83-#919 - 11830

REPORT ON THE

AIRBORNE GEOPHYSICAL SURVEY

ON THE

LITTLE LAKE PROPERTY

LIKELY AREA, B.C.

E & B EXPLORATIONS INC.

52° 36' N 121° 47' W

N.T.S. 93 A 12

CARIBOO MINING DIVISION

J.T. WALKER

J.T. WALKER MINING GEOPHYSICS

DECEMBER 20, 1983

TABLE OF CONTENTS

AIRBORNE GEOPHYSICAL SURVEY

on the

LITTLE LAKE PROPERTY

E & B EXPLORATIONS INC.

INTRODUCTION

During the period October 24 and 31, 1983, J.T. Walker Mining Geophysics carried out an airborne geophysical survey in the Likely Area, B.C. The survey area lies 14 kilometers due west of Likely, B.C. The area flown is outlined on the Location Map, which depicts the N.T.S. sheet 93 A 12 at a scale of 1:250,000. This map is located at the right side of Drawing Nos. 1 & 2.

The Little Lake claims lie within the survey area. The claims were staked by and are the property of E & B Explorations Inc. A list of claim names and record number follows:

CLAIM NAME	RECORD NUMBER
L.L. 1	4560
L.L. 2	4561
L.L. 3	4562
L.L. 4	4563
L.L. 5	4564
L.L. 6	4565
L.L. 7	4566
L.L. 8	4567
L.L. 9	4568
L.L. 10	4569
L.L. 11	4570
L.L. 12	4571

.../2

The purpose of the survey was to provide data for compiling a low level aeromagnetic contour map and to locate zones of conductivity at the VLF frequencies (21.4 kHz. - 24.8 kHz.).

Three measurements were recorded during the survey:

(1) Total magnetic field intensity.

(2) Relative Field Strength of the horizontal component of the VLF electromagnetic field, utilizing two transmitters simultaneously, located near:

   (a) Seattle, Washington (24.8 kHz)

   (b) Annapolis, Maryland (21.4 kHz)

A Bell 206 B helicopter, chartered from Highland Helicopters, Williams Lake, B.C. was used to fly the survey. Forty-seven survey lines were flown in an east - west direction. A total of 597 line kilometers were flown covering an area of approximately 17,700 hectares. A line spacing of 300 meters was maintained throughout the survey, with the exception of 5 lines over the Q.R. deposit where 200 meter line spacing was used. Terrain clearance was 60 meters. Air speed of 100 kilometers per hour was maintained where possible.

SURVEY PERSONNEL

Pilot: R. Huff (Highland Helicopters)
Navigator: R. Simpson (E & B ExplorationsInc.)
Operator: T. Walker (J.T. Walker Mining Geophysics)
Expeditor: P. McAndless (E & B Explorations Inc.)
Data reduction, compilation, drafting and interpretation: J.T. Walker

.../3

SURVEY PROCEDURE AND NAVIGATION

A flight line base map of the survey area was prepared by enlarging a 1:50,000 N.T.S. topographic map to a scale of 1:20,000. Proposed flight lines and topographically located control points were plotted and numbered prior to flying the survey. During the survey, flight line path deviations were noted and corrected on the flight line base map. Flight line and control point information was announced by the navigator and recorded on magnetic tape. This information was also noted by the operator directly on the magnetic and VLF-EM analog charts during the course of the survey to provide correlation between the flight line control points and the recorded data.

INSTRUMENTATION

The following instruments are installed in the helicopter for measuring and recording the geophysical data:

(a) Proton Magnetometer (ELSEC - Type 595)

The magnetometer was manufactured by the Littlemore Scientific Engineering Co., Oxford, U.K. The magnetometer measures the total magnetic field at a one second cycle rate. The measurement is displayed digitally to one gamma and has an analog output of 100, 1000, or 10,000 gammas full scale. The 1000 gamma full scale output was used for the survey. The Toroidal wound detector was installed in a fibreglass "bird", towed beneath the helicopter on a 12 meter cable.

