

CONFIDENTIAL

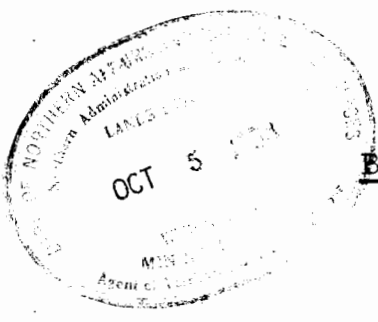
GEOPHYSICAL TESTS and SURVEY

on the PROPERTY of

REVENUE COPPER GROUP

BIG CREEK AREA, WHITEHORSE DISTRICT

YUKON TERRITORY



LOCATION AND ACCESS:

The group of claims on which the discovery is located lie on either side of Revenue Creek from Big Creek to the south. The discovery is on the east bank of Revenue Creek approximately one mile south of Big Creek.

A graded road, passable in summer for trucks, strikes almost due west from a point on the old Dawson-Whitehorse stage route fourteen miles north of town of Carmacks. A trail suitable for packhorses follows Seymour Creek to Bow Creek and down this creek for about a mile. From this point a footpath climbs northwesterly over a high ridge and descends to the discovery, a distance of approximately four miles.

PURPOSE OF THE GEOPHYSICAL SURVEY:

In the process of placer operations the owner of the claims uncovered a showing of high grade copper ore twelve feet wide. The geophysical tests and survey were undertaken to determine which geophysical method was most suitable for tracing the possible extension of the known ore and to find its extent.

GEOPHYSICAL METHODS TESTED:

(a) Magnetic - A number of determinations of the vertical

magnetic intensity were made with a Tiberg Magnetometer on surface directly above the ore exposure and to the east and west for 100 feet. No measureable variations were encountered showing that the variations were beyond the limit of sensitivity of the instrument.

(b) Self Potential - When a lens of pyrite or chalcopyrite oxidizes, the lens becomes electrically polarized with the negative pole near the top of the body and the positive pole near the lower extremity. The body acts as a buried battery and currents flow through the surrounding rocks and the covering overburden. These currents cause differences in voltage between points on the surface measurement of voltage difference between points on a line crossing the body serves as a means of detecting and outlining sulphide lenses whether massive or disseminated.

Profiles along lines 100 N and 150 N across the ore and its probable extension failed to show any significant changes.

The absence of self potentials was probably due to the permanently frozen overburden preventing oxidizing surface waters reaching the ore. Although the ore was highly oxidized, the oxidization was undoubtable of a much earlier age and had come to a halt so that the body was no longer electrically polarized.

(c) Electromagnetic -

If a loop of wire carries an alternating current an alternating magnetic field is set up all around the loop extending out for a large distance. Any conducting body such as a lens of massive or disseminated pyrite or chalcopyrite close to the loop will have electrical currents generated within it. The maximum strength of such currents occur when the planes of the loop and the ore lens are parallel. The currents in the ore body in turn set up their own alternating magnetic field which combines with the primary

field to give a net result higher than normal. The value of this resultant field increases with an increased concentration of sulphide mineralization. It is known from experiments on models that the induced currents in the body are concentrated near the outer edges of a conductor.

From the previous remarks it may be deduced that a vertical exciting loop is most efficient for vertical or steeply dipping conducting lenses.

The primary field for a vertical loop is always horizontal on a line along the loop parallel to its plane, whether the observation point is above or below the centre of the loop. The strength of the primary field decreases inversely as the distance cubed from the centre of the exciting loop.

If a vertical detecting coil is placed in the field the voltage generated across its terminals is proportional to the total horizontal field and accurate measurements of this voltage at suitable stations around the exciting loop will detect the presence of buried conductors.

For the present survey a large vertical loop was set up and supplied with a 1000 cycle alternating current. The plane of the loop was pointed at the stations where the determination was being made and the voltage in the detecting coil measured. The undisturbed field at the point was calculated and ratio of the observed and calculated field was determined. The results are shown on Map 1 and will be discussed in detail later.

(d) Resistivity - If two grounded electrodes are placed several hundreds of feet apart along a line perpendicular to the strike of a conductor and supplied with an alternating voltage a definite voltage pattern is set up on the surface. Measurements

of difference in voltage between surface points gives a means of detecting conducting zones below the overburden. Average resistivities of the underlying rocks can be calculated. A sulphide lens shows up as an area of low values.

Part of the area was also surveyed by this method. The results are shown on Map 3.

DISCUSSION OF RESULTS: MAP 1

The area from 300 S to 200 N is characterized by numerous high values. The contours indicate that these high values line up into several zones which are likely caused by mineralized lenses. From the profiles along the various lines the width of the lenses causing the increased field has been estimated and shown by the broken heavy lines. The central zone coincides with the position of the known ore near the base line, line 100 N is similar in shape but shows a very marked high at its southerly end. The southerly lens from 25 S to 200 S has high values at both ends.

The response from the known ore was smaller than one would expect from an inspection of samples and resistance tests on selected representative pieces of the ore. It is probably that the oxidized nature of the upper parts of the lenses is the cause. The extreme high isolated values of the electromagnetic method likely indicate small lenses of unoxidized chalcopyrite probably surrounded by poor conducting oxidized material.

If the various zones from north to south are considered in turn the following conclusions may be drawn:-

1. From 600 N to 300 N the anomaly could be caused by medium dissemination of approximately 15 percent sulphides except at the south end where the mineralization is heavier.

2. From 300 N to 125 N heavy dissemination with a possible massive section at least 50 feet long at the south end.

3. From 160 N to 50 S heavy dissemination with a 100 foot massive lens at the south end.

4. From 25 S to 225 S a heavily disseminated lens with massive sections at either end.

5. From 225 S to 600 S a short massive lens followed by a long section of sparser mineralization than in any of the other lenses.

6. From 200 N to 50 S approximately 100 feet east of the base line the zone is difficult to evaluate since the values were determined at 50 foot intervals except on lines 50 N and 100 N. It is probably that the anomaly is caused by a series of patches of very heavy mineralization since it is impossible to find from the profiles a series of high values which appear to extend over several lines.

Several isolated anomalies occur outside the main zone. With the exception of that one on line 200 N from 75 W to 120 W they are caused by single readings. None of these small anomalies appear to have any important significance.

As a check on the electromagnetic results, part of the area was tested by the resistivity method. Map 3. The results show that the area occupied by the electromagnetic high values is underlain by a region of better conductivity than the surrounding district. The lowest resistivity values coincide with the highest peak from the electromagnetic survey.

The nature of the method does not provide the same detail concerning subsurface conductors as the previous method but does provide further evidence that good conducting material exists in the area.

The permanently frozen cover has the effect of increasing the numerical value of the calculated resistivities.

The relatively poor response of the known ore was surprising. To check its conductivity and to estimate its probable depth extent, one electrode was placed directly on the ore and connected to the generator. The other generator terminal was connected to an earthed electrode 400 feet west. The voltage difference between points on the surface was measured at progressively greater intervals from the body. The resistivities were calculated and the results are shown on the conductivity test sheet.

The resistivity values increase as the depth extent of the tests increase. Experience has shown that if a buried conductor does not change in conductivity with depth the calculated resistivity values remain almost constant.

The results indicate that the massive position does not extend much below 20 feet. There is the possibility of another conducting region from 50 to 70 feet.

The average resistivity of the known body is much larger than one would expect, likely due to the massive sections of chalcopyrite being entirely surrounded by an oxide coating which would make the zone behave the same as a non-oxidized but disseminated one. This effect might account for the apparent shallow depth extent.

