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University of Toronto,  
4 July, 1947.

Memorandum for the Department of Mines, Ontario:

Report on the Staking of Claims, the Cutting of necessary Lines, and on Geological and Geophysical Exploration work carried out on Bonnie Prince Claims, Township of Fenton, Sudbury Mining District in the spring and summer of 1946 and in 1947.

I. This Report is made in view of the Memorandum re Geophysical Surveys issued by the Department of Mines and based on changes in The Mining Act re assessment work allowances (R.S.O. 1937, Chapter 47, Section 78-11).

1. Re submission of data required for assessment work purposes re geophysical surveys. The items of required data on the form submitted by the Department of Mines are herewith supplied.

2. Re recommendation that magnetic surveys be tied-in to the Department of Mines base stations, it is proposed to make use of stations at Matheson and at South Porcupine, controlled by the continuous records at the Standardizing Magnetic Station at Agincourt.

II. Reply to items of data required in the Memorandum of the Department of Mines of Ontario.

1. Name of Firm -- Bonnie Prince Mining Syndicate, Ltd.

2. Dates of Field Work -- May 1st to September 12th, 1946. Additional field work from May 1st, 1947 to date is being reported.

3. Type of Instrument and Scale Constant -- (a) Thalen Tiberg Magnetometer, Scale Constant approximately 250 gamma per division was used for a short time in preliminary work.

(b) Askania Vertical Component Magnetometer and a Calibrating Helmholtz Coil with Scale Constant approximately 25 gamma per division was used in 1946 and 1947 for most of the exploration.

4. Break-down of man days employed is as follows, @

(a) Line cutters - 483 days,

(b) Instrument operator and assistant - 192 days,

(c) Draftsman - 15 days,

(d) Consultants (1) Field work

(ii) Office work - 30 days previous to 1 June, 1947, 10 days after.

No payment as consultant.

5. Total number of stations established at which readings were taken -- (a) Before June 1st, 1947 -- 2277; (b) After June 1st, 1947 -- to be reported later.

6. Number of miles of transit lines cut -- 36 miles.
7. Maps to show. See Maps A, B, C.
  - (a) Lines, station points and readings.
  - (b) Important lakes, rivers and other topographical expressions.
  - (c) Outcrop data.
  - (d) Accurate location of main base control point.
  - (e) Interpretive geology wherever determined particularly on outcrops and also with a small amount of trenching.

### III. General record of exploratory work carried out on the Bonnie Prince Claims.

1. Details of magnetic exploration work carried out in 1946 and up to April 8th, 1947 are presented in a Memorandum submitted by Lachlan Gilchrist to Mr. George Barber, Secretary-Treasurer, Spruce Falls Power and Paper Company Limited, for consideration of the Bonnie Prince Mining Company. A copy of this report (Reports I and II) is submitted herewith.

2. Details of a report on geological exploration and sampling carried out by Mr. William Barber, Mining Engineer, in 1946 and early in 1947 are also submitted (Report III). This work was carried out under the guidance of Professor George B. Langford, University of Toronto.

3..(a) Preliminary geophysical exploration carried out previous to spring of 1946. The distortions of ordinary compass readings were observed during exploratory work in 1945 and 1946.  
(b) More detailed magnetic scouting exploratory work was carried out by Mr. J. L. Breckon under the guidance of Lachlan Gilchrist making use of a Thalen-Tiberg magnetometer.  
(c) More detailed magnetic exploratory work was carried out by J. L. Breckon under the guidance of Lachlan Gilchrist making use of an Askania Vertical Component Magnetometer. This is presented in III-1 above.

### IV. Magnetic exploratory work now in progress since the report of Lachlan Gilchrist to the mining company on April 8th, 1947.

1. More detailed magnetic exploratory work is at present being carried out by a party under J. L. Breckon under the guidance of Lachlan Gilchrist. The details of the results of this exploratory work are not at present ready for submission but will be submitted in the near future. This delay has been due to the unusual climatic conditions and late spring and ice and water conditions obtaining on the claims.

V. A general statement of the history of the preliminary exploratory work is presented in a letter to Mr. George Barber by Mr. G. G. Cosens. A copy of this letter is submitted.

(Report I)

University of Toronto,  
49 St. George Street,  
Toronto, 8 April, 1947.

Mr. George Barber,  
Secretary-Treasurer,  
Spruce Falls Power and Paper Company Limited,  
Toronto.

Memorandum of the Exploration Work on Bonnie Prince  
Claims, Township of Fenton, Sudbury Mining District,  
carried out in the spring and summer of 1946,  
by Lachlan Gilchrist.

Scope of the Exploration.

I. Geomagnetic investigations were made along north-south parallel profiles separated by 20 chains (1,320 feet) and covering the full extent of the claims. The profiles are lettered A, B, C, D .....R (see map).

II. Geological investigations were made on outcrops and in trenches in thin cover in several places in the western section of the claims, close to the profiles and in general close to contact of the granite and the basic rocks on these profiles.

III. Specimens were collected and were assayed for iron, base metals and gold.

Consideration of I.

1. The results of the geomagnetic survey gave pronounced indications of the existence of several extensive bodies of very rich magnetite under cover of a maximum depth of 50 feet with converging strikes in a general south west-north east direction. The portions of the profiles on which the indications of the existence of magnetite were obtained are shown on the map in a roughly classified system e.g. fairly rich, rich, very rich. It must be noted however that since the magnetic investigations were of a scouting character the classification can not be considered as precise e.g. when fairly rich indications are given on any profile it may simply be an indication of a rich body existing in the region between profiles.

2. More detailed geomagnetic work adjacent to the magnetic regions indicated on the profiles in order to contour magnetically these regions should be made. The specimens which

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have been obtained for iron assay purposes have not been obtained in general immediately below the peak point of the magnetic indication but rather from the outcrops at the north, south, east or west of the contact of the magnetite with acid rocks.

3. Magnetic contouring of the region should be followed by shallow drilling in indicated regions.

#### Consideration of II.

1. In the search for specimens of base metal ores such as pyrite, chalcopyrite, sphalerite, etc., or for quartz stringers bearing gold it is desirable to make at least the initial search along the contact of the magnetic zone and the acid or unaltered rocks.

2. In the search for specimens of rich magnetite the search should be made in the region immediately below the peak point of the magnetic indication. On these claims this search can be made only with the assistance of shallow drilling.

3. The magnetic contouring of a region throws into relief the location of the peak point of the magnetic indication as well as the approximate location of the contact of the magnetic body and the acid or slightly altered basic rocks. Very shallow drilling may be necessary on some of these claims to obtain specimens near this contact or to show the existence of a shear zone bearing base metal ores or quartz.

#### Consideration of III.

1. Specimens containing over 40 percent of iron were obtained in regions, in general, not indicated as most strongly magnetic.

2. For commercial iron ore there should be extensive bodies of homogeneous magnetite readily accessible at shallow depth and averaging about 55 percent of iron. Specimens obtained by shallow drilling in the magnetically contoured regions should be much richer than 40 percent in iron.

3. It is not possible to say from the results of investigation if these specimens would contain uniformly as much as 55 percent of iron.

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4. In the specimens containing base metals or quartz bearing gold which have been assayed commercial values did not exist.

