

Deer Lake

Four Metal Trace Element Content  
of Soils Related to Bedrock Types  
Report on Silver 1 - 56 Claims  
Kamloops Mining Division

*AUTHOR: ADK BURTON* for  
UNITED COPPER CORPORATION LTD,  
November 13, 1967 *51° 12' NE*

*a part*  
1169

ALRAE EXPLORATION LTD.

1169

Four Metal Trace Element Content of Soils  
Related to Bedrock Types  
Report on Silver 1 - 56 Mineral Claims  
Kamloops Mining Division  
for  
UNITED COPPER CORPORATION LTD.

ALRAE EXPLORATION LTD.

November 13, 1967

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Maps

Scale

Silver Group Geochemical Survey # 2

1" = 400 ft.

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## INTRODUCTION

Geochemical soil samples were collected over the Silver 1 - 56 claims during November of 1966 by Alrae personnel. These samples were analysed by two techniques for relatively soluble copper content in order to choose areas for further evaluation. A report dated February 23, 1967 was written by Rae G. Jury, P. Eng. and filed as a geochemical report on the Silver 1 - 56 claims.

Geochemical work on contiguous groups of claims showed the advantage to be gained for geological interpretation by analysing for total metal content of the soil for copper, molybdenum, lead and zinc. There appeared to be a direct relationship between the soil content of the four elements and the major rock units on the property.

Accordingly, the soil samples, which had been collected and analysed in 1966 for soluble copper content, were now analysed for total copper, molybdenum, lead and zinc content.

The results of this work have confirmed the hypothesis and shown an excellent relationship between major rock types and trace element concentrations.

## LOCATION AND ACCESS

The Silver 1 - 56 mineral claims are in the Kamloops Mining Division, and about 50 miles north of Kamloops.

From a point eleven miles west of Little Fort, on the Little Fort - Bridge Lake - 70 Mile House road, about ten miles of travel northerly on a dirt road leads to the claims.

Silver and Deer Lakes, within the claims, drain into Nehalliston Creek.

Approximate co-ordinates of the group is 51°32'N latitude and 120°22'W longitude and the group is on National Topographic System sheet 92P/9W.

#### CLAIMS

Claims and their record numbers are as follows:

<u>Claim Name</u>	<u>Record Number</u>
Silver 1 - 6	54734 - 54739
Silver 7 - 56	54740 - 54789

All 56 claims are within the Kamloops Mining Division.

#### SAMPLING AND ANALYZING TECHNIQUES

Soil samples had been collected at 200 foot spacing on lines 400 feet apart. The samples were collected by Alrae Exploration Ltd. field crews, under the supervision of Rae G. Jury, P. Eng. Samples were taken from a depth of six to twelve inches in clean soil, except for swampy areas. Care was taken to keep the ash layer from contaminating the sample which was the lower "A" zone. Samples were placed in grid co-ordinate labelled geochemical plastic bags and sent to the laboratory in Vancouver. Analysis in 1966 for soluble copper did not require seiving.

Samples analysed in 1967 were shipped to Mr. Burgoyne, Chief Chemist, of Anaconda American Brass Ltd., Western Exploration Division Geochemical Laboratory, Britannia Beach, B. C.

Analysis required seiving the dry sample to -80 mesh and weighing out a one gram sample of the -80 mesh fraction. The samples were then digested in a sulphuric-nitric acid solution which took the heavy metals out as sulphates. An aliquot was then digested in one normal hydrochloric acid and brought up to fifty millilitres in a culture tube.

The analysis for molybdenum was made by using the standard potassium thiocyanate technique with values read off colorimetrically in the iso-amyl alcohol layer in parts per million, using a Spectronic 20 Colorimeter - Spectrophotometer.

The copper, lead, and zinc were each analysed from a portion of the aliquot in an "atomic absorption spectrophotometer" Techtron type AA-3. Values for the copper, lead, and zinc were read as parts per million.

The parts per million (p.p.m.) of all four elements were then plotted on one base map at a scale of one inch to four hundred feet.

#### SURFICIAL GEOLOGY

There are three main divisions to the surficial geology on the claims.

1. Higher ridges with considerable outcrop and a shallow soil cover.
2. Glacial deposits; swamps - both glacial and fault line; plus a few lakes.
3. Over the larger portion of the property, a well developed soil of moderate depth over the bedrock.

Higher ridges of division one are found on the Silver 1, 3, 5, 8, 11 claims and Silver 45 - 56. Glacial deposits are found on claims Silver 17 - 20 at the south end of Silver Lake. Fault line and glacial swamps are found along and east of Nehalliston Lake on claim Silver 43.

Silver 2, 4, 6, 8, 10, 13 to 16, and 33 to 42 are predominantly division three.

## GEOLOGY

The area has been mapped by the Geological Survey of Canada, Map G.S.C. 3-1966, Bonaparte Sheet, at a scale of 1" = 4 miles.