SUMMARY:

The region of the discovery has been tested with every type of geophysical method which would be expected to give positive results. A number of conducting zones have been outlined and evaluated. Whether these zones contain ore in

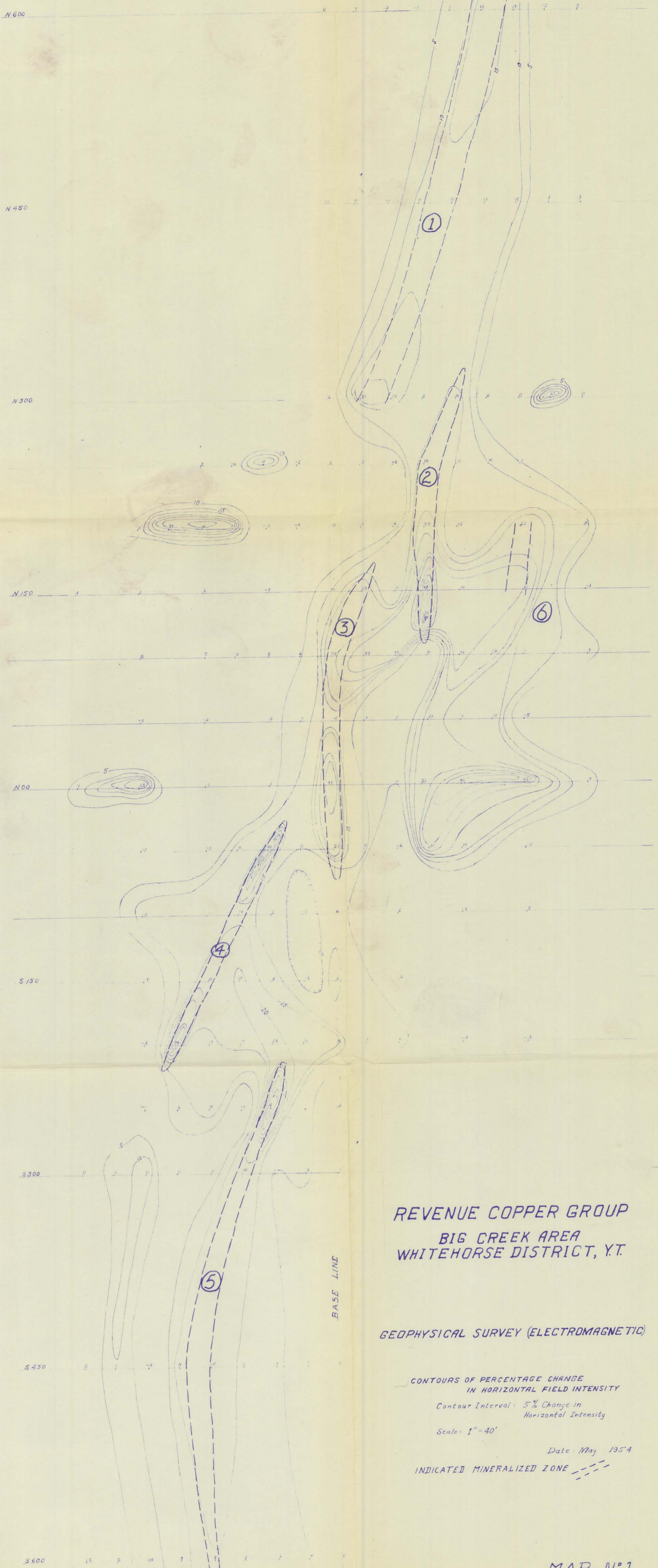
commercial quantity can only be tested by drilling or by drifting.

Respectfully submitted,

Original signed by
A. R. Clark

Certified true copy
Wm. Smithson

A. R. CLARK
Consulting Geophysicist.



REVENUE COPPER GROUP
 BIG CREEK AREA
 WHITEHORSE DISTRICT, Y.T.

GEOPHYSICAL SURVEY (ELECTROMAGNETIC)

CONTOURS OF PERCENTAGE CHANGE
 IN HORIZONTAL FIELD INTENSITY

Contour Interval: 5% Change in
 Horizontal Intensity

Scale: 1" = 40'

Date: May 1954

INDICATED MINERALIZED ZONE

N 600

pit to bedrock. Altered sedimentary rock; irregular very sparse pyrite.

N 300

REVENUE CREEK

2800

N 00

DISCOVERY

REVENUE NO 1 M.C.
REVENUE NO. 4 M.C.

REVENUE NO 2 M.C.
REVENUE NO. 3 M.C.

2300

5300

BASE LINE

REVENUE COPPER GROUP BIG CREEK AREA WHITEHORSE DISTRICT, Y.T.

GEOPHYSICAL SURVEY (ELECTROMAGNETIC)

CONTOURS OF PERCENTAGE CHANGE
IN HORIZONTAL FIELD INTENSITY

Contour Interval: 5% Change in
Horizontal Intensity

TOPOGRAPHIC CONTOURS

Contour Interval 25'

SCALE: 1" = 40'

Date: May 1954

INDICATED MINERALIZED ZONE

5600

MAP N°2.

REVENUE COPPER GROUP
BIG CREEK AREA
WHITEHORSE DISTRICT, Y.T.

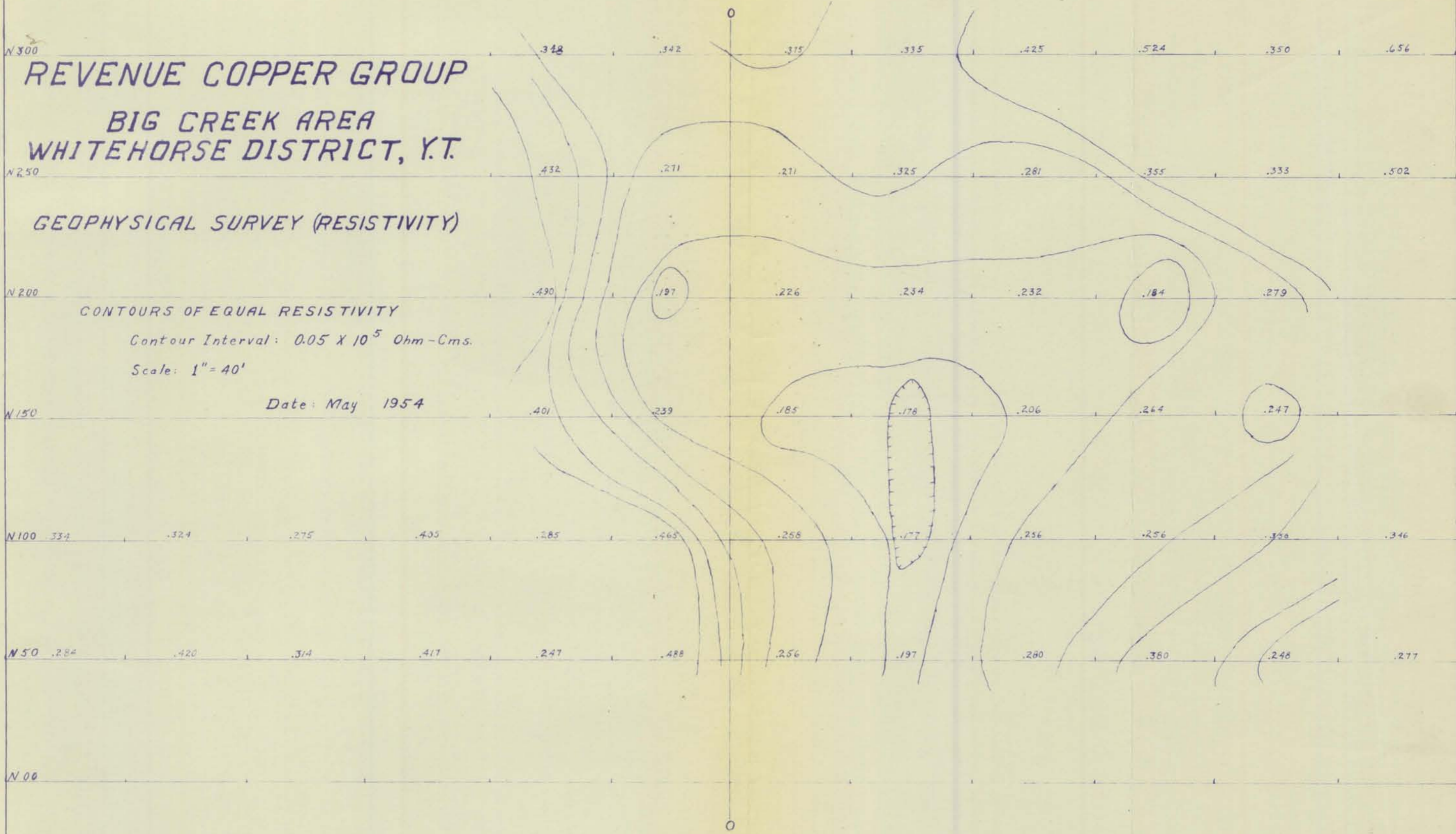
GEOPHYSICAL SURVEY (RESISTIVITY)

