GEOPHYSICAL INVESTIGATIONS

BY MAGNETIC METHODS

DY CLAIM GROUP (N.W.)

Location: 133° 05' W. Long.
62° 15' N. Lat.

Reference: Claim Sheets 105 K3 & K6

WHITEHORSE MINING DIVISION
VANGORDA CREEK AREA Y.T.

BY: John S. Brock

March 1965

GEOPHYSICAL INVESTIGATIONS BY MAGNETIC METHODS ON THE BY (NW) CLAIM GROUP

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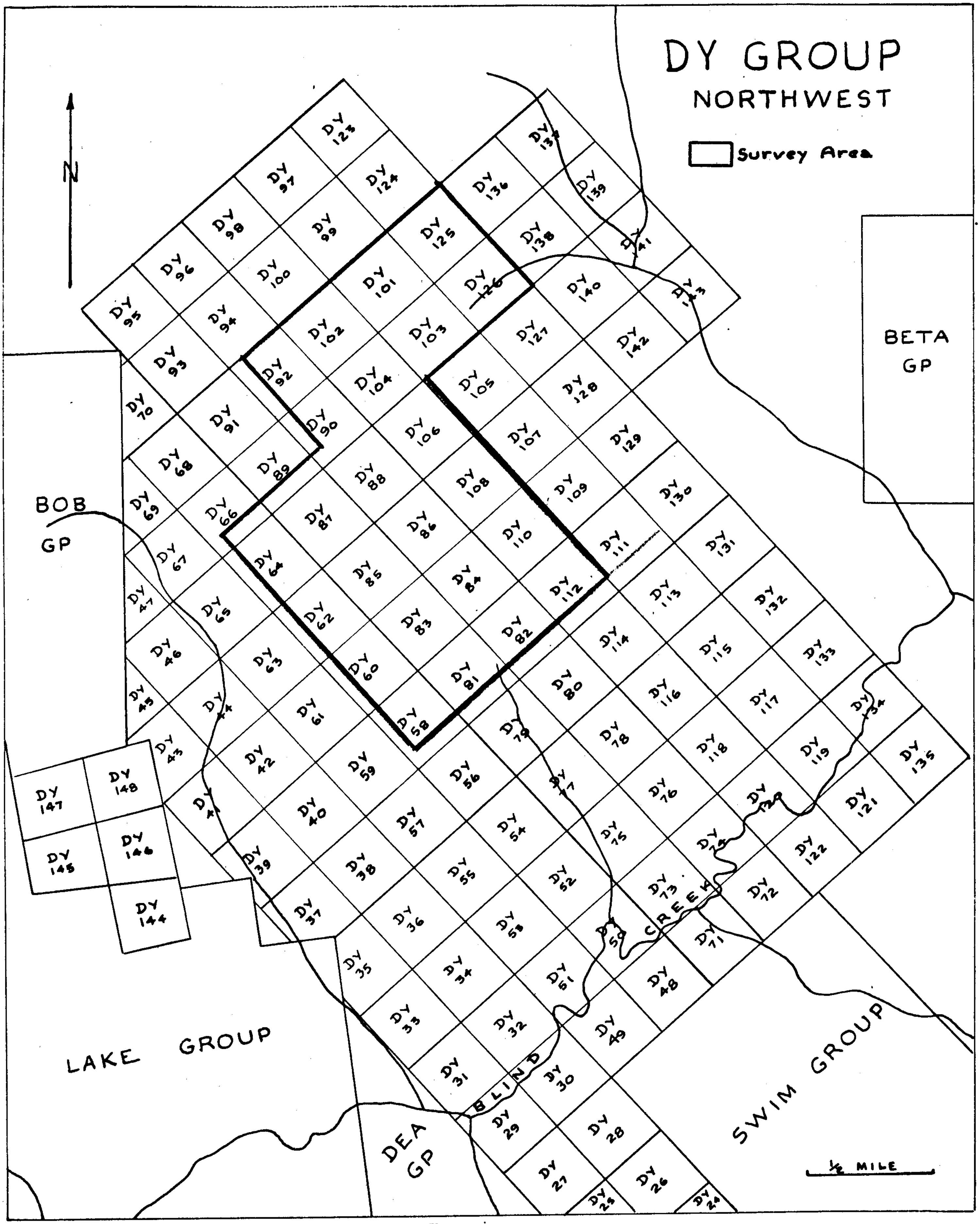
DY GROUP
NORTHWEST
Survey Area
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BETA GP
BOB GP
LAKE GROUP
DEA GP
SWIM GROUP
BLIND CREEK
½ MILE
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DY 124
DY 97
DY 98
DY 99
DY 96
DY 100
DY 95
DY 94
DY 93
DY 125
DY 101
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DY 103
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DY 139
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DY 148
DY 145
DY 146
DY 144

Fig i

INTRODUCTION

General

The magnetometer was employed as a method of geophysical survey on the DY claim group (N.W.), between September 19 and October 6, 1964. It was hoped that magnetic surveys would prove useful in outlining anomalous zones indicative of sub-surface mineralization as well as geological conditions masked by overburden. A Sharpe A3 magnetometer was employed in order to measure the vertical component of the earth's magnetic field. This instrument is a portable, hand-held magnetometer with a sensitivity of approximately 25 gammas per scale division, designed primarily for reconnaissance and mining surveys. The actual survey and subsequent interpretations were conducted by John S. Brock, an employee of Dynasty Explorations Limited, who presently hold the DY claim group.

Location and Access

The geophysical investigations as discussed in this report were conducted on a portion of the DY claim group located west of Blind Creek. The general area is of gentle, rolling relief, much of the originally timbered areas have been burned over, and sections of swamp and muskeg predominate most of the terrain of low relief.

The DY claims (N.W.) are only directly accessible by helicopter. Wheeled aircraft may land at Vangorda air strip approximately two miles southwest of the property, and aircraft equipped with floats may land at Shrimp Lake, 2½ miles south of the property.

Summary of Magnetometer Survey Portion of Costs

A)	Line Cutting - total cost $7/1000 ft. Cost of cut lines over area surveyed (54,850 feet of line cut)		$ 460.00
B)	Grid Location and Survey		200.00
C)	Magnetometer Survey		
	Carried out over 18 Days Total Time		
	1) Operator @ $18.50/day =	$333.00	
	2) Supplies @ $ 6.00/day =	108.00	
	3) Transportation		
	a) Into property - 2 trips Bell G2 from Swim Lake	60.00	
	b) Out from property - Beaver 'MAS' from Shrimp to Swim Lakes	20.00	
	c) Pro-rated portion of Beaver flights from Whitehorse	183.00	
	d) Supply Air Drop	50.00	656.00
D)	Compilation of Data (10 Days)		300.00
E)	Supervision and Final Report		200.00
		TOTAL	$2,001.00

Personnel

1) **Geophysical Operations:** John S. Brock
3050 Procter Avenue
West Vancouver, B.C.

2) **Line Cutters:**

a) William Peter)
b) George Sterriah)
c) Robert Etsel)
d) John Ollie) Ross River, Yukon Territories

3) **Grid Locations:** David Barclay
6040 Iona Drive
Vancouver 8, B.C.

4) **Supervision:** R.E. Gordon Davis
4734 West 6th Avenue
Vancouver 8, B.C.

AFFIDAVIT Supporting Statement of Costs
Dy (NW) Mineral Claim Group

I, John S. Brock, of West Vancouver, British Columbia, have compiled the statement of costs (Geophysical Investigations by Magnetic Methods on the Dy Claim Group).

I make oath and say that to the best of my knowledge and belief, the statement of costs as presented in this report, is true and an accurate representation of cost to be applied for assessment work on the Dy (NW) mineral claim group.

John S. Brock

A commissioner for taking affidavits, in and for the Yukon Territory

Witness (signed in presence of commissioner of oaths)

GEOLOGY

The N.W. DY anomaly is situated in the crestal area of a gentle N.E.-plunging synform where greenstone-chlorite schist and sericite schist contact surficially. Nearby N.E.-trending, steeply-dipping faults are situated in Blind Creek and on the slopes of Nye Mountain. Porphyry outcrop occurs 3/4 mile west.

Although magnetite is not apparent in the rocks of this area, the anomaly high is centered over greenstone outcrop. Greenstone elsewhere may contain up to 10% magnetite. Altered, medium-grain, subhedral amphibole and feldspar crystals in some of the greenstones indicate a possible basic intrusive origin. There is a continuous textural gradation from blocky greenstone to fine-grained chloritic schist. A thin member of limy-siliceous rock, apparently chert, is intercalated in the chlorite and sericite schist. This light green, fine-grained rock is not always common but similar associations occur south of the Vanguard property. The sericite schist occasionally grades toward impure limestone and may also be graphitic. Serpentine alteration is associated with greenstone along a probable fault.

The interpretation map indicates a high degree of complexity with torsional strains giving rise to anomalous structural trends. Magnetic highs correspond to the areas of greatest disturbance. Several periods of folding, including one isoclinal period which produced a schistosity, have apparently been followed by buckling and torsional strains which "confuse" all the attitudes and give a "scattered" stereogram indicating only general trends.

Structurally, there are possibilities of replacement mineralization at shallow depth (less than 100 feet). Rocks favourable for replacement as well as porphyry occur in the vicinity. The porphyry may not directly carry metal content, but metasomatism appears to be somewhat statistically associated with porphyry occurrences. However, magnetite in greenstone is the most likely cause of the anomaly.

METHODS OF SURVEY

Grid System

Base and tie lines were cut over the DY claim group by contracted line cutters, and survey control was maintained by picket and chain methods with systematic and periodic checks by means of Brunton compass. Base lines were cut with a spacing of 3000 feet, tie lines were cut at 0+00, 30+00, 90+00 and 165+00 S.E. A total of 127,000 feet of line were cut; 54,850 feet of cut line were used for the magnetometer survey.

Base stations were established on each of the base lines at intervals of 400 feet. The magnetometer survey was conducted on cross lines laid out by pace and compass methods with terminal points of each cross line corresponding to the 400-foot stations on each base line. The survey was therefore carried out over lines of 400 foot spacing with readings taken at intervals of 200 feet on each line.

Magnetometer Survey

Diurnal variations and drift were eliminated as much as possible by the following methods. Prior to actual survey, readings were taken at all 400 foot stations on the base lines, at the same time the diurnal variations were recorded by a second and stationary magnetometer. After reading of the base stations was completed, each value was corrected for diurnal variation as exhibited by records from the stationary magnetometer.

The use of predetermined magnetic values for each of the base line stations or terminal points of cross lines, leads to the accuracy and speed with which the survey may be carried out.