Three main groups occur on the claims, and a fourth group may occur on the claims or close to them.

The pertinent portion of the Legend is reproduced here:

### JURASSIC

#### Lower and (?) Middle Jurassic

Unit [16] Porphyritic augite andesite breccia, conglomerate and flows; minor andesite, arenite, flows; 16a, isolated areas of augite and hornblende andesite (may be all or partly intrusive).

#### Lower Jurassic

Unit [15] Andesitic arenite, siltstone, grit and breccia; local granite bearing conglomerate; minor argillite and flows; includes minor amounts of 12, 11, and (?) 2.

### TRIASSIC OR JURASSIC

#### Upper Triassic or Lower Jurassic

Unit [14] Hornblende-biotite quartz diorite and granodiorite, minor hornblende diorite, monzonite, gabbro, hornblendite.

Unit [13] 13a, fine- to medium-grained, pink to brown and grey syenite and monzonite; 13b, medium-grained, creamy-buff, locally coarsely porphyritic (K-feldspar) syenite and monzonite (13b may be equivalent in age to 14 or 17).

### TRIASSIC

#### Upper Triassic - Nicola Group

Unit [12] Augite andesite flows and breccia, tuff, argillite, greywacke, grey limestone; includes minor 2, 10, and 11.

Field traverses confirmed the regional mapping but were not sufficient to outline the rock units in enough detail to solve the structural problems associated with the major faulting.

Two directions of major faulting N35W and N35E control the distribution of the major rock groups. It was felt that not only did the faults act as boundary between two groups of rocks but that faulting also extended on past contacts into and through each group.

The geochemical and magnetic geophysical results reinforce the belief that the faulting goes through and offsets rock units and mineralized structures within a group.

#### DISCUSSION OF RESULTS

The three major rock units are each shown to have their own typical background content of Cu, Mo, Pb, and Zn. Those background levels are within the normal range for the rock types involved (Hawkes & Webb - Geochemistry in Mineral Exploration) and in addition, the relative proportions of the four elements in the soil are consistent for areas underlain by each of the three rock units.

As shown on the accompanying map, the trace element value groupings can be directly related to the three rock units.

#### Unit [12] Upper Triassic - Nicola Group

Cu < 70 p.p.m.  
Mo < 3 p.p.m.  
Pb < 40 p.p.m.  
Zn < 80 p.p.m.

#### Unit [15] Lower Jurassic (Volcanic)

Mo < 3 p.p.m.	Cu > 70 p.p.m.
Pb < 40 p.p.m.	Zn > 80 p.p.m.

#### Unit [16] Lower & (?) Middle Jurassic (Volcanics)

Cu < 70 p.p.m.	Mo > 3 p.p.m.
Pb < 40 p.p.m.	Zn > 80 p.p.m.

Contacts of each rock group as shown by the geochemistry are close to the position shown on the G.S.C. Map 3-1966. The major



Difference is that the N35°W fault running roughly along 40-45N is cut by the N35°E fault along 16E and moves Unit 12 (Nicola Group) to the east and the N35W fault contact over to 80N.'

Where Unit 12 (Nicola Group) is in contact with Unit 15, along the N35°E fault, line 16E, along the fault zone, is significantly higher in lead values. Four miles to the northeast, along the fault there is an arsenic-lead showing marked on the Geological Survey Map. Line 4E on claims Silver 19 and 20 also shows moderately significant lead values and could represent a zone of lead enrichment along another N35°E fault zone. D.R. Morgan discovered an outcrop of sheared and altered volcanics mineralized in one place with small crystals of galena while locating claim posts southeast of Silver Lake.

Another area of higher lead values occurs along line 32E on Silver 1 claim. This may be related to N35°E faulting or a combination of the N35°E faulting intersecting the NW trending sulphide zone and magnetic anomaly.

Rock units 15 and 16 have generally uniform trace element levels in their soils. Unit 15 does show some erratic copper highs which probably are characteristic of the rock type but will have to be field checked for possible copper mineralization.

Rock Unit 12 (Nicola Group) covers the larger western portion of the claims and shows non-anomalous background soil values for all four (Cu, Mo, Pb and Zn) elements. A few areas do show anomalous values for lead, copper, and molybdenum. The lead has been discussed in relation to the faulting. The copper and molybdenum anomalous values are more difficult to assess in that neither the soluble copper nor the total copper extraction techniques relate well to known mineralized zones. The lack of relations between the

mineralized zones and the copper soil values may be partly due to the narrowness of the zones (100 to 200 feet) and the 200 foot sampling interval, the massive amounts of pyrite present with attendant leaching by sulphuric acid developed during weathering and from possible organic collection in the swampy areas.

Molybdenum values in the two anomalous areas on claims Silver 11 and Silver 9 are greater than background but not excessively greater and their importance must be considered cautiously.

