

GEOCHEMICAL SOIL SURVEY

Key 9 to 40 and 49 to 64 claims
Highland Valley Area, 25 miles
southeast of Ashcroft, 50° 121° S.W.

2 parts

BY:

92 I / 6 E,
11 E

Rae G. Jury, P. Eng.
for Riviera Mines Ltd. (N.P.L.)
Field work from July 14th to August 1st,
1966

PART 1 OF 2

892

892

RIVIERA MINES LTD.

GEOCHEMICAL SOIL SURVEY

KEY CLAIMS 9 TO 40 AND 49 TO 64

HIGHLAND VALLEY, B. C.

September 6th, 1966

TO PROTECT OUR CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS AND EXTRACTS FROM OUR REPORTS MUST RECEIVE OUR WRITTEN APPROVAL.

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MAPS: LOCATION MAP Scale 1" = 8 miles ~~1~~

TOPOGRAPHY AND GEOCHEMICAL SOIL
SAMPLING ANALYSIS Scale 1" = 300 feet ~~1~~ 2

TO PROTECT OUR CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS AND EXTRACTS FROM OUR REPORTS MUST RECEIVE OUR WRITTEN APPROVAL.

INTRODUCTION

During July, 1966 six men under the supervision and direction of the writer, collected soil samples on a reconnaissance grid over the Key 9 to 40 and 49 to 64 claims. Samples were taken each 100 feet along lines 500 feet apart. These lines were run in an easterly direction between two base lines, by compass and chain methods. Each sampling station was marked with a numbered plastic flag. Samples were analysed in Vancouver using the standard rubeanic acid method.

The Riviera Mines Ltd. claims are on the south slope of the Highland Valley approximately 25 miles southeast of Ashcroft and between elevations 4,000 and 4,500 feet. The portion of the claims tested is relatively flat and uniformly covered by overburden. Large fir trees (up to 3 feet in diameter) and small pine, balsam, and poplar cover nearly the entire claim area. There are occasional open grassy meadows.

Field work was done during the period July 14th to August 1st, 1966.

LOCATION AND ACCESS

The Key claims lie southeast of Ashcroft approximately 25 miles and approximately two miles south of the Highland Valley road. The claims are readily accessible by automobile from Vancouver by way of Ashcroft. The total distance is approximately 245 miles. A ranch road leaves the Highland Valley road 19 miles from Ashcroft and provides access to a small ranch about a mile south of the road. From this point a very steep wagon track leads southerly to Jim Black Lake which is immediately north of the Key claims. This road is

51° 00' N



to Kamloops

Kamloops
lake

ASHCROFT

KAMLOOPS

BETHLEHEM
MINE


MB AND KEY CLAIMS

LYTTON

CRAIGMONT
MINE

Nicola
lake

MERRITT

to Vancouver

50° 00' N

121° 00' W

ALRAE EXPLORATION LTD

RIVIERA MINES LTD
HIGHLAND VALLEY AREA

Date **Sept 7, /66**

Scale 1" = 8 Mi.

passable by four wheel drive vehicles only.

CLAIMS

Riviera Mines Ltd. is the owner of 108 claims in the vicinity of Jim Black Lake. Of these, 48 claims were surveyed by geochemical soil sampling. These are the Key claims which are in the center portion of the claim group. The claims and their record numbers, examined in this survey are as follows:

Key 9 to 40 52763 to 52794 respectively

Key 49 to 64 52795 to 52810 respectively

All claims are within the Kamloops Mining Division.

GENERAL GEOLOGY

The Key claims are underlain by a light grey, medium grained Jurassic Guichon granodiorite. This is a portion of a large batholithic intrusion into the Nicola volcanics and sediments. Numerous occurrences of copper sulphides are found within this host rock in the Highland Valley area. Bethlehem Copper Mine is within this same rock type approximately ten miles east of the claims. Mineralization often occurs within this intrusion as veinlets, irregular or discontinuous lenses, and disseminations. Minerals commonly present are pyrite, chalcopyrite, bornite, and occasionally chalcocite and molybdenite.

Traces of copper mineralization have been found on the Key #9 mineral claim, in shallow bulldozer trenches made by Riviera Mines Ltd. during May, 1966.

SAMPLING AND ANALYSIS METHOD

Samples were taken on a grid system established on the claims by running chained compass lines between well cut base lines. These sample lines are 500 feet apart and samples were taken each 100 feet along the lines. The samples were taken from the layer of soil immediately below the leached zone. This is approximately 8 to 14 inches in depth over most of the claim area. Care was taken not to include humus in the material sampled except in swampy areas. A description of each sample has been kept together with an estimate of the slope and direction of drainage, type and texture of soil, type of forest cover, and moisture content of the soil. Samples were placed in marked Polyethelene bags and sample stations marked with numbered flagging.

