

GEOPHYSICAL REPORT

of the

AEROMAGNETIC SURVEY

of the

HOBBOE CREEK PROPERTY
ATLIN MINING DIVISION

Latitude 59°13'N
Longitude 134°7'W

on behalf of

RIO PLATA SILVER MINES LTD. (N. P. L.)

4995

104M/1E

Claim Name
or
Crown Grant

Record or Lot Number

Anniversary

Butte C. G.
Great Falls C. G.
Helena C. G.

Lot #304
Lot #306
Lot #305

Bear #1
Brother #2
Cuag #1
H. J. #1
Tunnel Fr.

133
1783
129
2353
2351

June 23
July 20
June 18
June 13
June 13

Loon 1 - 4
Loon 5 - 22
Loon 23 - 28
Loon 29 - 46
Loon 47 - 48
Loon 71 - 74
Loon 79 - 84
Loon 89 - 94
Loon 105 - 122
Loon 141 - 164

16404G - 16407G
16368G - 16385G
16408G - 16413G
16386G - 16403G
16414G - 16415G
16676G - 16679G
16684G - 16689G
16694G - 16699G
16710G - 16727G
16728G - 16751G

June 11
June 8
June 11
June 8
June 11
June 28
June 28
June 28
June 28
June 28

by

P. P. Nielsen, B.Sc., Geophysicist
G. B. Phelps, M.Sc., P.Eng.

NIELSEN GEOPHYSICS LTD.
Vancouver, B. C.

September, 1973

NTS 104 MI

Department of Mines and Petroleum Resources ASSESSMENT REPORT No. 4995 MAP	
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INTRODUCTION

During the period from August 6 to August 8, 1973, a helicopter-borne magnetic survey was executed on the Hoboe Creek property southwest of Atlin, B. C. The survey was carried out by Nielsen Geophysics Ltd. on behalf of Rio Plata Silver Mines Ltd.

The purpose of the survey was to assist in the mapping of rock-types and structures thought to be related to known skarn-type mineralization and, possibly, nearby porphyry-type copper and molybdenum mineralization.

A total of 110 line miles was surveyed using a Bell G-2 helicopter and a Newmont Nuclear Precession, total field magnetometer. Operation, navigation and data compilation were carried out by the author of this report.

