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DOMINION GULF COMPANY

REPORT ON  
THE GEOLOGY OF  
THE MIKE LUNGE OPTION  
BOSTON TWP.  
PROVINCE OF ONTARIO

H. D. McLeod  
September 15, 1952

63 A. 144

Dominion Gulf Company  
Report on  
The Geology of  
The Mike Lunge Option  
Boston Twp.  
Province of Ontario

INTRODUCTION

The Mike Lunge option consists of a group of nine contiguous claims, numbers L-57461 to L-57466 inclusive and L-57589 to L-57591 inclusive, lying in the northwest part of Boston Township, Larder Lake Mining Division, district of Timiskaming, Northern Ontario. The claims are situated approximately 1/2 mile north of the old Dane - Larder road at a point approximately one mile east of Dane Station on the Ontario Northland Railway, and the west boundary of claim L-57591 lies along the power line running north-south through the west part of the township.

The claims were acquired late in 1951 and a program of line cutting was instituted immediately. A magnetometer survey was completed during the winter months of 1952 and geological mapping during July of the same year. The latter work was done by the author assisted at different times by George Bretl and Don Colquhoun.

Since a large part of the claims area is underlain by syenite porphyry intrusives, the work was done in two stages. The preliminary operation consisted of mapping of the outcrops along the picket lines, and was followed by detailed mapping of the areas of interest located. The detail was done by pacing between picket lines at 100 foot intervals, thus locating all outcrops, formation boundaries etc. with relation to the nearest line. All strikes and trends were estimated since the presence of magnetite throughout the areas of volcanics and basic intrusives precluded the use of a compass.

The final interpretation of the geology on a scale of 1" = 200' is shown on the accompanying geological map.

TOPOGRAPHY

The claims lie on a series of high syenite porphyry hills bisected by the deep fault valley occupied by Boston Creek. The creek level here is from 100 to 150 feet below the level of the surrounding hills. The section is largely outcrop or shallow overburden area but there are local areas of swamp along the creek in the northwest corner and some clay plain along the east side of Boston Creek. Boston Creek flows south and drainage in the remainder of the area is east and west respectively into the creek.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The claim group is underlain by the south part of the large Boston-Label syenite porphyry batholith and the complicated mixture of partially replaced volcanic remnants and basic phases of the intrusive along the south contact.

The basic rocks are phases of the syenite porphyry intrusion and are caused by the partial assimilation of the original formations by the syenite magma.

The Boston Creek lineament is occupied by the Long Lake fault, which is known in the vicinity of the Bidgood Mine in Lebel Township to the north and which has an apparent 1100 foot displacement east side to the north in this area.

Mineralization is scarce, consisting only of minor disseminated pyrite and scattered pods of replacement magnetite related to the syenite porphyry, and is all barren except for a low titanium content in the magnetite. The replacement magnetite areas assay high in iron but are too small to be of any interest.

The north iron formation zone is of good grade but too narrow to be of economic interest.

The claims contain nothing of economic interest and therefore, should be dropped at the earliest opportunity.

### DESCRIPTION OF FORMATIONS

#### Volcanics

The volcanics consist largely of andesitic flows syenitized and recrystallized into a well-banded hornblende gneiss and, with exception of the southeast quarter of claim L-57464, occur only as highly altered remnants within the syenite porphyry and basic intrusives.

The gneiss is a lineated, massive rock composed of white feldspar and black hornblende. Remnants of fragmental or agglomerate structure were seen locally. The rock is generally partly syenitized, particularly where it occurs as remnants within the intrusive, and is intruded by blebs, stringers, and dikes of syenite porphyry and syenite pegmatite. Locally sections of a highly altered, but not recrystallized, medium-green, fine-grained andesite were found.

#### Iron Formation

Two narrow zones of magnetite iron formation were found in the gneisses in the southeast corner of claim L-57464. Both strike slightly north of east, are intruded out by the syenite to the west and leave the claims in the south part of the east boundary of the group. The north zone varies from 20 feet to 60 feet in width, where as the south zone consists of two parallel 10' to 15' wide bands lying approximately 30 feet apart.

