ASSESSMENT REPORT

1990 AIRBORNE GEOPHYSICAL SURVEY
ON THE
TER AND LIN CLAIM GROUP

CARIBOO MINING DIVISION
BRITISH COLUMBIA
NTS 93A/14E, 15W

Latitude : 52° 55' North
Longitude: 121° 10' West

Operator: Dunfel Explorations Ltd.
Owner : Dual Resources Ltd.

Vancouver, B.C.
February 10, 1991

R. S. Verzosa, P.Eng.
Consulting Geologist

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INTRODUCTION

The Ter and Lin property of Dual Resources Ltd. is located at Black Stuart Mountain in the Cariboo Mountain Range, approximately 43 km northeast of Likely, B.C. It is centered at approximately 52x 55' north and 121x 10' west, (Figure 1). Access is by helicopter from Williams Lake or Quesnel, B.C.

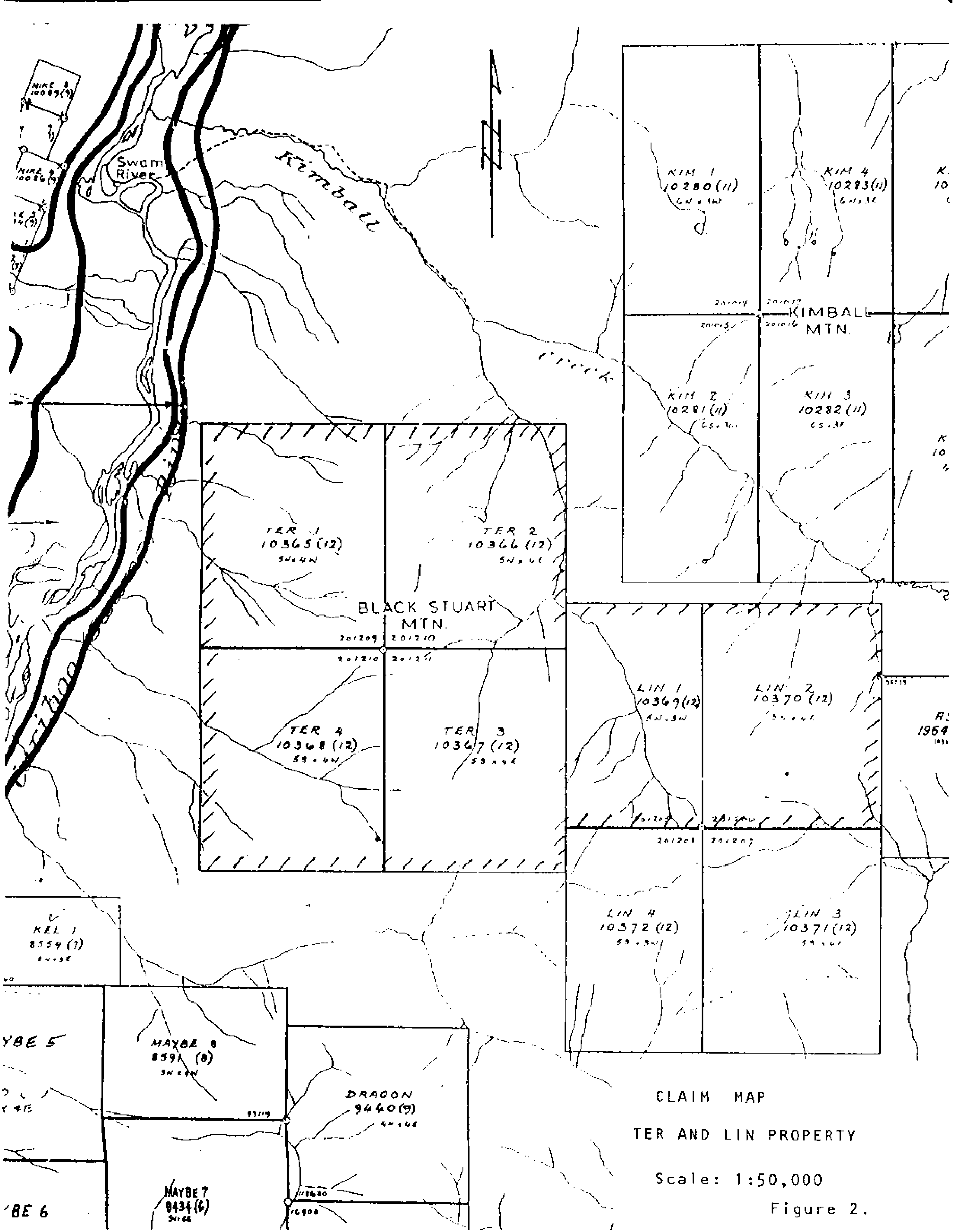
The property was staked in November, 1989 to cover ground previously explored for barite, lead and zinc. In September of 1990 Aerodat Limited of Ontario was commissioned to carry out an airborne magnetometer and VLF-EM survey over the entire property. The results of that survey are appended with this report.

