APPENDIX V

HI-TEC RESOURCE MANAGEMENT LTD.
GEOPHYSICAL REPORT
ON AN
AIRBORNE VLF-ELECTROMAGNETOMETER AND
MAGNETOMETER SURVEY
SULPHURETS PROJECT
UNUK 1-19,21-25 AND COUL 1-4 CLAIMS
SKEENA MINING DIVISION
LATITUDE: 56°32'N   LONGITUDE: 130°19'W
N.T.S. 104B/9E,9W,10E

AUTHOR: E.Trent Pezzot, B.Sc.,
Geophysicist

DATE OF WORK: Nov.14/86-Dec.4/86
DATE OF REPORT: Feb.6,1987

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ILLUSTRATIONS

INTRODUCTION

Western Geophysical Aero Data Ltd. was commissioned by **Hi-Tec Resource Management Ltd.** to conduct an airborne magnetometer and VLF-electromagnetometer survey across properties in the Sulphurets Creek - Unuk River area in northwestern British Columbia. Seven hundred eighty-five kilometres of survey were flown from Nov. 14 to Dec. 4,1986. In addition, three test lines were flown in the vicinity of the Brucejack deposit to determine whether a magnetic or electromagnetic signature could be associated with the known mineralization.

The project area lies to the north and west of the Brucejack and Sulphurets Gold Zones currently optioned by Newhawk Gold Mines Ltd. and Lacana Mining Corporation. Much of the survey area is covered by glacial ice and relatively unexplored. It was the intention of this survey to provide magnetic and conductivity information to assist geological mapping and also provide direction for ground follow-up investigations.

PROPERTY

Two claim blocks were surveyed at this time. The smaller block consists of 4 claims totalling 80 units as described below.

CLAIM NAME	RECORD NO.	UNITS	RECORD DATE
COUL 1	5211	20	Feb.28/86
COUL 2	5212	20	Feb.28/86
COUL 3	5213	20	Feb.28/86
COUL 4	5214	20	Feb.28/86

The larger block consists of 24 claims as listed on the following page and illustrated on Figure 1 of this report.

CLAIM NAME	RECORD NO.	UNITS	RECORD DATE
UNUK 1	5225	20	Feb.28/86
UNUK 2	5226	20	Feb.28/86
UNUK 3	5229	20	Feb.28/86
UNUK 4	5230	20	Feb.28/86
UNUK 5	5233	20	Feb.28/86
UNUK 6	5234	8	Feb.28/86
UNUK 7	5235	20	Feb.28/86
UNUK 8	5238	20	Feb.28/86
UNUK 9	5231	20	Feb.28/86
UNUK 10	5232	20	Feb.28/86
UNUK 11	5227	20	Feb.28/86
UNUK 12	5228	20	Feb.28/86
UNUK 13	5241	16	Feb.28/86
UNUK 14	5242	16	Feb.28/86
UNUK 15	5243	20	Feb.28/86
UNUK 16	5239	20	Feb.28/86
UNUK 17	5240	20	Feb.28/86
UNUK 18	5236	20	Feb.28/86
UNUK 19	5237	20	Feb.28/86
UNUK 21	5245	20	Feb.28/86
UNUK 22	5246	20	Feb.28/86
UNUK 23	5247	20	Feb.28/86
UNUK 24	5248	12	Feb.28/86
UNUK 25	5249	12	Feb.28/86

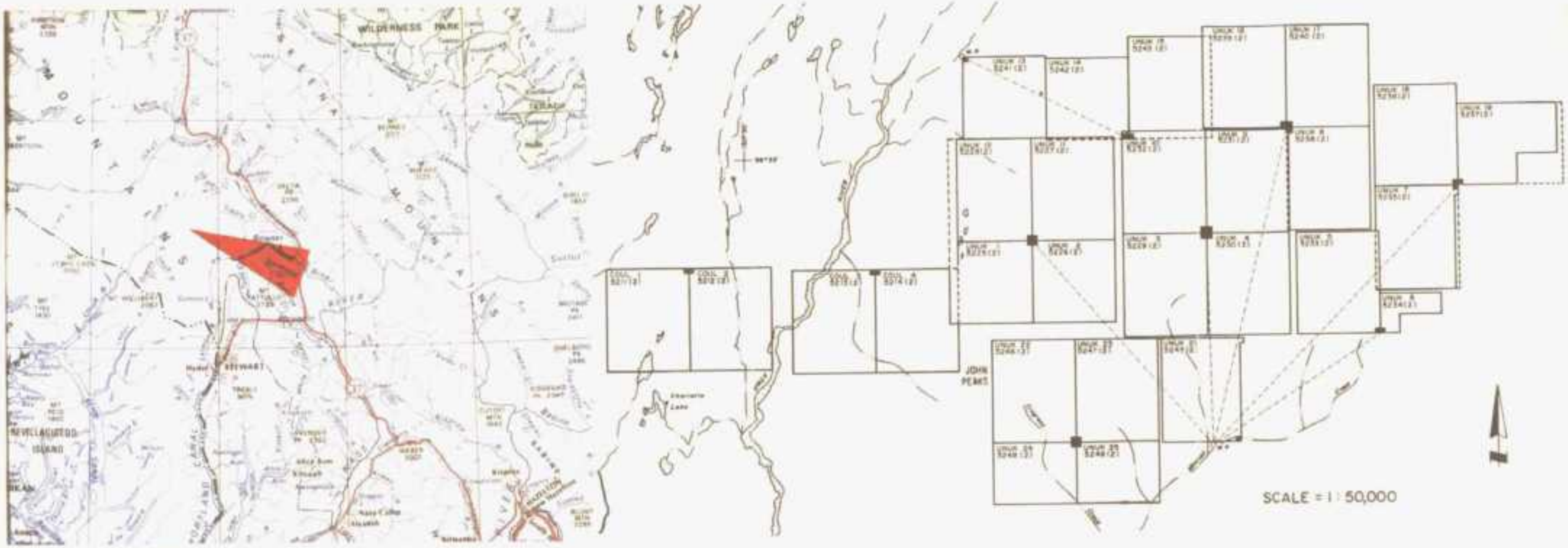
LOCATION AND ACCESS

The survey area is located some 70 kilometres north of Stewart, B.C. in NTS 104B/9E,9W and 10E and the Skeena Mining Division. The approximate geographical coordinates of the centre of the claim blocks are latitude 56°32'N and longitude 130°19'W.

No vehicle access to this area is available at this time and normal access procedures involve helicopter ferry from Stewart, B.C. Vehicle access is available to a point some 30 km southeast of the properties and plans to extend the road to the Brucejack Lake area (10 km southeast of the property) are being considered by some of the other operators in the area.

