

Report on
The Magnetic Mapping of Mineral Claims
Garnet 1 - 4. Record # 9007-9010
Boulder Creek, Atlin Mining Division

These claims are located in the Atlin Quadrangle 12 miles North-
east of Atlin at 59°N, 133°W.

for

Canadian Johns-Manville Co. Ltd.
Box 1500, Asbestos, Que.

Survey: February 1-2, 1972
Report: May 13, 1972

Department of Mines and Petroleum Resources ASSESSMENT REPORT NO. <u>3732</u> MAP.....

Submitted by:

Leon J. Schoen
Atlin, B.C.

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Statement of Qualifications

I Leon J. Schoen do hereby certify that:

- 1. I am a geologist employed by Canadian Johns-Manville Co. Ltd. Box 1500 , Asbestos, Que. and Box 69, Atlin, B.C.**
- 2. I am a graduate of the University of Montana at Missoula, Montana B.A. Geology, 1969.**
- 3. My status with Canadian Johns-Manville Co. Ltd. is that of a field geologist in Atlin, British Columbia.**

Property and Ownership

Canadian Johns-Manville Co. Ltd. Box 1500, Asbestos, Que. staked and own 4 mineral claims (Garnet 1-4 , Record # 9007-9010) on Boulder Creek. These four claims are located immediately South of a much larger block of claims owned by the Company (i.e. The Hobo, Thor, AT and X Groups).

Location:

The claims are on the Atlin Map sheet (104N) at $59^{\circ}43'N$, $133^{\circ}25' W$. The property is situated 12 miles NE of Atlin (population 175) and $2\frac{1}{2}$ miles north of the west end of Surprise Lake on the west side of Boulder Creek.

Access to the property can be made from Atlin by a good secondary road to Surprise Lake then by 4 wheel drive road up Boulder Creek. Winter access is by snowmobile or snowshoe from the end of Surprise Lake.

Topography

Boulder Creek valley is a wide U-shaped glaciated valley 4 miles long. The mountain ridges in the area attain elevations in excess of 6,000' with a vertical relief of 3000'. The Garnet 1 - 4 claims are located near the base of the west side of the valley.

Climate and Vegetation

Boulder Creek valley is free of snow from July to September. Lower elevations in the valley are usually free of snow for longer periods. Snow fall is approximately four feet and winter temperatures range from $+10^{\circ}F$ to $-60^{\circ}F$. Summer temperatures

average + 50°F and rain showers are frequent in July and August.

For the most part Boulder Creek valley is above treeline. Scattered balsam occur along the lower valley slopes. Most of the vegetation consists of buckbrush and willow. At the higher elevations short alpine grass prevails.

History of the Area

Canadian Johns-Manville Co. Ltd. became interested in the Boulder Creek area during the summer of 1968 after it had found interesting discoveries of Molybdenite on Ruby Creek, immediately to the North and East. The presence of Molybdenite, Lead-Silver and Wolframite in trenches on the west side of Boulder Creek warranted staking the area. Originally the entire lower end of the valley was staked for the Company but all the claims except the Garnet Group were allowed to lapse.

Originally Boulder Creek area was the property of Cominco and later Transcontinental Resources from the 1930's to the 1950's. The creek has been worked by private interests for Gold and Tungsten. Interesting values of Tin have been assayed from the black sands of Boulder Creek. Development work on Boulder Creek was carried out by Transcontinental Resources Ltd. (Black Diamond Tungsten Ltd). Trenches found on the property and old diamond drill cores near drill holes are believed to be the remnants of their development work.

In the summer of 1970, Clive Aspinall of Canadian Johns-Manville Co. Ltd. undertook a geochemical and geological survey of the claims area (1 & 2).

Geology of the claims area (refer 1,3)

The Garnet claim group is almost completely covered by glacial till and talus from 3 to 15 feet deep. Outcrops are very sparse. Bedrock is encountered in only 3 of the trenches dug by Transcontinental Resources Ltd.

Cache Creek Rocks

These Permian argillaceous quartzites, quartzites, recrystallized laminated limestones, laminated breccias and gossans are found in the lower 1/3 of the map area excluding the extreme western edge. The rocks contain accessory disseminated pyrrhotite and pyrite. Occasionally massive pyrrhotite with pyrite is found in till covered gossan zones.

Peridotite

A dark grey to black, hard, porphyritic peridotite of presumed Permian age occurs on the western edge of the map area. Occasional outcrops of this 40% pyroxene rock are found on the upper slopes of the west side of Boulder Creek valley.

Alaskite

Although actual contacts are not exposed, Cretaceous Alaskite is assumed to underlie the northern 2/3 of the map area. Where exposed in place in trench G-3(1) the Alaskite is very coarse, high in quartz, with plagioclase, orthoclase and minor biotite. Within the Alaskite in trench G-6 at baseline and south 2+00 a 12 foot wide vein of massive milky quartz is found which contains wolframite, lead silver and molybdenite. Quartz float found in other trenches suggest that the veins strikes north-south.

Scope of this Report

The survey described in this report was undertaken to gain information on the structure and contacts of the area and to explore relationships between magnetic response and possible economic mineralization in the area.

Field Work Covered in this Report

During February 1 and 2, 1972, 19,000 feet of grid line were chained and staked over the Garnet Group. A baseline 3000 feet long running S 30° W was chained down the claim block center-line with offset lines chained 1000 feet to the east and west every 400 feet. These lines were then surveyed with a Jalander fluxgate magnetometer, readings being taken every 100 feet on all lines. Base stations were reoccupied at regular intervals to allow data correction for diurnal magnetic variations. The data was then reduced and plotted on cross-sections and a magnetic contour map was drawn. The magnetic data presented here are relative rather than absolute field strengths.

Analysis of Data (Refer plates 1-11)

A diurnal variation correction curve was drawn but was found to be too variable and unsystematic to be useable. This variation may have been the result of a magnetic storm, operator error or equipment malfunction. Consideration of the data and operator technique suggest that the three above mentioned possibilities are in fact not responsible for the erratic diurnal curve. None the less, a study of the trends and changes of data as well as the relative ease with which contours could be drawn to fit the data suggest that the lack of a diurnal correction curve is not a serious threat to the validity of the results.

The northern 2/3 of the area displays an undulating low relief magnetic surface with definite north-south trends. Two relative highs of note occur along line 8+00 south, one at 6+00 west with a relief of more than 200 gammas and the other centered at 3+40 E with a relief of more than 400 gammas. These both trend north-south and may be related to the north-south quartz vein already discussed and similar or related structure.

The lower third of the map area exhibits a marked change. The magnetic relief becomes much greater and the trend of magnetic linations shifts from north-south to ENE-WSW. Three significant highs occur within the area, one at S 20+00, W6+00 with relief of more than 1000 gammas. The other at S 24+00, EWO+00 with a maximum relief of 2400 gammas and a third at 19+00; E1+00 with a relief of 600 gammas.

These anomalies all trend about E-W and their relative sharpness suggests them to be the result of near surface probable tabular bodies. The massive and disseminated pyrrhotite mentioned in Aspinalls report (1) in the underlying Cache Creek rocks could be responsible for the anomalies.

Using Peter's half slope depth determination method (5,p313) the profile of calculated vertical field strength of anomaly #3 (Plate 1 line A-A') gives a depth to the top of an assumed tabular vein of about 107 feet. Considering the form of the anomaly this is a rough approximation only and is complicated by a reversed polarity of this and the other anomalies. Anomalies #1 and #2 being tighter than #3 would indicate an even shallower depth to the top of a magnetic source.

Cross sections drawn normal to the strike of these three anomalies show relative negative readings on the south side of the high. Normally in the northern hemisphere at this latitude (approx. 60°N) the total field over a vertical dike would show relative negative readings on its north side; The pattern of these anomalies suggests that the assumed dike-like magnetic sources have been rotated somewhat towards the north from their original position. One might assume that a bodies emplaced with a shallow northerly dip has been rotated to a near vertical position. This might be explained by forceful intrusion of the Surprise Lake Alaskite Batholith. As the alaskite was emplaced it would tend to fold back or overturn in a direction away from its center the surrounding rock. This of course assumes the magnetic sources to have been emplaced previous to the intrusion. A second possibility would have the magnetic material emplaced in the Cache Creek rocks, with a slight-southerly dip.

