



52C10NW8306 63A.307 BAD VERMILION LAKE

63A.307

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STRATMAT LTD.
MONTREAL, QUEBEC.

PROJECT TITAN

REPORT ON THE
DETAILED GEOLOGY OF
CLAIMS FF10339, 10340, & 10344.
FORT FRANCES MINING DIV.

FEB. 1, 1958.

H.D. McLeod

H.D. McLeod.

AUTOPOSITIVES FILED
SEPERATELY.

INTRODUCTION

Claims FF10339, 10340, and 10344, owned by Stratmat Ltd. address Suite 1100, 620 Cathcart St., Montreal, P.Q., lie on the north shore of Seine Bay of Rainy Lake, a distance of approximately twenty five miles east of Fort Frances, Ontario. This group is in the Fort Frances Mining Division, District of Rainy River, Ontario.

These three claims form a contiguous group, one of three separated groups that comprise the remnants of a large single group of claims numbered FF10265 to FF10358 incl., FF10770 to FF10777 incl., and FF11049 to FF11082 incl. staked originally to cover the Seine Bay-Bad Vermillion Lake titaniferous magnetite range. The greater part of the latter group of claims is either now open or will come open early in February 1958.

Access to the claims is by boat or aeroplane from Fort Frances, Ontario, a distance of approximately twenty-five miles.

The original group of claims has been tested by an extensive work program designed to determine if lenses of titaniferous magnetite of economic size exist and to outline them as accurately as possible from surface.

A base line was surveyed the entire length of the claims in the summer months of 1956. This was used as control for a program of reconnaissance geological mapping, that covered the entire group of claims and was designed to determine whether or not further detailed work was warranted. This line cutting and mapping was submitted for assessment credits on February 9th, 1957, and nineteen days per claim was approved by the Department of Mines.

During the period February to April, 1957 a reconnaissance magnetometer survey was run across an extensive section of the western part of the titaniferous magnetite range including the claims dealt with in this report. This survey outlined the favorable zones for detailed mapping. It has not, as yet, been submitted for assessment credits.

A program of detailed mapping to accurately locate, outline, and determine the size, grade, etc. of the titaniferous magnetite lenses was started in May 1957 and continued until November 1957. This program was expected to determine the value of all the claims, but, due to the large area to be covered, was not completed.

The detailed geology claimed for assessment credits and shown on the accompanying geological map is part of the above program. The mapping was done on a scale of 100 feet to the inch by short paced traverses from the surveyed base line and subsidiary base lines established along the favorable horizons. These traverses were made at 100-foot and, in some places, 50-foot intervals always at right-angles to the accurately located base lines. The maximum length of any traverse was 600 feet and every one was started from a known point on a base line. In two sections parallel lines were established to assure greater accuracy. A compass is useless in this area due to the intense magnetic attraction.

The mapping, at all times, was done by a party of two men. The senior geologist traversed at regular intervals while the assistant prospected the interval between traverses for magnetite-bearing outcrop or rubble. Any showings located by him were accurately tied in to the traverse or to the base line. In this manner the favorable zone was accurately prospected and mapped.

The detailed mapping revealed that the greater part of all the titaniferous magnetite lenses are covered by shallow overburden and are traceable only by the rubble lying on surface. As a result a detailed magnetometer survey was commenced. Due to lack of time, little of this program was completed. The claims described in this report were not done.

The mapping program was done by H.D. McLeod, the writer, assisted by G.F. Burnside, addresses below.

The following assessment credits are claimed:

Geological mapping

H.D. McLeod 275 Sixth St. E., Fort Frances, Ont. -- July 5-9, 1957.
4 - 12 hour days - 6 days.

G.F. Burnside Schefferville, P.Q. -- July 5-9, 1967 -- 4-12 hour days
- 6 days.

Compilation, drafting, report, etc.

H.D. McLeod -- Jan. 22 - 25, 1958 - 4 days.

TOTAL - 16 days x 4 - 64 days.

Required - 21 days geology x 3 claims - 63 days.

GENERAL GEOLOGY

Table of Formations

Diorite

Intrusive contact

Shearing - formation of chlorite and carbonate schists.
Anorthosite

Intrusive contact

Gabbro ----- titaniferous magnetite.

Description of Formations

Magnetite

The massive and disseminated titaniferous magnetite zones are

distinguished on the accompanying geological plan, but, since they form one single distinct horizon, will be described as one unit.

The zone strikes east - west across the north part of claim FF10344, across the northwest corner of FF10339, and into the south part of FF10340 before it pinches out at a north roll in the gabbro intrusives. To the west it is known to pinch out a short distance west of claim FF10344. The strike length of this lens on the claims is 3000 feet. The width is difficult to due to the great number of irregular diorite intrusives,. It is a maximum of 160 feet in one section but averages considerably less.

The lens is largely gabbro containing a varying percentage of magnetite. A section from north to south across the horizon starts in barren gabbro or gabbro containing thinly disseminated magnetite. Moving south, the magnetite content increases progressively to a narrow (10 to 30 feet) zone of massive mineral. This massive zone is in sharp contact with the barren schists or gabbros to the south.

The visual estimates of the magnetite content by volume are shown on the accompanying geological plan.

The magnetite in the disseminated section of the lens is in the form of rounded individual grains ranging from very small sizes to a maximum of 1/4 inch in diameter.

The massive zone consists of coarse granular magnetite with small amounts of quartz and other impurities.

No assays were taken to determine the grade of the material. From experience in other sections of the titaniferous magnetite range, it is believed that the massive mineral will average approximately 40% Fe and 20% TiO_2 . The disseminated mineral should have an average content of combined Fe- TiO_2 approximately the same as the visual estimate of the magnetite content, The proportion of Fe to TiO_2 will be much the same as that proportion in the massive mineral.

A tonnage estimate is difficult to make due to the great numbers of irregular diorite intrusives, but tentatively is as follows:

Massive mineral --- 5500 tons/vertical foot.
Disseminated mineral- 16500 tons/vertical foot.

This gives a total of 22000 tons per vertical foot estimated to grade approximately 45% titaniferous magnetite or combined Fe - TiO_2 .

Scattered small lenses and veins of both massive and disseminated magnetite were seen in the gabbros to the south of the main horizon. None of these has any economic importance.

Gabbro

Two distinct types of gabbro are present. The north or magnetite-bearing gabbro is a shiny black basic gabbro composed almost entirely of a ferromagnesian mineral except for the magnetite content described above. Some white feldspar is seen, particularly in the north sections. In the sections containing heavily disseminated scattered white quartz grains are often seen. This rock is so distinctive that any outcrop of it can be used to determine the probable location of the magnetite lenses.

The south gabbro is a coarse-grained uniform mixture of black ferromagnesian minerals and white feldspars. This gabbro is normally barren of magnetite, but thinly disseminated mineral was seen in some sections. Narrow veins and lenses of both massive and disseminated magnetite were seen in this gabbro but all appeared to be intrusive.

Anorthosite

Anorthosite is not shown as a separate unit on the accompanying geological plan but forms extensive intrusives to the west of the claims area. Lenses and dikes too small to be distinguished on the scale of the plan were seen in the gabbros to the south of the main magnetite horizon.

The rock type is composed almost entirely of white feldspars in coarse grains and small amounts of black ferromagnesian minerals. A little magnetite was seen locally.

Diorite

Diorite forms great numbers of irregular dikes and plugs throughout the entire area mapped. The rock type is definitely intrusive into all the other rock types. All contacts are sharp.

The rock is a uniform fine-grained massive light grey mixture of white feldspars and dark grey to black ferromagnesian minerals.

STRUCTURAL GEOLOGY

The area mapped is entirely intrusive rocks of various ages, the diorite being the younger and the gabbro the older.

The diorite forms a great number of irregular disjointed intrusives with no apparent structural pattern.

The gabbros may have been intruded as sills and later folded into their present vertical position. The north magnetite-bearing gabbro has the structure of a differentiated sill with heavy iron minerals concentrated along the base or south edge. However in other sections of the titaniferous



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REPORT ON THE
DETAILED GEOLOGY OF

CLAIMS FF10304, 10305, 10311, 10315, 10316,
10317, 10320, 10321, 10322, 10323, 10324,
11617, and 11662.

FORT FRANCES MINING DIVISION.

Feb. 1, 1958.

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magnetite range outside this claim group there is definite evidence that contradicts this structural theory. Evidence located to date is so contradictory that no definite opinion is possible.

Feb. 1, 1958.

H.D. McLeod

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INTRODUCTION

Claims FF10304, 10305, 10311, 10315, 10316, 10317, 10320, 10321, 10322, 10323, 10324, 11617, and 11662, owned by Stratmat Ltd. address Suite 1100, 620 Cathcart St., Montreal, P.Q., lie on the north shore of Seine Bay of Rainy Lake, a distance of approximately twenty-seven miles east of Fort Frances, Ontario. This group is in the Fort Frances Mining division, district of Rainy River.

These thirteen claims form a contiguous group, one of three separated groups that comprise the remnants of a large single group of claims numbered FF10265 to FF10258 incls., FF10770 to FF10777 incls., and FF11047 to FF11082 incls. staked originally to cover the Seine Bay - Bad Vermillion Lake titaniferous magnetite range. The greater part of the latter group of claims is now open or will come open early in February, 1958. Claims FF11617 and FF11662 are the re-staking of claims that lapsed in 1957.

Access to the claims is by boat or aeroplane from Fort Frances, Ontario, a distance of approximately twenty-seven miles.

The original group of claims has been tested by an extensive work program designed to determine if lenses of titaniferous magnetite of economic size exist and to outline them as accurately as possible from surface.

A base line was surveyed the entire length of the claims in the summer months of 1956. This was used as control for a program of reconnaissance geological mapping that covered the entire group of claims and was designed to determine whether or not further detailed work was warranted. This line cutting and mapping was submitted for assessment credits on February 9th, 1957, and nineteen days per claim was approved by the Department of Mines.

During the period February to April, 1957 a reconnaissance magnetometer was run across an extensive section of the of the western part of the titaniferous magnetite range including the claims dealt with in this report. This survey outlined the favorable zones for detailed mapping. It has not, as yet, been submitted for assessment credits.

A program of detailed mapping to accurately locate, outline, and determine the size, grade, etc. of the titaniferous magnetite lenses was started in May 1957 and continued until November 1957. This program was expected to determine the value of all the claims, but, due to the large area to be covered, was not completed.

The detailed geology claimed for assessment credits and shown on the accompanying geological map is part of the above program. The mapping was done on a scale of 100 feet to the inch by short paced traverses from the surveyed base line and subsidiary base lines established along the favorable horizons. These traverses were made at 100-foot and, in some places, 50-foot intervals always at right-angles to the accurately located base lines. The maximum length of any traverse was 600 feet and every one was started from a known point on a base line. In two sections parallel base lines were established to assure greater accuracy. A compass is useless in this area due to the intense magnetic attraction.

The mapping, at all times, was done by a party of two men. The senior geologist traversed at regular intervals while the assistant prospected the interval between traverses for magnetite-bearing outcrop or rubble. Any showings located by him were accurately located with respect to the traverse or to the base line. In this manner the favorable zone was accurately prospected and mapped.

The detailed mapping revealed that the greater part of all the titaniferous magnetite lenses are covered by shallow overburden and are traceable only by the rubble lying on surface. As a result a detailed magnetometer survey was commenced. Due to lack of time little of this program was completed. Seven of the claims, FF10317, 10320 to 10324, and 11617, of this group were done.

The mapping was done by H.D.McLeod, the writer, assisted by G.F.Burnside, addresses below.

The following assessment credits are claimed:

Geological mapping

H.D.McLeod - 275 Sixth St. E., Fort Frances, Ont. -- June 1, 1957 to July 4, 1957 -- 22 - 12 hour days - 32 days.
G.F.Burnside - Schefferville, P.Q. -- June 1, 1957 to July 4, 1957 - 22 - 12 hour days - 32 days.

Compilation, drafting, reports, etc.

H.D.McLeod -- Jan. 20 - 21, 27 - 29, 1958 -- 5 days.

TOTAL - 69 days x 4 - 276 days.
Required - 21 days x 13 claims - 273 days.

The accompanying geological plan shows geology (not colored) outside the claims area. The reason for this is that the map is an adaption of a geology plan covering some claims that have now been allowed to lapse. The work on that mapping has not been claimed here.

GENERAL GEOLOGY

Table of Formations

Quartz - feldspar porphyry
Diorite dikes

Intrusive contact

Shearing - formation of chlorite and carbonate schists.

Anorthosite

Intrusive contact

Gabbro
Magnetite

Description of Formations

Magnetite

The massive and disseminated titaniferous magnetite are distinguished on the accompanying geological plan, but, since they are related in formation and distribution, will be described together. The main horizons as outlined on the geological plan can be divided into two distinct types and are designated as the north zone and the south zone. These both persist throughout the entire length of the claims group, lie parallel approximately 300 feet apart, but are entirely different in character and apparently in mode of emplacement.

Both zones can be traced from the southwest corner of claim FF10324, at the contact of a large quartz - feldspar porphyry intrusive, eastward across the entire claim group to the center section of claim FF10304. Several limited gaps are present but many of these might be proven to contain magnetite by a magnetometer survey.

To the west the magnetite - bearing horizon has been replaced by an extensive quartz - feldspar porphyry intrusive. Inclusions of magnetite were found in it to the west of the claims area.

To the east it disappears under an extensive area of sand plain. It may persist under the overburden but appears to be weakening and probably either pinches out or breaks up into small lenses.

