

Report on Detailed Mapping - Leonard A. Marshall Option No. 1  
Area No. 119, Boston Township, Ont.

During the period May 7th to June 10th, 1952, the writer mapped, on a scale of 1" - 200', the Leonard A. Marshall Option No. 1, in Boston Township Ontario. The seven claims which constitute the group - numbers L.57070, L.57374-9 - lie to the west and north of the main iron formation band which passes through the Dominion Gulf Boston II claim group and some of the other option groups.

The mapping was done from the N-S picket lines which were cut for the ground magnetometer survey, using the same general mapping procedure employed by McLeod in the remainder of the Boston ground.

SUMMARY AND RECOMMENDATIONS

The older rocks, andesites and quartzites, follow the same general north-east trend as those encountered on the Dominion Gulf Boston II group, although there is the suggestion of a westerly swing to the formations in the south-west corner of the group.

An extensive intrusion of basic gabbro and peridotite underlies much of the southern section of the group - the intrusive rock is generally non-magnetic and serpentinized only locally, with two or three occurrences of well-serpentinized peridotite containing magnetite stringers and narrow veinlets of asbestos cross-fibre, few reaching 1/16" in width.

Few minor quartz veins occur in the andesites, all barren, and no shear zones of interest were observed.

The quartzites are generally the rusty-weathering type with slight pyrite mineralization throughout and a few local concentrations of pyrite and pyrrhotite - sampling of three such occurrences gave nil assays for gold and nickel.

Iron formation was encountered at only one location in Claim L-57379. By visual estimate, the magnetite content varied from 15 to 30%, but the two parallel lenses were less than 50' wide and 400' long.

This detailed mapping has shown no mineral occurrences or structural anomalies on the Leonard A. Marshall Option No. 1 which would be of economic interest. It is recommended, without hesitation, that the option on this group of claims be dropped.

GENERAL GEOLOGY

The main features of the topography and general geology are well shown on the map which accompanies this report. Low ground, with alder, spruce, and cedar swamps, constitutes approximately 25% of the area, the

remainder being higher ground with a relatively large amount of good rock outcrop.

The older rock types are similar to those found in Boston II:

#### Volcanics:

To the north, the volcanics are mainly andesitic flows, with only minor amounts of tuff and fragmental material, sufficient to indicate a general north-east trend to the formations. The andesite is a normal massive medium-grained rock, except for the areas close to the contact with the syenite porphyry intrusive along the north boundary, where the outcrops are chloritized and largely replaced by the syenite. The extent of this "syenitization" suggests that the volcanics are underlain by the syenite at a shallow depth for some distance south of the actual contact.

To the south, the flows are accompanied by wider bands of coarse agglomerate, with light green acidic fragments in the basic matrix, and some discontinuous tuff bands. In the southern part of the group, most of the older rocks are well altered and in some cases difficult to identify accurately, by the presence of a large mass or masses of basic gabbro and peridotite intrusives. No attempt was made to distinguish between the bands of agglomerate, tuff, and andesite since the discontinuity and uncertainty of the bands would make such distinction confusing and meaningless.

#### Quartzite:

Practically all of the quartzite encountered was of the rusty-weathering type, slightly mineralized with pyrite and, to a lesser extent, pyrrhotite. In the north, quartzite appeared as narrow bands or lenses, just sufficient to reflect the N.E. trend; in the southern part of the group, much wider bands appeared, interbedded with the agglomerates and tuffs, and much more continuous. Here again, the alteration effected by the basic intrusive mass was very intense in places, with the appearance of hornblende and biotite in the quartzite, sometimes in the form of hornblende or biotite "gneiss". It is highly probable that a large amount of quartzite and volcanic rock appearing in the southern part occurs as remanental islands surrounded by the gabbro and peridotite.

#### Syenite Porphyry:

The southern edge of a large mass of intrusive syenite crosses the three north claims of the group. The rock is a uniform, medium-grained porphyritic syenite, and is easily recognized as the same syenite which was found at the western edge of the main Boston II claim group.

