63.301

Sothman Township, Group II
Geological Report
For
Assessment Purposes

INTRODUCTION

The group comprises sixty-five claims situated in the District of Sudbury, Province of Ontario. Thirty-five claims are in the southeast portion of Sothman Township. Twenty-five claims in Kemp Township, three in Mond Township and two in Halliday Township are contiguous to those in Sothman. The group is fourteen claims long in an east-west direction and six claims deep at the widest point.

Topographical control for the geological work, mapped at a scale of one inch equals four hundred feet, was obtained from photograph enlargements, picket lines and compass-pacing.

The camp is located on a narrow sand isthmus between Loonwing and Tom Lakes. It is twenty-six air miles northwest from the town of Gowganda and forty-three air miles south from the town of South Porcupine. A north-south electric power transmission line, on the east side of the Mattagami River, is about ten miles west of the camp.

Ontario Forestry Branch installations include a fire tower at Natal Mountain eight miles southeast of the camp, and a cabin on Sinclair Lake. Periodic air patrols are made during the season of fire hazard, and a two-man ground patrol passes through twice during the same period.

TOPOGRAPHY

A mantle of fine, brownish-grey to brown sand covers the area. It occurs as eskers, kames and outwash plains, with occasional boulder beds exposed in the depressions. The ridges curve in irregular fashion and are generally narrow with steep sides. Depressions which are ringed in by these ridges sometimes contain small lakes.

Hook Lake, in the northeast part of the group, is drained by a creek, six feet wide and one to two feet deep, in to John Lake to the southwest. The creek flows close to the trenching in claim S-55820. John Lake drains in to Tom Lake and thence in to Loonwing through shallow interconnecting streams. Loonwing Lake is part of the Grassy River system which flows from south to north in this section.

The strongest topographical feature on the property is a hill of volcanic rock in the south part of claim S-55821. It rises slightly above the regionally flat but locally rough terrain. Turkey (Sansawaju) Mountain, a landmark on the boundary of Kemp and Mond Townships, is a remnant of Cobalt sediments dipping slightly east.

Glacial topography has masked structural lineaments to a large extent. The northeast-southwest extension of Hook Lake is the trace of an indicated fault. The northwest-southeast trend at the base of the lake, giving it an inverted T shape, conforms to the strike of the volcanics in this section.

FORMATIONS

Animkean:	(Cobalt Series) Conglomerate
Haileyburian:	Granophyre (diabase) gabbro Diabase gabbro Peridotite
Keewatin:	Trachyte; trachyte flow breccia.

Keewatin:

The oldest rock, and present in greatest quantity on the group, is aphanitic, amygdaloidal, grey to pale greenish-grey lava. Anygdules are found up to three-quarters of an inch in diameter. The rock is a pillowed type and determinations of strike and direction of tops are possible on some of the outcrops; in such cases the pillows are from five to ten feet in diameter and well defined. On some exposures the pillows are small, irregular in shape and interspersed with ropy material and breccia, so that strike and top determinations can not be taken with any degree of accuracy.

Thin section examinations of representative specimens of the rock show that it is composed of over ninety percent of potash oligoclase, chlorite and little to no quartz. The small plagioclase laths as a rule are partially sericitized; they show no definite orientation but are arranged in an interlocking felt. Due to the low quartz content, aside from that introduced, and the Na - K nature of the feldspar, the rock is classified as trachyte rather than a dacite.

Outcrops of porphyritic trachyte, in which the phenocrysts are small euhedral to anhedral feldspars, occur on the west side of John Lake and southeast of it about thirteen hundred feet. The phenocrysts are developed in glomeroporphyritic pattern in some cases.

The amygdules in the lava are sometimes completely filled with quartz. In other cases, the cavities are rimmed with quartz and centred with chlorite, usually of the variety penninite.

The flow breccia consists of angular fragments, up to two feet in diameter, of pale greenish - grey trachyte in a groundmass of the same composition. The breccia has apparently been formed by crustal breakage and re-incorporation of the fragments. It is possible in some cases to determine the strike of the flow by the long axes of the fragments, but they are generally irregular in shape with no apparent lineation.

