

1686

A GEOPHYSICAL
REPORT ON AN INDUCED
POLARIZATION (I.P.) SURVEY
SHOT GROUP OF CLAIMS NEAR
MERRITT, NICOLA MINING DIVISION
BRITISH COLUMBIA
(50°, 120°, S.W.)

- for -

D. S. PATERSON

FROM JULY 28 TO AUGUST 7, 1968

- by -

W. A. FINNEY, B. Sc.

N. R. PATERSON, Ph.D., P. ENG.

HUNTEC LIMITED

SEPTEMBER, 1968

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Accompanying maps:

Scale

Drawing No. 1	Apparent Chargeability Contours with Interpretation	1" = 200' ^{#1}
Drawing No. 2	Apparent Resistivity Contours	1" = 200' ^{#2}

INTRODUCTION

General

This report contains the results of an Induced Polarization survey carried out by Huntco Limited for Consolidated Standard Mines Limited on the Shot Group of claims near Merritt in the Nicola Mining Division, British Columbia.

The purpose of the survey was to prospect for sulphide mineralization in both massive and disseminated form. The previous survey in this area had constituted only a few scattered lines and the present survey was designed to cover a larger portion of the claims and to elaborate on the previous results.

The field work was carried out between July 28 and August 7, 1968, using four-man crew, under the direction of Mr. V. Esbensen. The project was supervised from Vancouver by Mr. W. A. Finney.

The Property

The survey area is located approximately six miles west of Merritt. The claims surveyed include Shot Nos. 3, 4, 5, 6, 7, 8, J.J.M. No. 1 Fr., J.J.M. No. 2 Fr.

The geology of the property is not known very well, however, it is thought that the northern-most part of the property is underlain by volcanic rock of the Kingsvale Group.

The Shot Group of claims is located roughly two miles east of the Craigmont open pit.

SURVEY SPECIFICATIONS

The Equipment

The Induced Polarization equipment used was a 2.5 kw pulse-type instrument manufactured in Toronto by Hunttec Limited. The following specifications apply:

Type of current	Direct Current broken at periodic intervals.
Period	1.5 seconds "current on" and 0.5 seconds "current off". Alternate pulses have reverse polarity.
Integrating time	400 milliseconds
Maximum power available	2.5 kw
Maximum current available	3.0 amps

Measurement taken in the field were:

1. The current flowing through the current electrodes C_1 and C_2 .
2. Primary voltage V_p between measuring electrodes during "current on" time.
3. Secondary voltage V_s between measuring electrodes during "current off" time.

The apparent chargeability (M_a) in milliseconds is calculated by dividing the secondary voltage by the primary voltage and multiplying by 400 which is the sampling

time in milliseconds of the receiver unit. The apparent resistivity is calculated by dividing V_p by the current and multiplying by the geometrical factor appropriate to the electrode array being used.

Electrode Configuration

Both the reconnaissance and detailed parts of the survey were carried out in the pole-dipole configuration. In this array the current electrode C_1 and the two potential electrodes P_1 and P_2 are moved in unison along the line to be surveyed. The quantity "a", or "electrode separation" is the distance between C_1 and P_1 . In this array the distance between P_1 and P_2 is kept equal to one-half "a". For the reconnaissance phase of this survey the value of "a" was kept at 200 feet.

Since the value of "a" is a rough approximation to the depth penetration, detailing of anomalies discovered in the reconnaissance phase was done by profiling the anomalies at the different values of "a". This additional data provides information from which depth, dip and location of detected causative bodies may be calculated more easily than from a single profile.

For reasons of operational convenience some detailing was done using the "three-array" which is the same as the pole-dipole array except that the distance $P_1 - P_2$ is equal to $C_1 - P_1$. The response is almost identical and the two types of data may be used in combination for interpretation of the causative body. The two types of array will be distinguished on the profiles by a "p.d." or "3".

RESULTS AND INTERPRETATION

Presentation

The results of the survey are presented as contours of apparent chargeability and apparent resistivity in Drawing Nos. 1 and 2, respectively. These are located in the map pocket inside the back cover of the report. Outlines of interpreted causative bodies, and zones of possible interest, are indicated on the chargeability contour map by the shaded area.