#### Basic Intrusive:

A large intrusive mass appears in the central and southern portions of the group, very irregular in outline, but tending to follow the Northeast-trending bedding planes of the volcanics and quartzite. The composition of the intrusive varies from a greenish, or black-and-white, coarse-grained

gabbro to a fine to medium-grained black peridotite. In general, the peridotite is not highly serpentized, although in Claims L-57378 and L-57379 a green serpentized variety occurs, approaching a dunite, with stringers of magnetite and some minor asbestos cross-fibre to 1/16" in width. The fibre occurs only in local isolated patches and is not of economic interest.

### STRUCTURE

The steeply-dipping to vertical formations of volcanics and quartzite on this group of claims reflect the general north to north-east trend of similar rocks in the original Boston II claim group. Throughout most of the area, this trend appears to be continuous with little major folding evident. However, in the south and south-west, the large amount of alteration of the older rocks and the presence of large areas of basic intrusive prevent obtaining a true picture of the structural conditions.

An indication of folding and possibly the start of a change in the trend to an east-west direction is seen in the north-west corner of Claim L-57070. Strikes obtained on the south shore of the lake indicate a westerly trend, and possible folding east of the lake may be reflected in the irregular shapes of the basic intrusions to the south, although evidence is scanty.

Extensive alteration in the two southern claims suggests the presence of the basic intrusive at shallow depth beneath most of the older rocks in this section.

Mr. T. Parks, in his mapping of the Leonard A. Marshall Option No. 2, to the south-west, has encountered a similar mass of basic intrusive, and a comparison of rock specimens indicates that the gabbro and peridotite may form a continuous mass between the two option groups.

In hand specimen, the basic rock found on this claim group is non-magnetic, having little or no effect on the Brunton needle, so that the magnetite content is low and the effect of this rock on the ground magnetics would be small.

### ECONOMIC GEOLOGY

#### Pyrite-Pyrrhotite-Gold:

Numerous trenches and pits occur throughout the entire claim group, located for the most part on outcrops of rusty quartzite or barren quartz veins in the massive volcanics. Some of the quartzite is well mineralized with pyrite and pyrrhotite, although, as shown in the table of assays on the accompanying map, the values in gold and nickel are nil. This mineralization is apparently quite common in the quartzites of the original Boston claim group. The basic intrusive and contact rocks did not produce pyrrhotite mineralization anywhere in the group.

Iron Formation:

Two small lenses of iron formation were encountered on Claim L-57379. The magnetite content varied from 15 to 30% by visual estimate, but the lenses were only some 50' wide and 300-400' long.

Asbestos Fibre:

As mentioned above, very minor asbestos fibre occurred in local patches in the peridotite phase of the basic intrusive. The fibre is narrow, not exceeding 1/16" in width, and sparse - definitely not of economic interest.

R. N. Parkinson

:C  
June 22, 1952



Report on Detailed Mapping - Charles Marshall Option No. 2

Area No. 119, Boston Township, Ont.

INTRODUCTION

This report presents the results of a detailed geological investigation of the Charles Marshall Option No. 2, in Boston Township, Ontario.

The area under option contains eight claims - L-56502 to ~~607~~ inclusive, and L-56467 and -68. These claims form a rectangular group, one mile in length in an east-west direction, and one-half mile in a north-south direction, located in the upper central part of the township. The group abuts Dominion Gulf's major group of claims and options to the east, which extends to the north-east corner of the township.

The old and disused Dane-Larder road crosses the claims from north-west to south-east. Four-wheel drive vehicles could traverse the road after the first week in June.

Detailed mapping, at a scale of two hundred feet to the inch, was carried out by the writer, assisted by Mr. P. Nash, during the period May 20th-June 27th. Adequate mapping control was obtained from picket-lines spaced two hundred feet apart across half the area, and four hundred feet apart across the remainder.

SUMMARY AND RECOMMENDATIONS

The Charles Marshall Option No. 2 contains approximately thirty percent rock outcrop, most of the remainder being covered with shallow drift bearing poplar and birch.