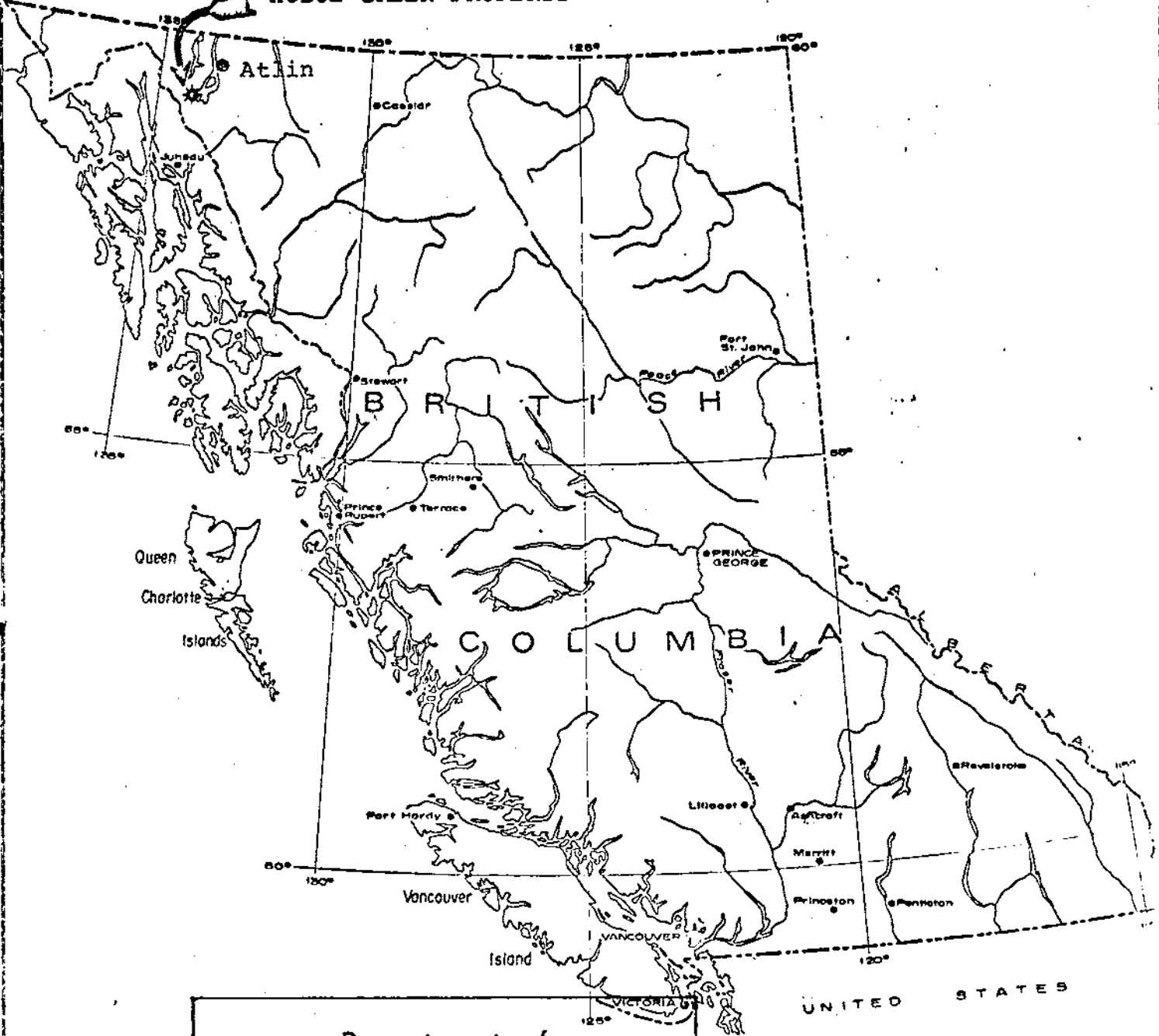
LOCATION AND ACCESS

The property is located 28 air miles south-southwest of Atlin, B. C. on Hoboe Creek which flows into Willison Bay at the head of Torres Channel.

The claims straddle Hoboe Creek and are centred approximately two miles upstream from its mouth.

Access to the survey area was by helicopter from its base in Atlin. Extra fuel was flown in to Hoboe Creek by the helicopter prior to the commencement of the survey.

