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REPORT ON  
ON  
MORITE EXPLORATIONS LIMITED  
BUCKE TOWNSHIP  
CORALT, ONTARIO.



FORM NO. L42-811-P REPORT PAPER GRAND & TOY LIMITED

Halleybury, Ont.,  
1 October 1963

K.E. Campbell P. Eng.



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### SUMMARY AND CONCLUSIONS

1. Norite Explorations Limited own a silver prospect consisting of 12 claims in the northwest part of the Cobalt area.

2. The surface of the property is underlain by flat-lying bedded greywacke of Huronian age traversed by two diabase dykes. The Nipissing diabase sill intrudes the Huronian sediments and lies at varying depths throughout the property. Both diabase dykes are younger than the Nipissing diabase; the dyke containing prominent epidote mineralization cuts through the Main diabase dyke.

3. The company has conducted an exploration programme in the recent field season consisting of a MS netometer survey, a geological survey, and 3141 feet of diamond drilling.

4. The geological survey shows that the Main diabase dyke and the rocks adjacent to it are the locus of promising veins and metallic mineralization. The areas of most promising appearance seem to coincide with the most pronounced magnetic lows.

5. Diamond drilling has been applied to probing beneath 2 of the most promising areas in such a way as to intersect their downward extensions at horizons just above the Nipissing diabase sill.

6. Many calcite veins were intersected in the course of the drilling; some were of promising appearance and dimensions; a few contained sparse but visible cobalt mineralization. However no truly significant silver assay was obtained in the drilling programme.

7. The exploration programme cannot be said to have exhausted the chances of finding silver ore deposition on the property. However diamond drilling was conducted in areas of the most promising appearance where the silver content of the veins proved to be so low that the chances of finding economic deposition of silver in the untested localities no longer seem to justify the expense of testing them.

### RECOMMENDATIONS

I recommend the suspension of work on the property.

INTRODUCTION

Norite Explorations Limited own 12 unpatented mining claims in Bucke Twp., Ontario. The claims constitute a silver prospect and are located as follows:

T 52902, being NE 1/4, S 1/2, lot 1, Con V  
 T 52903, being SE 1/4, S 1/2, lot 1, Con V  
 T 52904, being SW 1/4, S 1/2, lot 1, Con V  
 T 52905, being NW 1/4, S 1/2, lot 1, Con V  
 T 52906, being NE 1/4, N 1/2, lot 1, Con IV  
 T 52907, being NE 1/4, N 1/2, lot 1, Con IV  
 T 52908, being SE 1/4, N 1/2, lot 1, Con IV  
 T 52909, being SW 1/4, N 1/2, lot 1, Con IV  
 T 52910, being NW 1/4, S 1/2, lot 1, Con IV  
 T 52911, being NE 1/4, S 1/2, lot 1, Con IV  
 T 52912, being SE 1/4, S 1/2, lot 1, Con IV  
 T 52913, being SW 1/4, S 1/2, lot 1, Con IV

The property is accessible by a good all weather road from the town of Halleybury, 7 miles to the east.

The following references contain information bearing upon this property:

P.R. Bucke Twp., Ont. Dept. of Mines, Robert Thomson, 1960  
 Assessment work reports, Colebucke Mines Ltd., T.C. Keefer 1948, 1949.  
 Aeromagnetic Map 5110, Geol. Survey of Canada.  
 Report on Norite Explorations Limited, K.E. Campbell 27 Feb 1963.  
 Report on Magnetic Survey, Norite Explorations Limited, Douglas Burton, 24 May 1963.

These reports contain adequate descriptions of the general geology and location of the Norite group which need not be repeated here.

This report covers the exploration programme conducted on the claims subsequent to the magnetic survey performed by Douglas Burton in May 1963. Much of the information contained herein has been presented in the weekly reports submitted by the writer to Norite Explorations Limited.

**GENERAL GEOLOGY**

A full description of the geology of the area is presented in the writer's report of 27 Feb 1963. Only a summary is given here.

