

# 5013

REPORT

on

ELECTROMAGNETIC SURVEY

JUBILEE MOUNTAIN AREA, B.C.

GOLDEN MINING DIVISION

82K/16W

for

DEKALB MINING CORPORATION

by

R. G. Agarwal, Ph.D., P.Eng.

July 2, 1974

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. **5013** MAP .....

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INTRODUCTION

During the period June 21, 1974 to June 30, 1974, electromagnetic survey was conducted for DeKalb Mining Corporation on the Jubilee Mountain property in the Golden Mining Division, British Columbia.

The results of the survey are reported herein.

Property Description

The property consists of 8 Crown Grants and 12 mineral claims that may be more particularly described as follows:

<u>Claims</u>	<u>Record Number</u>
Atlanta	Lot 134
Horseshoe	Lot 266
London	Lot 15303
Manchester	Lot 15304
Cornwall	Lot 15305
Mountain Daisy	Lot 647
Lancaster	Lot 1112
Silver King	Lot 648
Luck	1 to 12

The above claims are recorded at the Mining Recorder's office in Golden Mining Division, Province of British Columbia.

## Property Location and Access

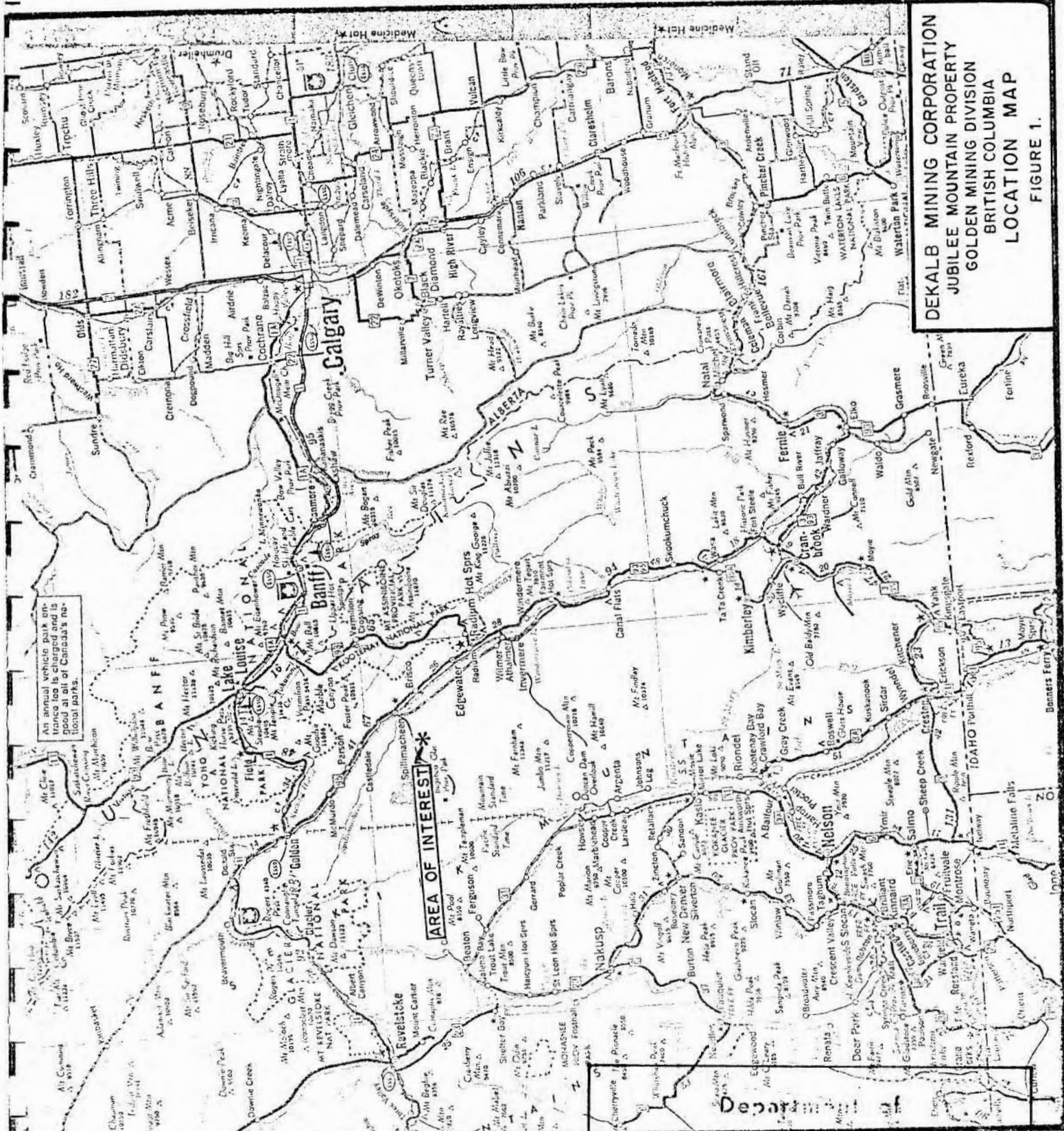
The attached map (Figure 1) shows the location and plan of Jubilee Mountain property. The property is located approximately at Longitude  $116^{\circ} 27.6'$  W and Latitude  $50^{\circ} 56.7'$ . It lies on the east side of Jubilee Mountain and is about 16 miles northwest of Brisco, B.C. Access on the property is available by means of unpaved road from the highway.

