468

Report 392T
N.T.S. 93-B-9

I.P. AND RESISTIVITY SURVEYS

ZEPHYR GROUP, MAJOR PROPERTY

CARIBOO AREA 52° 122° S.E.

PROVINCE OF BRITISH COLUMBIA

93B/9W

A. R. CLARK

ABSTRACT

In September and early October about 18 line miles on the Major Property, Cariboo Area, British Columbia were investigated by induced polarization and resistivity surveys. Base lines and picket lines had been cut and chained previously in the period July 20th to August 18th.

The geophysical results are shown on DWGS 2430 and 2431 and four areas are recommended for further work.

TABLE OF CONTENTS

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INTRODUCTION

Although an adit of approximately 120 feet had been driven on the Sunset showing and extensive diamond drilling carried near the showing apparently only surface prospecting had been done over the surrounding area. As this area is generally covered by overburden the present owners decided that geophysics would be necessary to evaluate this ground and that an I.P. survey and resistivity survey would have a good chance of identifying any nearby mineralized areas.

This report covers the geophysical work done on this property.

PROPERTY

The group of claims designated the Major Property consists of the Zephyr Group 1-16, the Pan Group 1-5, the H.C. Group 1-20 and Xaire 1 and 2 totalling 43 claims in all. The main part of the survey was done on the Zephyr Group of claims.

LOCATION AND ACCESS

The group covers part of the west slope of Granite Mountain. The Sunset adit is on the lower part of Granite Creek at approximately 3,160 feet elevation, about one mile east of the north end of Cuisson Lake. The claims can be reached by an extension of the Cuisson Lake road and is 7 miles by road from the Cariboo Highway at the north end of McLeese Lake.

GEOLOGY AND MINERALIZATION

The property lies on the west side of Granite Mountain. The intrusive varies from granite to diorite with granodiorite being predominant in the area of the claim group. Varying degrees of granitization are observed in the area with a decrease in intensity toward the south and west.

In the area of the "Sunset" showing some evidence of relict bedding is preserved and it is probable that the copper mineralization is primarily controlled by bedding with fracturing a secondary cause.

Mineralization includes pyrite, chalcopyrite, chalcocite and molybdenite in that order of abundance. Total sulphide content occasionally reaches ten percent. It is generally disseminated with rare seams or veinlets of massive sulphides.

GEOPHYSICS

Airborne magnetic results gave an almost featureless pattern over the area. Therefore, it was not considered worthwhile to do a ground magnetometer survey. As the known sulphides showings are below 10% sulphides the Induced Polarity method was considered most applicable. Since resistivity readings can be calculated as a by-product of the I.P. readings a resistivity map has also been drawn up. The resistivity readings could be expected to show up areas of anomalous resistivity. Some causes of low resistivities are sulphides, shear zones and graphite. As graphite is not known in the general area and the copper mineralization appears to be generally associated with shearing, resistivity could indicate areas of copper mineralization.

INDUCED POLARIZATION

When a voltage is applied to a material a current flows through the material. The current may be carried by ions or by the movement of electrons. The movement of current through the rocks is chiefly by ions. In metallic ore minerals the conduction is chiefly by electrons.

If particles of electronic conductors are scattered through rock, an applied voltage causes the electrons to move across the metallic particles and each particle becomes electrically polarized. This so-called Induced Polarization does not occur instantaneously but requires a short time to reach its steady value, the length of time increasing as the metallic concentration increases. If this polarizing effect can be measured the presence of metallic conductors may be detected.

If current is introduced into the ground by two electrodes, the potential between two other electrodes on surface may be measured. When a D.C. voltage is applied to the current electrodes the potential between the other electrodes soon reaches a steady value. When an A.C. current of the same value is introduced into the ground, the voltage between the two measuring electrodes does not have time to build up to as large a value as in the D.C. case before the current reverses. Hence the potential measured with A.C. will be equal to or less than that measured with D.C. The difference in the two values will depend on the concentration of the electronic conducting particles in the rock.

If Vo be the voltage measured with D.C. and V be the voltage measured with A.C. then the so-called metal factor is given by

$$m = \frac{Vo-V}{Vo} \times 1000$$

The survey was conducted as follows: A base line was started at the adit and driven 1,200 feet in a N45°W direction and 4,400 feet in a S45°E direction. Lines were turned off at right angles at 400 foot intervals and cut 4,500 feet to the north-east and 1,500 feet to the south-west. Secondary base lines were cut at 2,000 N, 4000 N and 1,500 S.

