



31F02SE9572 63.973 SOUTH CANONTO

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63 973

Report of a Gravity Survey

Property Location and Access

The ~~survey~~ survey extended onto four claims consisting of the North and South halves of lots 13 and 14, Concession 3, South Canonto Township, County of Frontenac, Ontario, Canada.

The property is reached by taking the 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. The southeast corner of the south half of lot 14 extends into Summit Lake. An old corduroy road runs in a valley northwesterly through the claims from the northwest corner of the lake. The mineral zone on the property crosses this corduroy road about a quarter mile northwest of the lake.

Claim Owner

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

Miner's Licence No. A 33703

Claim Numbers

North half lot 13, concession 3 - E.O. 26002
South half lot 13, concession 3 - E.O. 25783
North half lot 14, concession 3 - E.O. 26003
South half lot 14, concession 3 - E.O. 25784

Purpose of Survey

A previous magnetic survey outlined the main part of a zone of highly magnetized magnetite in a host rock of hornblende schist. The deposit appeared to be a dike-like formation about 100 feet wide and 1000 feet long with almost vertical dip and a northeast - southwest strike. In the most interesting area the magnetic intensity was extremely high (over 70,000 gammas) and the magnetite either outcropped or was very close to the surface. This made it impossible to make an accurate or reliable depth estimate. Hence, a gravity survey was made to see if any anomaly could be obtained over the zone which would give an estimate of the amount of magnetite present. In particular two traverses were wanted, - one across the widest part of the zone at the 400 S line where the deposit outcrops, and one across the narrow part at the 00 S line where the zone is covered with overburden at the bottom of a valley.

Consultant Geophysicist and Professional Mining Engineer

L. G. D. Thompson, B.A.Sc., M.S.c., Ph.D., P. Eng.

Dates Work Done

May 10, 11, 12, 1958

Instruments

1. Worden Gravimeter
scale constant 0.39793 milligals per division.
2. Zeiss Ni - 2 level

Number of Stations

87

Line Cutting, Chaining, Picketing

1050 feet or 0.2 miles

Gravity Anomaly Maps

Two anomaly maps have been prepared and accompany this report. One is a Bouguer anomaly map and the other is a Residual anomaly map. Both maps show the 50 foot station interval and profiles along the 00 S line and 400 S line. Lines were extended from the south half of lot 14 across the claim lines into the south half of lot 13, the north half of lot 13, and the north half of lot 14 so that all 4 claims were included in the survey.

In spite of the relatively large scale constant of the gravimeter, the gravity values are believed accurate to better than 0.1 milligals and hence a contour interval of 0.1 milligals has been used.

The Bouguer anomaly map is very similar to the magnetic map obtained previously and shows a ridge of high gravity over

However, if we assume the anomaly is caused by a buried horizontal cylinder some estimates can be made. The half-width of the profile at 400 S indicates the centre of mass of such a cylinder to be slightly less than 100 feet below the surface. It is known that the deposit is about 100 feet wide at this point and has a density of about 4.3 gms. per cc. Assuming a horizontal cylinder 100 feet in diameter just reaching the surface and a density contrast of 1.0, the peak anomaly is 0.64 milligals which is nearly the same as the profile. If the cylinder is buried under 20 feet of overburden the peak anomaly would be 0.46 milligals. In the vicinity of the 00 S line and the main base, the actual anomaly drops to 0.34 milligals which is believed to be the result of overburden in the valley. If we assume a horizontal cylinder only 50 feet in diameter which is at the surface, the maximum anomaly would be only 0.16 milligals. It is therefore evident that more mass is causing the anomaly. Considering 20 feet of overburden, the cylinder must be over 60 feet in diameter to produce a 0.3 milligal anomaly, which is more likely the case.

A vertical dike would have slightly greater peak anomalies in each case but the computations illustrate that a deposit about 100 feet wide and at least 100 feet in depth is needed to produce the measured anomalies. The depth of overburden in the vicinity of the main base may be expected to be 20 feet or more.

Considering the overall residual gravity pattern, a computation was made for an area 200 X 800 feet to estimate the

mass in tons of the mineral deposit causing the anomaly regardless of distribution within the area (after Hammer, 1945). Assuming a density contrast of 1.0 a value of 900,000 tons was obtained. Since the 200 foot width does not reach the limits of the anomaly caused by the deposit, a correction for a "tailing - off" error of about 20% may be added to this figure. This calculation agrees closely with a dike 100 X 100 X 800 feet which give a mass of about 1,000,000 tons.

A density contrast of 1.0 has been used for the computations (magnetite 9.3 and surrounding rock 3.3) since the regional gravity trend indicates the presence of a more dense rock near the zone. This suggests the possibility of a large quantity of material in the vicinity of the deposit with a low concentration of magnetite.