Haileyburian (?)

Peridotite - Specimens of the rock at the trenching in claim S-55820 were taken for thin section examination. The ultrabasic exposed here consists of two types of pyroxene, i.e. ortho and clinopyroxene, and olivine. The olivine is partially to wholly serpentinized and is found poikilitically in the pyroxenes as well as in assemblages. Alteration of the clinopyroxene to brown hornblende and weakly pleochroic amphibole is also present. Sulphide is molded around the olivine pseudomorphs for the most part but there are isolated cases of it penetrating the crystals outlines.

Haileyburian cont'd

In claims S-55820, 55819 and 55825, the abundance of olivine pseudomorphs in the rock suggests an original dunite.

Diabase Gabbro - On a small island near the east end of Loonwing Lake and on the shore one hundred and fifty feet to the southeast, there are exposures of diabase gabbro. Plagioclase feldspar, altered to saussurite and monoclinic pyroxene are the major constituents. A little penninite and carbonate are present. A specimen from the shore contains a little interstitial quartz.

Granophyre (diabase) Gabbro

Coarse to medium-grained granophyre diabase outcrops in claim S-56206 and also east from here south of Leo Lake, and along the east boundary of claim S-56424. In thin section, plagioclase laths are about labradorite in type. The clinopyroxene appears to be normal augite. Quartz and sodic feldspar occur in cuneiform patterns in the interstices of the feldspar and pyroxene. Megascopically, some specimens do not have an ophitic texture.

STRUCTURES

Evidence of a fault striking about 53° az. through Hook Lake includes a scarp along the northeast shore, and a band of flow breccia which shows an apparent offset along the strike.

A small fault striking more or less parallel to the Hook Lake fault is indicated between trench No. 3 and trench No. 1 in claim S-55820. An offset of forty to fifty feet has taken place between the trenches with the east side moving southwest relative to the west. The fractured slickensided nature of the rock in trench No. 1 would indicate that there has also been drag effects associated with the faulting.

The creek flowing from Hook Lake to John Lake follows a course paralleling the trend of the Hook Lake fault for about thirty-two hundred feet. Indications are that this is the trace of another northeast-south-west fault or fracture. The steep rock faces at Parson's Peak in claim S-55821 are close to its projection to the southwest.

The strike of the pillow lava in the central and eastern parts is generally a little north of west with tops south. South of John Lake the strike changes to a NNW direction which carries through in outcrops found to the northwest. At Parson's Peak on the west side, the pillows dip about 80° south. The change in direction of the strike gives an open anticline plunging steeply southwest.

Evidence that the peridotite intrusive is a sill of Haileyburian age was not found. At the trenching in claim S-55820 the contact dips 70° to 85° north. These dips are localized but they are not concordant with the southerly dip of the volcanics. The mineralization at the trenching is a replacement type followed by serpentinization which has spread through the same fractures in some cases; it is not a magmatic segregation one would expect at the base of a sill.

MINERALIZATION

Exposures of nickeliferous pyrrhotite, with small amounts of chalcopyrite and pyrite, occur at the trenching in claims S-55820 and S-55822. The pyrrhotite occurs

Mineralization cont'd.

as disseminations in the peridotite with heavier concentrations near fractures. It is also found in a massive state in blebs along the sides of, and contained within, stringers of greenish-white vein material. The latter would appear to have followed the sulphides into the same fractures in some cases.

The sulphides are a replacement in the peridotite, either deuteric or hydrothermal, closely related to the consolidation of the intrusive. Threads of amorphous, green serpentine, as distinct from the above veins, cut the sulphide mineralization. Serpentinization is thus later, but probably of contemporaneous hydrothermal activity to the sulphides.

The mineralized rock is well fractured, surfaces of the planes slickensided and coated with iron stain. There are occasional small, stellate clusters of actinolite in these fractures.