GENERAL GEOLOGY

The majority of the **UNUK** claim group is overlain by glacial



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HI-TEC RESOURCE MANAGEMENT LTD.

— SULPHURETES PROJECT —

LOCATION AND CLAIMS MAP

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FIGURE 1

ice and is mapped as unexplored on the Geological Survey of Canadas' Map 9-1957 (applicable portion reproduced as Plate 1A in this report). The westernmost claims **COUL** 1 and **COUL** 2 are mapped as being underlain by intrusive rocks, mainly quartz monzonite, granodiorite and granite. To the south of Sulphurets Creeks, this map indicates Jurassic volcanics and its' metamorphosed derivatives as being the principal rock groups.

A more recent Geological Survey of Canada publication is Map 1418A; a 1:1,000,000 scale compilation of NTS map sheets 104 and 114 completed in 1974 (Plate 1B of this report). This map also indicates Jurassic volcanics and metamorphics as being the principal rock types but indicates that small areas of Coast Plutonic complex (phyllite, layered gneiss, schist, marble, mylonite) and Early Tertiary granodiorites are also present. It contradicts the 1957 mapping by showing the westernmost portion of the **Coul** claims to be underlain by upper Triassic siltstone, chert, sandstone and Tuff.

No detailed geological descriptions of the nearby Sulphurets, Brucejack and Snowfield gold zones were available to the author. Conversations with local miners and geologists indicate that the Brucejack zone is a high grade epithermal deposit reported to contain 1,000,000 tonnes averaging 0.826 oz gold per ton. This zone is known to contain pyrite, galena, ruby silver and native gold and appears to be related to a regional, north-south trending fault zone. A projection of this fault extends beneath the glacier on the **UNUK** claim group.

PREVIOUS WORK

No previous work is known of by the author on the **UNUK** and **COUL** claims. A high altitude (2700 metres A.S.L.)

SEDIMENTARY AND VOLCANIC ROCKS

CENOZOIC

QUATERNARY
RECENT

20 Unconsolidated glacial and fluvial clay, silt, sand, gravel; till; peat, muskeg

19 Tufa, hot spring deposits

18 Olivine basalt, ash, cinders

TERTIARY
PLEISTOCENE AND (?) EARLIER

17 Basalt, rhyolite, ash, tuff, agglomerate; locally may include 16; 17a, rhyolite, pisolitic siliceous tuff, chalcedonic rhyolite breccia

EOCENE

16 Basalt, rhyolite and associated volcanic rocks; minor conglomerate, sandstone, shale

CRETACEOUS AND TERTIARY
UPPER CRETACEOUS AND PALEOCENE

15 Conglomerate, sandstone, shale, minor coal

MESOZOIC

CRETACEOUS
POST LOWER CRETACEOUS

14 Volcanic rocks, breccia

JURASSIC AND CRETACEOUS
UPPER JURASSIC AND LOWER CRETACEOUS

12 Argillite, greywacke, conglomerate, coal, 12a, andesite, chert, tuff, conglomerate, shale, greywacke

CRETACEOUS AND /OR EARLIER
PRE UPPER CRETACEOUS

13 Mainly volcanic rocks; minor conglomerate, greywacke; chert, argillite

JURASSIC
LOWER AND MIDDLE JURASSIC

11 Conglomerate, greywacke, grit, siltstone, shale; 11a, may include younger rocks

TRIASSIC

8 Tuff, siltstone, limestone, conglomerate, breccia

JURASSIC AND /OR EARLIER
PRE UPPER JURASSIC

9 **10** 9. Mainly volcanic rocks; minor conglomerate; greywacke, argillite
10. Mainly sedimentary rocks

PERMIAN AND/OR TRIASSIC

7 7, Volcanic and sedimentary rocks undivided; 7a, mainly andesitic and basaltic volcanic rocks; flows, breccia, tuff breccia, tuff; 7b, mainly greywacke, siltstone, conglomerate; 7c, mainly limestone

PALAEOZOIC

PERMIAN AND (?) EARLIER

6 Limestone, greenstone, chert, argillite, phyllitic quartzite, greywacke; meta-andesite and meta-diorite locally abundant near ultramafic bodies. May include younger greenstone, 6a, Carboniferous or Permian, mainly andesitic flows, breccia, tuff; minor sedimentary rocks

DEVONIAN AND MISSISSIPPIAN
UPPER DEVONIAN AND MISSISSIPPIAN

5 Chert, argillaceous quartzite, argillite, greywacke, greenstone, conglomerate, limestone

DEVONIAN
MIDDLE DEVONIAN

4 Limestone, dolomite, quartzite

ORDOVICIAN AND SILURIAN
UPPER ORDOVICIAN AND LOWER SILURIAN

3 Limestone, cherty limestone, quartzite, red and green chert, shale

CAMBRIAN AND ORDOVICIAN
MIDDLE AND (?) UPPER CAMBRIAN, LOWER AND MIDDLE ORDOVICIAN

2 Shale, phyllite, slate, calcareous slate, limestone

CAMBRIAN
LOWER CAMBRIAN

1 Limestone, dolomite, quartzite, slate, phyllite

INTRUSIVE ROCKS

A Felsite, felsite porphyry

B Mainly quartz monzonite, granodiorite, granite

C Mainly diorite, minor gabbro

D Granite porphyry, granophyre, syenite and related rocks

E Serpentinite, peridotite, locally includes meta-andesite and meta-diorite

METAMORPHIC ROCKS

TRIASSIC OR EARLIER

F Phyllite, sericite schist, hornfels, granulite, fine-grained biotite-hornblende gneiss; Fa, may include or be equivalent to 9