#### CONCLUSIONS

Four element total extraction analysis of the soils has proved to be a useful tool for solving the bedrock geological structure in an area with overburden covered fault contacts between the three major rock units.

Information gained on the structural geology of the three rock units as controlled by the faulting will be of value in helping understand the apparent fault offsets on the mineralized magnetic anomaly discovered on claims Silver 1-12.

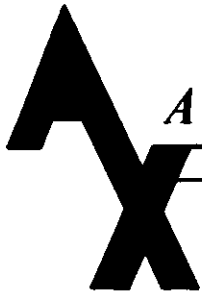
Respectfully submitted:



A. D. K. Burton, P. Eng.

REFERENCES

1. Hawkes, H.E. & Webb, J.S.      Geochemistry in Mineral Exploration
  
2. Morgan, David R.                The "Silver" Group of Claims  
September 1, 1966
  
3. Jury, R. G.                        Geochemical Soil Survey Report  
Silver 1 to 56 Claims  
February 23, 1967
  
4. Burton, A.D.K.                    Report on the Mae 1-4, S.P. 1-6,  
Bill 1-4 Mineral Claims  
September 28, 1967



# ALRAE EXPLORATION LTD.

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

United Copper Corporation Ltd.  
411 - 475 Howe Street  
Vancouver 1, B. C.

## GEOCHEMISTRY SURVEY - Silver Lake Claims

<u>Personnel</u>	<u>Occupation</u>	<u>Dates</u>	<u>Total</u>
A.D. Burton Vancouver, B. C.	Geological Engineer	Nov. 7, 8, 1967	\$ 275.00
M. Lee Vancouver, B. C.	Draftsman	Nov. 8, 10, 20, 21, 1967 Dec. 11, 1967	<u>120.00</u>
			\$ <u>395.00</u>

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 12th  
day of December, 1967, A.D.

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

UNITED COPPER CORPORATION LIMITED (N.P.L.)

GEOCHEMICAL REPORT COSTS DISTRIBUTION

GROUP I

Analyzing Charges:-

231 Samples @ \$2.60/sample	=	\$ 600.60
\$395.00 Alrae Charges x $\frac{12}{56}$ (Grp. 1 Claim)	=	87.00
		<u>87.00</u>
	TOTAL	\$ 687.60

GROUP II

Analyzing Charges:-

342 Samples @ \$2.60/sample	=	889.20
\$395.00 Alrae Charge x $\frac{20}{56}$	=	<u>140.00</u>
	TOTAL	\$ 1,029.20

GROUP III

Analyzing Charges:-

471 Samples @ \$2.60/sample	=	1,224.60
\$395.00 Alrae Charge x $\frac{24}{56}$	=	<u>168.00</u>
	TOTAL	\$ 1,392.60

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GEOPHYSICAL REPORT COST DISTRIBUTION

