

3181

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 3181 MAP

GEOPHYSICAL REPORT

ON

MAGNETIC SURVEY

921/6E

BIN 'A' CLAIM GROUP

ARLINGTON SILVER MINES LTD.

SKUHOST CREEK AREA, KAMLOOPS M.D., B.C.

JULY, 1971

BIN 'A' Claim Group: 14 miles S70E of Spences Bridge, B.C.

50° 121° SE

NTS: 92 I/6E

Report by:

DAVID G. MARK
Geophysicist
Geotronics Surveys Ltd.
514 - 602 W. Hastings St.
Vancouver 2, B.C.

August 4, 1971

Written for:

ARLINGTON SILVER MINES LTD.
1110 - 505 Burrard St.
Vancouver 1, B.C.

Magnetic Survey
BIN 'A' Claim Group

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Magnetic Survey
BIN 'A' Claim Group

S U M M A R Y

On 18 claims of the BIN 'A' claim group, a magnetic survey was completed during July, 1971. The purpose of the survey was to assist in geological mapping.

The claims are located in the Highland Valley mining camp about 14 miles S70E of Spences Bridge. Access is fairly good by taking the Skuhun Creek road either from Spences Bridge end or Chataway Lake end. The terrain is moderate and the trees are fairly open throughout most of the area.

The property is found within the Guichon Creek Batholith, host of a few large low-grade copper deposits. Rock types found on the property are Skeena (Bethlehem) Phase, Bethsaida Phase and 2 varieties of the Hybrid Phase, Guichon and Chataway. Faults have been inferred along creek gullies. No mineralization is known on the surveyed claims but bornite and chalcocite are found on fracture plane surfaces elsewhere on the BIN claims.

The magnetic survey results were of low variation, somewhat typical of the batholith. Two contacts and some faults were reflected by the survey.

It is recommended to do soil sampling and a VLF-EM survey over the survey area.



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GEOPHYSICAL REPORT
ON
MAGNETIC SURVEY
BIN 'A' CLAIM GROUP

Submitted to: Arlington Silver Mines Ltd.

INTRODUCTION

A magnetic survey on a portion of the BIN 'A' claim group on Skuhost Creek in the Highland Valley area was completed during the latter part of July, 1971. A crew of 3 men was employed: Kelvin McCulloch, Instrument Operator, Michael Scholz, Helper and the writer, Supervisor.

The Arlington Silver property consists of 2 sets of claims: the BIN 'A' Group containing 38 claims and 2 fractional claims, the BIN 'B' Group containing 35 claims and 2 fractional claims. The survey was completed over BIN 31-37, 42-45 and CU 1-7 mineral claims (hereinafter referred to as the survey claims) for a total of 18 claims. The

number of line miles completed was 16.1 or 828 readings.

The object of the survey was to assist in mapping lithology and structure.

LOCATION AND ACCESS ($50^{\circ} 20.5'$ $121^{\circ} 2.5'$)

The survey claims are the uppermost portion of the Arlington Silver property. By a straight line, they are located 14.4 miles $S67^{\circ}E$ of Spences Bridge and 20.0 miles $N35^{\circ}W$ of Merritt. They straddle Skuhost Creek and are centered about 11,000 feet above Skuhun Creek.

