REPORT ON THE AIRBORNE GEOPHYSICAL SURVEY ON THE LOUISE LAKE MINERAL CLAIM AND ADJACENT AREA LOUISE LAKE AREA, B.C.

54°51'25"N 127°40'00"W

93L/13E

J.T. WALKER

NORANDA EXPLORATION COMPANY, LIMITED

OMINICA MINING DIVISION

JANUARY 12, 1981

Part 1
of 2

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AIRBORNE GEOPHYSICAL SURVEY

on the

LOUISE LAKE MINERAL CLAIM

and adjacent area

NORANDA EXPLORATION COMPANY, LIMITED

INTRODUCTION

On October 4, 1980, Noranda Exploration Company, Limited carried out an airborne geophysical survey in the Louise Lake area of B.C. covering an area of approximately 43 square kilometers. The survey area lies 33 kilometers west, northwest of Smithers, B.C. The area flown is outlined on the location map (93 L 13) at a scale of 1:250,000.

The mineral claim lying within the survey area is Louise Lake comprising 4 units, the record number is 784.

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 (18kHz - 21kHz).

Three measurements were recorded during the survey:

1. Total magnetic field intensity
2. Relative field strength of the horizontal component of the VLF-EM electromagnetic field from two transmitters

a) Seattle, Washington (Jim Creek) 18.6 kHz

b) Annopolis, Maryland 21.4 kHz

A Bell 206B helicopter, chartered from Highland Helicopters, Vancouver, B.C. was used to fly the survey. Seventeen lines were flown in a north-south direction for a total of 100 kilometers. The line spacing was nominally 400 meters with a helicopter terrain clearance of 60 meters. An aircraft speed of approximately 60 m.p.h. (100 km/hour) was maintained on the survey flight lines.

SURVEY PERSONNEL

Pilot: T. Brooks

Navigator: M. Leahey

Operator: T. Walker

Data Reduction, Drafting: T. Walker and S. Neg.

All personnel are employees of Noranda Exploration Company, Limited except T. Brooks an employee of Highland Helicopters.

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 1:25,000. Proposed flight lines and topographically located control points were plotted prior to flying the survey. During the survey, flight line path corrections were made by the navigator where necessary. Line information, control point locations and numbers, announced by the navigator, were recorded on stereo magnetic tape together with the VLF-EM data.

INSTRUMENTATATION AND DATA RECORDING

The following instruments are installed in the helicopter for measuring and recording the geophysical data during flights.

a) Proton Magnetometer (ELSEC)

The magnetometer was manufactured by the Littlemore Scientific Engineering Co., Oxford, U.K. and is designated type 595. The magnetometer measures the total magnetic field at a 1 second cycle rate. The measurement is digitally displayed to one gamma and has an analog output of 100, 1000, and 10,000 gammas full scale. The 1000 gamma full scale output is normally used.

The toroidal wound detector is installed in a fibreglass "bird" towed beneath the helicopter on a 12 meter cable.

b) Electromagnetic Receiver (VLF-EM)

The VLF-EM receiver was manufactured by Sabre Electronic Instruments Ltd., Burnaby, B.C. The instrument has dual receivers tuned to 18.6 kHz (Seattle) and 21.4 kHz (Annapolis). Two omnidirectional antenna arrays are employed. They are mounted in the fibreglass "bird" also housing the magnetometer detector. The antenna arrays are designed to detect the horizontal magnetic component of the VLF fields. Signals originating from U.S. Navy transmiters near Seattle and Annapolis were utilized for this survey. The amplitudes of the horizontal component are measured continuously and displayed as relative field strengths. An analog output is provided for recording each measurement.

c) Recording System

Two recording systems were employed simultaneously during the survey.

1. Chart recorder, Model 7155B manufactured by Hewlett Packard is used to record the aeromagnetic data in profile form. The recorder has an event marker, controlled by the navigator to record control point locations. The points are numbered in flight by the operator.

2. The tape recording system consists of a Sony stereo cassette recorder Model TC 124 and a frequency modulator manufactured by Sabre Electronic Instruments Ltd. This system records both VLF-EM measurements on the left channel and all in flight conversation between pilot, navigator and operator on the right channel. The right channel also records an event tone (1000 kHz) controlled by the navigator to indicate control points locations.