The results of the gravity survey support the findings of the previous magnetic survey. The deposit has been traced for at least 1000 feet and is approximately 100 feet wide. The gravity results indicate that the depth is likely to be at least 100 feet which gives a mass estimate of 1,270,000 tons.



L. G. D. Thompson
Nov. 28, 1958

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

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Report of a Magnetometer Survey

Property Location and Access

The magnetometer survey extended onto four claims consisting of the North and South halves of lots 13 and 14, Concession 3, South Canonto Township, County of Frontenac, Ontario, Canada.

The property is reached by taking the 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. The southeast corner of the south half of lot 14 extends into Summit Lake. An old corduroy road runs in a valley northwesterly through the claims from the northwest corner of the lake. The mineral zone on the property crosses this corduroy road about a quarter mile northwest of the lake.

Claim Owner

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

Miner's Licence No. A 33703

Claim Numbers

North half lot 13, concession 3 - E.O. 26002
South half lot 13, concession 3 - E.O. 25783
North half lot 14, concession 3 - E.O. 26003
South half lot 14, concession 3 - E.O. 25784

Purpose of Survey

Preliminary investigation of the area showed severe compass disturbance and outcrops of massive looking magnetite. This survey was intended to outline the magnetic zone to see if it was of sufficient extent to be of economic importance. From the magnetic anomaly it was hoped to determine the structure and dimensions of the magnetic zone and possible amount of mineral involved.

Consultant Geophysicist and Professional Mining Engineer

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

Dates Work Done

December 13,14,15, 1957

April 12,13; May 17,18,19; 1958

Instruments

1. Sharpe D-1M magnetometer, maximum sensitivity about 60 gammas per division
2. Cooke transit

Number of Stations

212

Line Cutting, Chaining, Picketing

11,100 feet or 2.1 miles

General Geology

A deposit of magnetite occurs at the north end of the claim containing the south half of lot 14 in a rock mass mapped locally (O D M map no. 1956-4) as biotite - hornblende schist. The rock varies from a gneissic character near the northwest shore of Summit Lake to a schistose character to the northwest. Amphibolite phases are common as are minor granitic intrusions. The schist is up-ended with almost vertical dip (85° southeast) and has a northeast - southwest strike. The magnetite appears to have formed as an alteration product of a hornblende phase and the mineralization may be associated with a mass of fine grained diorite which intrudes the area immediately to the west to form exposed hills of over 1100 feet in elevation.

The magnetite outcrops in two areas on either slope of a shallow valley filled with overburden. Its appearance indicates that it replaced a rock of schistose character. The magnetite formation has a nearly vertical dip like the surrounding rock and also has a northeast - southwest strike. The two outcrop areas are in the line of strike about 600 feet apart and the zone is undoubtedly continuous between and likely extends beyond them. Trenching at the northeast outcrop area has shown a sharp contact with the hornblende gneiss. The magnetite appears massive but, while some phases are definitely massive, closer examination shows that most of the zone is made up of disseminated magnetite in such high concentration that the deposit is almost entirely magnetite.

Two grab samples were assayed, - one representing material with a high magnetite concentration and the other low magnetite concentration. The former sample assayed 60% Fe and the latter 52% Fe. Density measurements gave a value of 4.3 gms per cc.

The magnetite is itself very strongly magnetized and some good samples of "lodestone" have been taken which exhibit both north and south poles.

Magnetic Anomaly Map

The magnetic anomaly map of the mineralized area is included with this report.

Lines were out at 50 foot intervals and magnetic readings were taken on a 50 foot grid system as shown by the map. The lines were extended from the south half of lot 14 to the south half of lot 13, the north half of lot 13, and the north half of lot 14 to include all four claims in the survey.

Extremely high intensities were encountered both positive and negative which drove the magnetometer beyond its calibration limits in spite of the fact it had a calibrated range of about + 65,000 gammas. The maximum positive anomaly is indefinite but is greater than 70,000 gammas. Profiles indicate it must be at least 80,000 gammas. With such large changes in intensity occurring over very short distances only 15,000 gamma contours have been drawn. These, however, effectively outline the magnetic zone.