The north band consists of typical iron formation composed of black magnetite stringers interbanded with white to dark grey quartz in an average 35% - 65% proportion. The individual bands vary from a hair-line to 3 inches in width - the quartz horizons tending to be the wider. The south zone is comprised of a low magnetite variety of iron formation consisting of approximately 20% magnetite in stringers and as a dissemination throughout the quartz which makes up the remainder of the volume.

One outcrop of siliceous iron formation or quartzite was found on line 196 west in the west part of claim L-57463. This consists of granular white to grey quartz with minor amounts of finely disseminated magnetite.

#### Intrusives

The intrusives of the area consist of syenite porphyry and a number of basic rocks varying in composition from diorite through gabbro to hornblendite. These basic phases are probably related to the syenite porphyry and formed by the contamination of the syenite magma by assimilation of country rocks.

### Syenite Porphyry

The syenite porphyry underlies most of the claims area, occurring as one solid mass across the northeast half of the group and as irregular tongues throughout the volcanics and basic phases in the remainder of the section. To the north and locally through the south the rock is a good syenite porphyry composed of large phenocrysts of white to pink feldspar set in a fine-grained groundmass consisting of white feldspar, pink feldspar, and a dark green ferromagnesian mineral probably chlorite. The phenocrysts comprise approximately 65% of the volume of the rock and often have good crystal outlines.

Throughout the southern sections of the area, the syenite is generally fine to medium grained and equigranular, but of the same composition as the prophyritic phase.

Aplite and pegmatite dikes were noted locally and one area of granite was found along the north boundary. The aplite is a fine-to-medium-grained equigranular grey to pink rock occurring as narrow dikes. The pegmatite, which consists of very coarse feldspar with some ferromagnesian minerals, occurs as stringers and small dikes through the basic phases of the intrusive and in the volcanic remnants. The granite varies from the feldspar porphyry composition only in that it contains an appreciable amount of quartz and is probably only a pegmatitic phase.

### Basic Phases

The basic phases of the intrusive consist largely of hornblendite with some gabbro and diorite locally. The diorite is a uniform fine-to-medium-grained rock composed of 60% white feldspar and 40% of a dark ferromagnesian mineral. It was found in one location only along the east boundary of the group.

Gabbro was found locally apparently only as a more acid phase of the hornblendite. Much of it contains dikes and blebs of hornblendite, diorite and syenite.

The hornblendite is a fairly extensive formation around the gneisses and also occurs as a distinctive horizon lying within the main syenite porphyry mass. This zone strikes slightly north of west across the central part of the area and appears to represent an original compositional difference in the formations replaced by the syenite. The rock is composed of shiny-black, locally elongated hornblende crystals accompanied by a quite uniform content of magnetite. Locally, sharp contacts between this formation and the syenite porphyry were found and in places, dikes of the rock were seen cutting the gneisses. These dikes, however, contain a much higher percentage of magnetite.

### STRUCTURE

The syenite porphyry intrusive with its basic phases has replaced most of the volcanics and has recrystallized all of the remaining sections, leaving a secondary east-west banding. This banding and the trend of the syenite contact both roughly parallel the strike of the iron formation zones and thus the original structure of the formations.

Boston Creek occupies a definite lineament caused by the Long Lake fault known in the vicinity of the Bidgood Mine in Lebel Township to the north. This fault, which strikes approximately N 10° E, has an estimated horizontal movement of 1100 feet, east side to the north, in the claims area. This displacement has been determined from the offset on the band of magnetic amphibolites which has been outlined partly on evidence obtained from the magnetometer survey.

The trends of the three intermittent streams flowing northwest into Boston Creek in claim L-57464 suggest faulting or, more likely, fracturing related to the Long Lake fault. These are all fairly prominent valleys and the outcrops along them form steep cliffs, however no definite evidence of displacement of formations could be found.

#### MINERALIZATION

Mineralization in the area is scarce and consists only of a few pods and dikes of replacement magnetite, some disseminated pyrite, and the magnetite in the iron formation and hornblendite described above.

Medium-grained crystalline magnetite was found as a replacement of hornblende gneiss along the syenite contact locally, and as narrow dikes in the syenitized gneisses of some of the volcanic remnants.