In claims S-55820 and S-55819, outcrops of serpentinized peridotite contain a few one-eighth to one thrity-second inch asbestos cross-fibre veinlets. The longest fibre, with a length of about one-quarter inch, occurs in a flat-lying stringer in the outcrop in claim S-55825. The quantities of asbestos on the exposed surfaces are insufficient for grade determinations. The serpentine is nodular, soft and fissile.

In the eastern part of claim S-56157, a weak fracture striking at 30° az. in the trachyte contains a little pyrite. It has been tested by a small pit dynamited years ago.

R. W. BAKER

April 3, 1952

/dc

Interpretation Report
of
Ground Magnetometer Survey
Dominion Gulf Company
Sothman Township Group II Claims
N. W. Gowganda Area
Province of Ontario

INTRODUCTION

A group of 65 contiguous claims surrounding the common corner of Sothman, Halliday, Kemp and Mond Townships was staked during the summer of 1950 by the Dominion Gulf Company. Geological investigations had indicated the presence of a nickel-bearing peridotite intrusive cutting the lava series. Since outcrops of the ultrabasic intrusive are scarce, it was proposed to outline the position of the body by means of a vertical ground magnetometer survey of the claim group.

An Askania Schmidt-type magnetic balance having a sensitivity of about 25 gammas per scale division, was used in the survey. Basic coverage consisting of picket lines 400 feet apart, and a station interval of 100 feet was obtained. On completion of this reconnaissance ground magnetometer survey and geological mapping, it was found that the data on hand were insufficient to plan an intelligent diamond drilling program to sample the intrusive. Accordingly, a detailed ground magnetometer survey was proposed and carried out. The intrusive was covered over its entire length by picket lines no more than 100 feet apart, with a station interval of 50 feet or less. Combining the data obtained for both surveys, a total of 6320 stations were observed on 86.4 miles of picket line.

The magnetic data were observed and reduced by Dominion Gulf Company magnetometer crews, and then transmitted to the Toronto office of the Dominion Gulf Company for further processing and interpretation. The basic data together with isomagnetic contours and interpretation are presented on two maps, a property map at a scale of 1 inch to 400 feet, and a map of the main ultrabasic intrusive zone at a scale of 1 inch equals 100 feet.

INTERPRETATION

The rock types in the area may be placed in two general categories, acid lavas and basic to ultrabasic intrusives. As a result, the magnetic data differentiate quite sharply between the two major rock types. The broad, magnetically flat areas surrounding the magnetic anomaly zones represent the rhyolite-dacite lava series, while the magnetic anomalies themselves may be correlated with the gabbro and peridotite intrusives.

Two major intrusive zones are indicated, both of which have a strike length of 10,000 feet. In addition, five relatively local magnetic anomalies indicate the presence of five small independent basic plugs, which no doubt are related to the major intrusives in age. The major anomaly north of the Sothman - Kemp township line has been shown to represent a peridotite - dunite intrusive. Some nickel has been found in association with the peridotite, while minor amounts of asbestos fibre have been found in the serpentinized dunite. The second major magnetic anomaly located near the southern boundary of the claims in Kemp Township appears to be caused by a diabase gabbro. Little mineralization has been found associated with this intrusive.

Magnetically the two major intrusives are quite dissimilar in form. The northern anomaly is much more intense, and has a much greater width than the southern anomaly. Geological evidence suggests that the northern intrusives should be classified as a concordant dyke, while the southern intrusive might be called a discordant dyke.

Interpretation cont'd

A study of the detailed magnetics over the northern intrusive body indicates that two distinct magnetic effects are present. The dividing line is the narrow neck of the intrusive near line 82 + 00 east. West of this point the magnetic anomaly is relatively smooth, while to the east many sharp local anomalies are present. Depth of overburden as indicated by drilling, is very similar for both portions of the anomaly. It is therefore suggested that the sharp local magnetic effects in the eastern portion of the anomaly represent zones of serpentinization, while the smooth magnetics of the western zone indicate relatively unaltered rock.

A detailed analysis of the "hook" shaped magnetic anomaly at the far eastern end of the major intrusive indicates that the magnetic anomaly is probably caused by four separate intrusive bodies, all of which conform roughly with the regional strike. This permits a more logical explanation of the geology than could be given if the anomaly was considered as due to a single causative body.

