REPORT ON THE AIRBORNE GEOPHYSICAL SURVEY ON THE WHIPSAW CREEK PROPERTY PRINCETON AREA, B.C.

820983

WORLD WIDE MINERALS LIMITED

49° 16' N 120° 45' W

NTS 92 H 7

SIMILKAMEEN MINING DIVISION

J.T. WALKER MINING GEOPHYSICS

DECEMBER 12, 1987

REPORT ON THE
AIRBORNE GEOPHYSICAL SURVEY
ON THE
WHIPSAW CREEK PROPERTY
AND ADJACENT AREA
SOUTH OF
PRINCETON, B.C.

WORLD WIDE MINERALS LIMITED

49° 16' N 120° 45' W

N.T.S. 92 H 7

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AIRBORNE GEOPHYSICAL SURVEY
ON THE
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INTRODUCTION

On October 27, 1987, J.T. Walker Mining Geophysics carried out an airborne geophysical survey in the Whipsaw Creek Area, near Princeton, B.C. The survey area lies 25 kilometers southwest of Princeton, B.C. The area flown is outlined on the Location Map, which depicts the N.T.S. sheet 92 H 7 at a scale of 1:250,000. This map is located at the top right corner of Drawing No. 1.

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 frequency (24.8 kHz.).

Two 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 a transmitter located near Seattle, Washington (24.8 kHz.) Azimuth 217°

A Bell 206 B Helicopter, chartered from Highland Helicopters, Agassiz, B.C. was used to fly the survey. Twenty-six survey lines were flown in a east-west direction. A total of 168 line kilometers were flown covering an area of approximately 4200 hectares. Line spacing of 250 meters was maintained throughout the survey. Terrain clearance was 60 meters. Air speed of 100 kilometers per hour was maintained where possible.

SURVEY PERSONNEL

Pilot: G. Freeman (Highland Helicopters)
Navigator: R. Hamilton
Operator: T. Walker (J.T. Walker Mining Geophysics)

Data reduction, compilation, drafting and interpretation: T. Walker

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 1:15,000. 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. During the course of the survey, this information was notated by the operator directly onto the magnetic and VLF-EM analog charts to provide correlation between the flight line control points and the recorded data.

INSTRUMENTATION

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

(a) Proton Magnetometer (ELSEC - Type 595)
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

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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.

The VLF signal, originating from U.S. Navy transmitters near Seattle, Washington (24.8 kHz.) was utilized for this survey. The amplitudes of the horizontal component of the field is measured continuously and displayed as relative field strength. An analog output is provided for recording.

(c) Recording System

Two chart recorders are used to record the data during the survey:

(1) A one-pen chart recorder, (Hewlett Packard - Model 7155B) 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.

(d) Radar Altimeter

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

DATA REDUCTION AND PRESENTATION

All survey data is presented on one plan map at a scale of 1:15,000. Corrected flight lines and control points are plotted and numbered. Flight line direction is indicated by an arrow at the beginning of each line.

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(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 56,000 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 500 gammas, 100 gammas and 50 gammas were used.

(b) Electromagnetic data (VLF-EM) (Drawing No. 1)

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 Drawing No. 1 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. The location of the flight lines is shown by the screened topographic contour map printed as an underlay on the drawings. Also, a location map, with the survey area outlined, is located at the top right of the drawings. The Location Map covers the 92 H 7 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, Drawing No. 1, using a 50 gamma contour. The 100 gamma contours are a solid line, with 50 gamma contours accentuated by a heavier line. The contour values are referenced above a total magnetic field value of 56,000 gammas.

The results of the airborne VLF-EM survey are plotted as Airborne VLF-EM Anomalies on Drawing No. 1. An anomaly symbol with bar is used to locate the VLF-EM anomaly along the flight lines. The bar length indicates the anomaly width at the half height of profile. The intensity of the VLF-EM anomaly (maximum amplitude) is expressed as a percentage increase of the Relative Field Strength and is shown within the hexagonal symbol.

Magnetic field values vary from less than 700 gammas in the vicinity of Forty-three Mile Creek to greater than 5500 gammas near the eastern side of the survey area.

The large magnetic "high" (61,500 gammas total field) located near the east side of the survey area and south of Whipsaw Creek is the most prominent feature of the survey. The anomaly, as defined by the 2500 gamma contour line, extends more than two kilometers along its north-south axis. A single VLF-EM anomaly is indicated within this "high", 300 meters southeast of the magnetic peak on flight line No. 17. This anomaly has a Relative Field Strength increase of 20 percent indicating a moderate conductor.

A magnetic "low", one kilometer long, is indicated in the vicinity of the crown granted claims near the confluence of Forty-three Mile and Whipsaw Creeks. There is no VLF conductivity associated with this "low". However, three VLF-EM anomalies are indicated immediately south of the "low," near the western boundary of Lot No. 1555. These conductors, on flight lines 14, 15 & 16 have R.F.S. values of 7, 14 & 8% respectively. The 14% anomaly is considered a moderate conductor.