CONTOURS OF EQUAL RESISTIVITY

Contour Interval: 0.05×10^5 Ohm-Cms.

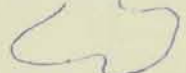


Scale: 1" = 40'

Date: May 1954



REVENUE COPPER GROUP
 BIG CREEK AREA
 WHITEHORSE DISTRICT, Y.T.



GEOPHYSICAL SURVEY (ELECTROMAGNETIC)

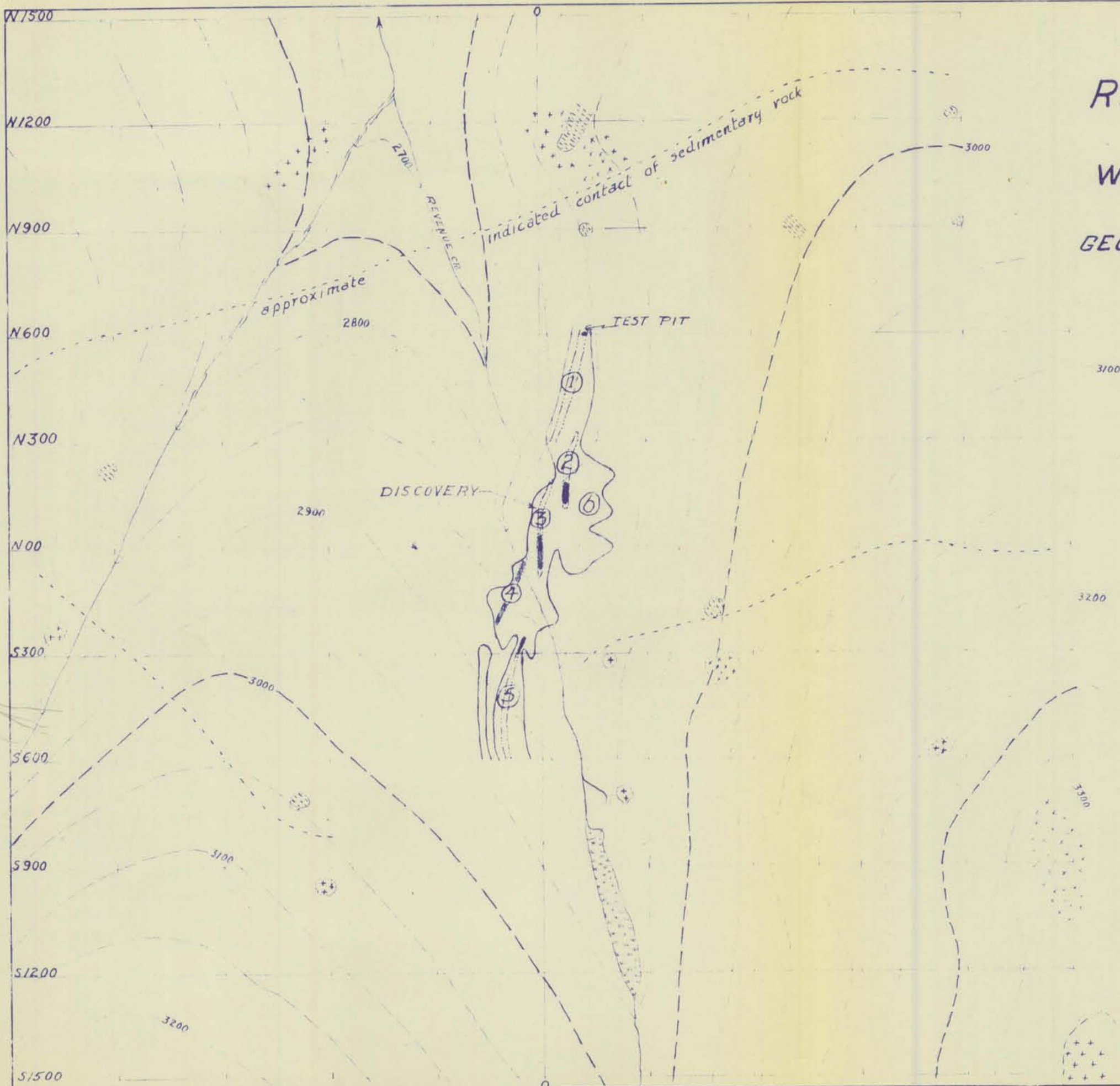
OUTLINE OF ANOMALY 
 INDICATED MINERALIZED ZONE 
 INDICATED HIGH MINERAL CONCENTRATION 

TOPOGRAPHIC CONTOURS
 Contour Interval 50'

SCALE: 1" = 300'

ROCK TYPES:

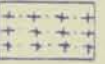

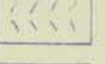
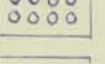

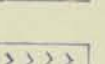
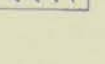
 Granitic Intrusive
 Sedimentary