(b) Electromagnetic Receiver (VLF-EM)

The two frequency VLF-EM receiver was manufactured by Sabre Electronic Instruments Ltd., Burnaby, B.C. Two omni-directional antenna arrays, (mounted in the fibreglass "bird", which also carries the magnetometer detector) are used. The antenna arrays are designed to detect the total horizontal magnetic component of the VLF fields.

.../4

VLF signals originating from U.S. Navy transmitters near Seattle, Washington (24.8 kHz), and Annapolis, Maryland (21.4 kHz) were utilized for this survey. Two signals are measured simultaneously. The amplitudes of the horizontal component of the fields are measured continuously and displayed as relative field strengths. Two analog outputs are provided for recording.

(c) Recording System

Two chart recorders and a magnetic tape Frequency Modulated system are employed simultaneously during the survey.

(1) A one-pen chart recorder, (Hewlett Packard - Model 7155 B) is used to record the aeromagnetic data in profile. The recorder is calibrated to provide a full scale deflection of 1000 gammas.

(2) A two-pen chart recorder (Soltec - Model VP6723S) is used to record the VLF-EM field strength data from two transmitters.

(3) The tape recording system utilizes a stereo cassette recorder (Marantz Superscope - Model 330) and a frequency modulator (Sabre Electronic Instruments Ltd.). All in-flight conversation between navigator, pilot and operator was recorded on the right stereo channel. The VLF-EM data, in addition to being recorded on strip charts, is recorded, after frequency modulation, on the left stereo channel. The tape recorded voice and VLF-EM data is used as a back-up system only. The playback system utilizes the Marantz stereo tape recorder and speaker for voice information. A frequency demodulator provides analog outputs of the two VLF-EM signals which may be recorded on the two-pen Soltec recorder, or digitized for computer application.

.../5

(d) Radar Altimeter

A radar altimeter (Mark 10 - Bonzer Inc.) was installed to measure and display the helicopter terrain clearance during the survey. The visual meter display assists the pilot in maintaining a constant aircraft-ground clearance.

DATA REDUCTION AND PRESENTATION

All survey data is presented on two plan maps at a scale of 1:20,000. Corrected flight lines and control points are plotted and numbered. Flight line direction is indicated by an arrow at the beginning of each line.

(a) Aeromagnetic Data (Drawing No. 1)

The aeromagnetic data is presented as an aeromagnetic Contour Map (Drawing No. 1). The contour values are referenced to a base of 57,000 gammas total magnetic field. The results were not corrected for diurnal variation. The magnetic data was transferred manually from the strip charts to the flight lines using a standard graphic method, whereby magnetic contour interval points are transcribed to the plan map on the appropriate flight line. Contour lines were drawn through points of equal magnetic intensity. Contour intervals of 100 gammas and 500 gammas were used. The contour line thickness designates the contour interval.

(b) Electromagnetic Data (VLF-EM) Drawing No. 2)

The VLF-EM data is recorded as a continuous profile of the relative field strength. A significant anomaly is a definitive increase in the relative field strength. The VLF-EM anomalies are shown on the VLF-EM Anomaly Map by an anomaly symbol and bar along the flight lines. The length of the bar corresponds to the anomalous profile width at the half height. The number enclosed within the anomaly symbol represents the percent increase of the field strength at the maximum profile height. The anomalous locations are transcribed to the flight lines using the graphic method described under Aeromagnetic Data. Anomalous responses

from the Transmitter near Seattle are plotted with the anomaly symbol above the flight line. Responses from the Transmitter near Annapolis are plotted below the flight line. The location of the flight lines is shown by the screened topographic contour map printed as an underlay on each drawing. Also, a location map with the survey area outlined, is located at the right side of each drawing. The Location Map covers the 93 A 12 map area at a scale of 1:250,000.

DISCUSSION OF RESULTS

The results of the airborne magnetometer survey are plotted as an aeromagnetic contour map using a 100 gamma contour interval. The 500 gamma contour intervals are accentuated by a heavier line. The contour values are referenced above 57,000 gammas, total magnetic field. The pattern of high frequency magnetic relief, over three quarters of the survey area, with gradients ranging from a few hundred gammas to a few thousand gammas suggests the area to be underlain by basic volcanics with possible small intrusive plugs. The magnetically low areas (less than 1,300 gammas) on the western and central parts of the survey are likely to be underlain by sedimentary rocks.