Fifty percent of the option is underlain by steeply-dipping sedimentary rocks, striking 20 degrees south of east, consisting mainly of massive quartzite, with minor bands of conglomerate, greywacke and iron formation, and altered phases of the sedimentary rocks where adjacent to basic intrusives, or where enveloped by them.

The continuity of the sediments, particularly across the north and eastern parts of the option, is greatly disturbed by discordant masses of gabbro and serpentized peridotite, which are differentiated products of one intrusive mass. These intrusives locally may be altered in character by the presence of partially assimilated siliceous sediments, giving rise to anomalous rock-types such as gabbro and serpentized peridotite containing quartz. In these local areas described, it is assumed that the level of erosion has not proceeded much lower than the upper intrusive contact with the sediments.

Intrusive areas containing such assimilated siliceous material are frequently locally rich in fine pyrrhotite, up to twenty percent being noted. The pyrrhotite may be seen to be concentrated in the partially assimilated siliceous fragments, such that it was either derived from the sediments, or the sediments forced deposition. This pyrrhotite does not carry values of economic importance.

Intrusive-sedimentary contacts may frequently contain coarse pyrite, of uneconomic importance.

Only a few fine fibre lines were noted in all of the serpentized rock examined, so that the area does not warrant further, more detailed exploration for asbestos.

There is no evidence, direct or indirect, of major faulting or shearing.

The lenses of iron-formation encountered are too small and scattered to be of economic interest. The chances of locating previously unknown exploitable deposits of other minerals are considered poor in an area that has been so intensively prospected and that contains such a high percentage of rock outcrop.

It is recommended that the option be dropped, unless Dominion Gulf wish to hold the ground for strategic reasons related to the major group of holdings.

#### TOPOGRAPHY

Approximately thirty percent of the area mapped consists of rock outcrop, and eighty percent of the remainder of shallow drift, covered with poplar and birch. Maximum relief of the area as a whole is probably not greater than one hundred feet. The quartzite and gabbro form higher ground, with the faster-weathering peridotite underlying much of the lower ground.

Drainage is gentle to the west and south by a small creek system. Tag alders and open grassy swamp comprise a minor proportion of the area. The old Dane-Larder road follows the low-lying ground, for most of its distance bisecting the narrow swamp area.

#### ROCK FORMATIONS

##### Sedimentary:

Sedimentary rocks and their altered derivatives really cover approximately fifty percent of the group, the other half being occupied by basic and ultrabasic intrusives. The sediments consist predominantly of quartzite, with minor bands of iron-formation, conglomerate and greywacke, and altered phases of the sediments.

The sediments trend slightly south of east across the map-area, interrupted by intrusive masses in the north and eastern part of the option. The quartzites are impure and well-banded, the banding standing out on a weathered surface as ridges of dark chert and as varying shades of grey. They have a thickness of greater than two thousand feet in the western part of the area, where they dip steeply (80 to 90 degrees) to the north. Isolated masses of sediments occur in the intrusives, ranging from small bands and fragments of unassimilated chert and quartzite several inches in length to masses of altered quartzite and iron-formation several hundred feet in length. Where highly altered by the intrusives, the quartzites show varying degrees of recrystallization, ranging from spotted quartzites in which gneissosity is

is incipient to diorite and hornblende gneisses. Large gabbroic areas contain bedding traces and cherty remnants, such that the process of intrusion must have been slow, with a viscous almost solid magma.

Minor bands of conglomerate were noted in the western part of the area, containing stretched elongate siliceous boulders; minor bands of greywacke were noted in the south-east part of the area.

The largest band of iron-formation present strikes slightly south of east across the bottom of claim L-56467. It is 900 feet long, with a maximum width of 100 feet, and contains an estimated 20 to 25 percent of iron. The remainder of the iron-formation mapped consists of unassimilated or partially-assimilated bands and patches found in the intrusive masses. Where encountered in the peridotite, alteration is slight. Where encountered in the gabbro, alteration is more pronounced, with much of the iron forming chlorite.

There is a possibility that what may have been at one time a potential body of iron-ore across the north part of the option has been largely obliterated by the intrusives.

#### Basic and Ultrabasic Intrusives:

Basic and ultrabasic intrusives cut the sediments with marked discordance.