The survey was executed in the following manner:

(See Fig. ii)

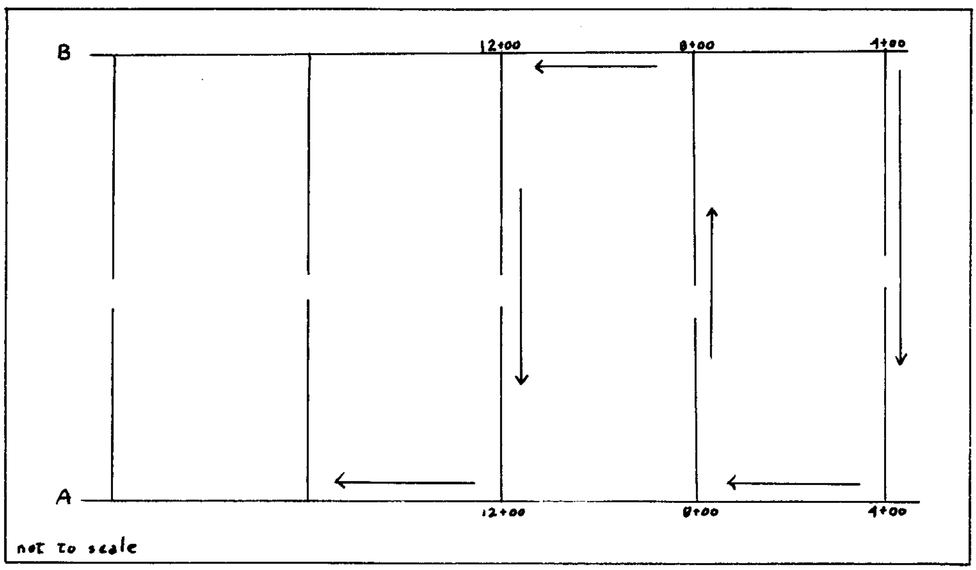


Fig. ii

Method of Survey

1) A reading was taken at base line B (Stn 4+00);
2) The cross line 4+00 was traversed with readings taken at 200 foot stations located by pace and compass;
3) At base line B (Stn 4+00) a reading was taken;
4) The same procedure was repeated for lines 8+00, 12+00, etc.

As the base line stations A 4+00, B 4+00, etc. all have predetermined magnetic values corrected for diurnal variation, re-reading each station at the terminal points of each cross line will give a corrective factor that can be applied to the stations on the cross lines. In this way, all values obtained during the course of the survey can be corrected for diurnal variation.

TREATMENT OF DATA

All field readings were recorded directly as read from the vernier of the magnetometer. Conversion to gamma values was carried out by means of a "vernier division - gamma value conversion curve", supplied by Sharpe for use with the particular magnetometer employed during the survey. Values were then corrected for diurnal variation by the method mentioned previously. An absolute background of 55,000 gammas was adopted.

After corrections were carefully carried out, all gamma values were plotted on a base map (see map 7-a), in accordance with the station at which they were derived. The results were then contoured using an interval of 100 gammas. (See map 7-b.)

INTERPRETATION OF RESULTS

General Observations

One anomaly of large areal extent was outlined, this anomaly strikes approximately 110° for 4,500 feet and may be considered 'open' at its eastern limit due to lack of survey coverage in this area; the greatest width obtained is approximately 1,550 feet.

Although a strike length can be approximated, the actual anomaly is irregular in nature (see map 7-b). If a background of 300 gammas is assumed, the anomaly appears to be composed of seven irregularly spaced peaks of intensity ranging from 600 gammas to 2000 gammas above background. Generally, these localized 'highs', strike 110° and are separated from each other by 'lows' ranging from 200 to 400 gammas below background.

Two separate anomalies of smaller extent occur near the southern limit of the main anomaly. Both are approximately 1000 feet in length and strike in a north easterly direction, each anomaly is comprised of twin peaks which range from 500 to 600 gammas above background.

Two localized 'highs' also occur in the northwestern half of the DY survey area, they will not be considered due to the fact that each is caused by only one anomalous gamma value.

Quantitative Interpretations

Due to the irregularity in anomalous profiles as portrayed by the magnetics, it is felt that detailed calculations in order to determine the depth, extent, and shape of the causative body or bodies are not warranted. The combination of sharp profile 'peaks', lack of profile symmetry and poor contour control would require too many assumptive factors for precise calculations. Other general assumptions such as induced magnetization, uniform and vertical magnetization, magnetic susceptibilities as applied to this specific area, would lead to an inaccurate quantitative interpretation.[2]

Depth calculations have been carried out on profiles across some of the localized anomalies making up the main DY magnetic anomaly (see plates 1-4, Appendix). In all cases Peters[3] depth derivations were used, also type curves and half-width calculations were applied for assumptive, causative structures.[4]

Qualitative Interpretation

A general comparison of ground magnetic results from the DY claims NW, and the Vangorda ore deposit, area, was carried out. The Vangorda ore deposit is approximately three miles west of the DY anomaly, both anomalies are partially associated with a common sericite schist-greenstone complex.

Chisholm[5] in his summary of investigations on the Vangorda deposit, made the following observations; residual magnetic values ranged from 800 to 2000 gammas, contours were lenticular along the length of the deposit, the most intense anomalies were obtained where overburden is shallow, anomalies of similar magnitude and shape were found outside the mineralised zone, certain sections of massive mineralisation gave no magnetic anomalies.

From this evidence it would appear that the magnetometer alone would not produce definitive anomalies signifying underlying sulphide mineralisation because of the variable magnetite content of the sulphide deposit itself as well as widely disseminated magnetite in certain sections of country rock which, when near surface, produce a mass effect equal in magnitude to the main section of the Vangorda mineralised zone.

The DY anomaly is similar in character to the Vangorda magnetic anomaly and is also in the same relative geologic environment, it is therefore reasonable to assume that many of the observations as stated above could apply to the DY magnetics. Campbell[6] notes that the DY anomaly is situated in schist, with the possibility of extension of the porphyry sill that underlies the Vangorda deposit. The general trend of the DY anomaly is along the schistosity, it is the closest known magnetic anomaly to the Vangorda deposit, it is the same distance from the intrusion to the north as the Vangorda and nearly the same distance from the Tintina Fault.

"There is geologic evidence that the magnetic anomaly may be due to sulphides contained within localised synformal folds that trend northerly, within a larger easterly plunging synclinal belt. The indicated width of this crossfold is about 1000 feet but of an irregular complex nature."[7]

Inspection of the DY magnetic anomaly and the geologic interpretation map (7-f) gives some evidence as to the cause of most of the localised anomalies. Anomaly (7) appears to be due to serpentinized greenstone associated with a probable major northwest-trending fault. Extension of this fault to the northeast is also shown magnetically as is the fault contact of the chloritic schist-greenstone and sericite schist. Most of the other localised anomalies trend generally in the same attitude as recognised fold structures in the area. Anomaly highs usually correspond with areas of greatest structural disturbance. Geologic and magnetic profiles correlate well (plate 5, Appendix), the fold structures exhibited by greenstone are easily comparable to magnetic highs over the same section. Although no susceptibility measurements of local greenstones have been recorded it is known that greenstone found in this area may carry up to 10% disseminated magnetite. Greenstone structures may be a major cause of a number of these anomalies.

Qualitative Interpretations (Continued)

Anomalies (4) and (5) are thought to be associated with cross faulting related to the major northwest-plunging synform. Anomaly (5) may also be a result of an assumed fold structure, however, no greenstone is immediately evident and mineralization has been found in this area, thus making this anomaly more interesting economically.

SUMMARY

Magnetic methods can only be justified on the DY claim group (N.W.) when used as a preliminary geophysical exploration tool. Magnetic evidence obtained from the Vangorda ore deposit is generally inconclusive in relation to the actual location of economic zones of sulphide mineralization. The DY anomaly is in an area of similar geologic conditions and is also in close proximity to Vangorda, it is therefore assumed that magnetics can only serve as a guide in locating favourable areas for further exploration on this property.

In some cases localized magnetic anomalies may easily be due to sulphides contained within northerly-trending synformal folds. Most of the anomalies appear to be readily accounted for by comparison with geologic evidence.

RECOMMENDATIONS

Further geophysical methods should be applied to the DY group. It is felt that electromagnetic surveys may be employed to gain new results. Gravity surveys have been carried out over the anomaly but interpretations to date have not been fully completed.

Since a dry rotary drill program will be used to test all geophysical anomalies held by Dynasty Explorations Limited, it is recommended that approximately 6000 feet of drilling be done to test the DY magnetic anomaly.

Respectfully submitted,

John S. Brock

Approved

[signature]

<u>BIBLIOGRAPHY:</u>

(1) FAIRLEY, J.F. : Geological Report on File with Dynasty Explorations Limited February 1963;

(2) JAKOSKY : Exploration Geophysics, TRIJA Pub. 2nd. Edit. 1961 (For further technical discussion of interpretations see Chapter III);

(3) DOBRIN : PP. 312-313 Geophysical Prospecting McGraw-Hill (1960);

(4) NETTLETON, L.L. : Gravity and Magnetic Calculations Geophysics Vol. 7 pp 293-310 (1942);

(5) CHISHOLM, E.O. : Geophysical Exploration of a Lead-Zinc Deposit in Yukon Territory; Methods and Case Histories in Mining Geophysics, (C.I.M.M. Pub. 1957);

(6) CAMPBELL, D.D. : Consultants Report to Dynasty Explorations Limited (1964);

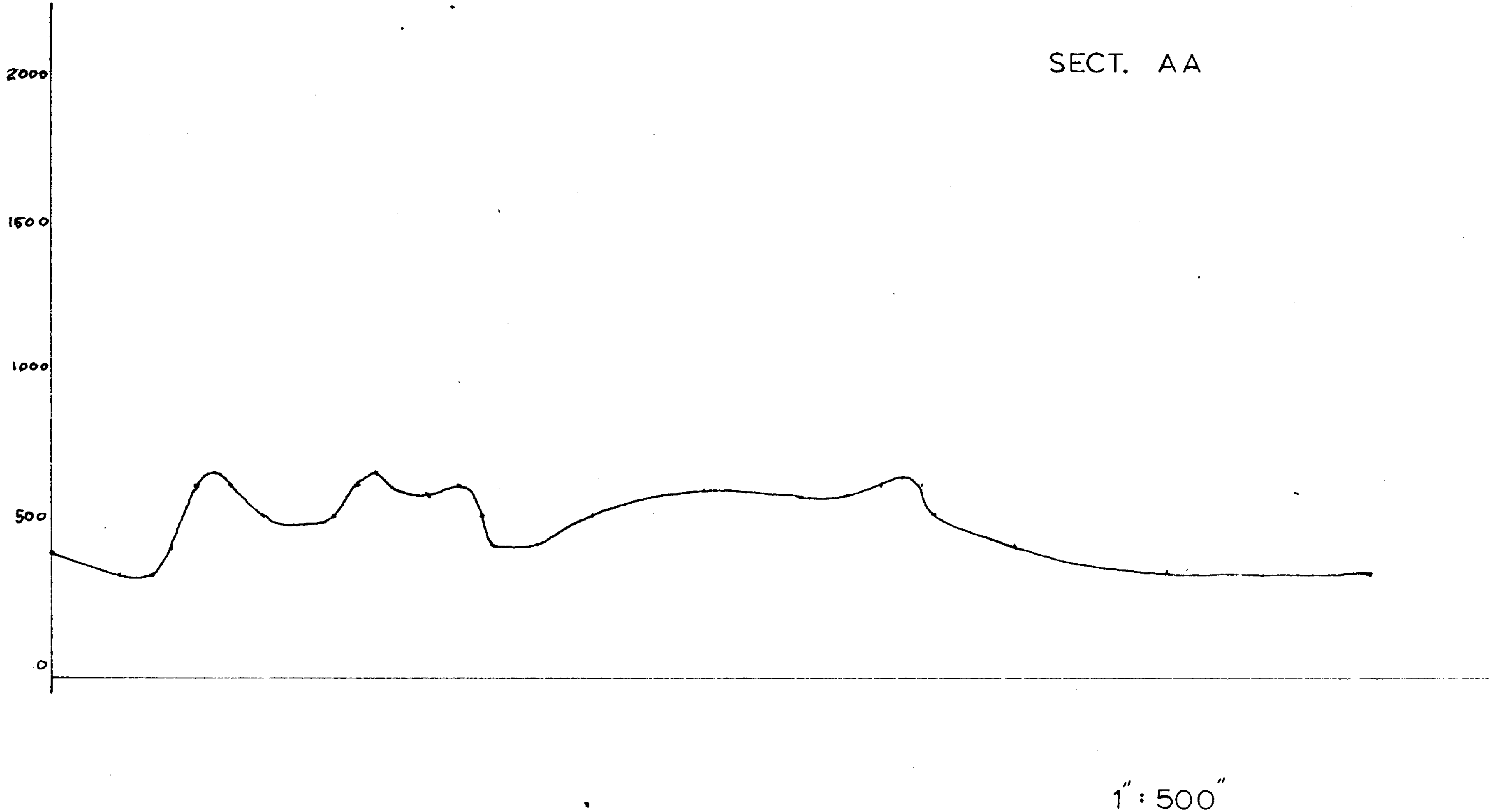
(7) CHAPLIN, R.E. : "Geology of DY Group in Vicinity of Aero-Mag Anomaly." Submitted to Dynasty Explorations Limited October 1, 1964.

