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Report of a Magnetometer Survey

Property Location and Access

The magnetometer survey was carried out over four (4) claims consisting of the North halves of lots 13, 14, and 15, and the South half of lot 15, Concession 3, South Canonto Township, County of Frontenac, Ontario, Canada.

The property is reached by taking a gravel road over the dam between Palmerston and Canonto Lakes westward to a meadow beside the road at the Northeast corner of Marl Lake, and thence by foot along a bush trail to the North end of Summit Lake. At this point a bulldozed road begins which runs around the North end of Summit Lake through the South half of lot 15, crosses the South half of lot 14, in a South Westerly direction, then turns Northwesterly across the South half of lot 13, runs Northerly across the North half of lot 13, and then North and West to a Hydro line about a half mile to the West.

Claim Owner

Lloyd G. D. Thompson,
15 Minute Man Lane,
Lexington, 73, Mass. U.S.A.

Miner's License No. A 33703

Claim Numbers

North Half Lot 13, Concession 3 - E. O. 28399
North Half Lot 14, Concession 3 - E. O. 28400
North Half Lot 15, Concession 3 - E. O. 28401
South Half Lot 15, Concession 3 - E. O. 28402

Purpose of Survey

Previous exploration work on claim No. E.O. 25784, South Half, Lot 14, Concession 3, South Canonto Township, has established the presence of a highly magnetic dike-like body of magnetite about 1,000 feet long and 100 feet wide. Work performed on this claim includes a Magnetic Survey, a Gravity Survey, bulldozer stripping, and diamond drilling, which have been recorded with Ontario Department of Mines. This claim is held by the same claim owner as above.

The present survey was performed on 4 claims to the north and east of E. O. 25784 to look for extensions of this magnetite zone or other similar deposits occurring in the vicinity. This was a reconnaissance magnetic survey in which a large area was covered seeking large anomalies of many thousands of gamma. The object was to locate any areas or belts where such anomalies exist but not to define them in detail.

Consultant Geophysicist and Professional Mining Engineer

Lloyd G. D. Thompson, B.A. Sc., M.Sc., Ph.D., P.Eng.

● Dates Field Work Done

March 31, April 1, 2, 3, 4, 5, 6, 7, 1961

Instruments

1. Sharpe D-IM Magnetometer, maximum sensitivity 60 gammas per division, average reading accuracy 100 to 200 gammas.
2. Sharpe A-2 Magnetometer, scale factor 20 gammas per division, reading accuracy 2 gammas.

The intention was to use the A-2 magnetometer as much as possible where the magnetic field was undisturbed and use the D-IM magnetometer over anomalous areas of high intensity. However, it was soon found that the vertical force changed rapidly by many hundreds of gamma over a few hundred feet which meant that the A-2 was continually off-scale one way or the other and the results were based on the position of the auxiliary magnet only. Therefore, for the most part, the survey was done with the D-IM and the A-2 was used to measure diurnal changes in the magnetic field at the base camp. It is interesting to note that diurnal changes of 200 gamma were experienced during the survey. With the D-IM, corrections for diurnal variation are not really significant since the overall accuracy is not as good as the sensitivity indicates. It is felt that the error in any one reading could be as high as 200 gamma, but this is still perfectly adequate for detecting anomalies of many thousands of gammas

and satisfies the purpose of the survey.

Number of Stations

288

Line cutting, Chaining, Picketing

Chaining and picketing - 30,000 ft. or 5.68 miles.

Line cutting - 16, 400 ft. or 3.11 miles

(claim lines had been cut previously)

Bush Conditions and the Weather

The survey was carried out about the first of April in order to take advantage of the ice on Summit Lake which was still completely frozen over and which extends over the south-west part of the south half of lot 15. At the start of the survey there was a base of one to three feet of sugar snow in the bush over which a crust had formed from recent rains and mild weather followed by a cold spell, and a more recent snow storm had left three to four inches of powder snow on top of the crust. Travel was very difficult since the crust was not strong enough to support a man's weight and the sugar snow was both wet and deep. The weather during the survey was very favourable and mild. As a result, the fresh snow and crust rapidly disappeared but travel was still extremely difficult in the wet sugar snow. A serious complication arose in that the water from the melting snow collected in the low swamp areas and swail holes which would

otherwise have been considered frozen. Several accidental soakings of crew members soon indicated that travel through such areas was not possible (as planned) and survey lines were altered accordingly.