PROPERTY DEFINITION

The Ter and Lin Property consists of a total of 115 units in 6 contiguous claims, (Figure 2). The claims were purchased from Wayne E. Wile and presently held 100% by Dual Resources Ltd. Of Vancouver, B.C. The details of the claims are as follows:

Claim	Units	Record Number	Expiry Date
Ter 1	20	10365	Dec 14, 1990
Ter 2	20	10366	Dec 14, 1990
Ter 3	20	10367	Dec 14, 1990
Ter 4	20	10368	Dec 14, 1990
Lin 1	15	10369	Dec 14, 1990
Lin 2	20	10370	Dec 14, 1990

Figure 1.
Location Map



CLAIM MAP

TER AND LIN PROPERTY

Scale: 1:50,000

Figure 2.

EXPLORATION HISTORY

Records indicate that the property was covered by staking in 1979 on the basis of zinc anomalies in stream samples. The staked area was subsequently optioned to Teck Corporation in 1980. Between 1980 and 1981 Teck Corporation carried out a soil geochmistry survey program, prospecting, geologic mapping, hand trenching and limited diamond drilling. The results of the work are contained in B.C. Assessment Reports Nos. 8582 and 9819.

GEOLOGICAL SETTING AND MINERALIZATION

The Ter and Lin claims are within the Cariboo Mountains geological terrane which in the vicinity of Quesnel Lake is underlain by thick successions of Precambrian to Mesozoic sediments. The Cariboo Group is a series of argillites, limetones and quartzites ranging from Proterozoic (Hadrynian) to Lower Cambrian whose rock units form the flanks of a regional syncline starting from near the vicinity of the north arm of Quesnel Lake and extending northesterly passing through Black Stuart Mountain, thence across the Cariboo River. A salient feature of this regional fold is the Black Stuart Synclinorium that structurally defines the Paleozoic carbonate and mudstone units underlying the Ter and Lin claims. The synclinorium in turn overly folded marbles and phyllites of the Precambrian Cunningham and Yankee Belle formations.

The showings at the Ter and Lin claims have been described by previous workers as strata-bound Ba-Pb-Zn mineralization of the Mississipi Valley type. The main mineralized horizon reportedly occurs 90m above the base of the Paleozoic sequence in clastic dolostones and limestones of the Upper Mural Formation. Barite and galena are associated and occur as coarse crystals in the dolostone as well as disseminated and nodular sedimentary pyrite. Quartz veins cross-cutting chert breccia include varying assemblages of silver-rich galena, sphalerite and tetrahedrite. The quartz veining with its attendant barite and sulphide mineralization has been interpreted by previous workers as the result of remobilization associated with low-grade metamorphism during the formation of the Black Stuart synclinorium.

AIRBORNE SURVEY

The results of the airborne survey is appended with this report. The geophysical responses measured were total magnetic field and VLF-EM. Both responses do not show a definite anomaly although they are in general consistent with the northwesterly trend of the rock formations on the property.

RECOMMENDATIONS

A program of prospecting and geological mapping is recommended with particular emphasis on the chert breccia unit of the Mural Limestone.

STATEMENT OF COSTS

Airborne Geophysical Survey	$24,000.00

R. S. Vag—

CERTIFICATE

I, Ruben S. Verzosa, of Langley, British Columbia, hereby certify that:

1. I am an independent Consulting Geologist with an office at 23064 - 50th Avenue, Langley, B.C.. V3A 7N6.

2. I am a graduate of the University of the Philippines with the degree of Bachelor of Science in Geology.

3. I have been a member of the Association of Professional Engineers of British Columbia since 1970.

4. I have been practising my profession as a geologist for more than 25 years.

5. This report is based upon a study of all available data on the property.

R. S. Verzosa, P.Eng.
Consulting Geologist

February, 1991
Vancouver, B.C.

APPENDIX I

REPORT ON
COMBINED HELICOPTER-BORNE
MAGNETIC AND VLF SURVEY
WELLS, BRITISH COLUMBIA

FOR
DUNFEL EXPLORATIONS LTD.
BY
AERODAT LIMITED
November 22, 1990

J9074

Adriana Carbone
Geologist

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List of Maps
(Scale 1:10,000)

Basic Maps: (As described under Appendix B of the Contract)

1. **PHOTOMOSAIC BASE MAP;**
   Prepared from available photos from the National Photo Library (Ottawa).

2. **FLIGHT LINE MAP;**
   Showing all flight lines and fiducials with the base map.

3. **TOTAL FIELD MAGNETIC CONTOURS;**
   Showing magnetic values corrected of all diurnal variation with flight lines, fiducials, and base map.

4. **VERTICAL MAGNETIC GRADIENT CONTOURS;**
   Showing magnetic gradient values calculated from the total field magnetics with flight lines, fiducials and base map.

5. **VLF-EM TOTAL FIELD CONTOURS;**
   Showing VLF total field response from the line transmitter with flight lines, fiducials, and base map.