These interpretations of the magnetic data are not of course the only possible solutions. Numerous models could be made to fit the data. The model given is felt to best agree with the geology and structures of the area. Further magnetic surveying and drilling would be required to validate this model.

On the basis of changes observed on the magnetic contour map the assumed alaskite-Cache Creek contact has been moved northward (plate 1) from its position on Aspinal's map (1).

The magnetic data do not extend sufficiently into the peridotite area to allow any discussion of its magnetic response.

Recommendations

It is recommended that the magnetometer survey be extended to

the west and southwest. Lines S2+00, S 24+00 and S28+00 should be extended and surveyed magnetically at least 1000' to the west. Lines S 32+00 and S34+00 should be added and surveyed from 0+00 to W20+00. Fill in stations at close spacing should be taken around anomalies 1 and 2 to check their trend and nature. Further geologic mapping in the above mentioned areas of extension should be undertaken. If the extended survey and geologic mapping are favorable one or two shallow drill holes might be suggested to determine the anomaly source and its relation to possibly economic mineralization.

Staking of more claims around the Garnet group would not be necessary pending the outcome of the extension work.

Bibliography

1. Aspinall, N.C.: Report on Geological Mapping of Mineral Claims Garnet 1-4, Record #9007 - 9010, Boulder Creek, Atlin, Mining Division, B.C., 1970
2. Conn, H.K.: Report on Geochemical Survey of Mineral Claims Garnet 1 to 4, Record Numbers 9007-9010, Boulder Creek, Atlin Mining Division, B.C. 1970.
3. Aitken, J.D.: Atlin Map Area, British Columbia (104N) Memoir 307, Geological Survey of Canada, 1959.
4. Gutrath, G.C.: Coin Canyon Mines Ltd. Geological and Geochemical Report, British Columbia, Sub Claim Group, Atlin Mining Division, 1971
5. Dobrin : Geophysical Prospecting, McGraw-Hill, 1960.

APPENDIX I
Statement of Costs

Statement of Costs

Grid System

19,000 feet of line surveying and chaining
and picketting @ \$65 per mile (contracted
to GJR. Craft, Atlin, B.C.) \$ 234.00

Geophysical Work

2 days field work by geologist-
geophysicist L. Schoen @ \$31.81 per da. \$ 63.63

Interpretation

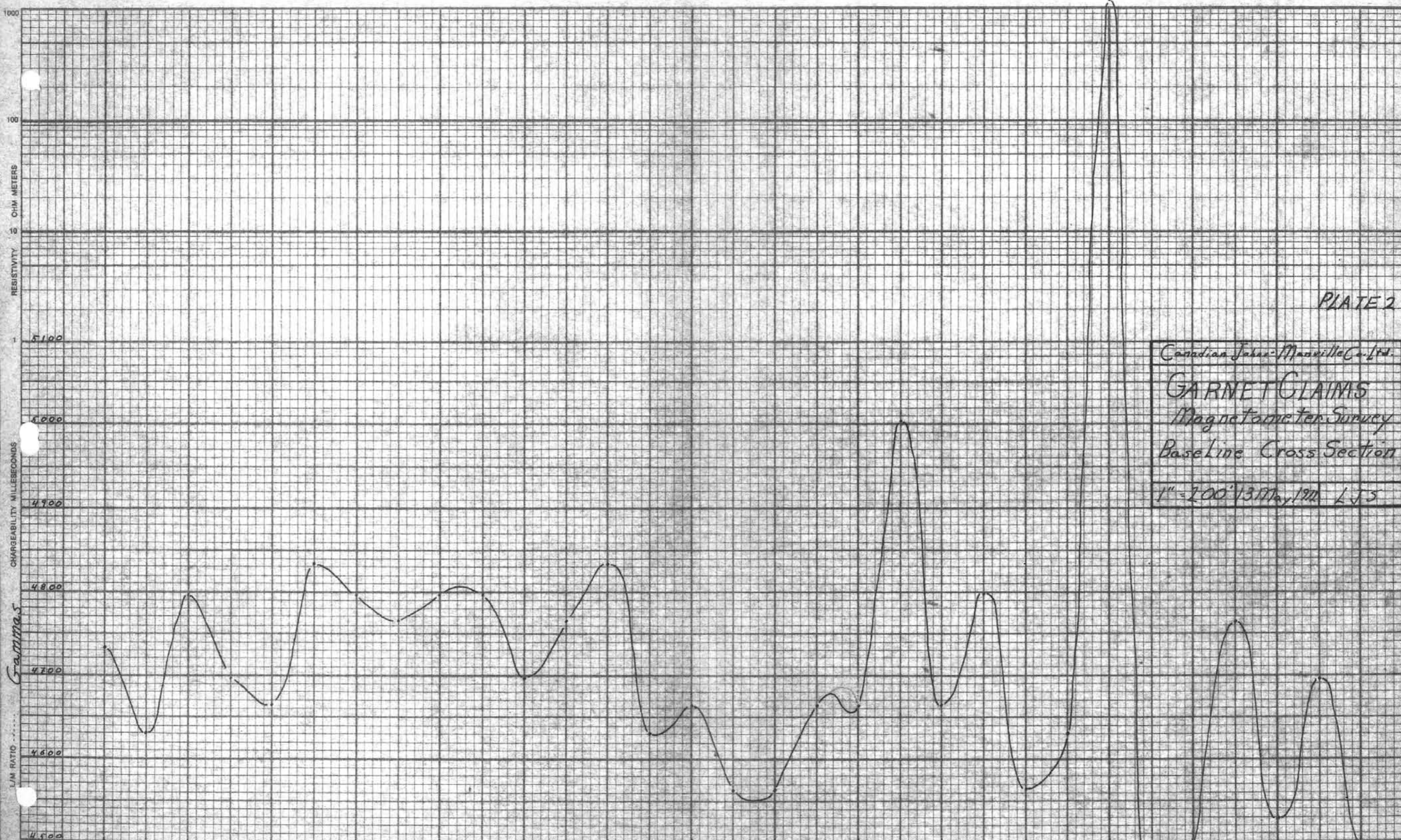
10 days interpretation of field data
and report writing and map drafting by
geologist -geophysicist L. Schoen @
\$31.81 per day \$ 318.10

Report Typing and reproduction of
maps etc. , stationary. 50.00

Total \$ 665.73.

PLATE 2

Canadian Inco-Massville Co. Ltd.
GARNET CLAIMS
 Magnetometer Survey
 Base Line Cross Section
 1" = 200' 13 May 1972 LJS



Gamma 5

5.010 5.2100 5.4100 5.6100 5.8100 6.0100 6.2100 6.4100 6.6100 6.8100 7.0100 7.2100 7.4100 7.6100 7.8100 8.0100

