

Jake Lake - Hess Area  
Yukon Territory  
Gravity Interpretation  
for  
Dynasty Explorations Ltd.  
R. B. Galeski<sup>by</sup>, P. Geoph.

015536

Jake Lake - Hess Area

Yukon Territory

Gravity Interpretation

for

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by

Robert B. Galeski, P. Geoph.

August, 1971

## Introduction

Field work was completed in the area by Airborne Geophysical Surveys, Ltd. in the summer of 1971. 297 stations were surveyed and metered. Station spacing was 100' along lines spaced at 400' and 800' intervals. The programme consisted of 8 N-S trending lines and one tie line.

Elevations vary between 2100' a.s.l. and 4100' a.s.l. Highest topography is in the southeast part of the area. Lowest elevations are in the northwest corner.

Data were reduced to a sea level datum by use of a 0.060 elevation correction factor (2.7 surface density). A factor corresponding to a surface density of 2.3 was tested and found to be unsatisfactory. Latitude corrections used were made appropriate for the area ( rate of change =  $1.307 \times \sin (2 \text{ lat.})$  mgal/mi.).

Bouguer values were plotted in profile form along with surface elevations. These were smoothed, then plotted, contoured and presented with this report as the "Bouguer Map". Regionals were run on the profiles, and residual values were extracted,

plotted and contoured to constitute the "Residual Map" of this report. The profiles, the Bouguer map and the residual map form the basis of the interpretation which follows.

## Interpretation

### Bouguer Map

Average gradient is 0.7 milligal/1000 feet north east from a regional high in the southwest corner. The gradient is interrupted in the vicinity of the base line between 8 W and 20 E. Local closures are noted at 4S on line 4E and at 2.5 N on line 12 E.

### Residual Map

A large positive closure exists in the north part of the prospect near the base line between lines 8 W and 20 E. Three local high areas have been mapped within the closed region. Amplitudes of these are as follows:

1. 3N on line 4E - 0.8 mgal. Calculated depth - 275' (?)
2. 3S on line 4E - 0.66 mgal. Calculated depth - 130'.
3. 4N on line 0 - 0.7 mgal.

It is possible the amplitudes of #1 and #3, above, may be somewhat greater than shown. Northward extension of lines 0 and 12 E a few hundred feet would add the necessary regional control to help determine this.

Another positive of possible significance may exist south of 15 S on line 12 E. Near-surface (drift ?) disturbance interferes with the interpretation here.

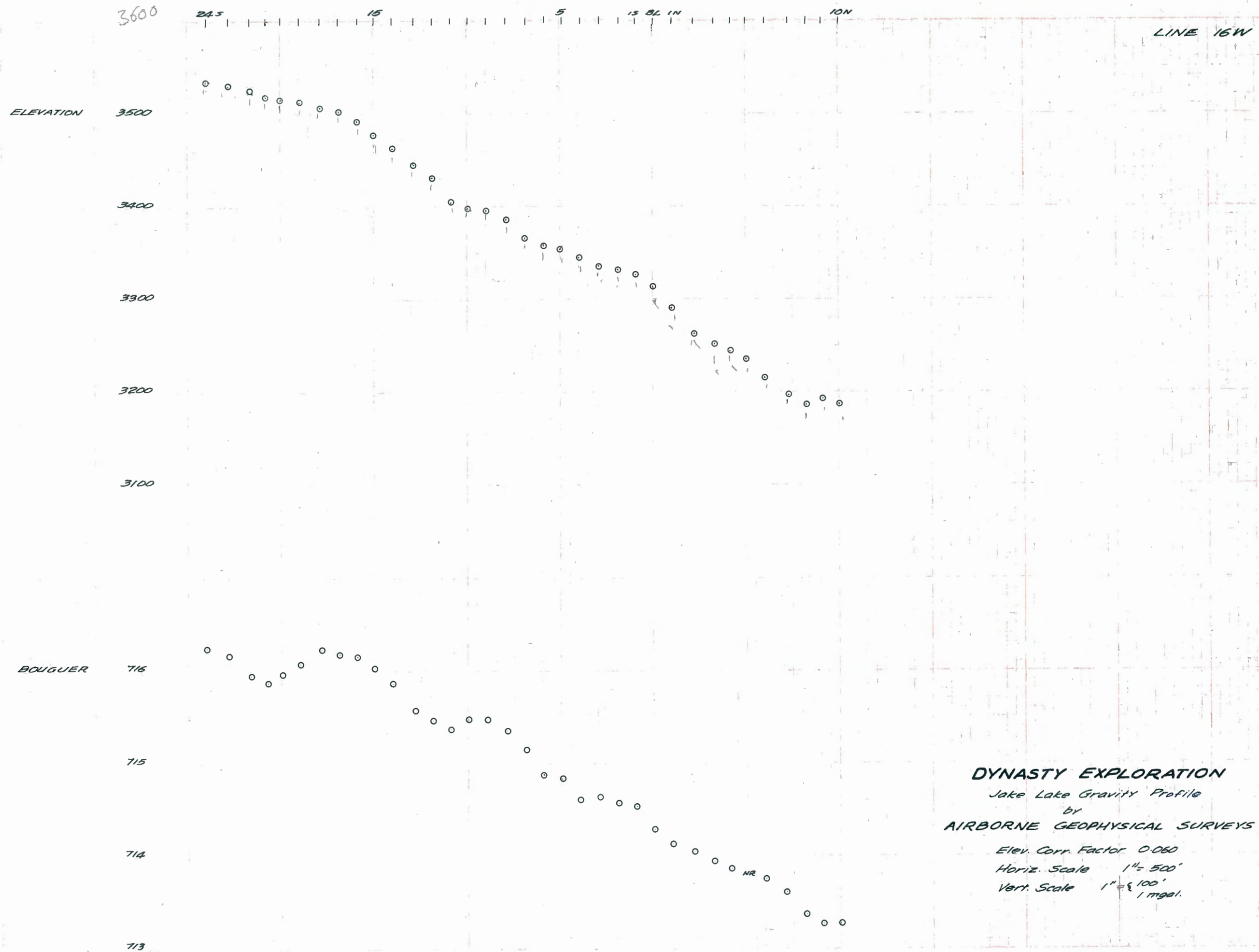
A local low of 1 milligal amplitude exists at 4 S on line 24 W. This is thought to result from a thick accumulation of glacial or talus material.

## Conclusions

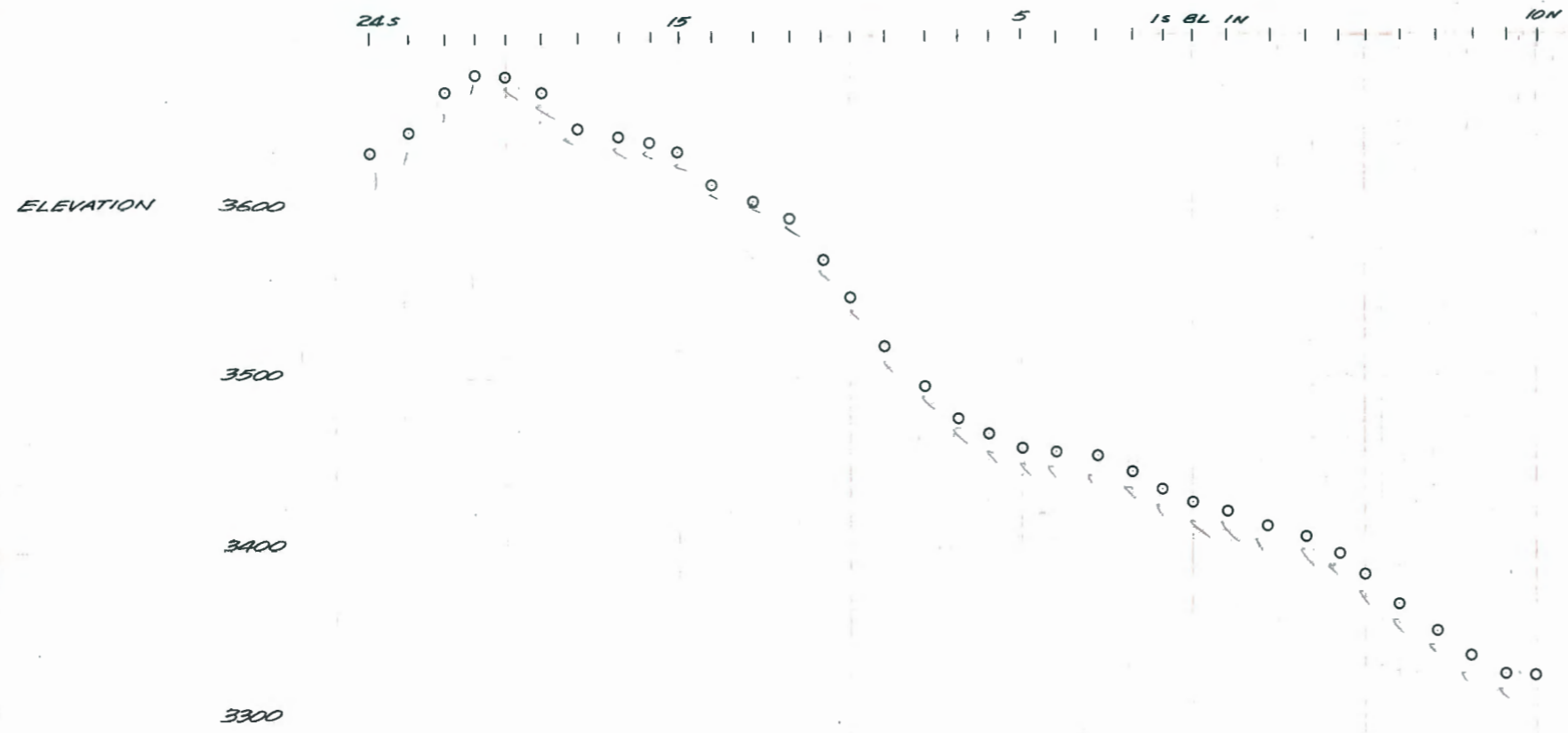
1. The large residual positive in the north part of the area may represent a sizable ore accumulation, although the possibility that it is associated with overburden effects cannot be eliminated.
2. It is recommended that it be tested by two drill holes: one at 3 S on line 4 E and the other in the vicinity of 3 N on line 12.
3. Before drilling on line 12 E, lines 8 E and 16 E should be run. These and lines 12 E and 20 E should be carried to 20 N at that time. In addition, an east - west tie line at 3 N between 8 W and 20 E is recommended.