High Fidelity cassette magnetic tapes (Phillips Type) are used to record the in-flight data and conversation.

d) Playback System

The playback system consists of a stereo cassette tape recorder (Sony TC 124), demodulator and 2 pen strip chart recorder (M.F.E. Model M-26). To retrieve the in-flight tape recorded data, the tapes are replayed, demodulated and the data is reproduced in profile form on the strip chart recorder. Playback is in real time and all voice recorded information, control points numbers and tones are written on the strip charts during playback.

c) Radar Altimeter

A Mark 10 radar altimeter, manufactured by Bonzar Inc. was installed to measure and display helicopter terrain clearance during the survey as an aid to the pilot in maintaining a constant aircraft clearance.

DATA REDUCTION AND PRESENTATION

All survey data are presented on a plan map at a scale of 1:25,000. Corrected flight line and control points are drawn and numbered. Flight line direction is indicated at the beginning of each line. The topographic contour map, used as a base map for the survey, is used as an underlay to allow ground positioning.

a) Aeromagnetic Data

The magnetic data is presented as isomagnetic contours of the total field as presented on the Magnetic Contour Map (Drawing No.1). Contour values are based on a datum of 57,000 gammas total magnetic field intensity. The results are not corrected for diurnal variations.

Magnetic values at 100 gamma intervals were picked on the in-flight profile recordings. These points were then transcribed to the flight line plan map with reference to the flight line and control points. The transcribed points of equal magnetic intensity were then contoured.

b) Electromagnetic Data (VLF-EM)

The recorded VLF-EM data measures the relative field strength (horizontal component). A significant conductive anomaly is indicated by a definitive increase in the field strength. Anomaly locations are indicated on the magnetic contour map by a hollow bar, the length corresponding to the profile width at the half height. The enclosed number within the bar represents the percent increase in relative field strength. The anomalous locations are transcribed to the flight line base as was described under aeromagnetic data.

DISCUSSION OF RESULTS

The results of the VLF-EM survey indicate three anomalous zones. The response of these anomalies is shown on copies of the in-flight profiles at the bottom left of Drawing No.1. The profiles show the relative field strength of the horizontal component of the VLF signal, the top trace is from transmitter Seattle, the bottom is from transmitter Annapolis. The anomalies on lines 7 and 13 show a response from the Annapolis transmitter only, suggesting a easterly strike direction of the conductors. The anomaly on line 10 shows a response from both Annapolis and Seattle indicating a more southerly strike direction.

These conductive anomalies have no coincident magnetic response however the anomaly on line 10 is located on the south gradient of a 100 gamma magnetic high. Three prominent features stand out on the magnetic contour map. An area of high magnetic relief in the south western part of the grid with an area of low relief across the central part of the survey area. A strong magnetic dipole is evident at the north end of lines 6,7 and 8.

CONCLUSIONS AND RECOMMENDATIONS

The airborne VLF-EM survey has indicated three anomalies. Each anomaly has been rated according to field strength and each anomaly response curve is shown.

The anomalies should be located by a ground VLF-EM survey followed by further work as required to determine the cause of the conductivity.

J.T. Walker

STATEMENT OF QUALIFICATIONS

I James T. Walker of the City of Vancouver, Province of British Columbia do certify that:

1. I have been an employee of Noranda Exploration Company Limited sice May, 1958.

2. I have held the position of Geophysicist for Noranda Exploration Company, Limited, British Columbia since June, 1965.

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

4. I am a member of the Canadian Exploration Geophysical Society.

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

January 12, 1981

J.T. Walker
Geophysicist
Noranda Exploration Company, Ltd.