GEOPHYSICAL INVESTIGATIONS

BY MAGNETIC METHODS ON THE

BY ([illegible]) CLAIM GROUP

APPENDIX



SECT. AA
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1000
500
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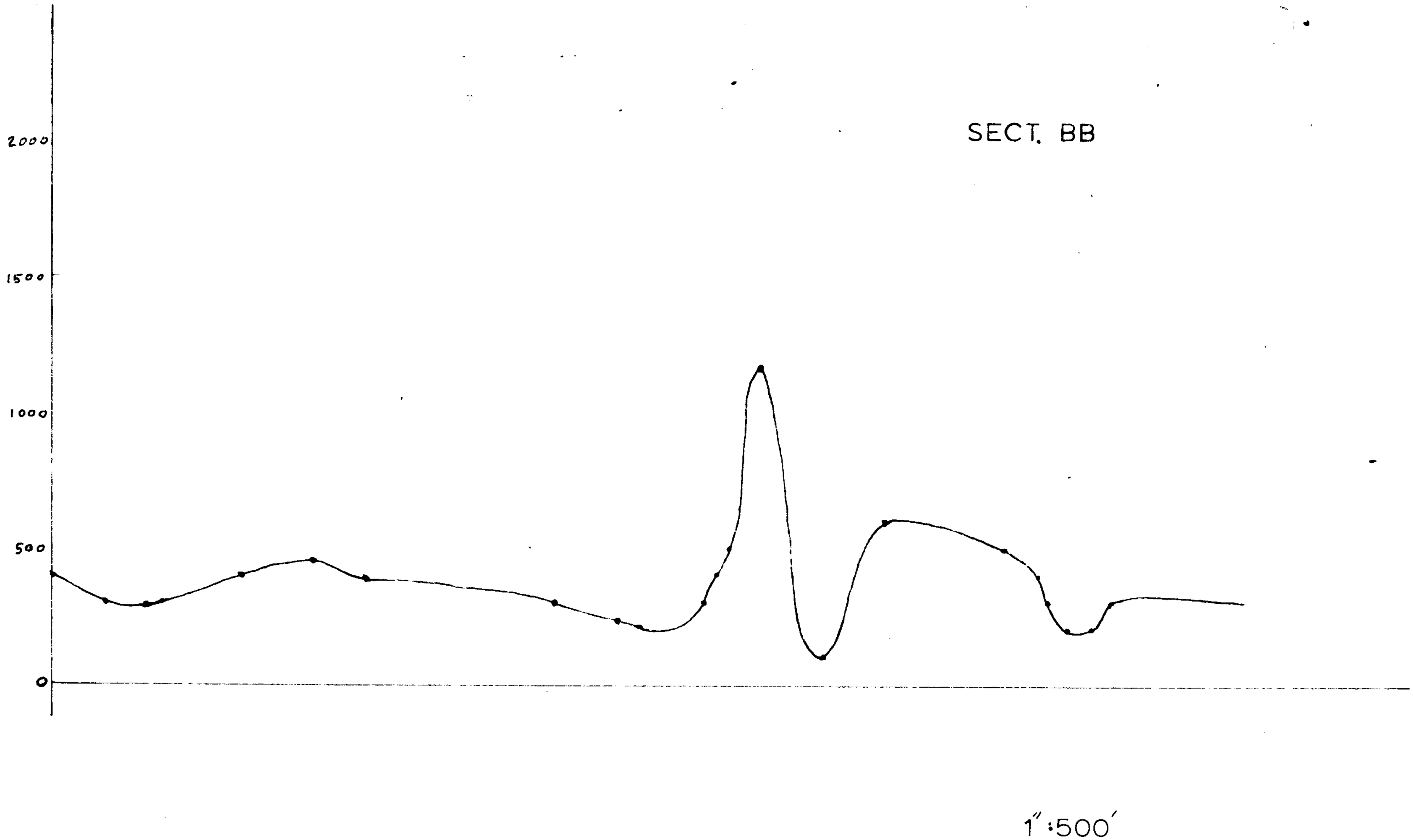
1" : 500"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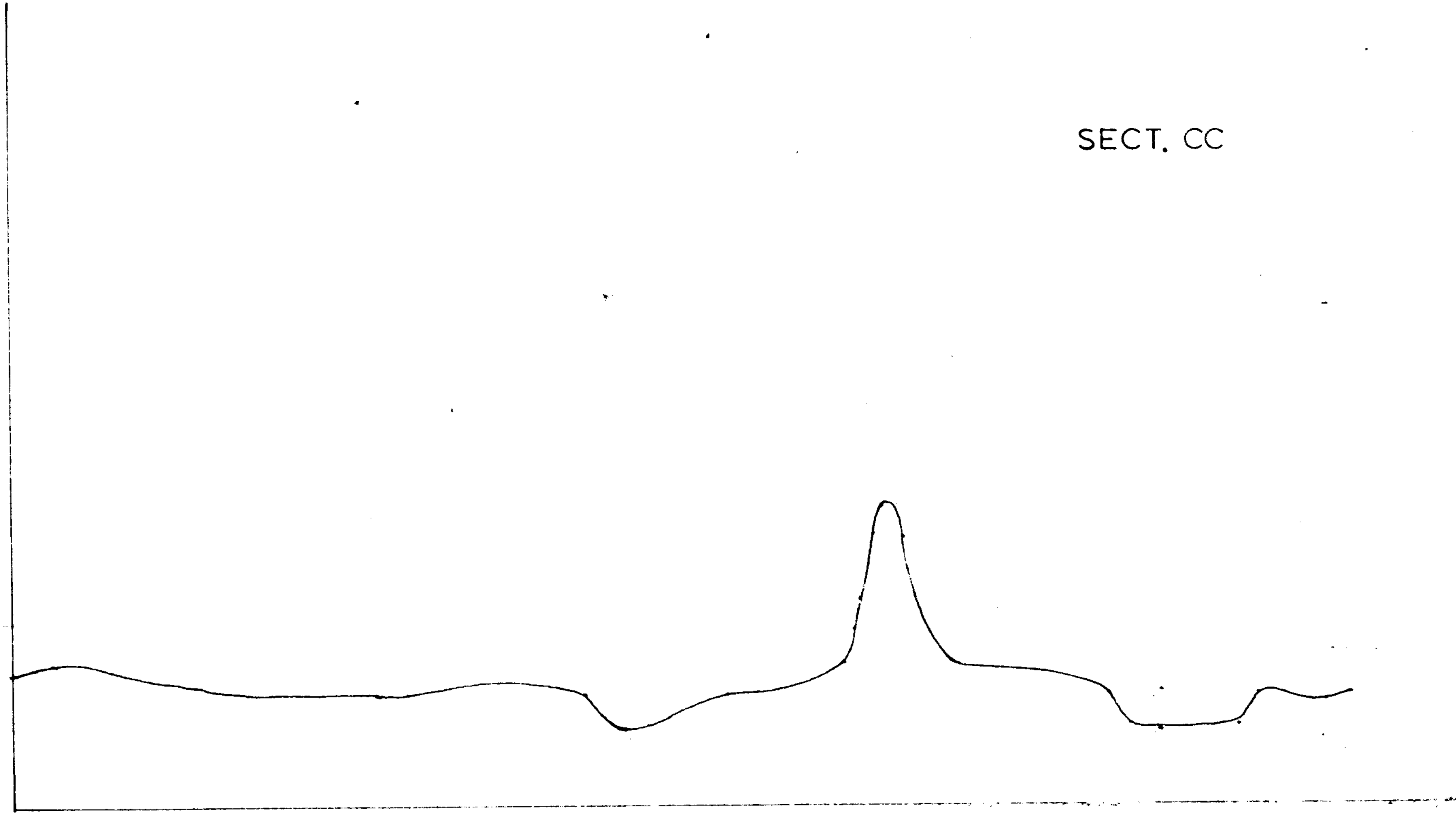

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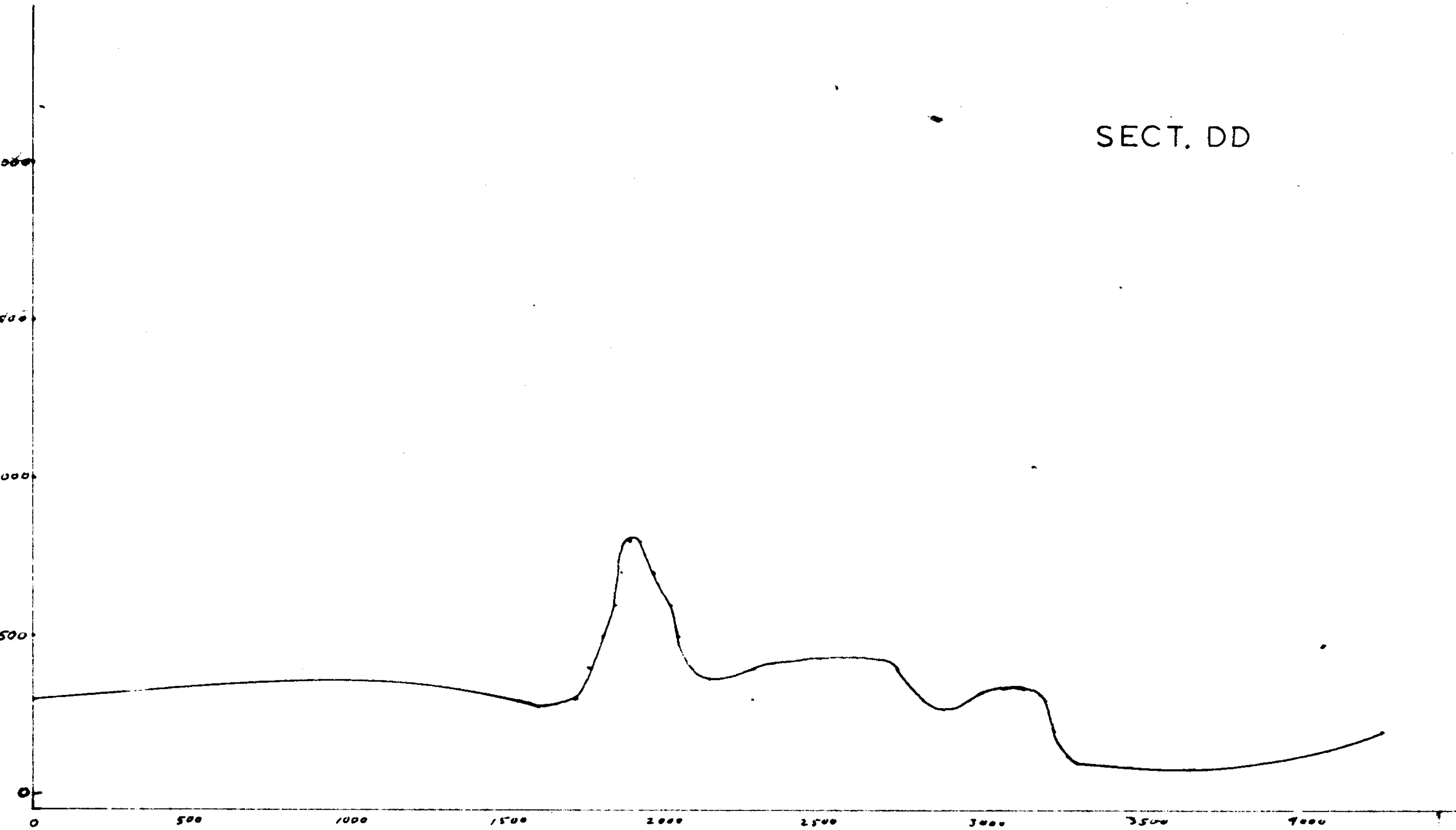