Respectfully submitted,

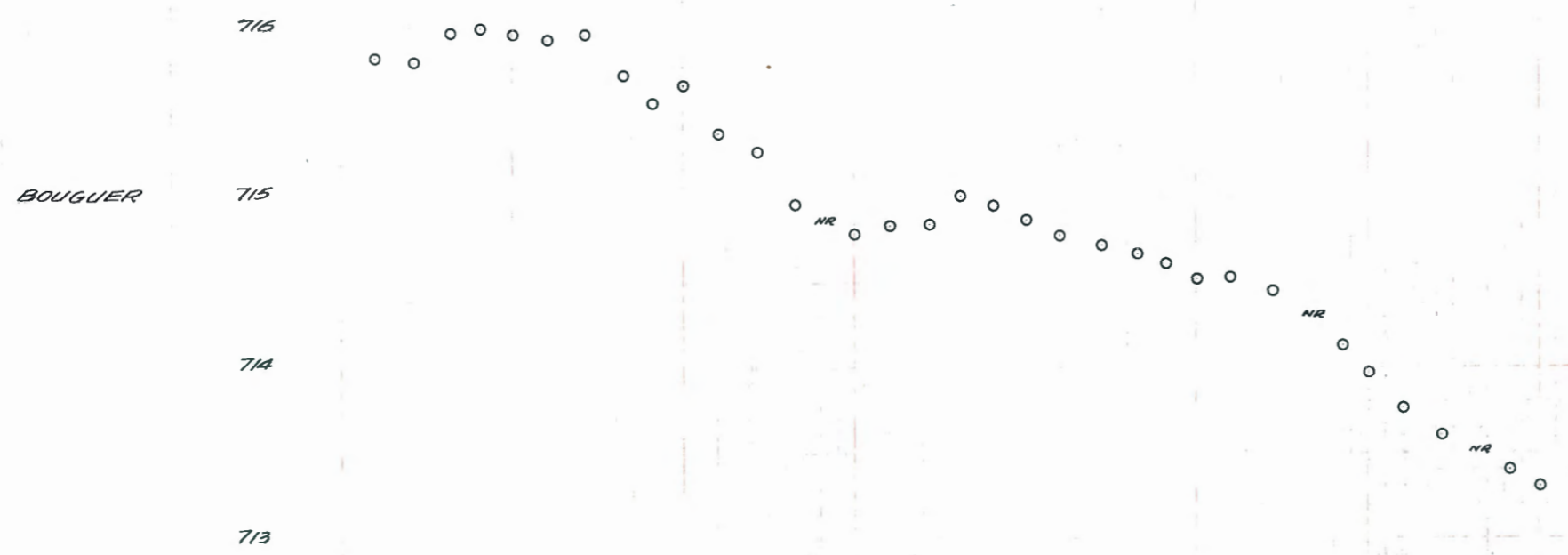
R. B. Galeski, P. Geoph.



**DYNASTY EXPLORATION**  
*Jake Lake Gravity Profile*  
 by  
**AIRBORNE GEOPHYSICAL SURVEYS**  
 Elev. Corr. Factor 0.060  
 Horiz. Scale 1" = 500'  
 Vert. Scale 1" = 100' 1 mgal.

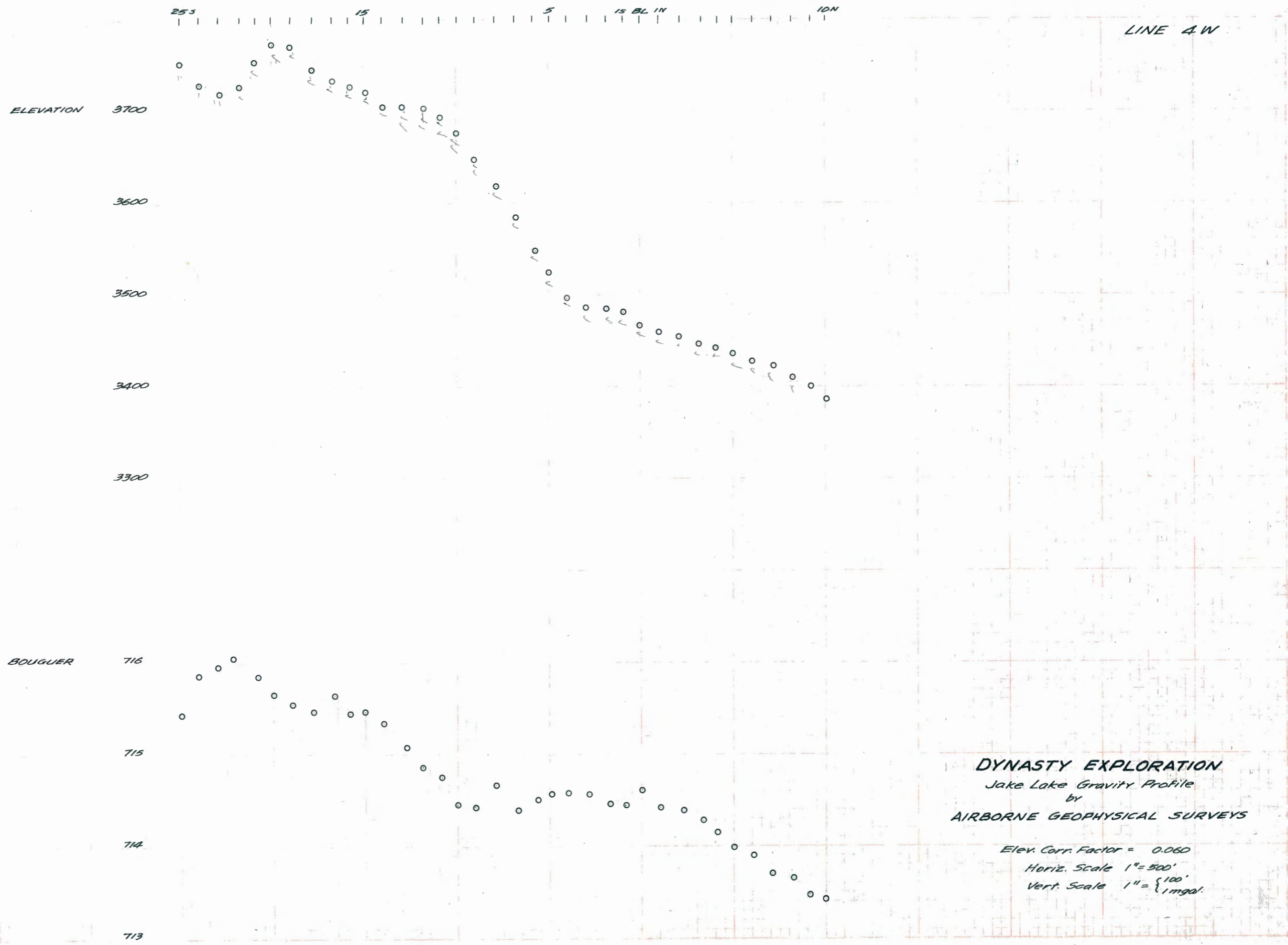


LINE 8W



**DYNASTY EXPLORATION**  
*Jake Lake Gravity Profile*  
 by  
**AIRBORNE GEOPHYSICAL SURVEYS**

Elev. Corr. Factor 0.060  
 Horiz. Scale 1" = 500'  
 Vert. Scale 1" = 100' mgal.