Survey Program

The original planning was to do four lines across each claim in the longest direction (Northwest-Southeast) with a 400 foot line spacing and a 100 foot station interval. Two of the lines were to be the claim lines themselves so that the claim lines for the north half of lot 14 served a dual purpose for the adjacent claims. In addition, the lot and half-lot claim lines were to be surveyed as much as possible. About 60 stations per claim were planned for a total of 240. It was estimated that only 4 or 5 stations per hour could be accomplished allowing for travel time, base checks, repeats, etc. Therefore, it was estimated that a four man crew would require 2 days per claim or 8 days to complete the survey. This would constitute about the maximum geophysical work that could be credited for assessment work.

Although the survey plan as outlined above was followed as a general pattern, the exact details had to be changed in the field as the survey progressed. In nearly every case the lines had to be turned from their prescribed position to avoid

travel along steep bluffs and ridges (extremely dangerous with the snow and almost impossible to set up the magnetometer) and through water-filled swamps and heavy slash areas. Some lines were started properly and then turned slightly to stay on favourable terrain. Other lines were started and abandoned and duplicate lines were run slightly to one side and angled to have one end of the line at the prescribed position. As a result, most of the lines formed a pattern at a small angle to the claim lines. On some lines this pattern was carried out to give the best coverage. In one instance a line was sighted to follow a bulldozed road through the north half of lot 13, which happened to maintain the same pattern of survey lines.

Although one line on the north half of lot 13 was not done and the line spacing could not be maintained exactly at 400 feet in all cases, it is evident from the enclosed survey map that a reasonable and adequate coverage of all claims was achieved to satisfy the purpose of the survey. A total of 288 stations was established which is in excess of the planned number. In spite of the slow travel conditions in the bush, the survey was accomplished in eight days as planned. This necessitated extremely hard work by the crew members, however, and a long working day. A work day was started at 7 o'clock in the morning and terminated at 5:30 in the evening (dusk) with a half hour lunch period. This procedure per-

mitted a 10 hour day on the survey.

Absolute Magnetic Reference

The reference point of the survey is at the Main Base situated at a camp on Summit Lake at the southwest corner of the south half of lot 15. The magnetic intensity at this point was taken as zero gamma.

This reference point was evaluated relative to the Dominion Observatory Magnetic Station at Ottawa with the A-2 magnetometer. The vertical force at Ottawa was taken to be 56,200 gamma. The difference in magnetic reading on the A-2 from Ottawa to the Main Base was plus 2,600 gamma. Therefore, the absolute vertical force at the Main Base is 58,800 gamma. Since a diurnal change of plus 200 gamma was recorded at the Main Base during the survey, the absolute vertical force should more properly be stated as being between 58,800 and 59,000 gamma.

It should be pointed out that this vertical force value is at a point remote from the known anomaly and it is still higher than one would expect. The normal vertical force for this area should be slightly less than at Ottawa. For example, at Madoc the vertical force is 56,000 gamma which is about the value one would expect in the present survey area. But the vertical force at the Main Base is 59,000 gamma so that the magnetic intensity is 2,000 or 3,000 gamma higher than normal which is an unusual feature.

General Geology

The area has been mapped (ODM map No. 1956-4) as biotite-hornblende schist. The rock varies from gneissic to schistose character and amphibolite phases and minor granitic intrusions are common. The schist is up-ended with almost vertical dip (85° southeast) and has a north-east-southwest strike. In crossing the formation the different phases are encountered as relatively narrow bands. The rock is exposed in a series of hills and long ridges running parallel to the strike.

Magnetic Anomaly Map and Profiles

The results of the magnetic survey are shown in the anomaly map and profiles included with this report. The anomaly map shows the survey lines, stations, magnetic values relative to the Main Base, the Main Base itself, and topographic features such as lakes and bush roads. A 15,000 gamma contour line around the known magnetite deposit on claim No. E. O. 25784, south half of lot 14, has been included for reference. The station values are in general very disappointing in that not only are no large anomalies found on the northern three claims, but also the values are so irregular, both positive and negative of no extreme amount, that it is impossible to draw any sensible contours and form a pattern. However, four areas or belts of high positive anomaly are discovered as shown on the map.