PERMIAN AND/OR EARLIER
PRE MIDDLE PERMIAN

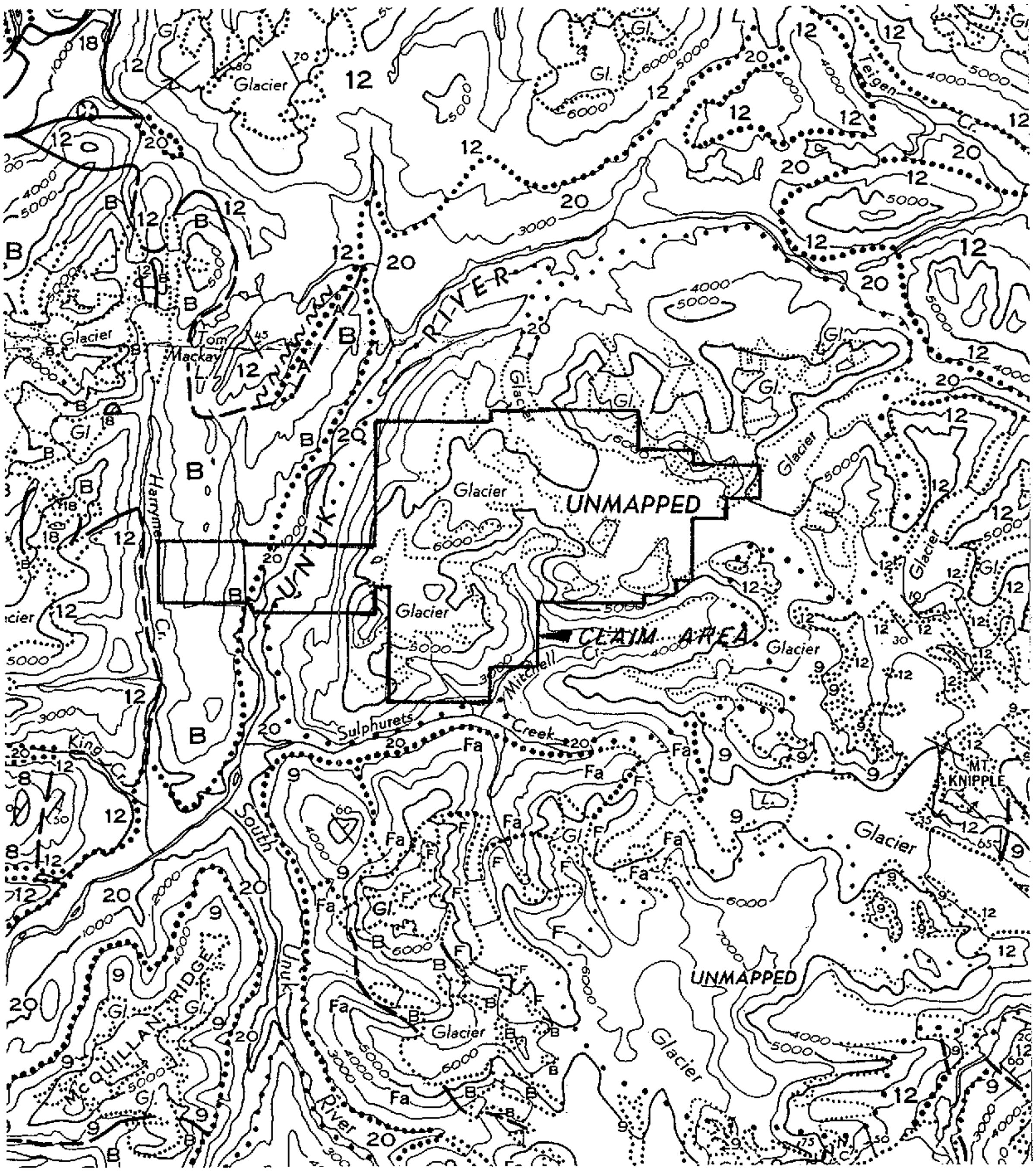
G Ga, Gneiss; Gb, phyllite, quartzite, minor crystalline limestone, highly altered and sheared graywacke and volcanic rock

MAINLY CARBONIFEROUS AND PERMIAN

H Biotite-quartz-feldspar gneiss, biotite-muscovite schist, crystalline limestone, greenstone, quartzite, phyllite

MISSISSIPPIAN AND EARLIER

J Gneiss, schist, crystalline limestone, crystalline dolomite, quartzite



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GENERAL GEOLOGY (9-1957)

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PLATE 1A

LEGEND:

JURASSIC AND CRETACEOUS

- JKd — DEZADEASH GROUP: greywacke, argillite, chert, conglomerate, minor coal
- JKs — siltstone, greywacke, conglomerate, shale (upper HAZELTON GROUP in part)

- JKk — KLUANE schist

JURASSIC

MIDDLE AND UPPER JURASSIC

- JHs — HAZELTON GROUP: siltstone, greywacke, conglomerate, shale

MIDDLE JURASSIC

- mJHs — HAZELTON GROUP: siltstone, greywacke, sandstone, tuff

- mJbx — volcanic breccia, conglomerate, sandstone, tuff
- mJvb — basalt, pillow lava, tuff, volcaniclastic rocks
- mJvr — rhyolite, breccia, tuff, andesite

LOWER AND MIDDLE JURASSIC

- JL — LABERGE GROUP: greywacke, conglomerate
- Ji — INKLIN: greywacke, siltstone
- Jil — INKLIN: limestone
- Jp — shale

- Jt — TAKWAHONI: conglomerate, grit, greywacke, sandstone, shale
- Jcg — conglomerate, grit, greywacke

LOWER JURASSIC

- lJs — quartzite, greywacke, argillite
- lJbx — breccia, tuff, conglomerate, sandstone

- lJv — andesite, basalt

TRIASSIC AND JURASSIC

UPPER TRIASSIC AND LOWER JURASSIC

- TJsn — SHONEKTAW NAZCHA: porphyry agglomerate, siltstone, tuff
- TJTv — TAKLA GROUP: andesitic, basaltic flows
- TJTw — TAKLA GROUP: greywacke, tuff, breccia, conglomerate, shale, limestone

TRIASSIC

- Ts — tuff, siltstone, limestone, breccia

UPPER TRIASSIC

- uTks — KING SALMON: greywacke
- uTp — phyllite, argillite, siltstone, greywacke, limestone
- uTs — siltstone, chert, sandstone, tuff
- uTpv — undifferentiated andesitic volcanic and clastic sedimentary rocks

JURASSIC

- Jy — syenite
- Jsd — syenodiorite
- Jgd — granodiorite
- Jqd — quartz diorite
- Jdi — diorite
- Jb — gabbro