## Previous Work

Previously the Jubilee Mountain property was held by Calix Mines Limited and was explored by means of reconnaissance induced polarization survey in 1968. Prior to the geophysical survey, there had been some diamond drilling program which indicated some favourable results but not of economic significance. Since the performance of I.P. survey, there has not been any testing of the anomalies.

## General Geology

Jubilee limestone is overlain by basal beds which are mostly shale. Both limestone and shales have steep dips. Due to faulting in the area, Jubilee limestone to the northwest no longer appears at the surface but must occur as an inverted "V" below the surface. Mineralization is generally richer and more extensive towards the apex of the inverted "V" of Jubilee limestone. To the southeast, relatively little ore is found and it



An annual vehicle park is located at all of Canada's national parks.

**AREA OF INTEREST**

**DEKALB MINING CORPORATION**  
**JUBILEE MOUNTAIN PROPERTY**  
**GOLDEN MOUNTAIN DIVISION**  
**BRITISH COLUMBIA**  
**LOCATION MAP**  
**FIGURE 1.**

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is here that erosion has carried away the upper part of the inverted "V". To the northwest, there is more ore and the best ore occurs in the apex of "V". This suggests that the upper part of the inverted "V" where limestone is contained between shales has acted as a confined channel for the mineralizing solutions. The mineralization in the area appears to be as follows:

Limestone replaced by barite and barite replaced by galena, sphalerite and in some places chalcopyrite and chalcocite occurs as scattered replacements, or as small pockets of richer ore in the barite and limestone. Silver is also generally associated with lead.

### ELECTROMAGNETIC SURVEYS

The electromagnetic survey was conducted on this property with grid consisting of 200 feet line spacing at 100 foot station intervals.

#### Equipment and Basic Principle

The equipment used for the survey was a vertical loop electromagnetic unit. It consists of setting up a large vertical transmitting coil and apply audio-frequency electromagnetic energy, i.e. at 1000 cps or 5000 cps to the coil. The use of the two frequencies is useful in estimating depth to conductor axis

and also dip of the conductor.

When an alternating electromagnetic field produced by the transmitting coil propagates through the ground, it induces electric currents in any conductor in its path, which in turn gives rise to a secondary magnetic field. At a given receiving station, the direction and magnitude of the primary field is altered by the presence of the secondary field. The direction of the resultant field is determined by means of a search coil with attached clinometer.

The strength of the induced currents depends, among other factors, upon the resistivity of the conductor concerned and the frequency with which the primary field is alternating. Generally, the currents are stronger, the smaller the resistivity and higher the frequency.

#### Measurements Taken In The Field

The dip angles are measured with a search coil whose axis is rotated in that vertical plane which is perpendicular to the plane of the transmitter. At some particular rotation angle, the voltage induced in the receiving coil, by the transmitted or primary field, will be a minimum. The axis of the search coil is vertical, unless a secondary field due to induced sub-surface currents is present. Departures from the vertical for a minimum voltage or "null" are recorded as tilt angles, indicating the dip of the resulting field vector from the hori-

zontal. Conductor indications are denoted by "cross-overs", in other words, the tilt of the receiving coil changes in sense as the conductor is crossed. The significance of the "cross-over" is that when the transmitting coil has been positioned over or near a conductor, the "cross-over" will occur over the surface projection of the conductor axis.

The results obtained by using the vertical loop EM method are displayed on the enclosed map. (Figure 2).