One current electrode C2 was placed 4,000 NW of point 2,000 N on line 12+00W and an insulated wire was strung along the 2,000 N secondary baseline. The generator was placed at the intersection of the 2000 foot baseline and the picket lines and a second current electrode C1 was placed 300 feet from the base line along the picket line. Two potential electrodes P1 and P2 were placed at 100 and 0 feet from the base line. A given current of 40 milliamps was caused to flow and the potential between P1 and P2 measured first with D.C. and second with 6 cycle A.C.

To eliminate the effect of spontaneous polarization, the self-potential was measured at each station and the corrected D.C. voltage obtained by calculation.

The electrode system C1 P1 P2 was moved as a unit a distance of 1,000 feet north and south along each picket line from the base line 2,000 N. Similarily wires were stretched along base lines 400N,0 and 1,500 S and connected to C2 and readings taken 1,000 feet out from these base lines.

The values for the metal factor were calculated from the formula $\frac{Vo - V}{V} \times 1000$ where Vo and V were the resistivities measured with D.C. and A.C. respectively and the values plotted at the mid-position of the potential probes. The results are shown on the I.P. map (DWG 2430).

The data from the A.C. values were used to calculate resistivities which were plotted at the same point as the metal factors but on a separate map (DWG 2431).

DISCUSSION OF RESULTS

Work to date with this unit indicates that metal factor values of +500 over could be caused by sulphide concentrations. However, the results on this property were extremely erratic with large negative readings obtained in several areas (it is possible that the sheared and broken nature of the rocks were the cause of the erratic results) so that most of the isolated one or two reading anomalies were discounted. For the resistivity results the electrode spacing employed tends to emphasize close to surface changes in resistivity and the values are controlled in part by the changes in conductivity and amount of the overburden. However, it is thought that the best interpretation could be made by considering the I.P. and resistivity results together. With this in mind the most interesting areas for further work in their order of importance are (1) the anomaly cutting lines 24+00E and 20+00E at around 750 feet south of 0 base line, (2) the anomaly cutting lines 4+00E and 8+00E at around 300 feet north of 0 base line and perhaps the resistivity anomaly immediately to the south of it, (3) the anomaly cutting lines 16+00E and 20+00E at around 1,200 feet north of 0 base line (4) the two I.P. anomalies on line 8+00W at 850 and 1,150 N.

RECOMMENDATIONS AND CONCLUSIONS

Although results were quite erratic on this property the four areas mentioned previously deserve further work.

The presence of ore grade mineralization in the adit on the property enhances the values of nearby anomalies and it is recommended that these anomalies be investigated by geochemical tests on soil samples.

Respectfully submitted,

GEOPHYSICAL ENGINEERING & SURVEYS LIMITED

A. R. Clark

A. R. Clark. /E.P.

Toronto, Ontario,
January 2, 1963.

GEOPHYSICAL ENGINEERING AND SURVEYS LIMITED

JOB NUMBER 583E

DECEMBER 27, 1962.

STATEMENT OF COSTS:

Induced polarization and resistivity surveys on Major property, Cariboo Area, British Columbia.

Salaries and Wages:

(a) Line-cutting	$1,990.45	
(b) Surveys	2,713.50	
(c) Plotting and calculation	500.54	5,204.49
Transportation		99.22
Food and lodging		56.22
Supplies		73.17
		$5,433.10

J. C. Frantz,
Vice-President.

APPENDIX TO REPORT NO. 392 T

PROPERTY Zephyr Group - Major Property, Cariboo Area, British Columbia

TYPE OF SURVEY
1. Induced Polarization
2. Resistivity

INSTRUMENTS	SENSITIVITY
1. I.P. Unit	0.1 mv.
2. Resistivity Unit	--

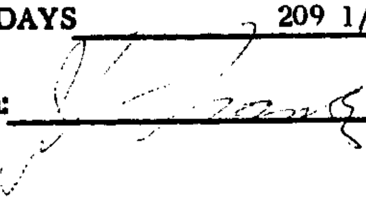
NO. MILES OF LINE
1. 18.0
2. B.L. & T.L. 4.0 TOTAL 22