HOBOE CREEK PROPERTY

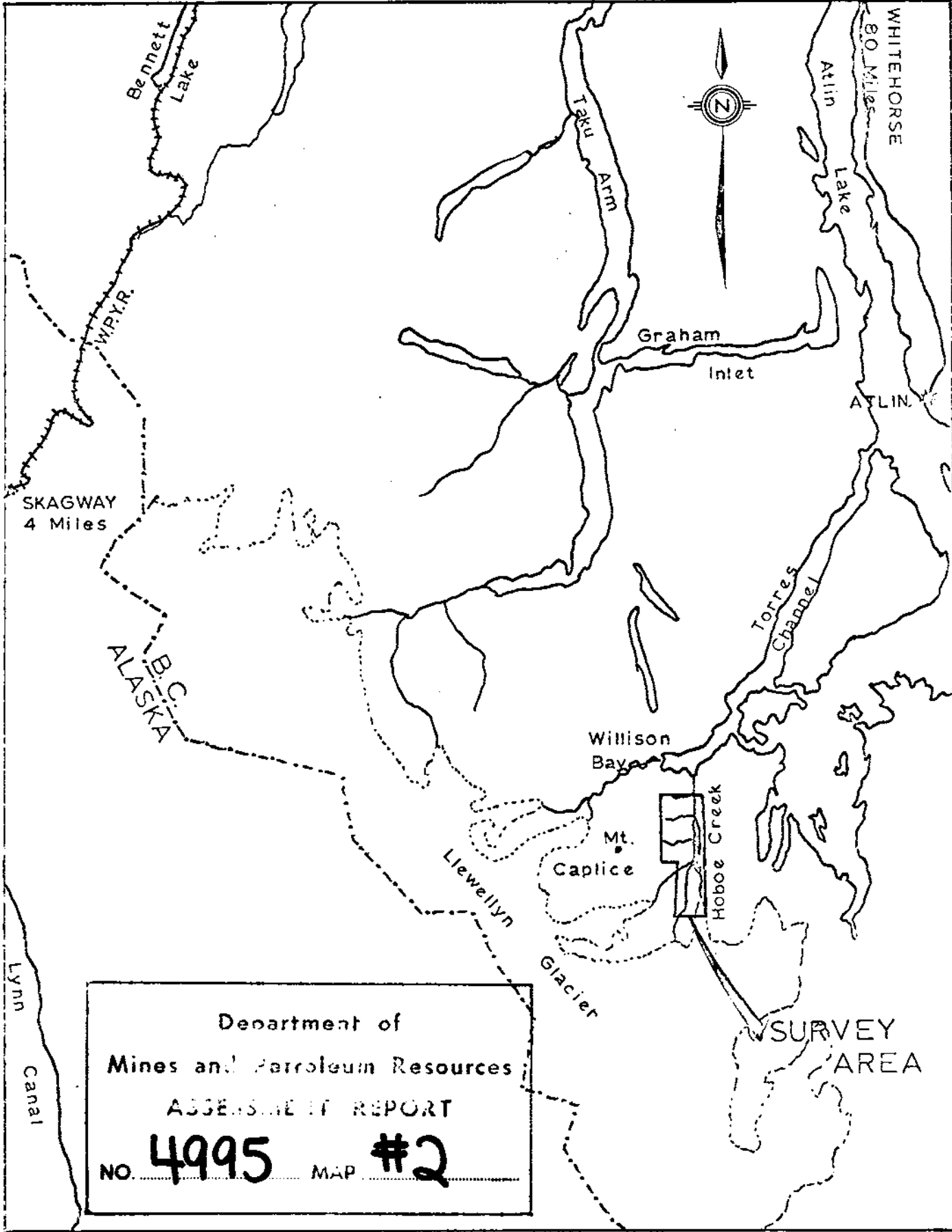


Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **4995** MAP **#1**

RIO PLATA SILVER MINES LTD. (N.P.L.)

LOCATION MAP

Scale: 1" = 100 miles



Department of
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 ASSESSMENT REPORT
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RIO PLATA SILVER MINES LTD. (N.P.L.)
 HOBEO CREEK PROPERTY
 AEROMAGNETIC SURVEY AREA
 LOCATION MAP - Scale: 1" = 8 miles

CLAIMS

The following list of claims and crown grants are presently owned by Hobo Creek Coppermines Ltd. (N. P. L.) and are under option to Rio Plata Silver Mines Ltd. (N. P. L.) who supplied the claims information.

<u>Claim Name</u> or <u>Crown Grant</u>	<u>Record or Lot Number</u>	<u>Anniversary</u>
Butte C. G.	Lot #304	
Great Falls C. G.	Lot #306	
Helena C. G.	Lot #305	
Bear #1	133	June 23
Brother #2	1783	July 20
Cuag #1	129	June 18
H. J. #1	2353	June 13
Tunnel Fr.	2351	June 13
Loon 1 - 4	16404G - 16407G	June 11
Loon 5 - 22	16368G - 16385G	June 8
Loon 23 - 28	16408G - 16413G	June 11
Loon 29 - 46	16386G - 16403G	June 8
Loon 47 - 48	16414G - 16415G	June 11
Loon 71 - 74	16676G - 16679G	June 28
Loon 79 - 84	16684G - 16689G	June 28
Loon 89 - 94	16684G - 16699G	June 28
Loon 105 - 122	16710G - 16727G	June 28
Loon 141 - 164	16728G --16751G	June 28

PHYSIOGRAPHY AND SURVEY CONDITIONS

The Hoboe Creek Property is situated within the Western System of the Canadian Cordillera. Hoboe Creek lies on the eastern flank of the Boundary Ranges of the Coast Range Intrusives.

Hoboe Creek, which is fed by the Llewellyn Glacier to the south and to the southwest, meanders through a "U" shaped valley which varies in altitude from 2,200 feet A.S.L. on Hoboe Creek to approximately 6,000 feet A.S.L. at the southwest corner of the survey area.

The northern half of the survey area occurs on a steep east slope of about 30 degrees. The western edge of the survey coverage in this area was at the 5,200 foot level.

Timber line is at approximately 4,000 feet A.S.L. Vegetation below this level consists of spruce, fir, pine and slide-alder along the slopes with tamarack and aspen occurring along the valley floor.

Snow patches and glacier-tongues covered much of the survey area above the 4,000 foot level.

Wind gusts off the glacier tongues and down some ravines, steep and variable terrain and snow coverage made navigation difficult in the higher elevation areas.