The intrusives consist of gabbro and serpentized peridotite and dunite as sprawling irregular masses. In a general sense, the gabbro masses appear to exist as 'cores' in the peridotite, with contacts gradational.

The gabbro varies in texture from fine-grained to medium and coarse-grained diabasic. It weathers dark green or brown, and, as noted, forms much of the higher ground, being more resistant to erosion. A freshly-broken surface shows white feldspar and dark green or black ferromagnesian, with a diabasic texture where the gabbro is other than fine-grained. Fine-grained phases of the gabbro are indistinguishable texturally from a coarse andesite.

The gabbro mass in the central part of the map-area contains numerous inclusions of sediments, of varying size, and in varying stages of assimilation, such that the character of the gabbro is often altered greatly, and gabbroic rock types occur containing an unreasonably high amount of silica, sometimes as assimilated and redeposited quartz eyes, but much more frequently as partially assimilated fragments of quartzite. Bedding traces are still intact, with normal strike, in this complex zone, which suggests an originally viscous almost solid magma, and that the gabbro has not eroded much lower than its upper contact with the sediments.

The gabbro grades, usually sharply, into a serpentized peridotite, which in turn has local dunitic facies. The dunite is readily distinguishable by its bluish-white weathering, its high degree of serpentization, and the apparent absence of pyroxenes on a freshly-broken medium-grained black-green surface.

Some of the peridotite appears to be normal, containing a fairly high percentage of pyroxene; locally it may be gabbroic in character, containing minor feldspar. Usually the gradational contact with gabbro is fairly sharp, across a few feet, but locally, as with the gabbro mass in the south-east corner of the area, it may be spread out across twenty or thirty feet.

Assimilation of sediments has locally altered the original character of the peridotite. Chloritic facies occur in the south-east part of the map-area, in a zone that contains inclusions of sediments. The chlorite is probably derived from digested iron formation.

Unfortunately, due to its weathering characteristics, much of the peridotite is observed as low small outcrops, usually moss-covered. Without a great amount of stripping, the weight of classification is thrown completely on textural features. This can be difficult where inclusions of sedimentary material occur, and where the texture is fine for a peridotite, as is the case with some of the peridotite encountered.

In several places, isolated fine fibre lines, of uneconomic importance were noted in the peridotite.

#### Acid Intrusives:

Syenite and syenite-porphry dykes of Algomian age cut the foregoing rocks. One major dyke is present in the western part of the map-area, striking north-south.

#### STRUCTURAL FEATURES

The predominant strike of the sedimentary formations is twenty degrees south of east. The quartzites in the south-west part of the area dip steeply north. The quartzites are not of a character such that top-determinations can be readily observed and none were made. In the extreme north-west corner of the map-area, the sedimentary strike changes to southwesterly.

Geological structure is dominated by the large irregular masses of gabbro and peridotite, which sprawl discordantly across much of the map-area. In the central part of the area a body of gabbro strikes up from the south, pinching and swelling, and fans out at its top end along the sedimentary strike. In the west part of the area a thinner gabbro sill parallels the sedimentary strike.

The north and east part of the map-area is underlain mainly by intrusive. The sedimentary bands and remnants that still exist here retain their normal strike, being elongate in a south-of-east direction. It is probable that most of these remnants are shallow, and that a further hundred feet of erosion would have removed them.

The syenite dykes in the western part of the area strike north, having followed lines of weakness.

There is no evidence, direct or indirect, of major faulting or shearing within the area.



### ECONOMIC POSSIBILITIES

The lenses of iron-formation that are present within the map-area are too small and scattered to be of economic importance. The chances of locating previously unknown exploitable deposits of other minerals are considered poor in an area that has been so intensively prospected and that contains such a high percentage of rock outcrop. As noted, there is no evidence, direct or indirect, of major faulting or shearing.

In the extreme west of the area, two prospect shafts were sunk on a narrow shear in a rusty 'fahlband' zone in the quartzites, containing coarse pale pyrite or marcasite, and fine pyrrhotite. Assay results were nil.