A number of reentrants along the peridotite rhyolite contact are shown by the magnetics. This suggests that the peridotite magma probably migrated along minor faults in the lava series, or that later faulting has displaced the contact.

A number of minor faults are indicated by the magnetics, and have been shown on the accompanying map. None of the faults are particularly strong, but where the evidence for the faults is very weak, question marks are added. The direction of fault movement has been indicated wherever possible.

The claim block has been carefully prospected, and ground magnetometer coverage is very complete. Therefore further work on the property must be confined to other geophysical methods or drilling. Of the geophysical methods, electrical surveys would appear to provide the best chance of locating economic concentrations of nickel. Drilling should be concetrated along the contact zones of the intrusive mass, particularly in the vicinity of the interpreted faults.

J. H. Ratcliffe

/dc

Schedule A

Geology	1950 June	July	Aug	Sept	Oct	Nov	Dec	1951 Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	1952 Jan	Feb	Apr	M
Field Work																							
R. W. Baker		X	X	X	X																		
W. Rainboth		X	X																				
G. E. Parsons		X	X									X		X	X	X							
B. Cryderman		X																					
E. Kittilson		X																					
E. Norppa		X																					
L. Potila		X																					
G. T. Hurd		X	X	X																			
C. Cryderman			X																				
J. Magnuson			X																				
L. Sarin				X																			
R. T. Pountney														X	X	X							
J. H. Ratcliffe													X										
C. Letourneau														X									
R. Leonard															X		X						
John MacDonald															X								
D. Sprague															X	X							
Report																							
R. W. Baker						X	X	X	X	X	X			X							X		
G. E. Parsons								X											X				
R. T. Pountney																		X					
Drafting																							
D. Lewis																			X		X		
M. Sturrock																			X				
R. T. Pountney									X														
T. G. Robinson									X														

Schedule A

Linecutters	1950 May	July	Aug.	Sept.	Oct.	Nov.	Dec.	1951 Jan.	Feb.	Mar.	Apr.	Oct.	1952 Jan.
J. H. Baldrey	X												
J. R. Brisson	X												
B. Cryderman		X											
E. Kittilson		X	X	X		X	X						
R. Lillhood		X	X										
J. Magnuson		X	X										
L. Potila		X	X	X	X		X	X	X				
G. T. Hurd		X	X	X				X			X		
G. Anderson					X								
P. Mousseau						X	X	X					
J. D. MacDonald							X	X				X	
G. E. Parsons								X					
O. Eliason								X	X	X	X	X	
D. Sprague								X					
H. B. Vos								X					
J. H. Baldrey									X	X			
E. Millar									X				
R. T. Pountney										X			
R. W. Baker										X			
T. Broathen										X	X		
R. Leonard												X	
D. W. Smellie													X
Y. Charron													X
T. Denner													X
G. Froyrak													X
G. Toner													X

Ground Magnetometer	1950 Sept.	Oct.	Nov.	Dec.	1951 Jan.	Feb.	Mar.	Apr.	May	Oct.	Nov.
Instrument Operators and Assistants											
B. M. Middleton	X				X	X	X	X			
R. Hodgins	X	X	X							X	X
J. H. Baldrey	X	X	X			X					
D. Sprague				X	X	X					
E. Millar				X	X	X		X	X		
H. B. Vos				X	X	X					
G. T. Hurd					X						
R. T. Pountney					X	X					
T. G. Robinson						X	X	X	X		
R. McDonald										X	X

