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AN ASSESSMENT REPORT ON

A TIME DOMAIN INDUCED POLARIZATION SURVEY

ON THE FORD AND WOOF MINERAL CLAIMS,

CHASE, BRITISH COLUMBIA

FOR .

THE ADAMS PLATEAU JOHNT VENTURE PARTNERS ASSESSMENT REPORT

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John Lloyd M.Sc., P. Eng. LLOYD GEOPHYSICS LIMITED VANCOUVER, BRITISH COLUMBIA



SUMMARY

During the periods May 30 to June 14, September 7 to 10, and October 7 & 8, 1987, Lloyd Geophysics Limited carried out a time domain Induced Polarization (IP) survey on parts of the FORD and WOOF mineral claims.

The survey identified at least 4 strong anomalies on the ADAM C grid. A total of 410 metres of drilling has been recommended to test these anomalies.

No drilling has been recommended on either the ADAM D grid or the WOOLFORD CREEK grid at the present time.



TABLE OF CONTENTS

Page

1.	INTRODUCTION	1
2.	PROPERTY LOCATION AND ACCESS	1
3.	GEOLOGY	2
4.	PURPOSE OF THE I.P. SURVEY	4
5.	INSTRUMENT SPECIFICATIONS	4
6.	SURVEY SPECIFICATIONS	7
7.	DATA PROCESSING	7
8.	DATA PRESENTATION	8
9.	DISCUSSION OF RESULTS	9
10.	CONCLUSIONS AND RECOMMENDATIONS	11

APPENDIX

Personnel Employed on Survey	(i)
Cost of Survey	(ii)
Certification of Author	(iii)
Chargeability And Resistivity Pseudo-sections	Bound into end of report
Grid Location Map	In Map Pocket

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1. INTRODUCTION

During the periods May 30 to June 15, September 7 to September 10, and October 7 and 8, 1987, Lloyd Geophysics Limited carried out time domain Induced Polarization (IP) surveys on parts of the FORD and WOOF mineral claims. These claims are under option from BHP-Utah Mines Limited by Clifton Resources Limited on behalf of the Adams Plateau Joint Venture Partners, namely Adams Exploration Ltd., Clifton Resources Limited and Izone International Ltd.

The May-June part of the survey was carried out by Mr. Jeff Warne B.Sc., Geophysicist and the September-October part of the survey by Mr. David Hall B.Sc., Geophysicist. In addition, each crew comprised of two geophysical instrument operators and two field assistants.

A total of 22.225 kilometres of IP survey work was completed on three grids as follows:

ADAM C Grid - 2.05 Km. x = 50m; n = 1, 2, 3 & 4 - 9.375 Km. x = 25m; n = 1, 2, 3 & 4 ADAM D Grid - 6.70 Km. x = 25m; n = 1, 2, 3 & 4 WOOLFORD CREEK Grid - 4.10 Km. x = 50m; n = 1, 2, 3 & 4

2. PROPERTY LOCATION AND ACCESS

The property, known as the FORD and WOOF mineral claims, is located in the Kamloops Mining Division of British Columbia, and consists of 145 units as follows:



CLAIM NAME	RECORD NUMBER	EXPIRY DATE
Ford 1	5310	Dec. 1990
Ford 2	5311	Dec. 1989
Ford 3	5312	Dec. 1989
Ford 4	5313	Dec. 1990
Ford 5	5314	Dec. 1990
Ford 6	6219	May 1990
Ford 7	6220	May 1989
Woof 1	4997	Nov. 1990
Woof 2	4998	Nov. 1990
Woof 3	4999	Nov. 1988

The claims are located on the Adams Plateau, 70 kilometres northeast of Kamloops at latitude $51^{\circ}03$ 'N and longitude $119^{\circ}37$ 'N. See Figure 1.

A 25 kilometre logging road which originates at the south end of Adams Lake provides good access to the property. The claims are at an elevation of about 1,800 metres and contain sub-alpine meadows and grassland as well as stands of merchantable spruce. The area is subject to heavy snowfalls and is generally inaccessible by road from December to June.