#### IV. Recommendations.

1. In the regions of strongest magnetic anomalies at least six geomagnetic profiles should be made parallel to and adjacent to those which have been made for a length of approximately 600 feet and separated by not more than 100 feet. Readings should be made on these profiles at a separation not greater than 50 feet. In order that suitable magnetic contours of the region could be made.

2. The regions where these geomagnetic profiles should be made are as follows.

- |                      |                         |
|----------------------|-------------------------|
| (1) One on Profile B | (8) One on Profile J    |
| (2) One on Profile D | (9) Two on Profile K    |
| (3) Two on Profile E | (10) Two on Profile L   |
| (4) One on Profile F | (11) Three on Profile M |
| (5) One on Profile G | (12) Three on Profile N |
| (6) One on Profile H | (13) One on Profile O   |
| (7) One on Profile I | (14) One on Profile P   |

that is 21 x 6 = 126 profiles each 600 feet long or a total length of 75600 feet or approximately 15 miles.

3. In the scouting geomagnetic work which has already been carried out about 36 miles of survey work was carried out in about two months. The detailed work on a total length of 15 miles would require about the same length of time as the 36 miles of scouting work since the separation of the reading points should not be greater than 50 feet and in many places should not be greater than 25 feet.

4. Consultation and guidance of a party on this work and on the subsequent report and the use of the necessary instruments would entail an expenditure of \$2000.

5. An estimate of the expenditure associated with the exploration party would be about the same as that of the scouting party in 1946.

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6. An estimate of the expenditure associated with drilling and the securing of specimens and assaying may be deferred until further information is obtained.

*Lachlan Gilchrist*

(signed) Lachlan Gilchrist.

(Report II)

TOWNSHIP OF FENTON -- BONNIE PRINCE CLAIMS

Memorandum re overburden over Magnetite on Profiles A to R, inclusive.

Lines A, B, C, D -

Dr. Gilchrist does not wish to comment as outcrop and readings very erratic.

Line E -

Mostly outcrop and not very rich except between 8100 ft. south and 6900 ft. south rich magnetite.

Line F -

1. From 7400 ft. south 7100; 6300 ft. south 5500 ft. south outcrop or shallow overburden rich magnetite. 2. From 3200 ft. south to 3000 ft. outcrop or shallow overburden fairly rich. 3. 1600 ft. south to 700 ft. south outcrop especially on north end - look for rich samples magnetite.

Line G -

1. From 6400 ft. south to 0 line outcrop or very shallow overburden and not rich in magnetite. 2. From 0 to 900 ft. north shallow overburden and very rich in magnetite - easy to dig.

Line H -

From 5400 ft. south to 2600 ft. north outcrop or shallow overburden with rich magnetite spots at 5400 ft. south to 5000 ft. south; 3500 ft. south 3200 ft. south; 2650 ft. south 2500 ft. south. (850 ft. south to 500 ft. south very rich) (1100 ft. north to 1900 ft. north very rich)

Line I -

1. From 4400 ft. south to 4100 ft. south very shallow overburden not rich in magnetite.

2. From 3500 ft. south to 2400 ft. south very shallow overburden fairly rich in spots in magnetite.

3. From 1600 ft. south to 1200 ft. south very shallow overburden not rich in magnetite.

4. From 200 ft. south to 800 ft. north outcrop at south side overburden; 100 ft. north - 800 ft. north overburden 15-20 ft. very rich in magnetite

5. From 800 ft. north to 2000 ft. north outcrop to shallow overburden not rich in magnetite except between 1000-1100 ft. north small shallow but rich in magnetite.

6. From 1900 ft. north to 2600 ft. very shallow to outcrop and probably rich in magnetite - may be shallow.



Lin J -

1. From 3500 ft. south to 1600 ft. south very shallow overburden not rich in magnetite.
2. From 700 ft. south to 4000 ft. north outcrop or very shallow overburden and not rich in magnetite.

Line K -

1. From 2600 ft. south to 2200 ft. south very shallow overburden rich in magnetite.
2. From 1300 ft. south to 1000 ft. south very shallow overburden not very rich.
3. From 100 ft. north to 1900 ft. north very shallow overburden not rich in magnetite.
4. From 3200 ft. north to 4000 ft. north 40 to 50 feet overburden fairly rich magnetite.

Line L -

1. From 1800 ft. south to 0 - very shallow overburden but not rich in magnetite.
2. From 0 to 3200 ft. north - outcrop or very shallow overburden - rich in magnetite. Should be done.

Line M -

1. From 1500 ft. south to 100 ft. north - very shallow overburden near outcrop. Fairly rich in magnetite.
2. From 1200 ft. north to 3000 ft. north - overburden probably 10 to 20 feet deep. Very rich in magnetite.
3. From 3000 ft. north to 3600 ft. north - very shallow overburden near outcrop - rich in magnetite.
4. From 4900 ft. north to 5300 ft. north - a little deeper overburden - rich in magnetite. 10-15 feet overburden.

Line N -

1. From 400 ft. south to 300 ft. north - overburden 20-30 feet deep. Very rich in magnetite.
2. From 2500 ft. north to 5000 ft. north - overburden 40 to 50 feet deep. Very rich in magnetite. Possibly intrusives if contacts with acid rocks can be located.

Line O -

1. From 300 ft. south to 1000 ft. north - overburden 35 to 45 feet. Very rich in magnetite.
2. From 2600 ft. north to beyond 5300 ft. north. Very shallow overburden. Rich in magnetite from 4200 to 4500 ft. north and 5000 ft. to beyond 5300 ft.

Line P -

Probably worth investigating from 400 ft. south to 2000 ft. north very shallow overburden.

Lines Q, R, and S - Not worth investigating.

## (Report III)

REPORT ON BONNIE PRINCE CLAIMS -- William Barber,  
Mining Engineer.

Location: These claims were staked in the township of FENTON some 26 miles south of the town of KAPUSKASING, located on the Canadian National Railway between the towns of Cochrane and Hearst, and from one to five miles east of SAGANASH LAKE. There are 99 claims. The south west claims may be reached by means of a well-marked trail from the south end of Saganash Lake. The north central and east claims may be reached from a well-cut trail from the east side of Saganash Lake about 2 miles from the south tip of the Lake. The north east and central claims can also be reached by means of landing on Keenoa Lake by plane then by trail about 1 mile north to the claims. The walking over any of these trails is not easy at the present time and it is necessary to cover at least a mile on any of them before the claims can be reached. Saganash Lake is easily reached from Kapuskasing in either winter or summer by means of the transportation facilities of the Spruce Falls Power and Paper Co. Woods Department. One of the Woods Department's camps, number 43, is situated on the west side of Saganash Lake about a 1/2 mile from the south end of the lake. The camp is 43 miles from Kapuskasing by way of the winter road.

Field Examination: The claims were examined from October 29th to November 2nd, 1946 inclusive with the objective of paying particular attention to those claims in the south west of the group, as the magnetometer readings were relatively weaker and more erratic than those readings which were taken on the north west claims. If the examination of this group of claims did not disclose any rock formation or structure where commercial minerals would likely be found, then these claims would be dropped.