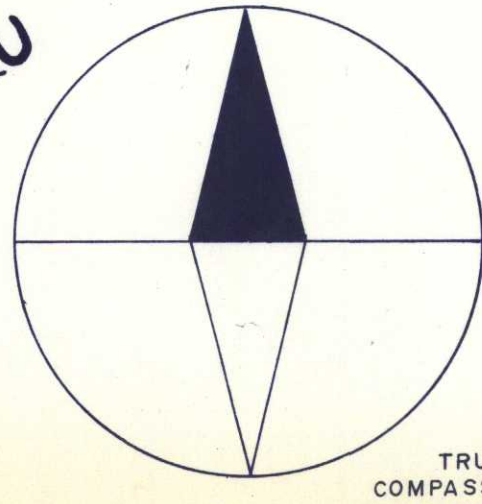
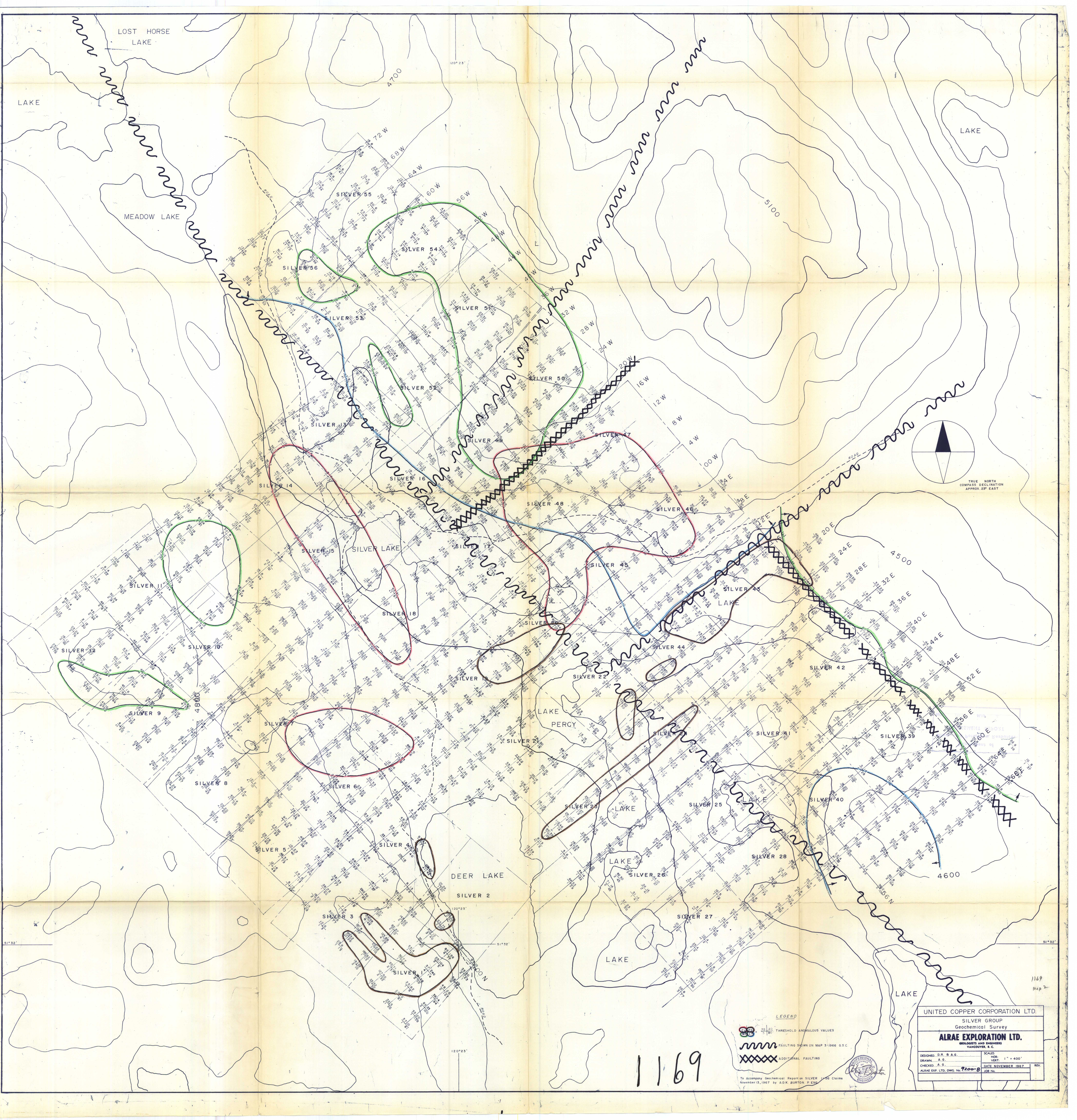
GROUP I

$$\$3,370.50 \text{ Total Charge} \times \frac{12 \text{ (Grp. 1 Claims)}}{20 \text{ (Total Claims)}} = \$ 2,022.30$$

GROUP II

$$\$2,270.50 \text{ Total Charge} \times \frac{-8}{20} = \$ 1,348.20$$





LEGEND  
 20 TO 30 THRESHOLD ANOMALOUS VALUES  
 FAULTING SHOWN ON MAP 3-1966 G.S.C.  
 ADDITIONAL FAULTING

UNITED COPPER CORPORATION LTD.  
 SILVER GROUP  
 Geochemical Survey  
**ALRAE EXPLORATION LTD.**  
 GEOLOGISTS AND ENGINEERS  
 VANCOUVER, B.C.  
 DESIGNED: D.R. S.A.G. SCALE: 1" = 400'  
 DRAWN: A.S. FOR: VERT.  
 CHECKED: A.S. DATE: NOVEMBER 1967 REV.  
 ALRAE EXP. LTD. DWS. NO. 7100-8 JOB NO.

1169  
 Map 2

To Accompany Geochemical Report on SILVER  
 November 15, 1967 by A.G.K. BURTON, P. ENG.



UNITED COPPER CORPORATION LTD.  
Magnetometer Survey on the  
Silver 1 to 12 Mineral Claims

*AUTHOR - A.D.K. BURTON* and

Silver 13 to 20 Mineral Claims  
Kamloops Mining Division

November 20, 1967

*42 P-9*

*92P/9W*

*57° 12' 0" N E*

1169

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1169  
CONT'D

UNITED COPPER CORPORATION LTD.  
Magnetometer Survey  
on the  
Silver 1 to 12 Mineral Claims  
and  
Silver 13 to 20 Mineral Claims  
Kamloops Mining Division

by  
A.D.K. Burton, P. Eng.  
ALRAE EXPLORATION LTD.

November 20, 1967

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MAP

Scale

Silver Group Magnetometer Survey H I

1" = 400 ft.

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## INTRODUCTION

A magnetometer survey was conducted over the Silver 1 - 12 and Silver 13 to 20 claims in the hope of discovering mineralization similar to the copper mineralization which extends into the Silver 1 claim.