Samples were analyzed in Vancouver using acetic acid extraction and rubeanic acid test paper. Samples were graded on a relative scale by assigning numbers from 0 to 5, 5 representing the test for pure malachite. Each of these analysis has been retained as a permanent record of the copper content in the soil at any particular station. This method tests only the copper content of the soil and does not include other metallic ions.

A base map was made on which to plot these samples, showing the location of ponds, swamps, bush-roads, steep slopes, and many of the claim posts. The accompanying map in the pocket at the end of the report shows the individual sample grades and the areas considered to contain anomalous amounts of copper disseminated in the soil.

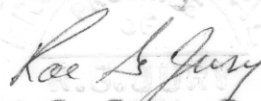
CONCLUSIONS AND RECOMMENDATIONS

As may be seen by the accompanying map several individual samples contain relatively high copper content. Many of these isolated highly graded samples must be discounted due to their occurrence in a swampy area or natural drainage depression. There are however four groups of these anomalous readings on the northern section of the claims tested. The most westerly two of these anomalies are considered to be the best encountered.

To test these areas for the cause of the anomalous amounts of copper in the soil and induced polarization survey is recommended. This electrical method may be conducted on a trial basis over the central portion of the anomalies and if successful in confirming the soil sampling anomalies, the survey should be extended to fully delineate the induced polarization survey anomaly.

Re examination and more detailed soil sampling should be conducted in smaller zones of anomalous copper content noted to be present on other test lines. It is also recommended that selected samples from one or more of the reconnaissance test lines across the property be analyzed spectrographically to test for the presence of other metals in the soil.

Respectfully submitted,


Rae G. Jury, P. Eng.

C E R T I F I C A T E

I, Rae G. Jury of the City of Vancouver, British Columbia, do hereby certify that:

1. I am a consulting geological engineer.
2. I am a graduate of Queen's University in Kingston (B. Sc. in Geological Sciences 1957)
3. I am a registered Professional Engineer of the Provinces of British Columbia and Ontario and also a junior member of the Canadian Institute of Mining and Metallurgy.
4. I have practised my profession since 1957 with Labrador Mining and Exploration Company, Quemont Mining Corporation, Canadian Johns Manville Co. Ltd., and Alrae Exploration Ltd.
5. I have personally supervised geochemical soil sampling analysis on the Key 9 to 40 and Key 49 to 64 mineral claims, Kamloops Mining Division.
6. I have not received, nor do I expect to receive, any interest, either directly or indirectly in the properties or securities of Riviera Mines Ltd..

DATED AT VANCOUVER THIS 6TH DAY OF SEPTEMBER, 1966


Rae G. Jury

Rae G. Jury, P. Eng.

DO NOT file



ALRAE EXPLORATION LTD.

202 - 846 WEST HASTINGS STREET, VANCOUVER 1, B.C. TELEPHONE 681-9381

November 29, 1966

SUB-MINING RECORDER
RECEIVED
NOV 29 1966
M.R. # _____ \$ _____
VANCOUVER, B.C.

RIVIERA MINES LTD.

Geochemical Soil Survey - Key Claims

Personnel Record

<u>Name</u>	<u>Occupation</u>	<u>Dates Employed</u>
J. Deighton	Geologist	July 16 to August 2, 1966
P. Saxton	Foreman	July 15 to August 2, 1966
J. Hudson	Sampler	July 15 to August 2, 1966
P. Kennedy	Sampler	July 15 to August 2, 1966
I. Gregg	Sampler	July 15 to August 2, 1966
A. McIlhinney	Sampler	July 15 to August 2, 1966
M. Hrynchuk	Lab Technician	July 28 to August 19, 1966

Total contract price \$5,074.50 for Geochemical Soil Survey of 48 claims.