The most prominent magnetic feature is the series of magnetic "highs" located in the south east corner of the survey area. This magnetic high complex located on the south flank of Mount Polley coincides with the Cariboo Bell mineralization. The magnetic high (above 2,500 gammas) indicated on line 5 of the detail grid define the northern edge of the diorite plug associated with the Q.R. deposit of Dome Mines.

Several other magnetic highs greater than 2,500 gammas may indicate additional basic plugs. VLF-EM anomalies located near these magnetic highs should receive priority follow-up.

The results of the VLF-EM survey are plotted on the Airborne VLF-EM Anomaly Map using anomaly symbols. Over one hundred anomalies are plotted with Relative Field Strength changes ranging from 6% to 55%. Ninety anomalies with R.F.S. changes of 10% and greater are listed in Appendix A.

.../7

The R.F.S. intensity and Transmitter producing the anomaly are also shown. The anomaly number defines the location by referring first to the flight line number - second, the control point number. The number following the decimal point indicates the distance in tenths of the anomaly toward the next control point. Numbering is in the direction that each line is flown.

Thirty-one of the anomalies have a R.F.S. of 10%, forty-six anomalies range between 11% and 19% R.F.S. with eight anomalies equal to or above 20% R.F.S.

Five anomalies are listed as negative with the % R.F.S. ranging from -15% to -20%. This dramatic reduction of relative field strength suggests a highly resistive rock unit which would impede the induced current flow, thus reducing the relative field strength.

In addition to the anomalies shown, the VLF-EM results have indicated several areas where the relative field strength is above the normal background. These areas are indicated by shading. No numerical value has been assigned. The cause of this increase in field strength may indicate areas of lower resistivity, the effect of topographic "highs" or a combination of both.

The presence of well defined VLF-EM anomalies associated with these broad anomalous zones will render these areas as prime targets for further exploration.

CONCLUSIONS AND RECOMMENDATIONS

The Airborne Geophysical survey has provided data for the low level aeromagnetic contour map and has indicated conductive zones defined by the VLF-EM anomaly map.

.../8

The magnetic features will assist in developing a geological map of the area as well as defining areas for further prospecting.

The more significant magnetic and VLF-EM anomalies should be investigated on the ground, utilizing geochemical and geological methods as well as magnetic and electromagnetic techniques. The Induced Polarization method should be considered if disseminated sulphides are the prime target, or where conductive overburden anomalies are to be eliminated.

December 20, 1983

J.T. Walker

J.T. WALKER MINING GEOPHYSICS

APPENDIX A

LIST OF VLF-EM ANOMALIES

Anomaly No.	% increase of R.F.S.	Tx. S - Seattle A - Annapolis
1 - 0.1	55	S
1 - 0.8	10	A
1 - 1.7	15	S
1 - 4.4	10	S
1 - 4a.1	28	S
2 - 0.9	15	S
2 - 3.2	12	S
3 - 0.4	10	S
3 - 6.0	-16	S
4 - 0.5	18	S
4 - 0.7	16	S
4 - 6.7	10	S
5 - 0.3	28	S
5 - 5.7	12	S
5 - 5.9	18	S
6 - 0.7	-20	S
6 - 4.0	-15	S
6 - 5.7	14	S
6 - 7a.8	10	S
6 - 8.7	12	S
6 - 8.9	20	S
7 - 1.5	12	S
7 - 2a.1	12	S
8 - 3.8	18	S
8 - 5.3	12	S
8 - 8.6	10	S
8 - 8.8	10	S
9 - 3.4	12	S
9 - 6.2	12	S
9 - 6.8	10	S