The survey was successful in discovering a magnetic anomaly running nearly the full length of the Silver 1 - 12 claim group. The south end of this anomaly is related to the previously known mineralization adjacent to the Silver 1. Two places along its length have been partially exposed to bedrock, one place showing magnetite, and the other place showing massive sulphides similar to the previously known mineralization.

## LOCATION AND ACCESS

The Silver 1 - 12 and Silver 13 - 20 mineral claims are in the Kamloops Mining Division, ten miles northwest of Little Fort and about 50 miles north of Kamloops.

From a point eleven miles west of Little Fort, on the Little Fort - Bridge Lake - 70 Mile House road, ten miles of travel northerly on a dirt road leads to the claims.

The Silver 1 - 12 claims are by Deer Lake, the Silver 13 - 20 claims are by Silver Lake, and both lakes drain into Nehalliston Creek.

Approximate co-ordinates of the claims are 51°32' north latitude and 120°22' west longitude; and the National Topographic System sheet is 92P/9W.

CLAIMS

Silver Group No. 1

<u>Claim Name</u>	<u>Record Number</u>
Silver 1 - 12	54734 - 54745

Magnetometer Survey conducted over all twelve claims.

Silver Group No. 2 - Twenty claims

Silver 13 - 20	54746 - 54753
Silver 45 - 56	54778 - 54789

Magnetometer Survey conducted over eight claims - Silver 13 - 20.

GEOLOGY

The Silver claims are underlain by three rock groups as mapped by the Geological Survey of Canada, Map 3-1966, Bonaparte Sheet 1" = 4 miles, 92P.

The appropriate portion of the legend is reproduced here:

JURASSIC

Lower and (?) Middle Jurassic

Unit [16] Porphyritic augite andesite breccia, conglomerate and flows; minor andesite, arenite, flows; 16a, isolated areas of augite and hornblende andesite (may be all or partly intrusive).

Lower Jurassic

Unit [15] Andesitic arenite, siltstone, grit and breccia; local granite bearing conglomerate; minor argillite and flows: includes minor amounts of 12, 11, and (?) 2.

TRIASSIC OR JURASSIC

Upper Triassic or Lower Jurassic

Unit [14] Hornblende-biotite quartz diorite and granodiorite, minor hornblende diorite, monzonite, gabbro, hornblendite.

Unit [13] 13a, fine- to medium-grained, pink to brown and grey syenite and monzonite, 13b, medium-grained, creamy-buff, locally coarsely porphyritic (K-feldspar) syenite and monzonite (13b may be equivalent in age to 14 or 17).

## TRIASSIC

### Upper Triassic - Nicola Group

Unit [12] Augite andesite flows and breccia, tuff, argillite, greywacke, grey limestone; includes minor 2, 10, and 11.

Units 12, 15 and 16 cover the Silver claims.

Silver 1 - 12 and Silver 13 - 20 claims appear to be underlain solely by the Nicola Group, Unit #12. A recent geochemical report on the Silver 1 - 56 claims by the writer introduces evidence confirming the geology and the faulting as mapped by the Geological Survey. Faulting with offsets follows two main directions, N35°W and N35°E. The faults both form contacts between two different rock units and also cut through individual rock units.

## LINE CUTTING

A flagged grid system of base lines and cross lines at 400 foot intervals with stations every 200 feet already existed on both groups of claims. However, it was necessary to rehabilitate the grid, as some flagging was missing and as readings were to be taken at 100 foot intervals. Some fill-in detail lines were run on the Silver 1 - 12 claims. On the Silver 13 - 20 claims, three lines were extended eastward to tie in with the 56N baseline so that the claims location line could be used as a base line.

## TYPE OF MAGNETOMETER

A Sharpe fluxgate magnetometer, model MF-1 was used for this survey. This is a hand-held instrument which requires only coarse levelling and is not significantly affected by orientation and, therefore, can be used rapidly and efficiently.

The magnetometer measures the vertical component of the earth's magnetic field to 5 gammas on the lowest scale range. Full scale ranges vary progressively from a minimum of plus or minus

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1,000 gammas to a maximum of plus or minus 100,000 gammas. The values can be read directly from the scale.

Since temperature compensations have been built directly into the instrument, the only corrections of the readings necessary is the diurnal variation. The variation in each survey loop is assumed to be linear and is determined by subtraction of the initial and final readings. The correction added to each reading in the loop is the product of the total diurnal variation of the loop and the ratio of time elapsed up to the time of the reading over the total time elapsed for the loop.

#### FIELD PROCEDURE

The instrument was set or zeroed for the area and a base station selected and tied in with a sub-base station for the Silver 13 to 20 claims.