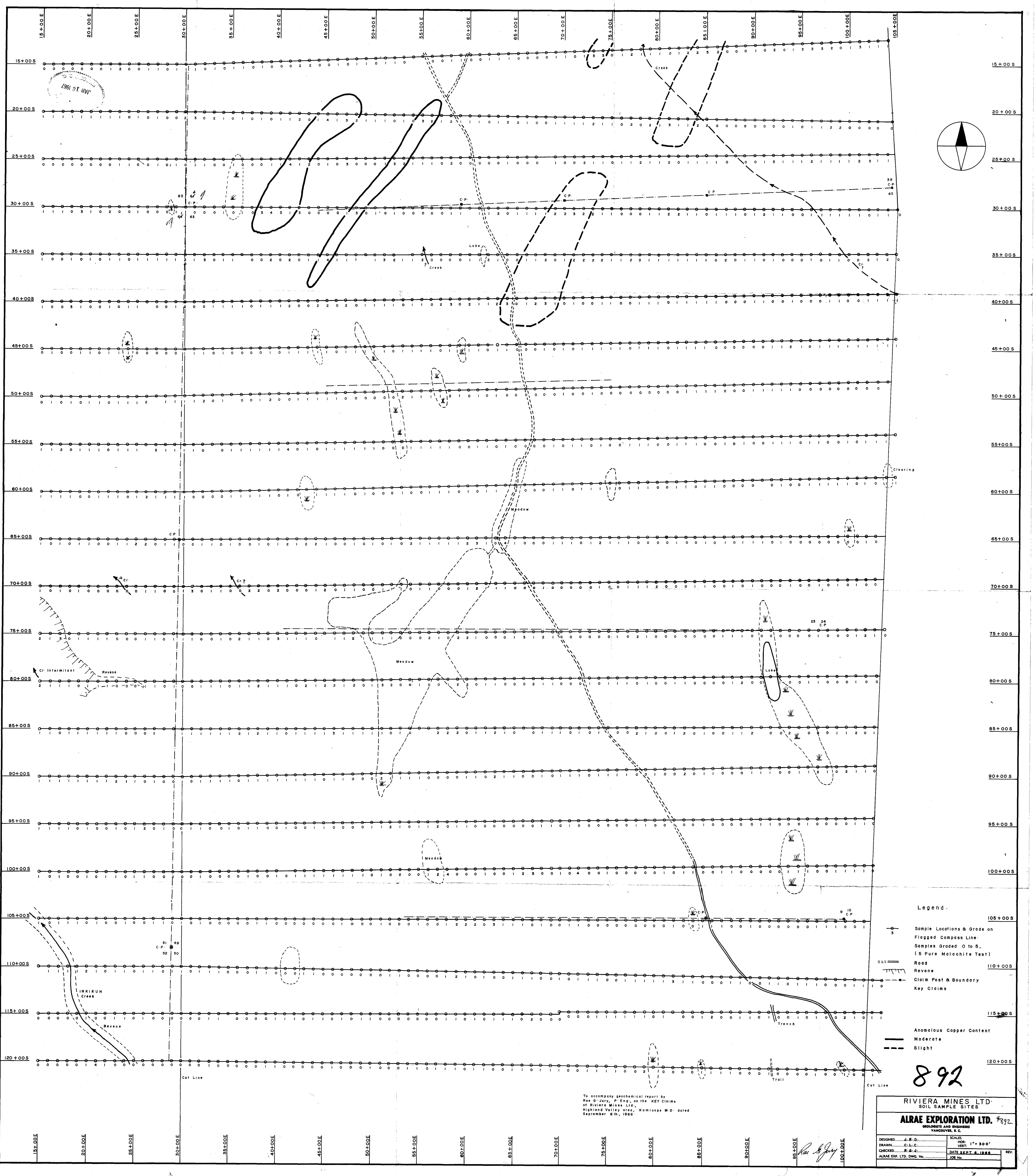
And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City
of Vancouver, in the
Province of British Columbia, this 29
day of November, 1966, A.D.

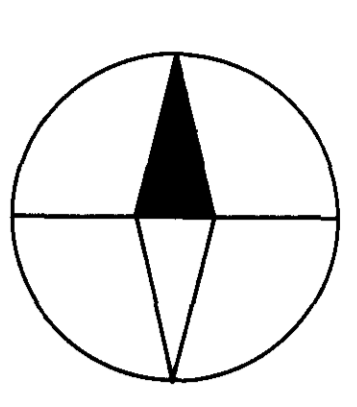
Rae E. Jury

GEOLOGY CONSULTANTS MINING
Exploration S. Glanville Production

A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.
Sub-mining Recorder



JAN 13 1987



- Legend**
- Sample Locations & Grade on Flagged Compass Line
 - Samples Graded 0 to 5, (5 Pure Malachite Test)
 - == Road
 - Reverse
 - - - Claim Post & Boundary
 - Key Claims

- Anomalous Copper Content
- Moderate
- - - Slight

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To accompany geochemical report by
 Rex G. Jary, P. Eng., on the 'KEY Claims'
 of Riviera Mines Ltd.,
 Highland Valley area, Kamloops M.D. dated
 September 6th, 1986.

RIVIERA MINES LTD.		SOIL SAMPLE SITES	
ALRAE EXPLORATION LTD. #892			
GEOLOGISTS AND ENGINEERS VANCOUVER, B.C.			
DESIGNED: J.R.D.	SCALE: 1" = 300'		
DRAWN: C.L.C.	HOR. VERT.		
CHECKED: R.R.J.	DATE: SEPT 11 1986		
ALRAE EXP. LTD. DWG. No.	JOB No.		