The Norite claims lie on the northwest extension of groups of productive mines in the Cobalt camp from which nearly 400 million ounces of silver have been produced. The Dotsee Mine, a small cobalt producer, lies 1 1/2 miles south of the property; rich silver mineralization is reported to have occurred 2 1/2 miles northwest of the property.

Huronian sediments and two post-Wipissing quartz diabase dykes underlie the immediate surface of the property. It can be inferred that Tesikaming Series sediments underlie the property at great depth. The Wipissing diabase sill lies at moderate depth and cuts the Huronian sediments. The Cross Lake fault, striking northwest, passes just to the northeast of the property.

**GEOLOGICAL SUCCESSION**

The following rocks have been observed on the property in the course of the geological mapping and diamond drilling:

**PRE-CAMBRIAN**

**KEWENAWAN:** Epidote diabase dyke

INTRUSIVE CONTACT

Main diabase dyke

INTRUSIVE CONTACT

**NIPISSING:** Diabase sill

INTRUSIVE CONTACT

**MURONIAN:** Firstbrook formation; slate, greywacke, conglomerate  
(Cobalt Series)

RECENT WORK PROGRAMME

In May 1963, 36,550 feet of picket lines were cut and chained at 50 foot intervals. Two base lines were located and directed at bearings of 164° and 144° to provide the control for a system of cross lines designed to cover those areas underlain by the two diabase dykes traversing the property. The lines provided survey control for the magnetometer survey which was also conducted in May, and for the geological survey which was completed on 11 Aug 1963. The mapping and the magnetic data have permitted a reliable interpretation of the geology in those extensive portions of the property covered by overburden, and have provided information enabling the diamond drilling locations to be made with precision.

A total of 3141 feet of "A" core diamond drilling was conducted in 5 holes from 15 July to 24 September 1963. F. Barron Diamond Drilling of Haileybury performed the drilling. Sufficient footage was drilled to meet all assessment work requirements of the Ontario Department of Mines for the whole of the 12 claim group. The distribution of footage between holes is as follows; location references refer to base line "A":

DDH	N1	350 S,	200 W,	401 feet
DDH	N2	350 S,	500 W,	774 feet
DDH	N3	2000 S,	250 W,	808 feet
DDH	N4	2000 S,	250 W,	551 feet
DDH	N5	2000 S,	250 W,	<u>607 feet</u>
	TOTAL			3141 feet

GEOLOGY OF THE NORITE GROUP

On page 8 of his February 1963 report on Norite Explorations Limited, the writer reasoned that rocks of the Temiskaming Series underlie the property at depth. In the recent exploration programme there has been no evidence to confirm or to reject this theory.

Rocks of the Huronian Series underlie most of the property. Where observed on surface these were invariably of bedded greywacke. In many places the bedding is so fine and the parting along the bedding planes is so easy that the rock has the characteristics of slate. The bedded greywacke is made up of 1/8 - 1/4 inch beds of contrasting grain size. Near surface the fine grained beds contain sufficient hematite to give them a dull red colour. The coarser beds are grey to buff in colour. These rocks appear to be undisturbed and where examined they display a uniform dip of 5° - 10° to the southwest.

Diamond drilling has enabled observations to be made on the Huronian rocks beneath the surface. At increasing depth the bedding in the greywacke becomes fainter and finally disappears in a massive greywacke. The massive greywacke in its turn grades at increasing depth into massive conglomerate in which the matrix is indistinguishable from the massive greywacke. Pebbles in the conglomerate are generally sparse, one being visible in about every two feet of core, and are of red coarse grained granite. The Nipissing diabase sill was encountered before the base of the conglomerate.

A stratigraphic reconstruction of the sedimentary rocks underlying the surveyed portion of the property shows the following thicknesses:

Firstbrook formation:		
Bedded, and slate-like greywacke, at least		820 feet
Massive greywacke,		75 feet
Conglomerate, at least		120 feet

In his report on Bucke Twp., Robert Thomson describes the Firstbrook formation as bedded greywacke, and mentions neither massive greywacke nor conglomerate. Throughout the drilling programme the writer observed no unconformity in the Huronian succession and can only conclude that massive greywacke and conglomerate are lower members of the Firstbrook formation.