L/M RATIO SCALE : 1" = 50100
 CHARGEABILITY SCALE : 1" = 512100
 HORIZONTAL SCALE : 1" = 516100

ARRAY OPERATOR 520100
 SPACING 522100 524100

CLIENT AREA 528100
 SURVEY BY 528100 530100



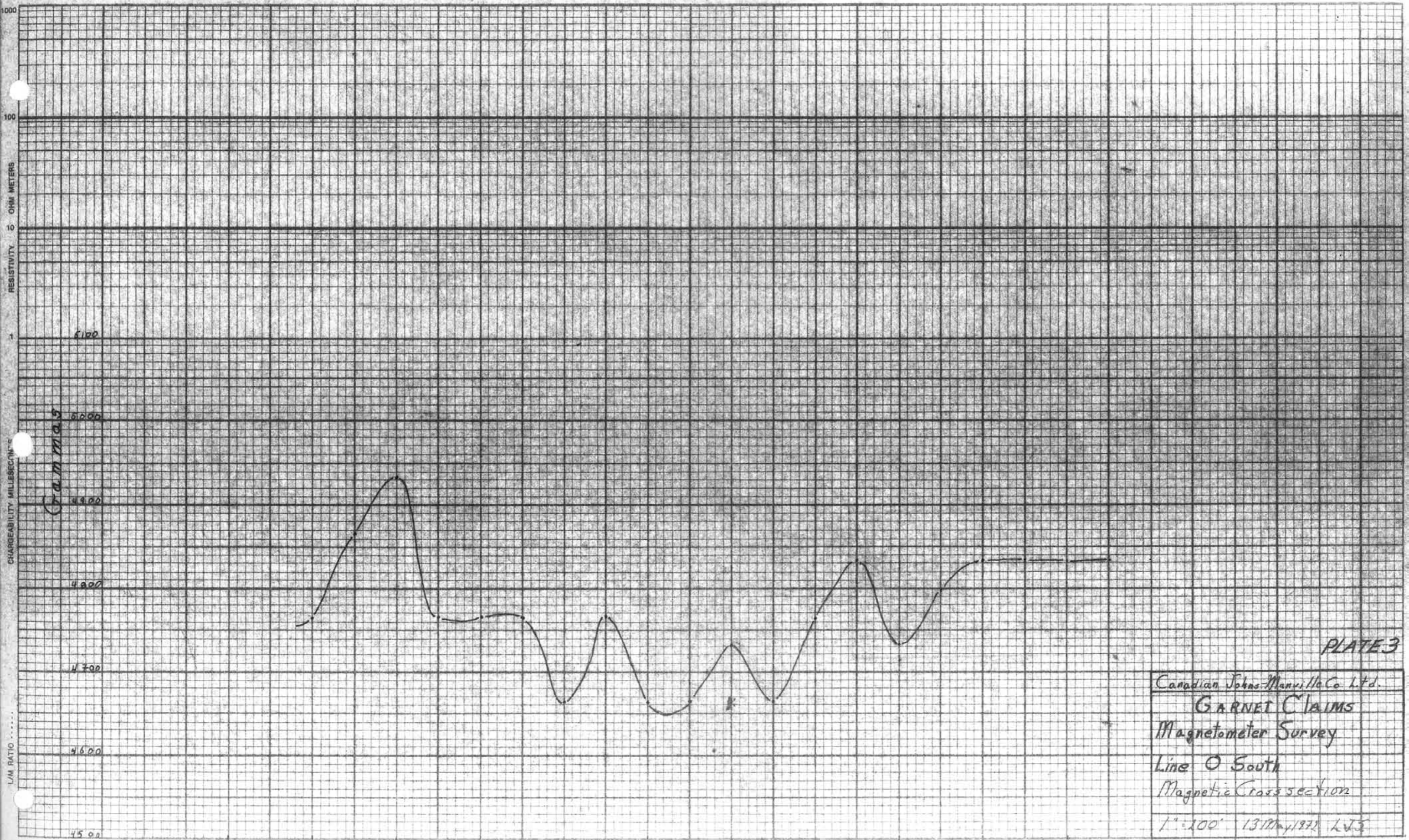
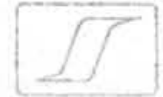
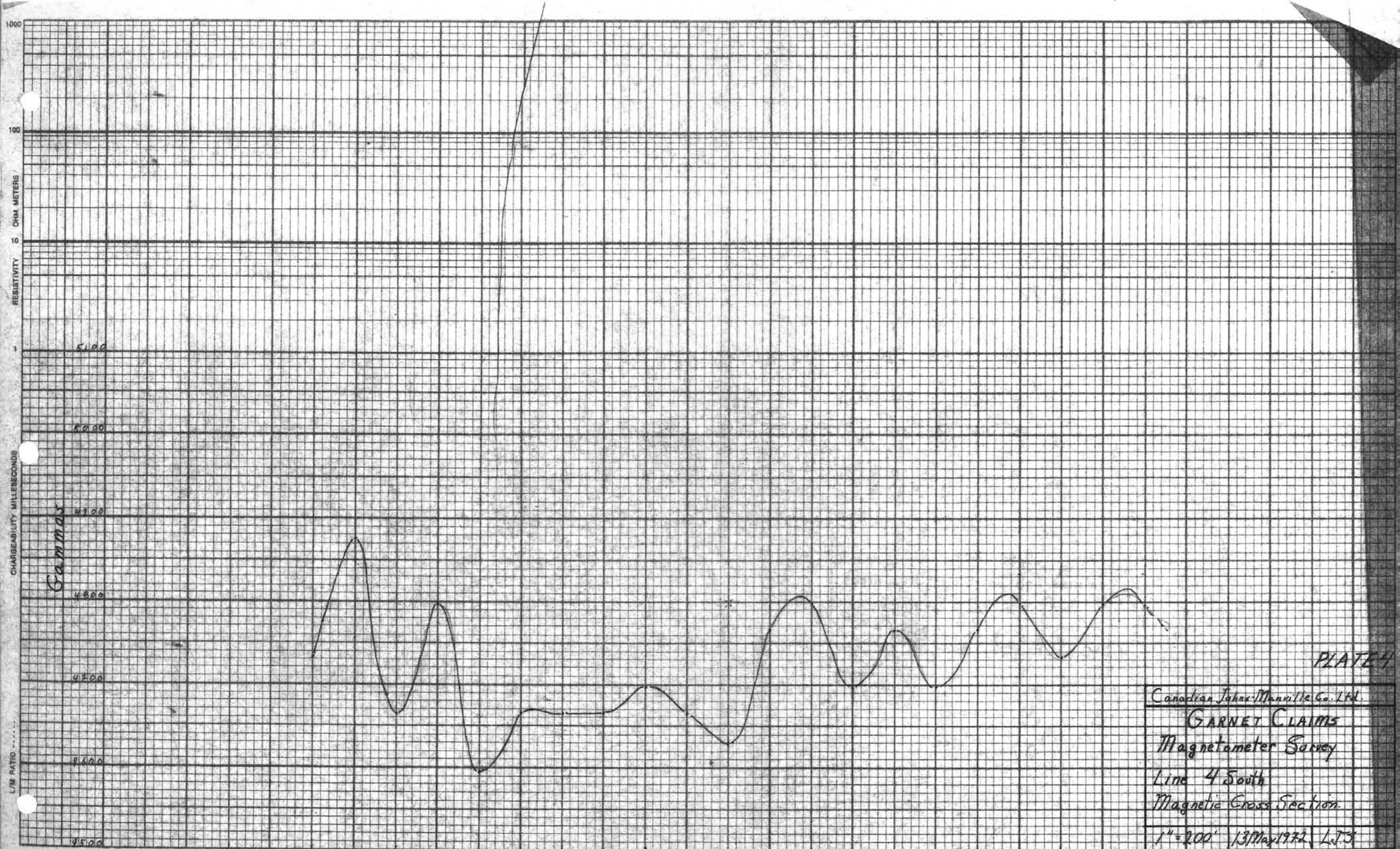


PLATE 3

Canadian Johns-Manville Co. Ltd.
GARNET CLAIMS
 Magnetometer Survey
 Line O South
 Magnetic Cross Section
 1" = 100' 13 May 1971 LJS



W1100 W1000 L/M RATIO SCALE 1" = W800 W600 CHARGEABILITY SCALE 1" = W400 W200 HORIZONTAL SCALE 1" = 0+0 E100 E400 ARRAY E100 SPACING DATE E800 CLIENT AREA C1000 E1100 SURVEY BY