HISTORY

Near the turn of the century the north central portion of the present survey area (vicinity of "camp" marked on accompanying isomagnetic contour map.) was known as the Laverdiere Property and was explored by trenching and drifting as a contact-metamorphic prospect.

Since that time various groups have worked on the property in attempts to prove up economic grades and tonnages to the skarn-type pods, lenses and veins.

Recently, prospecting and drilling have indicated the distinct possibility of a porphyry-type copper-molybdenum deposit occurring within the intrusives to the west of this contact environment.

GEOLOGY

The area consists of regionally and contact metamorphosed pre-Permian sediments cut by a batholithic complex related to the Jurassic Coast Intrusions.

The metasediments which strike north-south and dip westerly are quartzite, gneiss, schist, dolomitic-limestone. Where observed, the contact is roughly near the base of the west side of the valley.

Their contact with the intrusives to the west is moderate and is believed to be concordant with their attitude.

Locally the intrusive rocks have been identified as altered monzonite.

The extent or importance of local faulting is not clear. A major fault parallel to the contact is postulated striking northerly down Hoboe Creek valley, through Willison Bay and along Taku Arm.

Mineralization observed on the property consists of the contact-metasomatic type where the primary constituents are chalcopyrite intermixed with phaneritic magnetite in the form of pods of limited size but of good grade copper. Also of great interest is the porphyry-type copper-molybdenum mineralization within the intrusive rocks adjacent and to the west of the contact. This type of mineralization has been observed both on the surface at two widely separated locations and in recent drill holes.

REFERENCES

Much of the foregoing information was graciously supplied by Mr. A. Fustos, P.Eng. and readers desirous of further detail and other references regarding the property are referred to his report entitled:

"Evaluation and Recommendation of an Exploration Program on the 'Loon Group' " by Arpad Fustos, P.Eng., Dacian Resources Consultants Ltd.

(May 22, 1973)

THE AEROMAGNETIC SURVEY

General Comments

The aeromagnetic method which measures the variations in magnetic susceptibility between rock types and across faults is quick, informative and relatively inexpensive.

Aeromagnetics have detected many ore deposits directly due to the magnetite and/or pyrrhotite associations with economic minerals. More often, it is a successful tool used to narrow the search for deposits by assisting in mapping rock-types, faults and folds and to determine depths of overburden, dip, strike, and general attitude of interesting geological features.

On the Hoboe Creek property, it was hoped that the survey would assist in locating a number of east-west faults (fractures) to augment an air photo, fracture-density study and to delineate the granite-sedimentary contact observed at a few locations on the ground.

This contact, where observed, strikes north-south. It was necessary, but somewhat unfortunate, that the survey flight lines were flown north-south as well due to the severe topography which exhibits a steep east-west gradient over most of the property. As a result, the contact is not clearly identified in the aeromagnetic data.

Theory of the Nuclear Precession Magnetometer

The helicopter-borne magnetometer used for the survey was a Varian nuclear precession magnetometer which has been modified and improved upon by the geophysical staff of Newmont Exploration Limited of Danbury, Connecticut.

Briefly, the instrument includes a sensor which consists of a cylindrical bottle containing one pint of kerosene within a direct current-bearing coil which is oriented horizontally in a bird towed below the helicopter on a 50-foot cable.

Direct current is passed through the coil for 0.5 seconds which causes the proton orbit planes of the hydrogen atoms in the kerosene to align perpendicularly to the coil axis.

The current is then shut off and the orbit planes return to random orientation generating a die away envelope at a frequency of about 1Hz. for each 25 gammas of field present. Thus, in a field of 60,000 gammas, the frequency generated is 2400 Hz.

This signal is fed to a receiver where it is converted to gammas and recorded on a digital recorder using print tape. A reading is made every second. Readings are accurate to \pm five gammas.

The instrument measures the total intensity of the earth's magnetic field in gammas.

Field Procedure and Survey Specifications

The magnetometer was mounted in a chartered Bell G-2 helicopter owned by Transwest Helicopters (1965) Ltd. which was based in Atlin B. C. and piloted by Mr. D. Bruns.

Proposed flight lines spaced 500 and 1000 feet apart were ruled on an air photo mosaic in a north-south direction parallel to the terrain.

The magnetometer operator, P. Nielsen, also acted as navigator. Fiducial numbers observed on the recorder coincident with landmarks such as streams, canyons, ridges, lakes, and glaciers were noted on the mosaic for additional control.