LINE 4W

ELEVATION

3700

3600

3500

3400

3300

BOUGUER

716

715

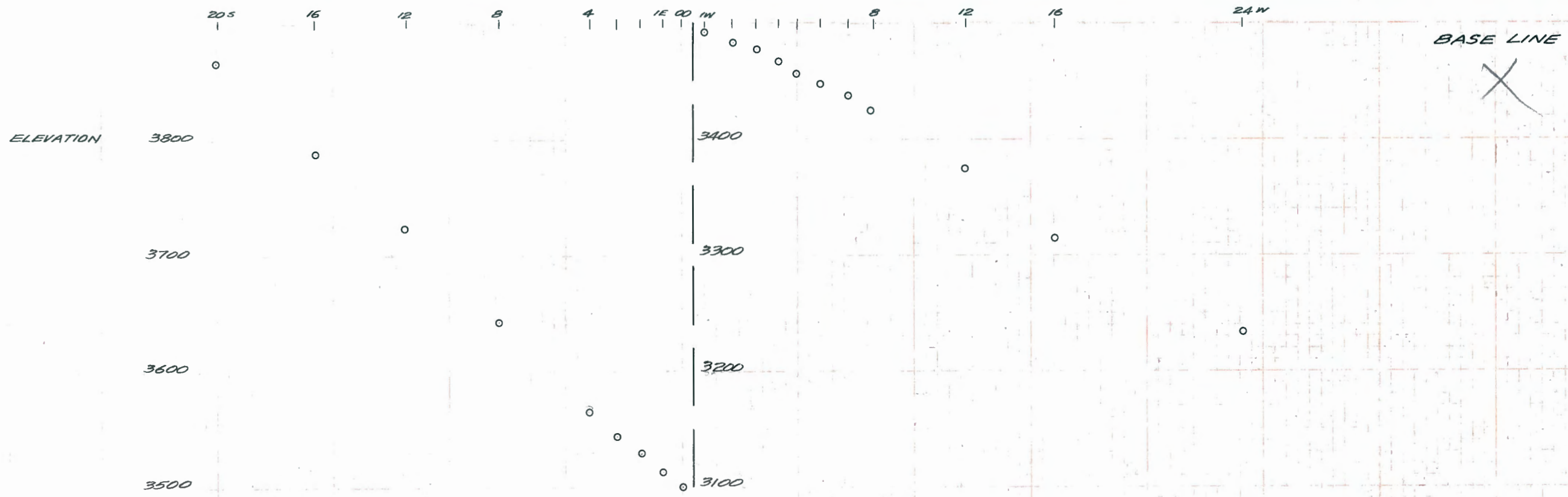
714

713

253 15 5 15 BL IN 10N

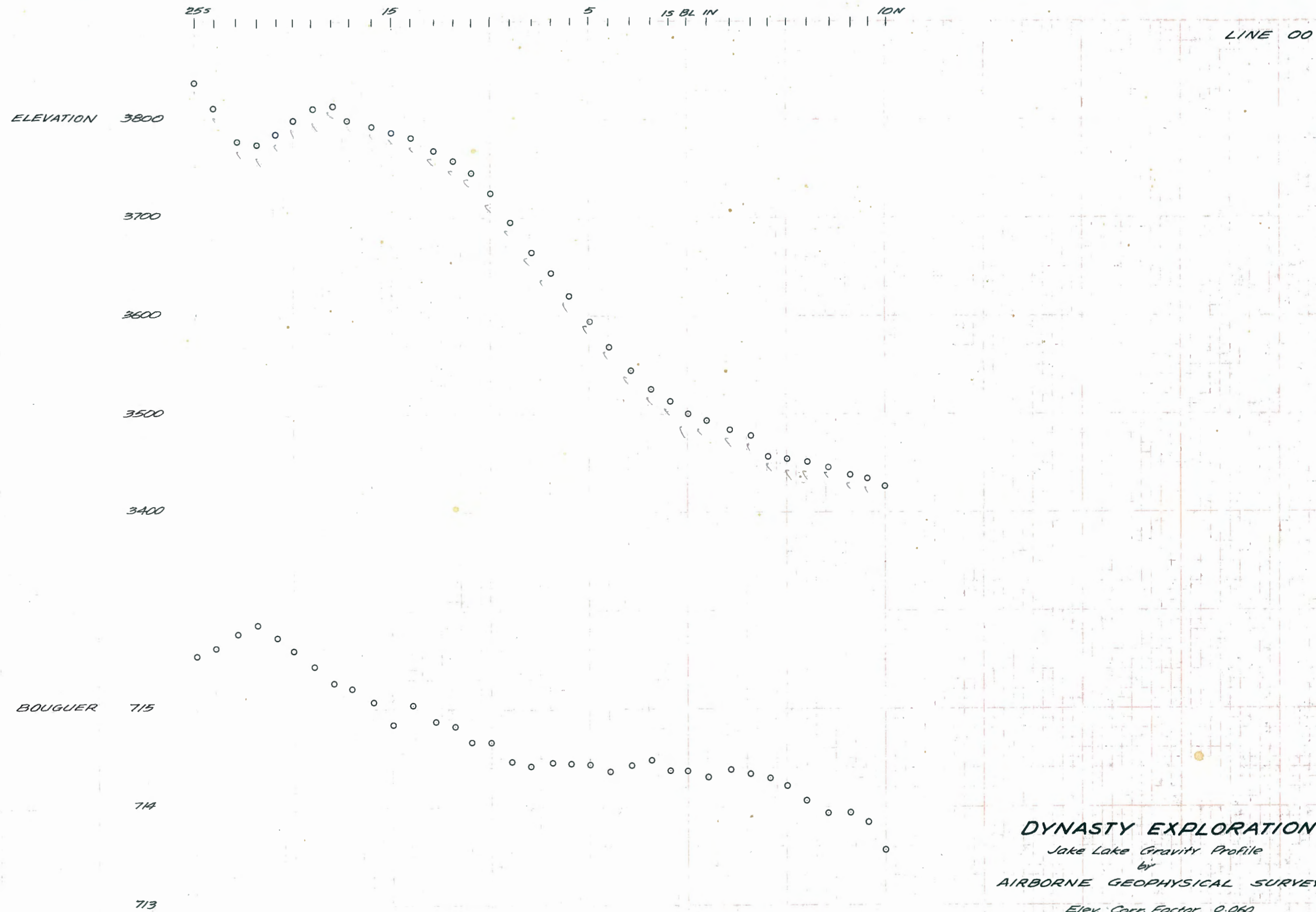
**DYNASTY EXPLORATION**  
*Jake Lake Gravity Profile*  
 by  
**AIRBORNE GEOPHYSICAL SURVEYS**

Elev. Corr. Factor = 0.060  
 Horiz. Scale 1" = 500'  
 Vert. Scale 1" =  $\begin{cases} 100' \\ 1 \text{ mgal} \end{cases}$



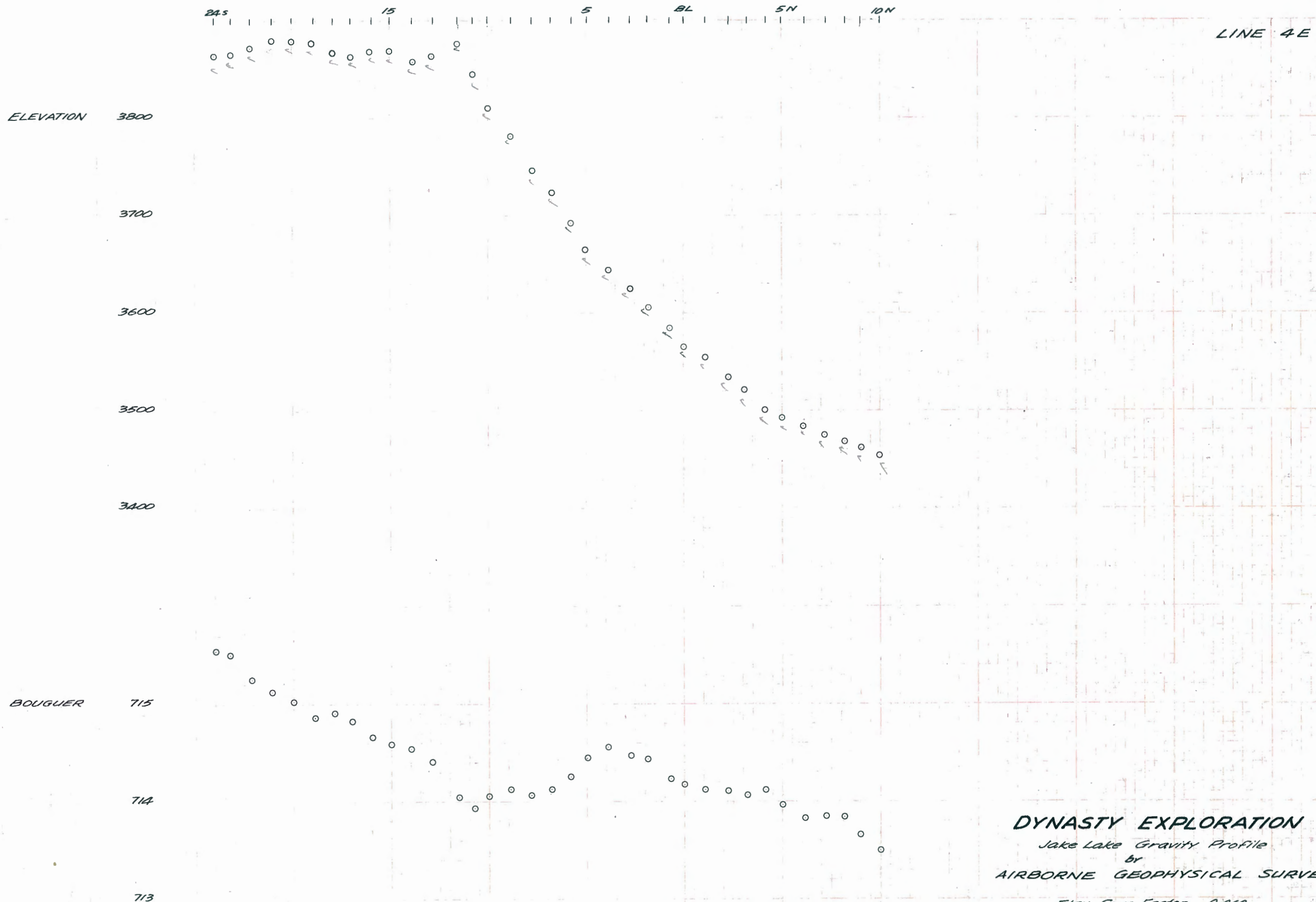
**DYNASTY EXPLORATION**  
 Jake Lake Gravity Profile  
 by  
 AIRBORNE GEOPHYSICAL SURVEYS