#### DISCUSSION OF RESULTS

Electromagnetic survey was conducted on lines 4 + 00 N to 40 + 00 S, at a grid of 200 feet line spacing and 100 foot station interval.

A continuous conducting zone of at least 4,400 feet (4 + 00 N to 40 + 00 S) has been located by the E.M. technique. (See Figure 2) The conducting zone is moderate to strong in strength. The conductor is responding from various depths below the surface and is stronger with increase in depth.

Between lines 4 + 00 N and 8 + 00 S, the conductor has been indicated between station 5 + 00 E and 6 + 00 E and is warped and curvilinear in shape.

On line 10 + 00 S, the conductor appears between station 4 + 00 E and 5 + 00 E and then starts to shift westward.



From line 10 + 00 S to line 40 + 00 S, the conductor axis has shifted 800 feet and appears at station 4 + 00 W on line 40 + 00 S.

It is contemplated that the conductor axis is mapping the contact between Jubilee limestone and shale units. The shift in the axis of the conductor represents folding and warping of rock units in the area. On the other hand, it is possible that at places, mineralization may also be associated with this contact and would require further field investigation.

#### CONCLUSIONS AND RECOMMENDATIONS

A program of electromagnetic survey was carried out to explore for indications of unknown mineralization zones over the Jubilee Mountain property, Golden Mining Division, British Columbia. The results of the survey have indicated one continuous conducting zone and is shown in Figure 2. The conducting zone is considered to represent a contact between Jubilee limestone and the shale units. The E.M. response of the conducting zone increases with depth and possible mineralization may also be associated with this zone at places.

To distinguish or to decipher whether mineralization is associated with this conducting zone, at various places, it is suggested that a detailed geological mapping should be carried out. In addition, indirect geophysical techniques such

as gravity survey to locate the barite bodies on the property should be given a serious consideration.

Respectfully submitted

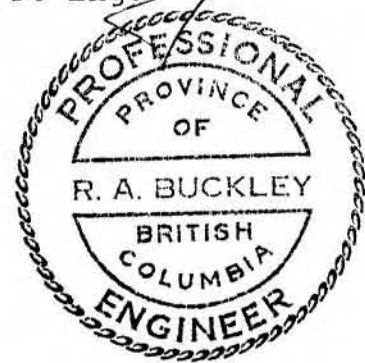
*R. G. Agarwal*

R.G. Agarwal, Ph.D., P. Eng.  
Consulting Geophysicist

*R. A. Buckley*

R.A. Buckley, P. Eng.  
Geologist

Dated: July 2, 1974  
Calgary, Alberta



CERTIFICATION

I, RAM GOPAL AGARWAL, of the City of Calgary, in the Province of Alberta, hereby certify that:

I am a Consulting Geophysicist with a business address at 601, 825 - 12 Avenue S.W., Calgary, Alberta.

I am a graduate of the University of Toronto, M.A. (Geophysics) 1956, and University of Alberta, Ph.D. (Geophysics) 1968.

I have been actively and continuously engaged in mineral exploration for the past 15 years.