L/M RATIO SCALE : 1" = w_{12+00} w_{10+00} w_{8+00} w_{6+00} w_{4+00} w_{2+00}

CHARGEABILITY SCALE : 1" = $0+0$ $E1+00$ $E4+00$

HORIZONTAL SCALE : 1" = $0+0$ $E1+00$ $E4+00$

ARRAY OPERATOR $E6+00$

SPACING DATE $E8+00$

CLIENT AREA $E10$ $E12+00$ SURVEY BY

LINE NUMBER

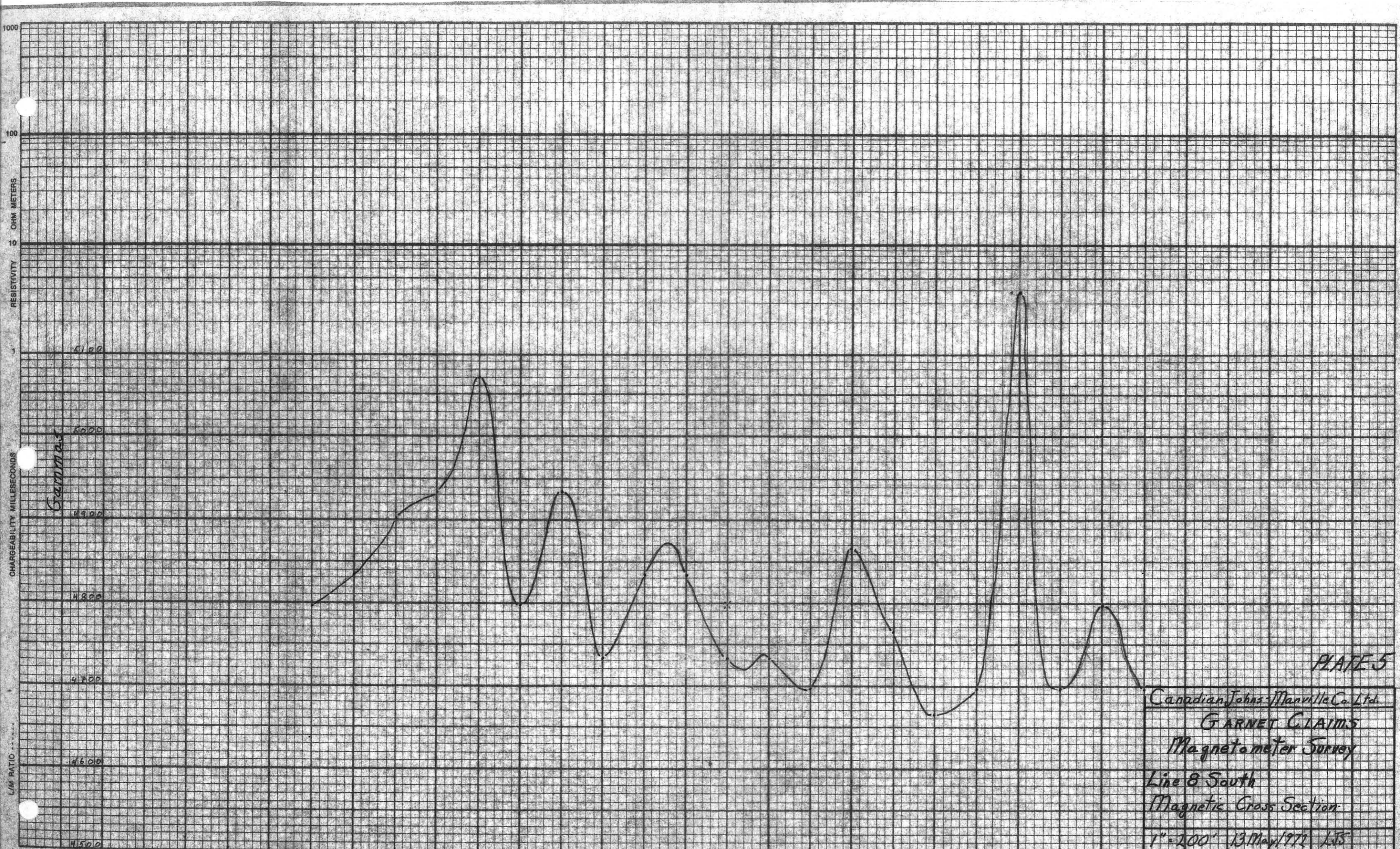
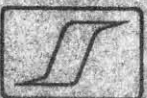


PLATE 5

Canadian Johns-Manville Co. Ltd.
 GARNET CLAIMS
 Magnetometer Survey
 Line 8 South
 Magnetic Cross Section
 1" = 100' 13 May 1971 LJS



L/M RATIO SCALE: 1" =
 W 12+00 W 10+00 W 8+00 W 6+00
 CHARGEABILITY SCALE: 1" =
 W 4+00 W 2+00
 HORIZONTAL SCALE: 1" =
 0+0 E 2+00 E 4+00
 ARRAY OPERATOR E 6+00
 SPACING DATE E 8+00
 CLIENT AREA E 10+00
 SURVEY BY E 12+00
 LINE NUMBER

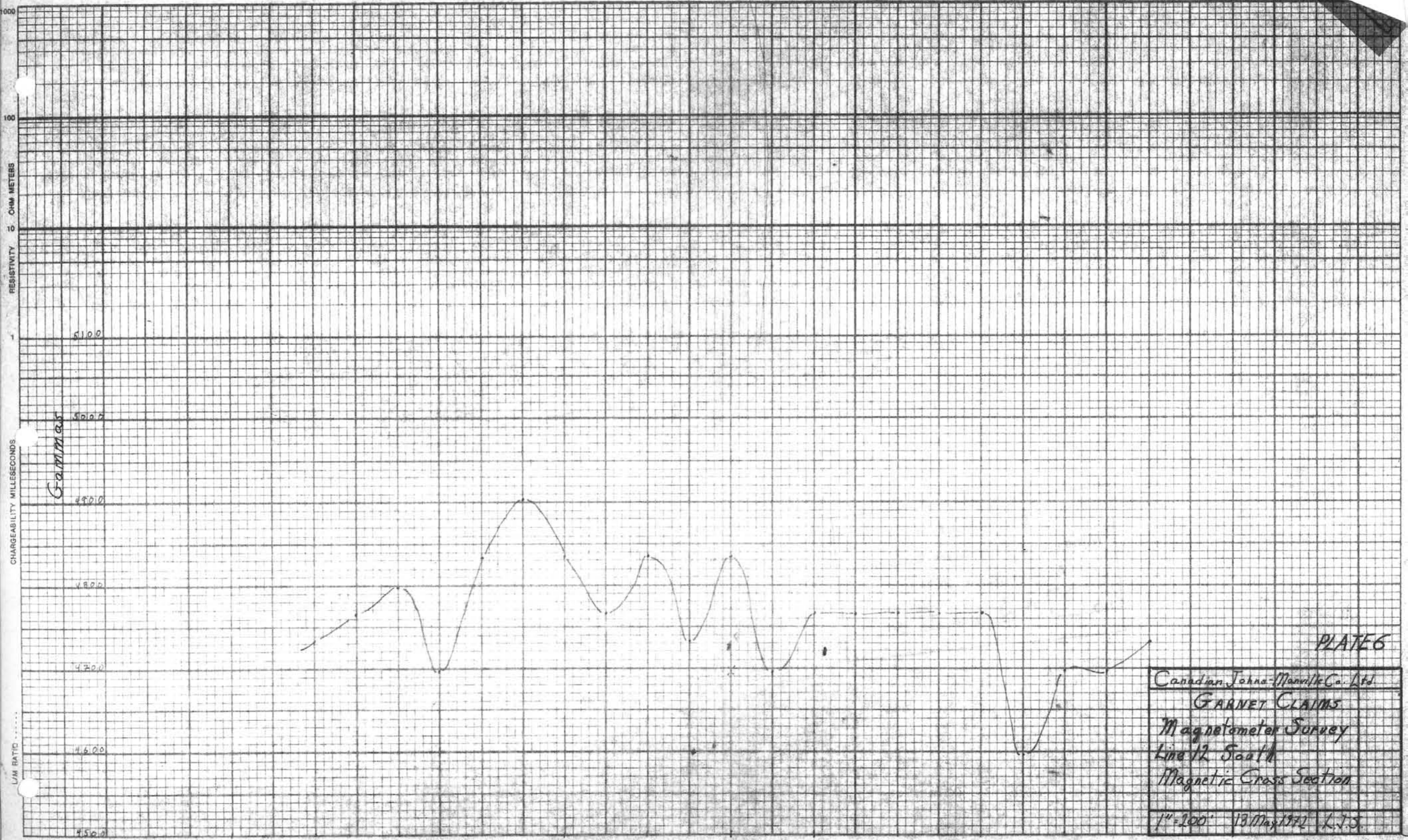
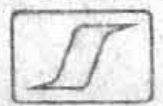


PLATE 6

Canadian Johns-Manville Co. Ltd
 GARNET CLAIMS
 Magnetometer Survey
 Line 12 South
 Magnetic Cross Section
 1" = 100' 13 May 1972 L.J.S.