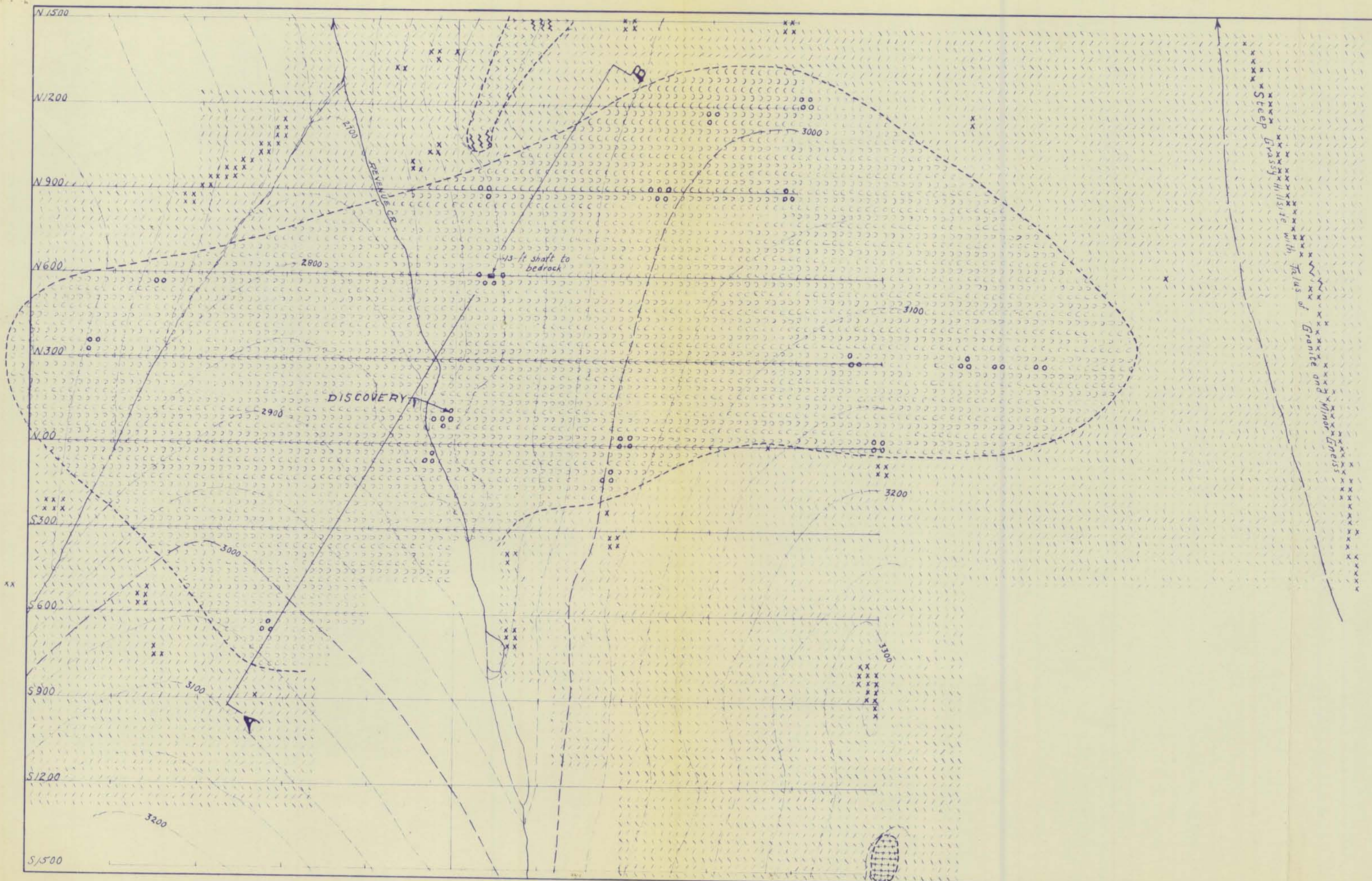


REVENUE COPPER GROUP BIG CREEK AREA WHITEHORSE DISTRICT, Y.T.

GEOLOGICAL MAP
TOPOGRAPHIC CONTOURS
Contour Interval 50'

SCALE: 1" = 300'

- ROCK TYPES:
-  Felsite (dike rock?)
 -  Granitic Rocks
(Indicated by outcrop and float)
 -  Granitic Rocks
(Inferred)
 -  Arkose & Arkosic Conglomerate
(Indicated by float)
 -  Arkose & Arkosic Conglomerate
(Inferred)
 -  Meta-Sediments -- Gneiss & Quartzite
(Indicated by outcrop and float)
 -  Meta-Sediments
(Inferred)



REVENUE COPPER GROUP

BIG CREEK AREA WHITEHORSE DISTRICT, Y.T.

WEST-EAST SECTIONS:

A. - TOPOGRAPHICAL

Scale: Horiz. & Vert. 1" = 40'

B. - GEOPHYSICAL (ELECTROMAGNETIC)

Scale: Horiz. 1" = 40'

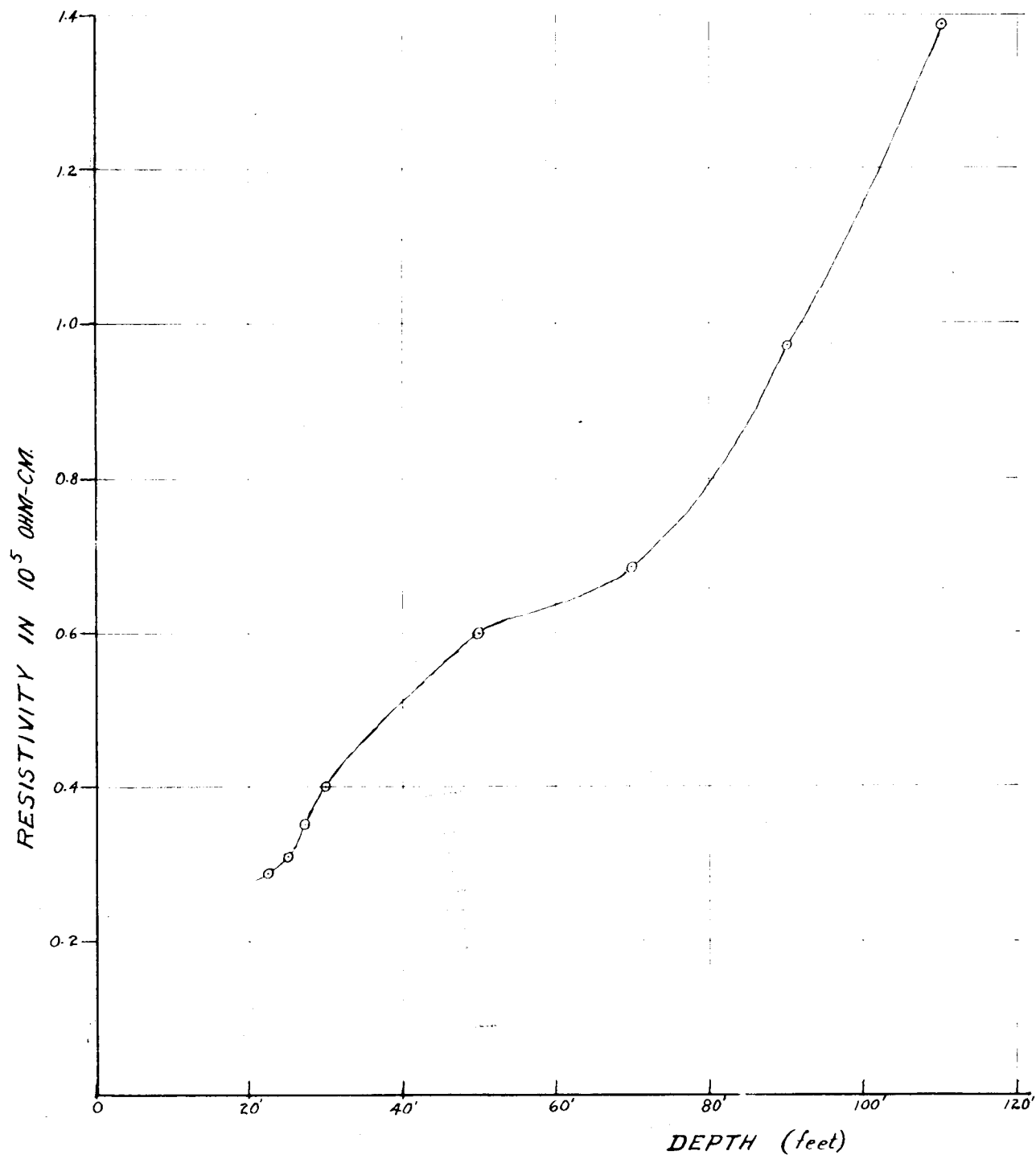
Vert. 1" = 20% change in
horiz. field intensity