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

PROJECT LOUISE LAKE DATE January 1981

TYPE OF REPORT AIRBORNE GEOPHYSICS

a) Wages:

No. of Days 13

Rate per Day $134.2138

Dates From: Oct. 4/80-Jan. 12, 1981

Total Wages 13 x $134.2138 1,744.78

b) Food and Accomodation:

No of days 13

Rate per day $10.00

Dates From: Oct. 4/80 to Jan. 12/81

Total Cost 13 x $10.00 130.00

c) Transportation:

No of days 13

Rate per day $93.1215

Dates From: Oct. 4/80 to Jan. 12/81

Total Cost 13 X $93.1215 1,210.58

d) Instrument Rental:

Type of Instrument

No of days

Rate per day $

Dates From:

Total Cost X $

Type of Instrument

No of days

Rate per day $

Dates From:

Total Cost X $

f) Analysis
(See attached schedule)

g) Cost of preparation of Report

Author	1 Day @ 134.21	
Drafting	1 Day @ 211.17	
Typing	1 Day @ 100.00	445.38

h) Other:

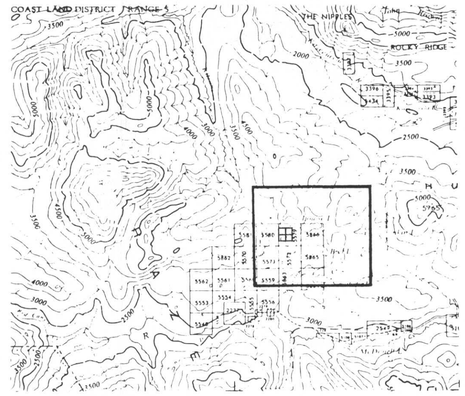
Total Cost 4,080.74

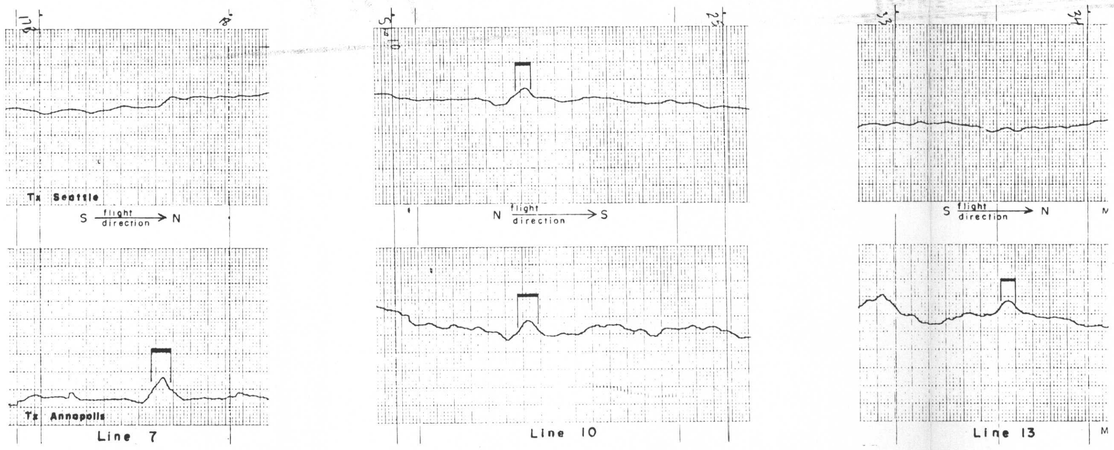
e) Unit costs for

No of days	13			
No of units	100 Km.			
Unit costs	40.8074		/ Km.	
Total Cost	100	x	$40.8074	$4,080.74

MAGNETIC CONTOUR MAP

1:25,000





VLF-EM CHARTS

SHOWING FIELD STRENGTH ANOMALIES

LEGEND

L3 — 10 — Flight line number and direction; numbered control point

Magnetic measurement is total field

Reference level — 57,000 nanoteslas

Contour interval — 100 nT

VLF-EM measurement — Field Strength (horizontal component)

Transmitters — Seattle

Annapolis

VLF-EM Anomaly showing ⅞ F.S increase

Tx Annapolis / Tx Seattle

To accompany Airborne Geophysical Report
by J.T. Walker, Geophysicist, on the
LOUISE LAKE Mineral Claim, Omineca M.D.
Dated: January 12, 1981.

REVISED	LOUISE LAKE AIRBORNE
	MAGNETOMETER & VLF-EM SURVEY
	MEAN TERRAIN CLEARANCE - 60 Meters
	FLIGHT LINE SPACING — 400 Meters
PROJ. No.	SURVEY BY T. WALKER M. LEAHEY DATE OCTOBER 1980
N.T.S. 93 L 13	DRAWN BY T. WALKER SCALE 1:25,000
DWG. No	NORANDA EXPLORATION
	OFFICE VANCOUVER