Pyrite was found in the outcrop of siliceous iron formation and as a fine dissemination in some of the neighbouring gneisses.

A number of samples of the mineralization were taken with the following results:

<u>Sample</u>	<u>Rock</u>	<u>Gold</u>	<u>Iron</u>	<u>Cr.</u>	<u>Ti.</u>	<u>Va</u>
6131	Mass magnetite	-	42.30%	Nil	0.23%	Nil
6132	" "	-	37.32%	Nil	0.38%	Nil
6133	Pyrite in gneiss	Nil	-	-	-	-
6134	Pyrite in quartzite	Nil	-	-	-	-
6135	Mass. magnetite	-	30.52%	Nil	0.20%	Tr.

/dc

w/att. Map

H. D. McLeod  
September 15, 1952



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DOMINION GULF COMPANY  
REPORT ON  
GEOLOGY  
OF  
LEONARD A. MARSHALL OPTION #2  
BOSTON TWPS.  
PROVINCE OF ONTARIO

H. D. McLeod  
Sept. 3, 1952



32D04SW0362 63A.144 BOSTON

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Dominion Gulf Company  
Report on  
Geology  
of  
Leonard A. Marshall Option #2  
Boston Twps.  
Province of Ontario

INTRODUCTION

The Leonard A. Marshall option #2 consists of six claims, numbers L-56808 to L-56812 inclusive and L-56814, lying in the northeast part of Boston Township, Larder Lake Mining division district of Timiskaming, Northern Ontario. The group is situated approximately five miles east of Dane station on the Ontario Northland Railway and the old Dane-Larder road passes through the north part of claim L-56814. This road is passable by jeep only during the summer months.

The claims were optioned in October 1951 and lines cut for a magnetometer survey during January 1952. Detailed geological mapping of the group was completed during the summer months of 1952 - the final interpretation of the geology being shown on the accompanying geological map. The geology was done on a scale of 1" = 200' by pacing between the picket lines cut for the magnetometer survey. All outcrops are accurately located with relation to the nearest picket line, and all strikes and trends are estimated since the use of a compass is precluded by the presence of magnetite in the iron formation.

TOPOGRAPHY

Relief on the group is quite high, the rocky hills rising to 150 to 200 feet above the level of the two lakes. Marshall Lake, lying on claim L-56812, appears to be at a considerably lower level than Lianne Lake to the north. Outcrops are abundant being equally common on the hills and in the lower areas. Swamp area is scarce being confined to the vicinity of the creeks which drain west. The higher hills are formed from massive gabbro and recrystallized volcanic rocks.

SUMMARY AND CONCLUSIONS

The group is underlain by a series of Keewatin interbedded massive and fragmental andesites, agglomerate, tuff, and magnetite and siliceous iron formation, all intruded by large irregular gabbro and peridotite intrusives, which are differentiated products of one magma. Younger syenite and lamprophyre dikes cut all the above rock types. The Keewatin assemblage has been folded on a regional scale and locally warped into a large drag fold.

The chemical sediments (magnetite and siliceous iron formation), pyroclastics (agglomerate and tuff), and andesite are interbedded related rocks of one period of vulcanism.

The siliceous greywacke and quartzite, lying on claim L-56814, may possibly be a chemical sediment related to the iron formation but appears to be a granular sediment possibly of a quite different age of deposition.

The numerous phases of the gabbro-peridotite complex are all differentiates of the same magma, which may be related to the large syenite porphyry batholith to the north.

The large drag fold in the formations within the claims area appears to be related to regional folding, but may be the result of crumpling of formations caused by the intrusion of the gabbro-peridotite complex or the syenite porphyry batholith.



The presence of the syenite porphyry pebbles in the lamprophyre dikes indicates that the south contact of the syenite porphyry batholith, lying one mile to the north, dips to the south and that the area is underlain by the batholith at depth.

### DESCRIPTION OF FORMATIONS

#### Andesite

Massive, dioritic, and fragmental flows of andesite composition are found throughout the claims area interbedded with the pyroclastics and sediments.