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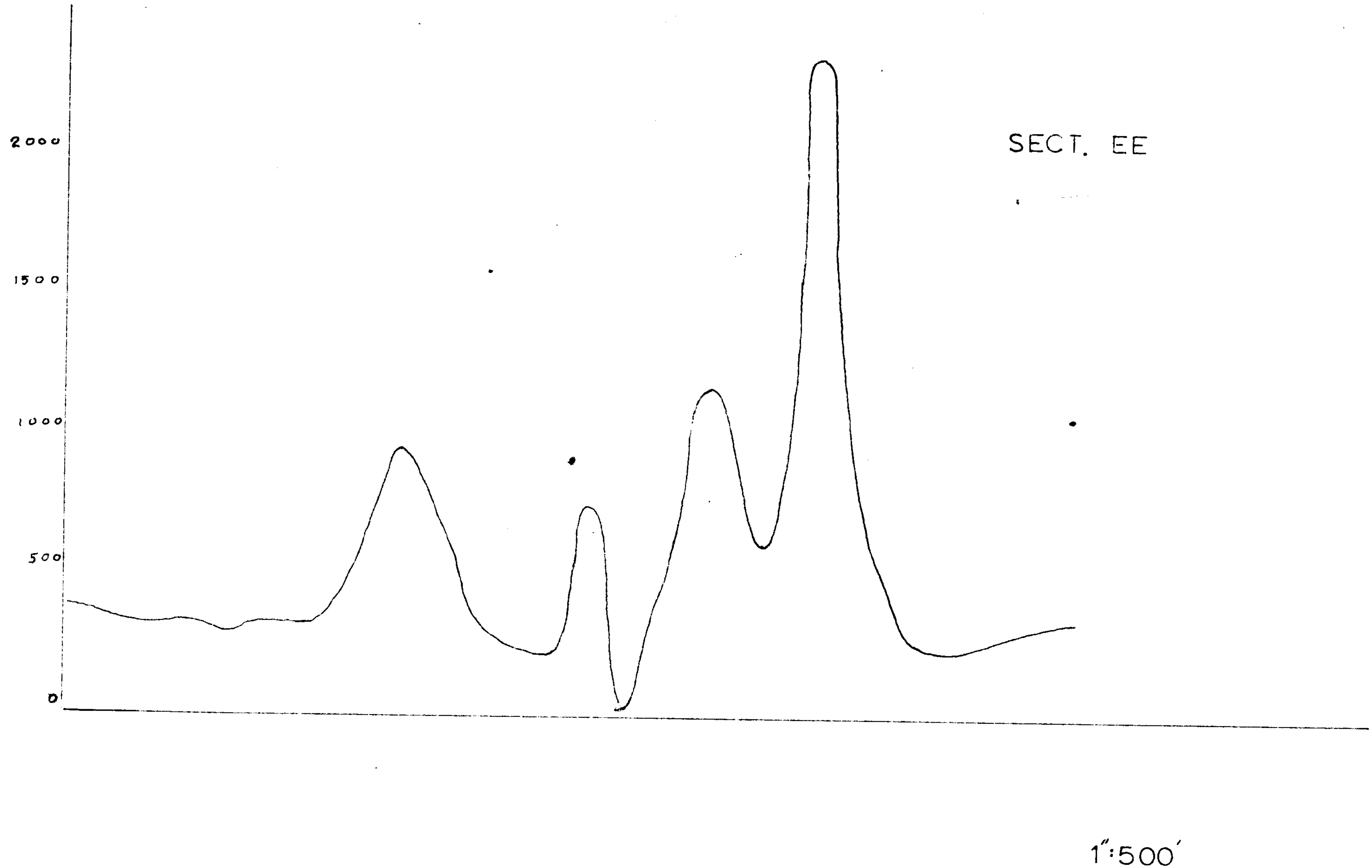
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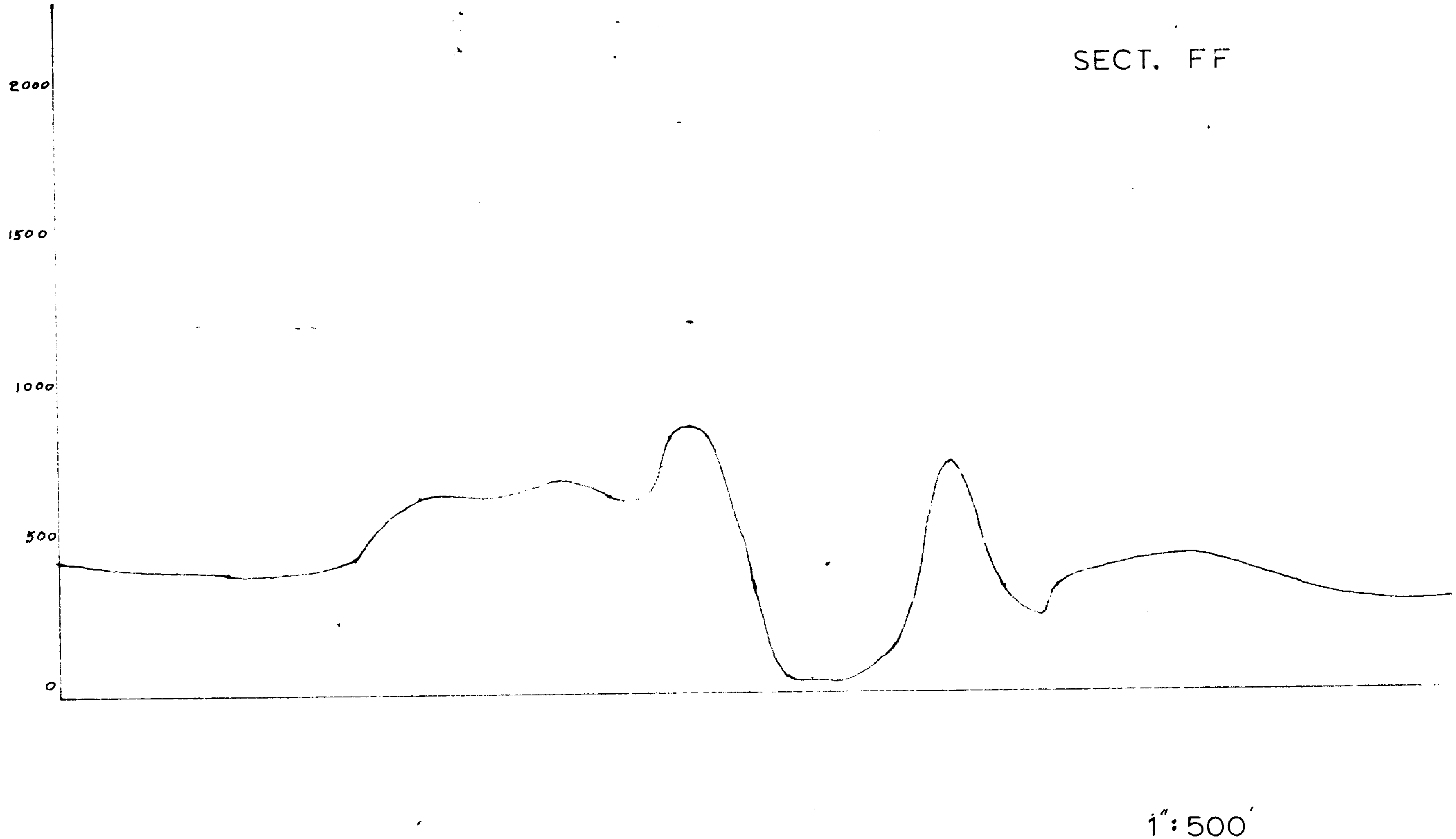
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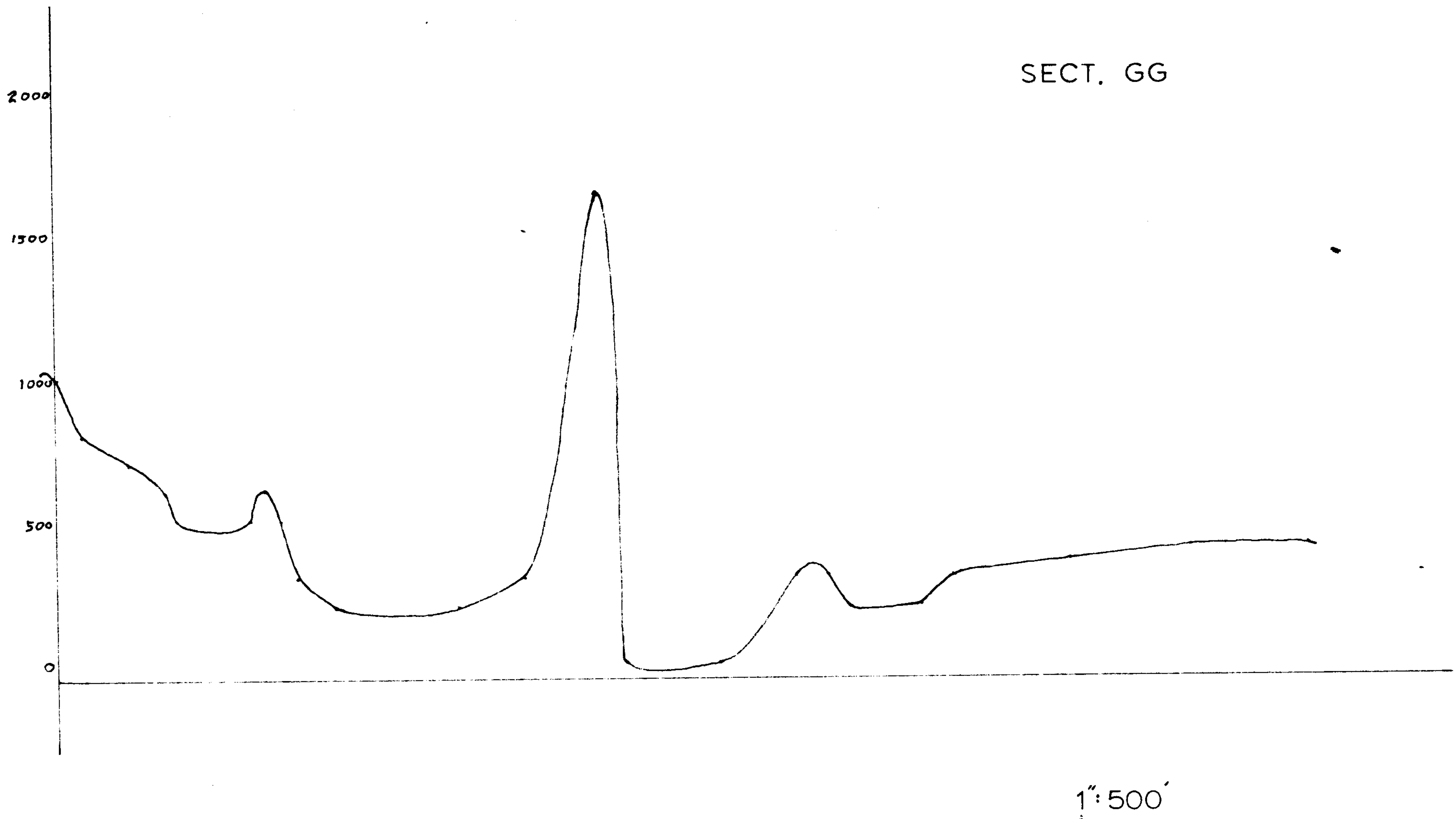
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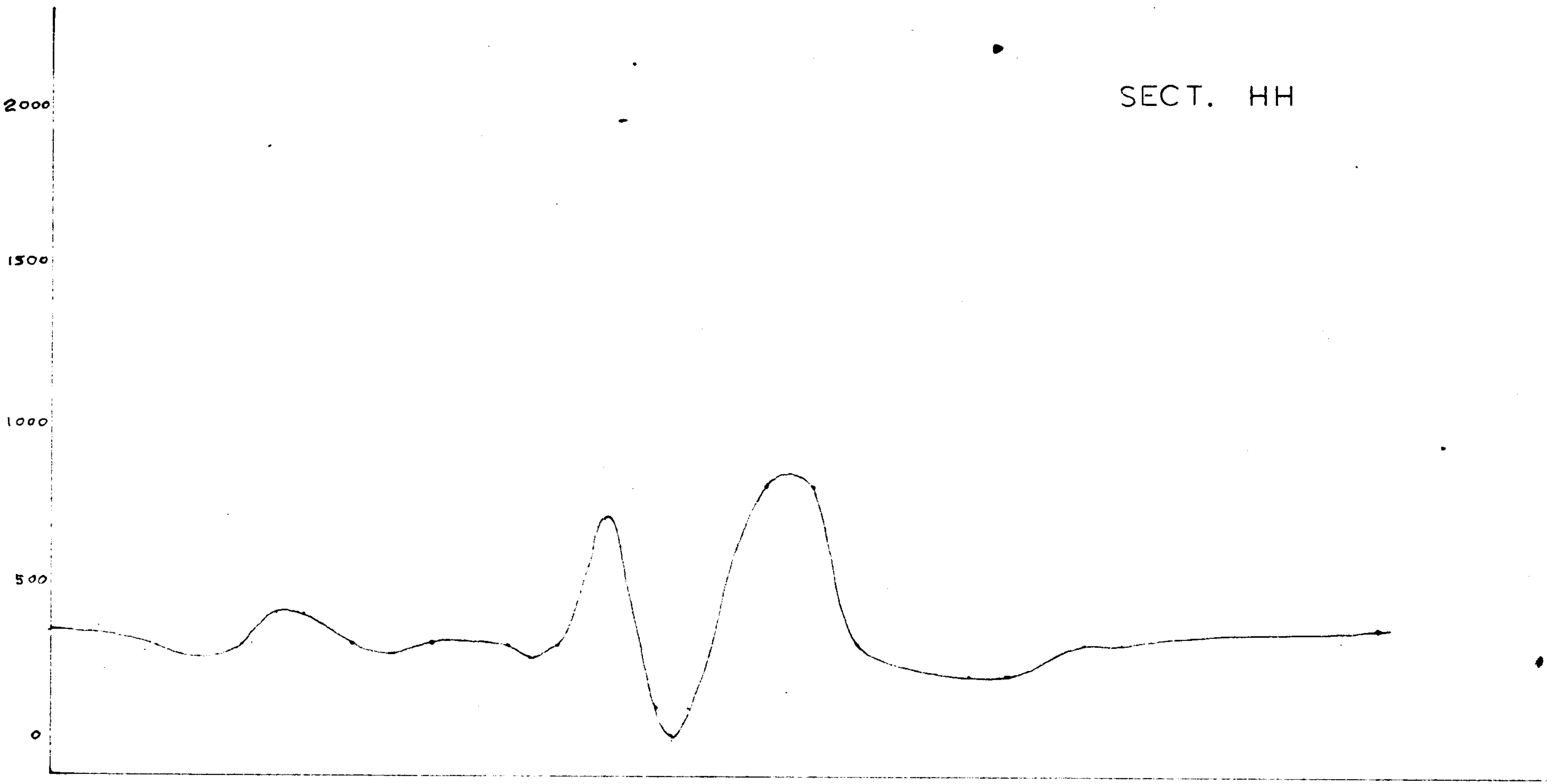