1. INTRODUCTION

This report describes an airborne geophysical survey carried out on behalf of Dunfel Explorations Ltd. Equipment operated during the survey included a high sensitivity cesium vapour magnetometer, a two frequency VLF-EM system, a video tracking camera, radar altimeter, and an electronic positioning system. Magnetic and altimeter data were recorded both in digital and analog forms. Positioning data was stored in digital form, encoded on VHS format video tape and recorded at regular intervals in local UTM coordinates, as well as being marked on the flight path mosaic by the operator while in flight.

The survey area is approximately 40 kilometres southeast of Wells, British Columbia. Data from three flights were used to compile the survey results. The flight lines were oriented at an angle of 90 degrees, with a nominal line spacing of 100 metres (according to Appendix "A" of the contract). Geophysical information is provided in the form of maps at 1:10,000. Coverage and data quality were considered to be well within the specifications described in the service contract.

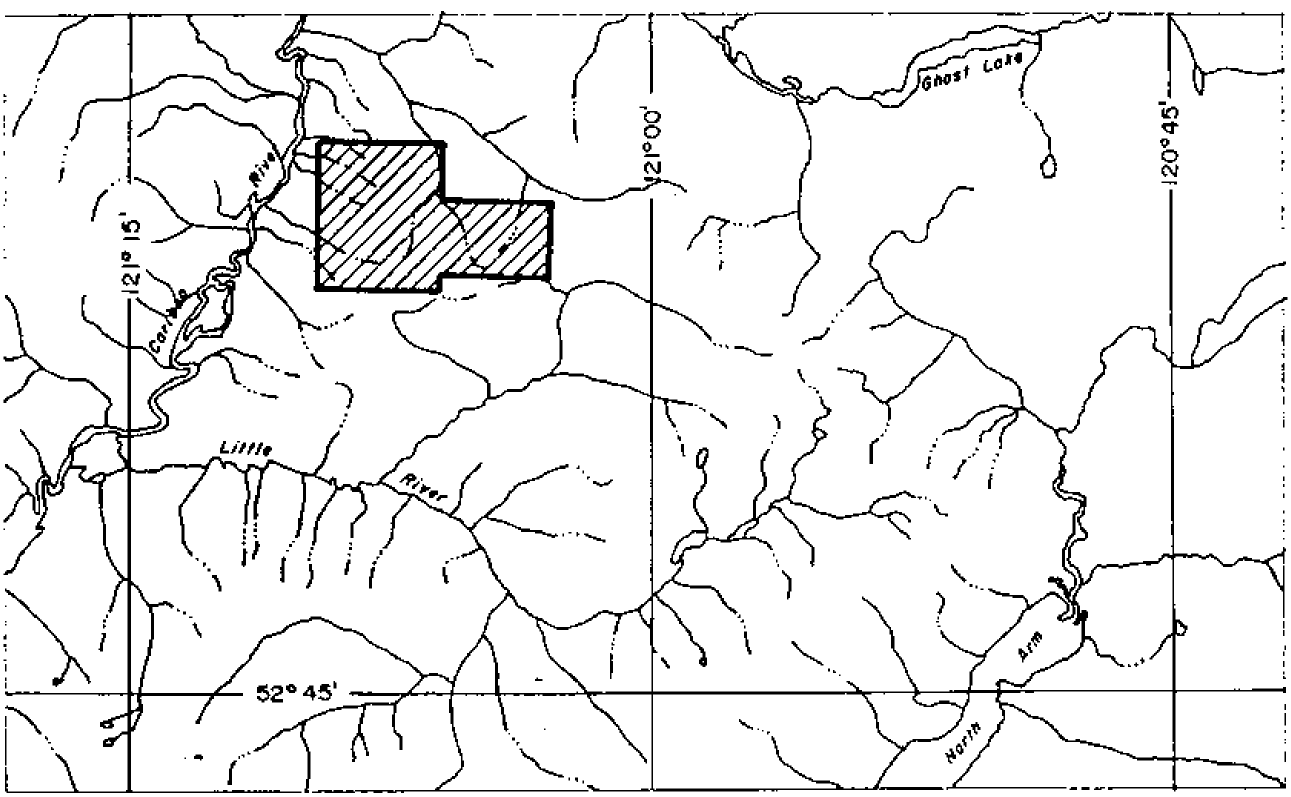
The purpose of the survey was to record airborne geophysical data over ground that is of interest to Dunfel Explorations Ltd.

The survey encompasses approximately 300 line kilometres of the recorded data that were compiled in a map form at a scale of 1:10,000. The maps are presented as part of this report according to specifications laid out by Dunfel Explorations Ltd.

2. SURVEY AREA LOCATION

The survey area is depicted on the following index map.

The survey area is centred at approximate geographic latitude 52 degrees 55 minutes North, longitude 121 degrees 10 minutes West.



BLACK STUART MTN.

3. AIRCRAFT AND EQUIPMENT

3.1 Aircraft

An Aerospatiale A-Star 350 B helicopter, (C-GYHT), piloted by Roger Morrow, owned and operated by Peace Helicopters Limited, was used for the survey. Pierre Moisan of Aerodat acted as navigator and equipment operator. Installation of the geophysical and ancillary equipment was carried out by Aerodat. The survey equipment was flown at a mean terrain clearance of 60 metres.