The massive flows are composed of a fine-to-medium grained mixture of a ferromagnesian mineral now probably chlorite and white feldspars. Fragmental horizons and areas were found scattered throughout the flows but are apparently only local phases of the flow rather than definite structural units. On claim L-56812 the flows have the composition and texture of a medium-grained fresh diorite which apparently is due to recrystallization along the axis of folding in that area. Flow structures are almost totally absent.

In the vicinity of the gabbro and peridotite intrusives the andesites have been highly altered and recrystallized. The common product is a fine-grained black shiny rock apparently composed almost entirely of hornblende, but hornblende gneiss and hornblende schist was noted locally. Recrystallization in areas at some distance from the intrusives suggests that much of the area is underlain by intrusives at a relatively shallow depth.

#### Pyroclastics

The pyroclastics consist of varying types of agglomerate and tuff that generally occur as relatively thin horizons interbedded with the andesite and sediments. The large bulge of tuff and agglomerate in the west part of claim L-56809 is apparently due to extreme flowage into the nose of the tight fold in that area.

The agglomerate is generally a basic fragmental rock, the fragments varying to 3 inches in diameter and composed of a highly altered chloritic material of andesitic composition. Locally this rock has been partially replaced by crystalline white calcite forming very distinctive horizons. The calcite has replaced much of the fine material around the larger fragments and also cuts some of them in a network of fine veinlets. The calcite definitely is a replacement mineral but is confined to certain horizons only within the one rock type, suggesting that it may be an original constituent or was introduced soon after formation of the rock.

The tuffs can be divided into two very distinct types - the siliceous tuff of the zone on claim L-56808, and the slaty tuff in the bulge in the west part of claim L-56809. The siliceous tuff is a very fine-grained, light grey, well-banded siliceous rock while the slaty tuff is very fine-grained, medium-to-dark-grey in colour, very poorly banded and light in weight. Some fine banding can be seen locally but in general, flowage and subsequent fracturing have obscured the original structure. Some narrow horizons of siliceous tuff are associated with this latter formation.

#### Iron Formation

Magnetite iron formation occurs in two definite zones, one in the south section and one in the north, and siliceous iron formation or quartzite in a zone interbedded with agglomerate in the west central part of the area as well as in a number of narrow horizons alone or along the magnetite iron formations horizons.

The north horizon of the magnetite iron formation has been largely replaced by gabbro but it can be traced along the boundary of claims L-56808 and L-56809 and across claim L-56810 by remnants not assimilated by the intrusives. The south band is irregular but quite persistent and can be traced across the south part of claim L-56809, in an arc around the nose of the fold into claim L-56812, and across the south part of claim L-56811.

A formation composed of siliceous greywacke and quartzite on claim L-56814 has been grouped with the siliceous member of the iron formation; but is more likely a true granular sediment rather than a chemical sediment (deposited from solution) as is the iron formation.

The magnetite iron formation is a perfectly banded contrasted black and white or black and red rock composed of magnetite, iron silicates, and quartz in colours varying from white through various shades of grey to black and locally red. The black colour of the quartz is due to a varying amount of finely disseminated magnetite, and the red variety is jasper - the colour being due to fine hematite. The magnetite and quartz occur in alternate bands from a hair-line to 3 inches in width, the proportions of each varying from area to area. The magnetite bearing member grades into the siliceous member which contains little or no magnetite. This formation is composed of quartz, iron silicates, and some magnetite in a fine dissemination in black quartz.

The siliceous member on claim L-56814 is a well banded, fine-grained, grey siliceous greywacke with narrow interbedded zones of quartzite. This rock is thinly-bedded and locally has cross-bedding.

#### Peridotite

Peridotite occurs as irregular intrusives in three sections of the area - as a large mass in the north part of claim L-56814, as an irregular tongue in claim L-56811, and along the west boundary of claim L-56808.

The rock is usually fine-grained and black with a dark grey to brown weathering surface. Some sections are quite coarse-grained, serpentized, and cut by carbonate veinlets.

#### Gabbro

Gabbro occurs as irregular plugs and dikes throughout the area. This rock, in general, is a fine-to-medium grained fresh gabbro but often varies to a diorite or through basic gabbro to pyroxenite and even peridotite. All phases of the complex are composed of white feldspar and a dark green to black ferromagnesian mineral in the proper proportion for the rock type.