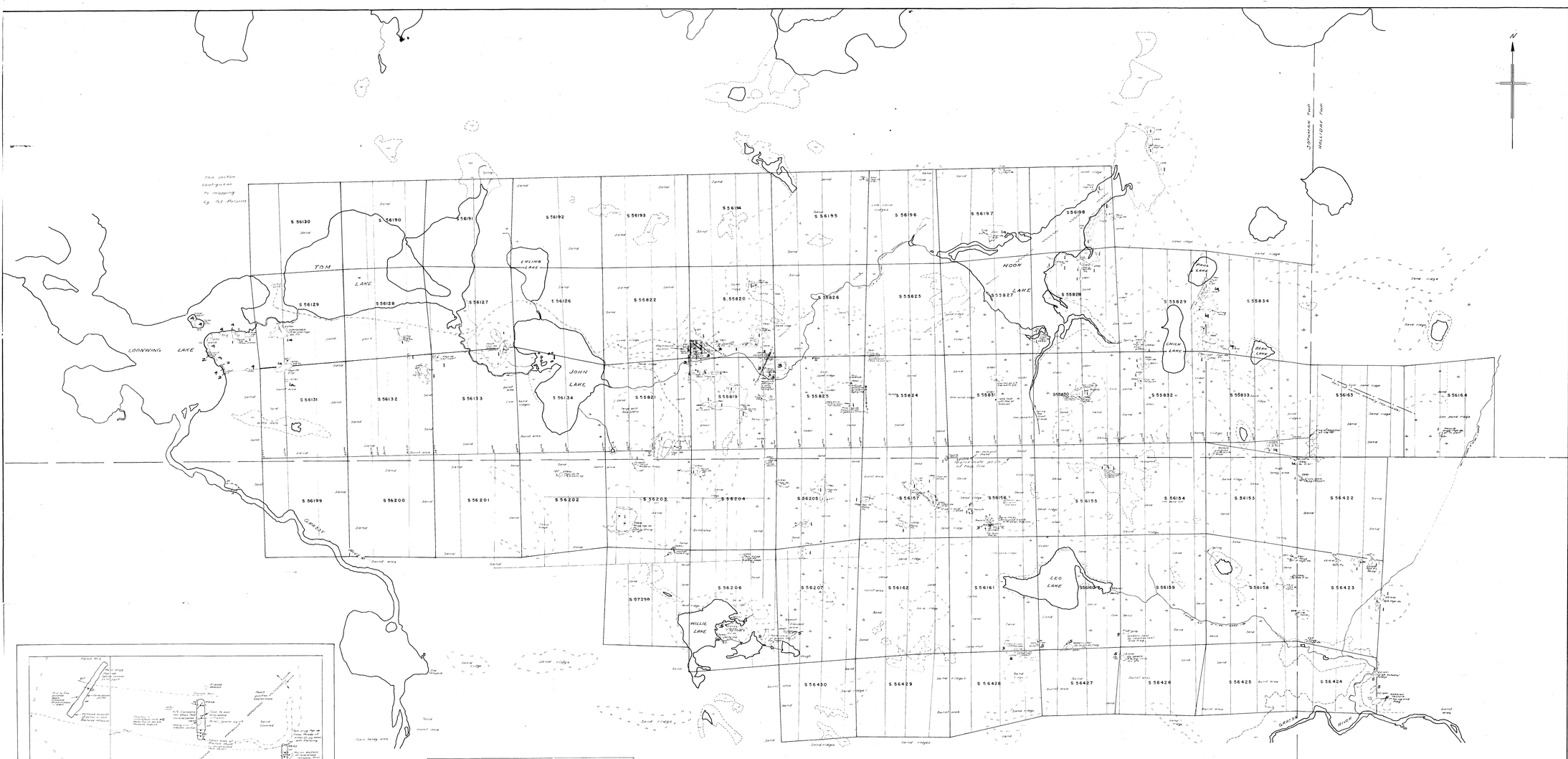
Interpretation	1950 Nov.	Dec.	1951 Jan.	Feb.	Mar.	Apr.	May	June	Aug.	Sept.	Nov.	Dec.	1952 Jan.	Feb.	Mar.	Apr.	May
J. Affleck	X	X	X				X	X		X		X					
A. J. Reese		X						X			X						
H. Cordwell		X									X						
H. Reimer			X	X	X	X											
J. H. Ratcliffe			X						X								
C. M. Patterson							X	X	X	X	X	X	X	X			
D. A. Griffis							X			X							
A. E. Mittereder							X										
F. Newell							X										
H. Ricketts								X			X					X	X
J. Wilson								X									
J. L. Carlson								X									
J. S. Armel										X							
A. Mariotti										X	X	X					
A. J. Cupps Jr.										X							
M. M. Weir										X							
R. N. Kennedy											X						
N. Snider											X						X
J. C. Cummings											X						
L. J. McCutcheon											X	X		X			
R. H. Cepon												X		X			
M. K. Clark												X					
M. L. Kelley												X					
M. Robinson												X					
V. Davis																	X
D. J. Torrens																	X