3.2 Equipment

3.2.1 VLF-EM System

The VLF-EM System was a Herz Totem 2 A. This instrument measures the total field and quadrature component of the selected frequency. The sensor was towed in a bird 30 metres below the helicopter.

3.2.2 Magnetometer System

The magnetometer employed a Scintrex Model VIW 2321 H8 cesium, optically pumped magnetometer sensor. The sensitivity of this instrument was 0.1 nanoTeslas. The sensor was towed in a bird 30 metres below the helicopter.

3.2.3 Magnetic Base Station

An IFG proton precession magnetometer was operated at the base of operations to record diurnal variations of the earth's magnetic field. The clock of the base station was synchronized with that of the airborne system to facilitate later correlation.

3.2.4 Altimeter System

A King KRA 10 radar altimeter was used to record terrain clearance. The output from the instrument is a linear function of altitude for maximum accuracy.

3.2.5 Tracking Camera

A Panasonic video flight path recording system was used to record the flight path on standard VHS format video tapes. The system was operated in continuous mode and the flight number, real time and manual fiducials were registered on the picture frame for cross-reference to the analog and digital data.

3.2.6 Analog Recorder

An RMS dot-Matrix recorder was used to display the data during the survey. In addition to manual and time fiducials, the following data was recorded:

Channel	Input	Scale
VLT	VLF-EM Total Field, Line	25 %/cm
VLQ	VLF-EM Quadrature, Line	25 %/cm
VOT	VLF-EM Total Field, Ortho	25 %/cm

VOQ	VLF-EM Quadrature, Ortho	25 %/cm
RALT	Radar Altimeter	100 ft./cm
MAGF	Magnetometer, fine	25 nT/cm
MAGC	Magnetometer, coarse	250 nT/cm

3.2.7 Digital Recorder

A DGR 33:16 data system recorded the survey on magnetic tape. Information recorded was as follows:

Equipment	Recording Interval
VLF-EM	0.20 seconds
Magnetometer	0.20 seconds
Altimeter	0.20 seconds
Nav System	0.20 seconds

3.2.8 Radar Positioning System

A Mini-Ranger MRS-III radar navigation system was used for both navigation and flight path recovery. Transponders sited at fixed locations were interrogated several times per second and the ranges from these points to the helicopter were measured to a high degree of accuracy. A navigational computer triangulated the position of the helicopter and provided the pilot with navigation information. The range/range data was recorded on magnetic tape for subsequent flight path determination.

4. DATA PRESENTATION

4.1 Base Map

A photomosaic base map at a scale of 1:10,000 was prepared from available photos from the National Photo Library (Ottawa).

4.2 Flight Path Map

The flight path was derived from the Mini-Ranger radar positioning system. The distance from the helicopter to two established reference locations was measured several times per second and the position of the helicopter was calculated by triangulation. It is estimated that the flight path is generally accurate to about 10 metres with respect to the topographic detail on the base map.

The flight lines have the time and the navigator's manual fiducials for cross reference to both analog and digital data.

4.3 Magnetics

4.3.1 Total Field Magnetic Contours Map

The magnetic data from the high sensitivity cesium magnetometer provided virtually a continuous magnetic reading when recording at 0.2 second intervals. The system is also noise free for all practical purposes.

A sensitivity of 0.1 nanoTesla (nT) allows for the mapping of very small inflections in the magnetic field, resulting in a contour map that is equal to or exceeds ground data in quality and accuracy.

The aeromagnetic data was corrected for diurnal variations by adjustment with the digitally recorded base station magnetic values. No correction for regional variation was applied. The corrected data was interpolated onto a regular grid at a 25 metre true scale interval using an Akima spline technique. This grid provided the basis for threading the presented contours at a 2 nT interval.

The contoured aeromagnetic data has been presented on a Cronaflex copy of the base map with flight lines.

4.3.2 Vertical Gradient Contour Map

The vertical magnetic gradient was calculated from the total field magnetic data. Contoured at a 0.2 Nt/m interval, the data was presented on a cronaflex copy of the base map with flight lines.

4.4 VLF-EM Total Field Contours

The VLF data was interpolated onto a regular grid at a 25 metre true scale interval using an Akima spline technique. This grid provided the basis for threading the contours at a 2% interval.

The VLF-EM signal from the line transmitting station was compiled as contours in map form on cronaflex copies of the base map with flight lines.

The VLF stations used were NLK, Seattle, Washington, broadcasting at 24.8 kHz, and NAA, Cutler, Maine, broadcasting at 24.0 kHz. NLK was used as the line transmitting station and NAA was used as the orthogonal station.

Respectfully submitted,

Adriana Carbone

November 22, 1990

Adriana Carbone
Geologist

APPENDIX I

PERSONNEL

FIELD

Flown	September, 1990
Pilot	Bruce MacDonald
Operator	Peter Moore

OFFICE

Processing	A. Carbone G. McDonald
Report	A. Carbone

APPENDIX II

GENERAL INTERPRETIVE CONSIDERATIONS

Magnetics

A digital base station magnetometer was used to detect fluctuations in the magnetic field during flight times. The airborne magnetic data was levelled by removing these diurnal changes. The Total Field Magnetic map shows the levelled magnetic contours, uncorrected for regional variation.