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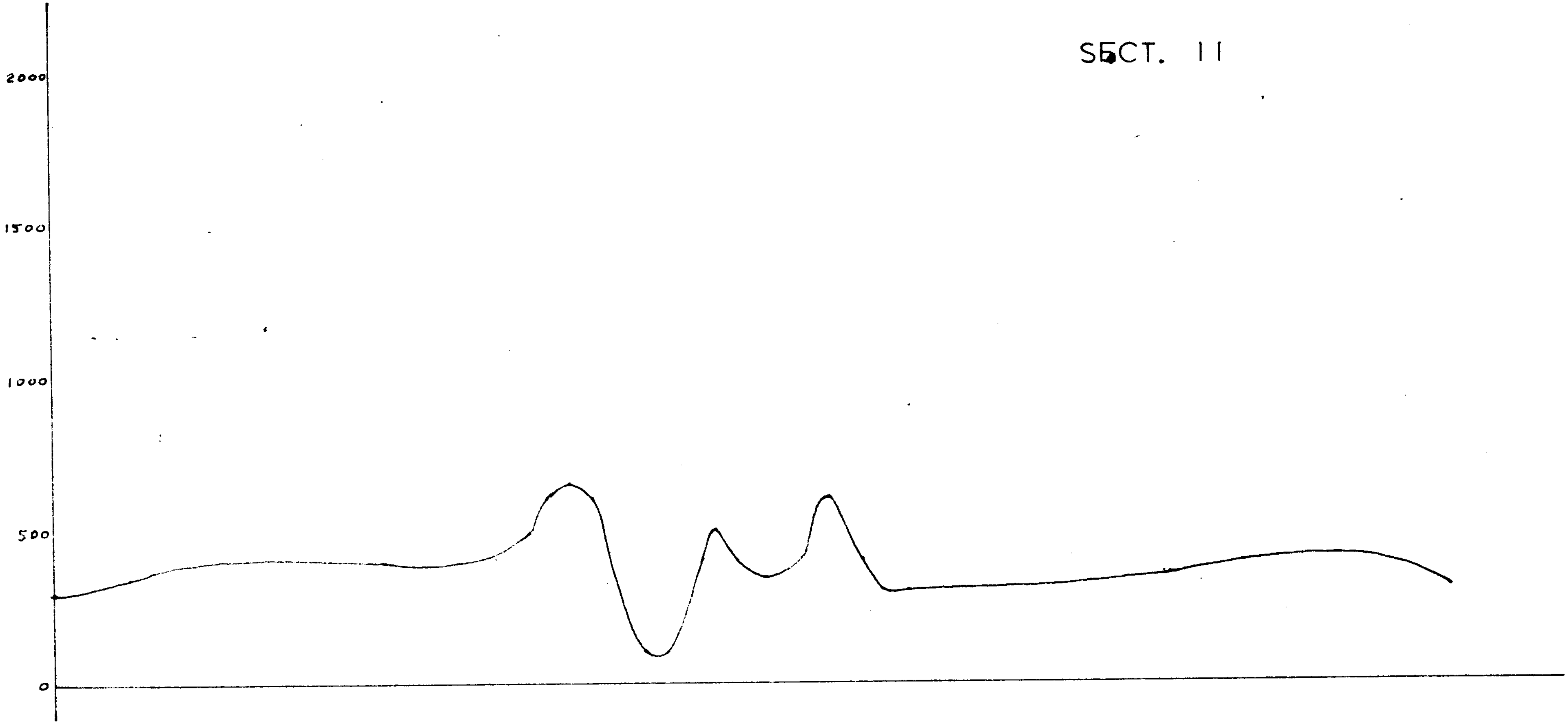
SECT. 11



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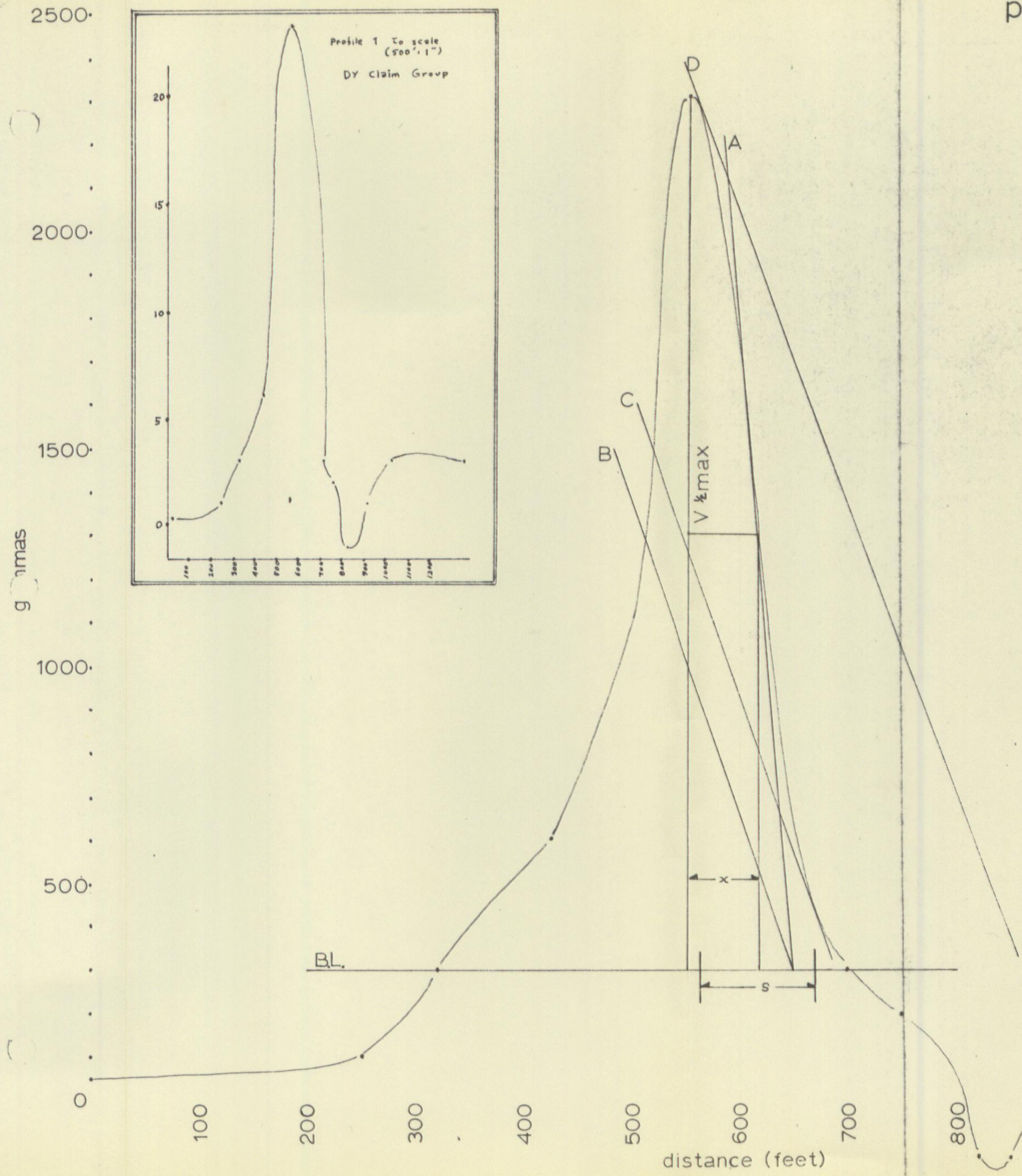