Nipissing diabase on the Norite property was observed only in diamond drill holes N-2 and N-3. The rock appears identical to that occurring elsewhere in the Cobalt area; it is coarse grained and dark grey-green in colour. It is clearly chilled against the Huronian sediments.

The Main diabase dyke exposed along Base Line "A" is extremely variable. In general it is a bit finer grained than the Nipissing diabase. Specimens show plagioclase feldspar and augite



in a clear diabassic texture. Magnetite is visible, quartz is not, except for widely scattered blubs measuring up to 6 inches in diameter. The contacts contain both pyrite and hematite. A distinguishing feature of the dyke is the widespread pink colour of the feldspars which is noticeable in many but not all portions of the dyke. It is especially noticeable in the north and south extremities of the surveyed area. In places the contacts of the dyke are gradational with the Huronian sediments over a distance of about 12 inches. In such places both rocks are red-altered and crystal textures have been destroyed. Diamond drilling reveals that even in the interior of the dyke there are short sections of core which are remarkably like altered sedimentary material.

The main dyke pinches and swells with observed widths on surface ranging from 60 to 120 feet. In the north part of the surveyed area it dips steeply west; in the south part, and just north of the road, it dips steeply east.

The Main dyke clearly cuts both the Huronian sediments and the Nipissing diabase. Its relationship with Nipissing diabase is confusing however, because in the vicinity of the dyke intrusion, both rocks are severely fractured, altered, and stained with hematite. The intersection of the dyke in DRH N-2 is particularly confusing; it is possible that this is another dyke altogether and that the hole was stopped short of intersecting the main dyke. Since it seemed unlikely to encounter silver mineralization at such a distance below the upper contact of the Nipissing diabase sill, the hole was stopped for economic reasons.

The epidote diabase dyke, exposed along Base Line "B", is finer grained than the Main dyke. Its outstanding characteristic is the notable content of epidote. Throughout most exposures of the dyke the grains of plagioclase feldspar can be seen to have been altered to epidote. In many exposures epidote-filled fractures cut the rock. In the outcrop at S 1080 on Base Line "B", flat seams of epidote appear to be a continuation of the slate-like bedding of the adjacent Huronian sediments. Both the Main dyke and the Epidote dyke are variable and where they cross, in the south part of the surveyed area, identification is difficult.

The Epidote dyke varies in width from 30 to 75 feet. Its exact dip cannot be stated; it is steeply dipping.

The Epidote diabase dyke clearly cuts the Huronian sediments. In the course of the geological mapping much effort was devoted to determining its relationship with the Main dyke. Just south of line S 5400 an outcrop was stripped off to show clearly that the Epidote dyke intrudes, and is chilled against the Main dyke. The Epidote dyke is therefore the youngest pre-Cambrian rock in the area.

Black chloritic spotting in the Huronian sediments can be detected in all parts of the property. The spots measure up to 1/4 inch in diameter. Close attention has been paid to the distribution of the spotting in hopes that a pattern of its occurrence might be defined and that such a pattern would be related to the

distribution of economic mineralization. However the distribution of spotting was observed to be dependent upon the nature of individual beds in the Huronian sediments. Some beds, especially the granular beds in the slate, show intense spotting, whereas others, even nearby granular beds, show none. As a tool in the search for ore, spotting proved to be of no use.

The occurrence of hematite on the property is widespread and occurs in all rock types examined. It was noticed in every drill hole that the characteristic hematite colour in the slate beds of the Firstbrook formation disappeared at a depth of about 80 feet. In hole N-3 the colour resumed for a core length of 36 feet at a hole depth of 218 feet. Possibly this colour is a near surface phenomenon.