The Calculated Vertical Gradient map shows contours of the magnetic gradient as calculated from the total field magnetic data. The zero contour shows changes in the magnetic lithologies and will coincide closely with geologic contacts assuming a steeply dipping interface. Thus this data may be used as a pseudo-geologic map.

VLF Electromagnetics

The VLF-EM method employs the radiation from powerful military radio transmitters as the primary signals. The magnetic field associated with the primary field is elliptically polarized in the vicinity of electrical conductors. The Herz Totem uses three coils in the X, Y, Z configuration to measure the total field and vertical quadrature component of the polarization ellipse.

The relatively high frequency of VLF (15-25) kHz provides high response factors for bodies of low conductance. Relatively "disconnected" sulphide ores have been found to produce measurable VLF signals. For the same reason, poor conductors such as sheared contacts, breccia zones, narrow faults, alteration zones and porous flow tops normally produce VLF anomalies. The method can therefore be used effectively for geological mapping. The only relative disadvantage of the method lies in its sensitivity to conductive overburden. In conductive ground to depth of exploration is severely limited.

The effect of strike direction is important in the sense of the relation of the conductor axis relative to the energizing electromagnetic field. A conductor aligned along a radius drawn from a transmitting station will be in a maximum coupled orientation and thereby produce a stronger response than a similar conductor at a different strike angle. Theoretically, it would be possible for a conductor, oriented tangentially to the transmitter to produce no signal. The most obvious effect of the strike angle consideration is that conductors favourably oriented with respect to the transmitter location and also near perpendicular to the flight direction are most clearly rendered and usually dominate the map presentation.

The total field response is an indicator of the existence and position of a conductivity anomaly. The response will be a maximum over the conductor, without any special filtering, and strongly favour the upper edge of the conductor even in the case of a relatively shallow dip.

The vertical quadrature component over steeply dipping sheet-like conductor will be a cross-over type response with the cross-over closely associated with the upper edge of the conductor.

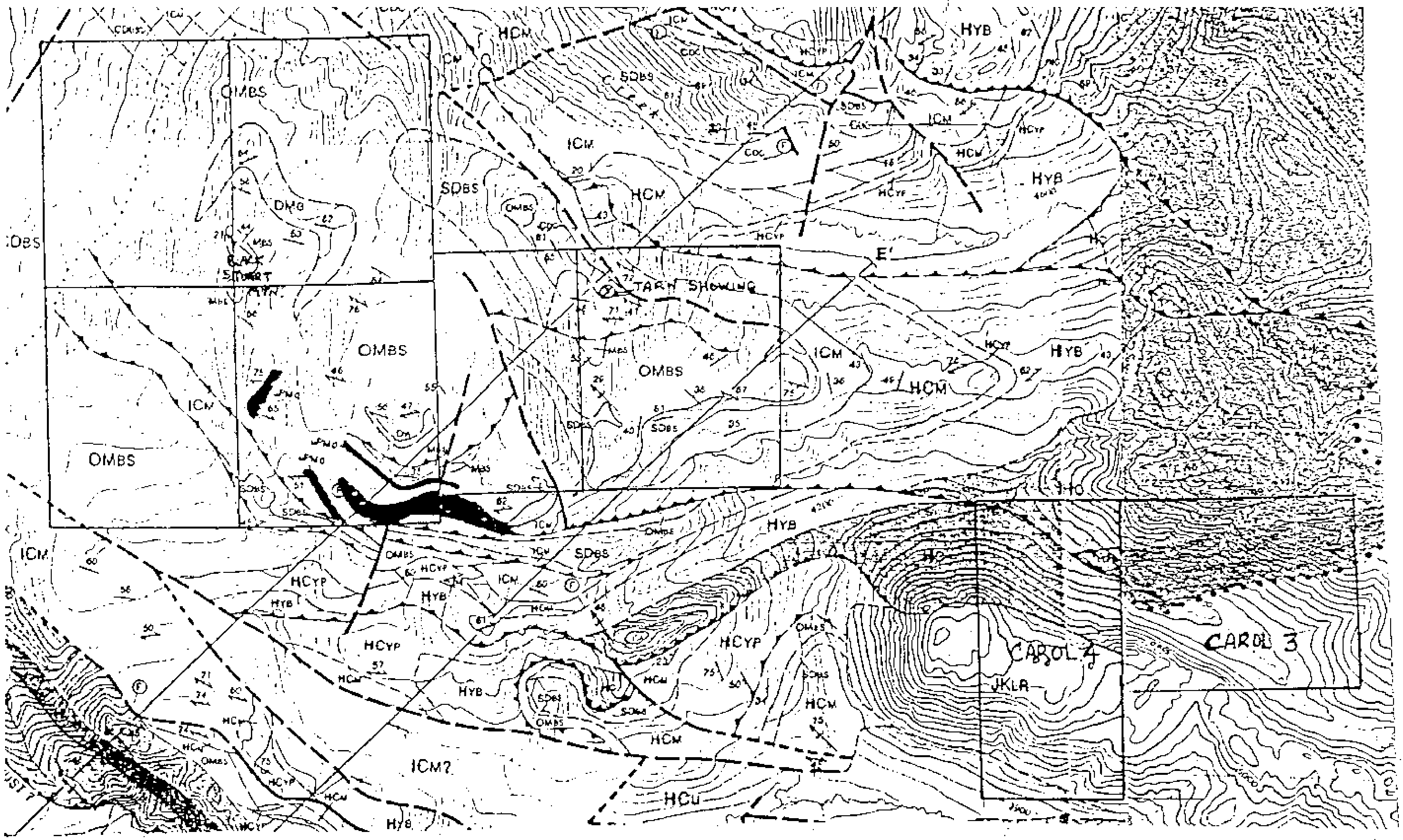
The response is a cross-over type due to the fact that it is the vertical rather than total field quadrature component that is measured. The response shape is due largely to geometrical rather than conductivity considerations and the distance between the maximum and minimum on either side of the cross-over is related to target depth. For a given target geometry, the larger this distance the greater the depth.