Since these are the only points of interest, profiles across the anomalies along the survey line are presented.

Interpretation

The lack of a contour pattern on the anomaly map can be explained as the result of the combination of many reasons. The survey lines essentially cross the up-ended schist formation so that the stations are on different phases of rock, which have different magnetic susceptibilities. The stations are in valleys, on sides of slopes, on rock, on overburden, on tops of hills etc. which will have varying effects if magnetic material is present. The instrument height varied depending on the depth of snow. The line spacing is large and the readings are not sufficiently accurate to permit contouring where the magnetic field changes so rapidly.

The significant feature of the anomaly map is that no large anomaly is found in the northern three claims, but a very large anomaly and two smaller ones are found on the south half of lot 15. One other minor anomaly is found just to the east of the north half of lot 15. None of these anomalies has apparently any relation to the known magnetite zone on the south half of lot 14. The anomaly on the northeast side of the south half of lot 15 indicates a belt of magnetic material over 400 feet long and about 50 to 100 feet wide. The vertical intensity over this zone is greater

(by direct comparison) than that over the known magnetite deposit on the south half of lot 14. The maximum intensity is estimated at over 70,000 gamma although the limit of the magnetometer was 30,000 gamma. The minor zone at the northwest corner of Summit Lake is possibly a continuation of this main zone. No outcrops of magnetic material were found in the area of these anomalies, therefore, it is concluded that the material must be at depth. This means there must be more material to produce this anomaly than if it surfaced. The pattern indicates a dike-like formation of magnetic material about 50 to 100 feet wide extending for perhaps 1500 feet in a North-South direction but not necessarily continuous. This is substantiated by the magnetic profiles which also indicate that the dike-like formation is dipping steeply to the southeast. This will, of course, depend on the direction of any residual magnetic poles in the formation.

The other small positive anomalies are likely caused by formations with a high susceptibility and are not considered further.

Conclusions and Recommendations

This magnetic survey has fulfilled its purpose in examining the four claims for intense magnetic anomalies. It can be concluded that no such anomalies exist on the northern three claims. An extremely intense anomaly and its possible continuation have been located on the south half of lot 15. Since the magnetic intensity of this anomaly is greater than

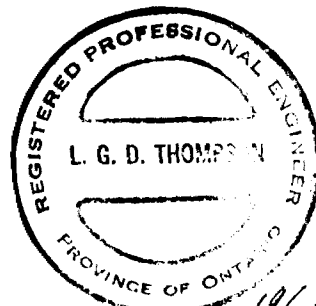
that over a known magnetite deposit on the south half of lot 14, and since no magnetic material was found on the surface, it is likely that the new anomaly indicates a mineral zone as big or bigger than the first one.

A more detailed magnetic survey should be accomplished over the anomalous zone to determine its limits and full potentiality. Some stripping and drilling will have to be done to expose or determine the magnetic material and its extent.