NO. OF STATIONS
1. 720
2. 720 TOTAL 1440

PERSONNEL AND TIME DISTRIBUTION

NAME	ADDRESS	TYPE OF WORK	PERIOD	DAYS
A. Linecutting, Picketing, Chaining:				
Claude G. Lefferson	McLeese Lake		July 20-28	7
Ron McBurnie	Vancouver		July 20-28	2
Dan Ruskin	Quesnel		July 20-Aug. 18	17
Leslie Dahl	Quesnel		July 28-Aug. 4	6
Steve Smith	Quesnel		July 28-Aug. 4	2
August Hofer	Quesnel		July 28-Aug. 4	1
Scott Bond	McLeese Lake		July 28-Aug. 18	10
			Total Page 2	66 1/2
			TOTAL 8 HOUR DAYS	111 1/2
B. Geophysical Survey:				
John Mayman	Toronto	Operator	Sept. 13-Oct. 3	21
Angus McDonnell	North Bay	Operator	Sept. 10-Oct. 3	24
Albert Bird	Quesnel	Helper	Sept. 15-Oct. 3	19
William Bristow	Quesnel	Helper	Sept. 15-Oct. 3	19
			TOTAL 8 HOUR DAYS	83
C. Calculating, Plotting, Drafting, Report:				
A.R. Clark	Toronto	Geophysicist	Sept. 15 - Oct. 28	6
B. Morant	North Bay	Drafting	Oct. 22-28	4
H. Davison	North Bay	Drafting	Oct. 22-28	4
J.C. Frantz	Toronto	Interpret	Nov. 5	1
			TOTAL 8 HOUR DAYS	15

TOTAL ALL DAYS 209 1/2

Signed: 

APPENDIX TO REPORT NO.

PROPERTY ______

TYPE OF SURVEY 1. ______
2. ______

INSTRUMENTS 1. ______ SENSITIVITY ______
2. ______ ______

NO. MILES OF LINE
1. ______
2. ______ TOTAL ______

NO. OF STATIONS
1. ______
2. ______ TOTAL ______

PERSONNEL AND TIME DISTRIBUTION

NAME	ADDRESS	TYPE OF WORK	PERIOD	DAYS
A. Linecutting, Picketing, Chaining:				
Stuer Pearson	McLeese Lake		Aug 4-18	12
Clarence Fuller	McLeese Lake		Aug 4-18	12
John Schonke	Quesnel		Aug 4-18	13 1/2
W.S. McCallum	Vancouver	Supervision	July 20-Aug 12	23
D. Saxton	Vancouver	Supervision	Aug 13-18	6
			TOTAL 8 HOUR DAYS	66 1/2