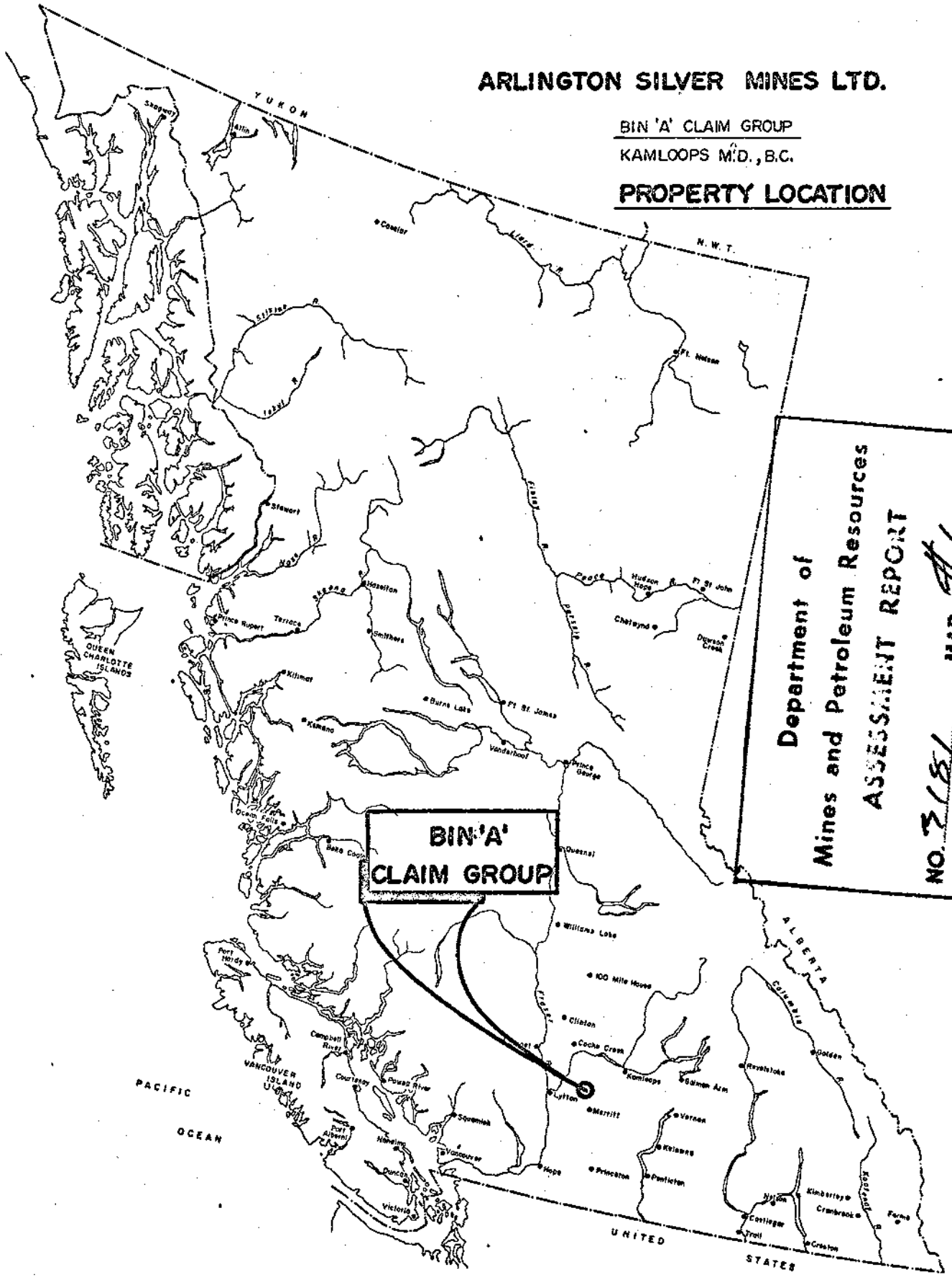
Access is good for these claims. Two roads cut northerly through the property, one which forks north from the Skuhun Creek road just west of Skuhost Creek and the other, just east. The Skuhun Creek road leaves the Merritt-Spences Bridge Highway about 13 miles from Spences Bridge. However, this way is only accessible with a 4-wheel drive and when the creek is low due to a washout at Mile 6. Otherwise, one must take the Skuhun Creek road from the Chataway Lake end of which access is via Lower Nicola and Craigmont Mines.

ARLINGTON SILVER MINES LTD.

BIN 'A' CLAIM GROUP

KAMLOOPS M.D., B.C.

PROPERTY LOCATION



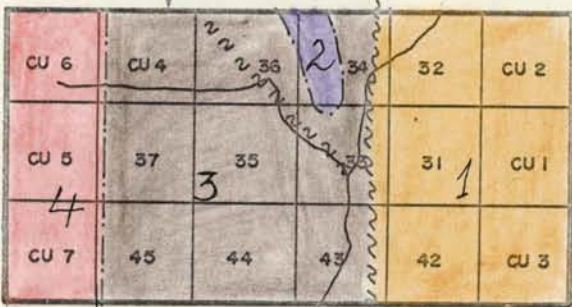
Department of
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ASSESSMENT REPORT

NO. 3181 MAP A1

SCALE 1" = 110 miles



BIN 'A' GROUP



LEGEND

- 4 GUICHON VARIETY
- 3 CHATAWAY VARIETY
- 2 SKEENA PHASE
- 1 BETHSAIDA PHASE
- FAULT
- INFERRED GEOLOGICAL CONTACT

SURVEY AREA
1970

BIN 'B' GROUP

Skuhun Cr.

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 3181 MAP #2

CLAIM LOCATION & GEOLOGY

ARLINGTON SILVER MINES LTD.
 BIN 'A' CLAIM GROUP
 KAMLOOPS M.D., B.C.