- ym — phyllite, layered gneiss, schist, marble, mylonite

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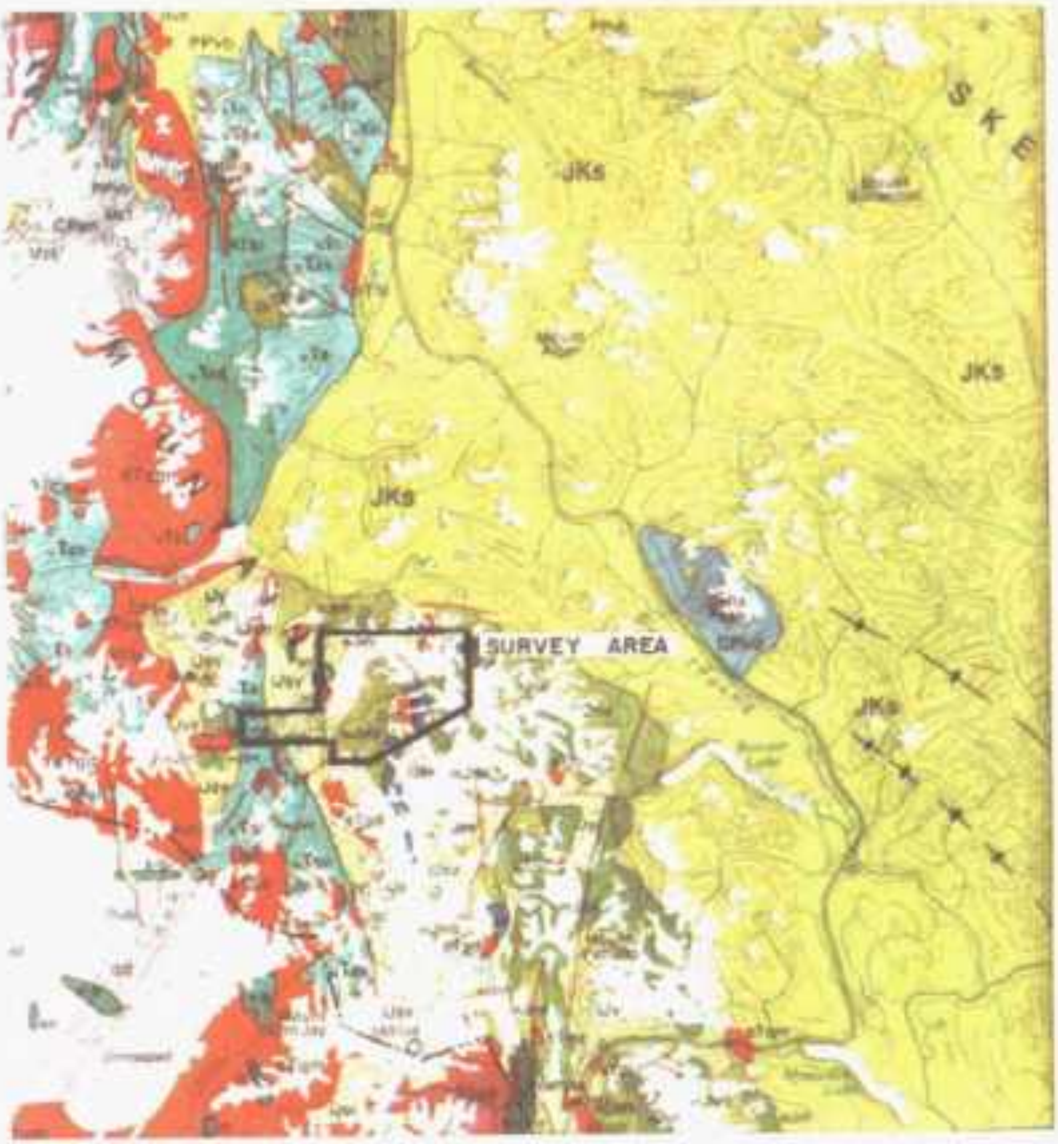

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GENERAL GEOLOGY (1418 A)

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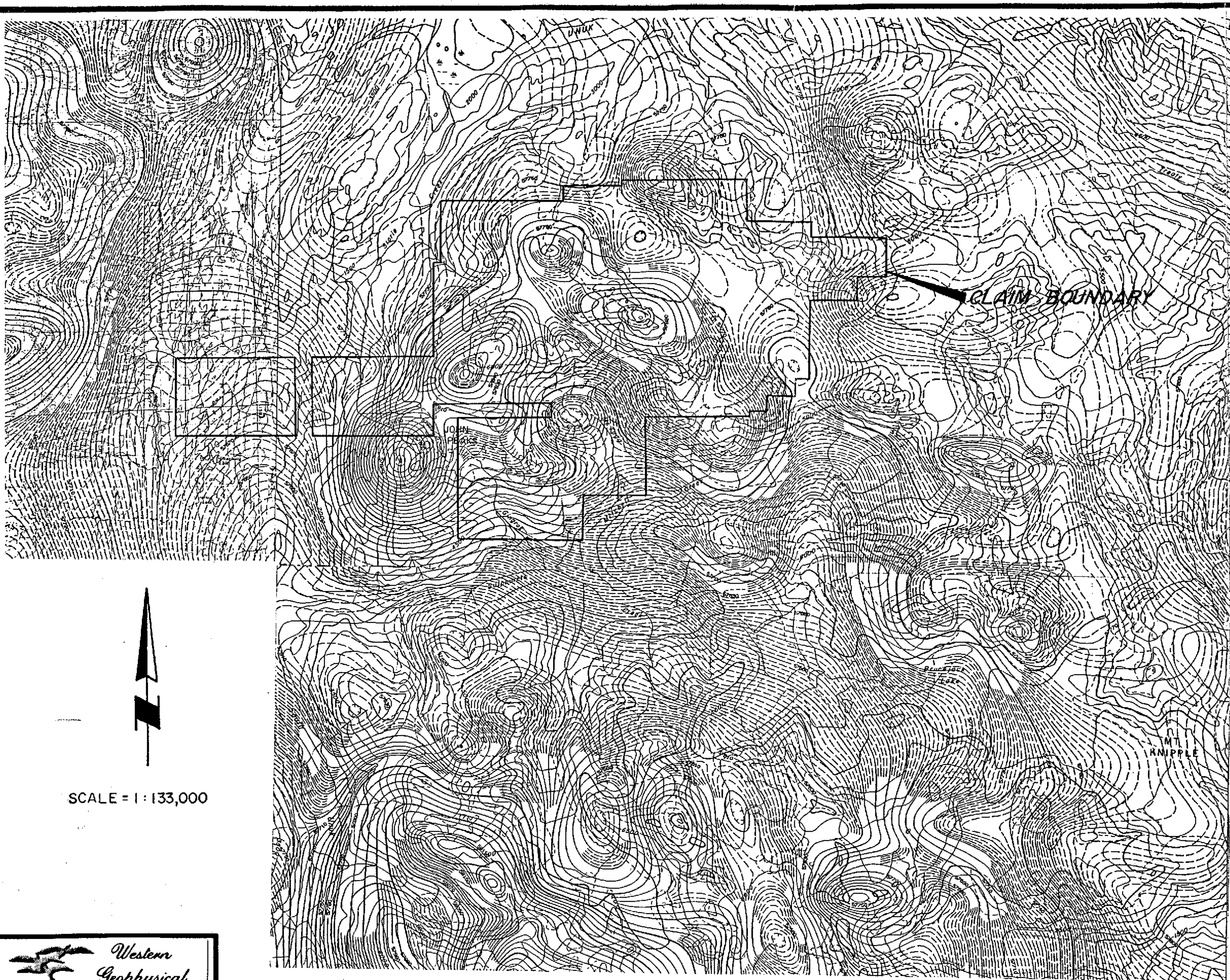
PLATE 1B

aeromagnetic survey was flown over this area from November 1975 to February 1978. The results of this survey applicable to these claims are published by the Geological Survey of Canada as maps 9212G, 9213G and 9224G. Portions of these maps are reproduced as Plate 2 in this report and a description of the trends observed is given under the Discussion of Results section of this report.