Interpretation

The general anomaly pattern indicates a long dike-like formation of highly magnetized magnetite averaging about 100 feet wide, extending for at least 1000 feet, and dipping steeply (85°) to the southeast. The presence of positive and negative anomalies is common in such deposits. The negative anomalies that interrupt the trend of the long positive anomaly are likely to be caused by magnetite in the same formation but with different polarity because of their small areal extent. The general negative anomalies to the southeast indicate a dipping body and are the reflections of the opposite poles at depth. Stripping and examination of outcrops show that the magnetite extends laterally to about the 30,000 gamma contour and the contact is very abrupt, - the transition occurring in about a foot. This indicates that at the northeast end the width of the zone is about 50 feet while in the vicinity of the 300 S line it widens to something over 100 feet. Profiles across the zone at these points indicate slightly more conservative figures. The narrowing of the zone at the 00 S line near the main base is likely the result of overburden in the valley and the magnetite being at depth rather than a decrease in the width of the zone.

The fact that the magnetite zone surfaces at the widest part of the anomaly makes interpretation for the depth of the zone virtually impossible at this location. In the vicinity of the main base, however, where there is some thickness of overburden, it maybe possible to derive an indication as to the depth of the formation.

From the general nature of the valley and the rock slopes there appears to be at least 20 feet of overburden and probably more. It seems unlikely that there could be as little as 10 feet. A profile indicates a peak magnetic anomaly of about 70,000 gamma at this point. Assuming a vertical dike formation 50 feet wide and 20 feet below the surface, it would have to extend to a depth of 300 feet and contain 50% magnetite to produce a peak anomaly of 70,000 gamma. The depth value is not too reliable for such a thin covering of overburden. For example, if the same factors are used for a dike only 100 feet in depth, the peak anomaly is 60,000 gamma. However, if the thickness of overburden is increased, it is obvious that an increase in the % of magnetite and/or the formation depth is required to give the same peak anomaly. If the overburden is only 10 feet thick, then the same anomaly could be produced by a dike formation 50 feet wide, less than 100 feet deep, and with only 30% magnetite. If the 20 feet or more of overburden is genuine, the magnetic anomaly indicates a vertical dike formation of 100 or more feet in depth having containing 50% or more magnetite.

The zone has been traced for about 1000 feet. Assuming an average width of 100 feet, a depth of 100 feet, and a density of 4.3, a figure of 1,200,000 tons is obtained for the amount of mineralized material. This is definitely of economic interest and warrants further investigation.

Recommendations

Further development is required to remove uncertainties in the magnetic interpretation. To prove the width of the zone, stripping should be done in the outcrop areas and where the overburden is shallow. Contact zones should be examined and assays of the wall rock should be made to see if low concentrations of magnetite exist in the rock around the mineral zone.

Channel samples across the exposed zone width should be taken and assayed to get an average grade. Bulk samples could be taken for milling tests.

Diamond drilling should be initiated to test the depth of the zone and get assay values. The first hole could be spotted on the outcrop near 300 S, 00 E and a second could be spotted at 00S, 25 E near the main base to test the thickness of the overburden and get the depth of the zone here. If the depth proves to be about 100 feet or more, further drilling to outline the zone at depth could be continued.



L. G. D. Thompson
Nov. 28/1958

L. G. D. THOMPSON

BA.Sc., M.Sc., Ph.D., P.Eng.