A Geophysical Report On
An Induced Polarization Survey
Near Jim Black Lake
Highland Valley, British Columbia
(50°, 121°, N.E.)

2 parts

For

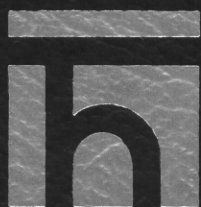
92 I / 6E,
11E

Riviera Mines Limited

Claims Covered: KEY 62-68 inclusive, 62 and 64.

Supervision and Report By: A. R. Dodds, B. Sc., Geophysicist

October 9th to 17th, 1966



HUNTEC LIMITED
TORONTO, CANADA

PART 2 OF 2

892

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REPORT ON
AN INDUCED POLARIZATION SURVEY
NEAR JIM BLACK LAKE
HIGHLAND VALLEY, BRITISH COLUMBIA
(50°, 121°, N. E.)

FOR

RIVIERA MINES LIMITED

BY

HUNTEC LIMITED
TORONTO, ONTARIO
NOVEMBER, 1966

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- Claims Surveyed
- Line-miles Surveyed
- Number of Man-days Required
- Personnel Employed on Survey

ACCOMPANYING MAPS

MAP POCKET

3

- Contours of Apparent Chargeability and Apparent Resistivity
~~# 2 (a), (b), (c)~~
Scale 1" : 500'
- Detail Profiles - Line 28+00S
Scale 1" : 200'

INTRODUCTION

Between October 9th and 17th, 1966, an Induced Polarization (I.P.) survey was carried out by Huntec Limited for Riviera Mines Limited over 8 claims of the Key Claim Group located on Inkikuh Creek south of Jim Black Lake, Highland Valley, British Columbia.

The geophysical crew of five men was managed by Mr. A. Schamott and supervised by Mr. A.R. Dodds, both of Huntec Limited. Final drafting, interpretation and report writing were done at the Toronto office of Huntec Limited.

The I.P. survey consisted of 5.85 line-miles of readings taken at 200 foot intervals on lines 400 feet apart, using the electrode configuration known as the 'three-electrode array'. An electrode separation of 200 feet was used. Part of one line was subsequently detailed using the same array with electrode separations of 100 and 400 feet. Resistivity measurements were taken concurrently throughout the survey.

The reconnaissance data are presented in the form of contoured maps of apparent chargeability and apparent resistivity at a scale of one inch to 500 feet. Data for the detailed line are presented in profile form at a scale of one inch to 200 feet.

SURVEY SPECIFICATIONS

The equipment used on this survey was the Hunttec pulse-type I. P. unit manufactured in Toronto by Hunttec Limited. Power is obtained from a JLO motor, coupled to a 2.5 kw 400 cycle three-phase generator, providing a maximum of 2.5 kw d.c. to the ground. The cycling rate is 1.5 seconds "current on" and 0.5 seconds "current off", the pulses reversing continuously in polarity. Power is transmitted to the ground through two current electrodes, C_1 and C_2 , and measurements taken across two potential electrodes, P_1 and P_2 .

The data recorded in the field consist of careful measurements of the current (I) in amperes flowing through electrodes C_1 and C_2 , the primary voltage (V_p) appearing between electrodes P_1 and P_2 during the "current on" part of the cycle, and the secondary voltage (V_s) appearing between electrodes P_1 and P_2 during the "current off" part of the cycle.

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, in ohmmeters, is proportional to the ratio of the primary voltage to the measured current, the proportionality factor depending on the geometry of the electrode array used. The chargeability and resistivity obtained are called "apparent" as they are values

which that portion of the earth sampled by the array would have if it were homogeneous. As the earth sampled is usually inhomogeneous, the calculated apparent chargeability and apparent resistivity are functions of the actual chargeabilities and resistivities of the rocks sampled, and of the geometry of these rocks.

For this survey the 'three-electrode array' was used throughout. For this array one current electrode (C_1) and the two potential electrodes (P_1 and P_2) are moved in unison along the survey lines, the other current electrode (C_2) remaining fixed at 'infinity'. In this way the flow of current from C_1 is approximately radial within the range of the three moving electrodes. The spacing between these electrodes is kept constant for each traverse, the distance between C_1 and P_1 , designated 'a', being roughly equal to the depth to be explored by that traverse. Detailing is done by running subsequent traverses at different electrode separations, enabling more precise estimates to be made of depth to the top or center of causative bodies, and more detailed information obtained on the geometry and extent of the bodies.