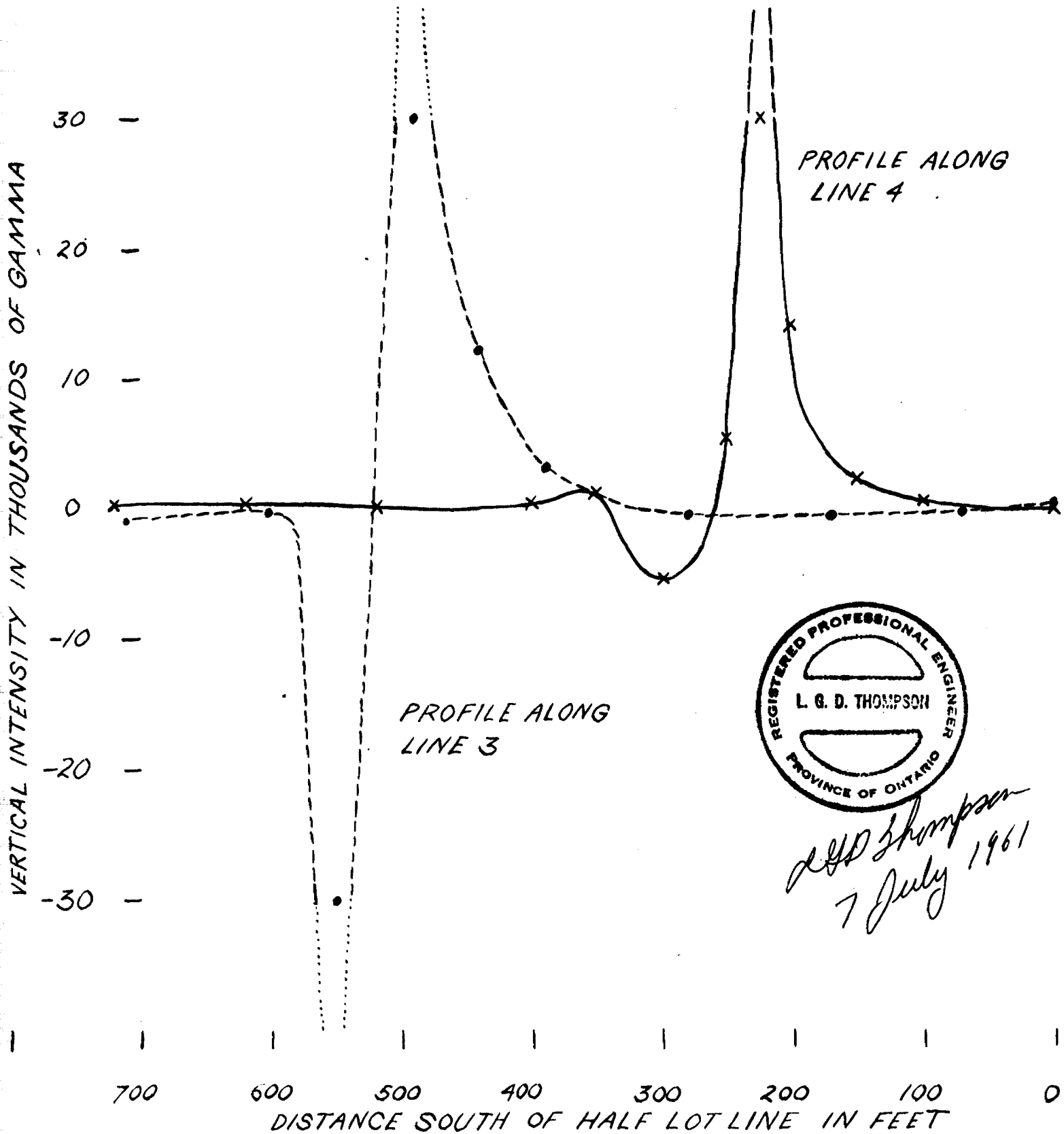
Lloyd G. D. Thompson

B.A.Sc., M.Sc., Ph.D., P.Eng.