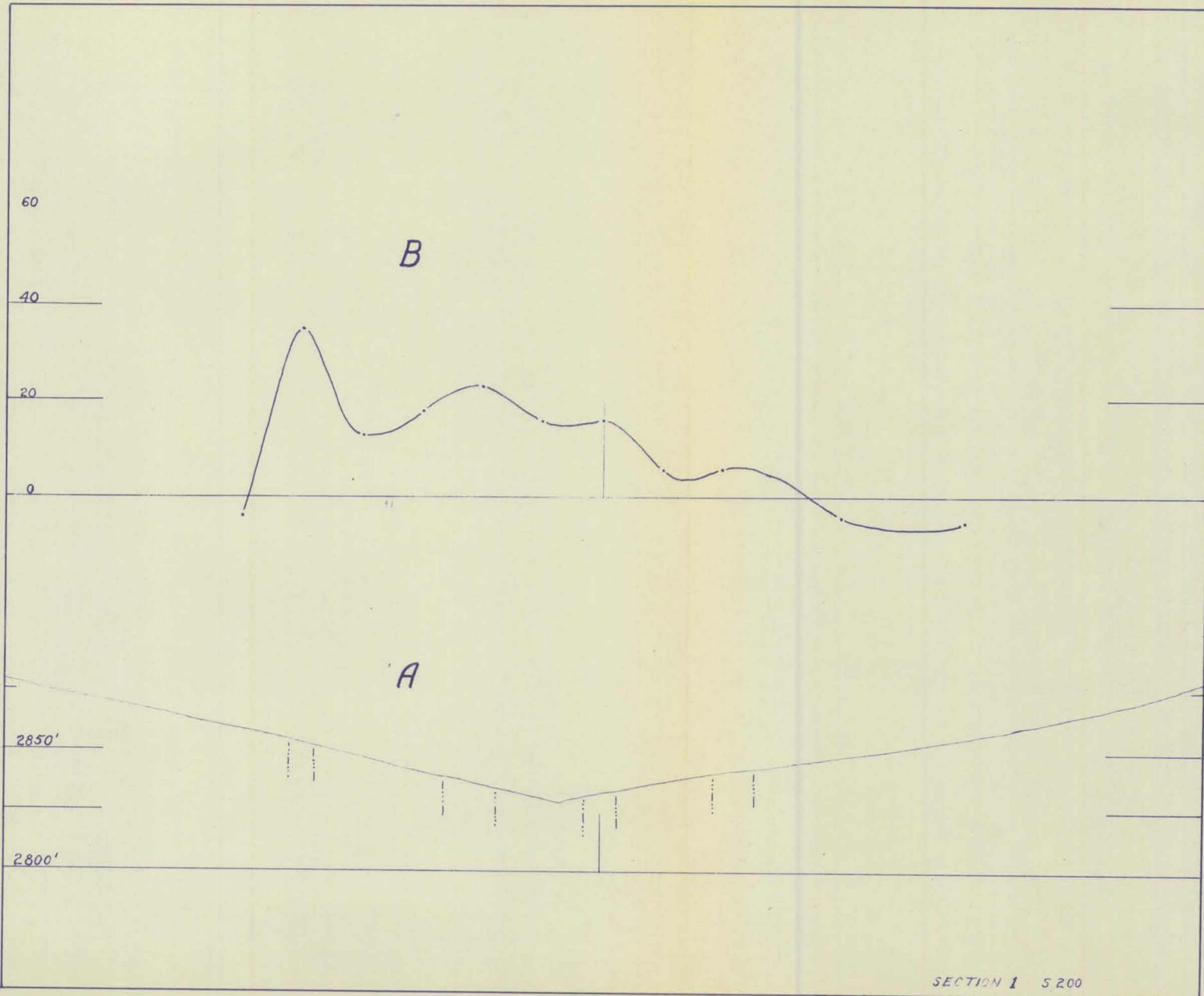
SECTION	GRID LINE	
1		S 200
2		S 100
3		S 50
4		N 00
5		N 50
6		N 100
7		N 150
8		N 250

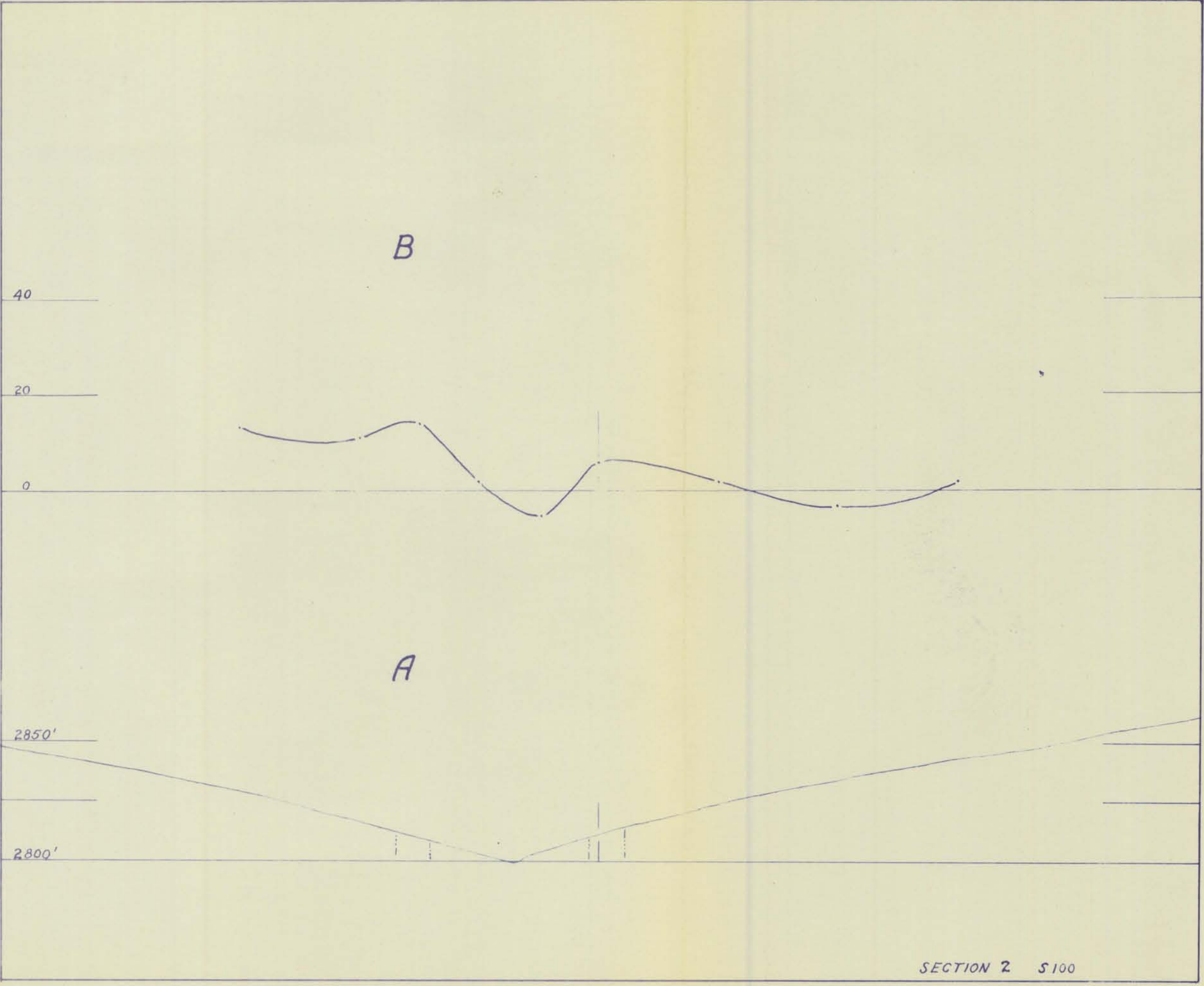
REVENUE COPPER GROUP

BIG CREEK AREA WHITEHORSE DISTRICT, Y.T.