Geology: In general, from field observations and the plotting of high potential magnetometer readings, the magnetite and quartz bearing formations lie in high ground along the divide between the Kapuskasing and Groundhog river basins. The drainage being to the north west over gradually sloping ground to the Kapuskasing River, and to the south east over a relatively steep incline down into a swamp area to the Groundhog river. This ridge of high ground runs about north 60° east. From observations along the claim boundaries, there is reason to believe that the strikes of the iron formations are close to north 30° east, especially in the south west group of claims. However, it was very difficult to determine strikes because of the strong local magnetic disturbances and because of the difficulty in following the formations any distance due to overburden. Preliminary field observations would indicate that no attempt should be made to correlate the magnetometer readings along the east and west boundaries of a claim until further study has been given to strikes in the field.

The overburden on this group of claims consists of: light covering of moss, glacial drift, and swamp. There is very little exposed rock on these claims. Where there is none or very little drift or swamp the rocks are covered with a light covering of moss. With the exception of a few small areas of light overburden and alder swamp, the claims are fairly heavily timbered. Most of the overburden consists of spruce and cedar swamp. In almost every instance of where the iron formation was found, the strongest magnetic disturbances occurred over swampy ground which would make summer trenching almost impossible and field observations difficult.

The country rock consists of a fine-grained ~~dark~~ rock that weathers to a green color at the surface and grades into a chloritic schist near those areas where high magnetic attractions are found. This rock appears to be of volcanic origin and will henceforth be referred to as greenstone.

On claim 43428 there is a small irregular granite intrusion. The greenstone near the contact with this granite contains large crystals of tourmaline and some finely disseminated sulphides. Grab samples were obtained from the contact zone which ran from a trace to 0.01 oz. of gold per ton. On the north east side of the granite there is a small banded formation containing many fine stringers of magnetite in quartz. This banded formation has a very strong magnetic attraction for a compass needle and has a north easterly strike. The greenstone near this magnetite bearing rock is, in places, covered with about a quarter of an inch of gossan. This granite has also been found on claim no. 43485 on both the east and west boundaries. On the west boundary it occurs as a dike about 12 feet wide and lies between two large iron formations. On the east boundary it occurs as a much smaller dike about 18 inches wide and lies between two much smaller iron formations. These two occurrences have the same general strike and from their relative positions on the claim boundaries could conceivably be of the same formation. Samples of granite from each of the above outcrops are so similar that they are all probably from the same source.

The greenstone on the south west claims is cut by a great number of glassy-looking quartz veins from less than one inch to more than 36 inches wide and from a few feet to several hundred feet long. They appear to have a general north east south west strike and are barren of sulphides, except where they approach or cut into the iron formations. Here they contain sulphides and in some places the quartz is a rusty color. A small piece of chalcopyrite knocked off a grab sample from claim no. 43456 had a gold value of \$5.80 to the ton.

The claims in this area were staked on the strength of the presence of ore bodies, the existence of which were presumed on the evidence of strong magnetic attractions for a compass needle, as has often been the case in large bodies of magnetite or pyrrhotite. The strength of the magnetic forces in some areas

on these claims is sufficient to turn a compass needle completely around so that the north end of the needle will assume a steady position 180° off magnetic north. In a few locations the force was powerful enough to freeze the needle to the bottom of the compass regardless of in what direction the compass was pointed. By using the compass a number of formations rich in magnetite were uncovered. On the boundary between claims 43438 and 44 a strong magnetic attraction indicated the presence of magnetite, however, as was inevitably the case, the strongest magnetic attraction was found in swampy ground where it was impossible to remove the overburden. By following the formation in a north easterly and south westerly direction, by means of the compass, this iron formation was uncovered in several places on high ground, although the magnetic forces were not nearly so encouraging as in the swampy areas. This formation consists of banded quartz and magnetite, the bands of which are in an almost vertical plane and strike in a north easterly direction. The bands vary from wide bands of fine-grained quartz with threadlike bands of magnetite to almost solid magnetite bands with insignificant bands of quartz, sometimes 3 inches apart. In places the formation is badly broken up. Most of this is probably due to the action of frost although in one or two places the character of the broken rock gave the impression of some extensive earth movement. The width of the formation was estimated to vary from 30 to 40 feet. Several grab samples ran about 34% iron. A similar formation was uncovered about 200 feet east of the boundary between claims 43482 and 85. Samples from this formation ran about 42% iron.

Conclusion: Evidence uncovered to date would indicate that there is a good possibility of the existence of large bodies of magnetite that are of sufficiently high grade to make ore in the north claims.

It is recommended that the south claims be held because of the possible existence of small magnetite bodies that would be of no value in themselves but could be economically mined in conjunction with an important mining operation nearby. They should also be prospected for gold as long as work is already being done on these claims.

Because of the extensive overburden and the presence of a great deal of swampy ground, it is recommended that the little trenching that can reasonably be done should be carried out with the objective of obtaining some field observations to substantiate Dr. Gilchrist's interpretations of the magnetometer survey.

(signed) William H. Barber.

(Report III)

SAMPLE FROM BONNIE PRINCE CLAIMS - TOWNSHIP OF FENTON

Submitted by William Barber, Mining Engineer.

- No. 1 - Grab sample taken across 7 feet of apparent shearing about 100 feet north of trail across claim 43428 near acid intrusion. Black rock of a felsitic texture containing a small amount of pyrite.  
Gold oz. per ton 0.01                      Gold value per ton \$0.35
- No. 2 - Grab sample 6 feet S E of No. 1  
Gold oz. per ton 0.01                      Gold value per ton \$0.35
- No. 3 Sample of rust across 8 feet of sheared zone, close to No. 2.  
Gold oz. per ton - Trace
- No. 4 - Grab sample from west line of claim 43454 banded iron formation, mostly quartz, strong magnetic zone.  
Gold - none.
- No. 5 - Close to sample No. 1.  
Gold - none.
- No. 6 - Close to sample No. 1.  
Gold - trace.
- No. 7 - Grab samples across 26 feet of apparently sheared zone, close to sample No. 1.  
Gold - none.

In general, samples 1, 2, 3, 5, 6 and 7 come from a contact zone between greenstone and an acid intrusion that has the appearance of granite but seems to be low in feldspar; there are small black specks in the quartz that look like minute crystals of magnetite and light to dark brown stains covering very small areas. The contact rock itself is black in color, of a felsitic texture, and contains some pyrite. Close to the contact, large tourmaline crystals can be found, and in some places this rock is capped with about a 1/4" of gossan. Close to this zone, apparently passing to the south east of it, is a very narrow formation containing small bands of quartz and magnetite which has a strong magnetic attraction for the compass needle. The samples were taken in the contact zone from about 6 to 100 feet away from the acid intrusion.

- No. 8 - Grab sample from quartz vein 200 feet south west of the acid intrusion. There are a great many of these quartz veins in the greenstone over this group of claims. The veins vary from less than an 1" to 36" wide and from a few feet to several hundred feet long. They appear to have a general north east strike but do not seem to follow any apparent structure in the greenstone. They are more numerous and larger near the iron formation. In two places found in the field they cut into the iron formation and then run parallel to the bands of magnetite and quartz. See sample no. 11.
- No. 9 & 10 - These samples were taken about 50 feet west of No. 1 and show some mineralization in the contact zone. 10 was not sent to Toronto.
- No. 11 - Grab sample from quartz vein about 18" wide running parallel to banded iron formation. This quartz is stained a rusty brown color in places and some chalcopyrite was found in it. The banded iron formation is strongly magnetic but the quartz bands predominate. This sample was taken from 60 to 70 feet north west of a rich iron formation.