The two zones of magnetite are completely different in character. The north zone appearance of a basal segregation in a flat - lying sill with subsequent folding tilting the structure into it's present vertical position. A section from north to south across this zone passes from barren gabbro or gabbro with thinly disseminated magnetite through a zone of increasing amount of disseminated magnetite into a south or basal zone of massive magnetite ranging from 10 to 40 feet in width. The massive section is in sharp contact with barren gabbros or schists to the south. In rare cases a narrow zone of disseminated mineral lies between the massive mineral and the barren rocks.

The south magnetite horizon normally consists of numerous narrow, irregular, disjointed lenses and veins of massive magnetite intruded into barren gabbro or schists. In two places only do these lenses attain a size comparable to the massive lenses in the north zone. It is possible, however, that other large lenses may be located by a magnetometer survey over some areas of deep overburden. Disseminated magnetite zones very rarely accompany the massive lenses but does form some individual lenses.

The north horizon is composed of three extensive lenses of disseminated mineral, each with a number of massive lenses along the south contact.

The west lens extends from the contact of the quartz - feldspar porphyry contact in the southwest corner of claim FF10324 across claims FF10323 and 10322 to the west boundary of FF10321, where it appears to

pinch out. Four lenses of massive magnetite are known along the south contact. The latter appear to be separated by distances up to 250 feet. However, the outlines of these lenses is not considered to be absolute. They were determined by a comparison of the results of detailed magnetics and detailed geology. Two factors lead to confusion in the interpretation. The first is that very little actual outcrop is present. The zones were traced by the rubble so common at the surface. The second factor was that considerable amounts of titaniferous hematite rubble were found along these zones. This material assays very high in Fe and TiO_2 but is almost completely non-magnetic. Thus it is possible that the massive lenses may be more extensive than shown.

Length of the west lens is 3400 feet and the width of material grading 20% magnetite or better by volume ranges from 50 feet to a maximum of 140 feet, the average being approximately 90 feet. The massive lenses range from 500 feet to 700 feet in length and from 20 feet to 40 feet in width.

The central lens of the north horizon commences abruptly in the northeast corner of claim FF10321 and extends continuously across claims FF10320, 11617, and 10317 to the boundary of claim 10316. Here it apparently pinches out but may continue a short distance to the east under overburden. This is a length of 2900 feet. Width varies from 40 feet to 100 feet and averages approximately 70 feet.

A massive magnetite horizon varying from 10 feet to 40 feet in width (average 25 feet) appears to be continuous along the entire south contact of the zone. This mineral is probably in the form of an echelon lenses but the gap between them is very small.

A high proportion of outcrop made the interpretation of this section much more complete.

The third or east lens commences in the central part of claim FF10316, offset to the east and north of the east end of the central lens. From there it extends continuously across claims FF10315, 10311, 11662, 10305, and 10304 to the east boundary of the claims group. Here it disappears under sand overburden, but there is evidence that it either pinches out or breaks up into small disjointed lenses.

This lens was traced almost wholly by surface rubble and thus, widths and continuity, especially of the massive lenses, are vague. The disseminated zone appears to be continuous, thus has a length of a minimum of 5200 feet. Width varies from 35 feet to 80 feet and averages approximately 50 feet.

Massive magnetite appears to be continuous along the entire length of the zone but may be in the form of an echelon lenses.

The south magnetite horizon contains only two important lenses of massive mineral. The first extends from the east section of claim FF10321 to the central section of FF10320. The main part of this lens has a length of 1000 feet and a width varying from 20 feet to 45 feet. A narrow is known to persist to the west.

The second lies on claim FF10317. This lens has a length of 1000 feet and a width varying from 20 feet to 35 feet. A narrow extension is known to the east. The west extension, if present, lies under deep overburden.

Gabbro

Two distinct types of gabbro are present. The north or magnetite-bearing gabbro is a shiny black basic mixture of ferromagnesian minerals with a high magnetite content in a 75 - foot to 150 - foot zone along the south contact. This has been described above. Some white feldspar is seen in the north or low magnetite section, and white quartz grains are often present in the sections containing heavily disseminated magnetite. This gabbro is so distinctive that the location of the magnetite horizon can be predicted from the location of any outcrop found.

The remainder of the gabbros are coarse - grained, generally massive and uniform mixtures of black ferromagnesian minerals and white feldspar. ~~Thinly~~ ^{Thinly} disseminated magnetite is present in places.

Anorthosite

Large irregular dikes of anorthosite are common in the south part of the west section of the area. These have sharp contacts with and are intrusive into the gabbro.

The rock is a coarse - grained mixture of white feldspars with minor amounts of ferromagnesian minerals and magnetite. In general it has a rusty weathered surface.

Schists

Schists are abundant in the east half of the area and almost unknown in the west half. They appear first along the south magnetite lenses at the west boundary of claim FF10320 and become progressively more abundant to the east. Except for one or two very narrow zones, these all lie to the south of the north magnetite horizon.

To the west of claim FF10320 two limited sections of schist were located, one along the south edge of the north magnetite horizon and one within this formation.

The schists are generally intensely foliated mixtures of chlorite and carbonate with sericite in places. Some, however, are strongly sheared gabbro, often with disseminated magnetite.

The strike of the shearing is generally N75°E to N80°E or parallel to the trend of the gabbros, and the dip is usually vertical, although local variations to 80° to the north were noted.

Diorite

Diorite forms narrow dikes scattered here and there throughout the area mapped. These often conform to the trend of the other formations but, in many instances, cut across them. All the dikes have sharp contacts.

The rock is a fine - grained, uniform, grey mixture of white feldspars and dark grey to black ferromagnesian minerals.

Quartz - feldspar porphyry

Quartz - feldspar porphyry is present in the form of irregular dikes and plugs throughout the claims area, but is most common in the north parts of the north magnetite - bearing gabbro. These are known to intrude all the other formations except the diorite. The relative ages of these two rock types is unknown.

The rock is a medium - to coarse - grained mixture of white feldspar, pink feldspar, and quartz. Ferromagnesian minerals are almost totally absent. Small white feldspar phenocrysts are generally present throughout and blue quartz eyes are common but not always present.

The rock is often schistose and generally carbonated, thus weathering to a brownish color.

STRUCTURAL GEOLOGY

The gabbros, schists, and magnetite horizons have uniform east - west strike in the west part of the claims area as far as claim FF10321. There this trend swings slightly to the north and maintains a $N75^{\circ}E$ to $N80^{\circ}E$ strike to the east boundary of the group.

The anorthosite, diorite, and quartz - feldspar porphyry intrusives have no regular trend, some conform to the older formations, others cut across at various angles or are irregular in strike.

Dip of all formations appears to be vertical, although local variations were seen.

The north magnetite - bearing gabbro and magnetite horizon appears to be a typical segregation type structure at the base of a sill, with subsequent folding tilting it into its present vertical position. The north or upper part of the gabbro contains some white feldspar, little magnetite, and is typical basic gabbro. Progressing south, the feldspar disappears, and magnetite becomes increasingly more abundant to a zone of massive mineral at the south contact. This contact is sharp against barren gabbros or schists.

The magnetite lenses in the south magnetite horizon are actually veins intruded into gabbros and schists. Their dips are vertical conforming with that of the schists.

Thus the two magnetite horizons give evidence of completely different methods of emplacement. No differences in character of the

massive mineral in the two zones was noted. Since no assays were taken, it is not known whether or not a difference in TiO₂ content might exist.

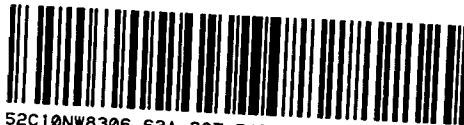
POSSIBLE TONNAGES

No final calculations of potential ore tonnages has been made due to the lack of definite outlines on most of the magnetite lenses. A tentative figure is as follows:

North Horizon			
West lens			
Disseminated	-----	30,600	tons/vert. foot.
Massive	-----	7,720	" " "
Center lens			
Disseminated	-----	20,300	" " "
Massive	-----	7,660	" " "
East lens			
Disseminated	-----	23,400	" " "
Massive	-----	12,100	" " "
South Horizon			
Massive	-----	7,000	" " "
TOTAL - Diss. - 74,300 tons/ vert. ft. - grade - 40% comb. Fe - TiO ₂			
Mass. - 34,500 " " " - " - 60% " " "			
OR 108,800 tons/vert. ft. averaging possibly 45% to 80% combined Fe and TiO ₂			

Feb. 1, 1958.

H.D. McLeod
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STRATMAT LTD.

EMO, ONTARIO

GEOLOGICAL REPORT

on the

SEINE BAY - BAD VERMILLION LAKE

TITANIFEROUS MAGNETITE RANGE

Feb. 10, 1957

H. D. McLeod, P. Engineer

H. D. McLeod

INTRODUCTION

LOCATION AND ACCESS

The Seine Bay - Bad Vermillion Lake group of Stratmat Ltd. consists of 163 contiguous claims lying along the north shore of Seine Bay of Rainy Lake and the west half of the north shore of Bad Vermillion Lake, covering also the stretch of ground between those two bodies of water. The group stretches for a distance of slightly more than 13 miles and is from 2 to 5 claims wide.

Access to the Seine Bay section of the claims group is by water or airplane from Fort Frances, a distance of approximately 24 miles. Access to the Bad Vermillion Lake section is by airplane, a distance of 30 miles from Fort Frances, or by water via the Seine River, Grassy Lake and Obashinsing Lake into Bad Vermillion Lake, a distance of approximately 35 miles. Two short portages below Obashinsing Lake make this route somewhat difficult.

There are no roads near the area.

The Winnipeg - Fort William line of the C.N.R. passes to the north of the claims - 6 miles north of the Seine Bay section and 3 to 4 miles north of the Bad Vermillion Lake section.

HISTORY

The group was staked in the following stages:

- (a.) 121 claims, numbers FF 10249 to FF 10369 inclusive, staked in January 1956 and recorded on February 10, 1956.
- (b.) 8 claims, numbers FF 10770 to FF 10777 inclusive, staked in June 1956 and recorded June 18, 1956.

The status of the claims as of February 10, 1957 will be as follows:

- (a.) 27 claims, numbers FF 10249 to FF 10252 incl., FF 10254-55, FF 10257-58, FF 10263-64, FF 10278-79, FF 10281, FF 10283, FF 10285, FF 10288-89, FF 10295, FF 10320 to FF 10322 incl., FF 10328 to FF 10333 incl., transferred to Stratmat Ltd., license A 26902, and 40 days assessment work applied February 10, 1957.
- (b.) 18 claims, numbers FF 10323 to FF 10326 incl., FF 10339 to FF 10349 incl., FF 10351, FF 10353-54, transferred to Stratmat Ltd. and 32 days assessment work submitted February 10, 1957. An extension of time to perform the remaining 8 days work requested on January 26, 1957.

- (c.) 37 claims, numbers FF 10260-61, FF 10284, FF 10286-87, FF 10290 to FF 10294 incl., FF 10296 to FF 10298 incl., FF 10300 to FF 10305 incl., FF 10308 to FF 10311 incl., FF 10315 to FF 10317 incl., FF 10335 to 10338 incl., FF 10359 to FF 10361 incl., FF 10364 to FF 10367 incl., transferred to Stratmat Ltd. and 28 days assessment work submitted February 10, 1957. An extension of time to perform the remaining 12 days work requested January 26/57.
- (d.) 8 claims, numbers FF 10770 to FF 10777 incl., transferred to Stratmat Ltd. Assessment work due on June 18, 1957.
- (e.) 34 claims, numbers FF 11049 to FF 11082 incl. Assessment work due on August 6, 1957.
- (f.) 39 claims, numbers FF 10253, FF 10256, FF 10259, FF 10264 to FF 10277 incl., FF 10280, FF 10282, FF 10299, FF 10306-07, FF 10312 to FF 10314 incl., FF 10318-19, FF 10327, FF 10334, FF 10350, FF 10352, FF 10355 to FF 10358 incl., FF 10362-63, FF 10368-69 will be allowed to lapse on February 10th, 1957.

The work done to date has covered all the claims in the group. This report will deal with the 82 claims comprising the first three groups described above.

The writer has been associated with all the work done to date, although much of the mapping was done by R. Slipp of Bathurst, N. B. The geological information for the west section of the claims group was obtained from his final report.

The work completed to date is as follows:

- (1.) A one-ton bulk sample for test work was taken from a magnetite lens lying on the border between claims FF 10320 and FF 10321. This sample was lost in Rainy Lake along with a boat, during transfer to Fort Frances, making it necessary to take out a second lot.

Personel employed on the operation was as follows:

L. Martin, Emo, Ontario - June 7 - 18/56 - 12 days
R. Meyers, Emo, Ontario - June 7 - 19/56 - 13 days

- (2.) A 15-ton bulk sample was taken in July from a lens of magnetite on the shoreline on claim FF 10354.

Personel employed on this operation was as follows:

L. Baker, Emo, Ontario - July 21 - 29/56 9 days
C. Coats, Emo, Ontario - July 21 - 29/56 9 days

- (3.) An accurately surveyed base line 61,100 feet or 11.57 miles approximately in length was run across the western two-thirds of the claims group. The purpose of the base line was for control of a reconnaissance mapping and prospecting program planned, and also

for control of more detailed surveys to follow.

The line was started from an arbitrary point on Seine Bay near the west boundary of the claims and carried due east, with north offsets where necessary, to the east end of Seine Bay. From there it was taken north 45° east to the west end of Bad Vermillion Lake.

The accurate location of the base line is shown on the geological plans.