CONDUCTIVITY TEST of "Showing"







B

40

20

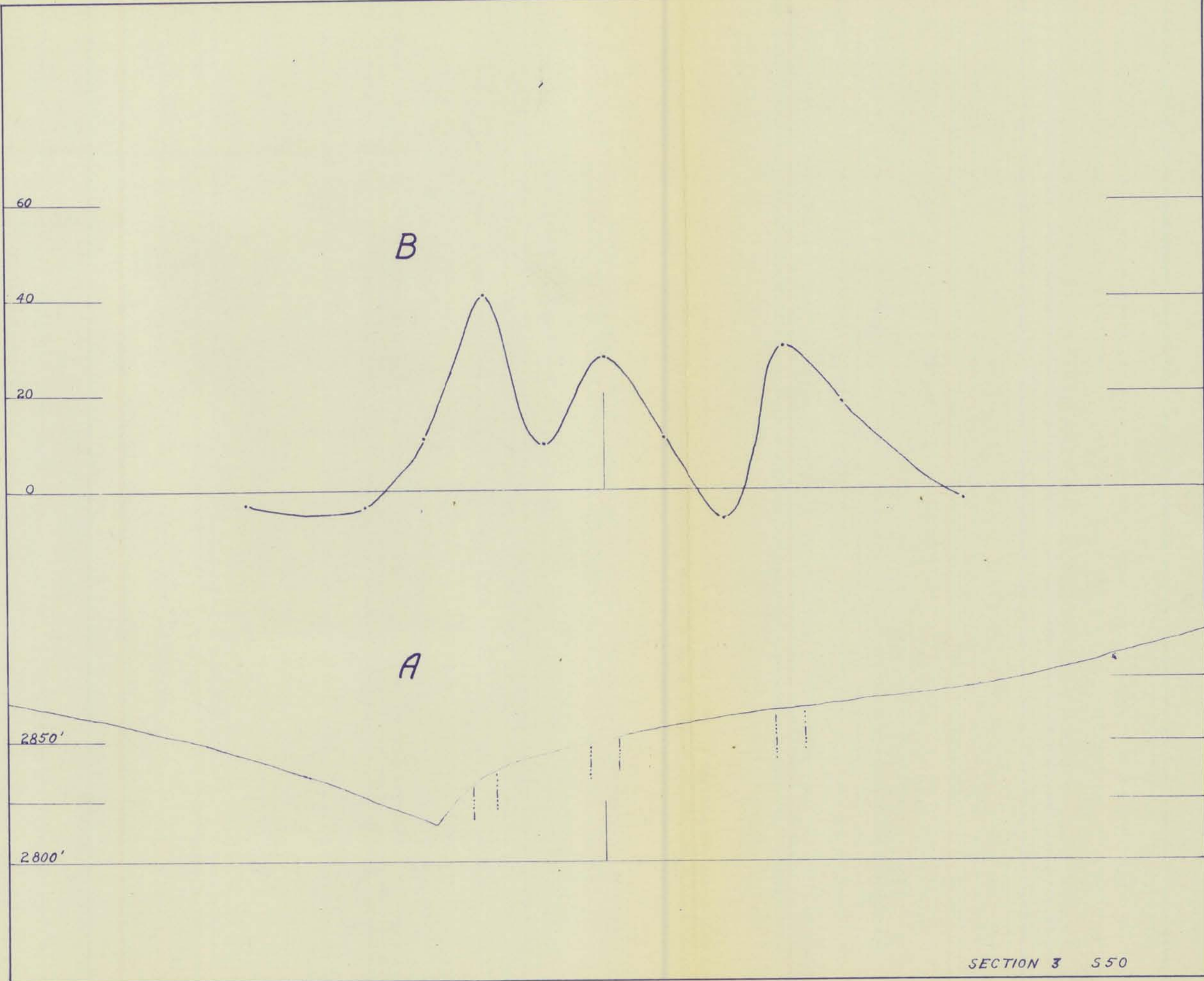
0

A

2850'

2800'

SECTION 2 S100



B

A

60

40

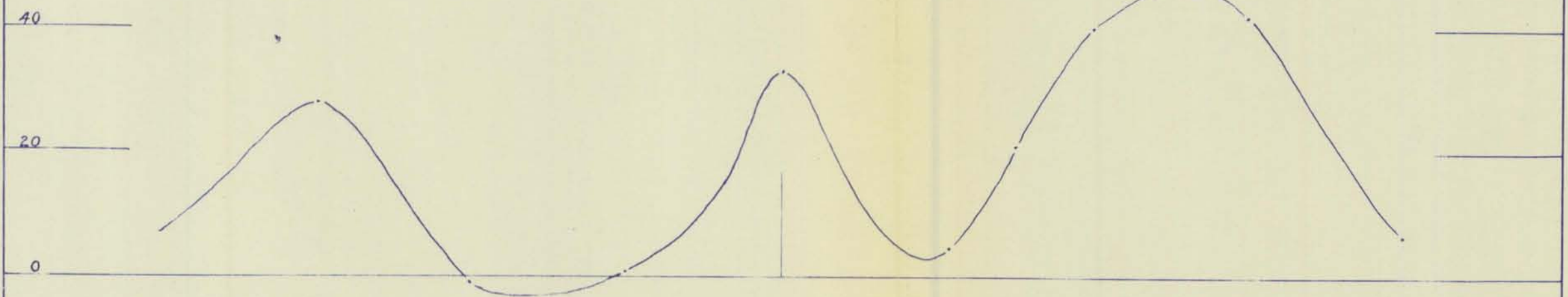
20

0

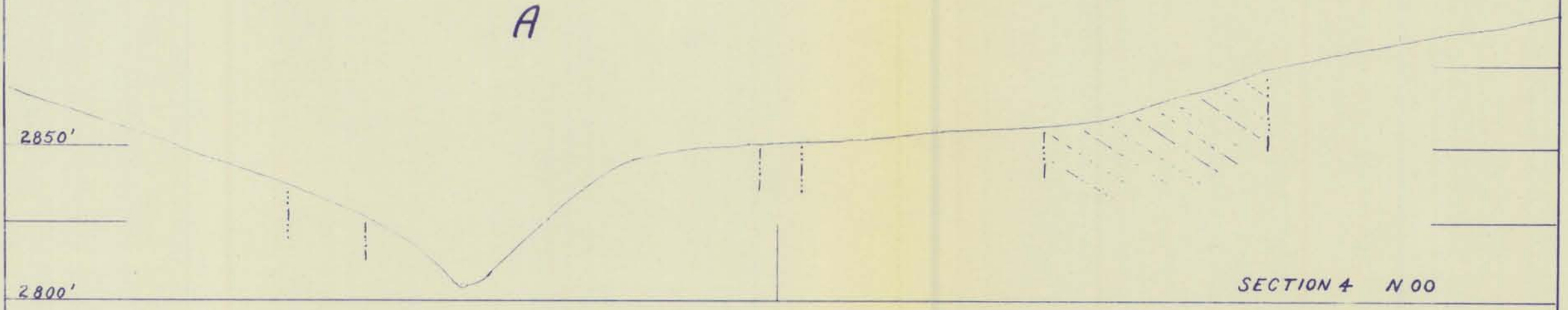
2850'

2800'