The action of the Main diabase dyke on intruded sediments has already been noted. This blurring of rock textures by red alteration was not observed to occur at the contact of Nipissing diabase with Huronian sediments or on the contacts of the Epidote diabase dyke. In this area it seems to be the exclusive property of the Main diabase dyke. It is of interest to note that where the Epidote dyke intrudes the Main dyke, the Main dyke is red-altered near the contact.

Magnetite is a visible constituent of the Main diabase dyke. At line S 1000 of base line "B" grains of magnetite-ilmenite can be seen in the Epidote dyke in a common ex-solution texture which has been partially replaced by pyrite.

The geological survey provides precise information whereby the magnetic survey results can be interpreted. The magnetic interpretation traces the Main diabase dyke with remarkable fidelity. In the north part of the area the persistence of the magnetic low to the west of the actual dyke contacts can be attributed to the west dip of the dyke, and near drill holes N-3, N-4, and N-5, to the pronounced fracturing and hydrothermal activity along the west contact. The Southwest striking spur to the magnetic low contour between lines S 2200 and S 2400 probably represents a fault which finds surface expression in the linear edge of outcrop immediately to the northwest. Some local magnetic irregularities, such as the high reading in the middle of the dyke on line S 600, can be deduced to be the effect of large boulders of Huronian sediments. The complex magnetic pattern in the south part of the area reflects the equally complex geological pattern. Although the experience gained from diamond drilling is very meagre, the pronounced hydrothermal effects associated with the veins and mineralization in drill holes N-3 and N-4 appear to have produced one of the lowest magnetometer readings obtained on the property. This suggests that in such a closely adjusted magnetic survey, the quantitatively lowest readings have an economic significance.

The magnetic properties of the Epidote diabase dyke are not as anomalously low as those of the Main dyke, and in areas of deep overburden it is impossible to identify the location of the dyke. Even in areas of shallow overburden location of the dyke cannot be

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assured without intermittent surface observations of outcroppings.

ECONOMIC GEOLOGY

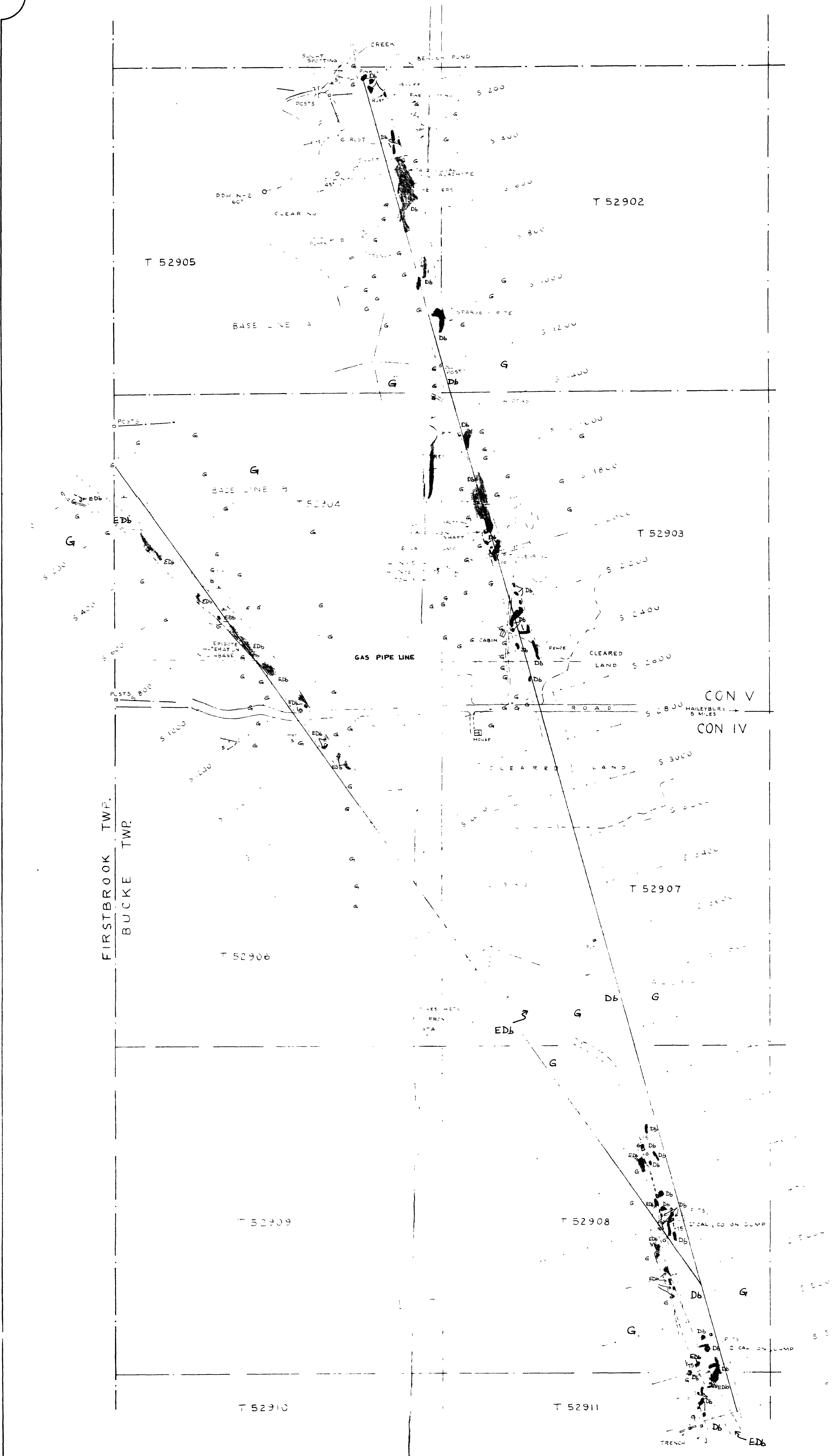
Observed metallic mineralization on the property seems to be restricted to the diabase dykes and to the rocks immediately adjacent to them. Pyrite and chalcopyrite are the minerals most commonly observed. They are particularly evident along the east contact of the main dyke at line S 400 and along the west contact south of line S 4400. This sulphide mineralization occurs in fracturing parallel to the contact. In no case does the copper content approach economic grade.