Personel employed on this operation were as follows:

G. Burnside, Emo, Ont.	- Aug. 1 - Sept. 20/56	51 days
J. A. Bragg, Fort Frances, Ont.-	- " "	51 "
H. Barron, Barwick, Ont.	- " "	51 "
A. O. Ewen, Emo, Ont.	- Aug. 1 - Sept. 15/56	46 "
L. Martin, Emo, Ont.	- " "	46 "
P. Jordens, Emo, Ont.	- Aug. 29 - Sept. 20/56	24 "
R. Meyers, Emo, Ont.	- Aug. 1 - Aug. 25/56	25 "
V. Loewen, Winnipeg, Man.	- Aug. 6 - Aug. 21/56	16 "
L. Loney, Emo, Ont.	- Aug. 6 - Aug. 31/56	26 "
R. MacDonald, Emo, Ont.	- Aug. 7 - Sept. 20/56	45 "
A. C. McKinnon, Emo, Ont.	- Sept. 1 - Sept. 20/56	20 "
L. Tilley, Emo, Ont.	- Aug. 1 - Sept. 20/56	51 "

452 days

The man days worked exceed those claimed for assessment credit since only 5 man days are allowable per claim.

(4.) Geological mapping of the claims area was carried out in the following stages:

(a.) A limited amount of detailed work on claims FF 10302, FF 10303 and FF 10308. This was done by the writer assisted by G. Cates of Fort Frances on September 19 and 20, 1956.

(b.) Reconnaissance geological mapping for the purpose of locating and evaluating the deposits of titaniferous magnetite. R. Slipp of Bathurst, N. B. mapped the section from the west boundary of the claims to the west end of Bad Vermillion Lake. He was assisted by R. D. MacDonald of Emo, J. A. Bragg of Fort Frances, Ontario, H. Barron, Barwick, Ontario, P. Jordens, Emo, Ontario, and L. Tilley, of Emo, Ontario.

Two men conducted a reconnaissance magnetometer survey ahead of the mapping crew in order to locate the favorable areas for more detailed work.

The mapping was done by traverses from the surveyed base line at 400 foot intervals. Assistants ranged the section between traverses to give more detailed coverage of the ground.

The sections found to contain lenses of titaniferous magnetite were prospected and mapped in closer detail.

This work was done during the period September 26 to October 15, 1956.

The section of the group lying along the north shore of Bad Vermillion Lake was mapped by the writer assisted for a time by G. Cates of Fort Frances, Ontario.

The mapping was done along regularly spaced traverses run north 45° west from known points on the shoreline of Bad Vermillion Lake. Favorable zones were mapped and prospected in detail.

This work was done during the period September 26 to October 13, 1956.

(c.) Detailed mapping of part of the Bad Vermillion Lake section of the magnetite range. A series of disseminated magnetite bodies lying along the west part of the north shore of Bad Vermillion Lake were checked with further detailed mapping.

This work was done from accurately located baselines. A reconnaissance magnetometer survey to locate the favorable zones was followed by detailed geological mapping along traverses spaced at 100 foot and 200 foot intervals.

This work was done by the writer assisted by R. D. MacDonald, Emo, Ontario, A. O. Ewen, Emo, Ontario, and J. M. Bragg, Emo, Ontario during the period December 11 to 19, 1956.

(5.) Three X-ray holes were drilled to give average material for assay. These holes #T1, T2, and T3 were drilled into disseminated magnetite zones on the north shore of Bad Vermillion Lake. The locations of the holes are shown on the accompanying geological plan sheet #3.

The drilling was done by W. Williams and A. Kellar both of Emo, Ontario with a company owned X-ray drill in the period October 2 to 22, 1956.

(6.) The claim posts were accurately located. During the period January 2 to 20th, 1956 two men located all the claim corners as accurately as possible with respect to the surveyed base line or to the shoreline of Seine Bay and Bad Vermillion Lake.

ACCOMPANYING MAPS

- (1.) "Reconnaissance Geology Sheet #1" - Scale 1" = 400'
- (2.) "Reconnaissance Geology Sheet #2" - Scale 1" = 400'
- (3.) "Reconnaissance Geology Sheet #3" - Scale 1" = 400'
- (4.) "Location of Claims & Assessment Grouping" - Scale 1" = 1320'

TOPOGRAPHY

The topography, in general, is rugged. The claims groups straddles a series of long high rock ridges that persist almost without break throughout the entire section from Wind Bay on the west of the central part of the north shore of Bad Vermillion Lake.

The relief in the Seine Bay section is generally lower than elsewhere, but the hills do rise to 75 to 100 feet above water level. In the area along the west end of Bad Vermillion Lake and to the west the hills rise to nearly 250 feet above the level of Bad Vermillion Lake.

These ridges are broken in places by sharp north and north-westerly trending valleys often with small creeks in the bottom. Sharp narrow valleys typically lie between rock ridges and parallel them.

The water level of Bad Vermillion Lake is estimated to be approximately 25 feet above that of Seine Bay.

Two sections of flat sand plain were located - one between Bad Vermillion Lake and Seine Bay and the second on claims FF 10301, FF 10302, and FF 10329 north of Seine Bay. Clay covering is common in much of the area. However, the percentage of outcrop area is very high.

GENERAL GEOLOGYTABLE OF FORMATIONS

Feldspar porphyry
 Intrusive contact
 Titaniferous magnetite
 Gabbro - anorthosite
 Intrusive contact
 Chlorite schists
 Andesite

DESCRIPTION OF FORMATIONSAndesite

Andesites with horizons of rhyolite are common to the south of the area mapped but are present on the claims in a few local sections only. They outcrop along the south boundary of claims FF 10308, FF 10367, FF 10366, FF 10360, and FF 10296 and in the east half of claim FF 10295.

In all sections they are a massive fine-grained dioritic rock highly altered to chlorite. Flow structures are entirely absent although pillows have been seen outside the claims group.

The sections of the formation lying on the claims appear to have been baked and recrystallized by the nearby gabbro-anorthosite intrusions.

Chlorite Schist

Narrow zones of chlorite schist were located in widely scattered sections of the claims. In most cases this material is highly carbonated and in places cut by veins and stringers of brown weathering calcite.

Sections of schist were located throughout the titaniferous magnetite horizon. In places the magnetite lenses are enclosed in schists, in others small inclusions and zones of schist occur in and separate lenses of mineral.

Gabbro - Anorthosite

A complex gabbro - anorthosite intrusive covers the south and south-east half of the claims group. This is part of a long narrow tongue or dike-like intrusive extending west along the north shore of Seine Bay from an extensive stock lying under and south of Bad Vermillion Lake. This tongue gradually narrows to the west and is less than 1500 feet in width at the west boundary of the group.

No attempt was made to separate the two rock types in the field. It was noted that they are intimately associated and changes can occur abruptly over short distances.

The contact with the andesite to the south is sharp and somewhat chilled. Narrow dikes of fine-grained diorite were seen cutting into the older rock type.

The greater part of the intrusive is a coarse-grained gabbro composed of dark green pyroxenes and white feldspar. Much of the rock contains a small percentage of magnetite.

The anorthosite sections are similar to the gabbro except that they are composed of white feldspar with subordinate amounts of pyroxenes.

Fine to medium grained dioritic sections were seen locally. It was not determined whether these are a phase of the intrusive or dikes of a different age. The contact section along the andesite is generally dioritic due to chilling.

Titaniferous Magnetite

Lenses of titaniferous magnetite form a more or less persistent horizon starting at the west boundary of claim FF 10354 and extending completely through the group to the east boundary of claim FF 10278. Some scattered narrow lenses are known further to the northeast.

These lenses are believed to be within a certain defined horizon which is believed to be continuous throughout.

Whether or not the magnetite is continuous throughout this zone or whether there are gaps with no mineralization is not known. The lenses, in general, are narrow and quite short in extent. As a result they can be easily missed in reconnaissance mapping.

In the area, two main concentrations of magnetite zones were located. The first lies along the west end of the north shore of Bad Vermillion Lake and the section to the west. This zone disappears under sand plain to the west so may be more extensive than known. The second zone of concentration lies along the north shore of Seine Bay between stations 85 + 00 and 270 + 00. This, as can be seen on the geological plans, may consist of two parallel zones or two overlapping en echelon zones.

The titaniferous magnetite lenses can be divided into two types - massive and disseminated.

The massive variety actually consists of from 65% to 95% granular blue black magnetite and from 5% to 35% of a bright green iron silicate. Some free quartz was seen in a few of the lenses.

These lenses, as known to date, range from a few feet in length with widths of 6 to 12 inches to a maximum of 700 to 800 feet in length with widths of 40 to 50 feet. In some cases the massive mineral is in sharp contact with the inclosing gabbro or schist. In others a disseminated zone grades gradually from massive mineral into barren gabbro. This fringe zone may lie on either side or both sides of a lens and in general is less than 25 feet in width.

In those sections ^{where} the massive lenses are concentrated ~~where~~ they may be parallel to each other within a wider zone but generally are present in short en echelon bodies within a narrow horizon.

No samples of this type of material have been assayed. However, a number of assays have been recorded in the Canada Dept. of Mines report titled "Titanium" by A.H.A. Robinson in 1922. Typical assays of massive mineral reported there are as follows.

Fe	TiO ₂	Combined Fe - TiO ₂
48.45%	26.03%	74.48
46.70%	20.50%	67.20
46.60%	27.54%	74.14
44.81%	20.70%	65.51
50.03%	10.34%	60.37
49.36%	15.71%	65.07
46.75%	23.40%	70.15
45.50%	24.00%	69.50
48.00%	19.87%	67.87
57.67%	20.28%	77.95

These assays show that the material does vary to a certain extent but that the massive mineral will assay roughly 47% iron and 20% TiO₂.

Disseminated zones of titaniferous magnetite were located in a few sections only. The main section is along the west end of the north shore of Bad Vermillion Lake. The remainder located, except for the one on claim FF 10344, are very small and local.

These horizons range from very narrow zones of limited extent to bodies with lengths in excess of 2000 feet. They are composed of disseminated grains of magnetite ranging from 1/16" to 1/2" in diameter in a white siliceous groundmass. A varying percentage of green silicates are present and much of the rock is talcy.

Very little is known about the grade of this material. Surface examination and the results of the three drill holes indicate that it will vary considerably. The assays of the mineral intersected in the three holes average out to 37% combined Fe and TiO₂. These holes, which were drilled into better grade disseminated material, indicate that it varies greatly in mineral content. Some narrow sections of massive mineral and narrow sections of barren schist were intersected. Lens^{es} of massive mineral with limited extent were seen in them on surface.

Many of the disseminated horizons located on surface were estimated to contain 10% to 15% magnetite by volume and, as a result, were not sampled. The actual grade of these is unknown.

Feldspar Porphyry

The feldspar porphyry occurs as a wide dike-like intrusive, the south contact of which parallels the trend of the claims group and lies a short distance south of the north boundary. The main body of the intrusive lies to the north of the claims.

The intrusive is composed of a uniform coarse-grained pink mixture of feldspars and quartz with white feldspar phenocrysts throughout. These phenocrysts are little larger than the grain size of the groundmass. Blue quartz phenocrysts were seen locally.

The south contact of the feldspar porphyry is not chilled. The actual contact with the gabbro was never located due to a narrow depression in every case. Rare dikes of the rock in gabbro indicate that it is younger in age.

STRUCTURAL GEOLOGY

Structure of the formations on the claims group is indefinite. Very little detailed geology has been done and there is a very limited variety of rock types.

The gabbro - anorthosite intrusive is part of a long tongue extending west from the main intrusive at Bad Vermillion Lake. This tongue parallels the presumed strike of the older formations.

The feldspar porphyry is part of a long dike-like intrusive trending east-west to north-east. It parallels the trend of the gabbro anorthosite.

The titaniferous magnetite bodies are believed to lie in a sheet-like body formed by segregation out of the gabbro-anorthosite magma. The location of the deposits near the north edge of the intrusive would suggest that this is the base and that it has been tilted into a vertical position by later folding.

The fact that the mineralized zone closely parallels the contact of the feldspar porphyry intrusive may be of some significance.

The occurrence of chlorite schists in the magnetite zone in many places could be taken to suggest that the mineral was introduced into a fault structure. A long lineal fault trend appears to follow the mineralized zone. This is particularly evident from the air or aerial photographs.



52C10NW8306 63A.307 BAD VERMILION LAKE

040

MAGNETOMETER SURVEY
OF THE
YOUNG GROUP

H.D. McLeod
May 1, 1956

ASSESSMENT CREDIT

Magnetometer Survey:

A. Audet, Val D'Or, Quebec,
December 5 - 9, 1955 5 days x 4 = 20

A. McKinnon, Emo, Ontario,
Assistant 5 days x 4 = 20

Draughting:

H. Wagner, Emo, Ontario 3 days x 4 = 12

Report:

H. D. McLeod, 275 6th St. E.,
Fort Frances, Ont. $\frac{1}{2}$ day x 4 = 2

Total 54
days

*H. D. McLeod
May 1, 1956*

*6 | 54
9*

INTRODUCTION

The Young Group consists of six claims (F.F.9130 - 31 - 32 - 33 - 34) in a contiguous group, and the sixth (F.F.9236) lying approximately one-half mile to the east. These claims lie along Niven's Base Line, three in the Bad Vermillion Lake section and three in the Atukamamooan Lake Section of the Fort Frances Mining Division, Northwestern Ontario.

The claims are located from one-half to one mile south of the Canadian National Railways' Fort William-Winnipeg line and a short distance east of Olive Station. Olive lies approximately thirty-five miles east of Fort Frances.

Access to the group is by tole road from Olive Station or by tole road from Bad Vermillion Lake, one mile to the south. Bad Vermillion Lake is reached by air or boat from Fort Frances, Ontario.

These claims were staked and recorded in May 1955 and then transferred to Dr. D. R. Young of Emo, Ontario. In July of 1955 Stratmat Limited, head office address Suite 1100, 620 Cathcart Street, Montreal, Quebec, optioned the claims and are submitting the assessment credits.