W11+00 W10+00 L/M RATIO SCALE 1" = W8+00 CHARGEABILITY SCALE 1" = W4+00 HORIZONTAL SCALE 1" = 0+0 E2+00 E4+00 ARRAY SPACING CLIENT SURVEY BY
 00+00 00+00 W8+00 W4+00 0+0 E2+00 E4+00 E6+00 DATE E8+00 E10+00 E12+00
 OPERATOR LINE NUMBER

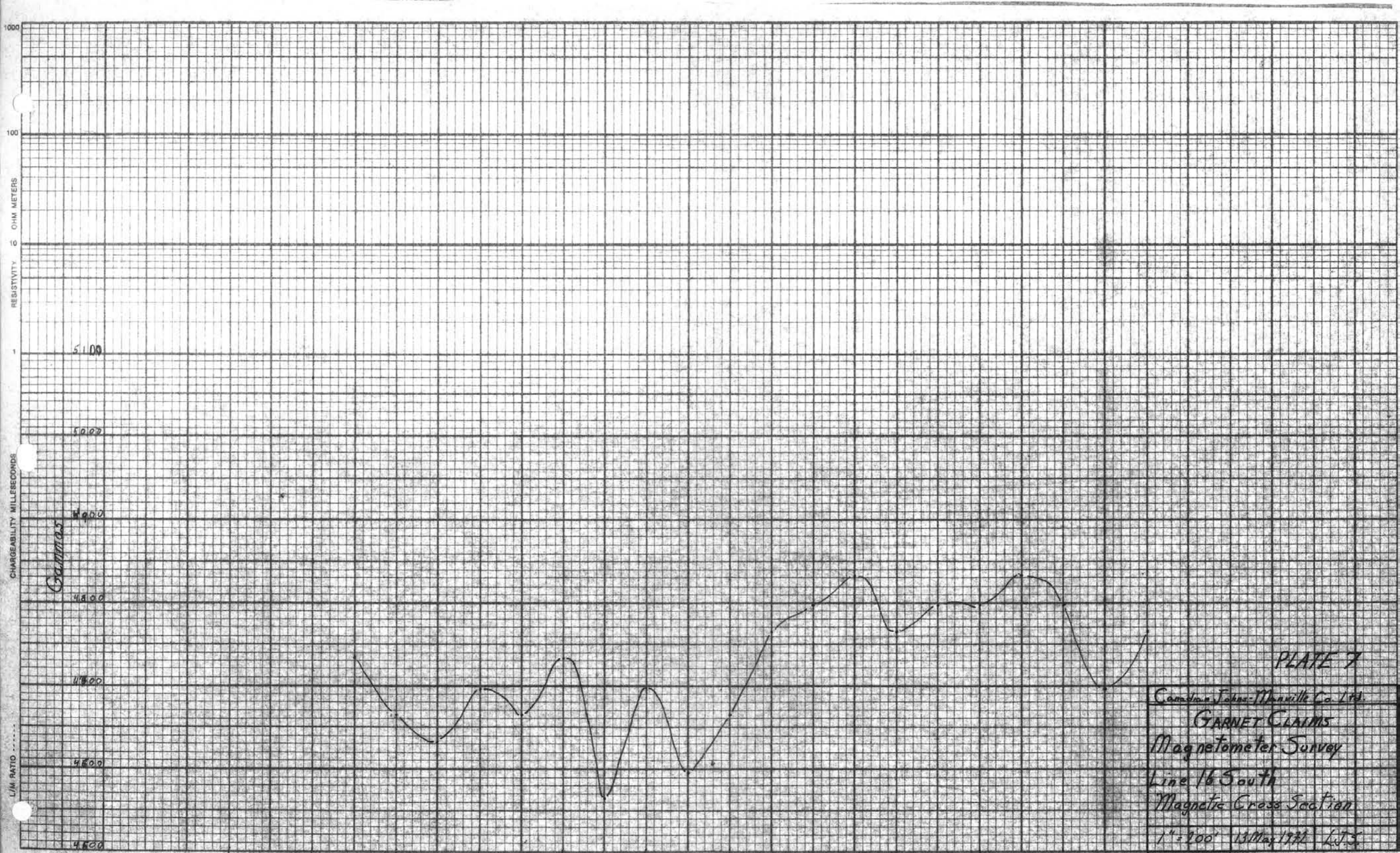


PLATE 7

Camden Johns-Manville Co. Ltd.
 GARNET CLAIMS
 Magnetometer Survey
 Line 16 South
 Magnetic Cross Section
 1" = 100' 13 May 1971 L.J.S.



L/M RATIO SCALE : 1" = 12200 W12200 W10400 W8700 W6400 W4400 W2100
 CHARGEABILITY SCALE : 1" = 0 to 2200
 HORIZONTAL SCALE : 1" = 0 to 4400
 ARRAY OPERATOR E6+00
 SPACING DATE E8+00
 CLIENT SURVEY BY
 AREA LINE NUMBER E10+00 E12100