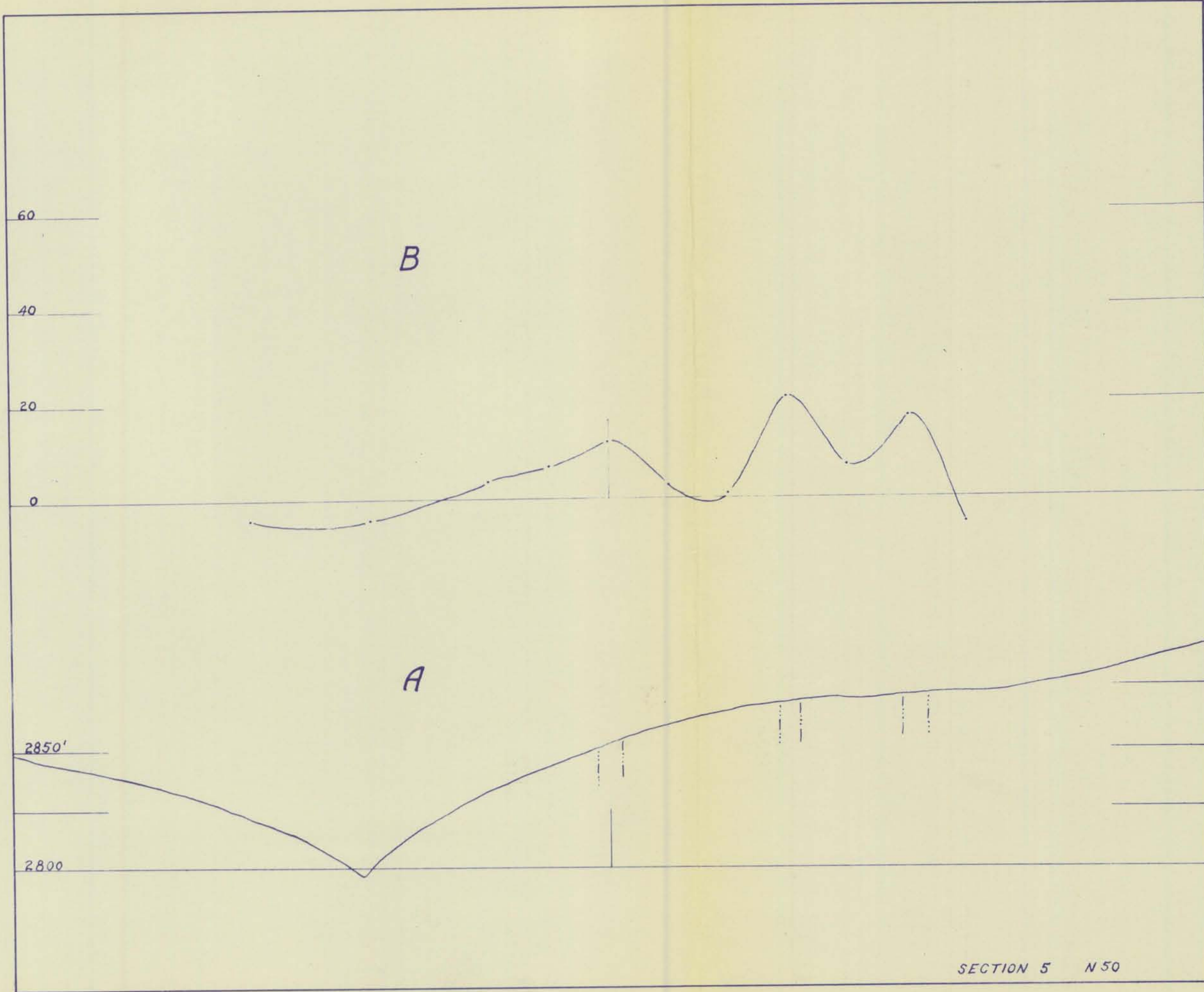
B



A



SECTION 4 N 00



B

A

60

40

20

0

2850'

