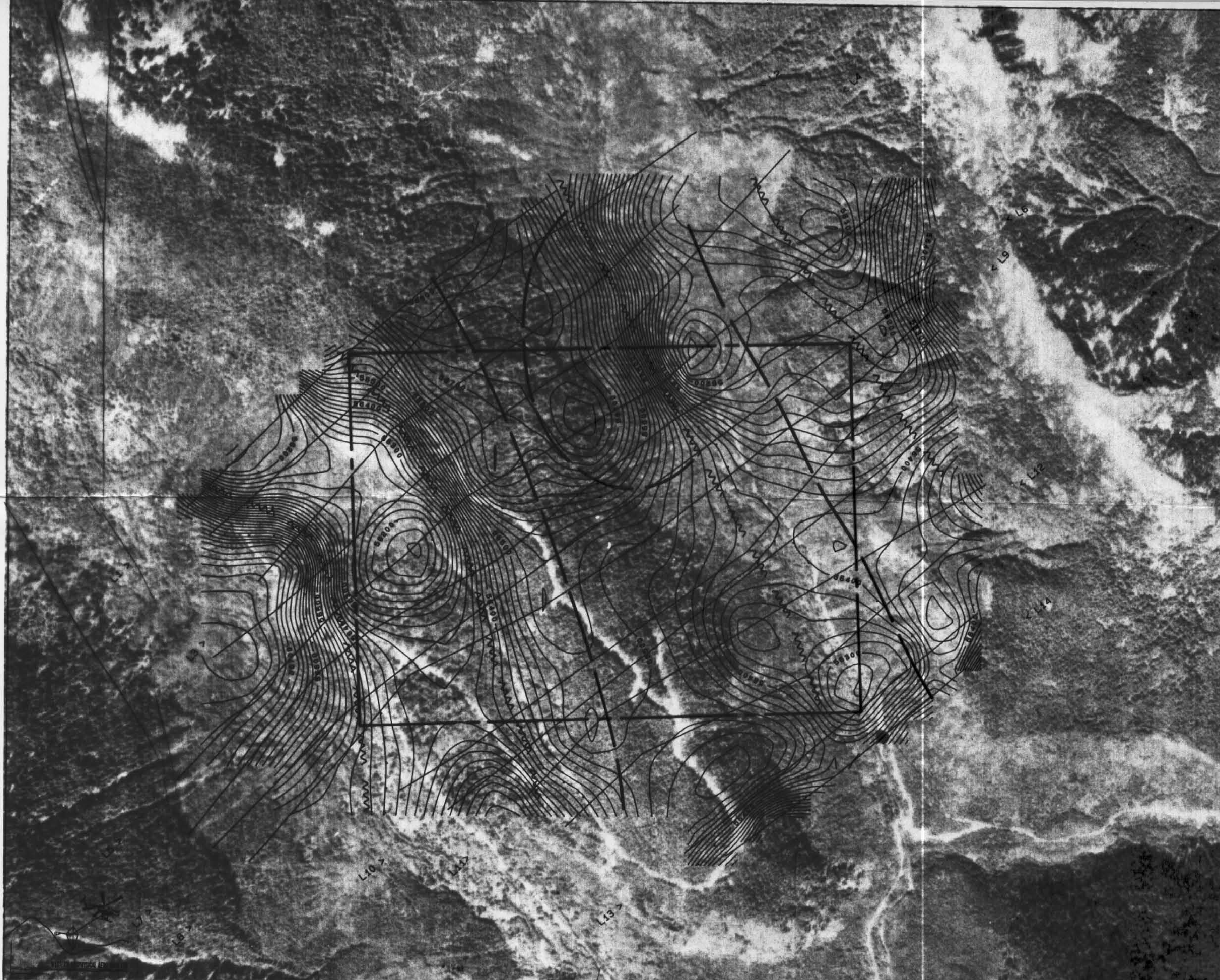
MAGNETIC SECOND VERTICAL DERIVATIVE

Scale 1: 10000.0

0 200 400 600 800 1000 M

Date: FEBRUARY 1988	FIG. 5

WESTERN GEOPHYSICAL AERO DATA LTD.



INFERRED FAULT
INFERRED LITHOLOGICAL CONTACT

GEOLOGICAL BRANCH
ASSESSMENT REPORT

N.T.S. 92C/16W

17,422

Part 2 of 2

BLACK GOLD RESOURCES INC.

TAURUS CLAIM

AIRBORNE MAGNETIC AND VLF-EM SURVEY

CONTOURED TOTAL FIELD MAGNETICS (nT)

Scale 1: 10000.0

0 200 400 600 800 1000 M

Date: FEBRUARY 1988	FIG. 4

WESTERN GEOPHYSICAL AERO DATA LTD.