#### Syenite dikes

Narrow syenite dikes are common in the area and were seen to cut all the rock types except the younger lamprophyre dikes. They are composed of pink and white feldspar with some black ferromagnesian minerals, and vary in texture from fine-grained to coarsely porphyritic. In the southeast corner of claim L-56809 a small area of the agglomerates has been syenitized to the point where it is essentially a diorite-syenite intrusive.

#### Lamprophyre dikes

Some narrow lamprophyre dikes were found locally. These are composed of black biotite flakes set in a medium-grained greenish-grey groundmass with no identifiable minerals. Some of these dikes contain rounded pebbles of coarse syenite porphyry which, in places, are up to 6 inches in diameter. These must have been

picked up in a syenite batholith at depth and carried to their present position by the lamprophyre magma.

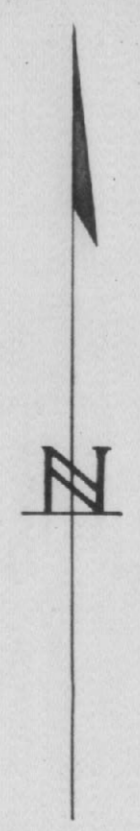
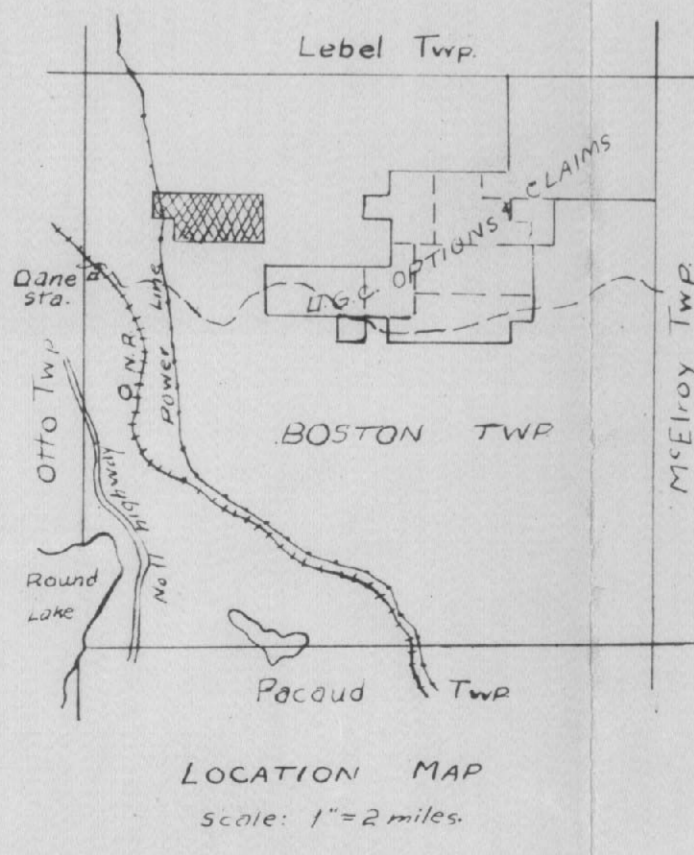
#### STRUCTURAL GEOLOGY

The Keewatin volcanics and sediments have been folded along an east-west axis until all dips are vertical or nearly vertical, and also into a large drag fold which is contained within the claims. This drag fold, the axes of which strike approximately N45°W, may be related to the regional folding or may be crumpling of the formations caused either by the large gabbro-peridotite intrusive, which is quite extensive to the west of the group, or by the syenite porphyry batholith lying within one mile to the north. However the gabbro on claims L-56810, 56809 and L-56808 has replaced parts of the folded formations indicating that the folding occurred previous to the intrusion. This establishes the folding in relation to the gabbro-peridotite intrusive, but their timing is very indefinite. They are presumed to be Haileyburian in age but may be related to the syenite porphyry batholith to the north which is Algoman in age.