The magnetometer survey was run along the uniformly spaced series of picket lines used to control the geological mapping. An arvila type magnetometer with sensitivity of 25 gammas per scale division was used. Stations were read at 50-foot intervals along all the picket lines. All readings are corrected in to a series of base stations set up along base line A. The instrument was operated by Albert Audet, address Val D'or, Quebec.

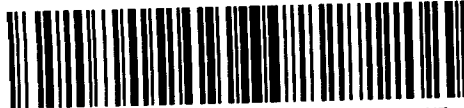
The survey submitted here for assessment credit is part of a much larger magnetometer survey.

INTERPRETATION

The contoured and interpreted results of the survey are shown on the accompanying plan. These are characterized by a series of long narrow lineal highs with peak values ranging from 700 gammas to approximately 7000 gammas above base reading. These very likely outline the magnetic gabbro dikes located in the process of geological mapping.

The interpretation of the greenstone, schists and quartz porphyry horizons is strictly based on geological information. There is no characteristic of the magnetics noticeable enough to enable their distinction on that basis. This may be due to the masking of the lower magnetic characteristics by the high attractions over the magnetic gabbro dikes or to the fact that the three formations all have relatively the same magnetic intensity.

The known sulphides do not show up magnetically.



52C10NW8306 63A.307 BAD VERMILION LAKE

050

G E O L O G I C A L R E P O R T
O N T H E
Y O U N G G R O U P

H. D. McLeod,
May 1, 1956.

INTRODUCTION

The Young Group consists of six claims, five (F.F.9130 - 31 - 32 - 33 - 34) in a contiguous group, and the sixth, (F.F.9236) lying approximately one-half mile to the east. These claims lie along Niven's Base Line, three in the Bad Vermillion Lake section and three in the Atukamamooan Lake section of the Fort Frances Mining Division, Northwestern Ontario.

The claims are located from one-half to one mile south of the Canadian National Railway's Fort William-Winnipeg line and a short distance east of Olive Station. Olive lies approximately thirty-five miles east of Fort Frances.

Access to the group is by the road from Olive Station or by the road from Bad Vermillion Lake one mile to the south. Bad Vermillion Lake is reached by air or boat from Fort Frances, Ontario.

These claims were staked and recorded in May, 1955, and then transferred to Dr. D. R. Young of Emo, Ontario. In July of 1955 Stratmat Limited, head office address, Suite 1100, 620 Cathcart Street, Montreal, Quebec, optioned the claims and are submitting the assessment credits.

The geological survey was done by the author assisted by George Cates and Joseph Bragg during the period October 3rd to October 15th, 1955. The work consisted of detailed examination and prospecting of the claims using regularly spaced picket lines as control.

The survey on these claims is part of a much larger mapping and prospecting program.

GEOLOGY

Table of Formations

Algoman

Anorthosite and gabbro intrusives.

Shearing

Quartz porphyry intrusives

Major shearing - formation of chlorite, sericite, carbonate and talc schists

Keewatin

Siliceous sediments

Tuff and greenstone

DESCRIPTION OF FORMATIONS

Tuff and Greenstone:

Tuff and greenstone, the oldest formation within the claims area, occur along the south boundary of Claim F.F.9132 only. This is the north contact of an extensive formation lying to the south. This rock consists of a fine-grained, sheared, chloritic andesite some sections of which are bedded indicating tuff horizons. The tuffs are chloritic and uniform, there being no lithological change between individual beds.

Strike of the bedding and shearing is N.80°E to East-West and dip ranges from 75° to the north to vertical.

SILICEOUS SEDIMENTS

This formation cuts across the north boundary of Claim F.F.9134

in the central part only. This is the south contact of a more extensive formation lying to the north.

The sediments consist of uniformly and thinly bedded, light grey to dark grey, fine-grained quartzites and cherts. Individual beds are narrow seldomly exceeding one inch in thickness.

Strike and dip of the formation are N.80°E to east-west and 75° to the north to vertical respectively. No evidence as to tops of beds was located.

SCHISTS

Chlorite, sericite, carbonate and talc schists underlie the greater part of the central section of Claims F.F.9130 to F.F.9134 and also the extreme southern section of F. F.9236.

An attempt was made to differentiate the different types but this was abandoned due to their complicated occurrence.

These are soft, dark grey to white weathering, depending on the type, platy schists. The chloritic variety weathers dark grey to dark green, the sericite and carbonate types light grey to white. A little greasy grey talc schist was located in places.

The strike of the schistosity is N.80°E, to east-west; the dip varies from 70° north to vertical. Some warping and minor drag-folding was noted locally.

QUARTZ PORPHYRY INTRUSIVES

Quartz porphyry occurs as one wide dike or sill crossing the north part of claims F. F. 9134 and F. F.9135 and underlying almost all of Claim F.F.9236 as well as numerous narrow irregular dikes throughout the schists.

This rock is a sheared and carbonated acid intrusive now composed of white feldspar and calcite or ankerite with blue quartz eyes throughout. It has a reddish brown weathered surface due largely to the rusty weathering of the ankerite.

All of the quartz porphyry is sheared in varying degrees. It is most highly sheared along contacts.

ANORTHOSITE AND GABBRO INTRUSIVES

All of this type of intrusive in the claims area have been mapped as gabbro, however, sections of some of the dikes are anorthosites or diorites. All appear to be phases only of one type of basic intrusive.

Within the claims area these occur as long narrow dikes following the trend of the shearing. Most are intruded into the schists and larger quartz porphyry dikes.

Lithologically they are composed of coarse-grained black ferromagnesian minerals with varying amounts of feldspar and magnetite in disseminated grains. All are magnetic. The rock is massive and not sheared indicating that it was intruded after the last period of shearing.

STRUCTURE

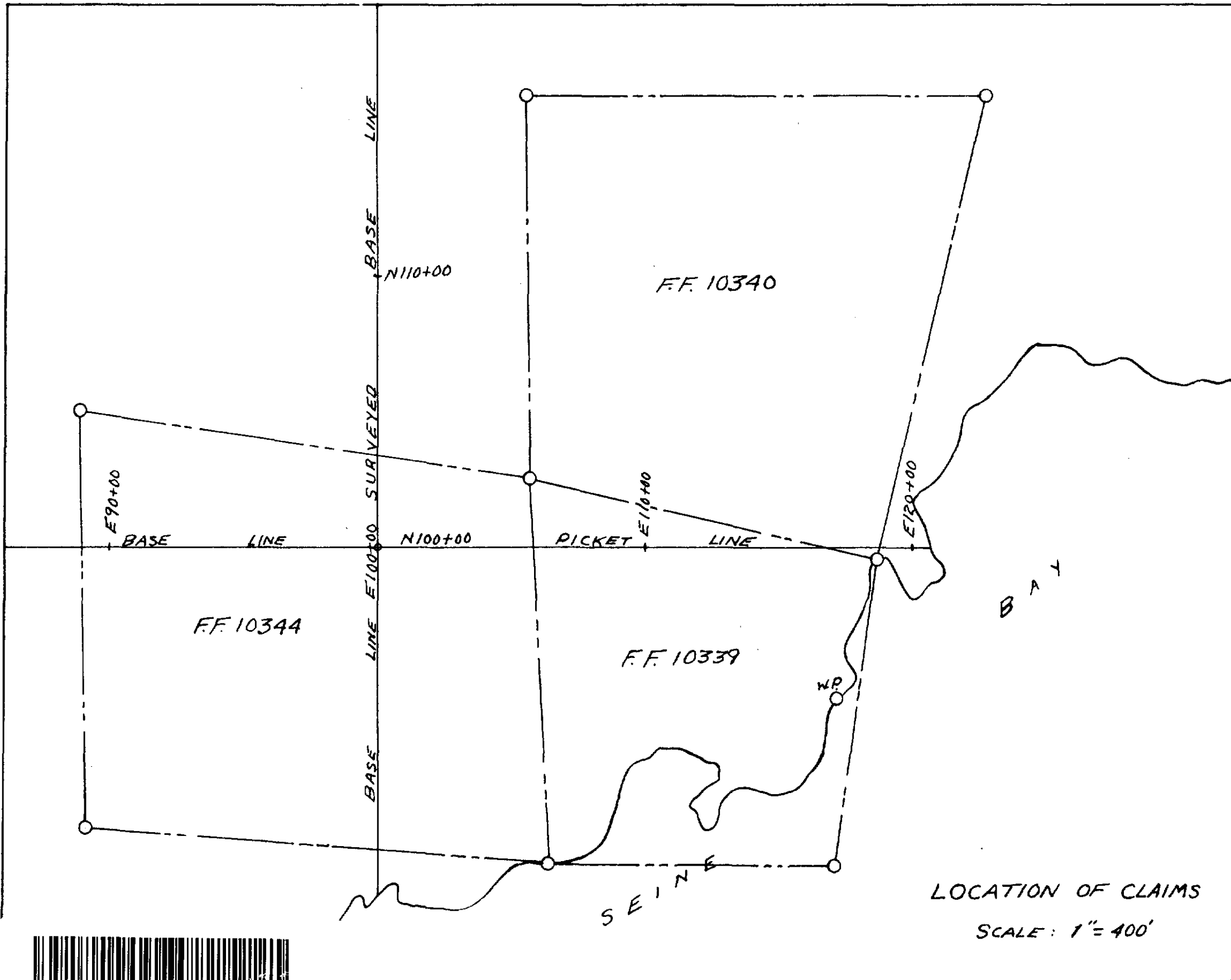
The main structural feature is the wide strong shear zone crossing the claims in an east-west direction. This appears to be a strong fault structure. The dikes are all intruded along this shearing.

ECONOMIC GEOLOGY

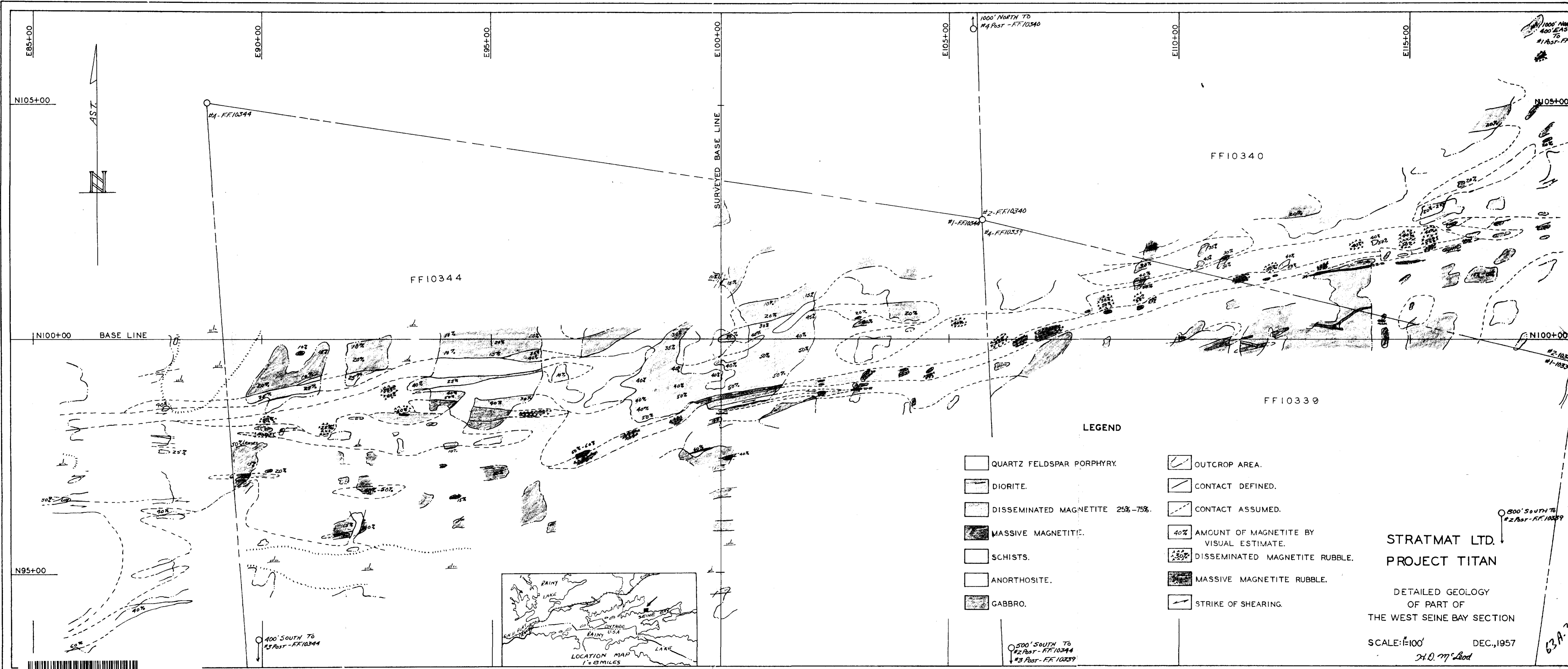
Mineralization is scarce on the claims. Some disseminated pyrite was located in a few scattered locations and one zone of massive pyrite was found. The latter lies a short distance north of base line A between lines 40 East and 44 East. It consists of a 20-foot wide zone of stringers of massive pyrite and disseminated pyrite with traces of chalcopyrite. Its strike and dip conform with the enclosing schists.

Several narrow erratic quartz veins were located, all of which were tested in the past with small pits. Some pyrite, sphalerite and galena were seen in one.