SCALE 1"=3000'
 NTS 921/6E

GEOLOGY SKETCHED AFTER M.D. McINNIS

A 2-wheel drive vehicle can be used, but a 4-wheel drive is preferable due to 2 washouts.

PHYSIOGRAPHY

The Arlington Silver property is found in the physiographic division known as the Thompson Plateau, most southern part of the Interior Plateau. It has a gently rolling upland of low relief, elevation varying largely between 4,000 and 5,000 feet except where major creeks flow. The survey area itself is found within the Skuhost Creek valley. Skuhost Creek flows south through the center of the claims and one main tributary joins it from the northwest. The slopes are moderate with the elevation varying from about 3,500 to 5,000 feet.

The prevalent tree type is jackpine which ranges up to over a foot in diameter, and some balsam. The tree density is less than moderate with little or no underbrush growing. Grass is the main undergrowth.

HISTORY OF PREVIOUS WORK

The Arlington Silver property was optioned to Cominco Ltd. about late 1968 - early 1969 who did

the following work:

- a) Geological mapping over the whole property from March to August, 1969. Report by M. D. McInnis. *of Cominco*
- b) Geochemistry - soil sampling on grid in central eastern part of property.
- a few silt samples from creeks throughout property.
- c) Refraction seismic profiling near junction of Skuhun and Skuhost Creeks during May, 1969 - Report by J. M. Hamilton, August, 1969. *Cominco*
- d) Induced polarization and resistivity with line cutting over most of BIN 'B' group and southeast portion of BIN 'A' group during July-August, 1969 - Report by J. M. Hamilton. *Cominco*
- e) Percussion drilling, 4 holes throughout property drilled during February, 1970.

The option was subsequently dropped by Cominco in 1970.

A magnetic survey was carried out over the BIN 87-94 claims during early September, 1970 by Geotronics Surveys Ltd.

GEOLOGY

The property is found within the Guichon Creek Batholith, which hosts the large disseminated copper deposits of Bethlehem, Lornex, Highmont, and Valley Copper and the massive type copper deposit of Alwin all located to the north. The batholith, according to Northcote's Ph.D. thesis, was emplaced between Upper Triassic and Middle Jurassic Age and is composed of several different phases varying in rock-type from quartz monzonite to quartz diorite.

According to McInnis, the area covered by the magnetic survey is underlain by 4 major rock types: the Guichon variety of the Highland Valley phase in the western portion of the survey area, the Chataway variety of the Highland Valley phase in the central portion, the Bethsaida phase in the eastern portion and the Skeena (Bethlehem) phase in the north central portion surrounded by Chataway variety. The description of these rock-types are given in Northcote's thesis and McInnis' report.

From air photos and field observations McInnis has inferred a fault striking northerly along Skuhost Creek and a second one striking northwesterly along its main tributary within the survey area. He notes that joint sets generally parallel these major structural trends.

There is no reported mineralization within the survey area. Bornite and chalcocite occur on fracture plane surfaces in the south and east central parts of the BIN claims outside the survey area.

INSTRUMENTATION AND THEORY

For the magnetic survey, a portable, vertical component, fluxgate magnetometer, Model G-110, manufactured by Geotronics Surveys Ltd., was used. It is a visual-null type, utilizing a meter, with a digital dial readout that has a range of 100,000 gammas and a reading accuracy of 10 gammas. Its temperature coefficient is approximately 2 gammas per 1° change on the centigrade scale. The G-110 incorporates a self-levelling device, an oil-damped gimbal, that will level the sensing element within $\pm 16^\circ$.

Only 2 minerals are magnetic and these are magnetite and pyrrhotite. Magnetic surveys are therefore used in direct search for these minerals as a source of iron, for orebodies associated with these minerals, or for geological mapping of lithology and structure, since different rock-types have different background amounts of magnetic material (usually magnetite).

SURVEY PROCEDURE

The claim line for the BIN 31-37 and CU 1-6 claims was used as a base line which strikes in an east-west direction. The survey was run on cross-lines at 500-foot intervals which were chained and compassed in. Readings of the magnetometer were read at 100-foot intervals which were marked by orange flagging tape. The magnetic diurnal variation was kept track of with a base station magnetometer read by the writer approximately every 45 minutes. The diurnal varied no more than 80 gammas per hour and 200 gammas per day.

When the grid was set up, it was assumed that the Cominco maps were correct since they were somewhat detailed. Therefore, from the maps, Cominco's

grid system was extended north onto the survey area. However, it was found later that the magnetic survey grid was 1,300 feet west of the corresponding lines of the Cominco grid.