DY CLAIM GROUP (NW)
GROUND MAGNETOMETER SURVEY
PROFILE 1

SCALE: 100' : 1"

section strikes 102° faces 2°

Calculations

Peter's Depth Estimation: (Slope Method)

assume long slab, thickness 'T', top at depth 'h'

$S = 1.6\ h$

$108' = 1.6\ h \quad \therefore$ h = 68.5' →

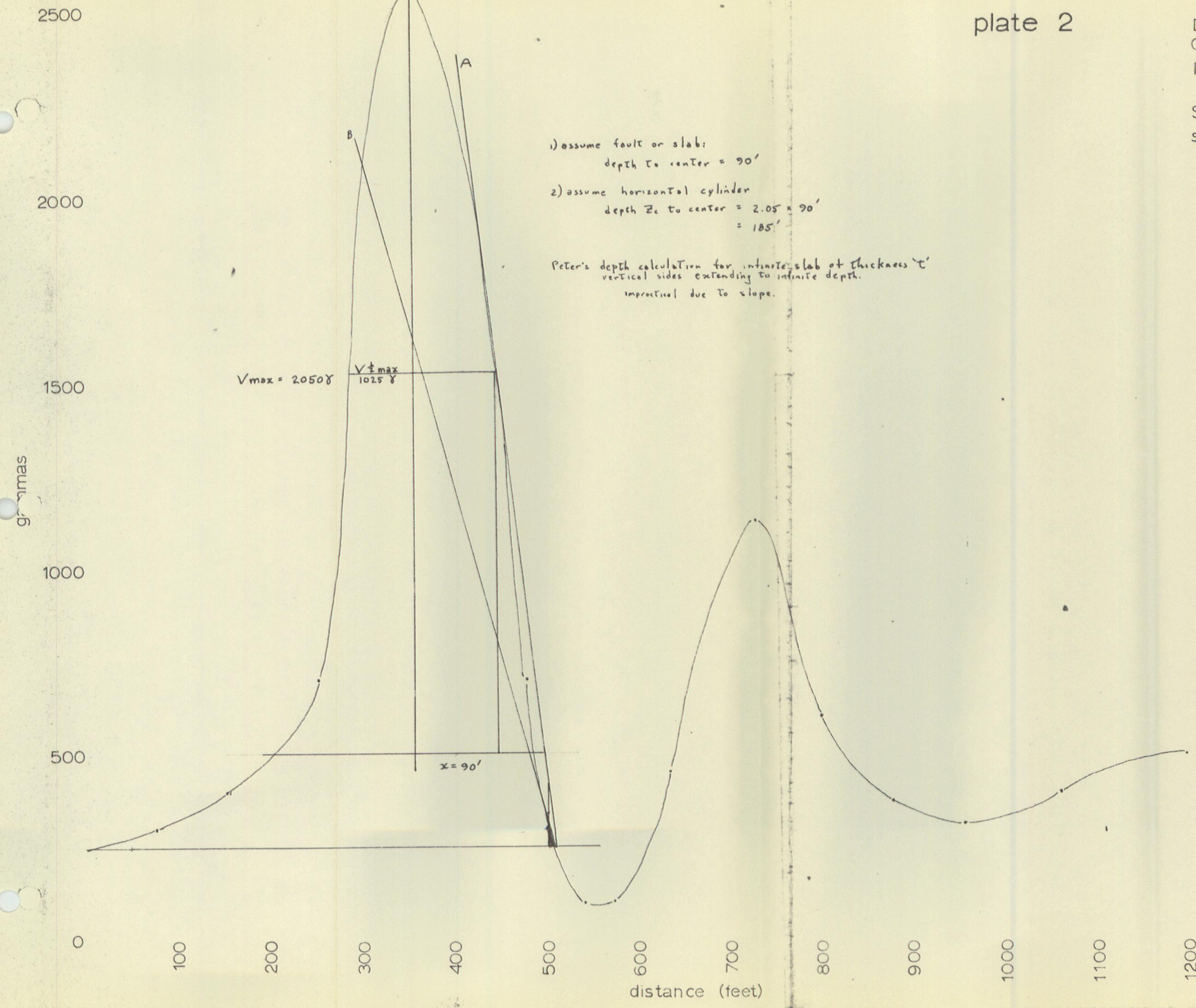
Half Width Depth Estimation:

assume fault $\therefore x = 70$ ft $\therefore$ h = 70' to center →

plate 2

DY CLAIM GROUP (NW)
GROUND MAGNETOMETER SURVEY
PROFILE 2

SCALE: 100' 1"
section strikes: 3° faces 93°



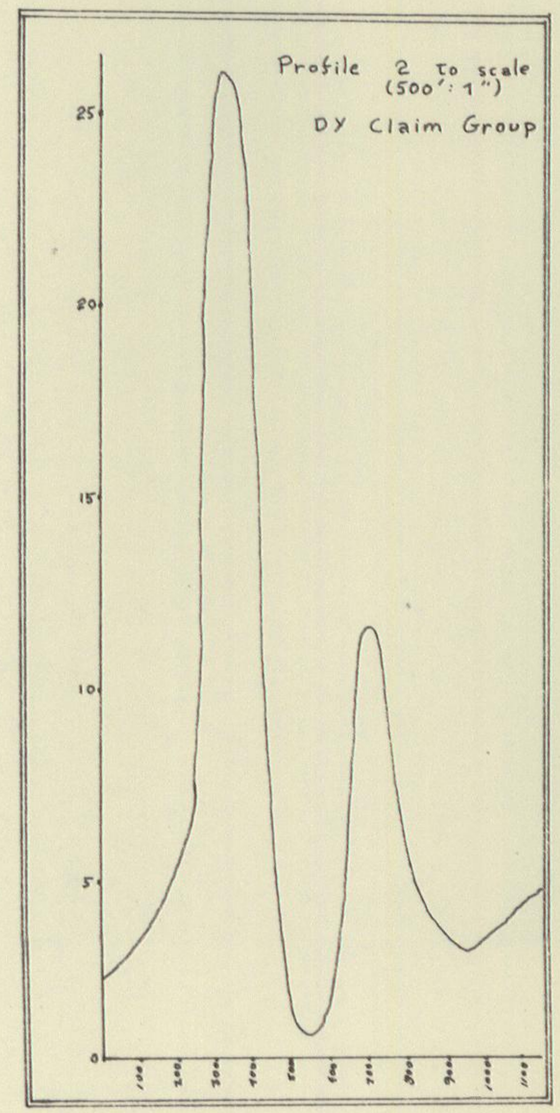
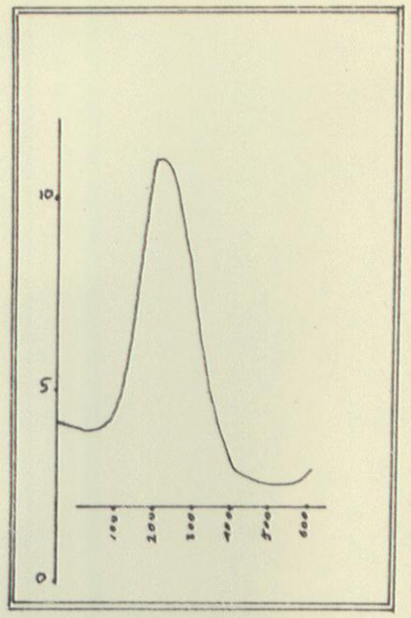
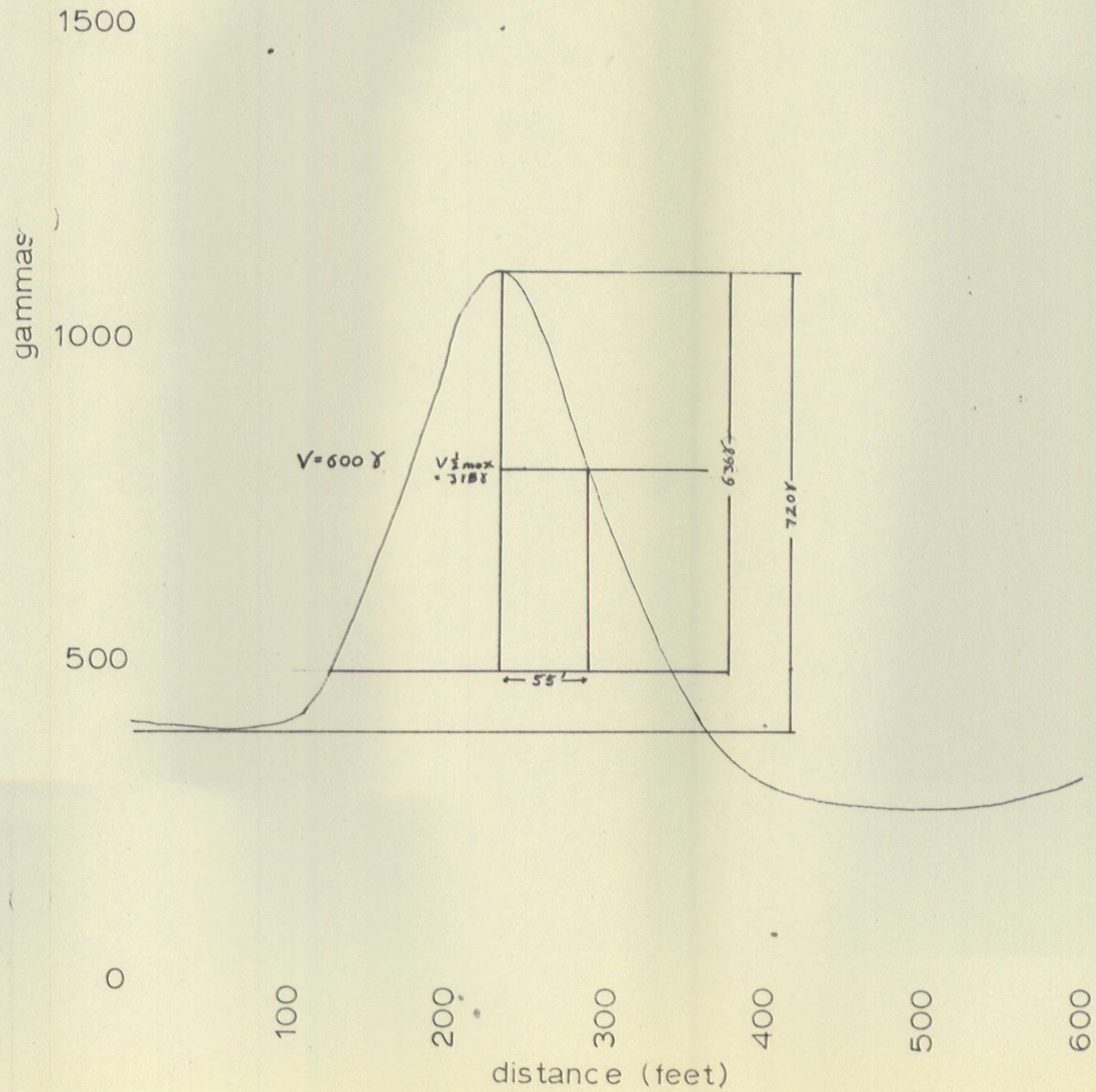


plate 3



DY CLAIM GROUP (NW)
GROUND MAGNETOMETER SURVEY
PROFILE 3

SCALE 100' 1"
section strikes 20° faces 110°



Assume horiz. cylinder
depth to center $Z_c = 2.05 \times x$
$= 2.05 \times 55' = 110.5'$

$$V_{max} = 6.28 \times 10^5 \frac{R^2 J}{Z^2}$$

$$636\gamma = 6.28 \times 10^5 \times \frac{R^2 \times 10^{-3}}{12100} \times 2$$