I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

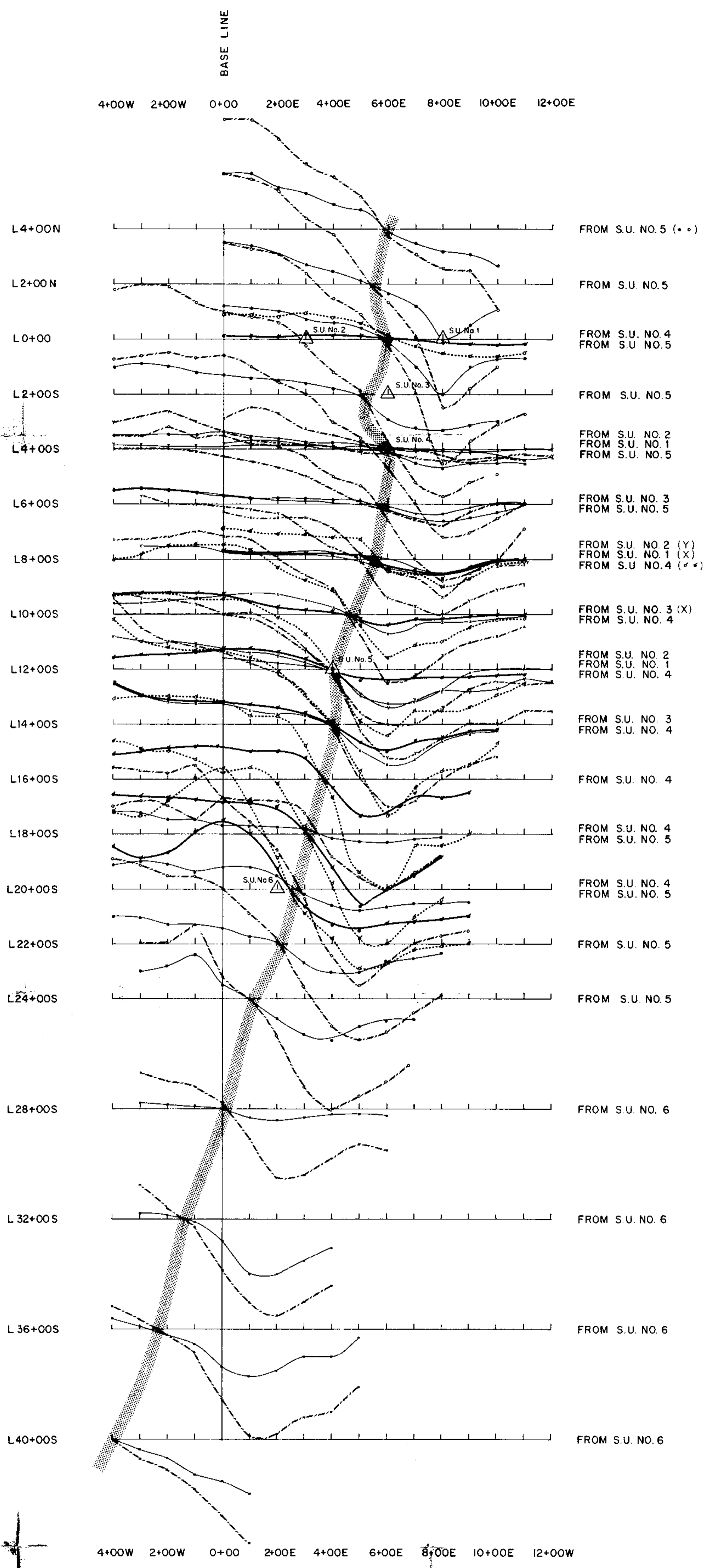
This report is based on Electromagnetic Survey carried out under my supervision on the property.

Dated this 2nd day of July, 1974, in the City of Calgary in the Province of Alberta.

*R. G. Agarwal*

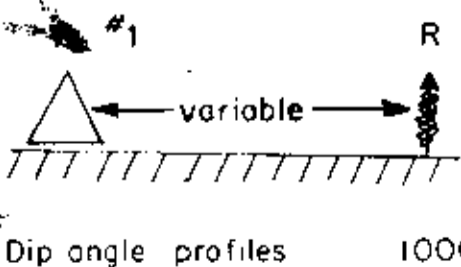
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R.G. Agarwal, Ph.D., P. Eng.  
Consulting Geophysicist



**LEGEND**

VERTICAL LOOP  
E.M. test survey  
1000 and 5000 cps



Dip angle profiles 1000 cps (solid line)  
5000 cps (dotted line)

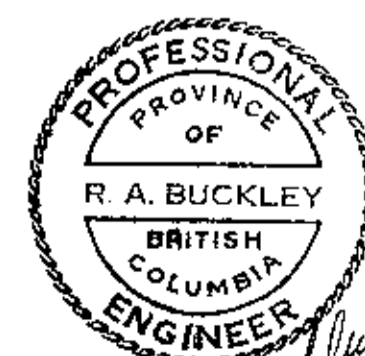
conducting zones (hatched area)

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DEKALB MINING CORPORATION  
JUBILEE MOUNTAIN PROPERTY  
GOLDEN MINING DIVISION  
BRITISH COLUMBIA  
VERTICAL LOOP  
ELECTROMAGNETIC SURVEY