INTERPRETATION PROCEDURES

I. P. interpretation procedures have been most completely developed in situations of horizontal layering, approximating bodies such as porphyry coppers of large lateral extent; and spherical shapes, which can generally be applied only when the depth to the center of a body greatly exceeds its average dimensions. The complex problem of resolving the combined effects of depth, width, dip and true chargeability of steeply dipping bodies, together with the physical characteristics of overburden and country rocks, has not yet been solved theoretically. However, by judicious use of the theoretical solutions to the situations mentioned above, together with experience from other I. P. surveys, it is generally possible to locate the center of the cause of anomalies with reasonable accuracy and, in some cases, to give an estimate of the true chargeability. In the case of bodies approximating the spherical shape, the parameters of volume and true chargeability are interdependent so far as the surface response is concerned, and it is therefore only possible to give an estimate of the combination of the two, such as a chargeability-volume factor.

An estimate of the average percentage sulphides can be made after the true chargeability of the body or bodies causing the observed anomalies has been calculated. These estimates are, of course, approximate inasmuch as the relationship between chargeability and percentage

sulphide is affected by such things as grain size, resistivity contrast, quantity and nature of absorbed water, degree of inter-connection of mineralization, and other factors. Based on past experience, 1% by volume of sulphide mineralization corresponds to between 5 and 15 milliseconds of true chargeability. In the ^{realm} of massive sulphides (say 25% by volume or greater), this relationship is still less exact since increasing quantities of sulphide may produce only minor changes in I. P. response.

INTERPRETATION

The apparent chargeability values over this area are flat and low, with a range from 0.7 to 2.3 milliseconds which is typical of the barren rocks of the Guichon batholith. Variations within these limits could be caused by very minor changes in the type or thickness of overburden, the type or condition of bedrock, or sulphide mineralization. The fluctuations encountered in this area could be caused by as little as 0.1% metallic sulphides. A more deeply buried source, with a correspondingly higher possible percentage of sulphides, is not considered likely because of the random nature of the chargeability fluctuations and the lack of response to wider electrode separations used on part of Line 28+00S. It is therefore considered that variations within these limits can be regarded as background fluctuations.

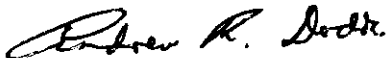
Only one reconnaissance chargeability reading, at 57+00.E on Line 28+00S, stands out above this background level. Detailing, done over this part of the line with electrode separations of 100 and 400 feet, indicates background values and it is therefore considered that this reading is either erroneous or a freak reading caused by a very small near-surface chargeable body close to one of the electrodes, such as boulder in the overburden.

SUMMARY AND RECOMMENDATIONS

The chargeability measurements over this area do not indicate any definite zones of interest. Such variations as do occur are expected to be caused by minor changes in the near-surface rocks or overburden. It is concluded that there are no extensive changes in the metallic sulphide content of the rocks in this area within the depth explored by the survey, which is at least 200 feet, and that such sulphide mineralization is either present in only minor quantities or totally absent.

Because of the negative nature of this survey, no recommendations can be made regarding further work on this property.

HUNTEC LIMITED


Andrew R. Dodds, B. Sc.
Geophysicist

APPENDIX

Claims Surveyed

The area surveyed was covered by the following group of claims:

KEY 33 to 38 inclusive, 62 and 64.

Miles Surveyed

Reconnaissance Phase

Electrode Separation	Line-miles	Readings
200'	5.85	164

Detail Phase

Electrode Separation	Line-miles	Readings
100'	0.11	8
400'	0.15	6

Number of man-days required

<u>Type of Work</u>	<u>Man-days</u>
Operating geophysical equipment	31
Interpretation and Report writing	2
Drafting	2
Typing	1
	<hr/>
	36

Personnel Employed on Survey

<u>Name</u>	<u>Occupation</u>	<u>Address</u>	<u>Dates</u>
A. R. Dodds	Geophysicist	1450 O'Connor Dr. Toronto 16, Ont.	Oct. 27, 1966 Nov. 23, 1966
A. Schamotta	Geophysical Operator	"	Oct. 9-17, 1966
G. Boulay	"	"	"
R. Carisse	"	"	"
G. MacLean	Helper	Ashcroft, B. C.	Oct. 12-17, 1966
J. Howe	"	"	"
H. Ricketts	Drafting	1450 O'Connor Dr., Toronto 16, Ont.	Nov. 22, 23, 1966
L. Brunton	Typing	"	Nov. 24, 1966

*This is Exhibit 1 to the declaration of
David Ehong declared before me this
29th day of November 1966*

DO NOT film

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
To Wit:

In the Matter of

SUB-MINING RECORDER
RECEIVED
NOV 29 1966
M.R. # _____ \$ _____
VANCOUVER, B.C.