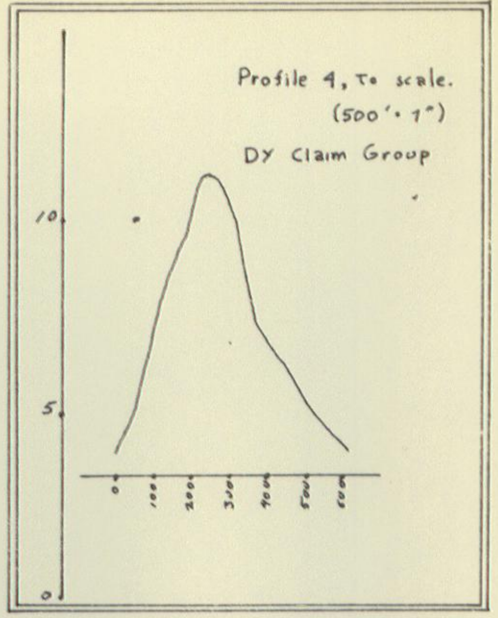
$R = 79'$

∴ 32' to top of cylinder

DY CLAIM GROUP (NW)
GROUND MAGNETOMETER SURVEY
PROFILE 4

plate 4

SCALE: 100' = 1"
section strikes 123° faces 33°



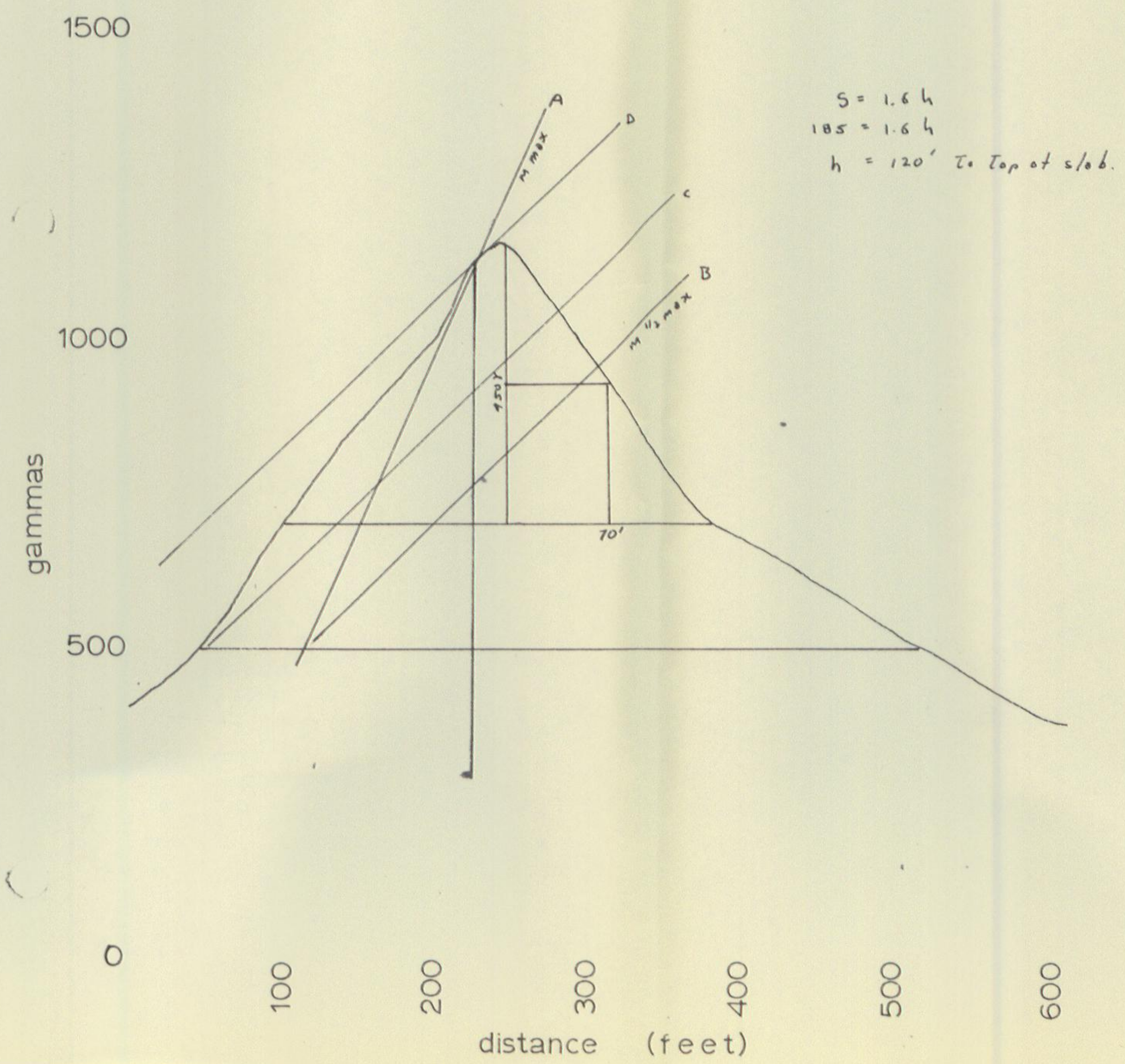
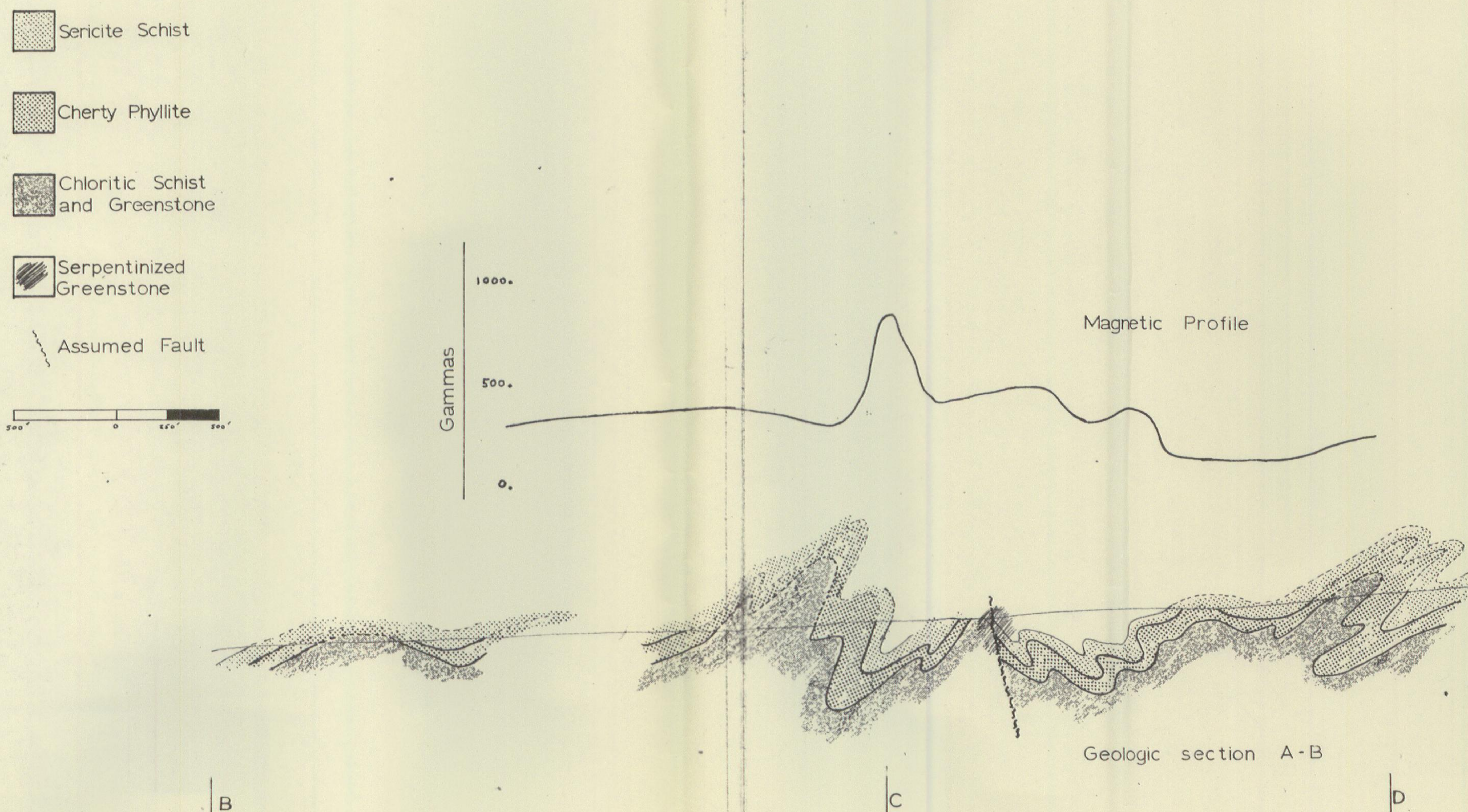
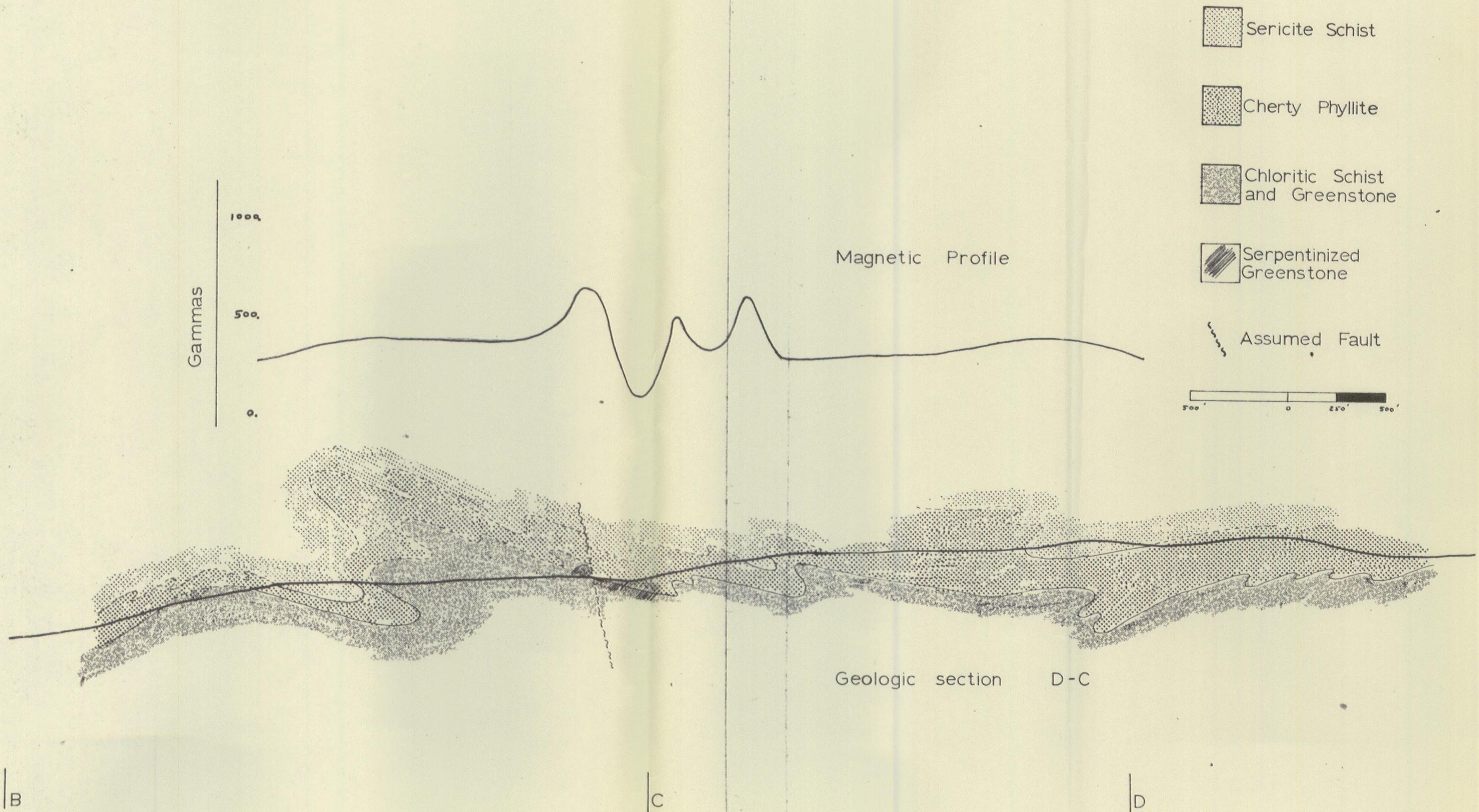