7 July 1961

PROFILES ACROSS ZONE A

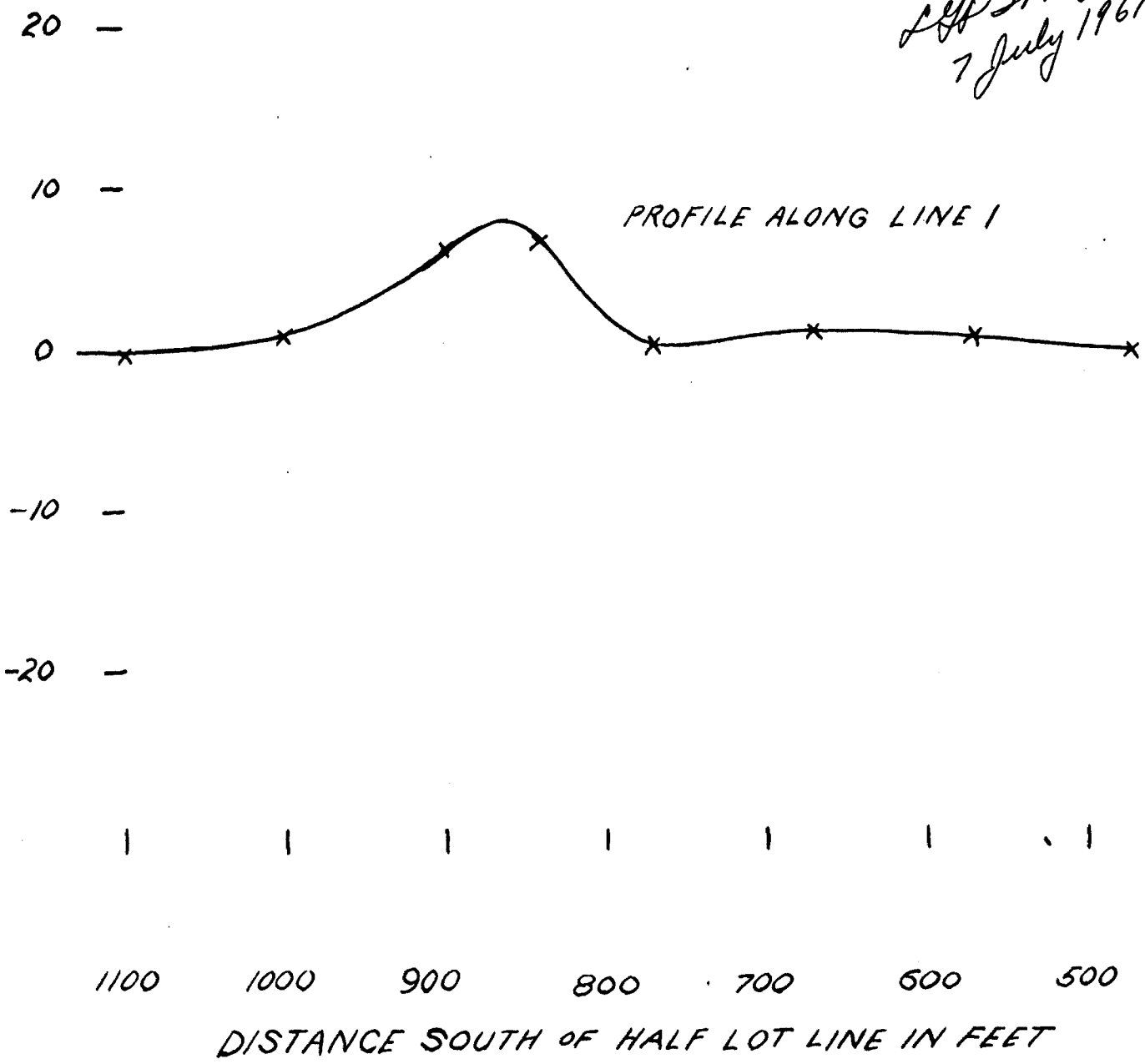


PROFILE ACROSS ZONE B



L. G. D. Thompson
7 July 1961

VERTICAL INTENSITY IN THOUSANDS OF GAMMA



MAGNETIC SURVEY

NORTH HALF LOTS 13, 14, 15
 SOUTH HALF LOT 15
 CONCESSION 3
 SOUTH CANONTO TWP.

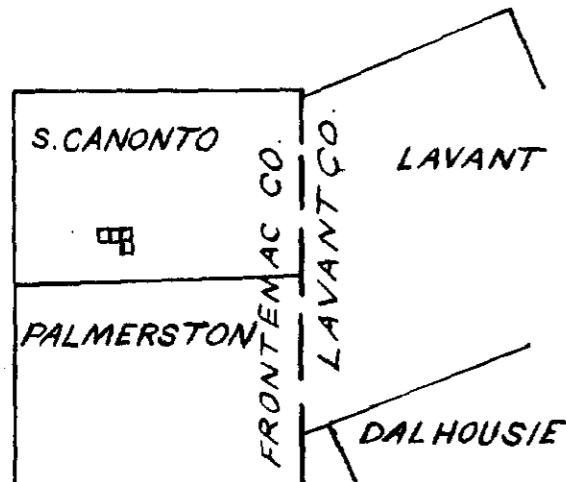
CLAIM OWNER:
 LLOYD G. D. THOMPSON
 A.33703

STATION VALUES ARE
 VERTICAL INTENSITY IN γ
 RELATIVE TO THE
 MAIN BASE



L. G. D. Thompson
 7 July 1961

LOCATION OF
 SURVEY AREA



SCALE: 1" = 6 MI.