2800

60

40

20

0

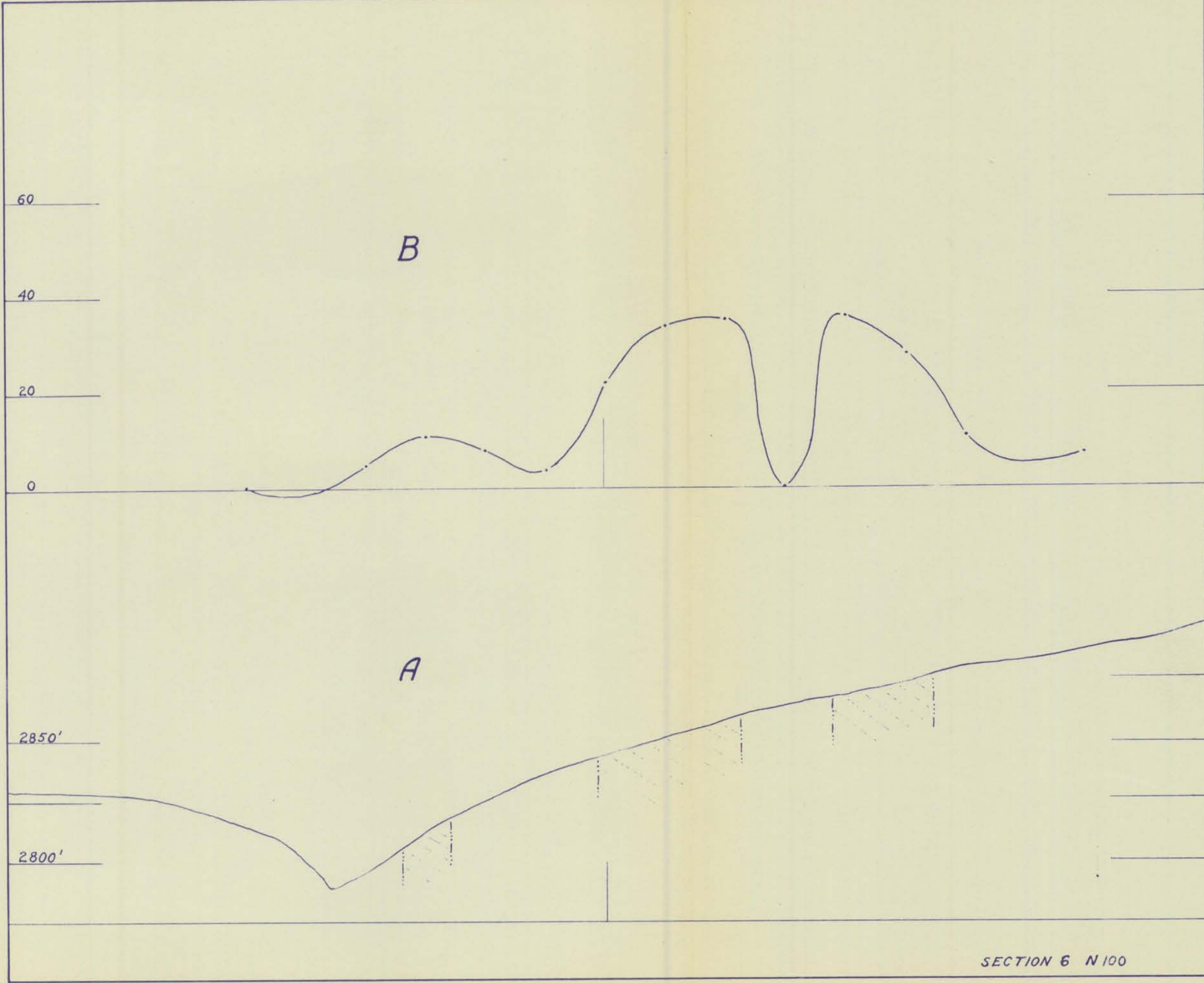
B

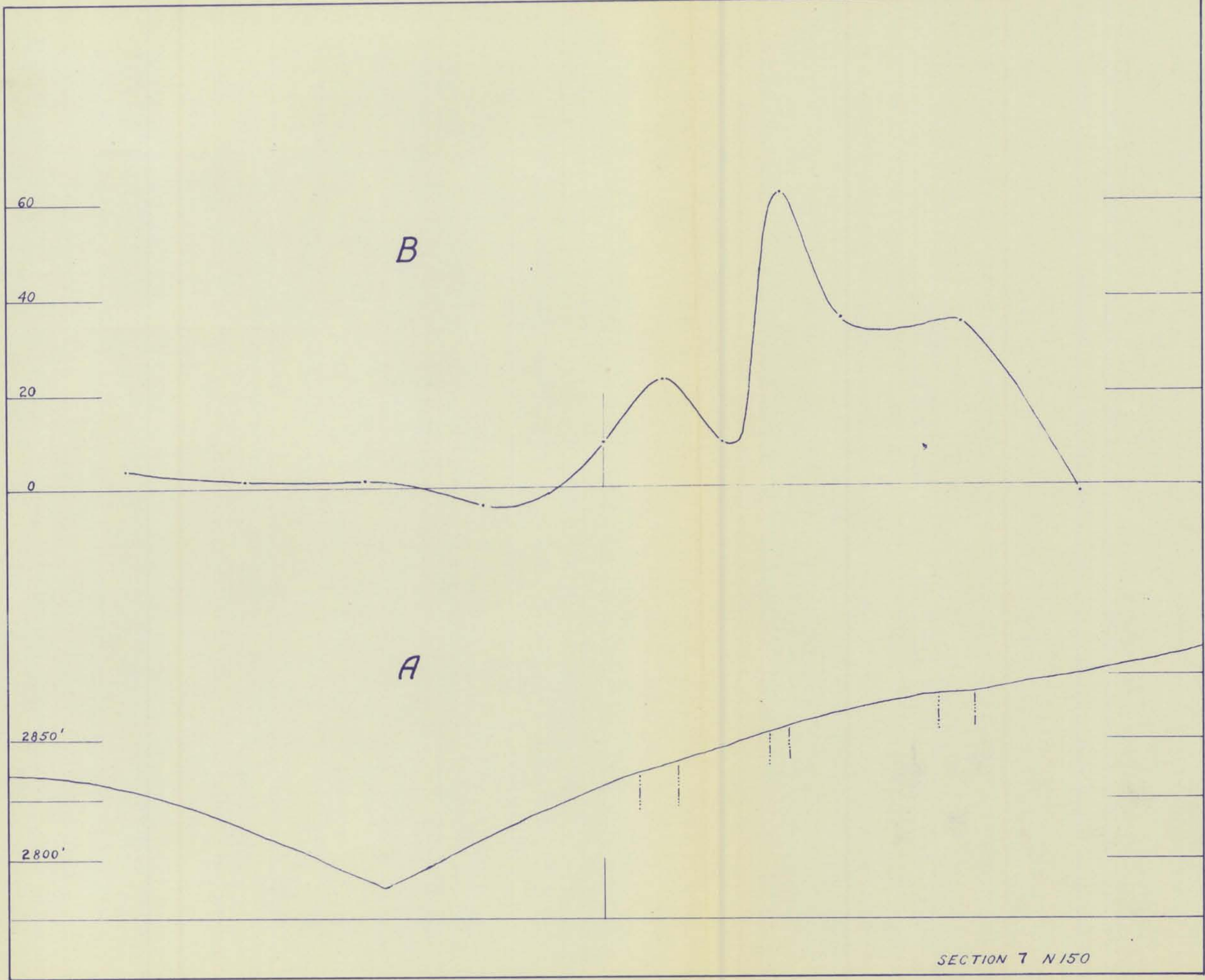
2850'

2800'

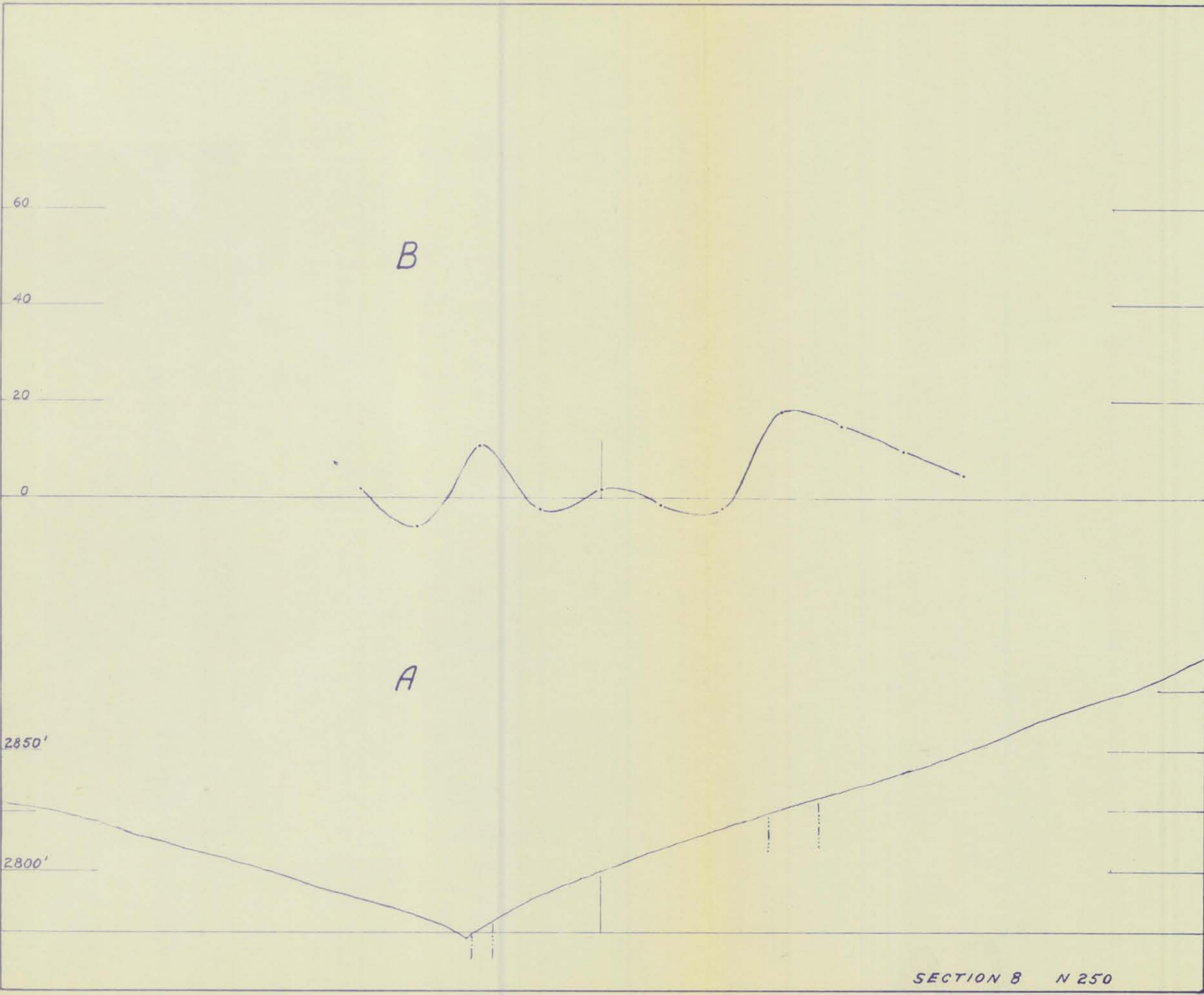
A

SECTION 6 N 100





SECTION 7 N 150



SECTION 8 N 250