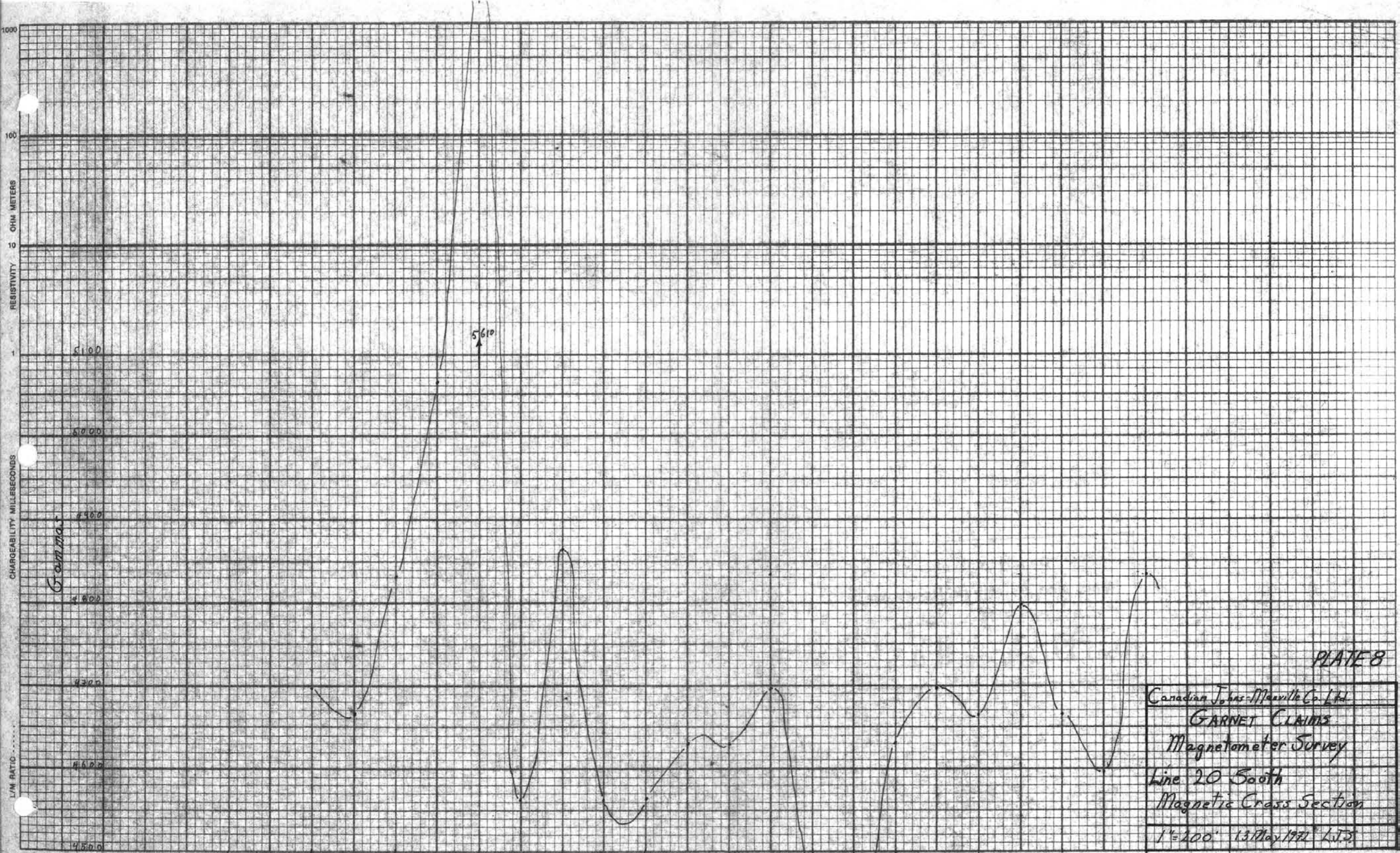


PLATE 8

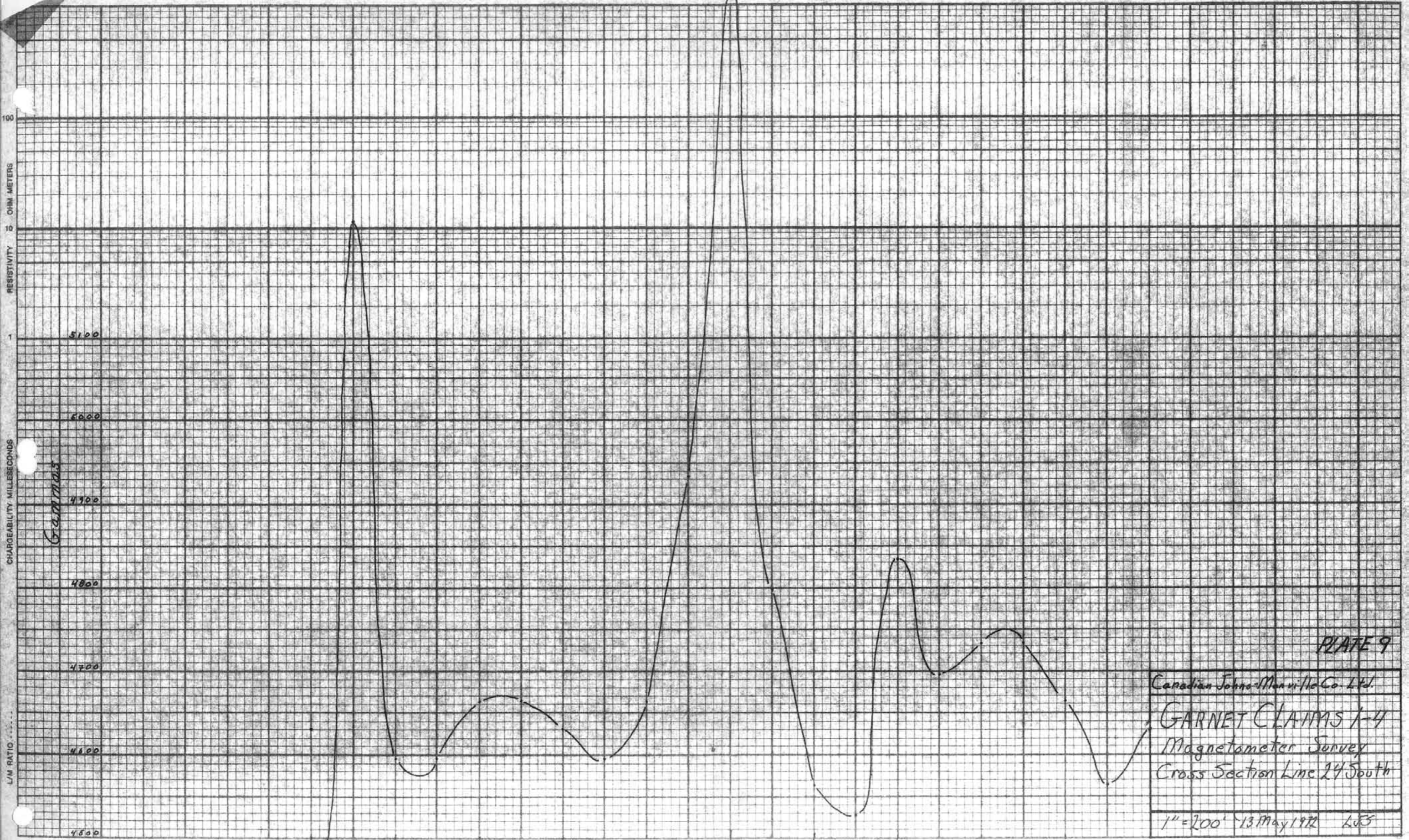
Canadian Johns-Manville Co. Ltd.
 GARNET CLAIMS
 Magnetometer Survey
 Line 20 South
 Magnetic Cross Section
 1" = 200' 13/11/72 L.J.S.



W12+00 W10+00 L/M RATIO SCALE : 1" = W8+00 W6+00 CHARGEABILITY SCALE : 1" = W9+00 W2+00 HORIZONTAL SCALE : 1" = 100' 1311' W4+00 ARRAY E6+00 SPACING DATE E8+00 CLIENT AREA E10+00 SURVEY BY E12505

OPERATOR

LINE NUMBER



GAMMAS

5100
5000
4900
4800
4700
4600
4500

PLATE 9

Canadian Johns-Manville Co. Ltd.
GARNET CLAIMS 1-4
Magnetometer Survey
Cross Section Line 24 South

1" = 200' 13 May 1972 LJS



W 10100
↓ 4350

L/M RATIO SCALE 1" = 10'

W 8100

CHARGEABILITY SCALE 1" = 100'

HORIZONTAL SCALE 1" = 200'