The amplitude of the quadrature response, as opposed to shape is function of target conductance and depth as well as the conductivity of the overburden and host rock. As the primary field travels down to the conductor through conductive material it is both attenuated and phase shifted in a negative sense. The secondary field produced by thisaltered field at the target also has an associated phase shift. This phase shift is positive and is larger for relatively poor conductors. This secondary field is attenuated and phase

shifted in a negative sense during return travel to the surface. The net effect of these 3 phase shifts determine the phase of the secondary field sensed at the receiver.

A relatively poor conductor in resistive ground will yield a net positive phase shift. A relatively good conductor in more conductive ground will yield a net negative phase shift. A combination is possible whereby the net phase shift is zero and the response is purely in-phase with no quadrature component.

A net positive phase shift combined with the geometrical cross-over shape will lead to a positive quadrature response on the side of approach and a negative on the side of departure. A net negative phase shift would produce the reverse. A further sign reversal occurs with a 180 degree change in instrument orientation as occurs on reciprocal line headings. During digital processing of the quadrature data for map presentation this is corrected for by normalizing the sign to one of the flight line headings.



LOWER CAMBRIAN

ICM	*MURAL FORMATION: grey limestone, minor shale and argillite*

HADRYNIAN AND/OR CAMBRIAN

HCM	*MIDAS FORMATION: dark siltstone and quartzite, minor shale and argillite*
HCYP	*YANKS PEAK FORMATION: grey and white, minor pink and green quartzite, minor siltstone and argillite*
HCu	*MIDAS, YANKS PEAK AND YANKEE BELLE FORMATIONS: undivided*

HADRYNIAN (WINDERMERE)

HYB	*YANKEE BELLE FORMATION: green and grey thin bedded argillite, shale, minor quartzite and limestone; local phyllite and schist*
Hc	*CUNNINGHAM FORMATION: grey limestone, minor shale, argillite and dolostone*
	ISAAC FORMATION: dark phyllite, calcareous phyllite, slate argillite, and minor limestone and micaceous quartzite
HCcu	*Cariboo Group undifferentiated:*

HADRYNIAN

KAZA GROUP

	Greywacke, argillite, phyllite, schist, minor pebble conglomerate

IGNEOUS ROCKS OF UNKNOWN TERRANE AFFINITY

MISSISSIPPIAN OR YOUNGER

	Diabase, diorite

LEGEND

ORDOVICIAN TO MISSISSIPPIAN
MISSISSIPPIAN OR YOUNGER
BLACK STUART GROUP (SDBS-MBS)

MBS	*Sandstone unit: olive grey micaceous and white quartzite, black and pink chert*

LOWER MISSISSIPPIAN

MG	*GREENBERRY FORMATION: crinoidal limestone, chert, dolostone*

UPPER DEVONIAN AND LOWER MISSISSIPPIAN

DMG	*GUYET FORMATION: muddy and sandy conglomerate and breccia, granule quartzite and slate*

MIDDLE AND/OR UPPER DEVONIAN

DW	*WAVERLY FORMATION: schistose, calcareous, basaltic tuff, and volcaniclastics, pillow basalt, minor siltite*

UPPER ORDOVICIAN AND DEVONIAN TO MISSISSIPPIAN OR YOUNGER

OMBS	*Black pelite unit: black slate, argillite and cherty argillite, black limestone, dolostone and silicified limestone (in part amphiporal)*

UPPER SILURIAN AND LOWER DEVONIAN

SDBS	*Chert-carbonate unit: light to dark grey chert breccia, grey limestone matrix, dolostone granule to pebble breccia, limestone matrix, chert-quartz-dolostone conglomerate to breccia*

CAMBRIAN TO (?) DEVONIAN

CDBS	*Black Stuart formation (as used by Campbell, 1978)*

HADRYNIAN AND CAMBRIAN
LOWER TO (?) UPPER CAMBRIAN
CARIBOO GROUP (HI-CDC)