Readings were taken every 100 feet on the base line and cross lines. Where readings at any station varied from the normal background, they were repeated and readings were taken 50 feet on each side of the station in order to sharply define the outline of the anomalous zones. Tests were made on the known copper mineralization adjacent to the Silver 1 claim in order to establish what was anomalous and from how far away it could be detected. Tie-ins were made to the base stations at the start and finish of each traverse which was generally less than two hours duration.

Except for two days which had magnetic storms so severe that the readings for those two days had to be repeated on magnetically calmer days, the diurnal variations were of a low order and corrections could be treated linearly in respect to elapsed time.

### DISCUSSION OF RESULTS

The readings were plotted on a base map of 1" = 400 ft. which was used as base map for all the surveys. Readings were plotted as gammas relative to the base station chosen.

The survey area for both groups of claims, as far as is known, is underlain solely by rocks of the Nicola group. On both claim groups there is a relatively uniform background with low magnetic relief.

South of Silver Lake, on some glacial fluvial deposits, there are small variations in magnetic density according to elevation (ie: higher on the rims of kettle and esker ridges and lower in kettle bottom), but well within the background values. Usually these magnetic variations due to the position of a magnetometer within the glacial features do not show up on the map as these changes are less than one contour interval.

The trend of the magnetics is northwest, which is parallel to the supposed strike of the Nicola group rocks and is also parallel to the direction of the glaciation. The trend of the magnetics is about 30° further northwest than the N35°W strike of the fault which makes the eastern boundary of the Nicola group with the Jurassic rocks.

A well defined linear anomaly was outlined on the Silver 1 - 12 claims. This anomaly runs from 36E at the southern end to 48W at the northern end and is over 8,400 feet long. Its intensity at either end is just as strong and it probably extends much further. The width of the anomaly varies from 100 to 800 feet, depending upon whether the anomaly is considered as one wide complex zone, or several separate narrow zones. Over all, the anomaly is one of linear shape with moderate to extreme local magnetic variations within it. In detail, the anomaly is composed of four characteristic portions:

1. Extreme and sharp changes in magnetic susceptibility across a short distance due to pockets of nearly massive magnetite, some of which is polarized. An example of this is the magnetite outcrop on line 60E.
2. Values of moderate magnetic intensity form the bulk of the anomaly, such as the sections between 4W and 12E or sections between 26W to 48W. Along these two sections the anomaly is typically about 50 gammas above background and about five times stronger than the variation in the background areas. Locally, within the moderate anomalies, there are isolated pockets of the type 1.
3. Values of low magnetic intensity comparable to normal background are found across faults which appear to offset the anomaly.
4. A small to moderate low lies along the east side of the anomaly and indicates that the anomaly is probably caused by a tabular body dipping to the west.

In three places the anomaly is off-set, probably due to the N35°E fault sets which on the northeast corner of the property have offset the Nicola and Jurassic rocks. At 30E, right hand lateral movement along a N35°E fault appears to have offset the anomaly up to 600 feet. At 8W, right hand lateral movement along another N35°E fault appears to have offset the anomaly from nil up to 200 feet, depending upon the interpretation. At 22W, another apparently N35°E fault has caused up to 400 feet of left hand lateral offset on the anomaly.

Known faulting on the property strikes N35°E and N35°W. The postulated faults offsetting the anomaly at 8W and 22W line up with the N35°E faults mapped by the G.S.C. and postulated by the writer in a geochemical report. None of these faults have been seen in the field but are presumed to exist by inference.



The anomaly has not been prospected and information is available in three places on it. At line 36E, line 16E and line 26W.

The anomaly at line 36E is the northern continuation from the old showings on the adjacent claims held by Anaconda American Brass Ltd., Western Explorations Division. These old showings have been partially explored by hand pits in rock exposures and by a shallow adit which is partially caved or open stoped through to the surface. More recently, in the summer of 1967, Anaconda did some bulldozer trenching in the vicinity of, but not on, the showings. The showings are essentially a series of narrow, massive sulphide lenses, scattered through a metasomatically altered zone. Certain areas of this metasomatically altered zone are barren and other areas contain disseminated sulphides as well as the narrow massive sulphide bands. Minerals present are chalcopyrite, pyrite, pyrrhotite, magnetite and very minor malachite. Gold values are reported to be present.

On line 16E, there is an outcrop of massive magnetite which, across 50 feet, has a magnetic variation of over 6,600 gammas. There is no noticeable copper and only minor iron sulphides with the magnetite, but there is a zone of moderate magnetometer highs adjacent in an unexposed area.

During the course of the magnetometer survey on line 26W, adjacent to the magnetometer high, the operator noticed that the overburden appeared to be shallow. Under the moss he discovered rusty and weathered outcrops with considerable pyrite and traces of chalcopyrite at station 125.

Due to the lateness of the season and the increasing depth of snow, no further attempts were made to expose the anomaly.

CONCLUSIONS

A well defined magnetic anomaly has been outlined along the length of the Silver 1 - 12 claims, a distance of nearly 9,000 feet. Outcrops of bedrock at three places along the anomaly contain chalcopryrite, pyrite, and magnetite.