H. D. McLeod

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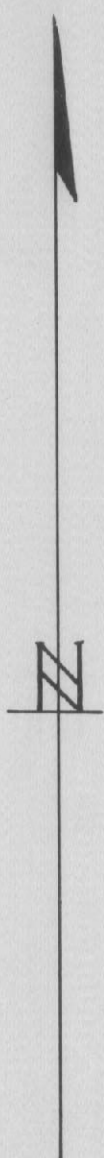
- LEGEND**
- SYENITE PORPHYRY.
  - AMPHIBOLITE, GABBRO.
  - QUARTZITE
  - IRON FORMATION, REPLACEMENT MAGNETITE (pyrite)
  - TUFF
  - GNEISS, ANDESITE.

- SYMBOLS**
- ? - OUTLINE OF OUTCROP
  - - - CONTACT DEFINED
  - - - CONTACT ASSUMED
  - / - STRIKE & DIP OF BEDDING.
  - - - FAULT.
  - - - CREEK.
  - - - SWAMP AREA.
  - Gn - GNEISS
  - Dior - DIORITIC
  - Py - PYRITE.
  - mag - MAGNETIC.
  - 30% - VISUAL ESTIMATE OF MAGNETITE CONTENT.
  - 6131 - SAMPLE NUMBER.

DOMINION GULF CO.  
 DETAILED GEOLOGY MAP  
 OF THE  
 MIKE LUNGE OPTION - AREA #126  
 BOSTON TWP, ONTARIO

SCALE: 1"=200' AUG 17, 1952  
*ed W. M. Led*  
 FILE 63A.149



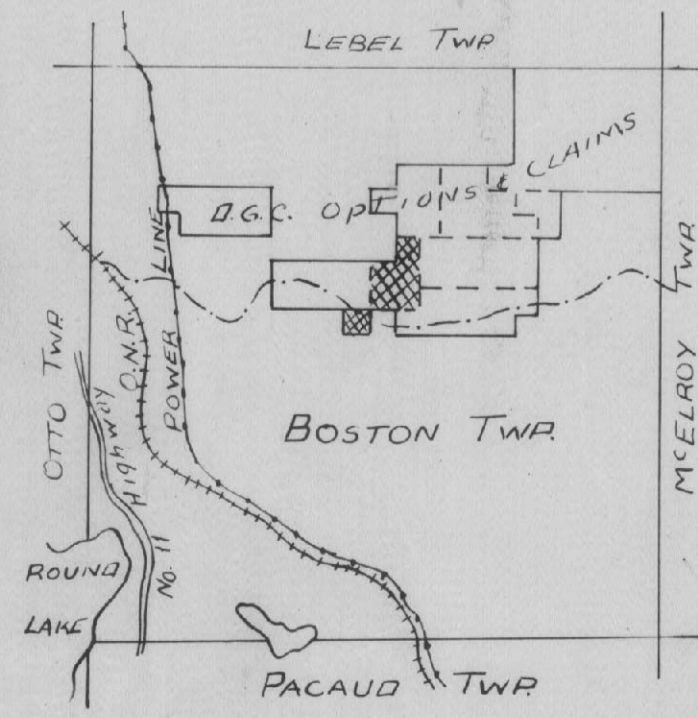