Intrusive-sedimentary contacts may contain coarse pyrite. Material from one such contact zone was assayed, and returned nil in gold.

Intrusive areas containing assimilated siliceous material are frequently locally rich in fine pyrrhotite, up to twenty percent being noted. The pyrrhotite appears to be concentrated in the partially assimilated quartzitic fragments, such that the sediments may have forced deposition. This pyrrhotite does not carry gold or nickel values of economic importance.

A few fine fibre-lines were noted in the serpentinized rock examined. The peridotite is not of importance as a potential source of asbestos.

Further exploration within the area is not warranted.

### SPECIMENS AND SAMPLES

Following are lists of specimens and samples from the Charles Marshall Option No. 2. The samples were assayed by Swastika Laboratories Ltd.

#### List of Specimens

<u>Specimen No.</u>	<u>Rock Classification</u>	<u>Location</u>	<u>Remarks</u>
PK-122-TP 1	Hornblende gneiss derived from sediments, close to basic intrusive madd	Extreme NW corner of map area	Typical of highly altered sediments
PK-122-TP 2	Altered iron-formation - part of 100' diameter inclusion in peridotite	Near line 148 west, 600' south of the 105 base line	Typical of altered iron formation
PK-122-TP 3	Diabasic gabbro	Near line 130 west, 150' south of the 105 base line	Typical
PK-122-TP 4	Diabasic gabbro	Line 120 west, 450' south of the 105 base line	Typical
PK-122-TP 5	Altered iron-formation, near basic and ultrabasic intrusive	Near line 120 west 850' south of the 105 base line	Typical

List of Specimens

<u>Specimen No.</u>	<u>Rock Classification</u>	<u>Location</u>	<u>Remarks</u>
PK-122-TP 6	Slightly sheared serpentized gabbro containing 20% fine pyrrhotite and almost completely assimilated siliceous fragments	Line 124 west, central part of the map-area	Typical of pyrrhotite min'n.
PK-122-TP 7	As above, not sheared	Near line 126 west central part of map-area	As above
PK-122-TP 8	Serpentinized dunite	Near line 130 west 200' north of the south tie-line	Typical
PK-122-TP 9	Serpentinized peridotite	Near line 132W 400' north of the south tie-line	Typical
PK-122-TP 10	Spotted quartzite showing incipient gneissosity	Line 140 west at south tie-line	Typical of slightly altered quartzite
PK-122-TP 11	Slightly gneissic altered quartzite	Line 146 west, lower central part of map-area	Typical of altered quartzite