Anomaly No.	% increase of R.F.S.	Tx. S - Seattle A - Annapolis
10 - 3.1	12	S
10 - 3.8	10	S
10 - 3.9	10	S
13 - 2.8	10	S
15 - 3.3	10	A
16 - 1.2	-16	S
16 - 4.7	12	S
17 - 2.5	10	S
19 - 1.6	14	S
21 - 2.9	10	S
21 - 3.8	10/10	S/A
21 - 4a.2	12/15	S/A
21 - 4a.8	12	S
22 - 3.3	-20/-20	S/A
22 - 4.3	10	S
22 - 6.1	10	S
23 - 0.5	14	S
24 - 3.9	12/10	S/A
25 - 2.0	10	S
27 - 6.4	12/10	S/A
28 - 6.1	10	S
28 - 6.5	10	S
29 - 1.8	10	S
29 - 4.6	10	S
30 - 0.2	15	S
30 - 4.1	12	S
31 - 1a.8	12/15	S/A
31 - 2.9	10	S
31 - 3.9	10/12	S/A
31 - 5.5	16/14	S/A
32 - 0.2	14	S
34 - 3.7	10	S
35 - 0.8	22	S
35 - 1.0	16	S
35 - 8.2	10	S

Anomaly No.	% increase of R.F.S.	Tx. S - Seattle A - Annapolis
36 - 1.3	12	A
37 - 5.2	12/14	S/A
38 - 0.5	14	S
38 - 0.7	12	S
38 - 0.8	10	S
39 - 1a.3	10	S
39 - 1a.8	10	S
39 - 1b.6	12	S
39 - 4.7	12/10	S/A
39 - 7.5	10	S
41 - 6.6	14	S
	Detail Area (Q.R. Deposit)	
1 - 1.1	15	S
1 - 2.6	14	S
1 - 3.0	14	A
1 - 3.7	15	S
2 - 0.7	20	S
2 - 1.7	12	S
2 - 3.6	15	S
3 - 2.5	10	A
3 - 2.2	10	S
3 - 0.7	20	S
3 - 0.1	14	S
4 - 0.8	20	S
5 - 1.5	12	S
5 - 2.2	14	S

STATEMENT OF EXPENDITURES

AIRBORNE GEOPHYSICAL SURVEY ON THE LL 1-12 MINERAL CLAIMS AND ADJACENT AREA

GEOPHYSICAL CONSULTANT		
- Airborne geophysical survey carried out during the period October 24-31, 1983 by J.T. Walker Mining Geophysics		
- Line kilometres surveyed	597	
- Line kilometre charge (Exclusive of helicopter)	$24.00/km	
- Total line charge	$14,328.00	
- Standby - 1 day @ $400.00	400.00	
	$14,728.00	$14,728.00
AIRCRAFT CHARTER		
- Charter of Bell 206-B from Highland Helicopters ltd.		
9.0 hours @ $ 415.00/hour	$3,735.00	
Fuel	583.00	
Air crew expense	145.38	
	$4,463.38	4,463.38
PERSONNEL		
R.G. Simpson - 8 days @ $225.00	$1,800.00	
P.M. McAndless - 5 days @ $315.00	1,575.00	
	$3,375.00	3,375.00
ACCOMMODATION AND MEALS		
R.G. Simpson - 8 days @ $60.00/day	$480.00	
P.M. McAndless - 5 days @ $60.00/day	300.00	
	$780.00	780.00
FIELD SUPPLIES	$150.00	150.00

STATEMENT OF EXPENDITURES .../2

DRAFTING, REPORT AND MAP REPRODUCTION	$250.00	250.00
TRANSPORTATION		
- Rental of 1982 GMC 3/4 Ton 4WD from Rentway Leasing	$661.96	661.96
COMMUNICATIONS	$50.00	50.00
AIR TRAVEL		
P.M. McAndless - Vancouver to Williams Lake and return	$183.60	183.60
TOTAL PROJECT EXPENDITURES		$24,641.94
TOTAL COST PER LINE KILOMETRE		$ 41.28

Total Area Surveyed	-	17700 hectares	
Area of LL 1-12 claims	-	5750 hectares	(32.5%)
Area outside LL 1-12	-	11950 hectares	(67.5%)
% of total survey expenditure claimed by E & B for assessment	-	86.0	($21200.00)
% of total survey expenditure available for assessment on adjacent claims	-	14.0	($3441.94)