Schedule A

Ground Magnetometer Cont'd	1952 May
Report	
J. H. Ratcliffe	X

The address for all persons listed on this schedule is:

203 Bay Street, Toronto, Ontario.



Plan of Trenching in Claims S-33982 and S-5820
Scale 1 inch = 20 feet

List of SPECIMENS		
Number	Location	Description
NWG. KE 63	Trench No 3, claim S5820	Peridotite
64	Trench No 1	Granodiorite stringers - bowenite
65	Trench No 1	Peridotite
66	Outcrop north of trenching	Trachyte
67	Island, Loonwing Lake	Diabase gabbro
68	Shore, SE Peninsula	Diabase gabbro
69	Claim S-33982	Trachyte
70	Claim S-56129	Trachyte
71	Claim S-56161	Granophyre diabase
72	Claim S-55820	Serpentinized peridotite
73	Claim S-56156	Trachyte
74	Claim S-56132	Trachyte

Topography from 400 scale enlargements of photos 46-95, 269-28; 46-95, 269-30; 46-96, 11-47; 46-96, 61-49; 46-96, 61-51.

LEGEND

KEWEENAWAN(?) (Possibly Huckleberrian)

5 ☐ Yh. Diabase gabbro

4 ☐ pb-gb Granophyre diabase

3 ☐ pd Peridotite

ANIMIKEAN (Granite Series)

2 ☒ cg. Conglomerate

KEEWATIN

1 ☐ Agp-t Trachyte; flow breccia.
1a

(Ni) Nickeliferous, by dimethylglyoxime test.
(NN) Non-nickeliferous

SYMBOLS

- Outline of high ground
- Direction and tops of pillows
- Shearing, dip and strike
- Faulting
- Jointing, dip and strike
- Picket line
- Exposure boundary
- Boundary of outcrop area
- Muskeg
- Open swamp
- Trail
- Claim boundary
- Trench