VERTICAL SCALE 1" = 20'  
HORIZONTAL SCALE 1" = 200 FEET  
200 0 200 400 600  
SCALE IN FEET



*R.A. Buckley*  
R. A. BUCKLEY  
PROFESSIONAL ENGINEER

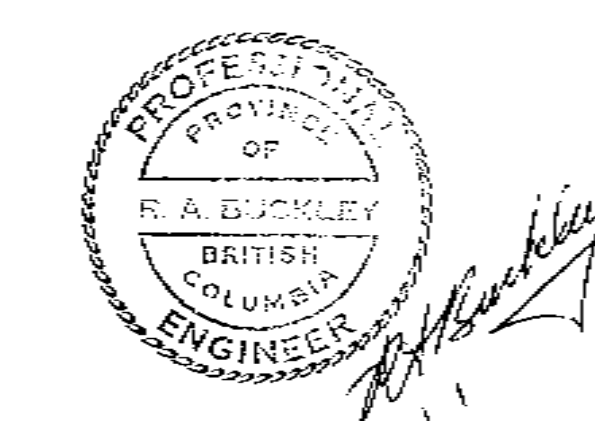
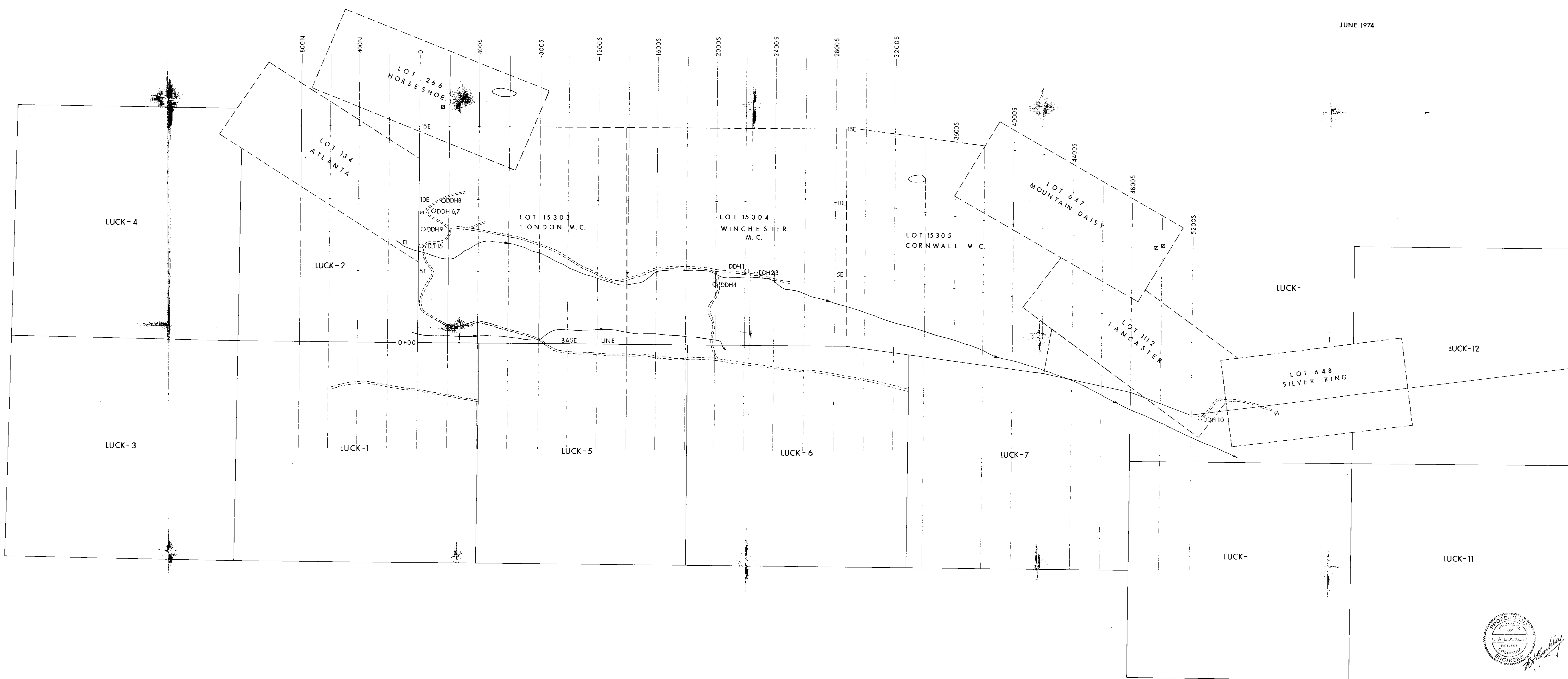
TO ACCOMPANY REPORT BY: R.G. AGARWAL, Ph. D., P. Eng.

FIGURE 2.

JUBILEE MTN. PROPERTY

FEET 600 0 600 FEET

JUNE 1974



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