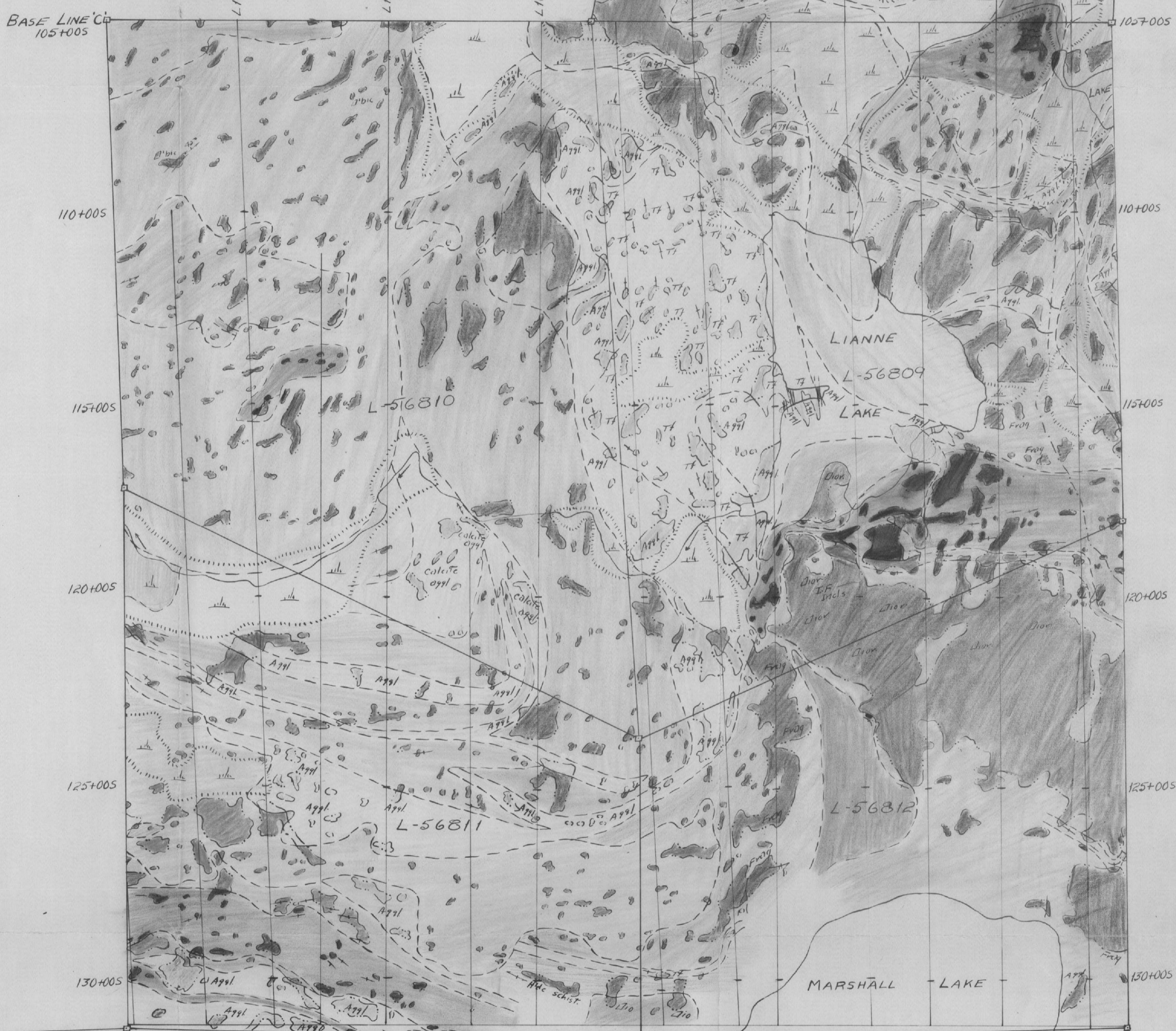


LEGEND

- SYENITE.
- GABBRO, DIORITE (Dio).
- PERIDOTITE.
- QUARTZITE, SLATE, GREYWACKE (GRC).
- IRON FORMATION.
- TUFF (T), AGGLOMERATE (Aggl), QUARTZITE (Q).
- ANDESITE, FRAGMENTAL (Frag).

SYMBOLS

- 7 - OUTLINE OF OUTCROP.
- - CONTACT DEFINED.
- - - CONTACT ASSUMED.
- / - STRIKE & DIP OF BEDDING.
- / - STRIKE & DIP OF SCHISTOSITY.
- [Symbol] - SWAMP.
- [Symbol] - CREEK.
- [Symbol] - CLAIM CORNER & LINES.
- L-56809 - CLAIM NUMBER.
- D'ic. - DIABASE.
- Dior. - DIORITIC.
- I.F. - IRON FORMATION.
- Incls. - INCLUSIONS.



LOCATION MAP Scale: 1"=2 miles

DOMINION GULF CO.  
 DETAILED GEOLOGY  
 OF THE  
 LEONARD A. MARSHALL OPTION #2  
 BOSTON TWP, ONT.  
 SCALE: 1"=200' AUG. 29, 1952  
 D. W. McLeod  
 FILE 63A. 144