The pilot was responsible for maintaining a 300-foot mean terrain clearance and for staying on course.

Good control was maintained over most of the survey area. In the northwest quadrant area, it was necessary to increase the line-spacing from 500 feet to 1000 feet due to the very steep terrain, air photo distortion and differences in snow cover on the ground to that shown on the photos.

Flight-line numbers and fiducial numbers at the beginning and end of each flight-line were marked on the digital tape.

A total of 5.1 hours of flying including ferry time from Atlin to the property and return was required to complete the project.

Data Compilation and Presentation

The flight-lines and fiducial numbers were transferred from the air photo mosaic to a mylar overlay of a controlled topographic map (Scale: 1" = 500') supplied by McElhanney Surveying and Engineering Ltd.

Gamma values for appropriate fiducial points were then taken from the digital tape records and plotted on the overlay. Then the values were contoured using a contour interval of 50 gammas.

The contours were then transferred to another mylar sheet. Important topographic features such as lakes, streams and glaciers were also included on the finished map.

All gamma values are positive and relative to a datum or base value of 57,000 gammas total field intensity.

Discussion of Results and Interpretation

Over the survey area, the magnetic intensity varied from 57,960 gammas to 58,830 gammas resulting in a magnetic relief of 870 gammas.

There is a general north-south gradient with intensities increasing to the south.

A number of structures including three major faults are interpreted.

The contours in the northeast corner of the map suggest the presence of a north-northwest striking fault which could extend southerly along Hoboe Creek Valley and northerly towards Takla Arm.

An east-west fault cuts through the main area of interest just north of the camp.

Another strong northeasterly fault is interpreted crossing the southern grid area. It does not appear to express itself topographically.

A north-south fault probably exists down the narrow valley through the center of the southern portion of the grid. None of the interpreted faults appear to have any lateral displacement and all are thought to be of the block-fault type. There are likely many faults present in the survey area which do not express themselves magnetically.

As mentioned above the contact between the metasediments and granites (monzonite) is not clear in the data primarily because the contact is sub-parallel to the survey flight-lines. An attempt has been made to interpret its location by extrapolating from the camp area where it has been observed.

In the north-central grid area an elongate, arcuate low is thought to be the magnetic expression of altered manzonites and could outline a porphyry-type target area.

The 1100 gamma low just west of Hoboe Creek in the centre of the grid should be investigated as another potential prophyry environment. The circular magnetic pattern is typical of a stock or small pluton.

The south west quadrant coincident with values in excess of 1,500 gammas is interpreted due to moderately dipping meta-sediments. A contact on the southerly extension of the contact metasomatic environment to the north could continue to the west of these highs. At the extreme southwest corner of the map, a distinct di-polar magnetic anomaly is observed and is interpreted due to a steeply dipping contact containing appreciable amounts of magnetic material. This feature should be investigated as a possible skarn deposit.

CONCLUSIONS AND RECOMMENDATIONS

The airborne magnetometer survey has indicated two areas of possible porphyry-type mineralization and one new area of skarn type mineralization.

As originally suspected, the granitic-metasediment contact has not been clearly defined by the survey.

The survey has also failed to detect any significant intense local faulting in the main area of interest. This is thought to be due to either a lack of such faulting or due to a lack of appreciable lateral or vertical movement of existing faults.

Three major faults have been interpreted and are shown on the contour map.

It is recommended that the above mentioned "lows" be explored for porphyry-type mineralization and that the dipolar anomaly in the southwest corner of the grid be prospected for indications of skarn type mineralization.

Within the confines of the survey it appears that the area within and immediately adjacent to the old workings and recent drilling (near "camp" on the map) are of the most interest and deserve further intensified exploration.

Although the terrain is quite steep in this area, a deep-penetrating Induced Polarization survey covering the aeromagnetic low (i.e. below 1,100 gammas) west and southwest of the camp should be seriously considered.

Respectfully submitted,



P. P. Nielsen, B.Sc., Geophysicist



G. B. Phelps, M.Sc., P.Eng. Geologist

NIELSEN GEOPHYSICS LTD.