Elev. Corr. Factor: 0.060  
 Horiz. Scale 1" = 500'  
 Vert. Scale 1" = 1mgal.



**DYNASTY EXPLORATION**  
*Jake Lake Gravity Profile*  
 by  
**AIRBORNE GEOPHYSICAL SURVEYS**

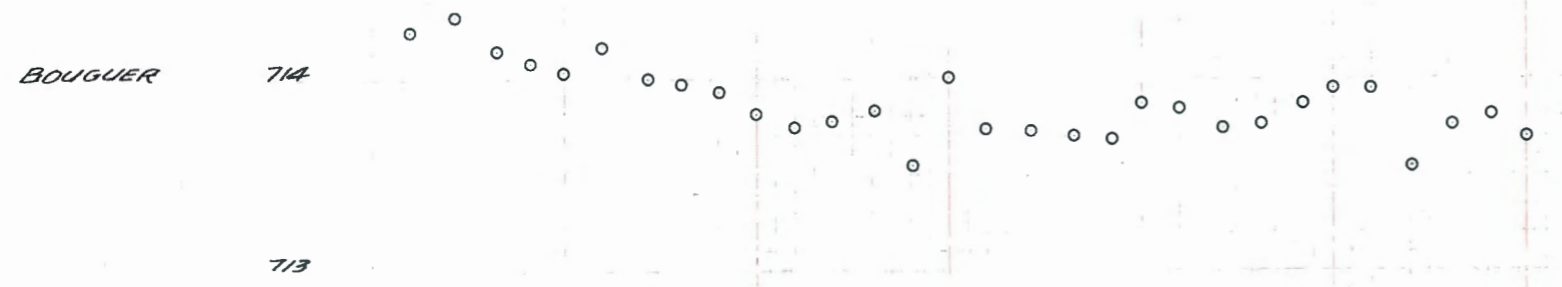
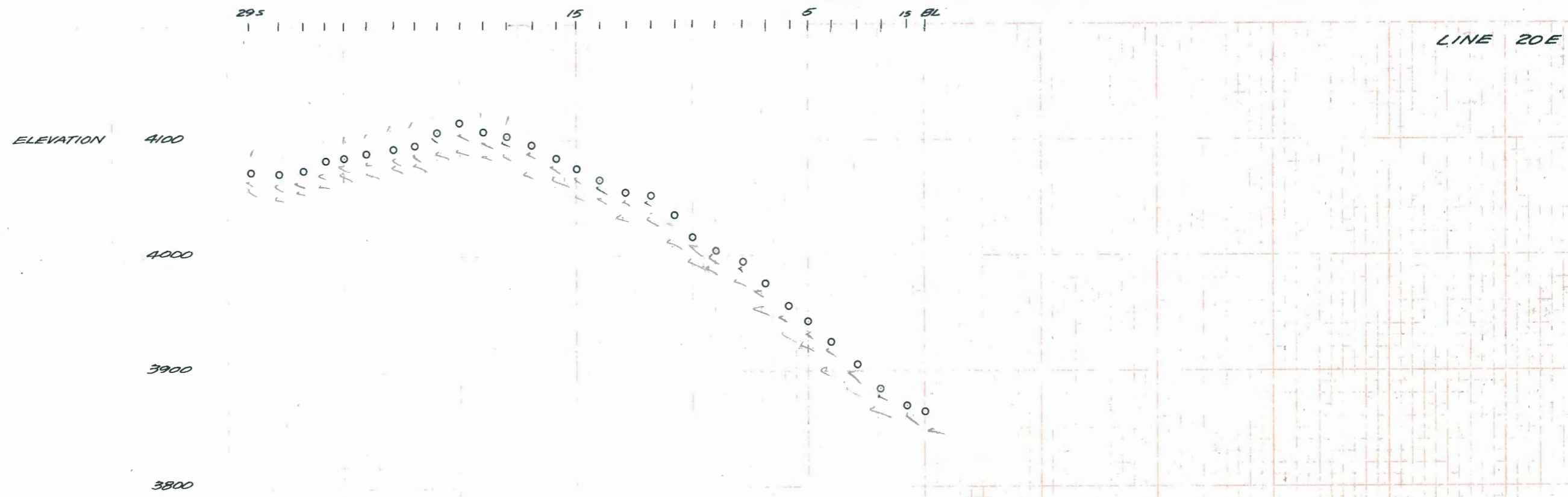
Elev. Corr. Factor 0.060  
 Horiz. Scale 1" = 500'  
 Vert. Scale 1" = 100'  
 1mgal.



**DYNASTY EXPLORATION**  
*Jake Lake Gravity Profile*  
 by  
**AIRBORNE GEOPHYSICAL SURVEYS**

Elev. Corr. Factor 0.060  
 Horiz. Scale 1" = 500'  
 Vert. Scale 1" = 100' / 1 mgal.





**DYNASTY EXPLORATION**  
*Jake Lake Gravity Profile*  
 by  
**AIRBORNE GEOPHYSICAL SURVEYS**  
 Elev. Corr. Factor 0.060  
 Horiz. Scale 1" = 500'  
 Vert. Scale 1" = 100 mgal.

32W 28W 20W 16W 8W

2,600'  
Feet  
2,500'  
2,400'

Elevation

53.0  
Milligals  
52.0  
51.0

Bouguer

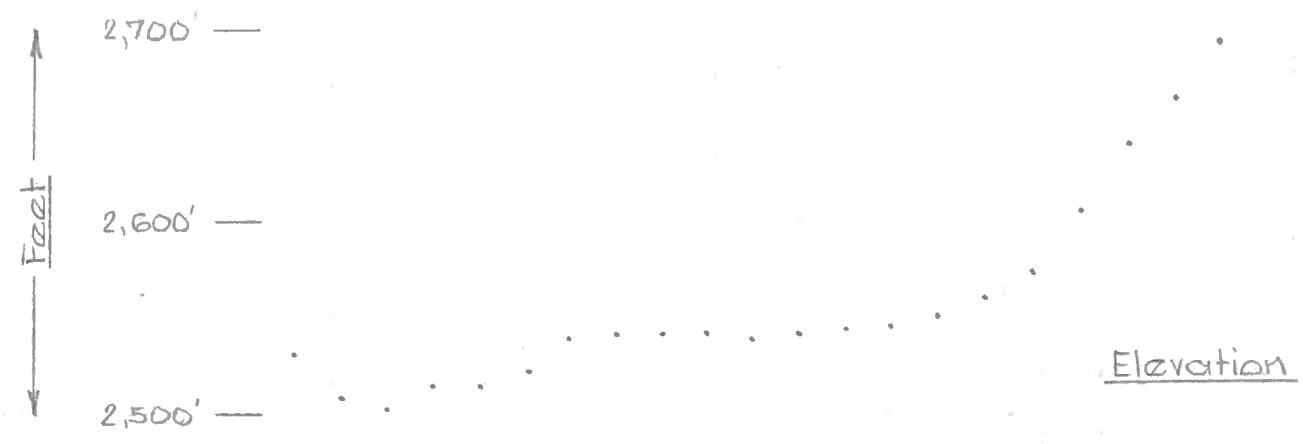
BASE LINE

Horizontal Scale 1" = 400'

Vertical Scale { 1" = 100'  
1" = 1 mgal.