J. T. Walker

J.T. Walker
J.T. Walker Mining Geophysics

December 20, 1983

STATEMENT OF QUALIFICATIONS

I, James T. Walker of the Municipality of Richmond, Province of British Columbia do certify that:

1. I have been engaged in Mining Geophysics since June, 1965.

2. I have been engaged in Airborne Geophysical surveying since April, 1973.

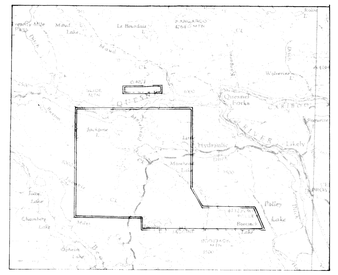
3. I am a member of the Canadian Institute of Mining and Metallurgy.

4. I am a member of the British Columbia Geophysical Society.

5. I am a member of the Society of Exploration Geophysicists.

J.T. Walker
J.T. Walker Mining Geophysics

AIRBORNE VLF-EM ANOMALY MAP



93 A 12 **LOCATION MAP** 1:250,000

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,830

LEGEND

L 12 — Flight line number and direction, numbered control point.

V L F – E M Measurement – Relative Field Strength (horizontal component)

V L F Transmitters – Seattle, Washington. (24.8 kHz.)
Annapolis, Maryland. (21.4 kHz.)

(15) Tx-Sea. / (8) Tx-Ann. — VLF-EM Anomaly, showing % increase in R.F.S. bar indicates anomaly width.

Area of lower resistivity and/or topographic high. indicated by high R.F.S. values.

Helicopter-terrain clearance — 60 meters.

Flight line spacing — 300 meters (detail area – 200 meters)

To accompany Airborne Geophysical Report by J.T.Walker Walker Mining Geophysics) on the L.L.1-12 Mineral Claims, Cariboo M.D. Dated- December 20, 1983.

J. T. Walker

MAP SCALE
400 0 400 800 1200
METERS

NTS 93 A 12

REVISIONS	No	Date	MADE BY	DESCRIPTION
	1			
	2			
	3			
	4			
	5			

DATE	DRAWN BY	CHECKED	APPROVED
Dec. 15 1983	J.T. Walker		

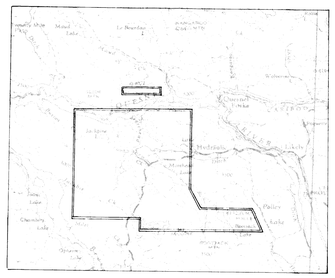
E & B Explorations Inc.

OFFICE	DEPARTMENT

LITTLE LAKE PROPERTY
AIRBORNE VLF-EM SURVEY
J.T. WALKER MINING GEOPHYSICS

MAP INDEX NUMBER	SCALE	DRAWING NUMBER
	1:20,000	2

AEROMAGNETIC CONTOUR MAP



93 A 12 **LOCATION MAP** 1: 250,000

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,830

LEGEND

L 12 — Flight line number and direction, numbered control point.

Measurement — Total Magnetic Field.

Reference Level — 57,000 gammas (nT)

Contour interval — 500 gammas

— 100 gammas

Helicopter-terrain clearance — 60 meters

Flight line spacing — 300 meters (detail area-200 meters)

J. T. Walker

To accompany Airborne Geophysical Report by J.T.Walker Walker Mining Geophysics. on the L.L.1-12 Mineral Claims, Cariboo M.D. Dated- December 20, 1983.

OUTLINE OF CLAIMS (L.L. 1-12)

MAP SCALE
400 0 400 800 1200
METERS
NTS 93 A 12

REVISIONS	No	Date	MADE BY	DESCRIPTION
	1			
	2			
	3			
	4			
	5			

DATE	DRAWN BY	CHECKED	APPROVED
Dec. 15, 1983	J.T. Walker		

E & B Explorations Inc.

OFFICE	DEPARTMENT

LITTLE LAKE PROPERTY

AIRBORNE MAGNETOMETER SURVEY

J.T. WALKER MINING GEOPHYSICS

MAP INDEX NUMBER	SCALE	DRAWING NUMBER
	1: 20,000	