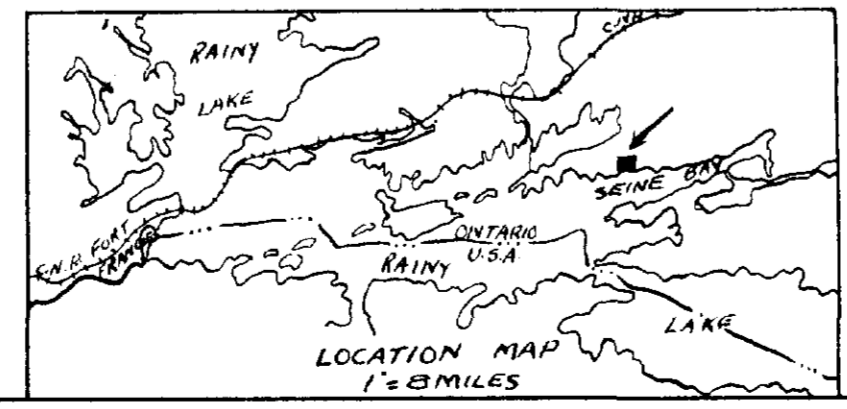
*W. M. Lead
May 12, 1956*



52C10NW8306 63A.307 BAD VERMILION LAKE



- LEGEND**
- QUARTZ FELDSPAR PORPHYRY.
 - DIORITE.
 - DISSEMINATED MAGNETITE 25%-75%.
 - MASSIVE MAGNETITE.
 - SCHISTS.
 - ANORTHOSITE.
 - GABBRO.
 - OUTCROP AREA.
 - CONTACT DEFINED.
 - CONTACT ASSUMED.
 - 40% AMOUNT OF MAGNETITE BY VISUAL ESTIMATE.
 - DISSEMINATED MAGNETITE RUBBLE.
 - MASSIVE MAGNETITE RUBBLE.
 - STRIKE OF SHEARING.



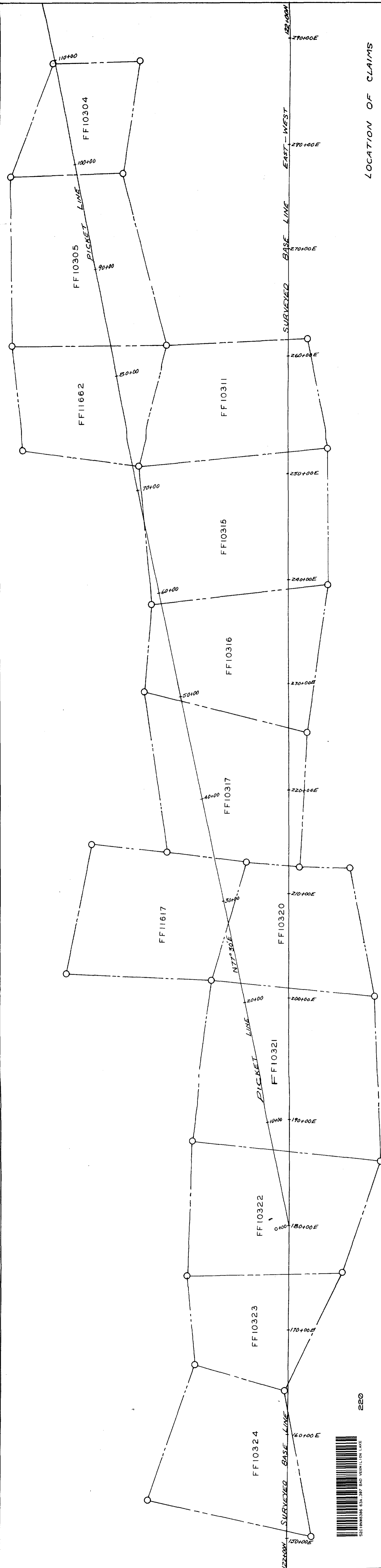
**STRATMAT LTD.
PROJECT TITAN**

DETAILED GEOLOGY
OF PART OF
THE WEST SEINE BAY SECTION

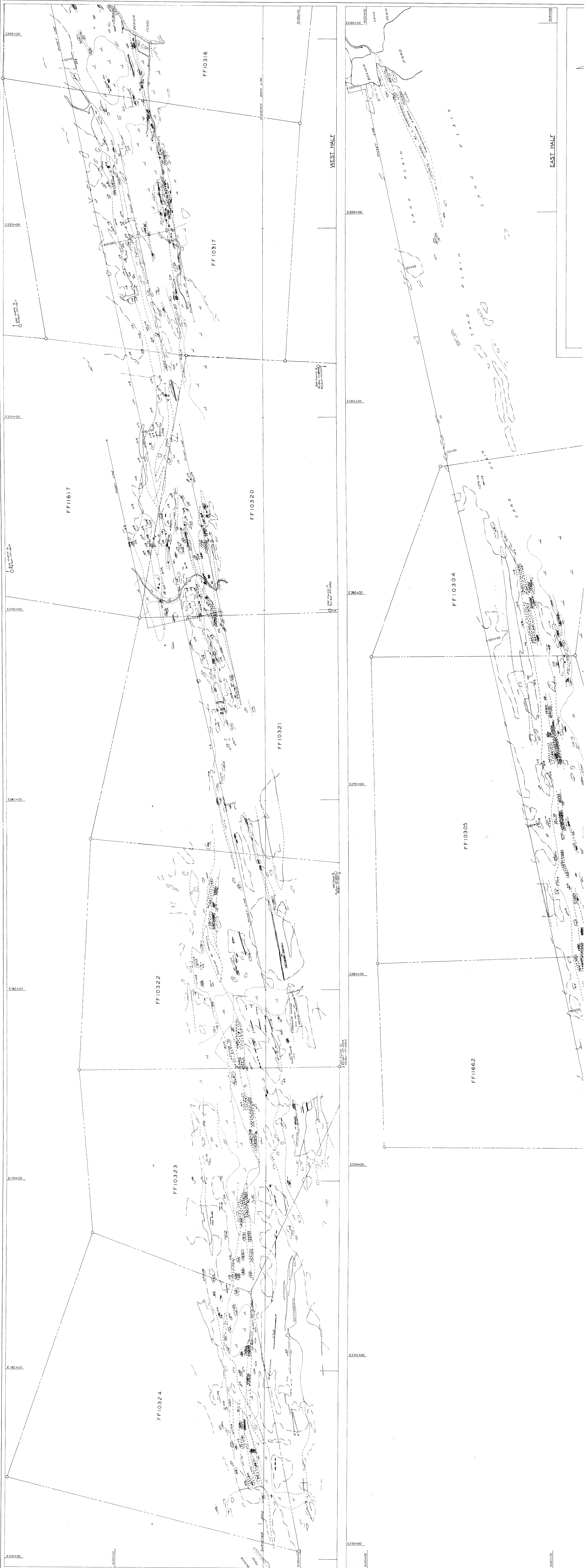
SCALE: 1"=100' DEC., 1957
H.O. M. Lead

LOCATION OF CLAIMS

SCALE: 1" = 400'



220



E150+00
E160+00
E170+00
E180+00
E190+00
E200+00
E210+00
E220+00
E230+00
E240+00
E250+00
E260+00
E270+00
E280+00
E290+00
E300+00
E310+00
E320+00
E330+00

FF11617

FF10322

FF10323

FF10324

FF10316

FF10317

FF10320

FF10321

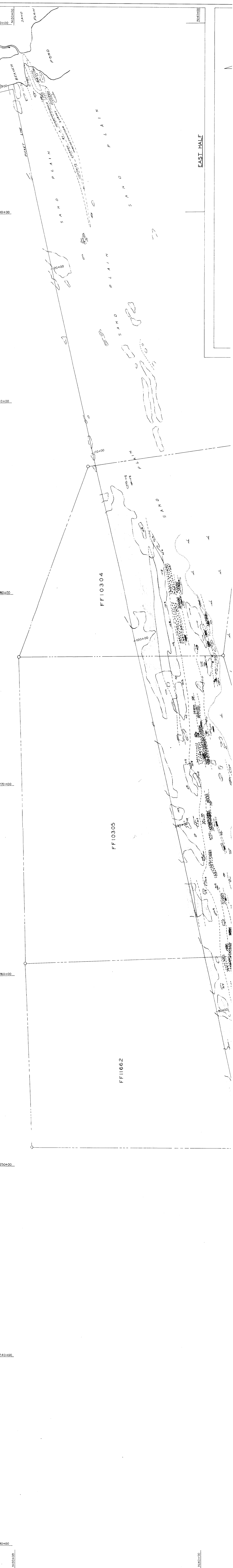
WEST HALF

EAST HALF

FF10304

FF10305

FF11662



E300+00
E310+00
E320+00
E330+00

SAND PLAIN

POND

BARRIER

SAND PLAIN

POND

BARRIER

SAND PLAIN

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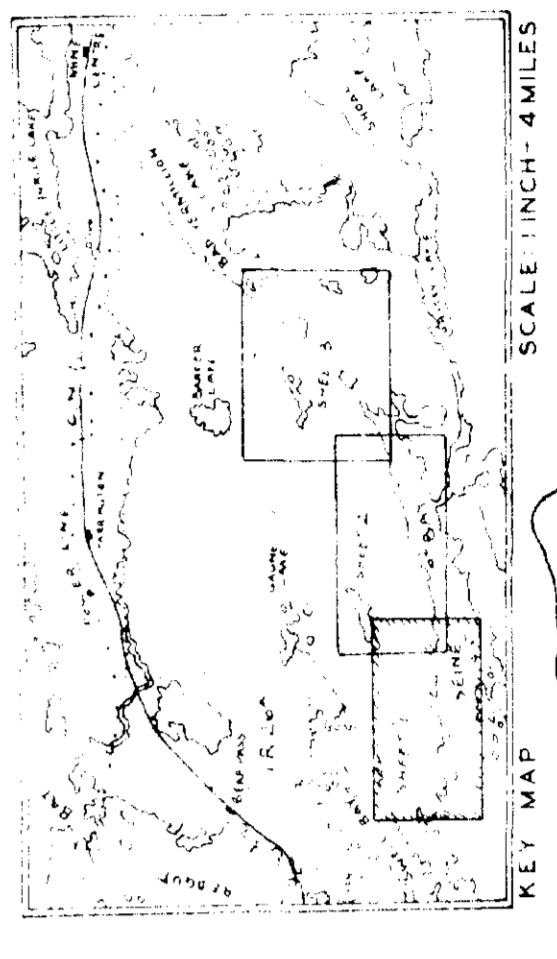
POND