List of Samples

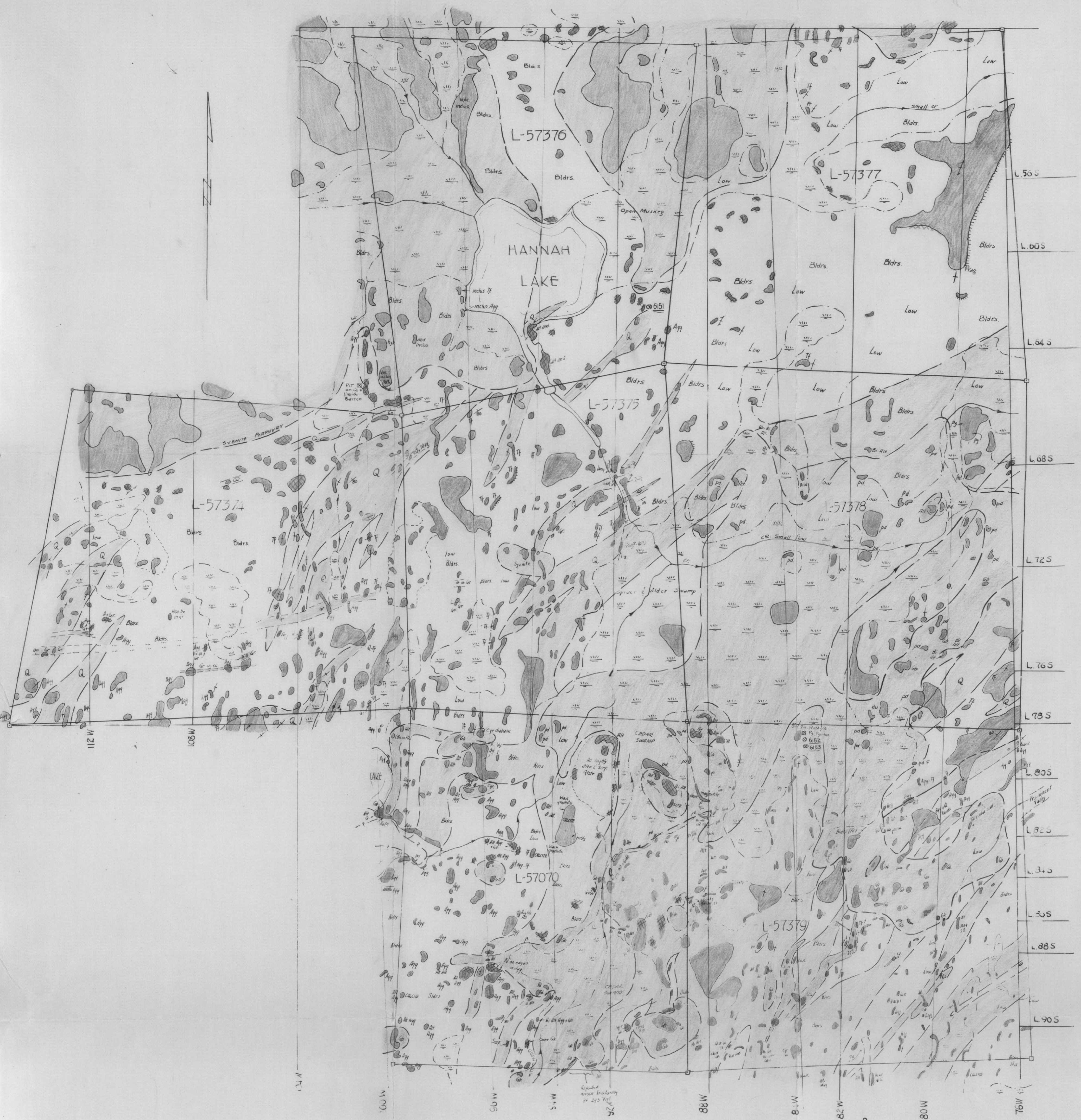
<u>Sample No.</u>	<u>Type of Mineralization</u>	<u>Location</u>	<u>Assay Result</u>
6154	Coarse pale pyrite from 18" shear in rusty quartzite	Old shaft near line 168 west, 850' north of south tie-line	Au-nil
6155	Pyrrhotite from 18" shear in rusty quartzite	"	Au - nil Ni - none
6156	Serp'd peridotite containing fine pyrrhotite - 10 to 20%	Near line 144 west central part of map-area	Au - nil Ni - none
6157	Gabbro near sedimentary contact, containing 10 to 20% fine pyrrhotite	Near line 140 west, central part of map-area	Au - nil Ni - 0.03
6158	Coarse pyrite at gabbro-sedimentary contact	Line 148 west, central part of map-area	Au - nil

List of Samples

<u>Sample No.</u>	<u>Type of Mineralization</u>	<u>Location</u>	<u>Assay Result</u>
6159	Serpentinized gabbro containing 10 to 20% fine pyrrhotite and almost completely assimilated quartzitic sediments	Line 128 west, central part of map-area	Au - nil Ni - 0.12
6160	Serpentinized peridotite containing 10 to 20% fine pyrrhotite in a zone containing almost completely assimilated siliceous sediments.	Line 124 west, 500' north of the south tie-line	Au - nil Ni - 0.05

"T. Parks"

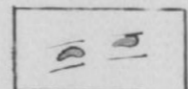
MC  
July 7, 1952



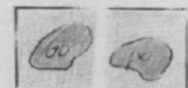
**LEGEND**



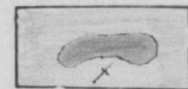
**SYENITE PORPHYRY** - massive intrusive to the north.



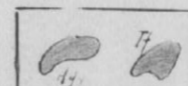
**QUARTZITE** - fine-grained epidite dikes.