I, David Cheng,

of City of Vancouver, Province of British Columbia -

in the Province of British Columbia, do solemnly declare that

1. I am President and a director of Riviera Mines Ltd.
2. That Hunter Limited has conducted a geophysical survey of Key 33-38 inclusive, and 62 and 64 inclusive situated in the Highland Valley, Kamloops Mining Division.
3. That the survey conducted and report prepared by Hunter Limited was at a cost to Riviera Mines Ltd N.P.L. of \$3,425⁰⁰.
4. Annexed hereto and marked Exhibit 1 to this my declaration is a copy of the report & supplied to Riviera Mines Ltd N.P.L. by Hunter Ltd.

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City
of Vancouver, in the
Province of British Columbia, this 29
day of November, 1966, A.D.

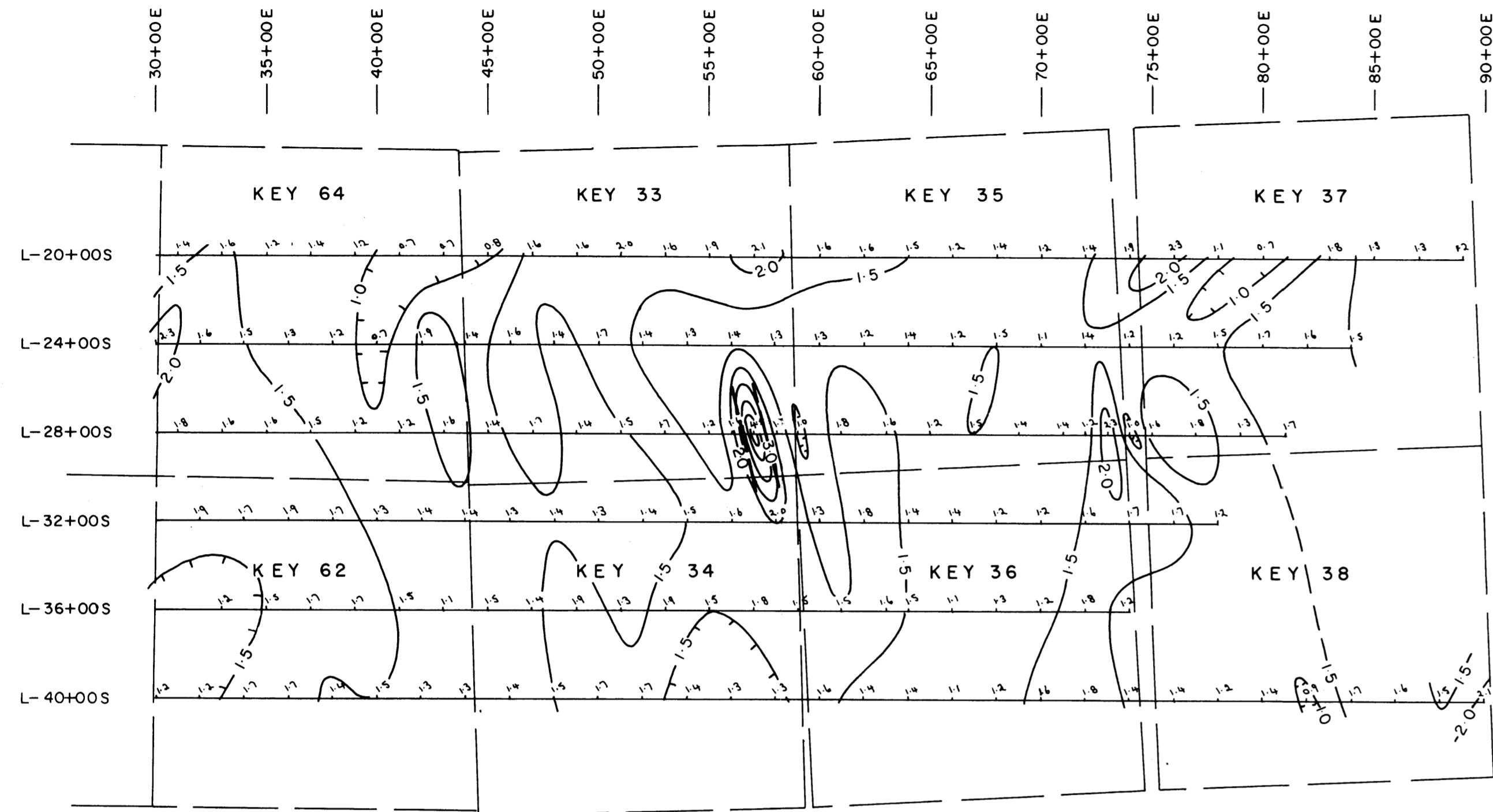
David Cheng

A. J. Gerrette

A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.