CDC	*DOME CREEK FORMATION: dark shale and limy shale*

N

FIGURE 3

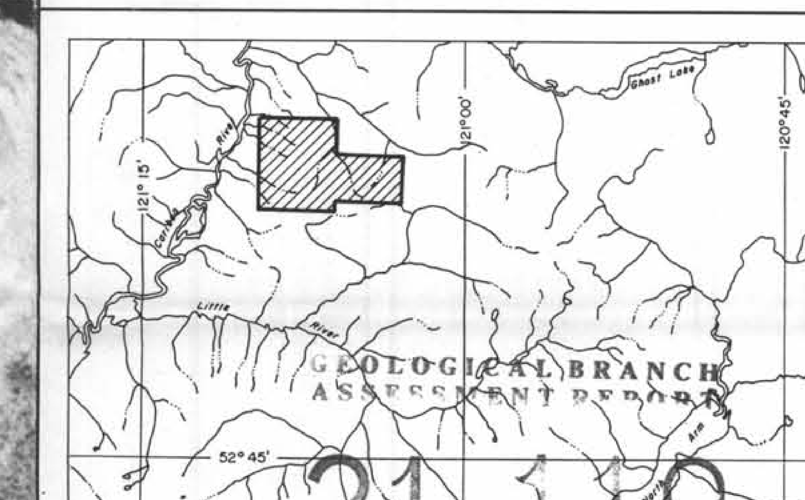
REGIONAL GEOLOGY

TER 1-4, LIN 1@2, CAROL 3@4 Claims

Cariboo Mining Division, NTS: 93A/14E, 15W

Scale 1:50,000

0 1 2 km



DUNFEL EXPLORATIONS LTD

BASE MAP

BLACK STUART MTN

WELLS BRITISH COLUMBIA

SCALE 1:10,000

0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

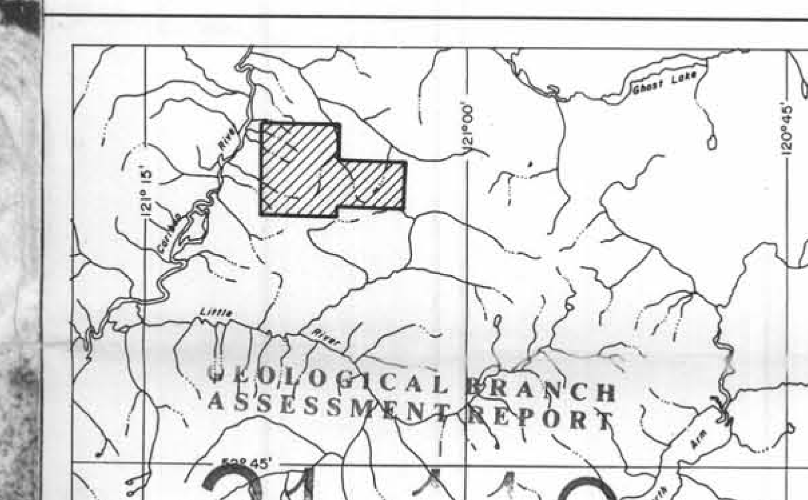
AERODAT LIMITED

DATE:	SEPTEMBER 1990
NTS No:	93 A/14
MAP No:	1 J9074 -

Flight Path

Navigation and recovery using a Motorola Mini-Ranger (MRS III) navigation system.

Average terrain clearance 60m
Average line spacing 100m



GEOLOGICAL BRANCH
ASSESSMENT REPORT

21,119

DUNFEL EXPLORATIONS LTD

FLIGHT PATH

BLACK STUART MTN

WELLS BRITISH COLUMBIA

SCALE 1:10,000

0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

AERODAT LIMITED

DATE:	SEPTEMBER 1990
NTS No:	93 A/14
MAP No:	2 J9074 - 1

N

Flight Path

Navigation and recovery using a Motorola Mini-Ranger (MRS III) navigation system.

Average terrain clearance 60m
Average line spacing 100m

Magnetics

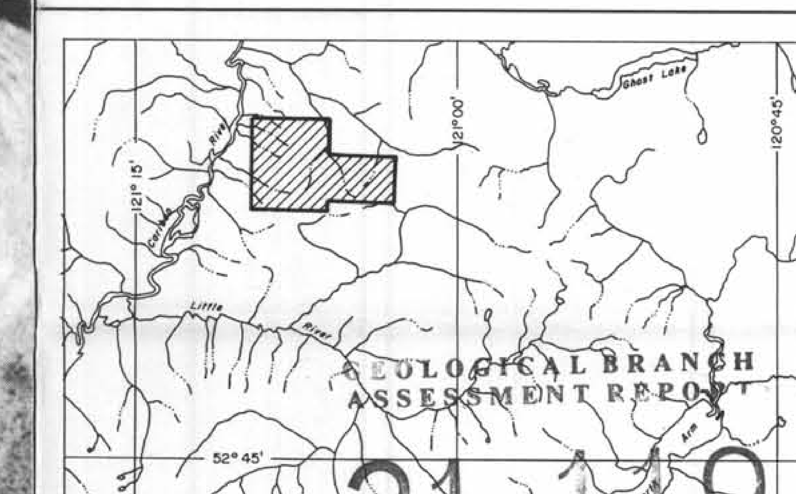
Total Field Magnetic Intensity Contours in nT.

