NORTH GILLIES LIMIT

BY

H.A. MOORE
INTRODUCTION

The purpose of this report is to describe an exploration programme conducted on sixteen unpatented claims comprising almost the whole Block 3 and Block 4, Limit Twp. The claims are numbered 263469 to 263474 incl, 263561 to 263563 incl, 263565 to 263567 incl, and 263933 to 263936 inclusive and are held jointly by Silverfields Mining Corporation Limited and Keevil Mining Group of Ontario.

The property is located 3 miles south of the town of Cobalt and one and a quarter miles south west of Silverfields Mine.

The westerly boundary is parallel to the cottage road servicing Cassidy Lake.

Access to it is best achieved by an all weather gravel road joining Highway 11 B with the cottages around the shores of Cassidy Lake. The abandoned South Lorrain Branch of Tand N.O. railway bisects the property.

There is an abandoned farm with four acres of cleared land in the west central portion of the property. In the south westerly portion approximately forty acres have been reforested by machine planting. There are three swampy ponds on the property. A north flowing stream follows the abandoned railway right of way along which there is abundant flooding in the spring. The largest pond is in the south east corner which floods approximately thirty acres.
Gillies Limit
Claim Location Map

NORTH PART GILLIES TWP
SCALE 1" = 20 CHAINS

April 1, 1971
KHA.T. MONT OED
GENERAL GEOLOGY

Three claims in the north east corner of Block 3 cover the southern extremity of a high ridge which rises 150 feet above the elevation of the rest of the property, which is nearly flat.

Four claims along the south boundary have fluctuating topography, while at the south west corner a gentle rise in elevation is indicated by approximately eighty feet in difference.

While at the south east corner a very steep outcropping of Nipissing Diabase is present giving an elevation difference of 220 feet.

There is sparse outcropping except in these areas described, the rest of the property is covered by glacial outwash material consisting of sand and gravel which locally has been washed away from the banks of the drainage channel.

The ridges and slopes are covered by glacial till and ground moraine. There are therefore two types of overburden on the property of vastly differing origin. Ground contours of the property can be seen on map P.81, O.D.M. Thompson.

Most of the consolidated rocks exposed on the property are of the volcanic and sedimentary rocks of the Keewatin exposed along the west boundary and south to the claim limits. The pre Cambrian Cobalt series are exposed predominantly in the north east corner. The Nipissing Diabase sill outcropping is only indicated in the extreme south east corner.

Study of the structural attitude of the Nipissing Diabase and the Keewatin in this area would indicate by the Nipissing Diabase Sill of heavy post Diabase faulting of the Cobalt Lake Era could be responsible for the steeply dipping Sill in Block 4 Map 2051.

There also appears to have been a large fault trend north westerly-south easterly as expressed by North and South Pickeral Lakes and related to the Cobalt Fault Era. If related to the Cobalt Thrust Fault or the Trewthey Contact Fault and being a low angled easterly dipping fault this could explain the large exposure of Huronian Sediments in Block 3.

This structural trend here could also be related to the large Montreal River Structure or sympathetic to it.

Such an exposure of Huronian Sediments with structural control could be considered a hopeful environment for associated silver deposition. The Nipissing Diabase Sill in this area was in close proximity to the favourable sediments but eroded off in this area.
EXPLORATION TECHNIQUE

The widespread overburden covering the property suggested the application of biogeochmical or geochemical soil sampling techniques to locate possible areas of silver cobalt ore mineralization. Due to a programme run on Silverfields Mine by the Dep't of Natural Resources (Geo. Chemistry Dep't) under the supervision of Mr. D. Hornbrook summers 1967-68. It was suggested we try to biogeochemical survey as the topography and the forest covering of the area appeared quite similar to Silverfields Mine Area. The option being if the forest cover was not representative we could use the A horizon soil technique which represented a similarity to the biogeochemistry or accumulated deposition of the same.

Both these methods were used by Dr. Hornbrook and the paper was presented at the Geo Chemistry Convention in Toronto, 1970.

Using a similar technique it was decided to run the soil (A) horizon by hot nitric method to establish a base to use in further detailed work, thus Co and Silver were digested in hot nitric acid and run by a AA Tomic Absorption unit in parts per million.

These suggestions were referred by R.W. Boyle G.S.C., Ottawa and D. Hornbrook who did the research in the Cobalt Camp.
SURVEY

An old east west base line used previously was re-established and new hubs were cut at 200 foot intervals in July, August 1970. North south lines were turned off every 200 feet and run to the tie lines at the north and south boundaries.

Two intermediate base lines were established due to patented claims and small fractions being covered not included in the Silverfield's group. Chainage pickets were erected every 100 feet along these picket lines.

SAMPLING

Sampling was conducted in August and September of 1970 under ideal summer conditions with very little rain. Only the Ag-A1 horizon block soil was taken, leaves, twigs and block humus down to the grey layer. Three and five pound plastic bags were used and samples depended on availability. A small garden trowel was used to loosen ground soil.

The samples were taken at 100 foot intervals with the exception of two lines where they were taken every fifty feet. As a check against previous geochem survey results.