3. GEOLOGY

The claims are underlain by intermediate to felsic volcanics of the Eagle Bay Formation. This formation hosts massive sulphide deposits with exceptional precious metals content, as evidenced by the SAMATOSUM deposit recently discovered by Minnova Inc. and Rea Gold Corporation.



4. PURPOSE OF THE IP SURVEY

The purpose of the IP survey was to outline for drilling and/or trenching any massive sulphide zones which are expected to exist on the property as a result of geological and geochemical survey work.

5. INSTRUMENT SPECIFICATIONS

The IP system used to carry out this survey was a time domain measuring system manufactured by Huntec Limited of Toronto, Ontario.

The system consists of a Wagner Leland alternator, driven by a 25 horsepower Onan engine which supplies in excess of 7.5 kilowatts of 3 phase power to the ground at 400 hertz, a Mark II transmitter and TWO Mark IV microprocessor controlled receivers.

The Mark II transmitter was operated with a cycle time of 8 seconds and the duty cycle ratio: [(time on)/(time on + time off)] was 0.5. This means the cycling sequence of the transmitter was 2 seconds current "on" and 2 seconds current "off" with consecutive pulses reversed in polarity.

The Mark IV receiver is microprocessor controlled, featuring automatic calibration, gain setting, SP cancellation, fault diagnosis and filter tuning. Operation of the instrument is controlled by 3 front panel switches and a keypad for requesting data on the digital display.





The delay time, the integration time and a number of other parameters may also be adjusted, by means of sub-panel switches to accommodate a wide range of geological conditions. Measurements are calculated automatically every 4 to 8 seconds from the averaged waveform which is accumulated in memory at 2,048 sample points.

The instrument has 10 equal chargeability channels, Mo, Μ1, M2, Мз, М₄, М_Б, M6, M₇, Ma and Mo (see Figure 2). These may be recorded individually, selectively or summed up automatically to obtain the total chargeability.

The apparent resistivity (\bigcirc a) in ohm-metres is calculated on the field computer, using the primary voltage (V_p), the measured current (I_g) and some factor (K) which is dependent on the geometry of the array used.

The instrument parameters chosen for this survey were as follows:

Cycle Time (T _c)	:	8	seconds
Ratio (<u>Time On</u>) (Time Off)	:	2:	2
Duty Cycle Ratio (7 (Time C	<u>Fime On) :</u> On)+(Time Off)	0.	5
Delay Time (T _p)	:	12	0 milliseconds
Window Width (t _p)	• •	90	milliseconds
Total Integrating Time	(T _P) :	90	0 milliseconds





Mark IV Receiver Measurement Parameters

FIGURE 2

6. SURVEY SPECIFICATIONS

The pole-dipole array was used for this survey. With this array the one current electrode C_1 and the two potential electrodes P_1 and P_2 are moved in unison along the survey lines. The second current electrode C_2 is grounded an "infinite" distance away, which is at least ten times the distance between C_1 and P_1 for the largest electrode separation.

The dipole length (x) is the distance between P_1 and P_2 . The electrode separation (nx) is the distance between C_1 and P_1 and is equal to or some multiple of the distance between P_1 and P_2 . For a sulphide body of some particular size, shape, depth and true chargeability, the dipole length (x) determines mainly the sensitivity of the array, whereas the electrode separation (nx) determines mainly the depth of penetration of the array.

The majority of the 3 grids were surveyed on lines 200 metres apart. Occassionally however, the lines were either 100 or 400 metres apart. The station interval was either 25 or 50 metres and measurements were taken with either x = 25m; n = 1, 2, 3 and 4, or with x = 50m; n = 1, 2, 3 and 4. The reader is referred to section 8 - the DATA PRESENTATION Section for exact details.

7. DATA PROCESSING

The data collected was transferred to diskette for processing in the field, using a Compaq 286 Portable Computer and an Epson Printer.



The software used to contour the data is based on the mathematical solution known as "krigging".

the office the data was transferred onto mylar. This In done using the Compaq 286 Portable Computer coupled to was a DL2400 Fujitsu Printer. This Fujitsu Printer has the capability of printing on mylar.