AIRBORNE VLF-ELECTROMAGNETIC AND MAGNETIC SURVEY

This survey simultaneously monitors and records the output signal from a proton precession magnetometer and two VLF-EM receivers installed in a bird designed to be towed 100 feet below a helicopter. A gimbal and shock mounted TV camera, fixed to the helicopter skid, provides input signal to a video cassette recorder allowing for accurate flight path recovery by correlation between the flight path 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 measurements of the earth's total magnetic field intensity and of the total horizontal VLF-EM field strength of two transmission frequencies are stored in three independent modes: an analogue strip chart recorder, digital magnetic tapes and a digital video recovery system. A three-pen analogue power recorder provides direct, unfiltered recordings of the three geophysical instrument output signals. A Hewlett-Packard 9875 tape drive system digitally records all information as it is processed through an onboard micro-computer. The magnetic and electromagnetic data is also processed through the onboard micro-computer, incorporating an analogue to digital converter and a character generator, then superimposed along with the date, real time and terrain clearance upon the actual flight path video recording to allow exact correlation between



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GEOLOGICAL BRANCH
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HIGH ALTITUDE AERO MAGNETIC MAP
9212 G, 9213G, 9224G

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PLATE 2

geophysical data and ground location. The input signals are averaged and updated on the video display every second. Correlation between the strip chart, digital tape 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 recorded on the audio track of the video recording tape.

DATA PROCESSING

Field data is digitally recorded, with the time of day fiducial, on magnetic cassettes in a format compatible with the Hewlett-Packard 9845 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 this data.

Total field intensity magnetic information is routinely edited for noise spikes and corrected for any diurnal variations recorded on a base magnetometer located in the survey area.

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

DISCUSSION OF RESULTS

The airborne magnetometer and VLF-electromagnetometer survey across the **UNUK** and **COUL** claim groups totalled seven hundred eighty-five kilometres in length. Survey lines were oriented east-west and flown on 200 metre centres with data being recorded at one second intervals. In addition three lines, totalling thirteen kilometres, were flown in the vicinity of the Brucejack Gold Zone.

Magnetometer (100nT /cm.) : ———
VLF-EM (10% /cm)
Seattle : ———
Annapolis : ———

Scale = 1 : 38,000 approx.

BRUCEJACK GOLD DEPOSIT TEST

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FIGURE 2

The results of the Brucejack test lines are presented as Figure 2. The magnetic data across the **UNUK** claims is presented in contour form as Figures 3A and 3B. Coul Creek magnetic data is presented on Figure 3C. The Annapolis frequency VLF-EM data across the **UNUK** claims is presented in profile format on Figures 4A and 4B. No Annapolis frequency information was recorded across the **COUL** claims. Seattle frequency information across the **UNUK** claims is presented on Figure 5A and 5B and across the **COUL** claims on Figure 5C.

Three test lines were flown in the vicinity of the Brucejack ore deposit to test the magnetic and VLF-EM response. The geophysical data is presented in profile format as Figure 2 in this report.

The mine portal is located near the intersection of testlines 2 and 3 and the underground workings extend 1500 to 2000 feet southwest from that point. Mineralization is associated with a major north-south trending fault, the surface expression of which is offset some 500 metres to the west of the underground workings.

The fault zone appears to be associated with a sharp magnetic low as observed on lines 2 and 3 near the mine site. No significant VLF-EM response was noted at this point. A similar magnetic low was observed on the south end of line 3 and may be related to the regional fault trend. A strongest magnetic low was observed on line 2 some 1000 metres to the west of the mine adit.

Test line 3 was flown north-south along the projected extension of the mineralization observed underground. This line produces the most significant VLF-EM response of the three test lines. A coincident magnetic low and conductivity high is observed on this line approximately 2 km north of the mine portal.

A high altitude aeromagnetic survey was conducted over the Iskut River area from Nov. 1975 to Feb. 1978. That portion of survey applicable to this project area is reproduced in this report as Plate 2. The **UNUK** claims are centred on a southwesterly trending magnetic high. This feature forms a bulge in the regional northwesterly trending isomagnetic contour lines and appears to be generated by a series of closed magnetic highs. Five distinct magnetic high features are mapped within the claims area as illustrated on Plate 2.

The magnetic contour maps presented as Figures 3A, B and C of this report are based on data gathered some 60 metres above the ground surface. This data conforms with the regional trends mapped however much more detail is observed. The large magnetic high observed on Plate 2 centred on the **UNUK** 1 claim appears to be generated from at least four discreet anomalies. These anomalies (Fig 3A) are generally elongated in the east-west direction and are associated with flanking magnetic lows. This dipole-type response is indicative of finite length source bodies and may be reflecting fault induced deformation of the larger north-westerly oriented trend.

Plate 2 shows a weak magnetic high trend extending south-easterly from the **UNUK 1** claim across the **UNUK 22** and **UNUK 23** claims. This trend is also reflected in the low level magnetic data.

The southernmost claims in this group, **UNUK 24** and **UNUK 25**, are situated on the flank of the regional magnetic trend and the low altitude magnetic data reflects a very complex geological environment. A large number of randomly sized and shaped magnetic highs and lows are mapped in this area. The source of these features are likely at or very near the surface and can probably be identified by ground geological mapping.

A large magnetic high mapped on Plate 2, centred in the southwest corner of the **UNUK 9** claim, is also observed in the low-level mapping. Unlike the anomaly observed on the **UNUK 1** claim, this feature appears to be generated from a single deep source.

A small, circular shaped anomaly mapped on Plate 2 in the southeast corner of the **UNUK 14** claim appears in the low level magnetic data as a broad irregular shaped magnetic high with a narrow central core, elongated east-northeast and extending on to the **UNUK 15** claim.

A weak magnetic high is observed on the northern half of the **UNUK 16 and 17** claims in both data sets.

The magnetic highs noted above are of the shape and size typically associated with intrusive plugs. No geological support for this interpretation is known of by the author although dioritic and granodioritic intrusives are mapped in the general area.