BARRIER

SAND PLAIN

POND

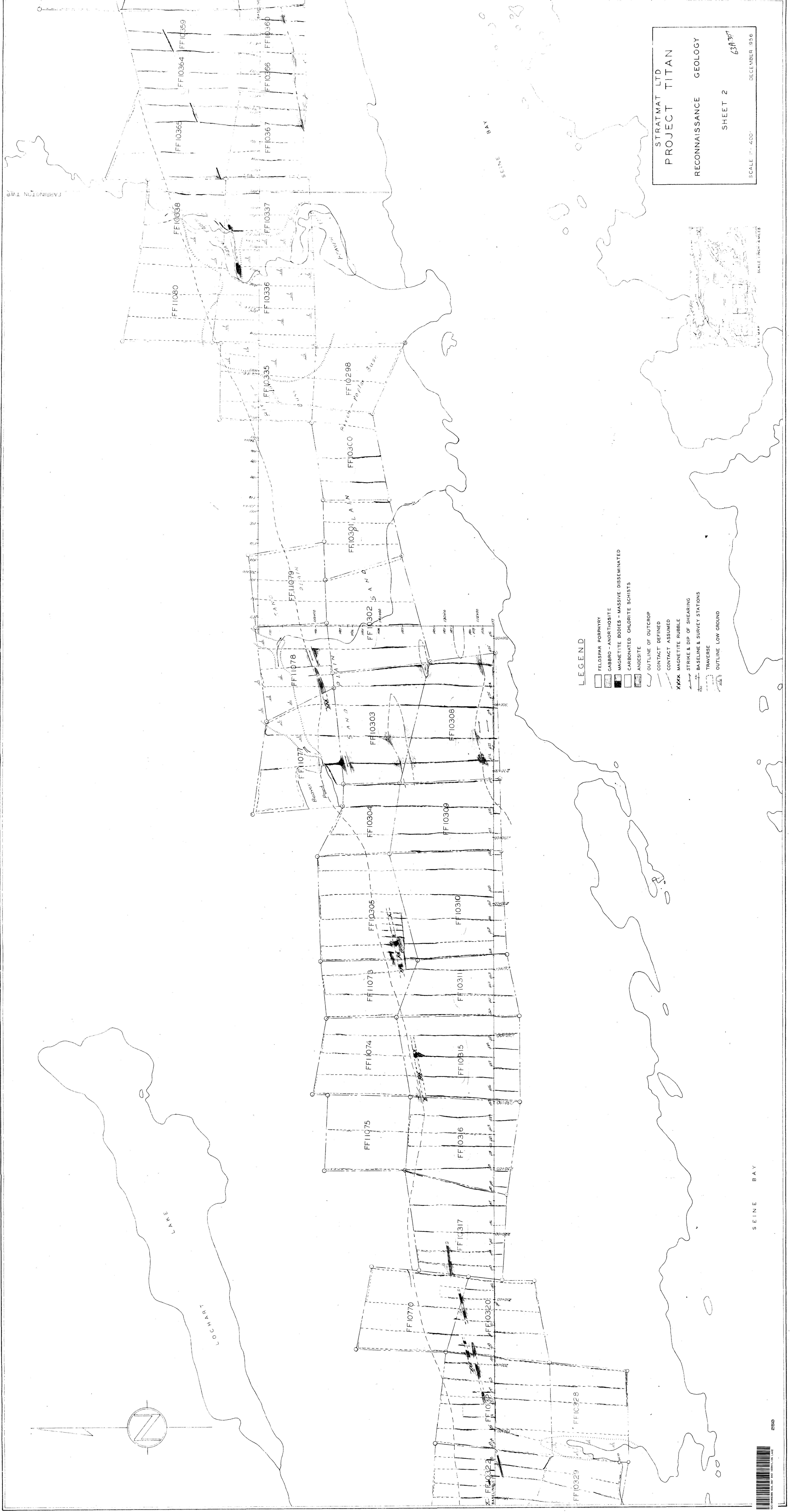
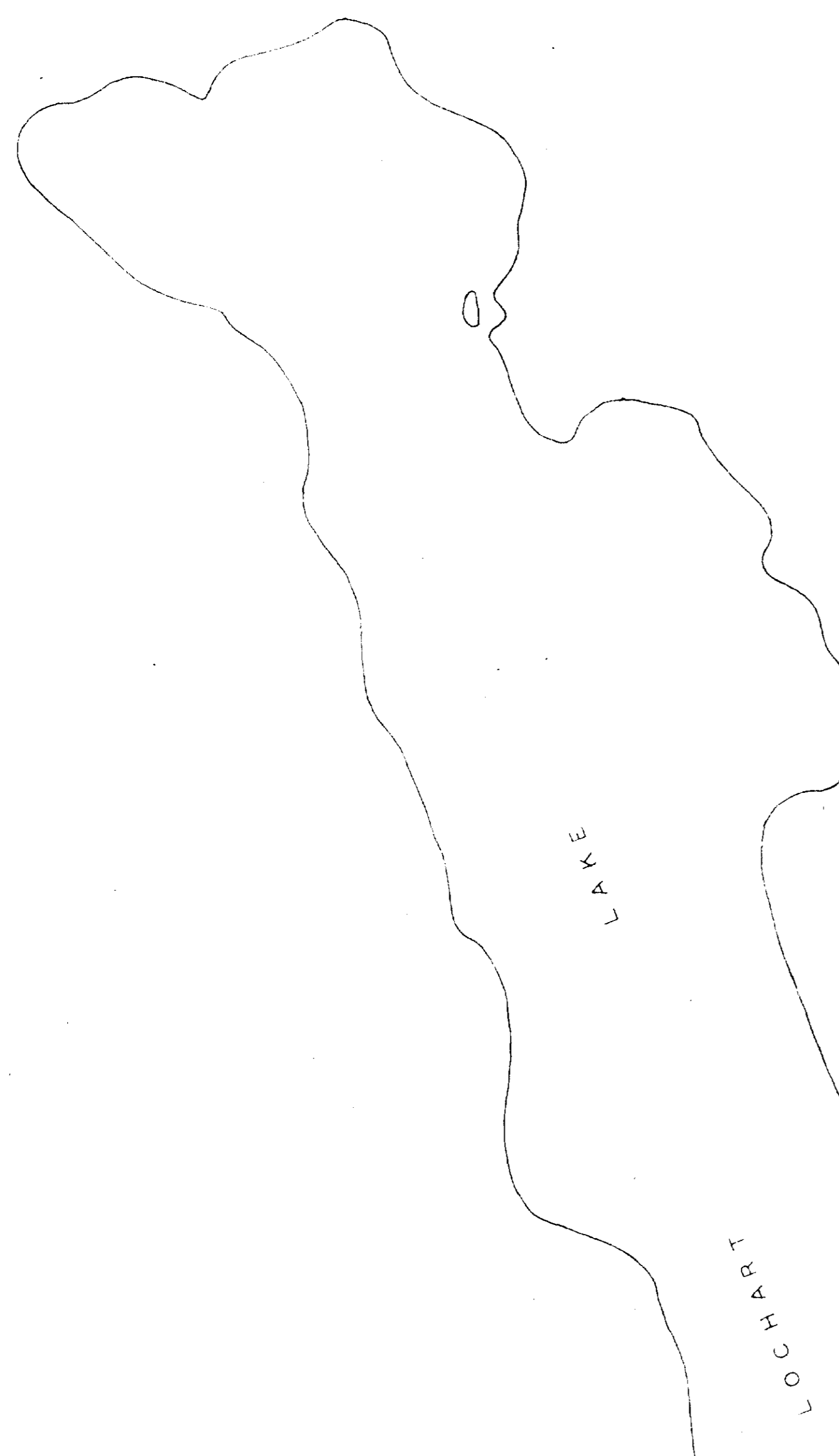
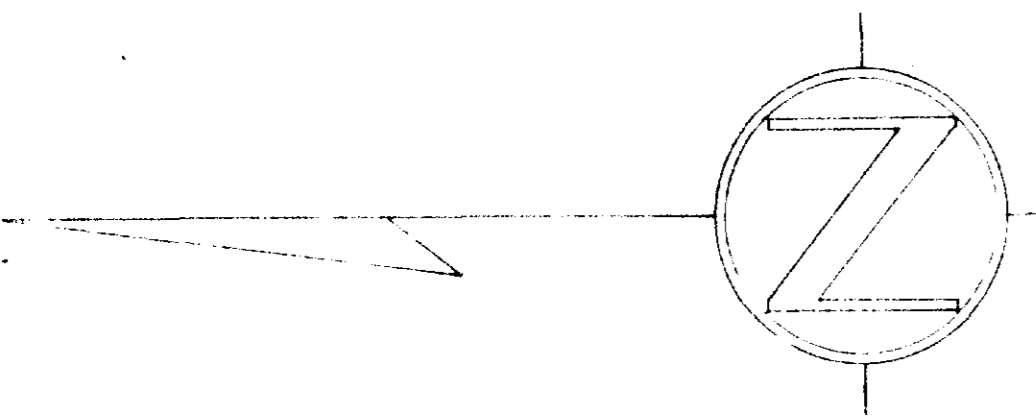
BARRIER



LEGEND

- FELDSPAR PORPHYRY
- ▨ GABBRO - ANORTHOITE
- MAGNETITE BODIES - MASSIVE-DISSEMINATED
- ▤ CARBONATED CHLORITE SCHISTS
- ▥ ANDESITE
- OUTLINE OF OUTCROP
- CONTACT DEFINED
- - - CONTACT ASSUMED
- XXXX MAGNETITE RUBBLE
- ↗ STRIKE & DIP OF SHEARING
- △ BASELINE & SURVEY STATIONS
- TRAVERSE
- OUTLINE LOW GROUND


















- LEGEND**
- FELDSPAR PORPHYRY
 - GABBRO - ANORTHOSITE
 - MAGNETITE BODIES - MASSIVE DISSEMINATED
 - CARBONATED CHLORITE SCHISTS
 - ANDESITE
 - OUTLINE OF OUTCROP
 - CONTACT DEFINED
 - CONTACT ASSUMED
 - MAGNETITE RUBBLE
 - STRIKE & DIP OF SHEARING
 - BASELINE & SURVEY STATIONS
 - TRANSVERSE
 - OUTLINE LOW GROUND

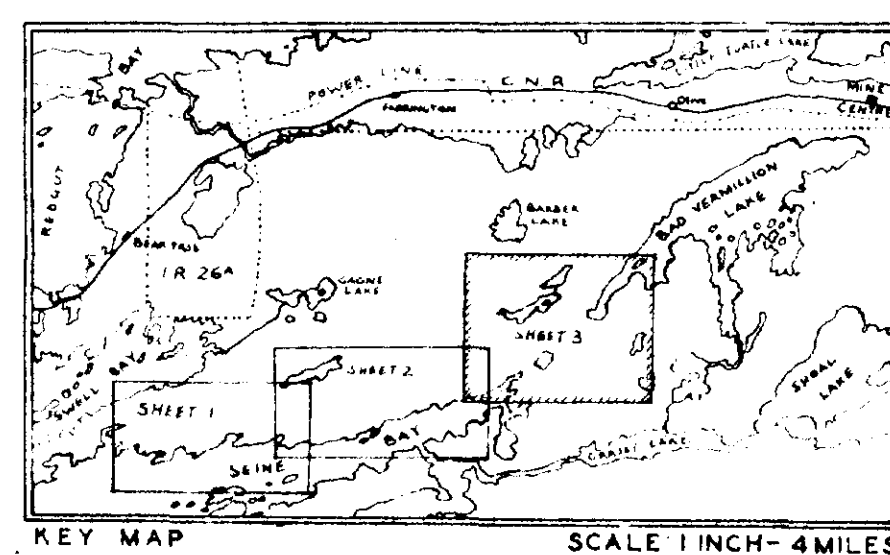
STRATMAT LTD
PROJECT TITAN
 RECONNAISSANCE GEOLOGY
 SHEET 2
 SCALE 1" = 400'
 DECEMBER, 1956
 631130