DOMINION GULF COMPANY

N.W. GOWGANDA 41P/4 S

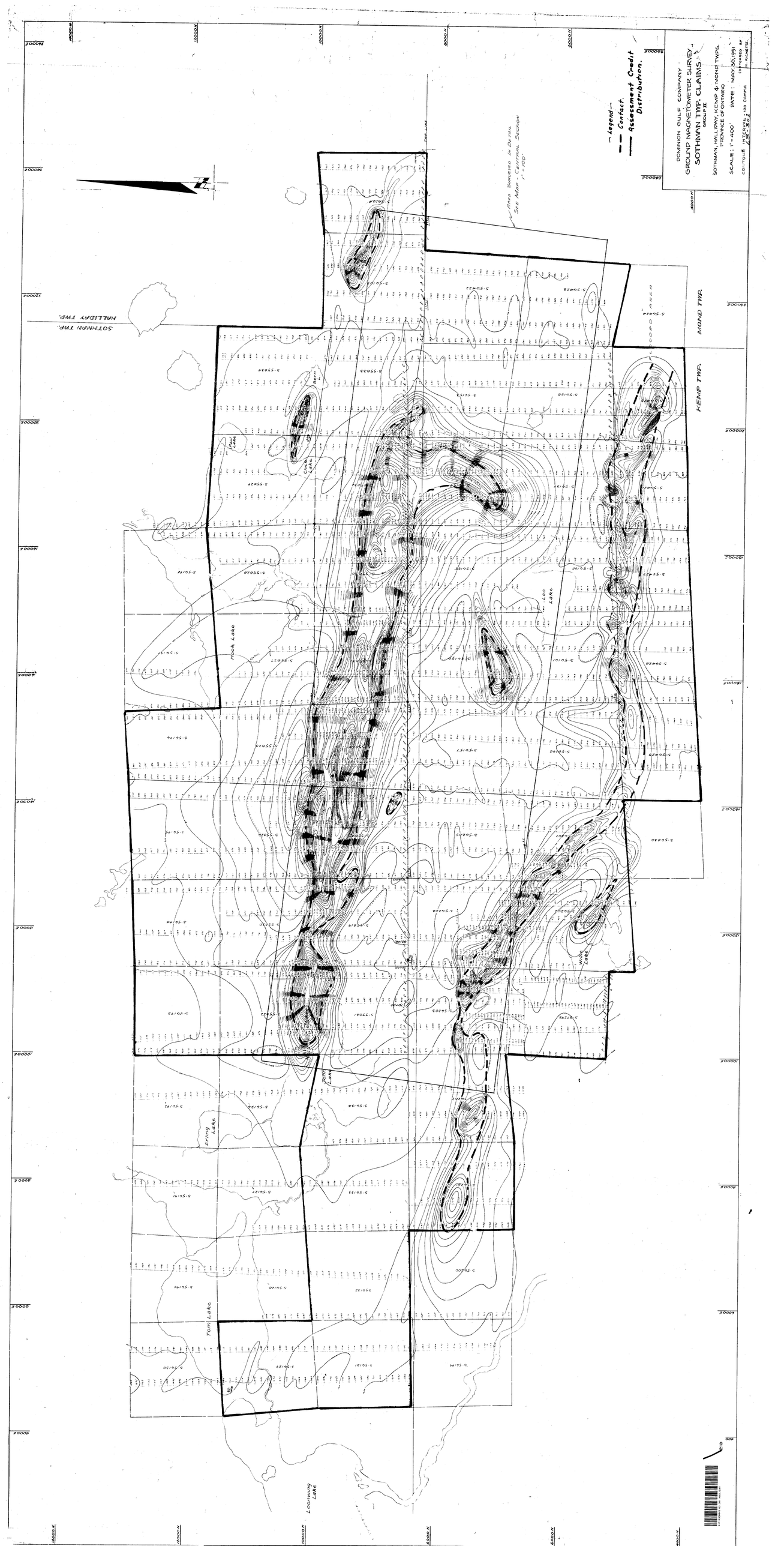
SOTHMAN TWP - GROUP II

With portions in Kemp, Halliday and Mond Twps.

GEOLOGICAL PLAN

SCALE: 1 in = 400 ft. DATE: APRIL 3, 1952

Geology by: R.V. Baker
R. Pountney
Assisted by: F. Ward


DOMINION GULF COMPANY
GROUND MAGNETOMETER SURVEY
SOTHMAN TWP. CLAIMS
GROUP II
SOTHMAN, HALLIDAY, KEMP & MOND TWPS.
PROVINCE OF ONTARIO
SCALE: 1"=400' DATE: MAY 30, 1951
CONTOUR INTERVAL 100 Gamma
SURVEYED BY
Legend
Contact.
Assessment Credit
Distribution.
AREA SURVEYED IN DETAIL
SEE MAP - CENTRAL SECTION
1"=100'
SOTHMAN TWP.
HALLIDAY TWP.
MOND TWP.
KEMP TWP.
Hook Lake
Leo Lake
Erling Lake
Tom Lake
Loonwing Lake
Long Lake
Cook Lake
Bond Lake
Wave Lake
Bond Lake
Bond Lake

DOWNTOWN GOLF COMPANY

GROUND MAGNETOMETER SURVEY

SHOWING THE CLAIMS

DOWNTOWN GOLF COMPANY

LOCATION MAP

SCALE 1" = 1 MILE

CLAIMS SURVEYED

CLAIMS STAKED

LOCATION MAP

SCALE 1" = 1 MILE

CLAIMS SURVEYED

CLAIMS STAKED