Another major magnetic feature, less easy to explain, is a 2500 metre wide band, which runs east-west across the project area from lines 34 to 51 inclusive. This feature is composed of a large number of small, isolated magnetic lows. The individual anomalies do not appear to conform to any common size, shape or attitude but reflect similar magnetic intensities, some 200nT to 400nT below local background levels. The limited areal extent of the individual anomalies suggests near surface source bodies however the area is almost entirely covered by glacial ice. A source of the magnetic anomalies could be an east-west band of loosely consolidated rock debris; possibly a result of either glacial movement, fault gouge or an unconformable geological contact.

The Annapolis frequency VLF-EM data produced more definative responses than the Seattle frequency information across the **UNUK** claim group. On the western half of the **UNUK** claim block, moderate VLF-EM signal amplitudes were observed with the majority of anomalies exhibiting short strike lengths of 200 to 400 metres as flagged on Figures 4A and 4B. No regional trends or lineations were mapped in this area.

Lower background levels were mapped across the eastern half of the **UNUK** claims, probably a result of the extensive cover of glacial ice. Moderate intensity anomalies show a broken but distinct line to line correlation indicating northerly to northwesterly trending conductivity lineations. The Brucejack and Sulphurets structural lineaments projected into this area do not show direct correlation with the VLF-EM defined lineations but parallel and subparallel trends are evident.

The Seattle frequency VLF-EM data for the **UNUK** claims is presented in profile format on Figures 5A and 5B. The data is generally much quieter than the Annapolis frequency information with the exception of lines 53 to 68. This "noisy" data was gathered on a different date than the rest of the data. It is unlikely that this noise was generated by a geological source.

In spite of the noise observed in this area, the northerly and northwesterly trending VLF-EM anomalies, mapped to the south in the Annapolis frequency data, are still evident. The more significant features have been flagged on the geophysical map.

The **COUL 1-4** claims total 80 units and lie immediately west of the **UNUK** block of claims. The magnetic data is presented as Figure 2C of this report. An elliptical shaped magnetic high, elongated north-south is observed centred on the **COUL 1** claim. This feature roughly coincides with a topographic rise. Both expressions are likely caused by the same geological unit.

Two other magnetic highs are observed on these claims. One straddles the northern border of the **COUL 4** claim and the other is located in its' southern portion. Both of these features are related to the large northeast/southwesterly trending magnetic high which crosses the westernmost **UNUK** claims as described above and illustrated on Plate 1.

A series of very small isolated magnetic highs and lows are observed across the claims. These are a result of very near surface, finite body sources and could likely be identified by ground geological investigations.

No Annapolis frequency VLF-EM data was gathered across the **COUL** claim group. The Seattle frequency information is presented as Figure 5C in this report. The **COUL** claims lie to the west of the **UNUK** claims, in the relatively flat bottom valley containing the Unuk River and Harrymel Creek. Numerous creeks and streams cover the area, primarily running north to northeast.

The Seattle frequency VLF-EM data reflects numerous surface conductors in this area. Most of these, as illustrated on Figure 5C, correlate with the Surface drainage systems. Conductors which are removed from these waterways do not display any significantly different characteristics. Additional information will be required to determine which of the conductors warrant detailed ground investigation. Correlation with soil geochemistry would be very useful in this area.

SUMMARY AND CONCLUSIONS

An airborne magnetometer and VLF-electromagnetometer survey was flown across the **UNUK 1-19, UNUK 21-25 and COUL 1-4** claims on behalf of **Hi-Tec Resource Management Ltd.** Seven hundred eighty-five line kilometres of data was gathered from Nov. 14,1986 to Dec. 4,1986. An additional 13 kilometres was flown in the vicinity of the Brucejack gold deposit, immediately south of the **UNUK** claims area to test the geophysical response of that target.

The Brucejack deposit is associated with and probably controlled by a major north-south trending structural break. A sharp magnetic low was mapped across the deposit area but no significant VLF-EM response was noted. To the north of the known mineralized zone, along the host fault system, both magnetic lows and increased conductivity responses were observed.

The **UNUK** claim group is centred over a rugged and mountainous area north of the Brucejack gold deposit. The area is for a large part covered by glacial ice and unmapped geologically. The regional magnetic trend of this area runs northwest- southeast with a gentle gradient which increases the magnetic field by approximately 2nT/km to the northeast. The **UNUK** claims cover a southwesterly trending bulge in the regional isomagnetic contours. The detailed magnetic data shows this response is generated by a series of small closed magnetic highs. These anomalies are similar in size and amplitude to those generated by intrusive bodies in this geological environment. The individual anomalies are separated by easterly trending magnetic lows which likely represent faulting.

The regional northerly trending fault associated with the Brucejack gold deposit is reflected by a magnetic low which enters the project area in the vicinity of the **UNUK 6 and 7** claims. At this point the low magnetic trend forks, with one arm swinging to the northwest and the second continuing to the north. The resolution of this magnetic low drops in the claims area due to the interference from the above mentioned southwesterly trending magnetic high. A similar magnetic low strikes northwest across the property from the **UNUK 21** claim, along McTagg Creek, to the **UNUK 11** claim.

A number of small isolated magnetic lows are mapped, primarily on the eastern portion of the **UNUK** claim block. These anomalies were observed over a glaciated region however they appear to originate from near surface sources. Individual anomalies exhibit various shapes and orientations yet combined they form a distinctive band, some 2.5 km wide, which runs east-west across the claim group on lines 34 to 51 inclusive. The source of this anomalous trend is likely a zone of loosely consolidated material, possibly resulting from debris generated by glacial movement, an unconformable rock contact or fault gouge. Outcrop present at the eastern end of this trend on claims **UNUK 18 and UNUK 19** should be mapped to identify the source of these anomalies.

A number of near surface magnetic anomalies are also observed on the **UNUK 24 and UNUK 25** claims which are free of glacial ice and can be examined by normal prospecting techniques.

Numerous VLF-EM anomalies are observed across the **UNUK** property which warrant investigation. On the western half of the block, the anomalies exhibit moderate intensities and short strike lengths. To the east, the anomalies reflect larger northerly to northwesterly trending conductivity lineations. The zones run parallel to the Sulphurets and Brucejack lineaments which are projected into this area and likely reflect structural trends.