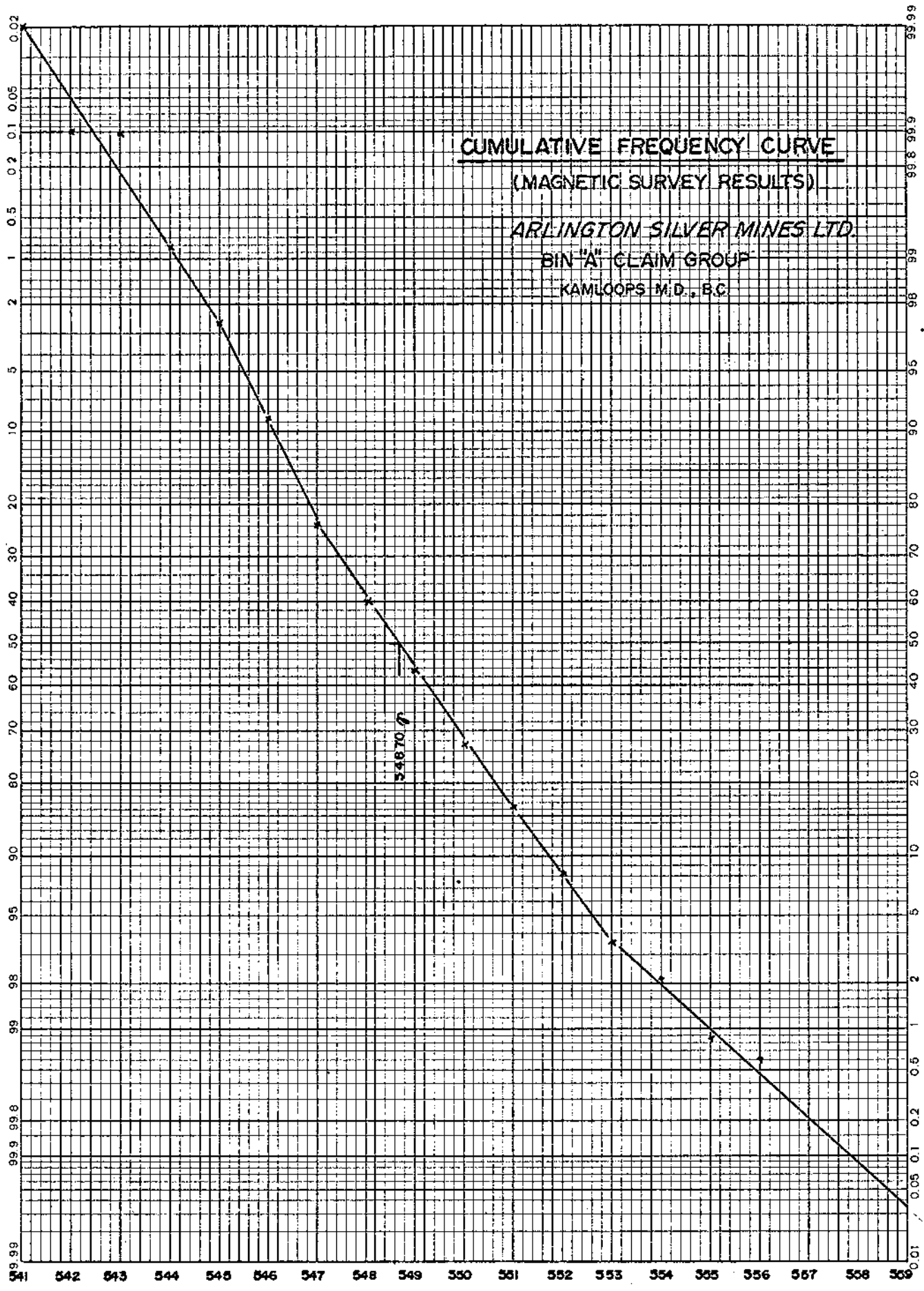
TREATMENT OF DATA

The magnetic field data was corrected for diurnal variation. These results were then statistically analyzed by plotting their cumulative frequency distribution on arithmetic-probability paper. The mean background value was shown at the 50% level to be approximately 54,900 gammas which was subsequently subtracted from all values. This divided the results into positives and negatives. These treated results were then plotted on sheet 1 and contoured at a 200-gamma interval with the zero contour being drawn in with a heavier solid line, the positive contours a solid line, and the negative contours, a dashed line.