A broad irregular magnetic "low", defined by the 900 gamma contour, is located on the west side of the survey area, trending south south-east from the Corral Creek area and extending from

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flight line 5 to flight line 22. Of greatest interest are the two narrow "lows", 850 gammas and 800 gammas, and the two VLF-EM conductors running parallel to these magnetic trends. The anomaly responses indicate moderate conductivity.

The VLF-EM survey has detected 37 anomalies. They are listed in Appendix B and numbered according to flight line and control point number. The control point at the beginning of each line is designated by a zero.

VLF-EM anomalies which appear to have line to line correlation, and anomalies with R.F.S. values greater than 15% are listed as conductors; eight are listed.

Two anomalies on flight line 19 are designated as - 16 and - 14, R.F.S. indicating a sharp decrease in Relative Field Strength rather than a normal increase in R.F.S. denoting an anomaly. One explanation would be to assume the earth beneath the negative anomaly to have anomalously high resistivity.

CONCLUSIONS AND RECOMMENDATIONS

The Airborne Geophysical Survey has provided data for the compilation of a Low Level Aeromagnetic Contour Map showing several interesting magnetic features. The VLF-EM survey has indicated 37 anomalies of various intensities. Eight conductive zones are indicated; three have line to line correlation of anomalies; five have intensities greater than 15% Relative Field Strength.

Further investigation of the eight conductive zones should include detail ground surveys, magnetometer and VLF-EM, combined with geological and geochemical programs.

It is recommended that the remaining VLF-EM anomalies be prospected and a limited reconnaisance silt and/or soil program be undertaken.

December 12, 1987

J.T. WALKER MINING GEOPHYSICS

Appendix A

STATEMENT OF EXPENDITURES

AIRBORNE GEOPHYSICAL SURVEY

ON THE

WHIPSAW CREEK PROPERTY

WORLD WIDE MINERALS LIMITED

Field Work: October 27, 1987

Flight Line Kilometers Surveyed - 168

Flight Line Kilometer Charge -	150 km.@	$26.75	
(Exclusive of Helicopter Charges)	18 km.@	22.00	
			$4408.50
Helicopter Costs (including fuel)	3.9 hrs.		1914.90
TOTAL SURVEY			$6323.40

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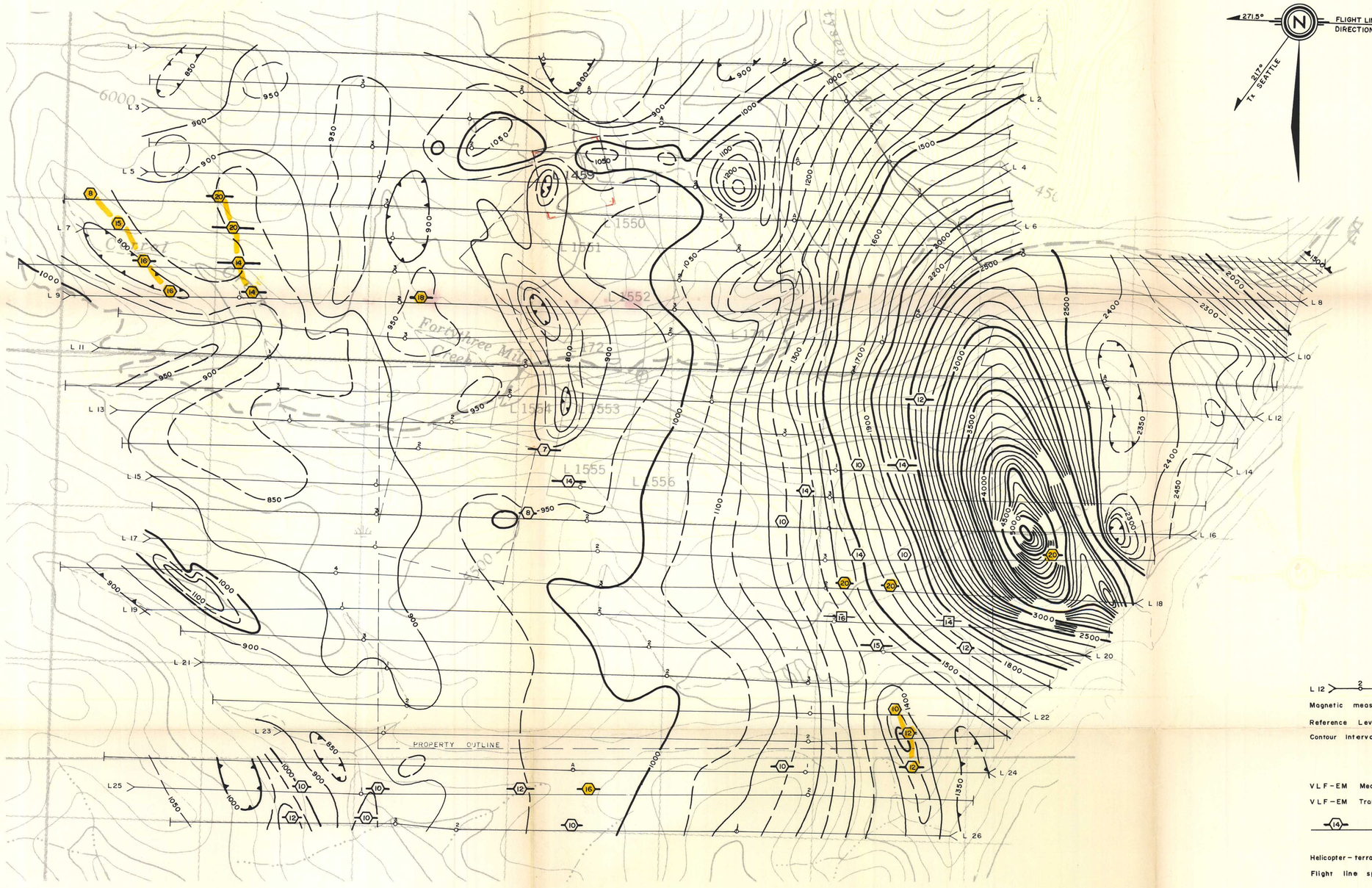
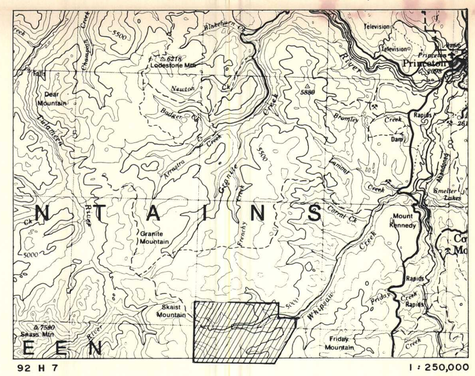
APPENDIX B