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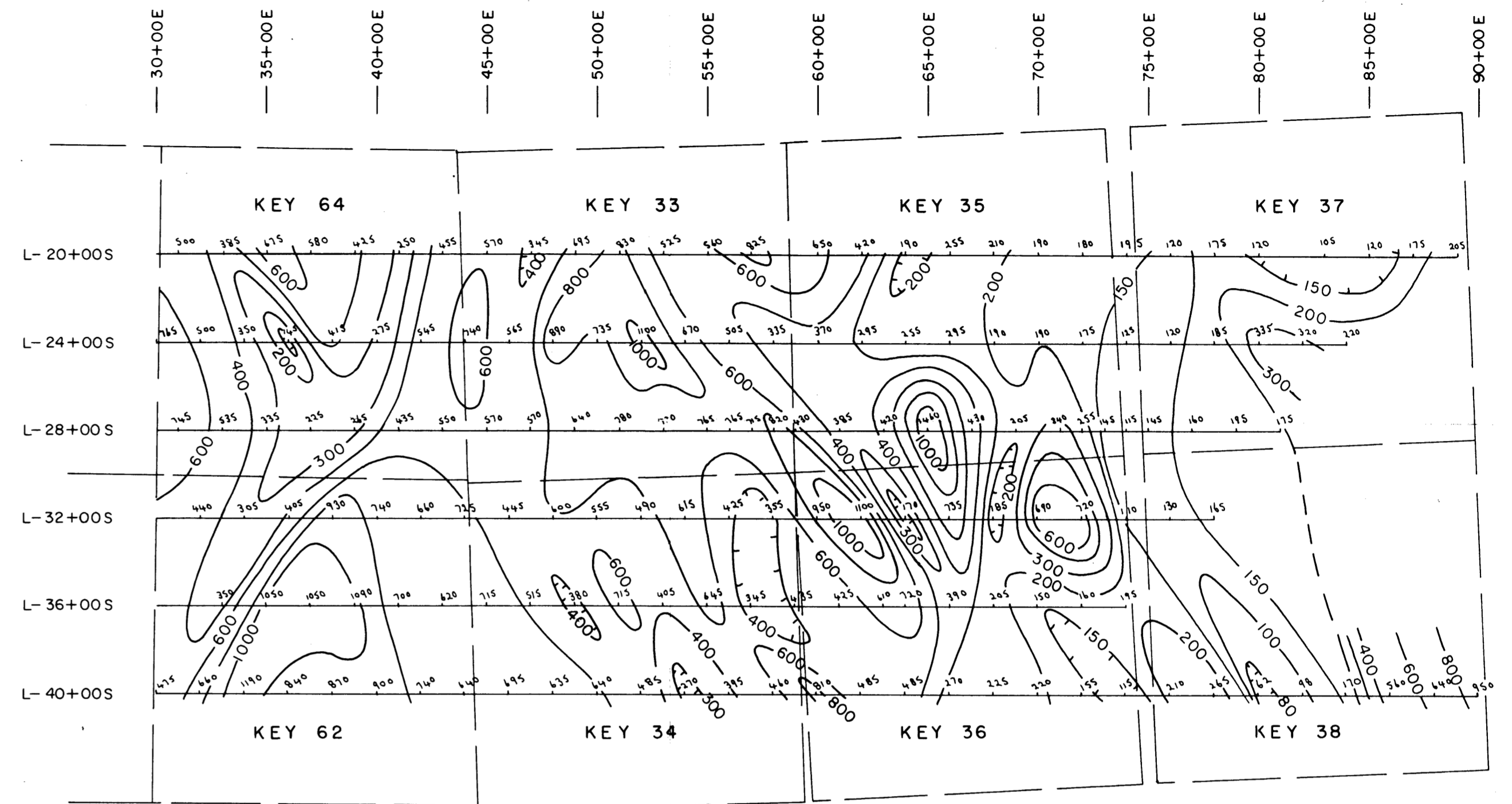
SUB-MINING RECORDER