B. Geophysical Survey:

TOTAL 8 HOUR DAYS ______

C. Calculating, Plotting, Drafting, Report:

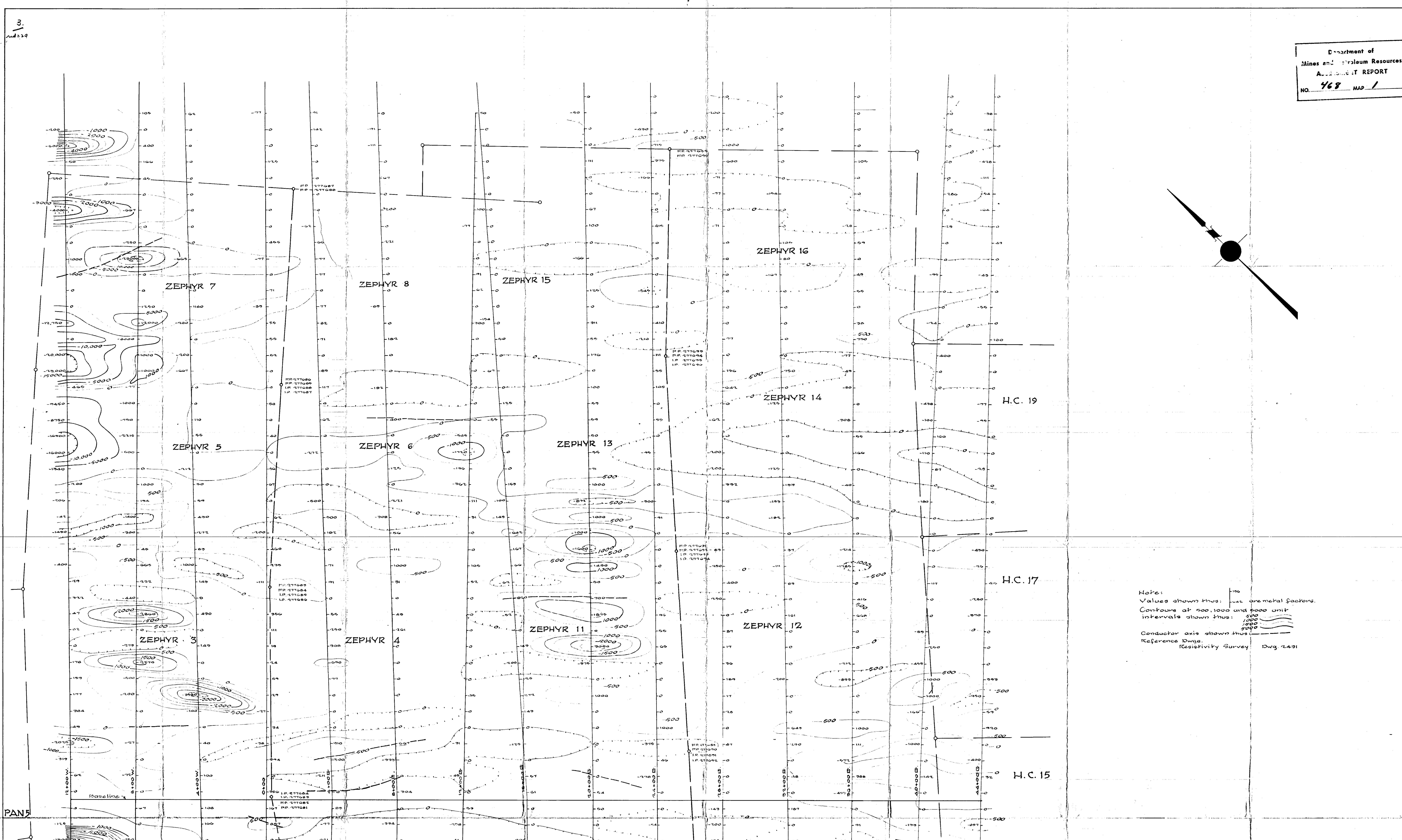
TOTAL 8 HOUR DAYS ______

TOTAL ALL DAYS ______

Signed: ______

WORK DISTRIBUTION SHEET

Name Of Claim		Tag Number	Name Of Group	Geophysics	Amount Claimed	Years Applied
Zephyr	1	277681	MA 1	$ 350	$ 200	2
	3	277683	MA 1	350	200	2
	5	277685	MA 1	350	200	2
	7	277687	MA 1	350	100	1
	8	277688	MA 1	350	100	1
Pan	1	310035	MA 1		100	1
	2	310036	MA 1		100	1
	3	310037	MA 1		100	1
	4	310038	MA 1		100	1
	5	310039	MA 1		100	1
H.C.	1	424011	MA 1		100	1
	2	424012	MA 1		100	1
	3	424013	MA 1		100	1
	4	424014	MA 1		100	1
Zephyr	2	277682	MA 2	$ 350	$ 200	2
	4	277684	MA 2	350	200	2
	6	277686	MA 2	350	200	2
	9	277689	MA 2	350	200	2
	10	277690	MA 2	350	100	1
Xaire	1	424257	MA 2		100	1
	2	424258	MA 2		100	1
H.C.	5	424015	MA 2		100	1
	6	424016	MA 2		100	1
	7	424017	MA 2		100	1
	8	424018	MA 2		100	1
	10	424020	MA 2		100	1
	12	424022	MA 2		100	1
Zephyr	11	277691	MA 3	$ 350	$ 200	2
	12	277692	MA 3	350	200	2
	13	277693	MA 3	350	200	2
	14	277694	MA 3	350	200	2
	15	277695	MA 3	350	200	2
	16	277696	MA 3	350	100	1
H.C.	9	424019	MA 3		100	1
	11	424021	MA 3		100	1
	13	424023	MA 3		100	1
	14	424024	MA 3		100	1
	15	424025	MA 3		100	1
	16	424026	MA 3		100	1
	17	424027	MA 3		100	1
	18	424028	MA 3		100	1
	19	424029	MA 3		100	1
	20	424030	MA 3		100	1