8. DATA PRESENTATION

The data obtained from the survey described in this report are presented on 24 pseudo-section plots as follows:

ADAM C GRID

Line	Dipole	<u>No. of</u>	Length	
<u>No.</u>	Spacing	Separations	Of Line	Dwg. No.
0+00	25 m	n = 1 to 4	525 m	87264-13
"ROAD2"	50 m	n = 1 to 4	1150 m	87264-14
4+00E	25 m	n = 1 to 4	750 m	87264-15
"ROAD3"	50 m	n = 1 to 4	900 m	87264-16
"ROAD4"	25 m	n = 1 to 4	950 m	87264-17
10+00E	25 m	n = 1 to 4	550 m	87264-18
12+00E	25 m	n = 1 to 4	1250 m	87264-19
14+00E	25 m	n = 1 to 4	1250 m	87264-20
16+00E	25 m	n = 1 to 4	750 m	87264-21
17+00E	25 m	n = 1 to 4	500 m	87264-22
18+00E	25 m	n = 1 to 4	750 m	87264-23
19+00E	25 m	n = 1 to 4	600 m	87264-24
20+00E	25 m	n = 1 to 4	750 m	87264-25
21+00E	25 m	n = 1 to 4	525 m	87264-26
"ROAD1"	25 m	n = 1 to 4	225 m	87264-27



ADAM D GRID

Line	Dipole	<u>No. of</u>	Length	
<u>No.</u>	Spacing	Separations	Of Line	Dwg. No.
0+00	50 m	n = 1 to 4	1600 m	87264-28
2+005	50 m	n = 1 to 4	700 m	87264-29
4+00S	50 m	n = 1 to 4	1600 m	87264-30
6+005	50 m	n = 1 to 4	700 m	87264-31
8+005	50 m	n = 1 to 4	1600 m	87264-32
10+00S	50 m	n = 1 to 4	500 m	87264-33

WOOLFORD	CREEK GRID			
Line	Dipole	<u>No. of</u>	Length	
<u>No.</u>	Length	Separations	<u>Of Line</u>	Dwg. No.
74+00E	50 m	n = 1 to 4	1250 m	87264-34
76+00E	50 m	n = 1 to 4	1300 m	87264-35
78+00E	50 m	n = 1 to 4	1550 m	87264-36

The location of these grid lines are shown on Dwg. No. 87264-M1 folded into the map pocket of this report.

9. DISCUSSION OF RESULTS

An IP response depends largely on the following factors:

- (a) The number of pore paths that are blocked by sulphide grains.
- (b) The number of sulphide faces that are available for polarization.



- (c) The absolute size and shape of the sulphide grains and the relationship of their size and shape to the size and shape of the available pore paths.
- (d) The volume content of sulphide minerals.
- (e) The electrode array employed.
- (f) The width, depth, thickness and strike length of the mineralized body and its location relative to the array.
- (g) The resistivity contrast between the mineralized body and the unmineralized host rock.

The sulphide content of the underlying rocks or, since rocks containing magnetite, graphite or clay minerals, frequently give rise to an IP response, an equivalent sulphide content is one of the critical factors that we would like to determine from field measurements. However, experience has shown that this is both difficult and unreliable, mainly because of the large number of factors, described above, which contribute to an IP response. These factors vary considerably from one geological environment another. Despite this, some interpreters have developed to empirical rules for making rough estimates of the percent sulphides by volume contained within rocks giving anomalous IP responses.

A detailed study has been made of the pseudo-sections which accompany this report. These pseudo-sections are not sections of the electrical properties of the sub-surface strata and cannot be treated as such when determining the depth, width and thickness of a zone which produces an





From this study the anomalies selected are shown on the individual pseudo-sections and are classified into 4 are definite, probable and possible groups. These anomalies and anomalies which may have a deeper source. This classification is based partly on the relative amplitudes of the chargeability and to a lesser degree on the resistivity response. Of equal importance in this classification is the overall anomaly pattern and the degree to which this pattern may be correlated from line to line, provided of course that the correlation is not so extensive along strike so as to most probably represent only the subcrop of a geological formation.

Some drilling has taken place on the ADAM C grid during the 1987 field season. However, from a geophysical standpoint, the more interesting anomalies still remain untested. The reader is referred to section 10 CONCLUSIONS AND RECOMMENDATIONS for specific drill recommendations.