**BASALT** - andesite - basalts (ab) Pandotite (pd) Dunite (du) Minor calcareous fliers (cf) Little intense magnetization.



**VOLCANICS** - Basic andesites, Agglomerate (agg) Tuffs (tf) - All highly altered by basic intrusive to the south.



**IRON FORMATION**

**SAMPLES**

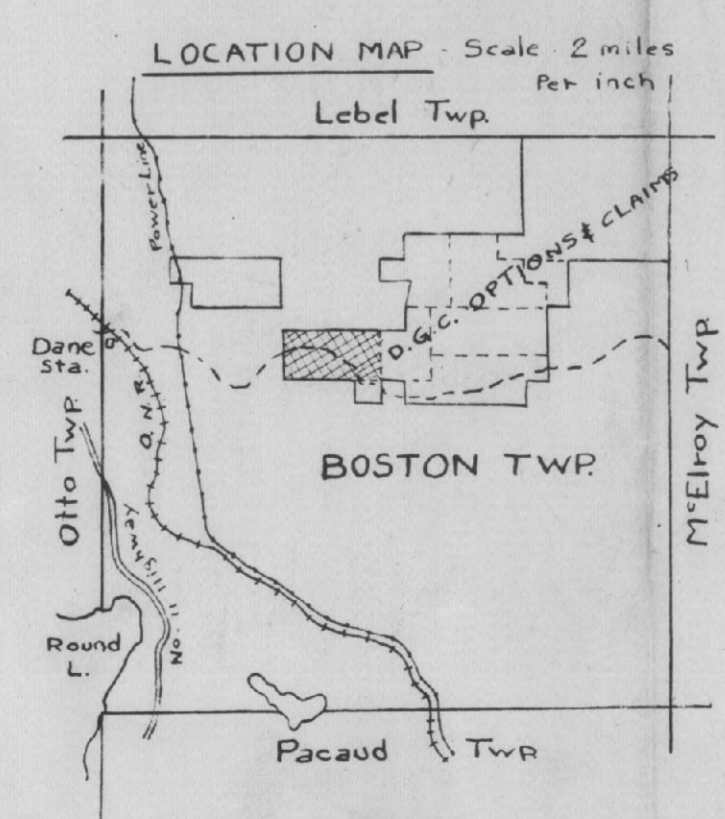
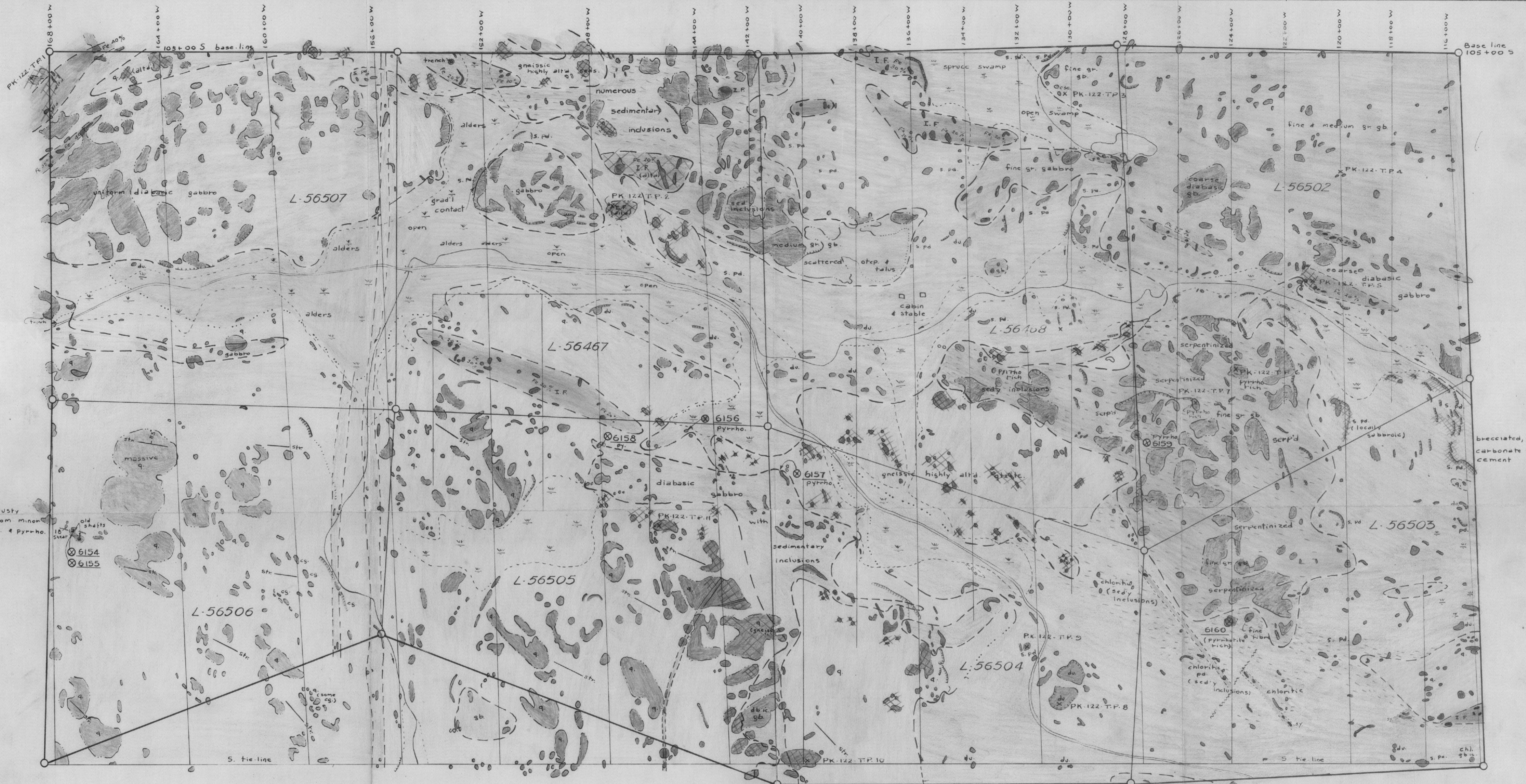
No.	Location	Description	As (%)	Ni (%)
6151	9100W 6250S	Pyrite min. in rusty qtzite. near syenite contact. 20% py	0.005	-
6152	8200W 7900S	Pyrite to 30% over 6" width in qtzite. Prospect pit.	Nil	-
6153	" "	Massive pyrimo min. to 30% - up to 6" wide with 2-3% py. In pit with No. 6152. Rusty qtzite.	Nil	0.05