GRAVITY SURVEY

BOUGUER ANOMALY MAP AND PROFILES

NORTH AND SOUTH HALF LOTS 13 AND 14, CONC. III, SOUTH CANONTO

CLAIM OWNER: L.G.D. THOMPSON, A33703

INSTRUMENTS: WORDEN GRAVITY METER
ZEISS NI.2 LEVEL

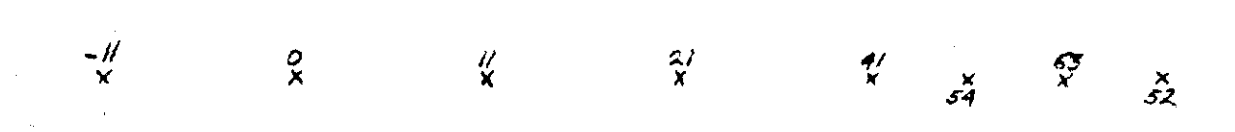
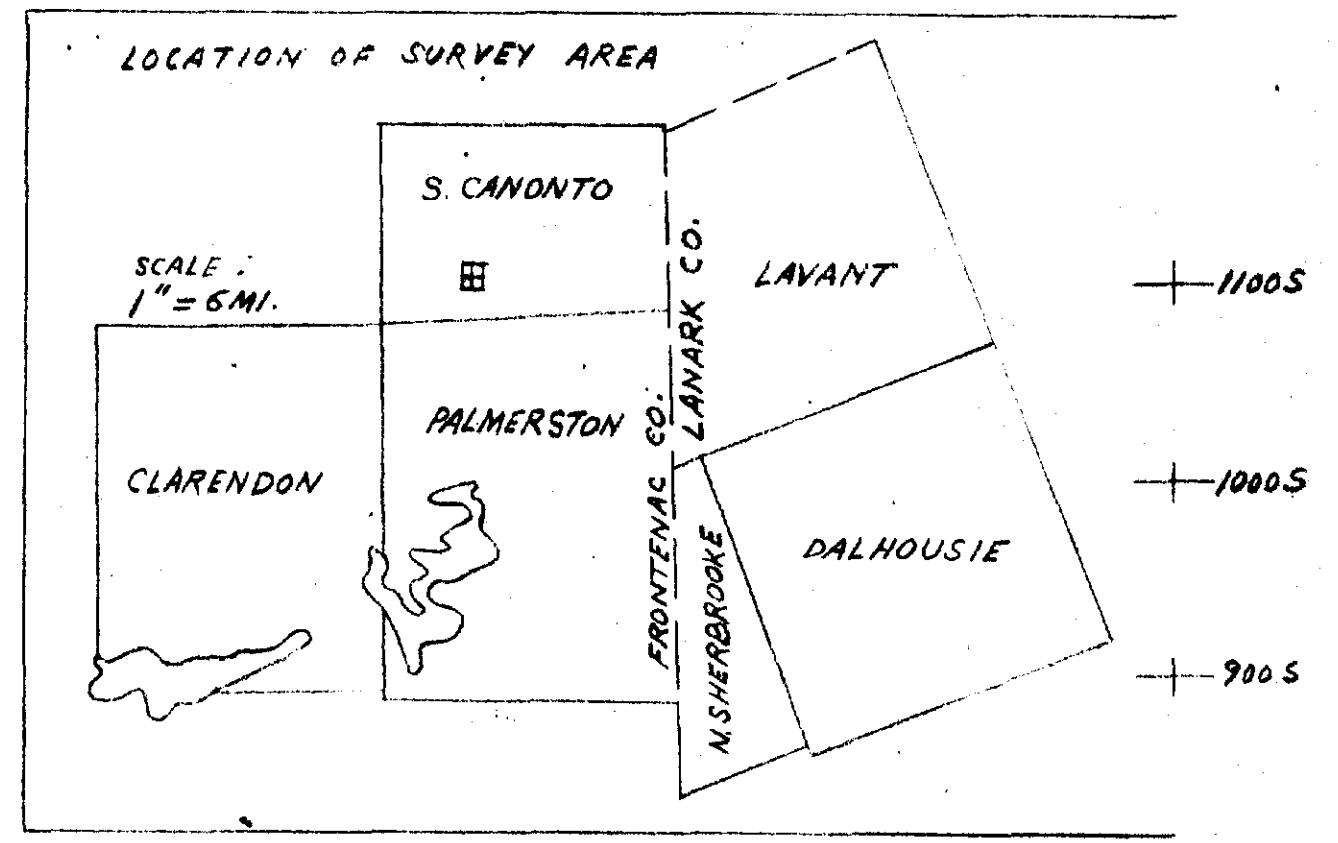
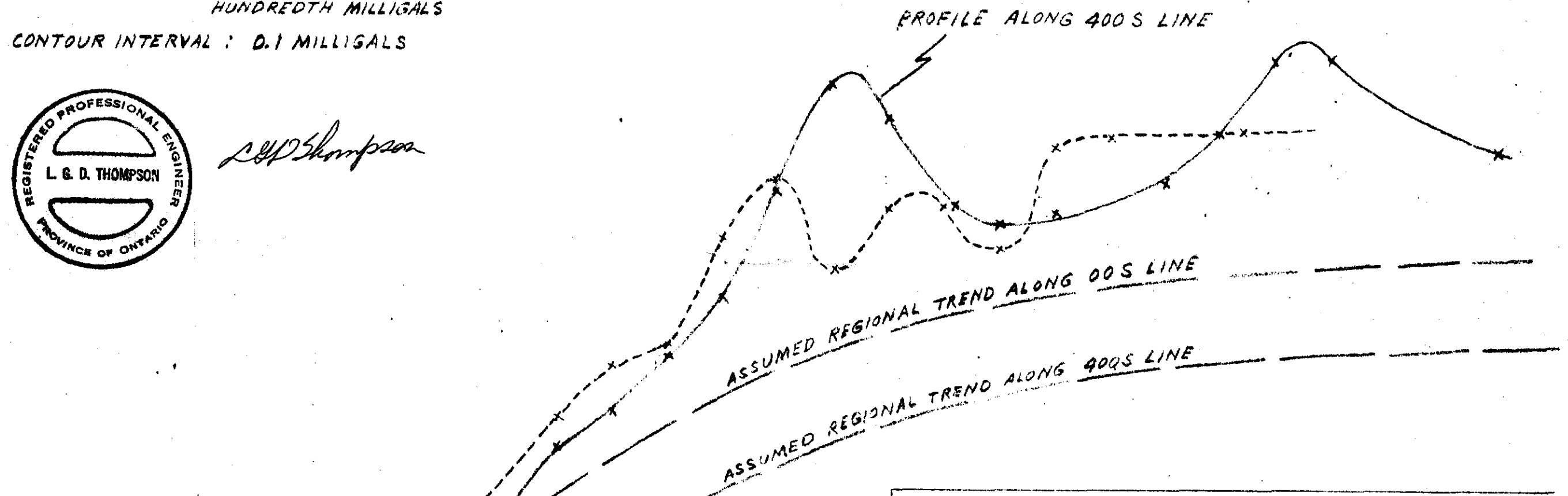
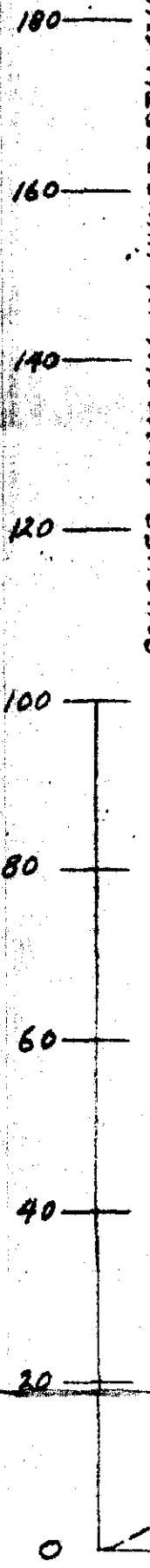
STATION VALUES: BOUGUER ANOMALY IN
HUNDREDTH MILLIGALS