Cobalt mineralization was observed on surface in the dumps of the pits located on the Main dyke at lines S 2000 and S 4800. The cobalt mineralization is very fine and occurs with calcite veins. Cobalt was also observed associated with calcite in drill hole N-4 immediately beneath the pit at line S 2000; the best cobalt assay obtained was from black sand at footage 452.5, and ran 0.06%.

In general the calcite veins observed are of promising appearance and are similar to the calcite veins which carry silver in the Cobalt area. They usually have a pink hue and contain soft chlorite. The silver content is distressingly low however; the highest vein assay obtained was 0.63 ozs of silver per ton, so low as to be beneath the threshold of economic significance.

Diamond drill logs, and sections of the drill holes are included with this report. Magnetic profiles are provided on the sections along the line of the drill holes. Sludge samples were taken from the drilling of the rock in and adjacent to the Main diabase dyke. The sludge sample assays have proved to be comparable to the vein assays; they are beneath the threshold of significance. The highest sludge assay obtained was 0.31 ozs. of silver per ton.

Two additional areas of the property on which further diamond drilling might be considered have been defined by the magnetic survey and surface mapping. These are the pronounced magnetic low observed on line S 2400 on the main dyke and the pit on line S 4800 on the dump of which cobalt mineralization in strong calcite vein material was observed. The disappointing silver values obtained in the diamond drilling to date however scarcely justify the expenditures required to drill these localities.



FIRSTBROOK TWP.  
BUCKE TWP.

**LEGEND**

- KWEENAWAN
- EDb EPIDOTE DIABASE DYKE
- Db MAIN DIABASE DYKE
- HURONIAN
- G GREYWACKE, SLATE

SCALE: 1 IN. = 200 FT.

**GEOLOGY  
OF A  
PORTION OF THE PROPERTY  
OF  
NORITE EXPLORATIONS LIMITED  
BUCKE TWP.  
ONTARIO**