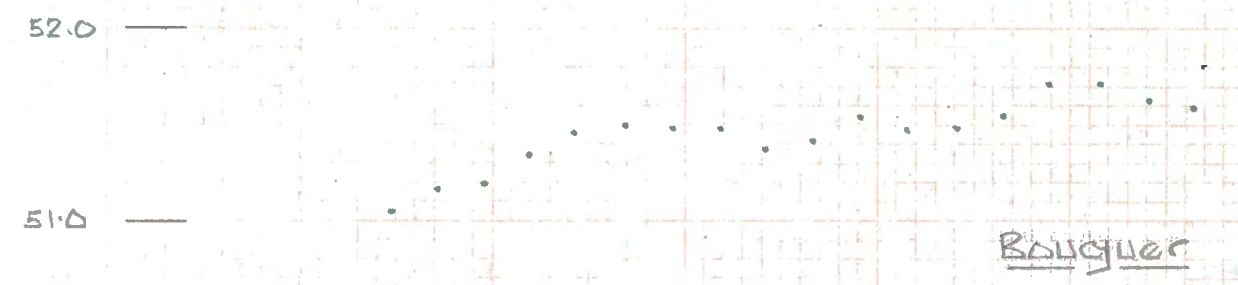
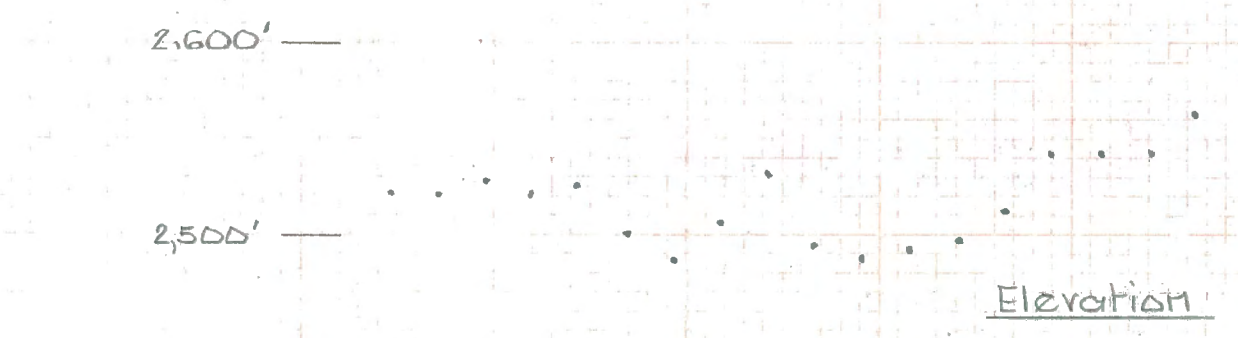
DYNASTY EXPLORATION  
GRAVITY PROFILE BY  
AIRBORNE GEOPHYSICAL CO.  
Elev<sup>n</sup> Corr. Factor :- 0.060

X



LINE 20W

Horizontal Scale 1" = 400'  
 Vertical Scale { 1" = 100'  
                   { 1" = 1 mgal.



LINE 16W

DYNASTY EXPLORATION  
GRAVITY PROFILE BY  
AIRBORNE GEOPHYSICAL CO.  
 Elyta Corr. Factor: 0.060

10N 5N 32W 6S

2,600' —  
↑ Feet ↓  
2,500' —  
2,400' —

Elevation

54.0 —  
↑ Milligals ↓  
53.0 —  
52.0 —

Bouguer

LINE 32 W

Horizontal Scale 1" = 400'  
Vertical Scale { 1" = 100'  
1" = 1 m.gal.

8N 5N 28W 5S 10S 15S

2,800' —  
2,700' —  
2,600' —  
2,500' —

Elevation

54.0 —  
53.0 —  
52.0 —

Bouguer

LINE 28 W

DYNASTY EXPLORATION  
GRAVITY PROFILE BY  
AIRBORNE GEDPHYSICAL CO.  
Elev. Corr. Factor :- 0.060

4N 8W 5S 10S 17S

2,600' —  
↑ Feet ↓  
2,500' —  
2,400' —

Elevation

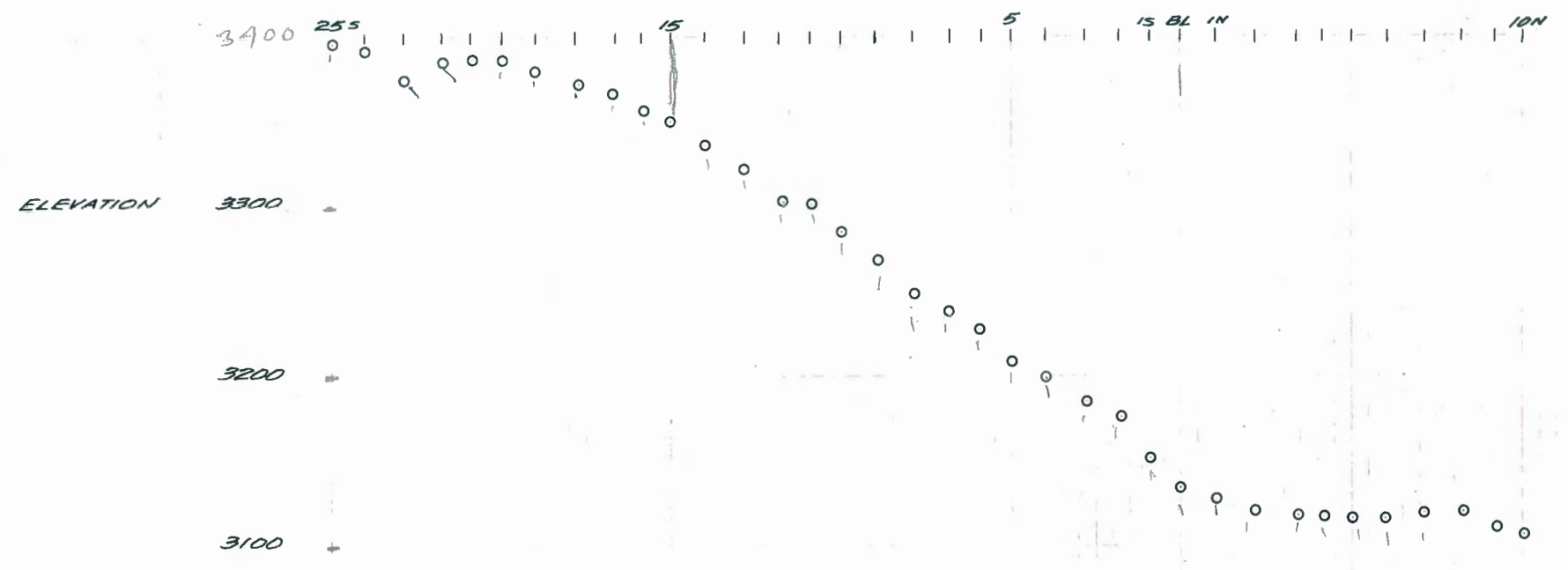
52.0 —  
↑ Milligals ↓  
51.0 —  
50.0 —

Bouguer

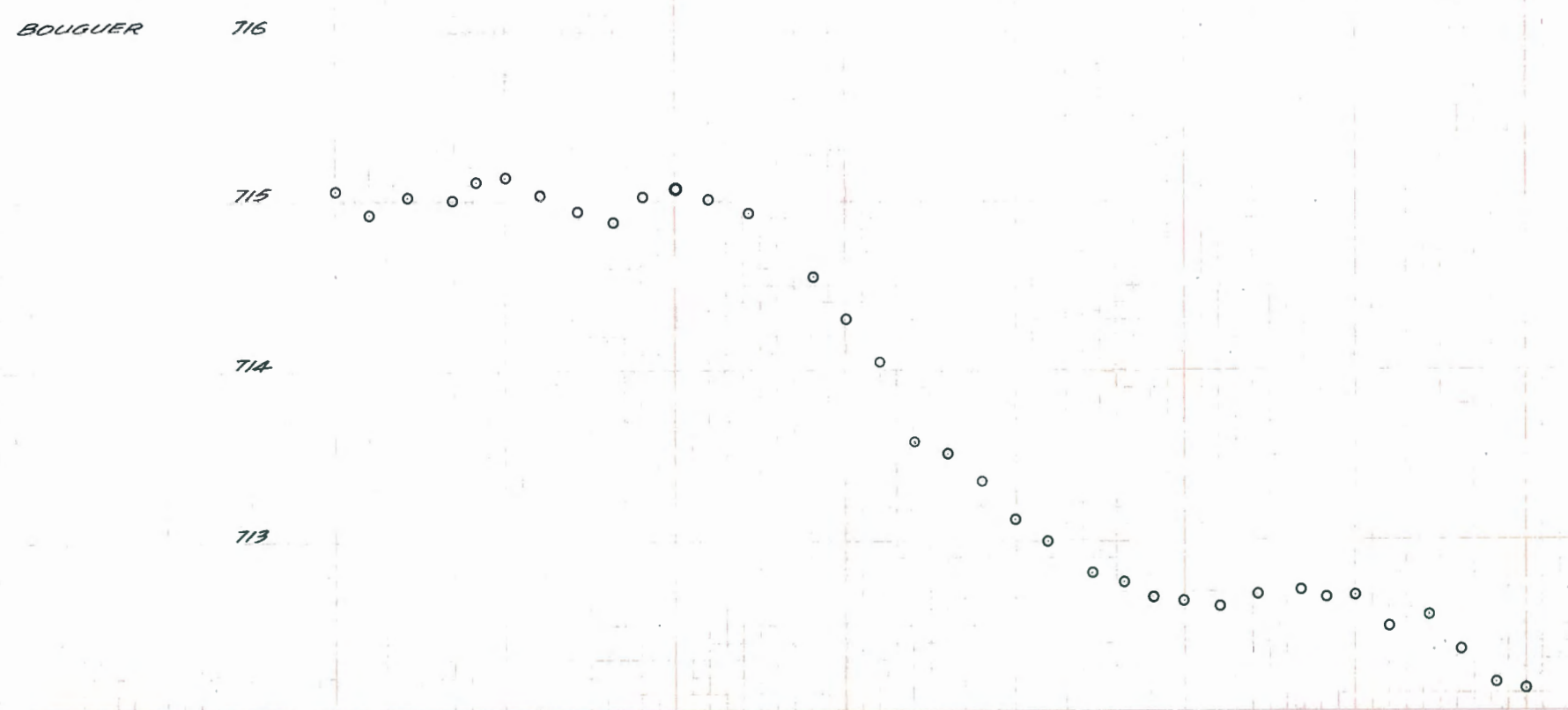
LINE 8W

Horizontal Scale 1" = 400'  
Vertical Scale { 1" = 100'  
                  { 1" = 1 mgal.