Interpretation

The apparent chargeability response throughout the area surveyed is generally weak and inactive. This can be seen clearly from the contours on Drawing No. 1 where no strong anomalies have been outlined. The only possible exception to this is a broad zone along the southern boundary of the area where the chargeability response rises to about 1.5 to 2.0 times background. The background chargeability is of the order 4.0 to 5.0 milliseconds which is typical of rocks carrying little or no sulphide mineralization. It is noted however, that this value is about 1.0 to 1.5 milliseconds higher than the typical background observed in other parts of the Guichon Batholith, particularly in the Highland Valley area.

Only very small variations above the background level occur in the northern part of the surveyed area. These regions of stronger response probably correspond to limited

localities within the granodiorites which have a slightly higher percentage of chargeable material than the average country rock. These minor increases in chargeability probably reflect weak sulphide mineralization present in disseminated form. The results confirm the lack of anomalous conditions observed in I.P. lines, No. 2 and No. 3 during the 1961 survey.

The present survey does not cover all of I.P. Line No. 3, nor did it go far enough north to cover I.P. Line No. 4, surveyed in 1961. The combined results of the two surveys suggest that the region to the immediate north of the present survey area is not of any economic value either.

The anomalous zone near the southern boundary of the area, outlined in Drawing No. 1, appears to be the only significant feature detected in the survey. The chargeability values in this region are of the order 1.5 to 2.0 times background and are accompanied by a marked decrease in the apparent resistivity. The results of the 1961 survey suggest that the decrease in the apparent resistivity is not due to a thickening of the overburden but rather that the reverse is true. Where depth to bed-rock studies were run in conjunction with the I.P. lines, it was shown, generally, that the bed-rock exhibited a lower resistivity than the overburden. It is therefore concluded in this survey that the low apparent resistivity values are associated with bed-rock and that the high chargeability response is therefore attributed to mineralization within the bed-rock.

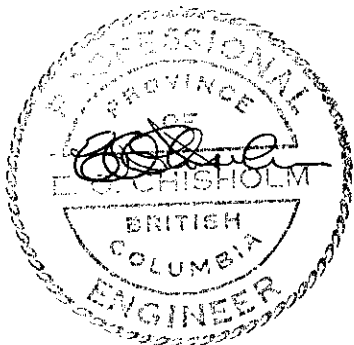
The strongest chargeability readings were observed near the southern extremity of Lines 12E, 16E and 20E. The anomalous zone appears to have a strike of about 30° S of E and has only been partially determined by the present survey. High chargeability values were detected on all other lines in this region and the anomaly remains open to the west.

It is essential, in order to carry out a full interpretation, that the anomaly be completely determined. In this case, it would be necessary to extend the survey area to the southeast and, if it was desired to determine the lateral extent of the anomaly, the survey area should also be extended to the west. Furthermore, in order to delineate the position and approximate geometry of the causative body or bodies, detailing with several electrode separations should be carried out along a selected line across the main reconnaissance anomaly. As it stands, only a broad outline of the main anomalous zone has been interpreted and the position of the causative body remains to a large extent undetermined.

From the results of the present survey, and those obtained along I.P. Line No. 1 in the 1961 survey, it would appear that the causative body has an east - west extent of about 2000 feet and extends, in some places, to a depth of at least 800 feet. However, it is emphasized that this interpretation as regards depth information could be changed considerably as a result of detailing with multiple electrode separations.

SUMMARY

1. The Induced Polarization survey over the Shot Group of claims near Merritt, B.C., covered 4.49 miles of reconnaissance work using a pole-dipole array with an electrode separation of 400 feet.
2. The apparent chargeability values obtained in the major part of the area are generally low and typical of rocks which are barren of sulphide mineralization.
3. An extensive chargeability anomalous zone has been detected near the southern limits of the survey area and is associated with a prominent decrease in the apparent resistivity. This is interpreted as probably indicative of sulphide mineralization within the bed-rock.
4. It is recommended that the anomalous zone should be outlined completely by extending the survey area to the south and to the east by at least 800 feet in each direction.
5. Detailing along a selected line should be carried out using a variety of electrode separations in order to delineate the causative body or bodies and to outline a drilling target.