RECOMMENDATIONS

This important anomaly will have to be thoroughly tested for copper and gold content by bulldozer trenching, sampling and mapping. This program should be followed by diamond drilling to test the best areas at depth.

Respectfully submitted:



A.D.K. Burton, P. Eng.



# ALRAE EXPLORATION LTD.

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

February 13, 1968

Mr. Frank J. Sell  
Mining Recorder  
Court House  
Kamloops, B. C.

Dear Sir:

Regarding your letter of January 30, 1968.

Mr. Beaudoin, over the past several years, has worked as a field man operating geophysical instruments such as magnetometers and E.M. sets for various companies as Coast Silver Mines Ltd., and for consulting companies as Alrae Exploration Ltd., Geo-X Services Ltd., Henry L. Hill and Associates, and Dolmage Campbell and Associates.

In addition, I personally checked him in the field to assure myself that he was operating the instrument correctly and in accordance with my instructions.

Yours truly,

Alex Burton, P. Eng.

AB/ph

GEOLOGY  
Exploration

CONSULTANTS  
Development

MINING  
Production

UNITED COPPER CORPORATION LIMITED (N.P.C.)

GEOPHYSICAL REPORT COST DISTRIBUTION

GROUP I

\$3,370.50 Total Charge x  $\frac{12 \text{ (Grp. 1 Claims)}}{20 \text{ (Total Claims)}}$  = \$ 2,022.30

GROUP II

\$2,270.50 Total Charge x  $\frac{-8}{20}$  = \$ 1,348.20

UNITED COPPER CORPORATION LIMITED (N.P.L.)

**GEOCHEMICAL REPORT COSTS DISTRIBUTION**

GROUP I

Analyzing Charges:-

231 Samples @ \$2.60/sample	-	\$ 600.60
\$395.00 Airae Charges x $\frac{12}{55}$ (Grp. 1 Claim)	-	87.00
		<u>87.00</u>
	TOTAL	\$ 687.60

GROUP II

Analyzing Charges:-

342 Samples @ \$2.60/sample	-	889.20
\$395.00 Airae Charge x $\frac{20}{55}$	-	<u>140.00</u>
	TOTAL	\$ 1,029.20

GROUP III

Analyzing Charges:-

471 Samples @ \$2.60/sample	-	1,224.60
\$395.00 Airae Charge x $\frac{24}{55}$	-	<u>168.00</u>
	TOTAL	\$ 1,392.60



# ALRAE EXPLORATION LTD.

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

United Copper Corporation Ltd.  
411 - 475 Howe Street  
Vancouver 1, B. C.