DISCUSSION OF RESULTS

The range of the magnetic results, taken from the extreme values is about 1,900 gammas but varies more commonly between ± 500 gammas. This small range

GB-23
PROBABILITY



VALUES ($\gamma \times 100$)

FREQUENCY (%)

has been found to be typical of the Guichon Creek Batholith. As can immediately be seen the contours seem to trend in an east-west direction. Most of this is due to an error inherent in the survey procedure. That is, the readings are spaced 100 feet apart in a north-south direction and 500 feet apart in an east-west direction which therefore biases the results in an east-west direction.

The western end of the property has a relatively high magnetic intensity. This could be due to the presence of the Guichon phase. According to McInnis this phase contains a relatively high mafic content and therefore, possibly, a higher concentration of magnetite.

The central and eastern portions of the survey area, with the exception of the north central portion, are relatively low in magnetic intensities. This can possibly be attributed to the lower mafic content of the Chataway variety and the Bethsaida phase. The higher intensity region of the north central portion of the claim group probably reflects the Skeena phase which likely, in this area, has a slightly higher background level of magnetite.

Over this property there is a correlation between the magnetic lows and topographic depressions

such as creek valleys and gullies. These lows most likely reflect faults and shear zones that have resulted in the formation of the gullies.

The contacts and faults as is inferred from the magnetic survey is drawn on an overlay. They are somewhat displaced from McInnis' geology map. A few additional faults and/or shear zones, inferred from magnetic troughs, have been added.

Combining the 1970 magnetic survey with that of this year's, no additional information could be obtained.

RECOMMENDATIONS

Little has been done on these claims to find out if they contain any mineralization. A soil sample survey is therefore recommended over the present grid, if it is felt that the soil is not too deep and has been sufficiently developed in order to give reliable results.

If it is desired to obtain additional structural information, a VLF-EM survey is recommended,

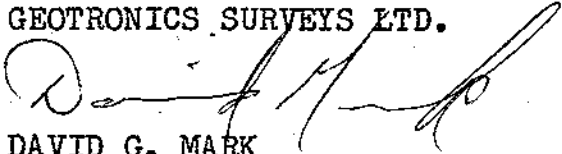
Magnetic Survey
BIN 'A' Claim Group

11.

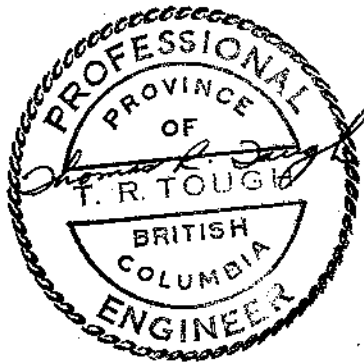
though only conductor faults striking in a direction
of $S15^{\circ}W \pm 45^{\circ}$ would be delineated best.

Respectfully submitted,

GEOTRONICS SURVEYS LTD.


DAVID G. MARK
Geophysicist

DGM:ly
August 4, 1971



SELECTED BIBLIOGRAPHY

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Department of Energy, Mines and Resources, Ottawa,
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Sheet 92 I/6, 1967.

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Duffel, S., McTaggart, K.C., Ashcroft Map-Area,
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Memoir 262, 1952.

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Magnetic Survey
BIN 'A' Claim Group

15.

COST BREAKDOWN

18 Line Miles Magnetometer Survey
BIN 'A' Claim Group of 18 mineral claims
Highland Valley Area, B.C.
July 23 to August 1st, 1971 (10 days)

Wages -

D. Mark, Geophysicist, 10 days @ \$100.00	\$1,000.00
K. McCulloch, Instrument Operator, 10 days @ \$75.00	750.00
M. Scholz, Helper 10 days @ \$60.00	<u>600.00</u>
	\$2,350.00
4x4 Rental, 10 days @ \$20.00	200.00
Instrument Rental, 10 days @ \$30.00	300.00
Survey Supplies	75.00
Mapping and report	500.00
Engineering Fees	<u>300.00</u>
	<u>\$3,725.00</u>

Declared before me at the *City*
of *Vancouver*, in the
Province of British Columbia, this *12*
day of *August* 1971, A.D.

Tom Ralst

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

Sub - mining Recorder

Geotronics Surveys Ltd.

RESUME OF TECHNICAL AND FIELD EXPERIENCE

OF

K. McCULLOCH

1. Presently Field Supervisor and Crew Chief for Trans-Arctic Explorations Ltd./Geotronics Surveys Ltd.
2. Two years of applied field experience in various aspects of mining exploration, geophysical and geochemical surveys.
3. Instrument Operator on various geophysical instrumentation methods, i.e., magnetometer, electromagnetic, self potential, resistivity, induced polarization and transit & level surveying.
4. The above mentioned experience applied in Western Canada and the U.S.A.