Cesium high sensitivity magnetometer.

Sensor elevation 45m

Map contours are multiples of those listed below

2 nT
10 nT
50 nT
250 nT
1000 nT



DUNFEL EXPLORATIONS LTD

TOTAL FIELD MAGNETIC CONTOURS

BLACK STUART MTN

WELLS BRITISH COLUMBIA

SCALE 1:10,000

0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

AEROADAT LIMITED

DATE: SEPTEMBER 1990

NTS No: 93 A/14

MAP No: 3 J9074 - 1

Flight Path

Navigation and recovery using a Motorola Mini-Ranger (MRS III) navigation system.

Average terrain clearance 60m
Average line spacing 100m

Vertical Gradient

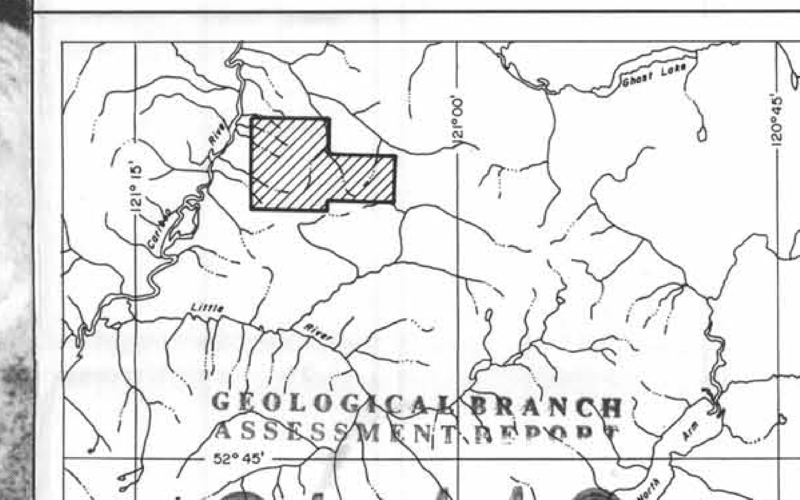
Vertical Magnetic Gradient calculated from the total field magnetic intensity in nT/m.

Cesium high sensitivity magnetometer.

Sensor elevation 45m

Map contours are multiples of those listed below

0.02 nT
0.10 nT
0.50 nT
2.50 nT
10.00 nT



DUNFEL EXPLORATIONS LTD

CALCULATED VERTICAL MAGNETIC GRADIENT

BLACK STUART MTN

WELLS BRITISH COLUMBIA

SCALE 1:10,000

0 330 660 1320 2640 Feet
0 100 200 500 1000 Metres

AERODAT LIMITED

DATE: SEPTEMBER 1990
NTS No: 93 A/14
MAP No: 4 J9074 - 1

Flight Path

Navigation and recovery using a Motorola Mini-Ranger (MRS III) navigation system.

Average terrain clearance 60m
Average line spacing 100m

VLF-EM

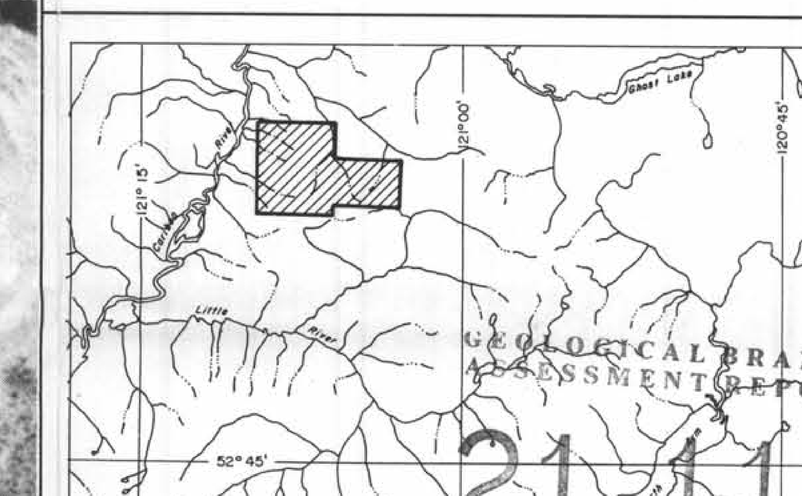
VLF-EM Total Field Intensity in percent.

Station: NLK
Jim Creek, Washingtom
24.8 kHz

Sensor elevation 45m

Map contours are multiples of those listed below

- 2 %
- 10 %
- 50 %
- 250 %



DUNFEL EXPLORATIONS LTD

VLF-EM TOTAL FIELD CONTOURS (LINE CHANNEL)

BLACK STUART MTN

WELLS BRITISH COLUMBIA

SCALE 1:10,000

0 330 660 1320 2640 Feet

0 100 200 500 1000 Metres

AERODAT LIMITED

DATE:	SEPTEMBER 1990
NTS No:	93 A/14
MAP No:	5 J9074 - 1