The **COUL** claims are located immediately west of the **UNUK** claims but are primarily staked over the Unuk River valley. The major southwesterly trending magnetic high which crosses the **UNUK** claims is present only on the easternmost of the **COUL** claims. The majority of these claims reflect a quiet magnetic field. The most significant magnetic feature is an elliptical shaped magnetic high, elongated north/south and centred on the **COUL 1** claim. This response correlated with a topographic rise and may be reflecting a buried intrusion. A number of small, closed magnetic lows are mapped in the centre of the **COUL** claims, near the Unuk River. These anomalies are similar to those observed to the east on the **UNUK** claims and should be examined by surface mapping.

The **COUL** claims contain an excessive number of VLF-EM anomalies. Most of these are likely attributed to the numerous streams and creeks of the area. None of the anomalies mapped show any characteristics which separate them from the rest. Additional information will be required before assigning priorities for individual ground investigations.

RECOMMENDATIONS

The majority of the area surveyed is covered by glacial ice and will not lend itself to an easy application of normal prospecting techniques. Initial efforts should concentrate on detailed geological mapping and prospecting of outcrop available in stream cuts and on mountain ridges to determine the geological source of both the magnetic high trends and the sharp magnetic lows observed in the area. The small VLF-EM anomalies mapped warrant similar investigations. A limited amount of ground magnetometer and VLF-EM surveying should be undertaken to test any likely geological sources identified by this mapping. Initial efforts should concentrate on the magnetic anomalies located on the **UNUK 18, 19, 21 and 22** claims.

The **COUL** claims are situated in more moderate terrain however outcrop is scarce. Soil geochemical analysis would likely prove to be a very useful exploration tool in this environment. This information should be correlated with the magnetic and VLF-EM results presented in this report to select specific targets for detailed geophysics, trenching and drilling.

Respectfully Submitted,

E.Trent Pezzot, B.Sc.,
Geophysicist

INSTRUMENT SPECIFICATIONS

BARRINGER AIRBORNE MAGNETOMETER

MODEL:		Nimbin M-123
TYPE:		Proton Precession
RANGE:		20,000 to 100,000 gammas
ACCURACY:		$\pm$ 1 gamma at 24 V d.c.
SENSITIVITY:		1 gamma throughout range
CYCLE RATES:		
Continuous	-	0.6, 0.8, 1.2 and 1.9 seconds
Automatic	-	2 seconds to 99 minutes in 1 second steps
Manual	-	Pushbutton single cycling at 1.9 seconds
External	-	Actuated by a 2.5 to 12 volt pulse longer than 1 millisecond.
OUTPUTS:		
Analogue	-	0 to 99 gammas or 0 to 990 gammas - automatic stepping
Visual	-	5 digit numeric display directly in gammas
EXTERNAL OUTPUTS:		
Analogue	-	2 channels, 0 to 99 gammas or 0 TO 990 gammas at 1 m.a. or 1 volt full scale deflection.
Digital	-	BCD 1, 2, 4, 8 code, TTL compatible
SIZE:		Instrument set in console 30 cm X 10 cm X 25 cm
WEIGHT:		3.5 Kg.
POWER REQUIREMENTS:		12 to 30 volts dc, 60 to 200 milliamps maximum.
DETECTOR:		Noise cancelling torroidal coil installed in air foil.

INSTRUMENT SPECIFICATIONS

SABRE AIRBORNE VLF SYSTEM

Source of Primary Field:	- VLF radio stations in the frequency range of 14 KH_z to 30 KH_z.
Type of Measurement:	-Horizontal field strength
Number of Channels:	-Two; Seattle, Washington at 24.8 KH_z -Annapolis, Maryland at 21.4 KH_z
Type of Sensor:	-Two ferrite antennae arrays, one for each channel, mounted in magnetometer bird.
Output:	-0 - 100 mV displayed on two analogue meters (one for each channel) -recorder output posts mounted on rear of instrument panel
Power Supply:	-Eight alkaline 'AA' cells in main instrument case (life 100 hours) -Two 9-volt alkaline transistor batteries in bird (life 300 hours)
Instrument Console:	-Dimensions - 30 cm x 10 cm x 25 cm -Weight - 3.5 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 ($60H_z$)
Tape:	Betamax ½" 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, 75 Ω 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

INSTRUMENT SPECIFICATIONS

DATA RECORDING SYSTEM

i) Chart Recorder

Type:	Esterline Angus Miniservo III Bench AC Ammeter - Voltmeter Power Recorder.
Model:	MS 413B
Specification:	S-22719, 3-pen servo recorder
Amplifiers:	Three independent isolated DC amplifiers (1 per channel) providing range of acceptable input signals.
Chart:	10 cm calibrated width z-fold chart.
Chart Drive:	Multispeed stepper motor chart drive, Type D850, with speeds of 2,5,10,15,30 and 60 cm/hr. and cm/min.
Controls:	Separate front mounted slide switches for power on-off, chart drive on-off, chart speed cm/hr. - cm/min. Six position chart speed selector individual front zero controls for each channel.
Power Requirements:	115/230 volts AC at 50/60 Hz (Approximately 30 W).
Writing System:	Disposable fibre tipped ink cartridge (variable colors)
Dimensions:	38.6 cm X 16.5 cm X 43.2 cm
Weight:	9.3 kg.

ii) Digital Video Recording System

Type:	L.M. Microcontrols Ltd. Microprocessor Control Data Acquisition System.
Model:	DADG - 68
Power Requirements:	10 - 14 volts DC, Maximum 2 amps.
Input Signal:	3,0 - 100 mvolt DC signals 1,0 - 25 DC signals
Microprocessor:	Motorola MC-6800
CRT Controller:	Motorola MC-6845
Character Generator:	Motorola MCM-6670
Analogue/Digital Convertor:	Intersil 7109
Multiplexer:	Intersil IH 6208
Digital Clock:	National MM 5318 chip 9 volt internal rechargeable nickle-cadmium battery.
Fiducial Generator:	internally variable time set controls relay contact and audio output.
Dimensions:	30 cm X 30 cm X 13 cm
Weight:	3 kg.

iii) Digital Magnetic Tape

Type:	Hewlett Packard cartridge tape unit.
Model:	9875A
Power Requirements:	24 volt d.c.
Data Format:	HP'S Standard Interchange Format (SIF)

Tape Cartridge:	HP 98200A 225K byte cartridge compatible with HP Series 9800 desktop computers.
Tape Drive:	Dual tape drives providing up to 8 hours continual recording time.
Controller:	Internal micro-computer provides 23 built in commands External computer generated commands.

STATEMENT OF QUALIFICATIONS

NAME: PEZZOT, E. Trent

PROFESSION: Geophysicist - Geologist

EDUCATION: University of British Columbia -
B.Sc. - Honors Geophysics and Geology

PROFESSIONAL ASSOCIATIONS: Society of Exploration Geophysicist

EXPERIENCE: Three years undergraduate work in geology - Geological Survey of Canada, consultants.