INDUCED POLARIZATION SURVEY OF MAJOR PROPERTY

CARIBOO AREA
PROVINCE OF BRITISH COLUMBIA

FOR

CANADIAN DEVONIAN PETROLEUMS LIMITED

AND

KEEVIL MINING GROUP LIMITED

by

GEOPHYSICAL ENGINEERING AND SURVEYS LIMITED

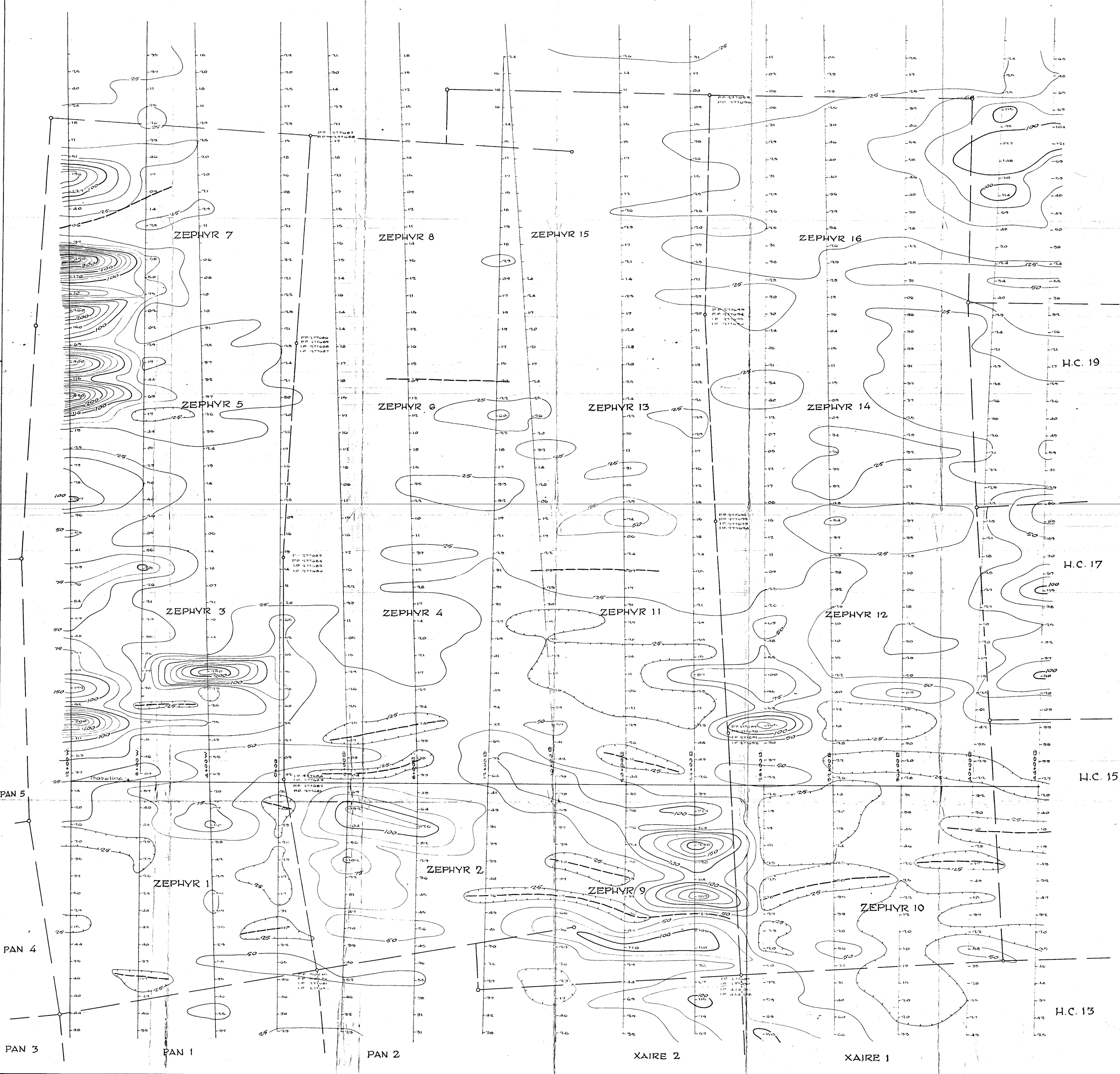
468 (M1)

SCALE: 1 INCH = 200 FEET

0 200 400 600

To accompany report # 392 T by A R Clark

Drawn by: BLM Checked: HD.	N.T.S. 93 B/9	OCT. 1962	JOB 583E	DWG. 2430



Note:
Values shown thus: 24 / 30 are apparent average resistivities in ohm cms x 10³
Contours at 25 unit intervals shown thus: 50 / 100
Conductor axis shown thus:
Reference Dwgs.
Induced Polarization Survey Dwg. 2430

RESISTIVITY SURVEY
OF
MAJOR PROPERTY
CARIBOO AREA
PROVINCE OF BRITISH COLUMBIA
FOR
CANADIAN DEVONIAN PETROLEUMS
LIMITED
AND
KEEVIL MINING GROUP
LIMITED
by
GEOPHYSICAL ENGINEERING AND SURVEYS LIMITED

468

SCALE: 1 INCH = 200 FEET
0 200 400 600

To accompany report No 392T by A R Clark

Drawn by: B.L.M. Checked: H.D.	N.T.S. 93 B/9	OCT. 1962	JOB 583E	DWG. 2431