CONTOUR INTERVAL: 0.1 MILLIGALS



L.G.D. Thompson

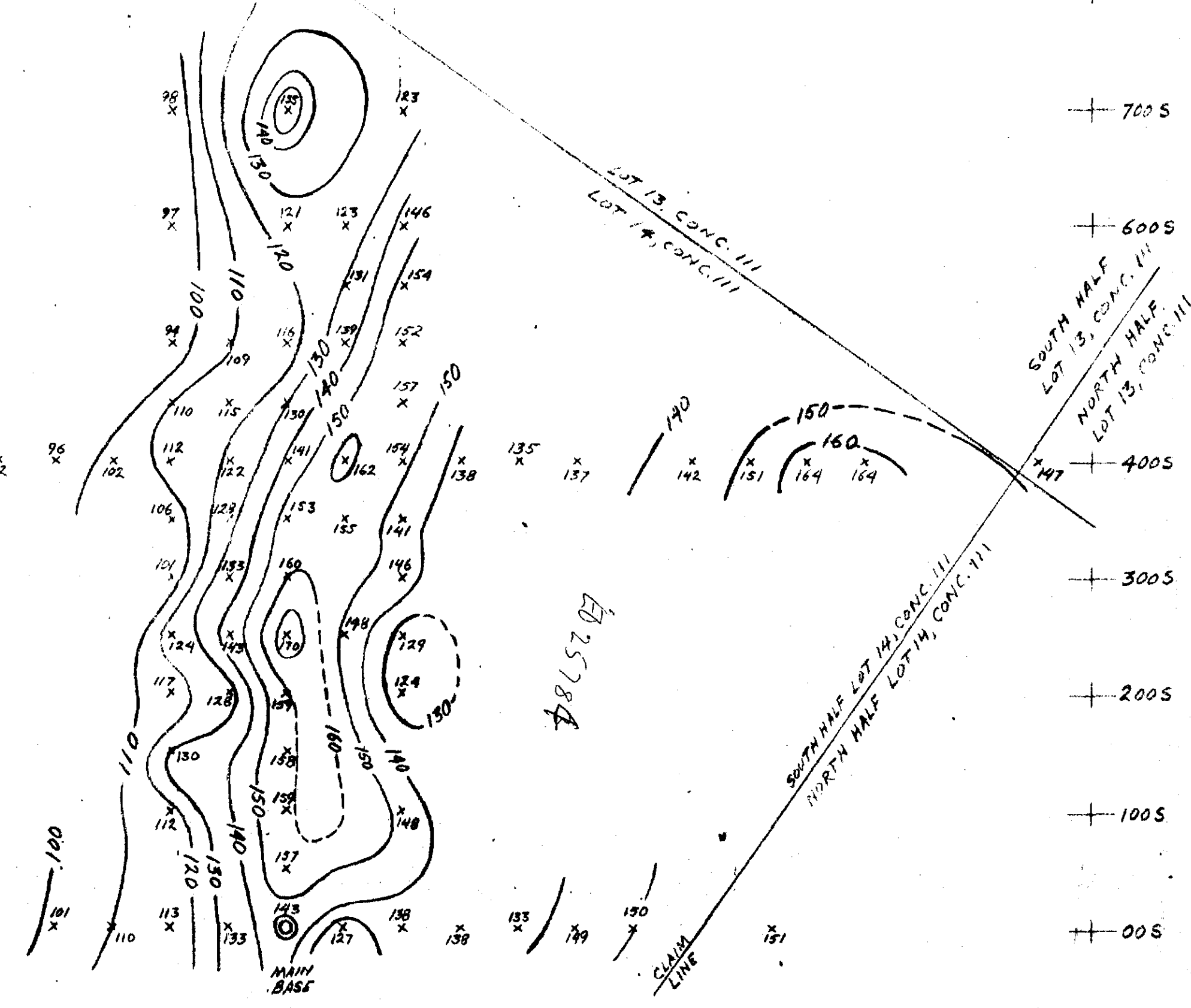
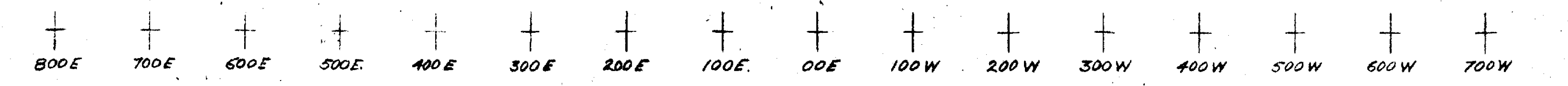
BOUGUER ANOMALY IN HUNDREDTH MILLIGALS