DYNASTY EXPLORATION  
GRAVITY PROFILE BY  
AIRBORNE GEOPHYSICAL CO.  
Elev<sup>n</sup> Corr. Factor 370.060



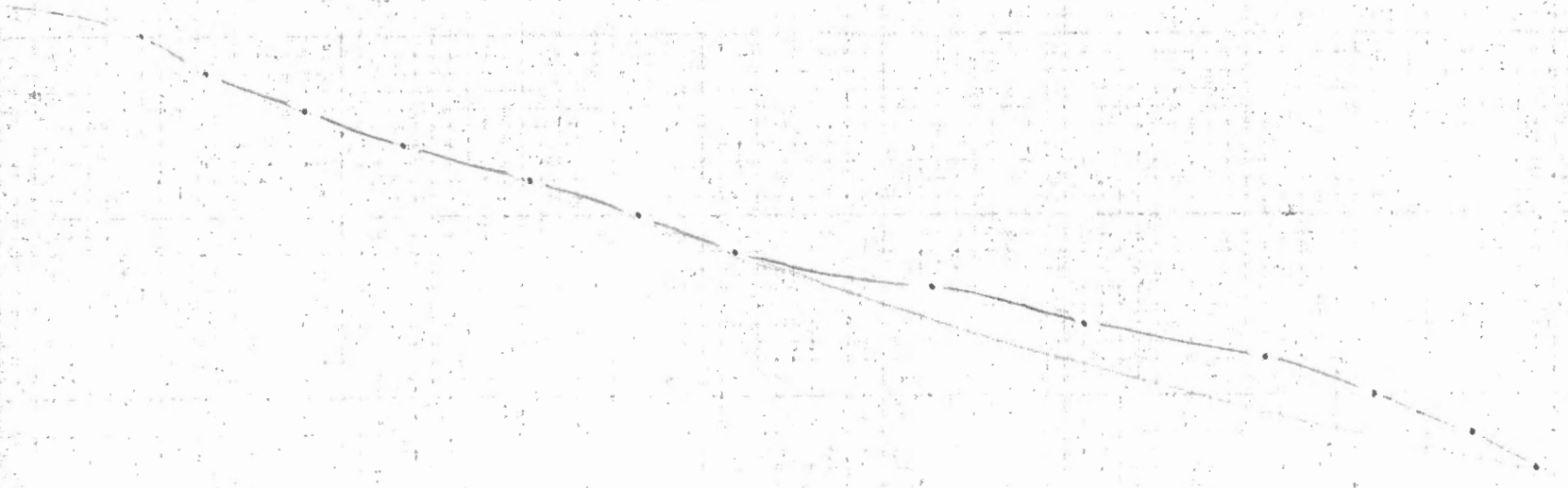
LINE 24 W

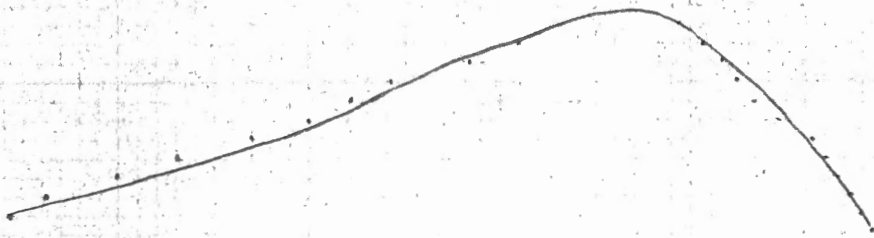


**DYNASTY EXPLORATION**  
 Jake Lake Gravity Profile  
 by  
**AIRBORNE GEOPHYSICAL SURVEYS**

Elev. Corr. Factor = 0.060  
 Horiz. Scale 1" = 500'  
 Vert. Scale 1" = 100'

6NW





AA

188

189

190

191

14

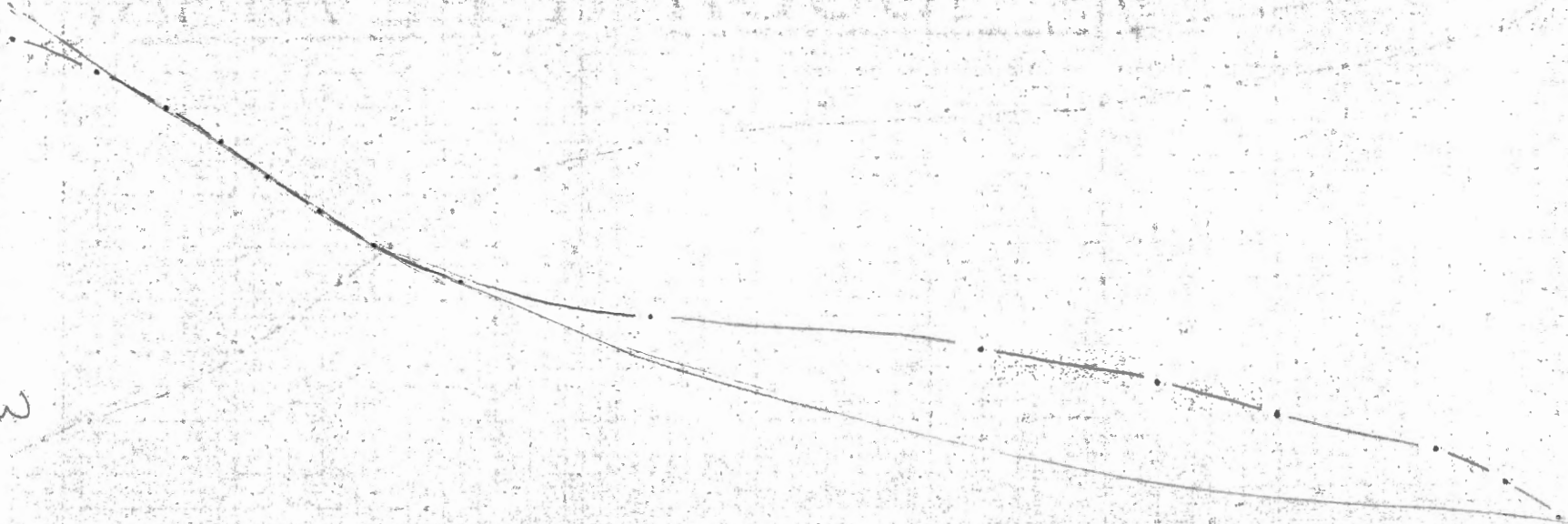
18 NW

13

17



2NW



# Sphere

$$\Delta g_{\text{max}} = GM d (z^2 + d^2)^{-3/2}$$

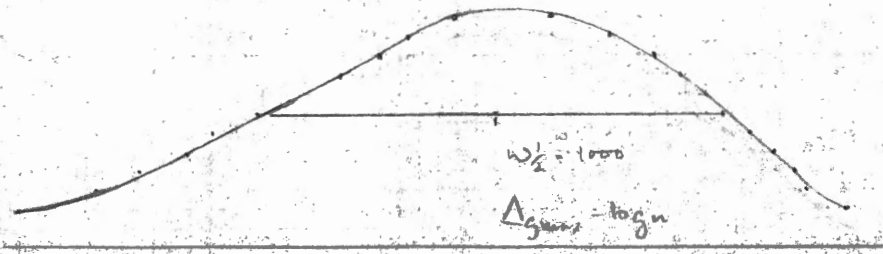
$$d = 0.65 W_{1/2}$$

$$M = 0.65 \Delta g_{\text{max}} (W_{1/2})^2$$

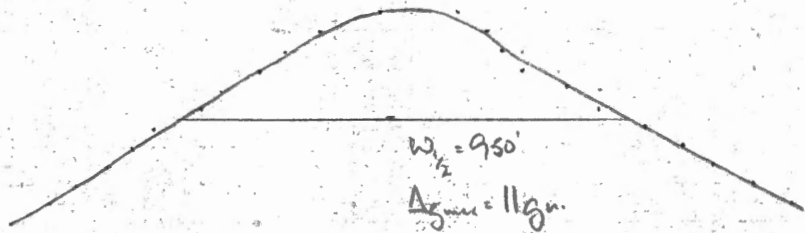
$$d = 0.65 \times 1000 = 650'$$

$$\begin{aligned} M &= 0.65 \times 10 \times (1000)^2 \text{ tons} \\ &= 6.5 \times 10^6 \\ &= 6.5 \text{ million tons} \end{aligned}$$