APPENDICES

STATEMENT OF AUTHOR'S QUALIFICATIONS

I DO HEREBY STATE:

1. I am the author of this report.
2. I have been actively and responsibly involved in mining exploration using airborne, ground and computer applied geophysics in Canada and the United States for the past nine years.
3. I graduated with a B.Sc. degree in Geophysics from the University of British Columbia in 1969.
4. I am President, Nielsen Geophysics Ltd. with business address at 420-475 Howe Street, Vancouver 1, B. C.
5. I am a member of the Society of Exploration Geophysicists, the Canadian Institute of Mining and Metallurgy and the B. C. Geophysical Society.

Signed

P. P. Nielsen

P. P. Nielsen

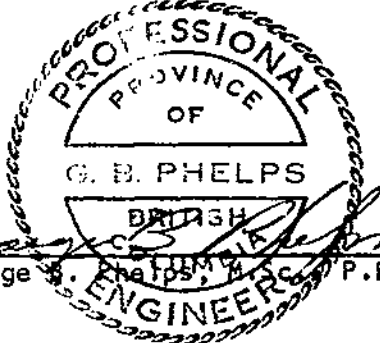
Date

22 October 1973.

ENGINEER'S CERTIFICATE

I, GEORGE B. PHELPS, of #501-2061 Beach Avenue, in the City of Vancouver, in the Province of British Columbia, DO HEREBY CERTIFY:-

1. That I am a consulting geological engineer with a business address of 420-475 Howe Street, Vancouver, British Columbia.
2. That I am a graduate of the Montana College of Mineral Science and Technology where I obtained my B.Sc. in geological engineering in 1966 and my M.Sc. in geological engineering in 1969.
3. That I am a Registered Professional Engineer in the Geological Section of the Association of Professional Engineers in the Province of British Columbia.
4. That I have practiced my profession as a geological engineer for the past seven years, and
5. That I have no interest, direct or indirect, in the property with which this report is concerned, nor do I expect to receive any such interest. I have no interest in the securities of Rio Plata Silver Mines Ltd. (N.P.L.)

A circular seal for the Professional Engineers of the Province of British Columbia. The outer ring contains the text "PROFESSIONAL ENGINEERS OF THE PROVINCE OF BRITISH COLUMBIA". The inner circle contains the text "PROFESSIONAL OF G. B. PHELPS BRITISH COLUMBIA ENGINEER". A handwritten signature of George B. Phelps is written across the seal.
George B. Phelps, B.Sc., P.Eng.

DATED at the City of Vancouver, Province of British Columbia, this 22 day of October 1973.

COSTS

The following is a statement of the charges by Nielsen Geophysics Ltd. to conduct the Aeromagnetic Survey on the Hoboe Creek property.

The cost of photo-mosaic and controlled topographic map preparations was borne by Rio Plata Silver Mines Ltd. and is not included herein.

1. Professional Services and Instrument Rental	\$ 2,500.00
(Includes: Aeromagnetometer installation, operation, navigation, data compilation and consulting.)	
2. Transportation	
(a) Mobilization and Demobilization.....	306.55
(b) Local (Helicopter) charter.....	730.36
3. Food and Accommodation.....	60.00
4. Final Report.....	400.00
	<hr/>
	\$ 3,996.91
	<hr/> <hr/>

COST PER MILE.....\$ 36.33

Declared before me at the city
of Vancouver, in the
Province of British Columbia on this 10
day of June 1974 A.D.