SCALE: 1" = 100'



OBSERVED GRAVITY DATUM STATION	28	39	67	79	83
	X	X	X	X	X



4825784

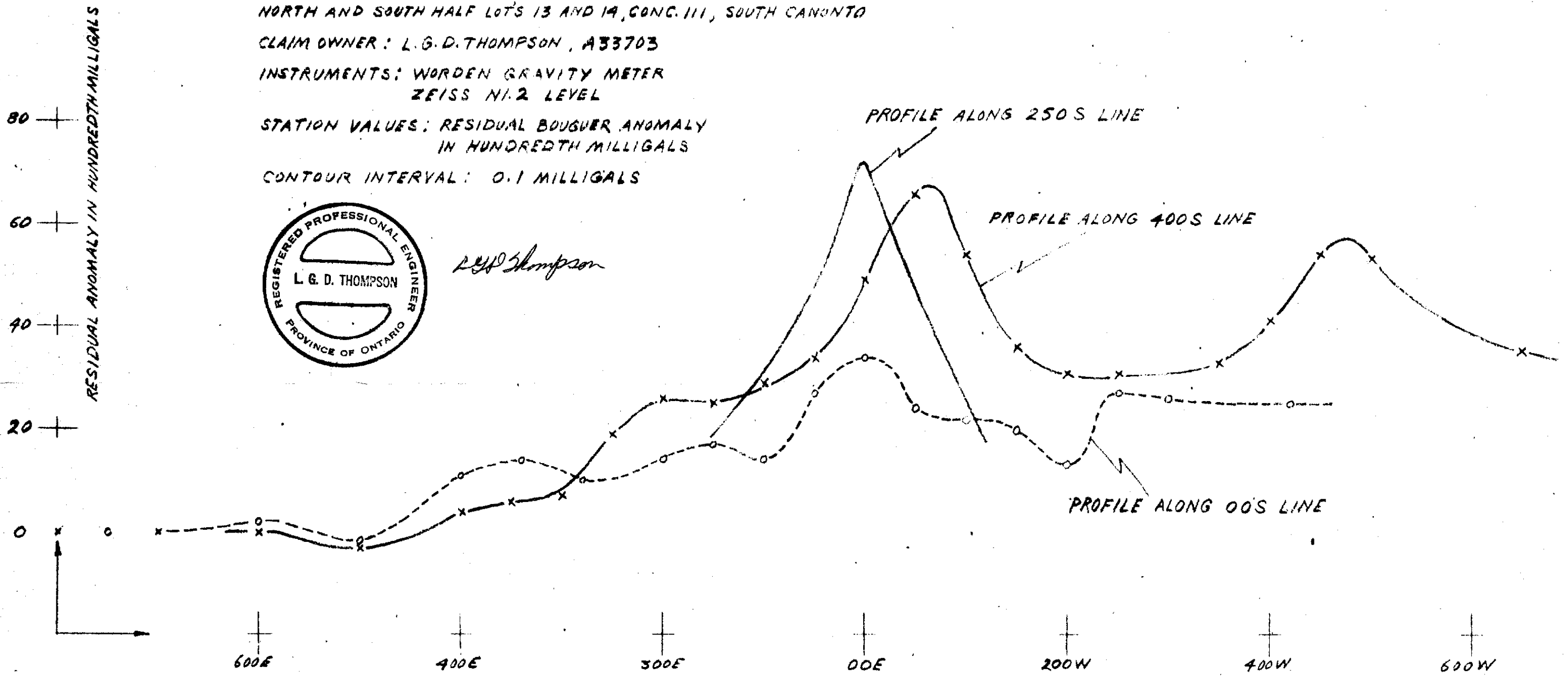
GRAVITY SURVEY

RESIDUAL ANOMALY MAP AND PROFILES

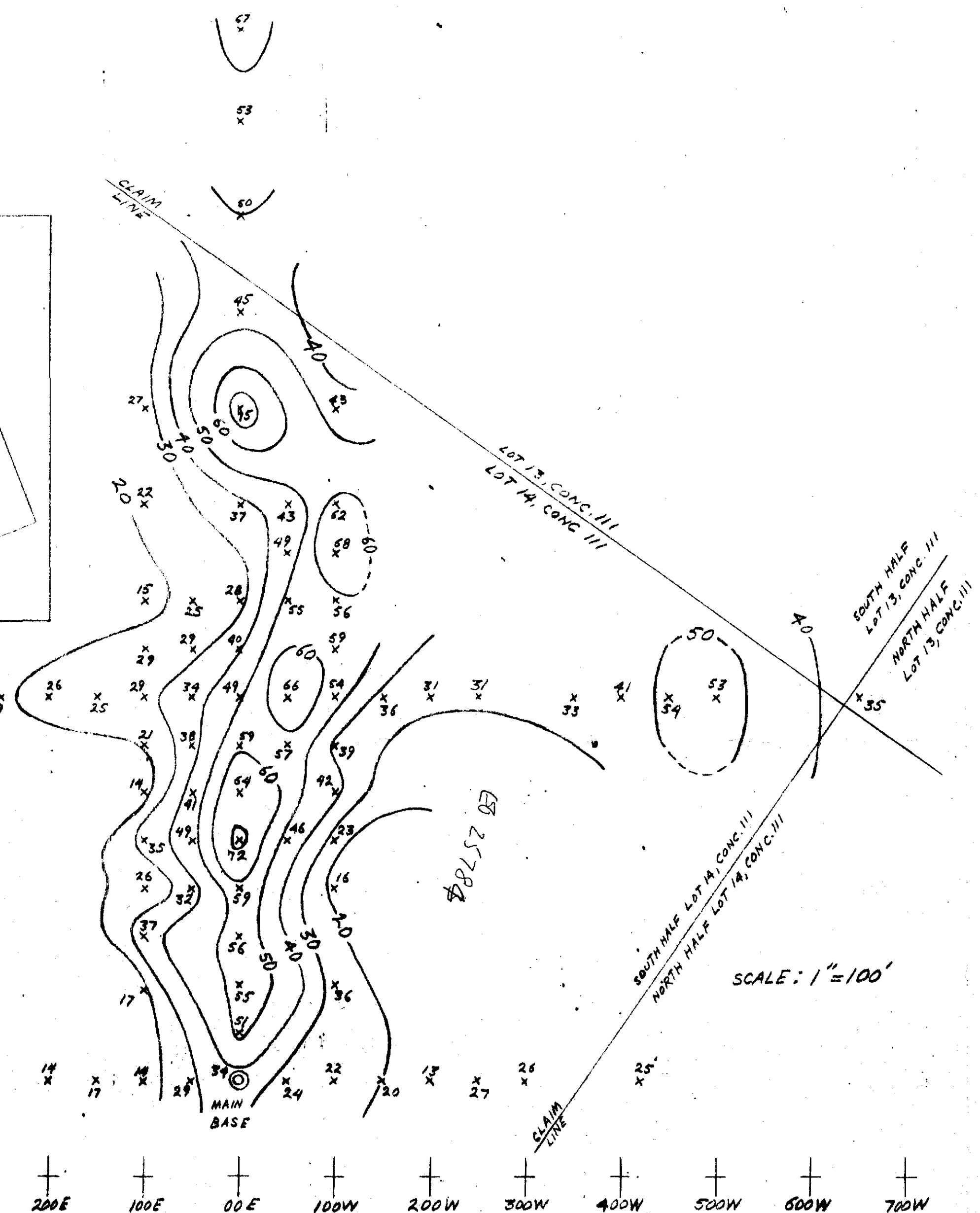
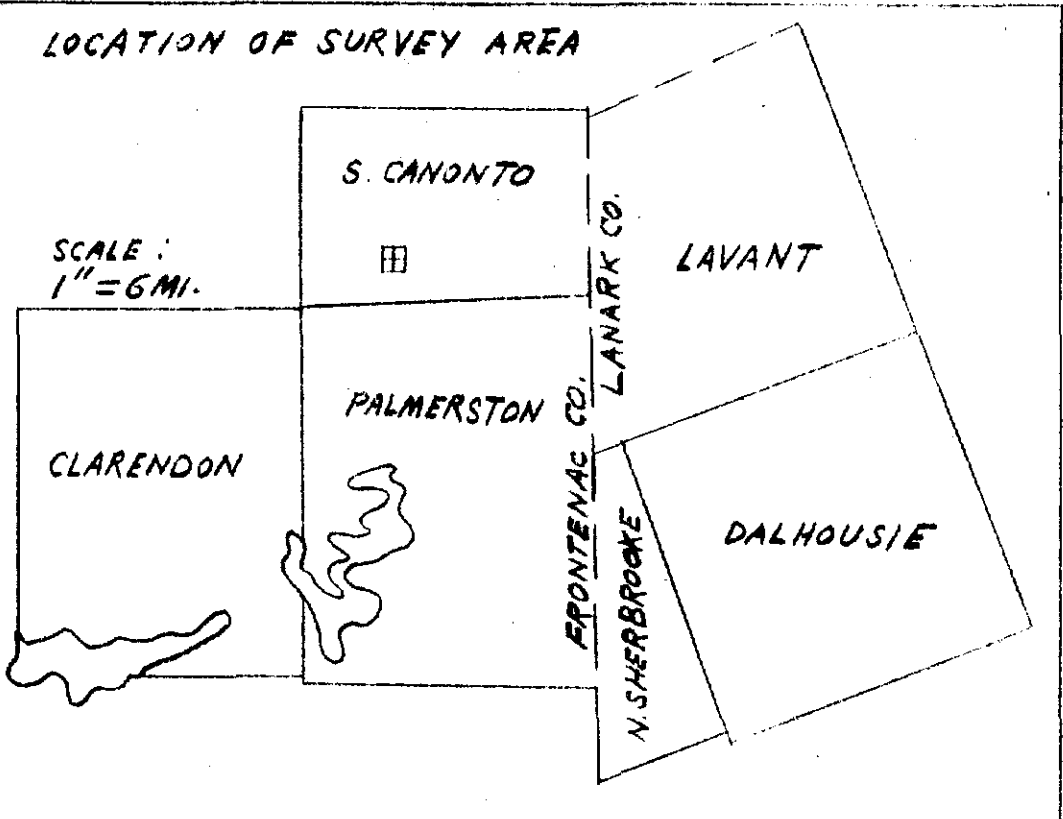
NORTH AND SOUTH HALF LOTS 13 AND 14, CONC. III, SOUTH CANONTO
 CLAIM OWNER: L. G. D. THOMPSON, A33703
 INSTRUMENTS: WORDEN GRAVITY METER
 ZEISS N1.2 LEVEL
 STATION VALUES: RESIDUAL BOUGUER ANOMALY
 IN HUNDRETH MILLIGALS
 CONTOUR INTERVAL: 0.1 MILLIGALS