Respectfully submitted,

HUNTEC LIMITED

V. A. Finney
V. A. Finney, B. Sc.
Geophysicist.

N. R. Paterson
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APPENDIX A

ASSESSMENT CREDIT DATA

Miles surveyed:

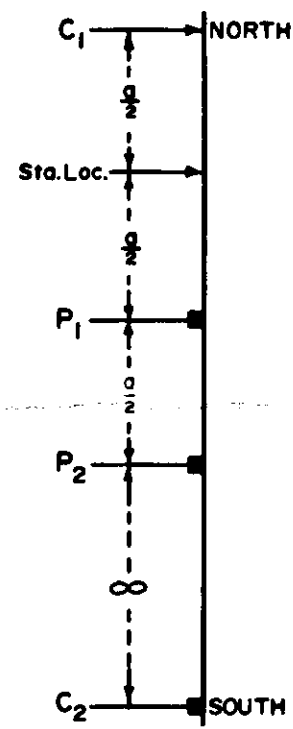
Reconnaissance	4.49 line miles
Detail	<u>0.00</u> line miles
	4.49 line miles

Personnel:

<u>Name</u>	<u>Position</u>	<u>Dates</u>	<u>Charge rate (per day)</u>	<u>Total charge</u>
V. Esbensen	Operator / Party Chief	July 28 - Aug 4	90.00	630.00
W. Mairs	-do-	Aug. 7	90.00	90.00
D. Wilson	Operator	July 28 - Aug. 7	75.00	750.00
M. Funk	Helper	July 29 - Aug. 4	45.00	315.00
D. Watt	Helper	-do-	45.00	315.00
E. Helkio	Draftsman	Sept. 10, 11	60.00	120.00
W. A. Finney	Geophysicist	Sept. 18, 19	125.00	250.00
I. P. Unit	--	July 28 - Aug. 7	70.00	700.00
Truck	--	-do-	20.00	<u>200.00</u>
		Total costs		\$3,370.00

POLE-DIPOLE ARRAY

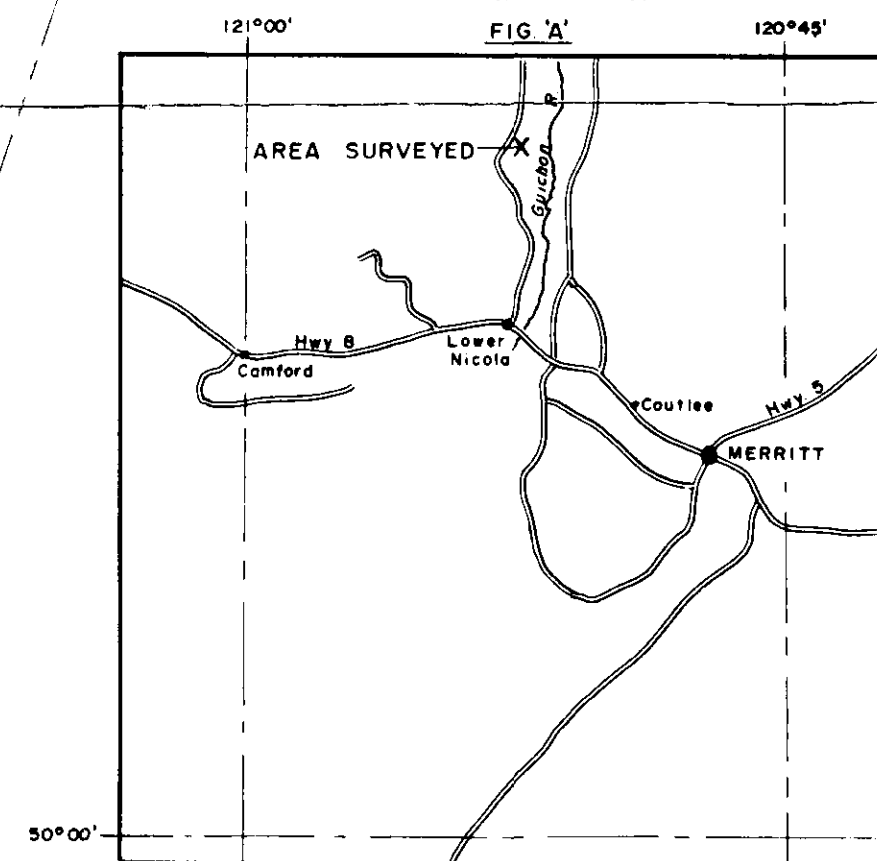
a = 400 feet.