- No. 11 (cont'd) A chip of chalcopyrite from this sample assayed \$5.80 in gold to the ton.
- No. 12 - Grab samples taken from trench over a distance of about 35 feet on either side of sample No. 11. Light-coloured fine-grained rocks high in quartz.
- No. 13 - Grab sample of rich magnetite from iron formation 25 feet wide, ~~fm~~ from trench 15 to 20 feet north of south claim line of claim No. 43456 and about 90 feet east of number 3 post. Contained 30.68% iron.
- No. 14 - A chip sample across about 20 feet of rich iron formation in trench at same location as No. 13.
- No. 15 Grab samples across 25 feet of banded quartz and magnetite formation in trench on claim 43454 about 40 feet south of sample No. 4.
- No. 16 - Grab samples across an apparently sheared zone about 20 feet north of sample No. 15 in banded iron formation with some pyrite present. Contained a trace of gold.
- No. 17 - A grab sample taken between samples 15 and 16. This sample bears evidence of some shearing action.
- No. 18 - Grab samples taken from trench across about 35 feet of banded quartz and magnetite formation 50 feet east of west boundary of claim No. 43444.
- No. 19 - Grab samples across 35 feet of rich magnetite formation from trench 300 feet east of west boundary of claim No. 43444. Contained 33.74% ~~ix~~ iron.
- No. 20 - Grab samples from rich iron formation 400 feet west of east boundary of claim No. 43438. Contained 33.98% iron.
- No. 21 - Grab sample of dark rock showing fine veins of pyrite taken 600 feet west of east boundary of claim 43438 on line of strike of rich iron formation close to highly magnetic area. Contained trace of gold.
- No. 22 - Grab sample taken on east claim line of claim No. 43428 from a badly broken up formation of dark rock on strike of rich iron formation. The rock in this area is so badly broken up that it has the appearance of having been subjected to extensive movement.
- No. 23 - Grab sample from rich magnetite formation 300 feet west of east claim line of claim No. 43438.
- No. 24 - Grab sample from rich magnetite formation 750 feet west of east claim line of claim No. 43438.
- No. 25 & 26 - Grab samples taken from rich magnetite formation on east boundary of claim 43482. These samples were taken from an outcrop of rich magnetite on the north side of a swamp, and, as in all cases where this rich magnetite has so far been found, the compass needle showed greater magnetic disturbance over the swamp than over the outcrop. Contained 42.02% iron.
- No. 27 - Chip samples across 27 feet of iron formation at 2-foot intervals from trench on claim 85. See sketch No. 1.

No. 29 - Chip samples across 13 feet of iron formation at 2-foot intervals from trench on claim 85. See sketch No. 1.

Bag of Hand Specimens - See sketch No. 1

- A - Quartz - granitoid texture - containing finely disseminated sulphides, formation 12 feet wide. (fine granite)
- B - Fine-grained altered greenstone, containing some finely disseminated sulphides, north contact.
- C - Iron formation containing irregular quartz inclusions (not banded) see sample No. 29, formation 13 feet wide.
- D - Hornblende (?) schist, formation 9 feet wide.
- E - Banded iron formation 27 feet wide see sample No. 27..
- F - Altered greenstone, texture coarser than specimen B. This is generally true of all rock on south side of formation.

No. 30 - Across 3 feet of south contact of iron formation shows heavy pyrite mineralization - for location see sketch No. 4. .01 oz. gold/ton.

No. 31 - Quartz across 20" vein - near sample No. 11 (barren)

No. 32 - Quartz sample - near No. 11 (barren)

No. 33 - Quartz sample containing some wall rock - near No. 11 See sketch No. 4.

No. 34 - Quartz sample near No. 11.

No. 35 - Iron formation near south contact - see sketch No. 4.

No. 36 - Greenstone south of iron formation near sample No. 30

No. 37 - Sample containing hornblende, pyrite, and garnet from north contact of iron formation - see sketch No. 4 - 18.7% iron

No. 38 - Black iron formation with fine bands of green mineral - see sketch No. 3 - 21.4% iron

No. 39 - Banded iron and black quartz with fine veinlets of pyrite covered with earthy rust - see sketch No. 3

No. 40 - Black, massive iron - see sketch No. 3 - 39.2% iron.

No. 41 - Banded iron and quartz covered with earthy rust.

No. 42 -

No. 43 -

No. 44 - Gray iron formation - see sketch No. 3.

~~Exam~~ Bag of Hand Specimens - see sketch No. 2.

H - Dark quartz, rusty surface, many fractures filled with rust, and many thread-like veinlets of pyrite.

I - Hornblende quartz schist or fine-grained gneiss

J - Hornblende ?

K - "

L - "

M - "

N - "

O - Glassy quartz

- P - Dark basic rock containing pyrite, pyrrhotite, and possibly other sulphides.
- Q - Same as P but less sulphides.
- R - Same as P but no discernible sulphides.
- S - Same as P, a few sulphides, some calcite.

- No. 45 - From quartz vein, containing pyrite and magnetite. See sketch No. 3.
- No. 46 - Iron formation - containing hornblende schist, pyrite stringers, finely disseminated pyrite, lenticular prisms of quartz. See sketch No. 5.



University of Toronto,  
8 April, 1947.

Mr. George Barber,  
Secretary-Treasurer,  
Spruce Falls Power and Paper Company Limited,  
Toronto.

Dear Mr. Barber,

If I may, I will give you a brief history of what has been done at the Bonnie Prince mining claims.

1. When Fenton Township was first cruised very heavy magnetic activity was noticed in the southeast section of the township. This magnetic activity was greater than I have ever experienced anywhere and I have cruised timber in several of the mining fields.

2. Over a series of years three small syndicates were formed and the area crudely prospected by grubstaking practical prospectors. Several samples assaying gold values up to \$2.50 per ton old value of gold were obtained but no attention was paid to base metals.

3. In connection with another project in the University and through Dr. Lachlan Gilchrist I saw something of modern geophysical methods of prospecting and this area was recalled to my mind.

4. I approached Mr. Lyons who in years past had been interested in the area. Mr. Lyons then interested Mr. Sage.

5. The old cruise notes were carefully checked and magnetic activity noted. A rough survey then was made along existing survey lines with a modern Swedish magnetometer. This work delimited the area of magnetic activity.

6. A series of transit lines were run at quarter-mile intervals and the claims staked.

Mr. George Barber--2

8 April, 1947.

7. Using the claim lines for control a geophysical survey was made with an Askania Magnetometer and careful recordings of magnetic activity were made and samples collected from rock outcroppings. It was pretty well apparent that the source of magnetic activity was a series of magnetic iron beds.

8. Dr. Gilchrist trained the crew who operated the Askania and he has very carefully checked the Askania results. He has split the areas that he considers interesting into three classes, fairly rich magnetite iron, rich magnetite iron, very rich magnetite iron. The richest areas are in depressions with considerable overburden and were completely inaccessible this winter to surface prospecting. The reason for this may be that in glaciation the concentrated magnetic iron areas were more heavily eroded than the surrounding granites and volcanics.

No. → 9. These iron beds parallel a granite intrusion of fairly recent time on very old rocks and were probably converted into magnetite at that time. There is no information at present precluding the possibility of hematite occurring between or with these magnetite bodies nor is there any information to suggest that there may not be concentrations of iron ore of fifty per cent iron or better.