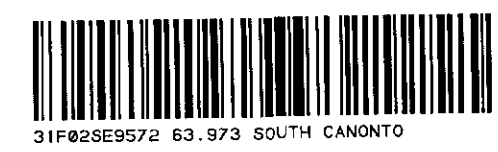
L. G. D. Thompson



1100S
1000S
900S
800S
700S
600S
500S
400S
300S
200S
100S
00S



SCALE: 1" = 100'



600E 700E 800E 900E 1000E 1100E 1200E 1300E 1400E 1500E 1600E 1700E 1800E 1900E 2000E 2100E 2200E 2300E 2400E 2500E 2600E 2700E 2800E 2900E 3000E 3100E 3200E 3300E 3400E 3500E 3600E 3700E 3800E 3900E 4000E 4100E 4200E 4300E 4400E 4500E 4600E 4700E 4800E 4900E 5000E 5100E 5200E 5300E 5400E 5500E 5600E 5700E 5800E 5900E 6000E 6100E 6200E 6300E 6400E 6500E 6600E 6700E 6800E 6900E 7000E 7100E 7200E 7300E 7400E 7500E 7600E 7700E 7800E 7900E 8000E 8100E 8200E 8300E 8400E 8500E 8600E 8700E 8800E 8900E 9000E 9100E 9200E 9300E 9400E 9500E 9600E 9700E 9800E 9900E 10000E