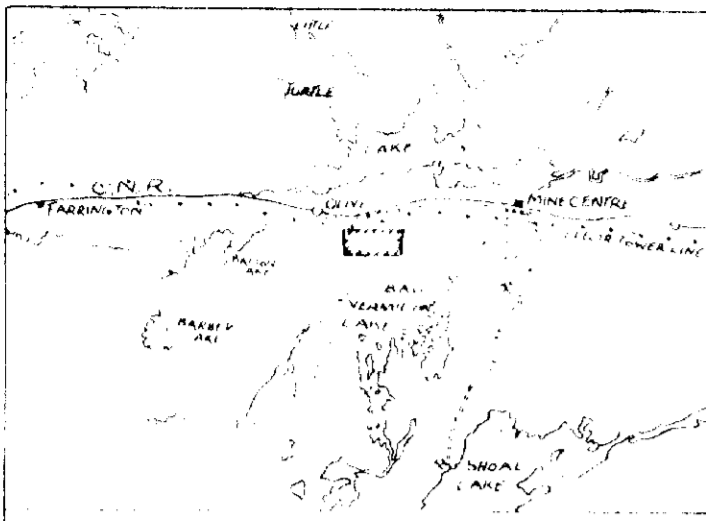


LEGEND

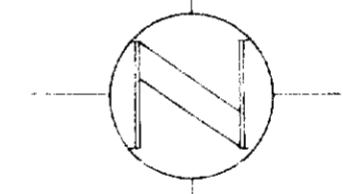
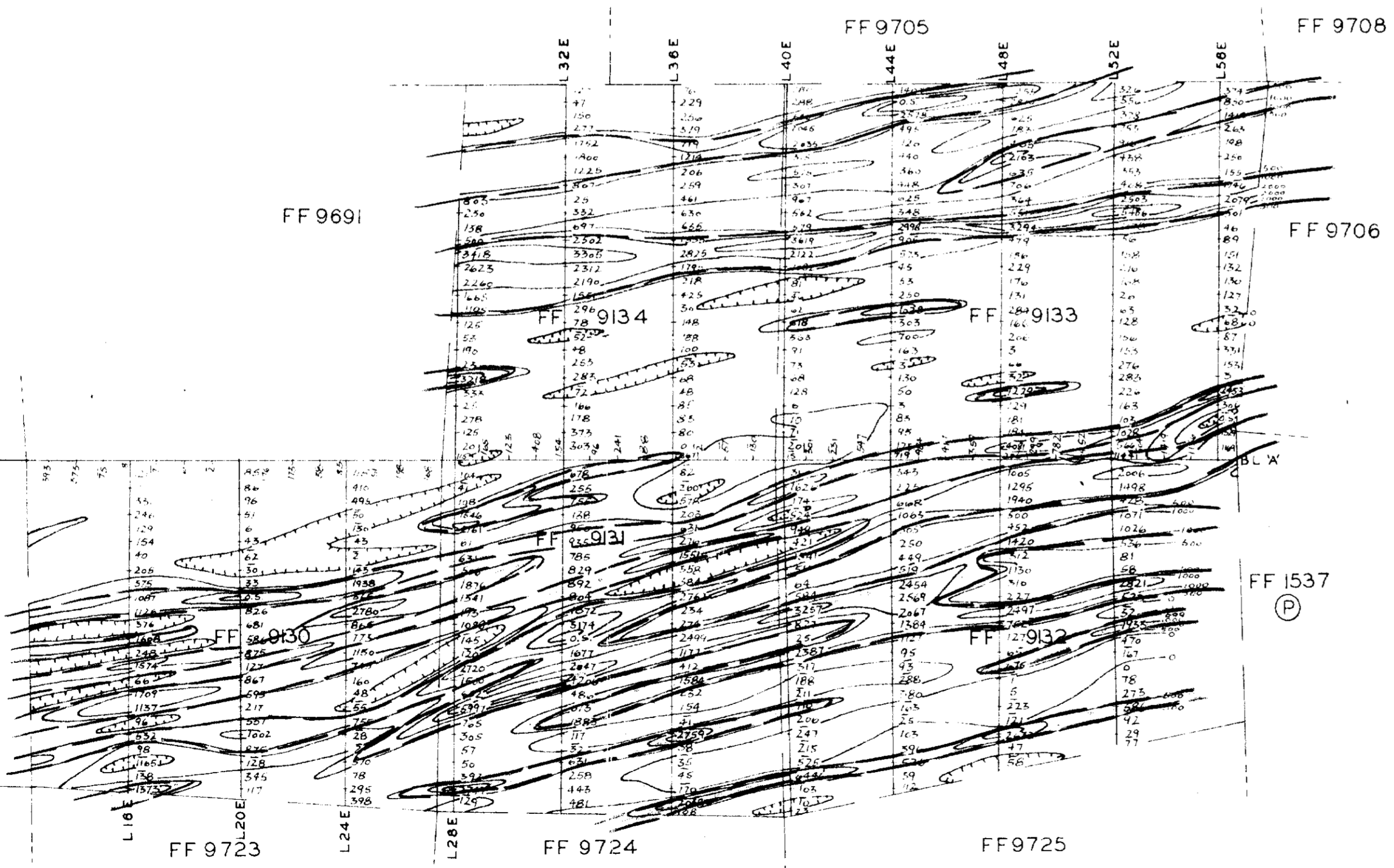
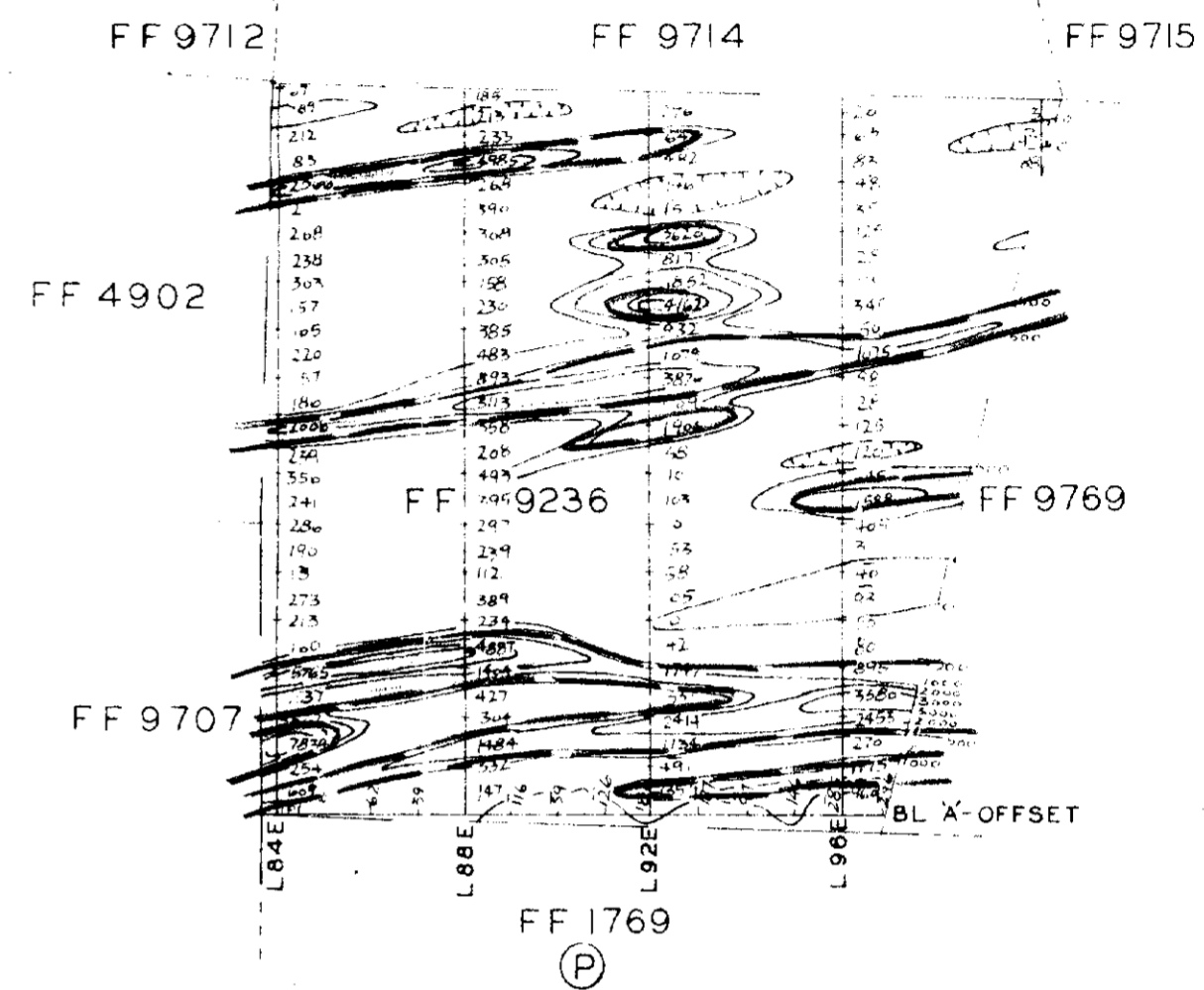
-  FELDSPAR PORPHYRY
-  GABBRO - ANORTHOSITE
-  MAGNETITE BODIES - MASSIVE-DISSEMINATED
-  CARBONATED CHLORITE SCHISTS
-  ANDESITE
-  OUTLINE OF OUTCROP
-  CONTACT DEFINED
-  CONTACT ASSUMED
-  MAGNETITE RUBBLE
-  STRIKE & DIP OF SHEARING
-  BASELINE & SURVEY STATIONS
-  TRAVERSE
-  OUTLINE LOW GROUND



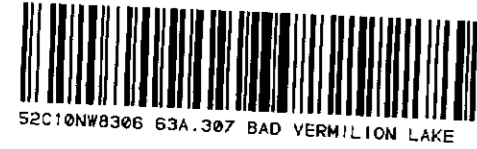
STRATMAT LTD
 PROJECT TITAN
 RECONNAISSANCE GEOLOGY
 SHEET 3
 63A.307
 SCALE: 1" = 400'
 DECEMBER 1956

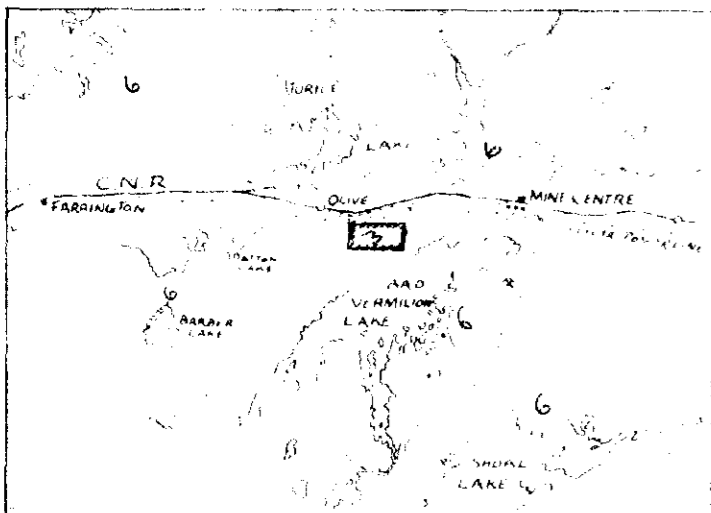


KEY MAP
SCALE 1 INCH = 4 MILES

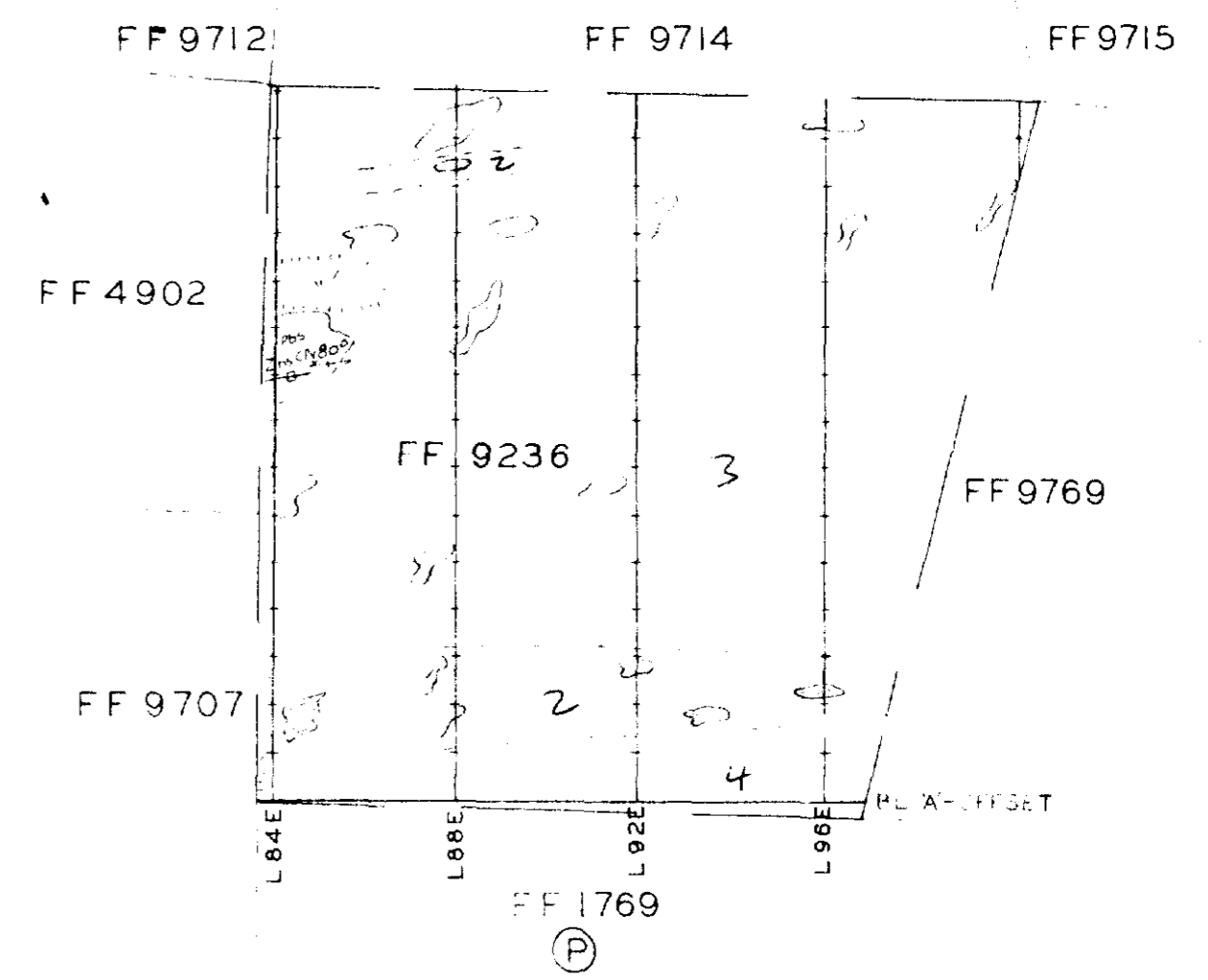
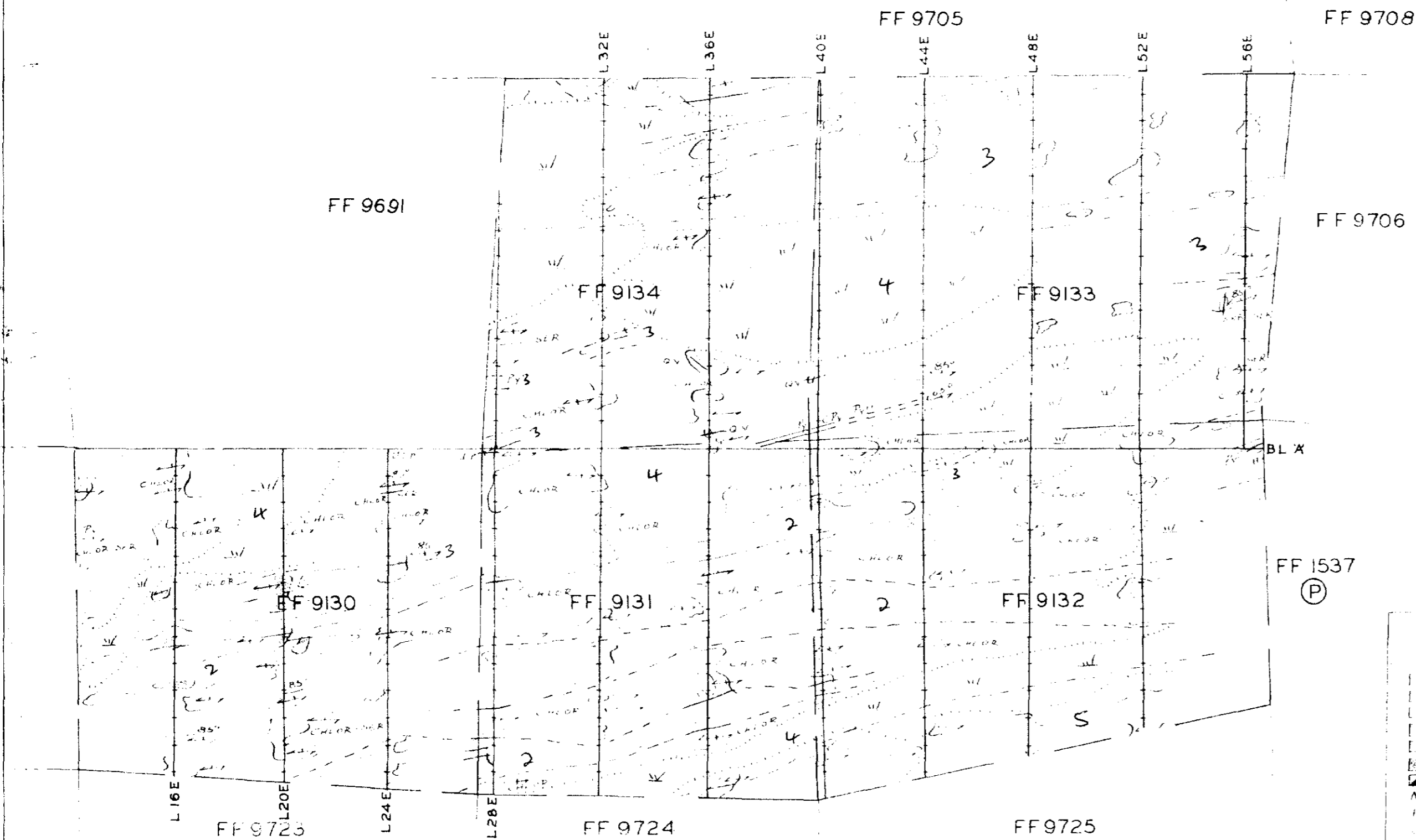