E 7100

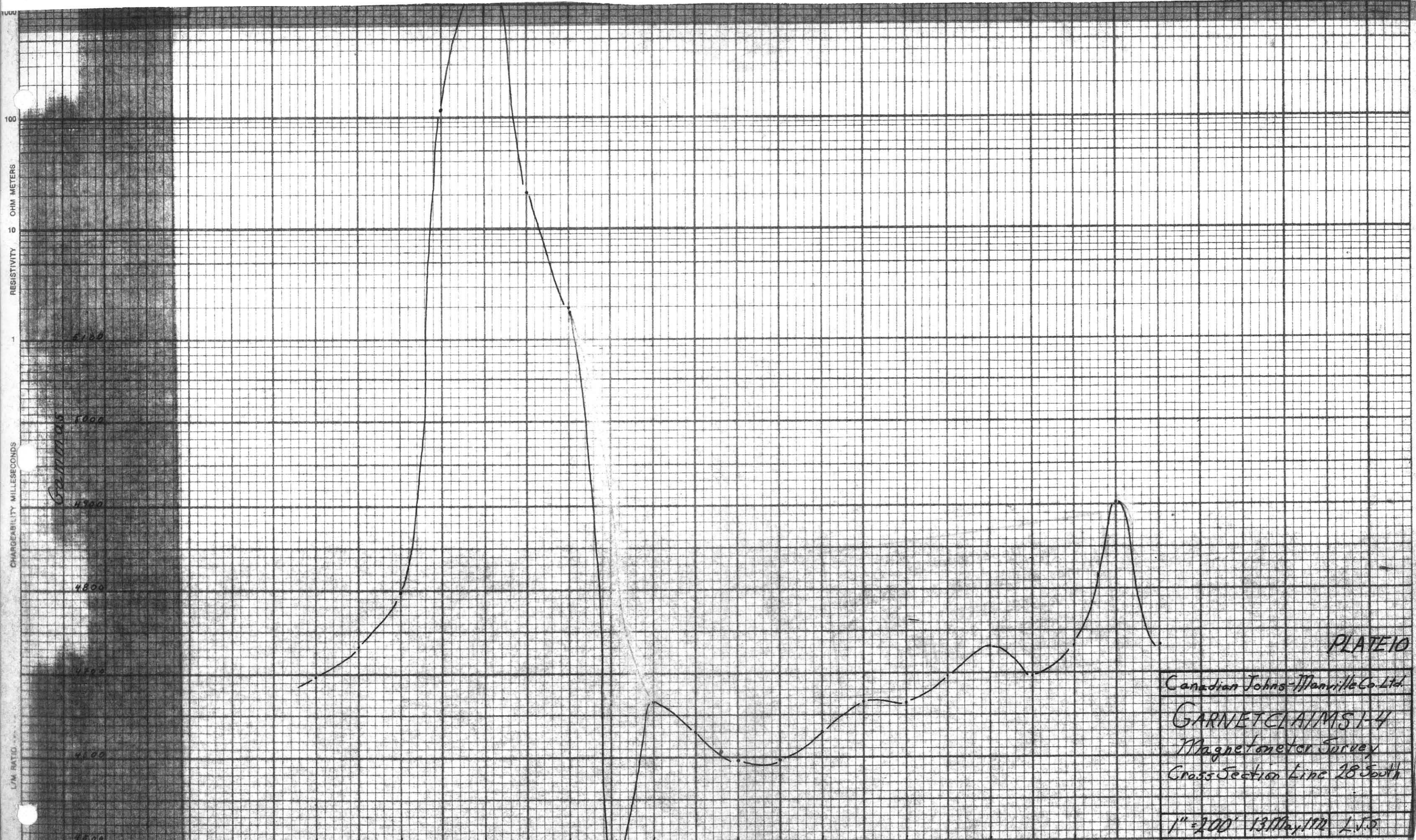
ARRAY E 6100

SPACING DATE E 8100

CLIENT E 10100 AREA

SURVEY BY

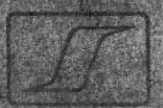
LINE NUMBER 5 dip

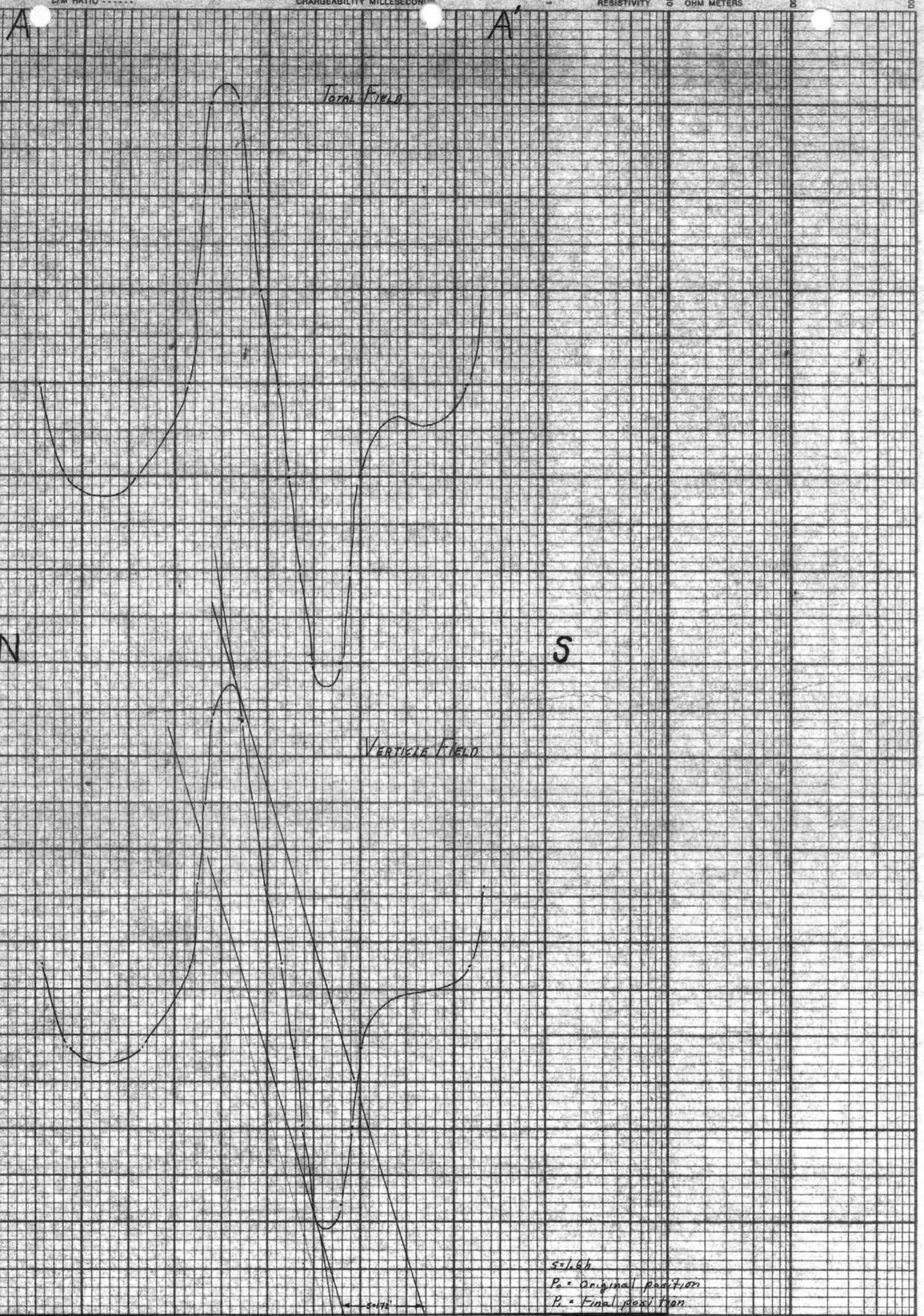


Gammmas

PLATE 10
 Canadian Johns-Manville Co. Ltd.
 GARNET CLAIMS 1-4
 Magnetometer Survey
 Cross Section Line 28 South
 1" = 200' 13 May 1962 L.J.D.

L/M RATIO SCALE: 1" = $W1000$ $W800$ $W600$
 CHARGEABILITY SCALE: 1" = $W400$ $W200$
 HORIZONTAL SCALE: 1" = $O+0$ $E200$ $E400$
 ARRAY $E600$
 OPERATOR
 SPACING $E800$
 DATE
 CLIENT $E1000$
 AREA
 SURVEY BY
 LINE NUMBER



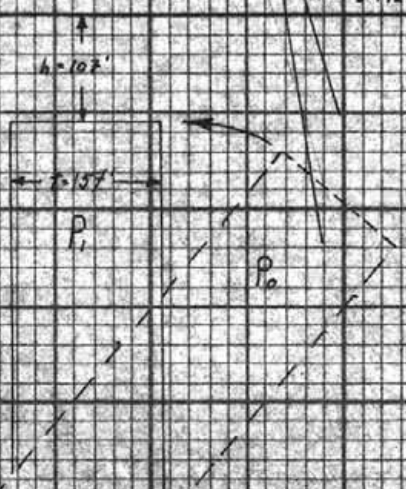


GAMMA
 CHARGEABILITY SCALE : 1" =
 HORIZONTAL SCALE : 1" =
 ARRAY OPERATOR
 SPACING
 DATE
 CLIENT AREA LINE NUMBER
 SURVEY BY