Jan Jensen
A Notary Public in and for the Province of British Columbia

Personnel

P. Nielsen, B.Sc., Geophysicist
Nielsen Geophysics Ltd.

magnetometer operator, navigator,
and data compilation supervisor

D. Brun
Transwest Helicopters (1965) Ltd.

helicopter pilot

A. Scott, B.Sc., Geophysicist

assistant data compiler

N. Cukor

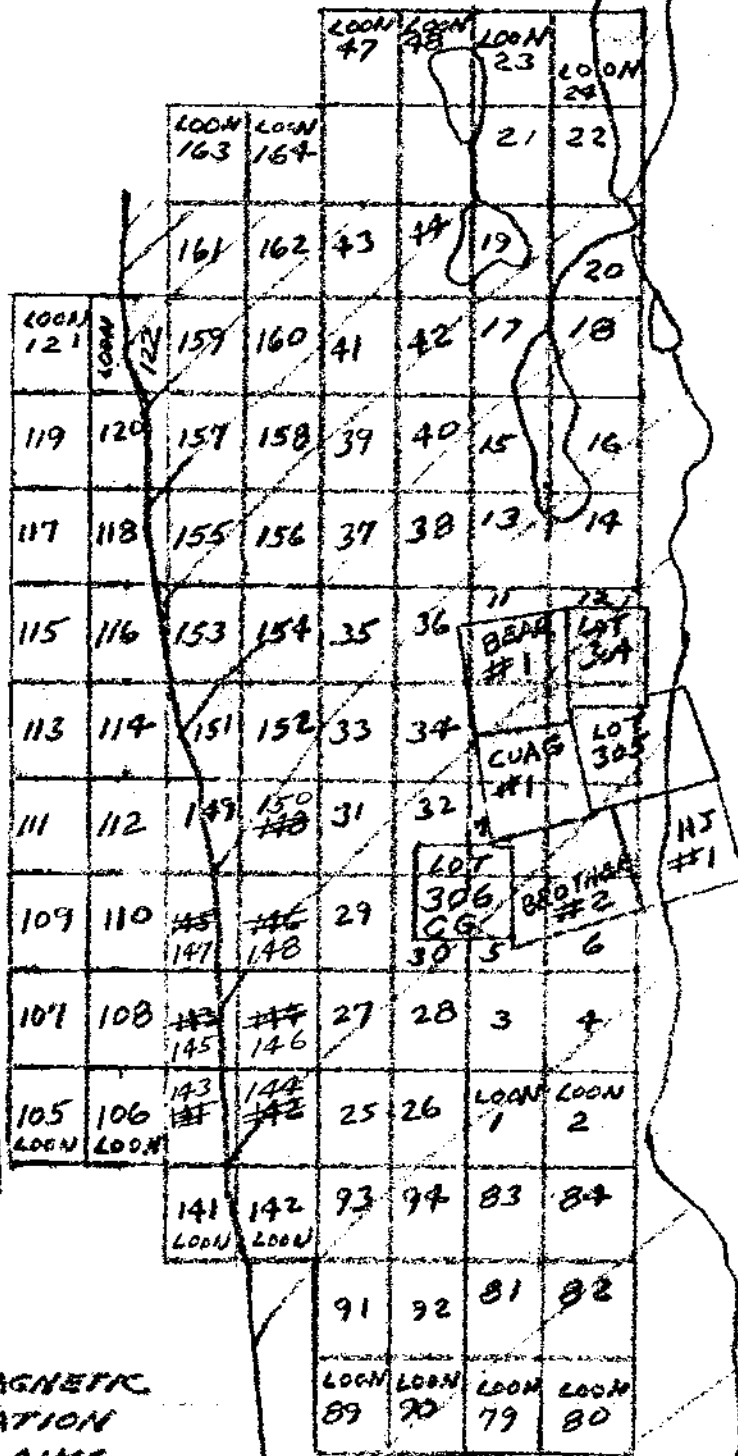
draftswoman

Mrs. J. Lerner

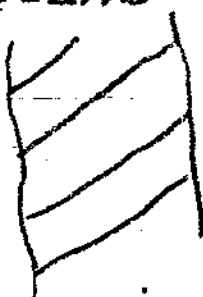
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Department of
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NO. **4995** MAP **#3**