B



B

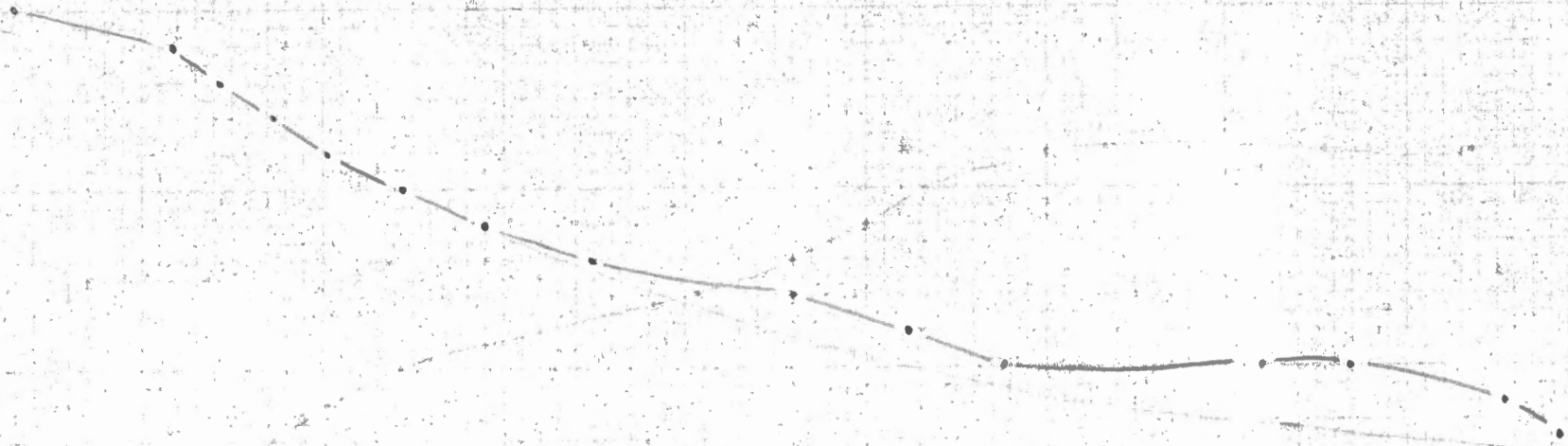


Sect<sup>n</sup> c-c

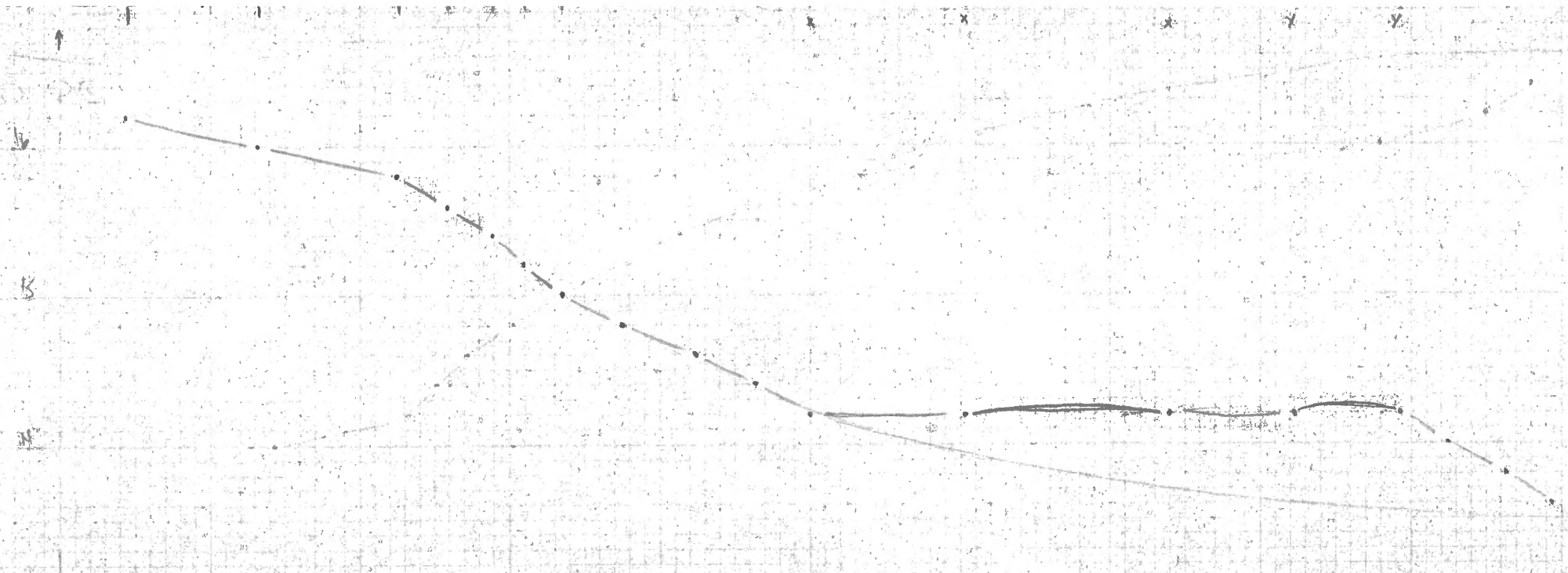
$$d = .65 \times 950$$
$$\approx 620'$$

$$M = .65 \times 11 \times (950)^2$$
$$= 715 \times 10^2 \times 9025$$
$$= 63,600,000$$
$$= 6.4 \text{ M TONS}$$