LIST OF VLF-EM ANOMALIES

ANOMALY NO.	R.F.S.	REMARKS
6 - 3,1	20	CONDUCTOR 2
6 - 3,2	8	" 1
7 - 0,1	15	" 1
7 - 0,2	20	" 2
8 - 3,1	14	" 2
8 - 3,2	16	" 1
9 - 0,1	16	" 1
9 - 1,1	14	" 2
9 - 2,1	18	CONDUCTOR 3
12 - A,1	12	WEAK
14 - 0,1	14	WEAK-MODERATE
14 - 0,2	10	WEAK
14 - 1,1	7	WEAK
15 - 1,1	14	WEAK-MODERATE
15 - 2,1	14	" "
16 - 1,1	10	WEAK
16 - 2,1	8	"
17 - 3,1	14	WEAK-MODERATE
17 - 3,2	10	WEAK
17 - 3,3	20	CONDUCTOR 4
18 - 0,1	20	CONDUCTOR 5
18 - 0,2	20	CONDUCTOR 6
19 - 3,1	-16	NEGATIVE
19 - 3,2	-14	"
20 - 0,1	12	WEAK
20 - 1,1	15	MODERATE
22 - 0,1	10	CONDUCTOR 7
23 - 2,1	12	" 7
24 - 0,1	12	" 7
24 - 1,1	10	WEAK
25 - 0,1	10	WEAK
25 - 1,1	10	"
25 - 1,2	12	"
25 - 1,3	16	CONDUCTOR 8
26 - 1,1	10	WEAK
26 - 3,1	10	"
26 - 3,2	12	"





LOCATION MAP

LEGEND

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

Magnetic measurement — Total Field.

Reference Level — 56,000 gammas

Contour Interval — 500 gammas; 100 gammas; 50 gammas

VLF-EM Measurement — Relative Field Strength (horizontal component)

VLF-EM Transmitter — Seattle, Washington. (24.8 kHz)

(14) — VLF-EM Anomaly, showing % increase in R.F.S. bar indicates anomaly length.

Helicopter-terrain clearance — 60 meters.

Flight line spacing — 250 meters.

AEROMAGNETIC CONTOUR MAP

SHOWING AIRBORNE VLF-EM ANOMALIES

0 1 2 3

KILOMETERS

inches

centimetres

This reference scale bar has been added to the original image. It will change in proportion as the image, therefore it can be used as a reference for the original size.

BRITISH COLUMBIA GEOLOGICAL SURVEY

J. T. Walker

AIRBORNE GEOPHYSICAL SURVEY

WHIPSAW CREEK PROPERTY
WORLD WIDE MINERALS LIMITED

PROJ. No. ____
NTS 92 H 7
DWG No. 1

SURVEY BY T. Walker & R. Hamilton DATE October 1987
DRAWN BY T. Walker SCALE 1 : 15,000

J.T. WALKER MINING GEOPHYSICS