TOTAL FIELD

VERTICAL FIELD

$s = 1.6h$
 $P_0 = \text{Original position}$
 $P_1 = \text{Final position}$

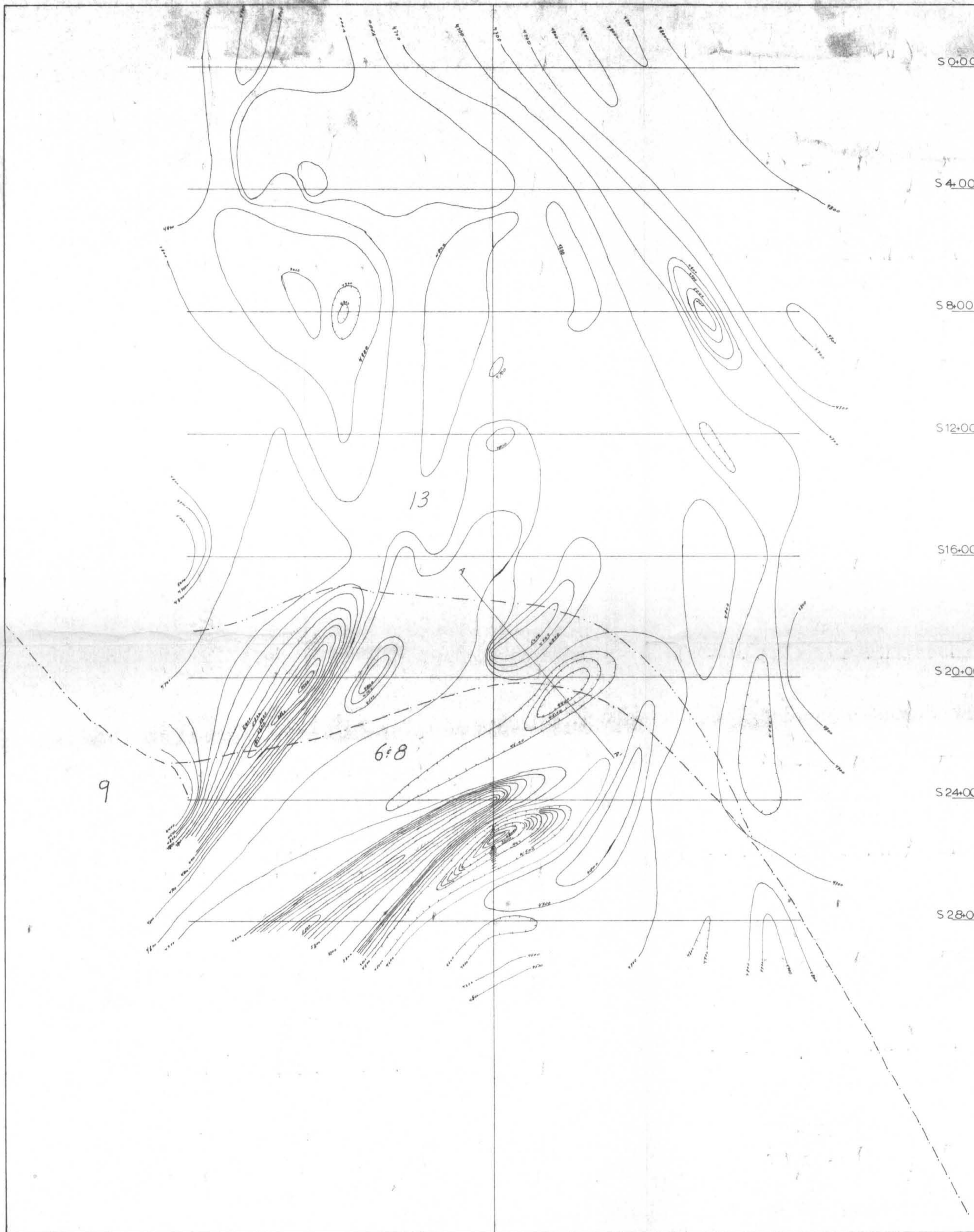


Regional Stress \leftarrow

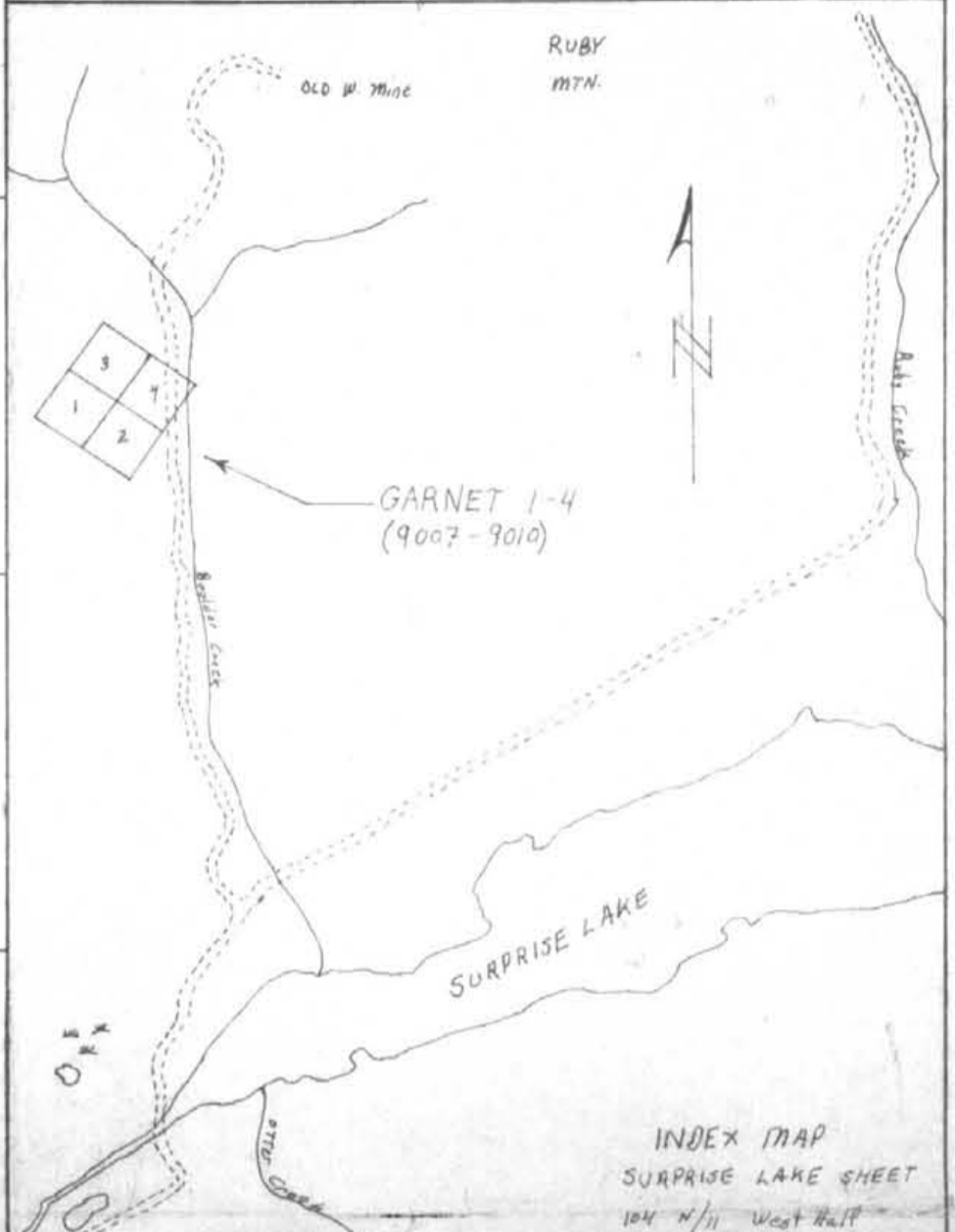
PLATE II

Canadian Johns-Manville Co. Ltd.
GARNET CLAIMS 1-4
 Magnetometer Survey
 Anomaly # 3

1" = 100' 13 May 1972 LJS



S 0+00
S 4+00
S 8+00
S 12+00
S 16+00
S 20+00
S 24+00
S 28+00



- SYMBOLS**
- Geologic contact (assumed) from Report on Geological Mapping of Mineral Claims Garnet 1-4
 - Revised Geologic contact (assumed)
- Rock Types**
- 13 Cretaceous Alaskite
 - 9 Permian Peridotite
 - 6+8 Permian Cache Creek Rocks
 - 6) Argillaceous Quartzites, Quartzites, Breccia
 - 8) Recrystallized laminated limestone

CANADIAN JOHNS MANVILLE Co. Ltd.

MAGNETIC CONTOUR MAP
M.C.s GARNET 1-4 ATLIN M.D.
Contour Interval - 100 gammas

Scale: 1"=200' Project: 60 Date: 13 May 1972 Drawn By: LJS