10. CONCLUSIONS AND RECOMMENDATIONS

From a study of the IP data obtained from the survey described in this report it has been concluded that 4 anomalies on the ADAM C grid are worthy of further investigation by drilling.

A total of 410 metres of drilling is recommended to test these anomalies as follows:



ADAM	C GRID				
<u>Hole</u>	Line	Collar			Length
<u>No</u> .	No.	Location	Angle	Direction	<u>Of Hole</u>
1	"ROAD4"	725N	-45	Drill from North to South	100 m
2	"ROAD2"	7355	-45	Drill from North to South	85 m
3	"ROAD3"	525S	-45	Drill from North to South	125 m
4	"ROAD4"	440N	-45	Drill from North to South	100 m

Based on the geophysical data alone no drilling is recommended on either the ADAM D grid or the WOOLFORD CREEK grid at the present time.

> Respectfully Submitted, LLOYD GEOPHYSICS LIMITED

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John Lloyd, M.Sc., P. Eng. Geophysicist

February 10, 1988 Vancouver, B.C.

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APPENDICES

LLOYD GEOPHYSICS LIMITED

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(i)

Personnel Employed on Survey

Name	Occupation	Address	Dates
J. Lloyd	Geophysicist	Lloyd Geophysics Limited 1110 - 625 Howe Street Vancouver, B.C. V6C 2T6	Feb. 8-10/88
J. Warne	Geophysicist	"	May 30 - June 14/87
D, Hall	Geophysicist	"	Sept. 7-10; Oct. 7-8/87
M. Pearson	Operator	**	May 30 - June 14/87
D. Kiliaan	Operator		May 30 - June 14/87
K. Dale	Operator	"	Sept. 7-10; Oct. 7-8/87
J. Cornock	Operator	11	Sept. 7-10; Oct. 7-8/87
W. Jopson	Helper	"	May 30 - June 14/87
D. Duncan	Helper	11	May 30 - June 5/87
D. Gray	Helper	"	June 7-14; Oct. 7-8/87
E. Griepsma	a Helper	"	Sept. 7-10/87
E. Steen	Helper	11	Sept. 7-10; Oct. 7-8/87
J. Zondag	Typist	"	Feb. 9-10/88

Cost of IP Survey and Report Writing

Lloyd Geophysics Limited contracted the data acquisition for this survey on a per diem charge basis. Data processing by computer, reproduction of maps, interpretation and report writing were extra.

B.E.Spencer Engineering Ltd. provided room and board for the IP crew at Chase, British Columbia.

The breakdown of these costs are shown below:

Lloyd Geophysics Limited

Field Data Acquisition	37,785.00
Data Processing, 656 stations at \$3.50 per station	2,296.00
Interpretation and Report Writing J. Lloyd, P. Eng.	
3 days at \$450.00 per day	1,350.00
Reproduction of Maps and Sections	335.37
B.E. Spencer Engineering Ltd.	
Room Charges - Overlander Motel 3 units for 22 days at \$31/unit/day	2,046.00
Meal Charges - Chase Cafe 5 men for 22 days at \$30/man/day	_3,300.00
Total	47,112.37



CERTIFICATION

I, John Lloyd, of 1110-625 Howe Street, in the City of Vancouver, in the Province of British Columbia, do hereby certify that:

- I graduated from the University of Liverpool, England in 1960 with a B.Sc. in Physics and Geology, Geophysics Option.
- 2. I obtained the diploma of the Imperial College of Science and Technology (D.I.C.), in Applied Geophysics from the Royal School of Mines, London University in 1961.
- 3. I obtained the degree of M.Sc. in Geophysics from the Royal School of Mines, London University in 1962.
- 4. I am a member in good standing of the Association of Professional Engineers in the Province of British Columbia, the Society of Exploration Geophysicists of America, the European Association of Exploration Geophysicists and the Canadian Institute of Mining and Metallurgy.
- 5. I have been practising my profession for over twenty years.

Vancouver, B.C. February, 1988

John Lloyd, P. Eng.

LLOYD GEOPHYSICS LIMITED







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