DOMINION GULF COMPANY  
LEONARD A. MARSHALL OPTION NO. 1

BOSTON TWP. - ONTARIO  
DATE - JUNE 20, 1952. AREA No. 119

SCALE - 1" = 200' GEOLOGY - R.N. PARKINSON





- Symbols**
- picket line
  - property boundary
  - claim lines
  - creek
  - swamp
  - scarp
  - road (passable with Jeep only)
  - geological contact - known
  - geological contact - well-defined
  - geological contact - assumed
  - 6157 ⊗ sample location and number
  - 6157 ⊙ specimen location and number
- ROCK ALTERATION**
- ▨ spotted quartzite; hb. & diorite gneiss derived from sediments
  - ▨ carbonatization

- LEGEND**
- ALGOMAN**
- ▨ Syenite & syenite porphyry dykes
- PRE-ALGOMAN INTRUSIVES**
- ▨ Serpentinized peridotite (s. pd) and dunite (du)
  - ▨ Gabbro
  - ▨ with sedimentary inclusions
- SEDIMENTS**
- ▨ Iron formation (I.F.)
  - ▨ Quartzite (q), conglomerate (cg), greywacke (gw), gneiss (gn)

**DOMINION GULF COMPANY**

**CHARLES MARSHALL OPTION No 2**  
BOSTON TWP. ONTARIO

Scale 200 ft to the inch      July 3 1952

Geology by T. PARKS      Drawn by J. Parks  
Assisted by P. NASH

FILE 634.139