10. In other like situations in the country where granite intrusions have occurred and where base metal deposits have resulted, gold-bearing quartz has occurred. So far any of the quartz veins we have sampled have run low gold values but these low gold values occur over quite large areas. That is, as I understand it, concentrations are quite possible in or along shears, probably some distance north or south of the iron. However the present economic possibilities of the claims are iron.

Sincerely yours,

(signed) G. G. Cosens.

# TWP. OF FENTON

SUDBURY MINING DISTRICT

SCALE: 1 Inch = 20 Chains. DATE June 28, 1947  
GEOPHYSICAL SURVEY LINES A-R

SAGANASH

LAKE

6M

5M

4M

TWP. LINE

3M

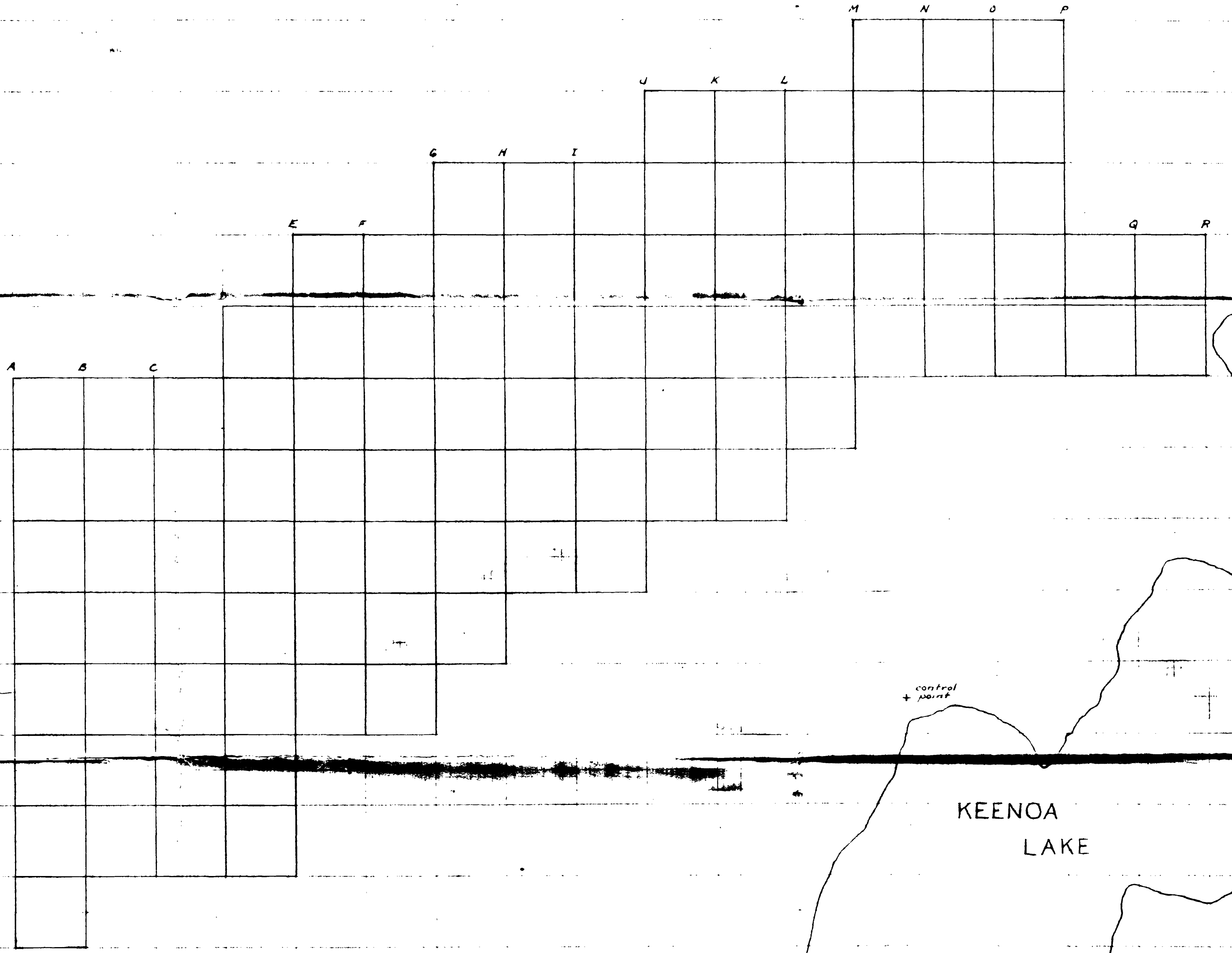
2M

1M

Clair Lake

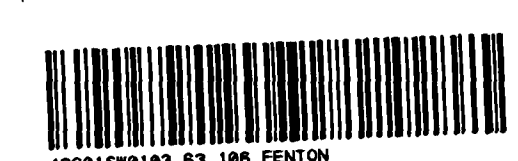
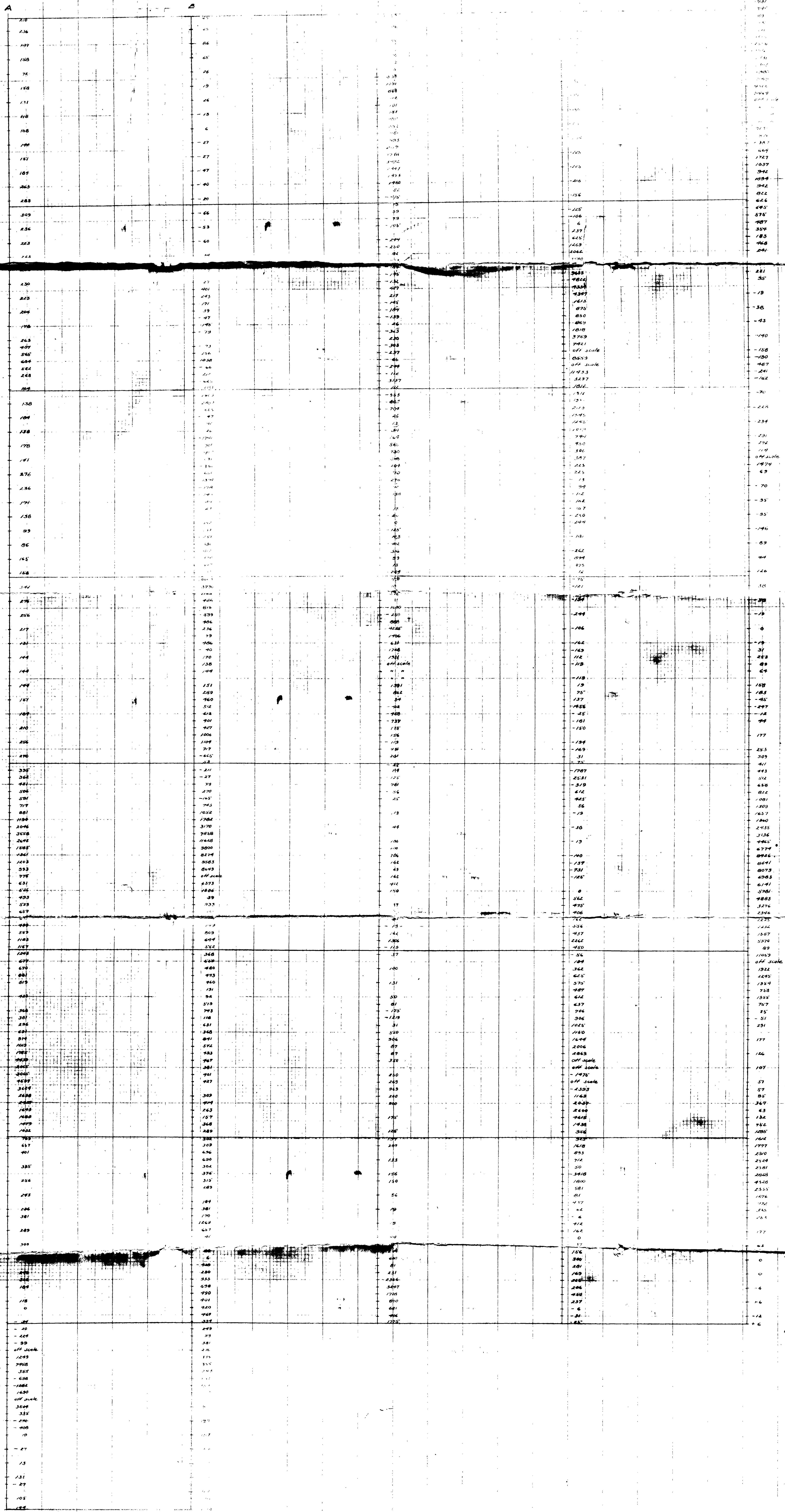
KEENOA LAKE