Three years Petroleum Geophysicist, Senior Grade, Amoco Canada Petroleum Co. Ltd.

Two years consulting geophysicist, Consulting Geologist - British Columbia, Alberta, Saskatchewan, N.W.T., Yukon, Western U.S.A.

Nine years geophysicist with White Geophysical Inc. and Western Geophysical Aero Data.

SEDIMENTARY AND VOLCANIC ROCKS

CENOZOIC

QUATERNARY

RECENT

20 UNCONSOLIDATED DEPOSITS; RIVER FLOODPLAIN, ESTUARINE, RIVER CHANNEL AND TERRACES, ALLUVIAL FANS, DELTAS AND BEACHES, OUTWASH, GLACIAL LAKE SEDIMENTS, TILL, PEAT, LANDSLIDES, VOLCANIC ASH, HOTSPRING DEPOSITS

19 BASALT FLOWS (a), CINDERS, ASH (b)

PLEISTOCENE AND RECENT

18 BASALT FLOWS

MESOZOIC

JURASSIC

HAZELTON GROUP

UPPER JURASSIC

NASS FORMATION

17 SILTSTONE, GREYWACKE, SANDSTONE, SOME CALCARENITE, ARGILLITE, CONGLOMERATE, MINOR LIMESTONE, MINOR COAL (INCLUDING EQUIVALENT SHALE, PHYLLITE, AND SCHIST)

MIDDLE JURASSIC

SALMON RIVER FORMATION

16 SILTSTONE, GREYWACKE, SANDSTONE, SOME CALCARENITE, MINOR LIMESTONE, ARGILLITE, CONLOMERATE, LITTORAL DEPOSITS

15 RHYOLITE, RHYOLITE BRECCIA; CRYSTAL AND LITHIC TUFF

BETTY CREEK FORMATION

14 PILLOW LAVA, BROKEN PILLOW BRECCIA (a); ANDESITIC AND BASALTIC FLOWS (b)

13 GREEN, RED, PURPLE, AND BLACK VOLCANIC BRECCIA, CONLOMGERATE, SANDSTONE, AND SILTSTONE (a); CRYSTAL AND LITHIC TUFF (b); SILTSTONE (c); MINOR CHERT AND LIMESTONE [INCLUDES SOME LAVA (+14)] (d)

LOWER JURASSIC

UNUK RIVER FORMATION

12 GREEN, RED, AND PURPLE VOLCANIC BRECCIA, CONGLOMERATE, SANDSTONE, AND SILTSTONE (a); CRYSTAL AND LITHIC TUFF (b); SANDSTONE (c); CONGLOMERATE (d); LIMESTONE (e); CHERT (f); MINOR COAL (g)

11 PILLOW LAVA (a); VOLCANIC FLOWS (b)

TRIASSIC

UPPER TRIASSIC

TAKLA GROUP (?)

10 SILTSTONE, SANDSTONE, CONGLOMERATE (a); VOLCANIC SILTSTONE, SANDSTONE, CONLOMGERATE (b); AND SOME BRECCIA (c); CRYSTAL AND LITHIC TUFF (d); LIMESTONE (e)

PLUTONIC ROCKS

CENOZOIC

OLIGOCENE AND YOUNGER

DYKES AND SILLS (SWARMS), DIORITE (a); QUARTZ DIORITE (b); GRANODIORITE (c); BASALT (d)

EOCENE (STOCKS, ETC.) AND OLDER

8 QUARTZ DIORITE (a); GRANODIORITE (b); MONZONITE (c); QUARTZ MONZONITE (d); AUGITE DIORITE (e); FELDSPAR PORPHYRY (f)

7 COAST PLUTONIC COMPLEX: GRANODIORITE (a); QUARTZ DIORITE (b); QUARTZ MONZONITE, SOME GRANITE (c); MIGMATITE – AGMATITE (d)

MESOZOIC

JURASSIC

MIDDLE JURASSIC AND YOUNGER ?

GRANODIORITE (a); DIORITE (b); SYENODIORITE (c); MONZONITE (d); ALASKITE (e)

LOWER JURASSIC AND YOUNGER ?

DIORITE (a); SYENOGABBRO (b); SYENITE (c)

TRIASSIC

UPPER TRIASSIC AND YOUNGER ?

DIORITE (a); QUARTZ DIORITE (b); GRANODIORITE (c)

HORNBLENDE PREDOMINANT .... H
BIOTITE PREDOMINANT .... B

METAMORPHIC ROCKS

TERTIARY

3 HORNFELS (a); PHYLLITE, SCHIST (b); SOME GNEISS (c)

JURASSIC

2 HORNFELS (a); PHYLLITE, SEMI-SCHIST, SCHIST (b); GNEISS (c); CATACLASITE, MYLONITE (d); TACTITE (e)

TRIASSIC

1 SCHIST (a); GNEISS (b); CATACLASITE, MYLONITE (c)

HORNBLENDE OR AMPHIBOLE DEVELOPED .... H
BIOTITE DEVELOPED .... B
POTASSIUM FELDSPAR DEVELOPED .... K

AREA UNMAPPED

SYMBOLS

ADIT ....
ANTICLINE (NORMAL, OVERTURNED) ....
BEDDING (HORIZONTAL, INCLINED, VERTICAL, CONTORTED)
BOUNDARY MONUMENT ....
CONTOURS (INTERVAL 1,000 FEET) 5000
FAULT (DEFINED, APPROXIMATE) ....
FAULT (THRUST) ....
FAULT MOVEMENT (APPARENT) ....
FOLD AXES, MINERAL LINEATION (HORIZONTAL, INCLINED)
FOSSIL LOCALITY .... F
GEOLOGICAL CONTACT (DEFINED, APPROXIMATE) ....
GLACIAL STRIAE ....
GRAVEL, SAND, OR MUD ....
HEIGHT IN FEET ABOVE MEAN SEA LEVEL .... •6234'
INTERNATIONAL BOUNDARY ....
JOINT SYSTEM (INCLINED, VERTICAL) ....
MARSH ....
MINING PROPERTY ....
RIDGE TOP ....
SCHISTOSITY (INCLINED, VERTICAL) ....
SYNCLINE (NORMAL, OVERTURNED) ....
TUNNEL ....
VOLCANIC CONE ....

Compilation and geology by E. W. Grove, 1964 to 1970, with assistance by N. H. Haimila and R. V. Kirkam, 1966 and James T. Fyles, 1967. Geology of the Alice Arm area by N. C. Carter, 1964 to 1968.

LEGEND FOR REGIONAL GEOLOGY
refer to Fig. 3