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MAGNETOMETER SURVEY
PART OF MINE CENTRE GROUP
SCALE 1" = 400'
APRIL 14/56





KEY MAP
SCALE: 1 INCH = 4 MILES



LEGEND

[Symbol]	1 ANORTHOSITE GABBRO INTRUSIVES
[Symbol]	2 GABBRO INTRUSIVES
[Symbol]	3 QUARTZ PORPHYRY INTRUSIVES
[Symbol]	4 SCHIST ZONES
[Symbol]	5 TUFF & GREENSTONE
[Symbol]	6 SILICEOUS SEDIMENTS
[Symbol]	PITS
Mg	MAGNETITE
P	PYRITE
Ch	CHALCOPYRITE
Gal	GALENA
Sp	SPHALERITE
IR	IRON PIN
-QV	QUARTZ VEIN

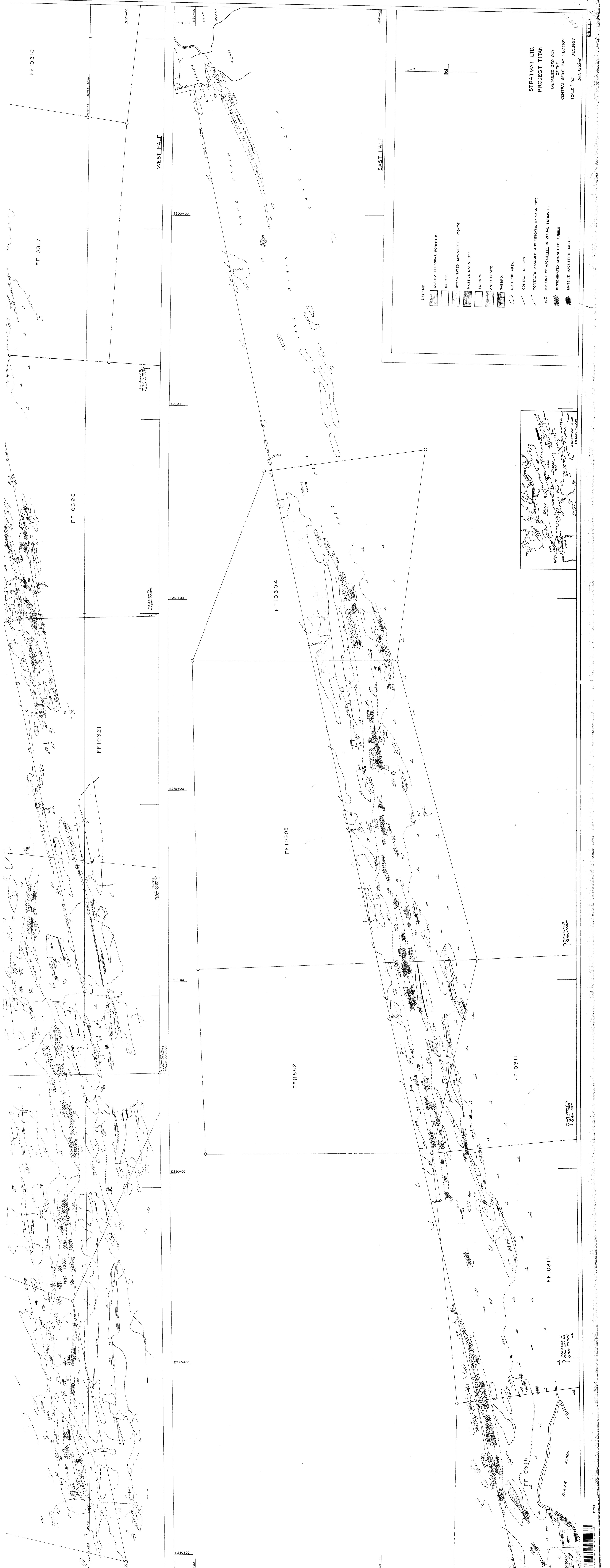
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DETAILED GEOLOGY

PART OF MINE CENTRE GROUP

SCALE 1" = 400' APRIL 13/56



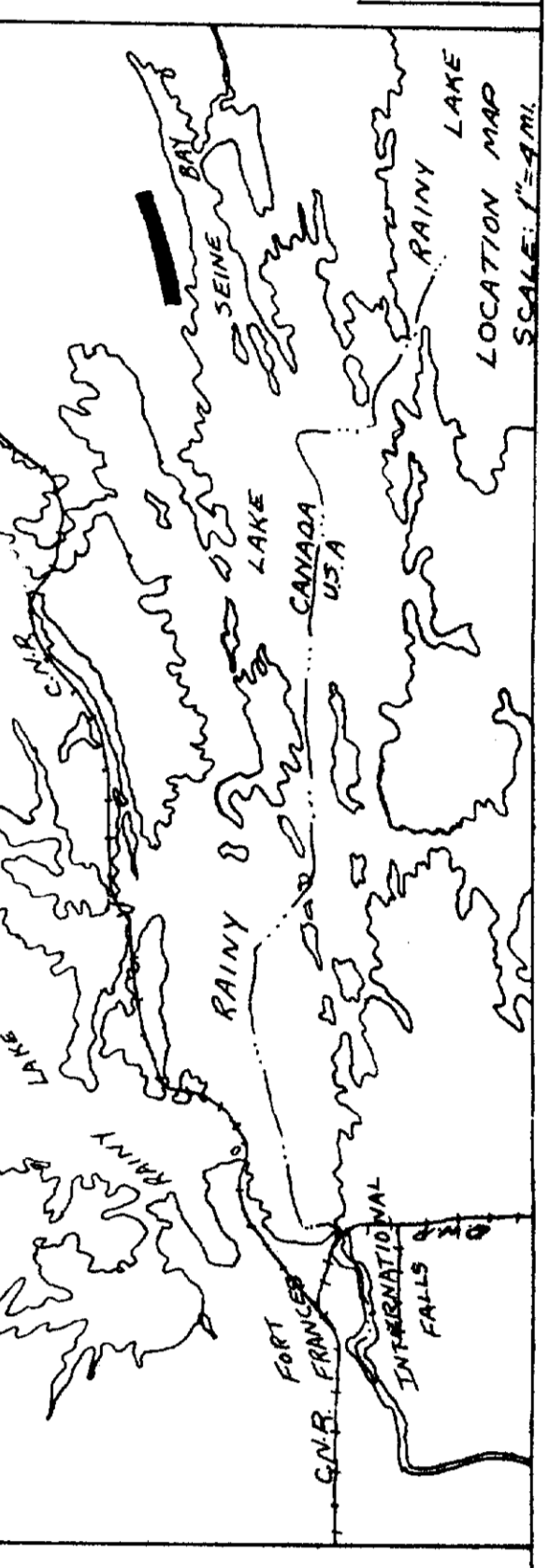


WEST HALF

EAST HALF

LEGEND

- QUARTZ FELDSPAR PORPHYRY
- DIOBRITE
- DISSEMINATED MAGNETITE (25-75%)
- MASSIVE MAGNETITE
- SCHIST
- AMPHIBOLITE
- GABBRO
- OUTCROP AREA
- CONTACT DEFINED
- CONTACTS ASSUMED AND INDICATED BY MAGNETICS
- CONTACTS ASSUMED AND INDICATED BY VISUAL ESTIMATE
- 4:2 AMOUNT OF MAGNETITE BY VISUAL ESTIMATE
- DISSEMINATED MAGNETITE RUBBLE
- MASSIVE MAGNETITE RUBBLE

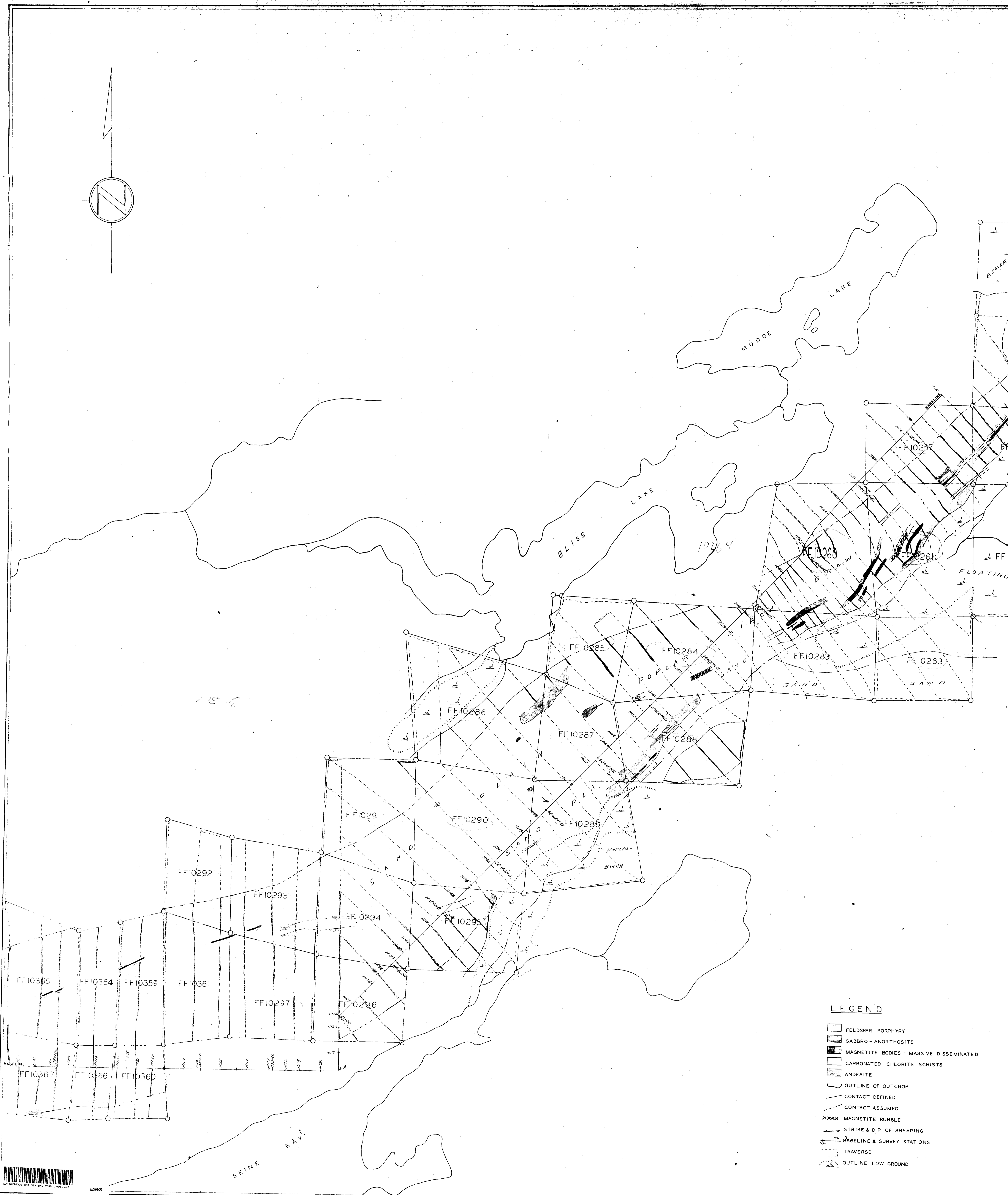
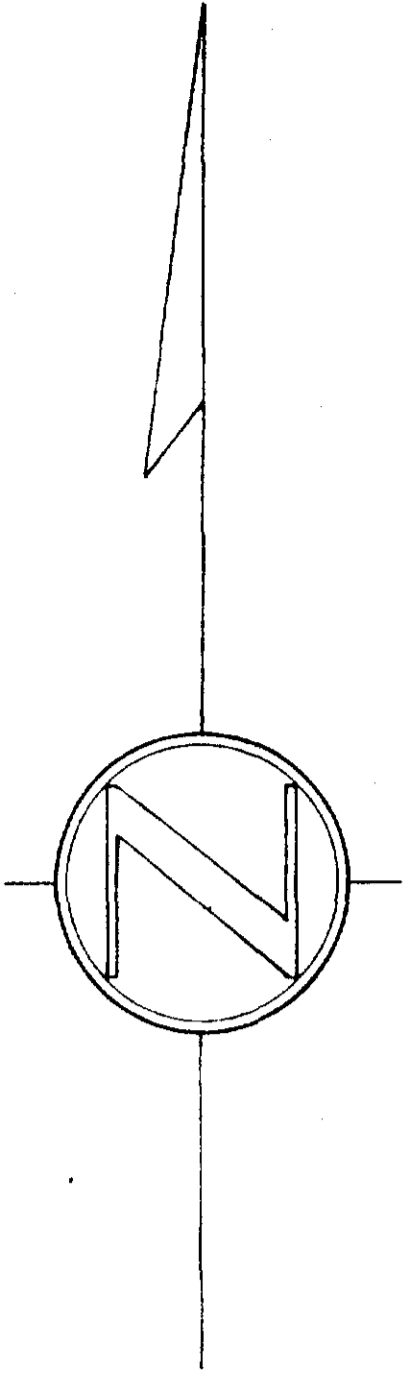


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DETAILED GEOLOGY
CENTRAL SENE BAY SECTION
SCALE 1:50,000
DEC/1997

SHEET 3

E230





LEGEND

- FELDSPAR PORPHYRY
- GABBRO - ANORTHOSITE
- MAGNETITE BODIES - MASSIVE-DISSEMINATED
- CARBONATED CHLORITE SCHISTS
- ANDESITE
- OUTLINE OF OUTCROP
- CONTACT DEFINED
- CONTACT ASSUMED
- MAGNETITE RUBBLE
- STRIKE & DIP OF SHEARING
- BASELINE & SURVEY STATIONS
- TRAVERSE
- OUTLINE LOW GROUND