control point



# TWP. OF FENTON

SUDBURY MINING DISTRICT  
GEOPHYSICAL SURVEY STATIONS 1966  
SURFACE GAMMAS  
SCALE 1:50,000

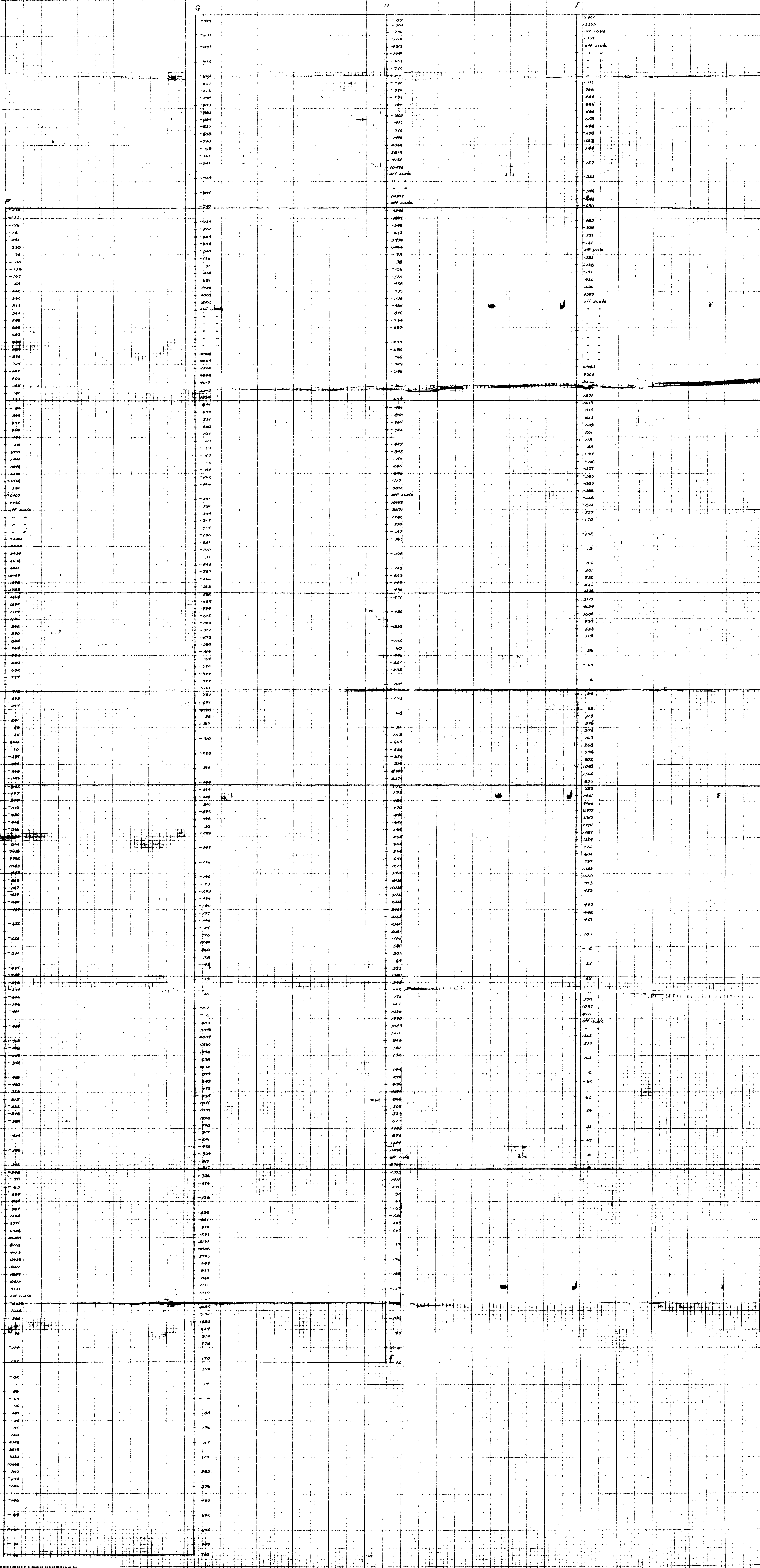




# TWP. OF FENTON

SUDBURY MINING DISTRICT  
 GEOPHYSICAL SURVEY STAT'NS 1945  
 VALUE IN GAMMAS.  
 SCALE 1 inch = 250 ft.