## MAGNETOMETER SURVEY - Silver Claims 1 - 20

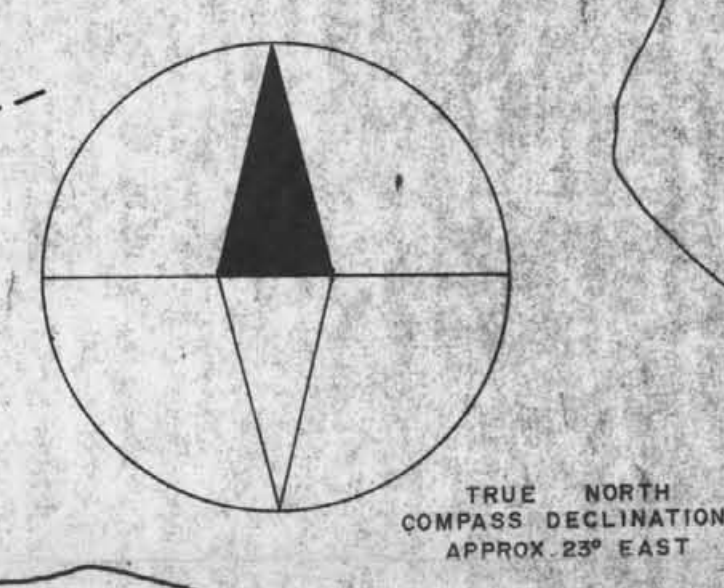
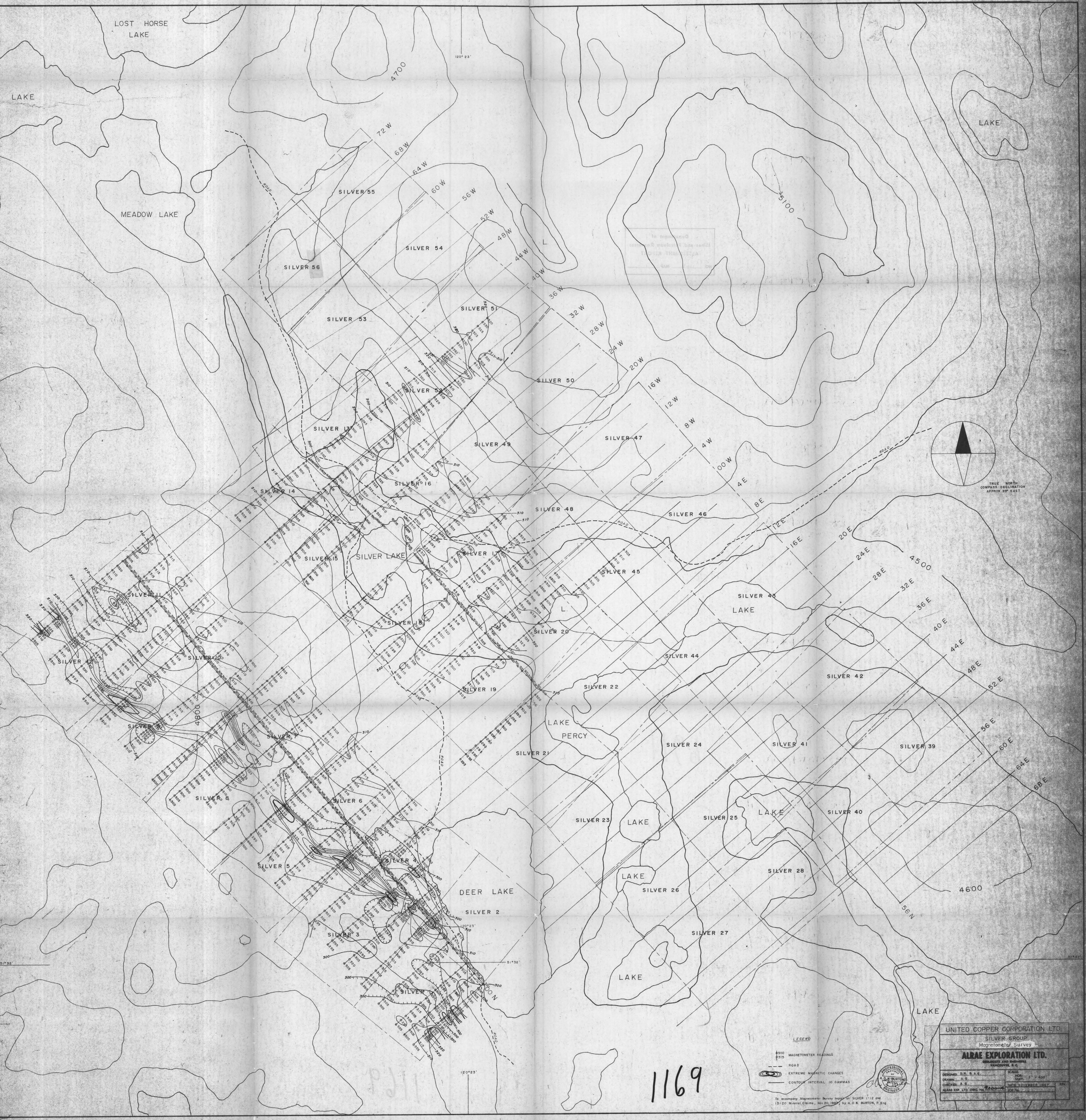
<u>Personnel</u>	<u>Occupation</u>	<u>Date</u>	<u>Total</u>
A.D. Burton Vancouver, B.C.	Geological Engineer	Oct. 24-31/67	\$ 917.00
A. Beaudoin Vancouver, B.C.	Instrument Operator	Oct. 12-19/67 Oct. 24-31/67 Nov. 1- 8/67	1,752.00
B. Mulligan Kamloops, B.C.	Assistant	Oct. 24-Nov. 2/67	564.00
M. Lee Vancouver, B.C.	Draftsman	Nov. 14, 1967	<u>32.50</u>
			\$ 3,265.50
Equipment Rental - Sharpe Model Magnetometer S/N 21104			<u>105.00</u>
			\$ <u>3,370.50</u>

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 12th  
day of December, 1967, A.D.

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





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**LEGEND**

- MAGNETOMETER READINGS
- ROAD
- EXTREME MAGNETIC CHANGES
- CONTOUR INTERVAL 10 GAMMAS



UNITED COPPER CORPORATION LTD.  
 SILVER GROUP  
 Magnetometer Survey  
**ALRAE EXPLORATION LTD.**  
 CONSULTANTS AND ENGINEERS  
 VANCOUVER, B.C.

DESIGNED: D.D. B.A.S.	SCALE: 1" = 400'
DRAWN: A.S.	CHECKED: A.S.
DATE: NOVEMBER 1957	
ALRAE EXP. LTD. DRAW. NO. 7200-1	

To accompany Magnetometer Survey results on SILVER 1-12 and 13-20 Mineral Claims, Nov. 20, 1957, by A.D.K. BURTON, P.Eng.