RESUME OF PROFESSIONAL AND TECHNICAL EXPERIENCE
OF

DAVID G. MARK, B.Sc.

EDUCATION

Graduate of the University of British Columbia in Science (B.Sc.) in Geophysics.

EXPERIENCE IN INDUSTRY

Experience, technical and interpretational, in various geophysical surveys: magnetometer, electromagnetic, self-potential, gravity, induced polarization, resistivity and seismic methods.

1968 - Present - Geophysicist for Geotronics Surveys Ltd., Vancouver, B.C.

1968 (exploration season) - Field Geophysicist for Geo-X Surveys Ltd., Vancouver, B.C.

1967 (exploration season) - Field Supervisor in geochemical work and geological mapping for Anaconda (Canada) Company.

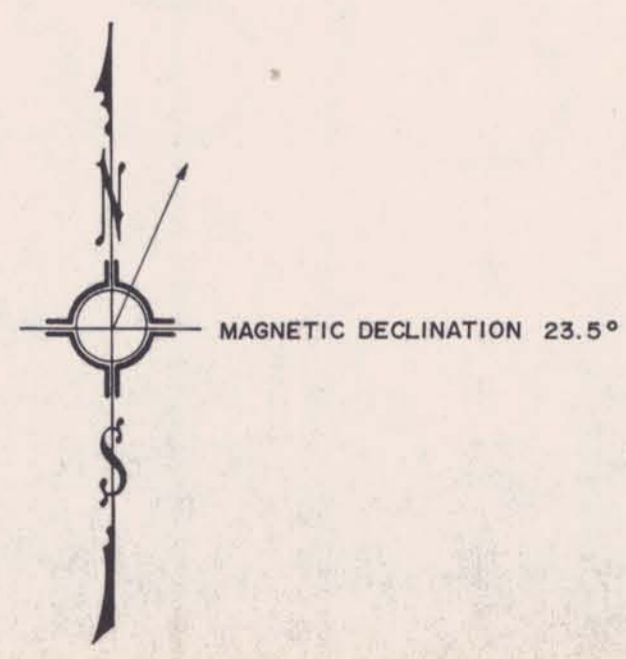
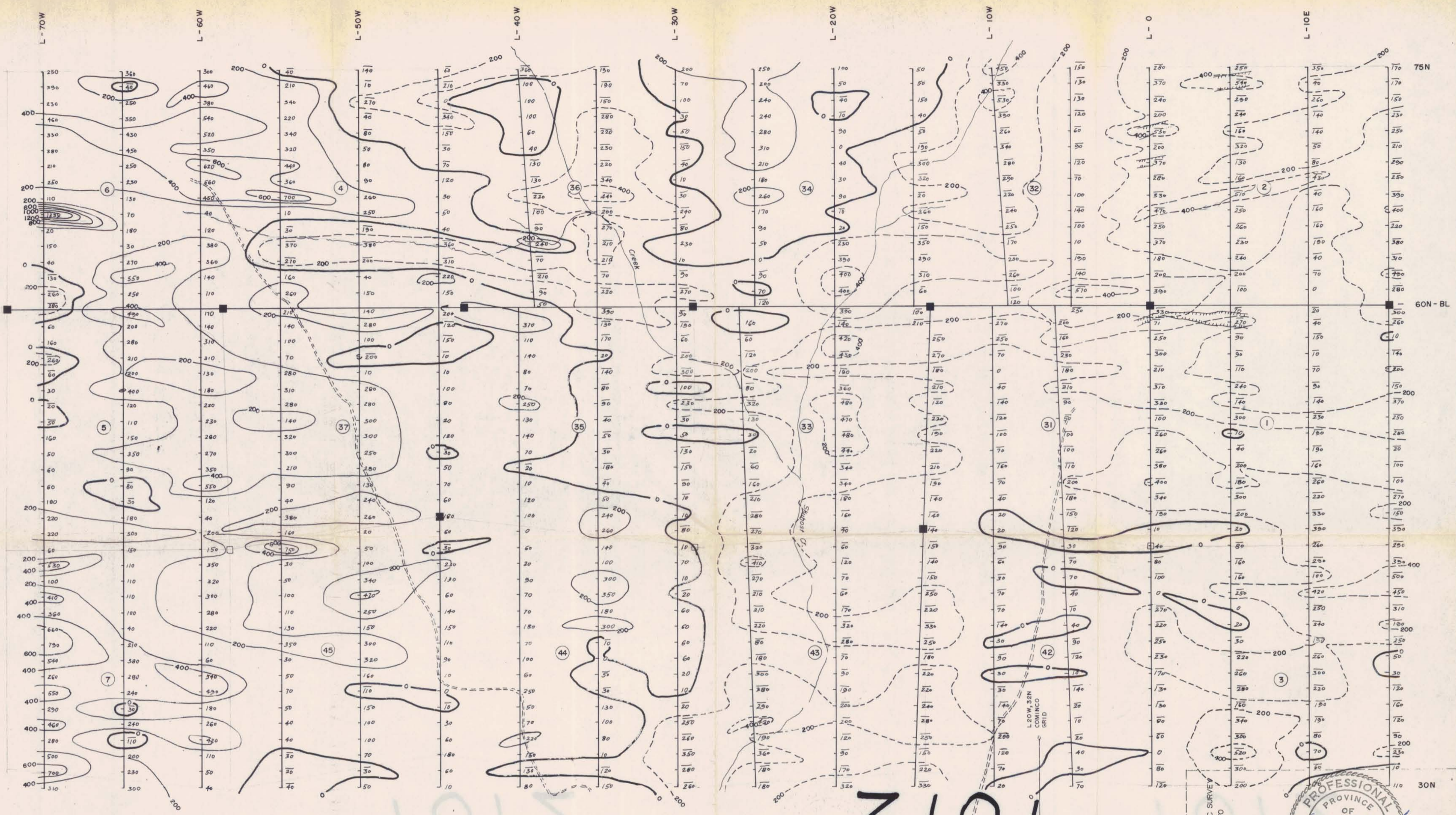
1966 (exploration season) - Field Supervisor for geophysical and geochemical work and prospecting for Mastadon-Highland Bell Mines Ltd.