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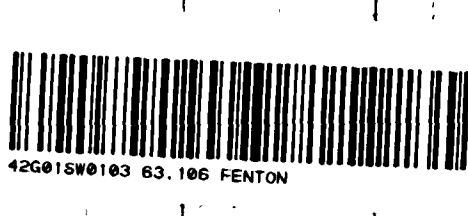
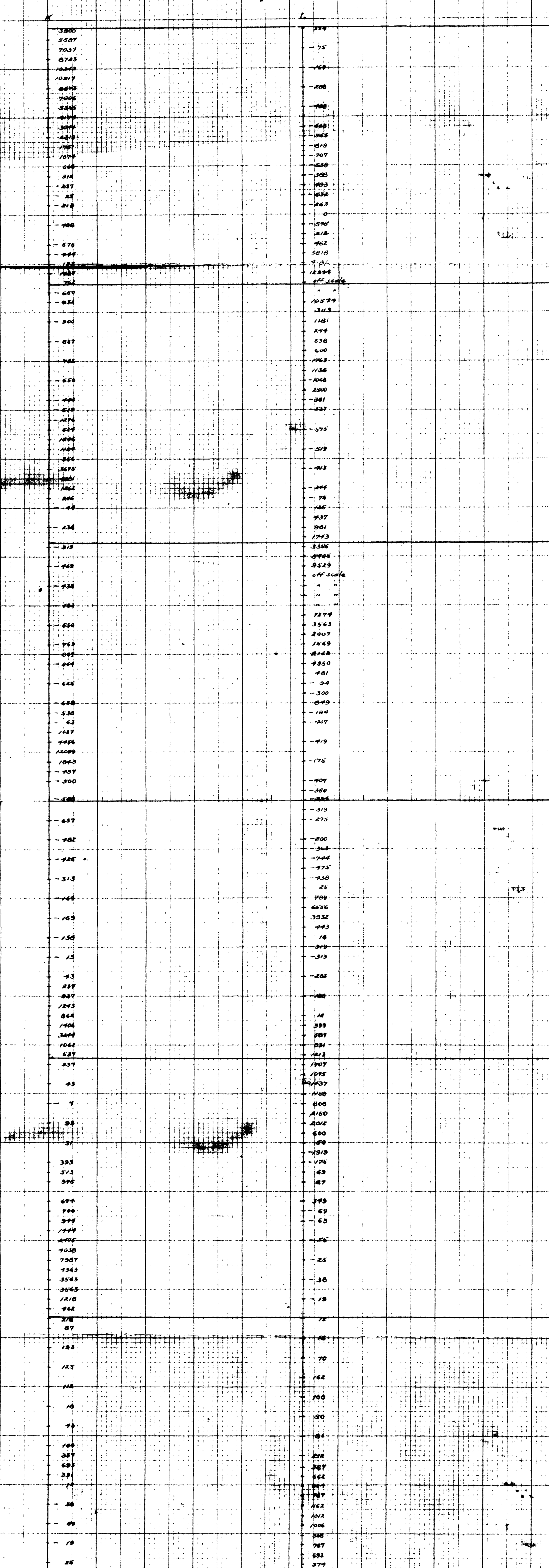




# TWP. OF FENTON

REDBURY MINING DISTRICT  
GEOPHYSICAL SURVEY STATIONS, 1946  
VALUE IN GAMMAS  
SCALE 1 inch = 250 ft.

M	N	O
off scale	239	off scale
4400	174	3473
4405	177	3377
4410	225	1046
4415	537	1443
4420	302	1387
4425	1392	317
4430	2051	373
4435	2188	466
4440	2442	500
4445	2479	833
4450	2357	1144
4455	3408	1730
4460	1765	1874
4465	8039	4733
4470	off scale	off scale
4475	" "	1161
4480	" "	441
4485	" "	1153
4490	8911	374
4495	5373	570
4500	3463	801
4505	4488	1361
4510	7878	2723
4515	4676	3050
4520	1352	2646
4525	1159	2446
4530	1044	1304
4535	375	1006
4540	313	772
4545	30	611
4550	764	439
4555	off scale	394
4560	232	403
4565	2380	613
4570	3178	4387
4575	5274	3332
4580	8371	2033
4585	off scale	1793
4590	" "	1211
4595	8360	1864
4600	2417	304
4605	4720	1857
4610	4103	1415
4615	2246	123
4620	7870	162
4625	1327	1780
4630	1473	1008
4635	1439	646
4640	766	206
4645	610	85
4650	" "	38
4655	1133	27
4660	738	110
4665	1013	344
4670	1167	402
4675	373	344
4680	323	853
4685	740	793
4690	78	891
4695	25	300
4700	135	1447
4705	61	2101
4710	15	2400
4715	280	1851
4720	34	1742
4725	208	1763
4730	311	1678
4735	322	1742
4740	386	2492
4745	310	3453
4750	1066	3690
4755	1063	5357
4760	1488	7386
4765	1850	8603
4770	1500	10783
4775	1405	11800
4780	1385	off scale
4785	1197	12023
4790	1497	off scale
4795	2172	" "
4800	4806	11935
4805	3243	9845
4810	6057	7745
4815	4101	5845
4820	1740	4422
4825	6470	3714
4830	off scale	2405
4835	" "	2397
4840	" "	1505
4845	" "	1006
4850	" "	1460
4855	" "	1315
4860	7347	1338
4865	3448	174
4870	2165	841
4875	436	783
4880	1292	679
4885	892	545
4890	794	532
4895	664	419
4900	430	746
4905	362	478
4910	284	385
4915	387	450
4920	187	
4925	220	
4930	231	
4935	133	
4940		
4945		
4950		
4955		
4960		
4965		
4970		
4975		
4980		
4985		
4990		
4995		
5000		



# TWP. OF FENTON

SUDBURY MINING DISTRICT  
 GEOPHYSICAL SURVEY STATIONS 1946  
 VALUE IN GAMMAS  
 SCALE 1 inch = 250 ft.