LOCATION MAP

Scale: 1 inch = 4 miles.

FIG. 'A'



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1686 MAP 1

CONSOLIDATED STANDARD MINES LIMITED

SHOT PROPERTY
NICOLA MD, MERRITT - B C

INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY CONTOURS
WITH INTERPRETATION.
CONTOUR INTERVAL = 0.5 milliseconds

To accompany report by: *W. A. Finney*
W. A. Finney, B.Sc., Geophysicist

HUNTEC LIMITED. CALGARY-CANADA.

SCALE: 1 inch = 200 feet
DRAWN: E.H.
DATE: SEPT 1968
JOB NO. PH 780

1686 (1)
DWG. NO. - 780-1

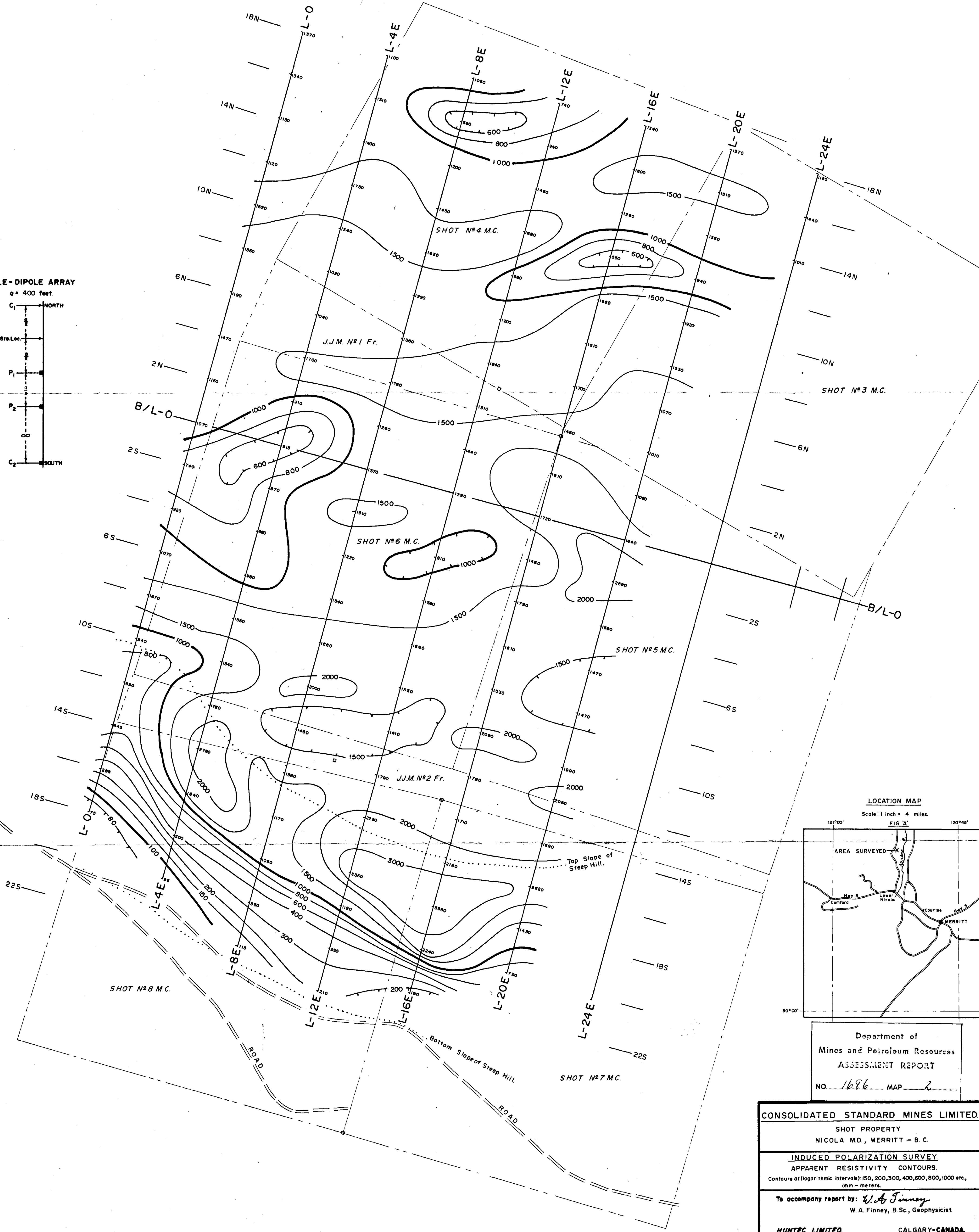
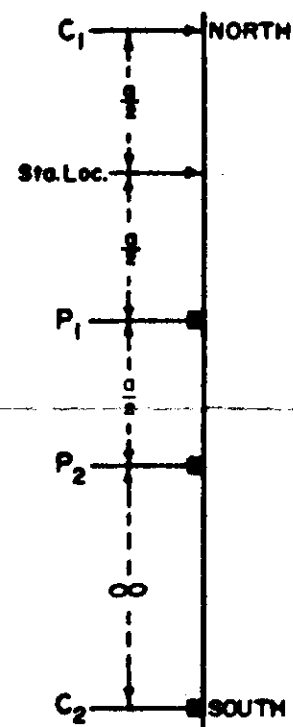
LEGEND