A total of 1130 samples were taken. A location map of the sample numbers and metal values are presented on a 200 scale geochemical map enclosed. The samples were dried, screened to +100 mesh and sent to Technical Services Lab in Toronto.
Upon investigation in June 1970 of the Gillies Limit Claims and of the old Lines and base line, it was found these lines were practically impossible to see as well as hubs were destroyed due to the Diamond Drill programme using this as a trail.

Later on reading the report it was found that line cutting and sampling by the previous operators was done when snow was on the ground. This gave us the reason for such high stubble along the lines. We tried to locate as many pickets as possible but these were very scarce or eligible so a need to cut new ones was necessary to complete a proper survey.
DISCUSSION OF RESULTS

Work to date has been of a preliminary nature designed to delineate areas in which more detailed sampling and ground study can be conducted.

Percent frequency diagrams for Cobalt and Silver values are presented herein. They are of use in determining the threshold of significance for the assay values.

In assembling the statistics for them it is apparent that background characteristics increased in those samples collected from the easterly portion of the property with some isolated portions in the south west section.

Following field investigation portions of the flat low lying parts of the property had very thin portions of Aβ, horizon while others were 2" in depth.

At the present stage of sampling it is rather difficult to access glacial drift and ground moraine dependencies to their retentive power in holding trace elements. To counteract this evidence of retention in the soil, several -100 mesh samples were sent to the laboratory where they indicated that identical cobalt values were present while the silver values increased in most cases.

Anomalous values on the accompanying maps are separated but silver values are interlocked with cobalt values. The main object of further work will be to determine whether the anomalies are superjacent or products of lateral migration. There is evidence of this east of T & N.C. Railway Line but recommended spacing of 25 to 50 foot should eliminate this trend. Apparently this was also obtained by Hornbrook on Silverfields but he found closer sample intervals gave a trend to the halos in superjacent ore zones.
CONCLUSIONS

A number of large and small anomalies separated throughout the property with the major concentrations to the east has been produced by this geochemical exploration programme. Each must be studied in detail, and re-sampled at a closer interval with the aim of producing target areas for diamond drilling.
RECOMMENDATION

The following programme of exploration has been recommended for the 1971 field season.

1. Sample all anomalies areas over 15 parts per million cobalt at 50 foot centres.

II. Recheck digestion time in assay analysis to see if Agua Regia method more favourable than hot HNO₃ digestion.

III. Study soil cover and bedrock depth of the anomalous areas.

H.A. Moore, P. Eng.
### ASSESSMENT WORK DETAILS

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<th>Township or Area</th>
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<td>Type of Survey</td>
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<tr>
<td>Party Chief</td>
<td>H.A. Moore</td>
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Send in duplicate to:

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Performance and coverage credits do not apply to airborne surveys.
In order to simplify the filing of geological, geochemical and ground geophysical surveys for assessment work, the Minister has approved the following procedure under Section 84 (8a) of the Ontario Mining Act. This special provision does not apply to airborne geophysical surveys.

If, in the opinion of the Minister, a ground geophysical survey meets the requirements prescribed for such a survey, including:

(a) substantial and systematic coverage of each claim
(b) line spacing not exceeding 400 foot intervals
(c) stations not exceeding 100 foot intervals or
(d) the average number of readings per claim not less than 40 readings

it will qualify for a credit of 40 assessment work days for each claim so covered. It will not be necessary for the applicant to furnish any data or breakdown concerning the persons employed in the survey except for the names and addresses of those in charge of the various phases (linecutting contractor, etc.). It will be assumed that the required number of man days were spent in producing the survey to qualify for the specified credit.

Each additional ground geophysical survey using the same grid system and otherwise meeting these requirements will qualify for an assessment work credit of 20 days.

A geological survey using the same grid system, and meeting the requirements for submission of geological surveys for maximum credits will qualify for an assessment work credit of 20 days. If line cutting has not previously been reported with any other survey and is reported in conjunction with the geological survey a credit of 40 days per claim will be allowed for the survey.

Similarly, a geochemical survey using the same grid system with the average number of collected samples per claim being not less than 40 samples, and meeting the requirements for the submission of geochemical surveys for maximum credits, will qualify for an assessment work credit of 20 days. If line cutting has not previously been reported with any other survey and is reported in conjunction with the geochemical survey a credit of 40 days per claim will be allowed for the survey.

Credits for partial coverage or for surveys not meeting requirements for full credit will be granted on a pro-rata basis.

If the credits are reduced for any reason, a fifteen day Notice of Intent will be issued. During this period, the applicant may apply to the Mining Commissioner for relief if his claims are jeopardized for lack of work or, if he wishes, may file with the Department, normal assessment work breakdowns listing the names of the employees and the dates of work. The survey would then be re-assessed to determine if higher credits may be allowed under the provisions of subsections 8 and 9 of section 84 of the Mining Act.

If new breakdowns are not submitted, the Performance and Coverage credits are confirmed to the Mining Recorder at the end of the fifteen days.