1965 (exploration season) - Prospecting and geological evaluation for New Taku Mines Ltd.

* * * * *

Member of the British Columbia Geophysical Society and the Vancouver Branch of The Canadian Institute of Mining and Metallurgy.

P. Eng. applied for with the Association of Professional Engineers of B.C.



LEGEND

- SURVEY LINE ———
- CLAIM POST (LOCATED, ASSUMED) ■ □
- CLAIM No. (33)
- ROAD - - - - -
- CREEK ~~~~~
- GULLY - - - - -

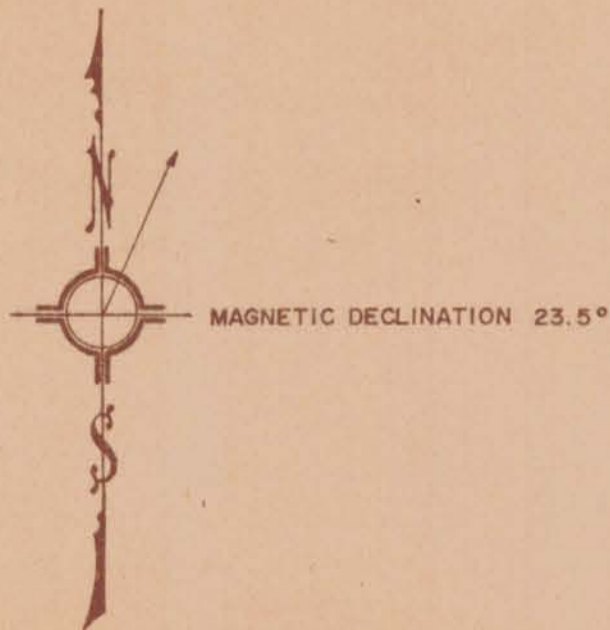
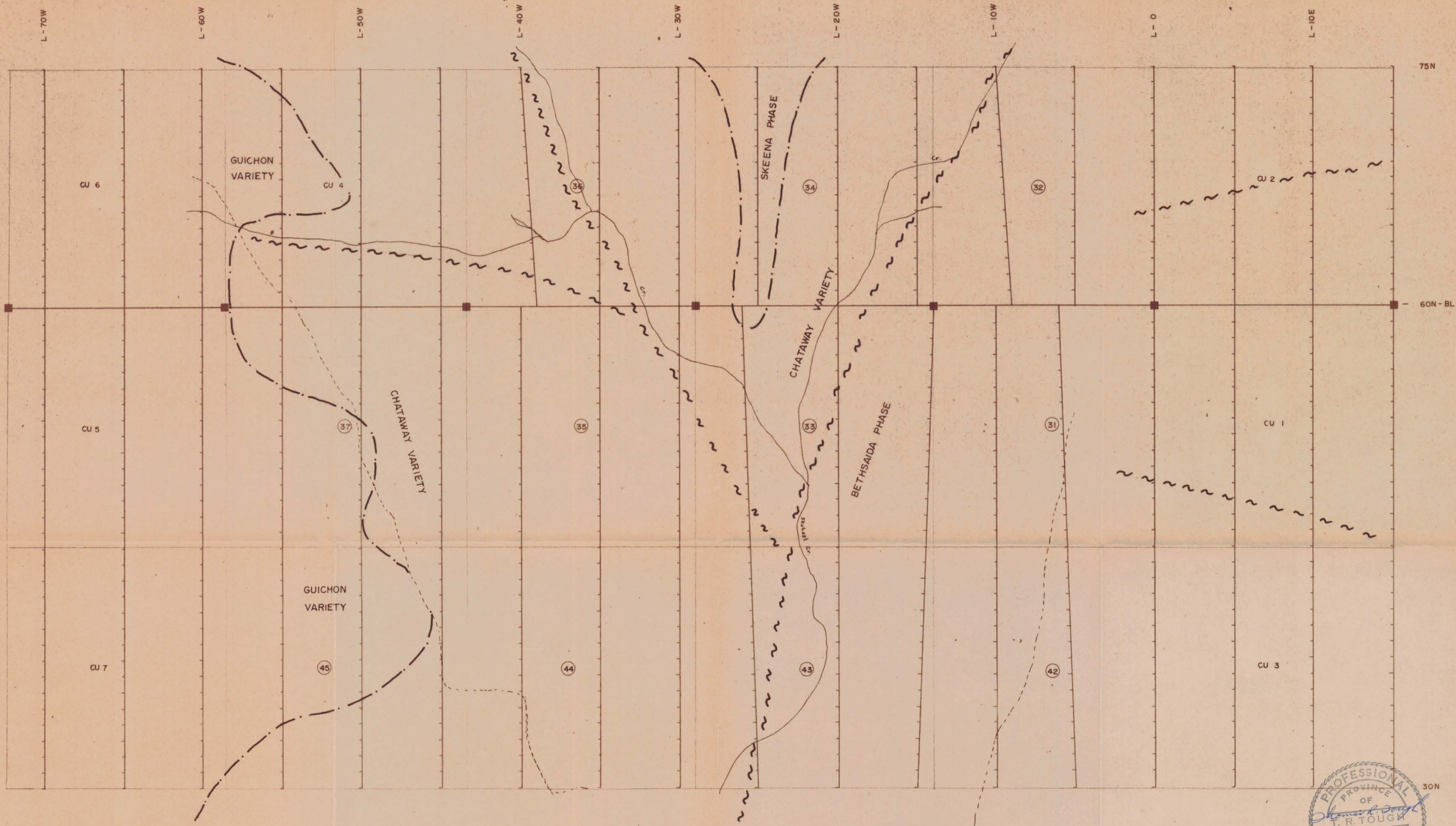
- CONTOUR INTERVAL 200 gamma
- POSITIVE CONTOUR LINE ———
- NEGATIVE CONTOUR LINE - - - - -

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3181 MAP #3



TO ACCOMPANY GEOPHYSICAL REPORT BY D.G. MARK, B.Sc.

ARLINGTON SILVER MINES LTD.			
BIN 'A' CLAIM GROUP			
KAMLOOPS M.D., B.C.			
MAGNETOMETER SURVEY			
type of survey FIELD DATA AND CONTOURS			
scale 1" = 400'	date JULY 1971	job no. 71 - 70	sheet no. I
		drawn by P. P.	
		Geotronics Survey Ltd.	



LEGEND

SURVEY LINE	—
CLAIM POST	■
CLAIM No.	(33)
ROAD	- - - -
CREEK	~~~~~
FAULT	~~~~~
INFERRED GEOLOGICAL CONTACT	- · - · -

Department of
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ASSESSMENT REPORT
NO. 3181 MAP #4

NOTE GEOLOGY ON THIS MAP IS A COMBINATION OF McINNIS AND THE MAGNETIC SURVEY



TO ACCOMPANY GEOPHYSICAL REPORT BY D.G. MARK, B.Sc.

ARLINGTON SILVER MINES LTD.
BIN 'A' CLAIM GROUP
KAMLOOPS M.D., B.C.

MAGNETOMETER SURVEY

scale	date	job no.	sheet no.	drawn by
1" = 400'	JULY 1971	71 - 70	2	P. P.

Geotronics Surveys Ltd.
411 - 80 West Hastings Street, Vancouver, British Columbia