Outline of Interpreted Anomalous Zone.



POLE-DIPOLE ARRAY

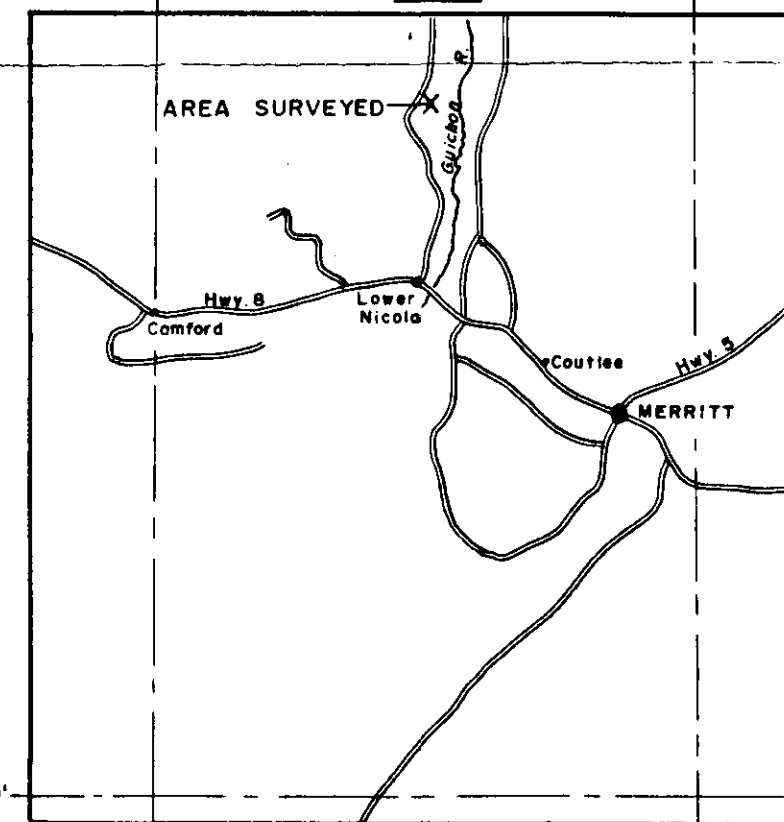
a = 400 feet.



LOCATION MAP

Scale: 1 inch = 4 miles.

FIG. 'A'



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1686 MAP 2

CONSOLIDATED STANDARD MINES LIMITED.

SHOT PROPERTY.
NICOLA MD., MERRITT - B. C.

INDUCED POLARIZATION SURVEY

APPARENT RESISTIVITY CONTOURS.

Contours at logarithmic intervals: 150, 200, 300, 400, 600, 800, 1000 etc., ohm-meters.

To accompany report by: *W.A. Finney*
W. A. Finney, B.Sc., Geophysicist.

HUNTEC LIMITED. CALGARY-CANADA.

SCALE: 1 inch = 200 feet

DRAWN: E. H.

DATE: SEPT. 1968

JOB NO: PH. 780

1686 ②
DWG. NO. - 780-2