plate 5 a



Sericite Schist
Cherty Phyllite
Chloritic Schist and Greenstone
Serpentinized Greenstone
Assumed Fault
500'
0
250'
500'
1000.
500.
0.
Gammas
Magnetic Profile
Geologic section A-B
B
C
D

plate 5b


Sericite Schist
Cherty Phyllite
Chloritic Schist and Greenstone
Serpentinized Greenstone
Assumed Fault
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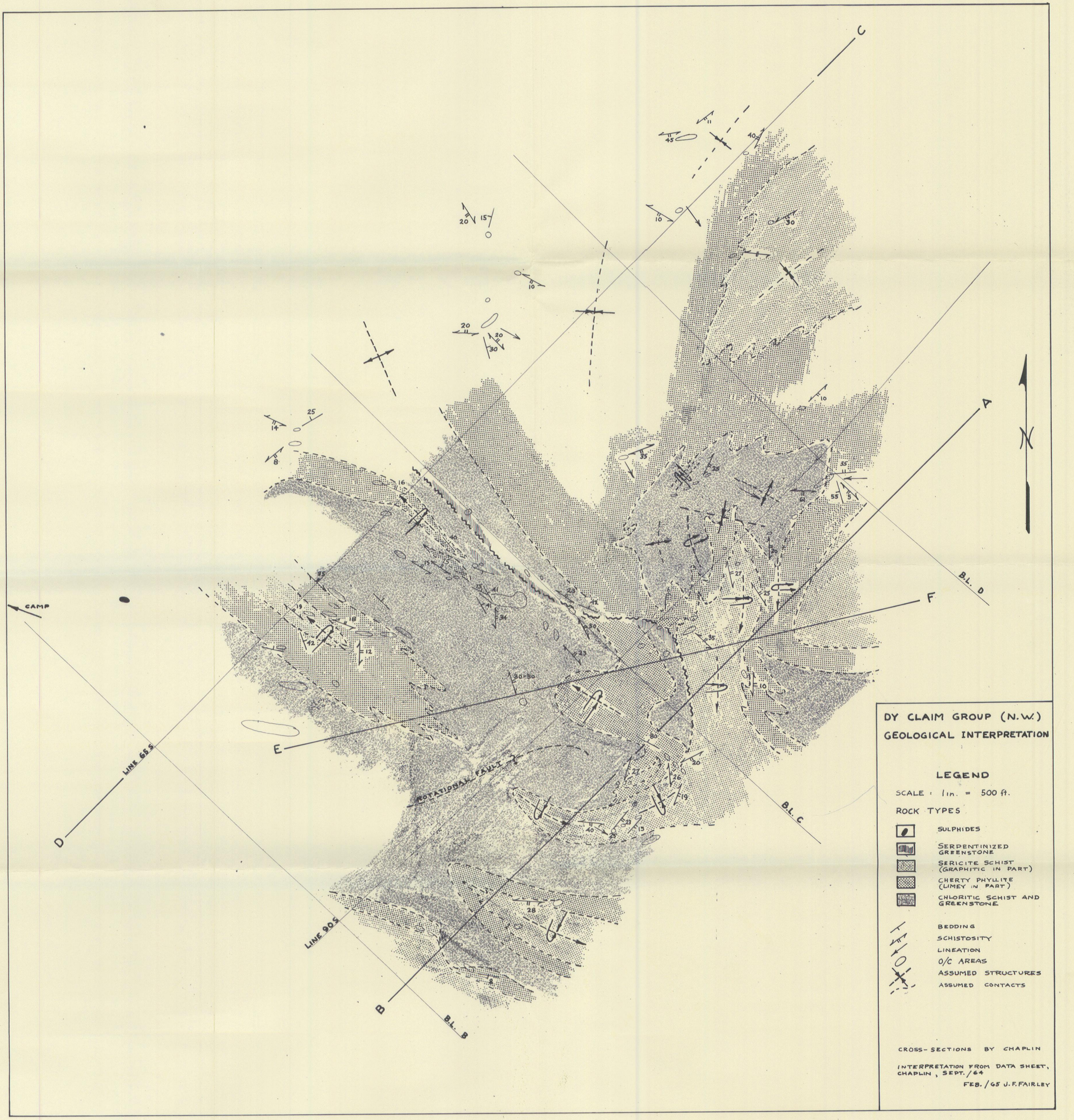
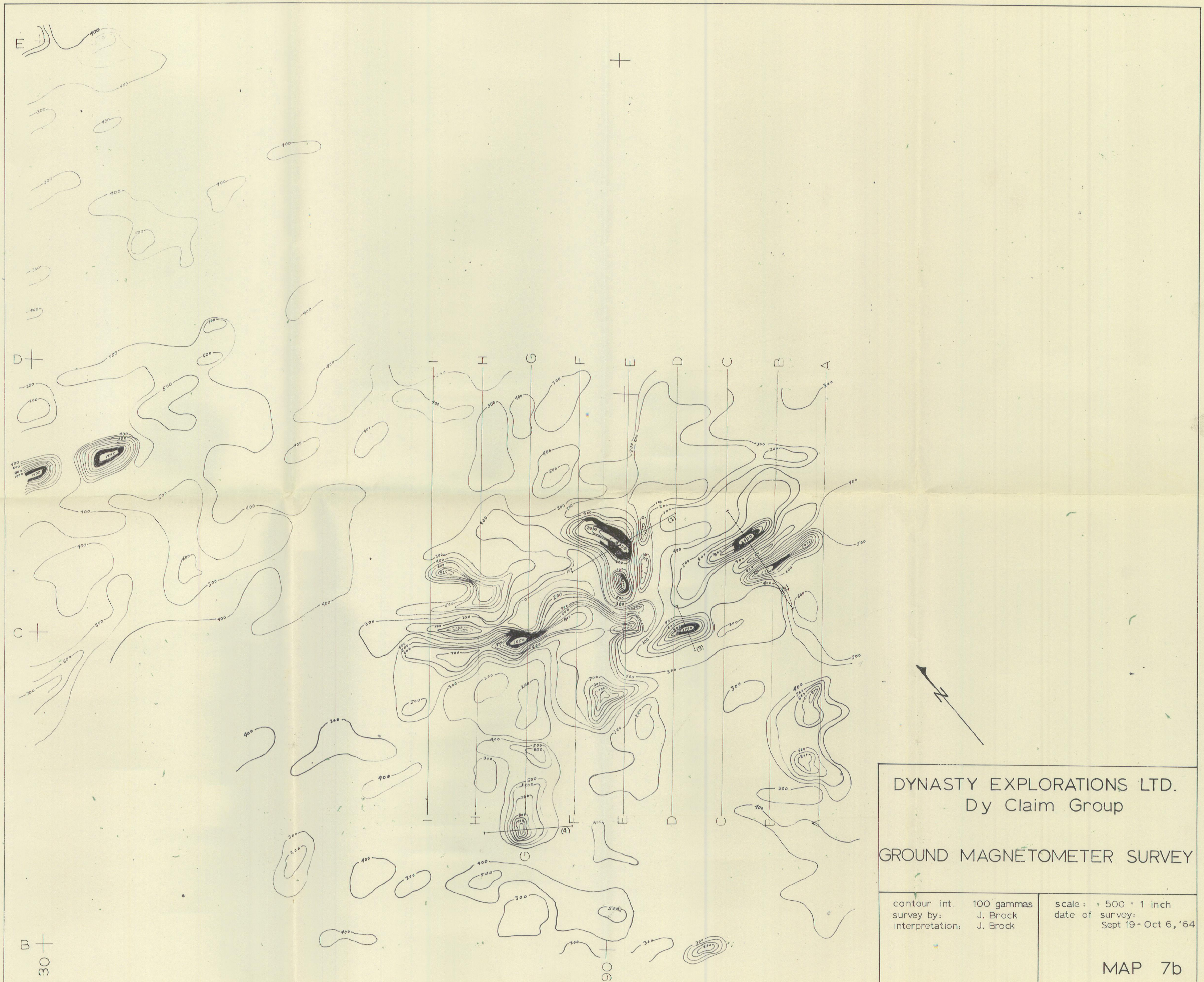
0
250'
500'
Gammas
1000.
500.
0.
Magnetic Profile
Geologic section D-C
B
C
D


DY CLAIM GROUP (N.W.)
GEOLOGICAL INTERPRETATION
LEGEND
SCALE : 1in. = 500 ft.
ROCK TYPES
SULPHIDES
SERPENTINIZED GREENSTONE
SERICITE SCHIST (GRAPHITIC IN PART)
CHERTY PHYLLITE (LIMEY IN PART)
CHLORITIC SCHIST AND GREENSTONE
BEDDING
SCHISTOSITY
LINEATION
O/C AREAS
ASSUMED STRUCTURES
ASSUMED CONTACTS
CROSS-SECTIONS BY CHAPLIN
INTERPRETATION FROM DATA SHEET, CHAPLIN, SEPT./64
FEB./65 J.F. FAIRLEY
C
A
F
E
D
B
N
LINE 65 S
LINE 90 S
B.L. D
B.L. C
B.L. B
CAMP
ROTATIONAL FAULT

B.L. 'E'
B.L. 'D'
B.L. 'C'
B.L. 'B'
C.L. 30+00
C.L. 90+00
DYNASTY EXPLORATIONS LTD.
Dy Claim Group
GROUND MAGNETOMETER
GAMMA VALUES
background (absolute) 55000 γ
background (interp.) 300 γ
survey lines by pace and compass: 400' line spacing 200' stations
survey by: J Brock
base lines by chain and picket.
compilation by: J Brock Jan. 23 '65
scale: 300': 1 inch
MAP 7a


DYNASTY EXPLORATIONS LTD.
Dy Claim Group
GROUND MAGNETOMETER SURVEY
contour int. 100 gammas
survey by: J. Brock
interpretation: J. Brock
scale: 500 ' 1 inch
date of survey:
Sept 19 - Oct 6, '64
MAP 7b
N
E
D
C
B
30
90
A
B
C
D
E
F
G
H
I