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# TWP. OF FENTON

SUDBURY MINING DISTRICT

SCALE: 1 Inch = 10 Chains DATE: June 25, 1947

N

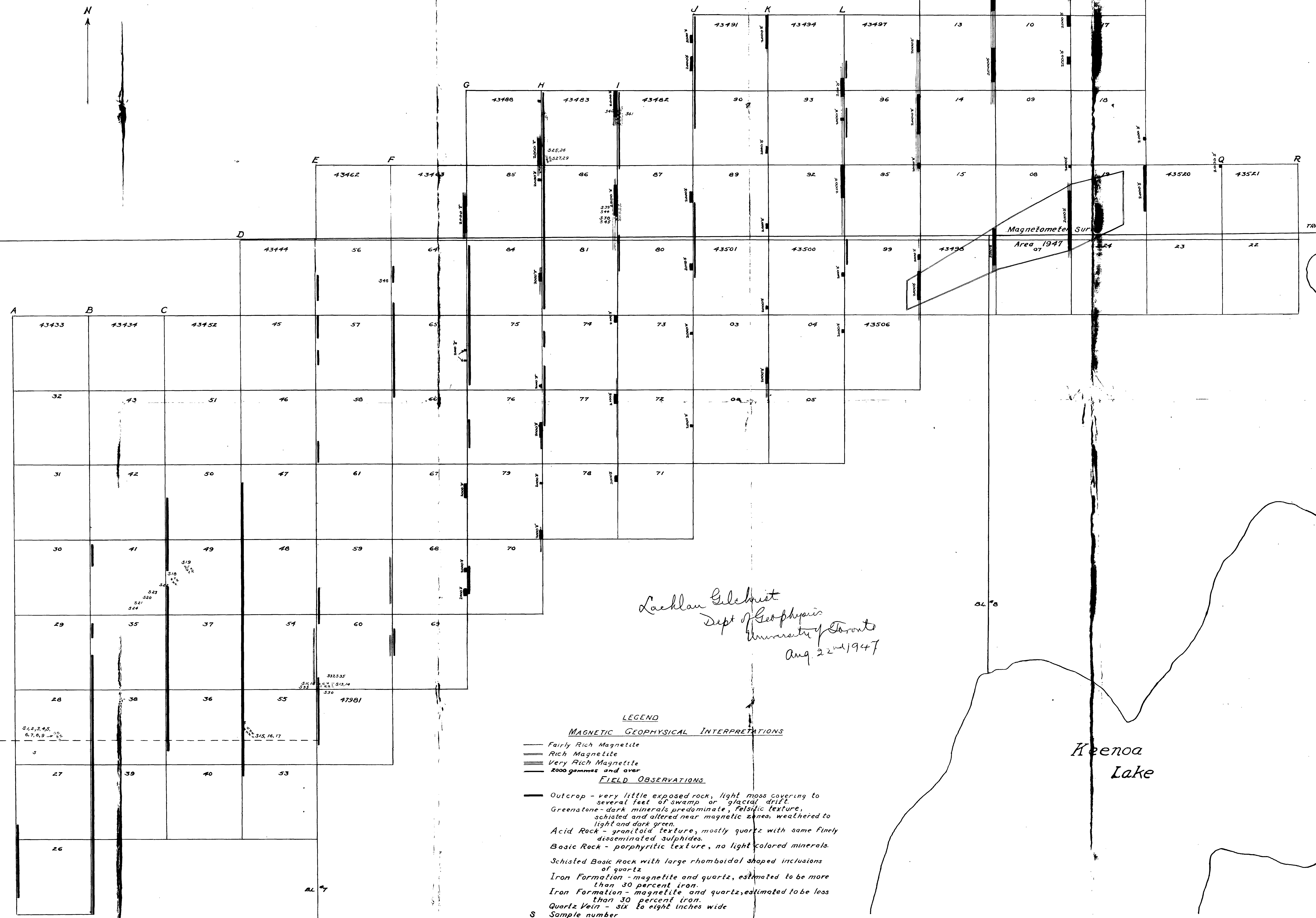
Saganash Lake

Clair Lake

Twp. Line

ZM

Keenoa Lake



*Laclau Gilchrist*  
 Dept. of Geophysics  
 University of Toronto  
 Aug. 22-1947

- LEGEND**
- MAGNETIC GEOPHYSICAL INTERPRETATIONS**
- Fairly Rich Magnetite
  - Rich Magnetite
  - Very Rich Magnetite
  - 4000 gamma and over
- FIELD OBSERVATIONS**
- Outcrop - very little exposed rock, light moss covering to several feet of swamp or glacial drift.
  - Greenstone - dark minerals predominate, felsitic texture, schisted and altered near magnetic zones, weathered to light and dark green.
  - Acid Rock - granitoid texture, mostly quartz with some finely disseminated sulphides.
  - Basic Rock - porphyritic texture, no light colored minerals.
  - Schisted Basic Rock with large rhomboidal shaped inclusions of quartz.
  - Iron Formation - magnetite and quartz, estimated to be more than 30 percent iron.
  - Iron Formation - magnetite and quartz, estimated to be less than 30 percent iron.
  - Quartz Vein - six to eight inches wide
  - S Sample number
  - Formation width in feet.
  - Trenched

Date Revised-

Cp 48



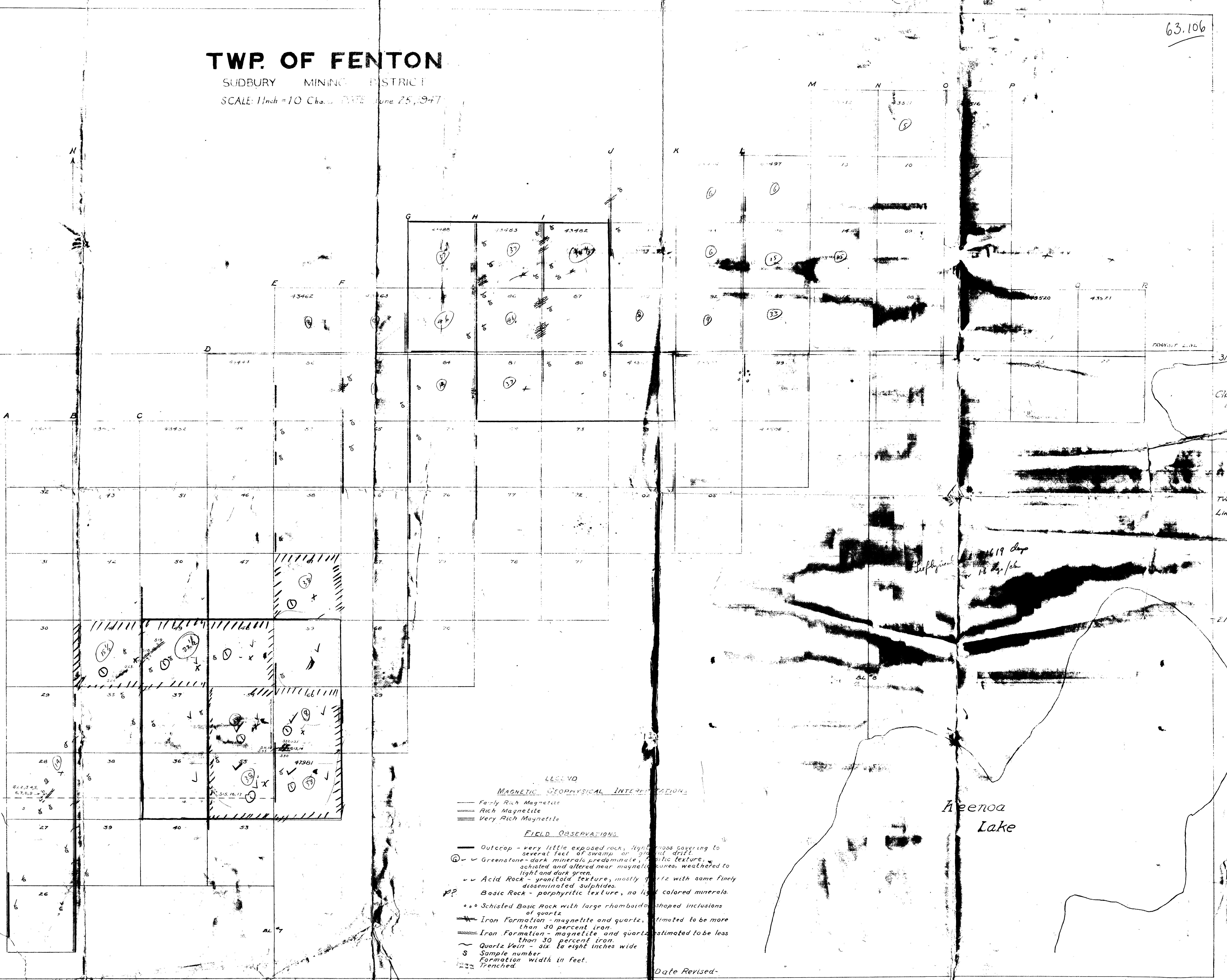


### TWP. OF FENTON

SUDBURY MINING DISTRICT  
SCALE 1 inch = 10 Chains. DATED June 25, 1917

Saganash Lake

Akenoa Lake



LEGEND

**MAGNETIC OBSERVATIONS**

- Fairly Rich Magnetite
- Rich Magnetite
- Very Rich Magnetite

**FIELD OBSERVATIONS**

- Outcrop - very little exposed rock, light mass covering to several feet of surface on top of hill
- ① Greenstone - dark minerals predominant, basic texture, schistose and altered near magnetite zone, weathered to light and dark green
- ∨ Acid Rock - granitic texture, mostly quartz with some finely disseminated sulphides
- Basic Rock - porphyritic texture, no light colored minerals
- Schistose Basic Rock with large rhomboidal shaped inclusions of quartz
- Iron Formation - magnetite and quartz, estimated to be more than 30 percent iron
- Iron Formation - magnetite and quartz, estimated to be less than 30 percent iron
- Quartz Vein - six to eight inches wide
- S Sample number
- Formation width in feet
- Trenched

Date Revised:

01159  
270