APPARENT CHARGEABILITY CONTOURS
WITH INTERPRETATION

CONTOUR INTERVAL : 0.5 milliseconds
SCALE : 1 inch : 500 feet

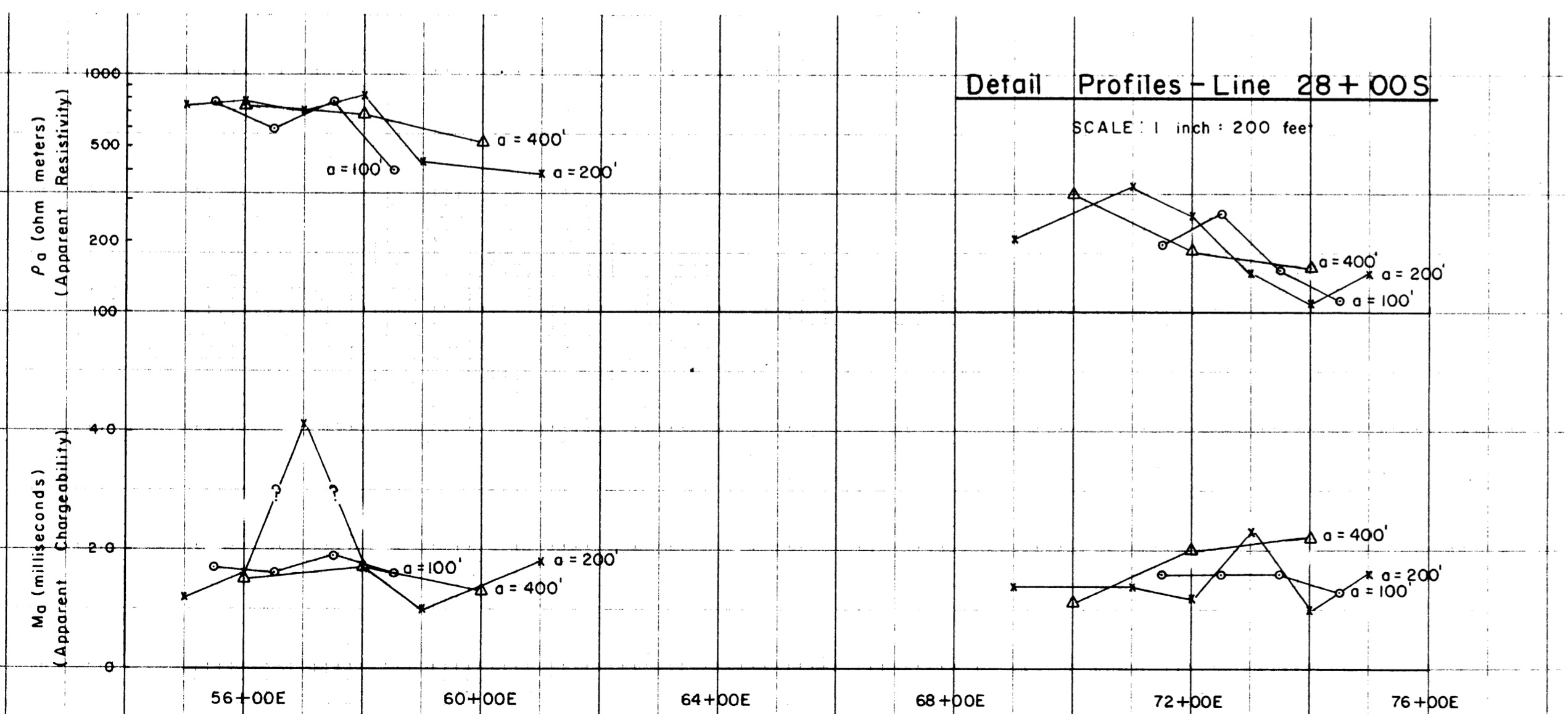
----- Area of possible anomaly



APPARENT RESISTIVITY CONTOURS

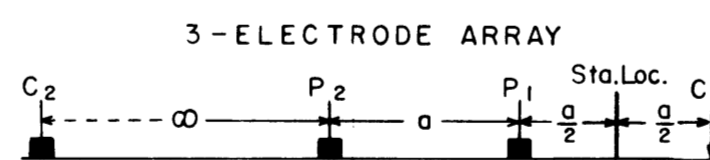
Contours at (logarithmic intervals) 100, 150,
200, 300, 400, 600, 800, 1000 etc. ohm-meters.
SCALE : 1 inch : 500 feet

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 892 MAP 1/3
3



Detail Profiles - Line 28+00S

SCALE : 1 inch : 200 feet



a = 200'
Detail profiles as marked

JAN 18 1967
KAMLOOPS, B. C.

RIVIERA MINES LIMITED
INDUCED POLARIZATION SURVEY
KEY CLAIM GROUP
HIGHLAND VALLEY, B. C.
CONTOURS AND DETAIL PROFILES

To accompany report by *Arthur R. Dodds*
A. R. Dodds, B. Sc., Geophysicist.

HUNTEC LIMITED, Toronto, Canada - November 1966

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