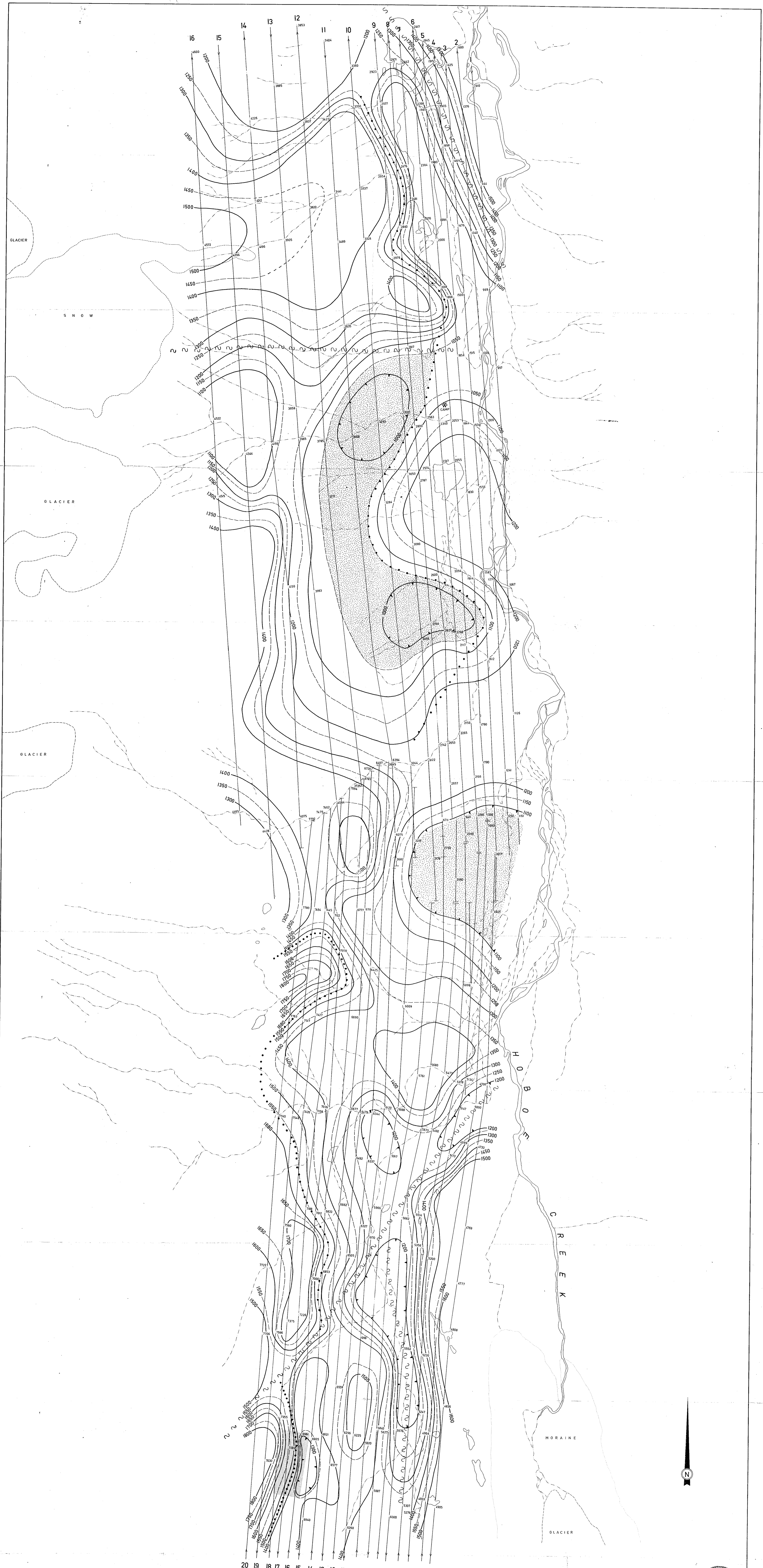
LEGEND



DENOTES FERROMAGNETIC
SURVEY IN RELATION
TO MINERAL CLAIMS
NOTE THE MINERAL
CLAIMS HAVE NOT
BEEN SURVEYED

4995
M3

GLACIER
HOBSE
CREEK



INTERPRETATION

- POSSIBLE SHEAR ZONE
- POSSIBLE PORPHYRY TYPE CU-MO TARGET AREA
- FAULT
- CONTACT

LEGEND

- FLIGHT LINE NUMBER, DIRECTION AND NUMBERED CONTROL POINT
- 100 GAMMA ISOMAGNETIC CONTOUR INTERVAL
- 50 GAMMA ISOMAGNETIC CONTOUR INTERVAL
- MAGNETIC LOW

BASE VALUE 57000 GAMMAS

INSTRUMENT USED
 NEMOT TYPE NUCLEAR PRESSION AIRBORNE MAGNETOMETER (TOTAL FIELD)

4995
M4

To accompany report by:
 P.B. NIELSEN, B.Sc., Geophysicist &
 G.B. PHELPS, M.Sc., P.Eng.

RIO PLATA SILVER MINES LTD (N.P.L.)

HOBEO CREEK PROPERTY Department of
 ATLIN AREA, B.C. Mines and Petroleum Resources

AEROMAGNETIC SURVEY ASSESSMENT REPORT

CONTOUR MAP NO. 4995 MAP #4

ATLIN M.D. NIELSEN GEOPHYSICS LTD. VANCOUVER, B.C.

DATE: SEPTEMBER, 1973 Scale in feet (approx.) DRAWN BY: RCL