1482

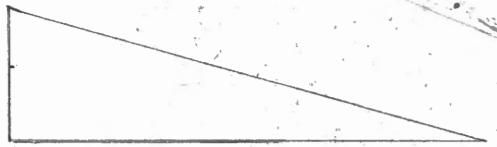


bse

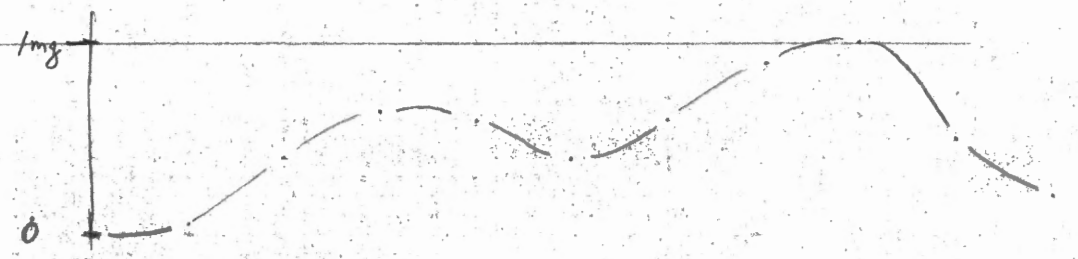


x 16.2 16 15.8 16 14 12 15 14.8 14.6 14.4 14.4 14.2 14.2 14.2 14.2 14 13.8 13.8

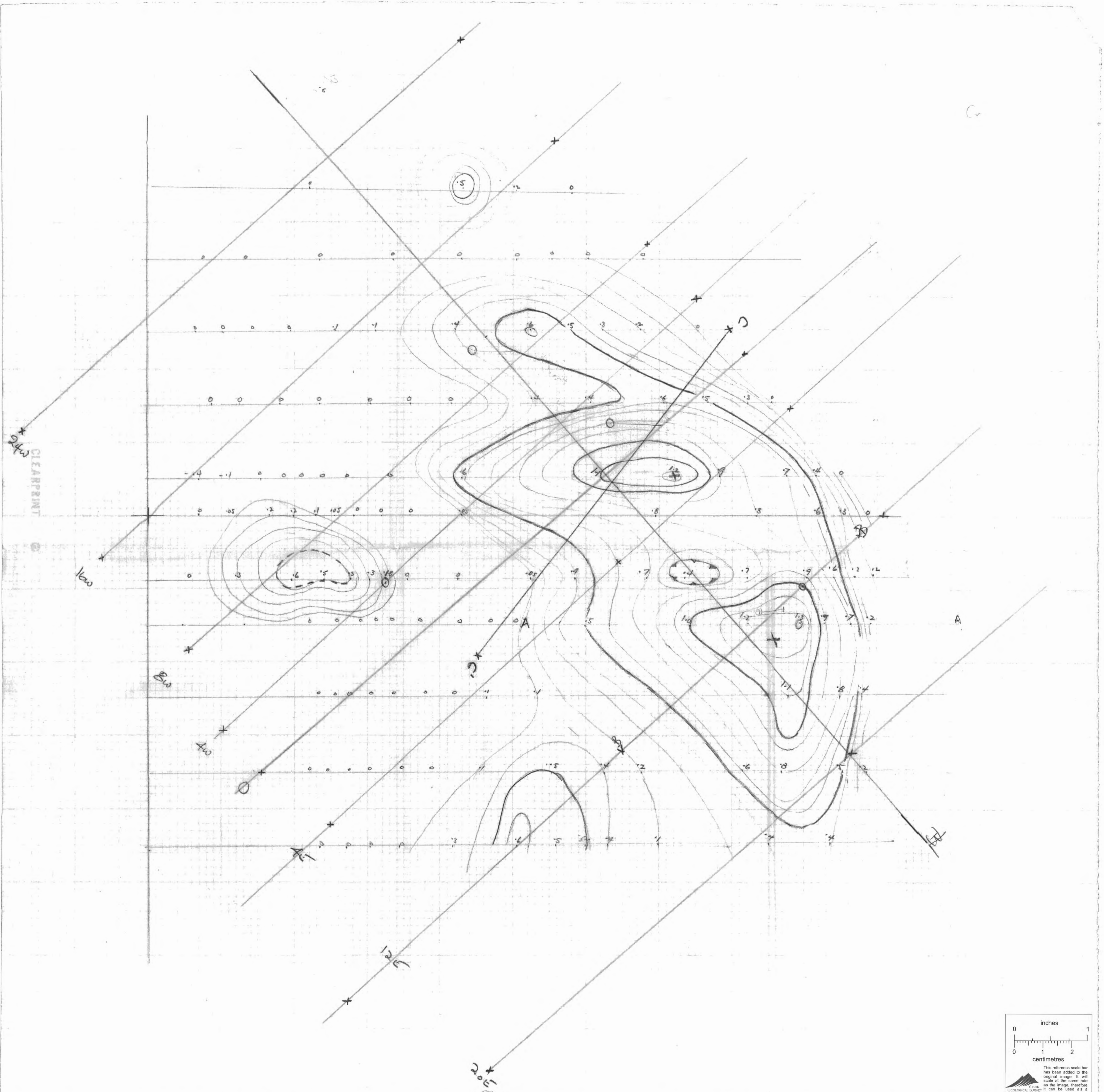
16  
15  
14  
13



3+50 S.E.







240  
CLEARPRINT

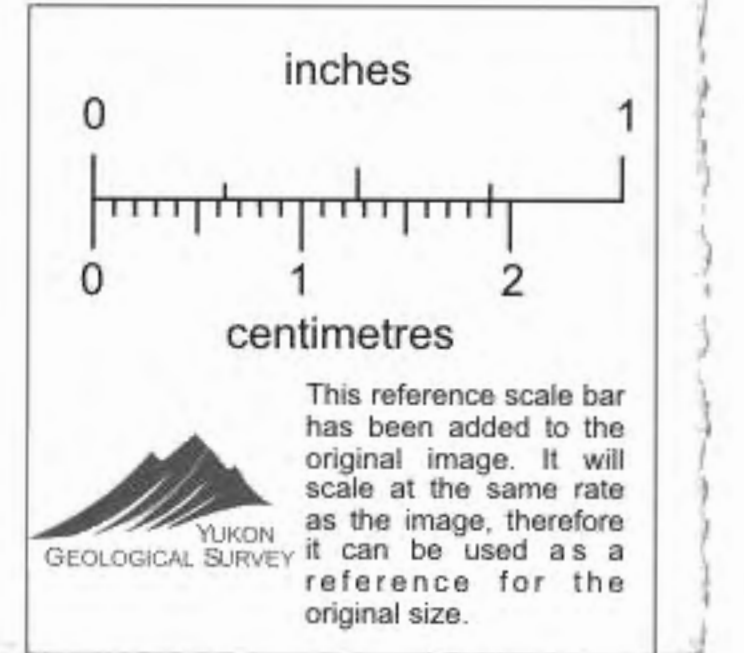
1600

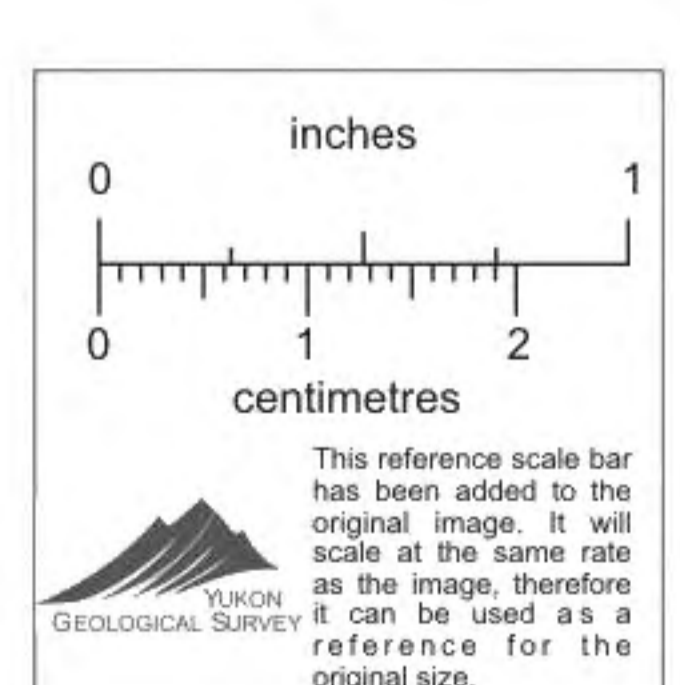
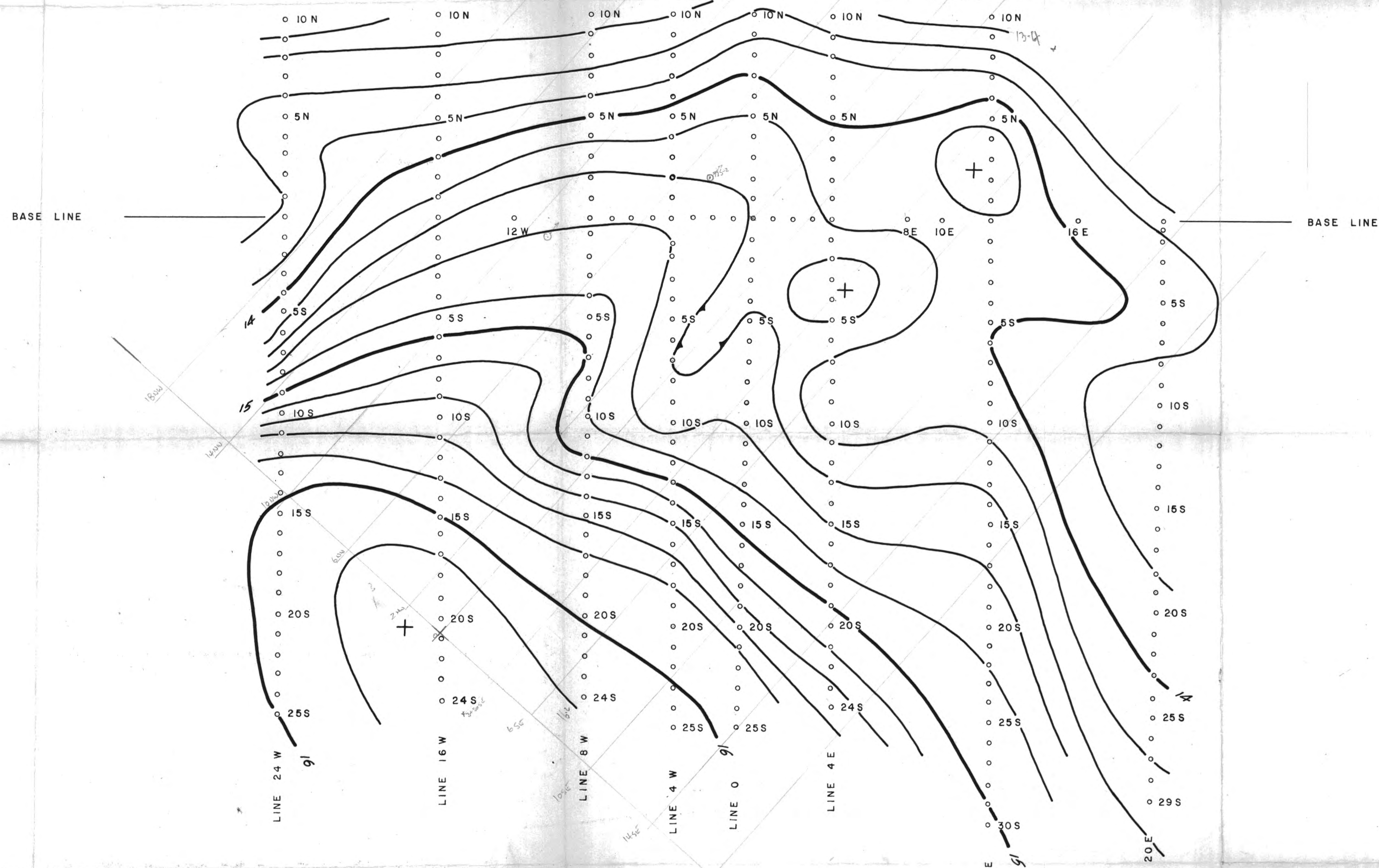
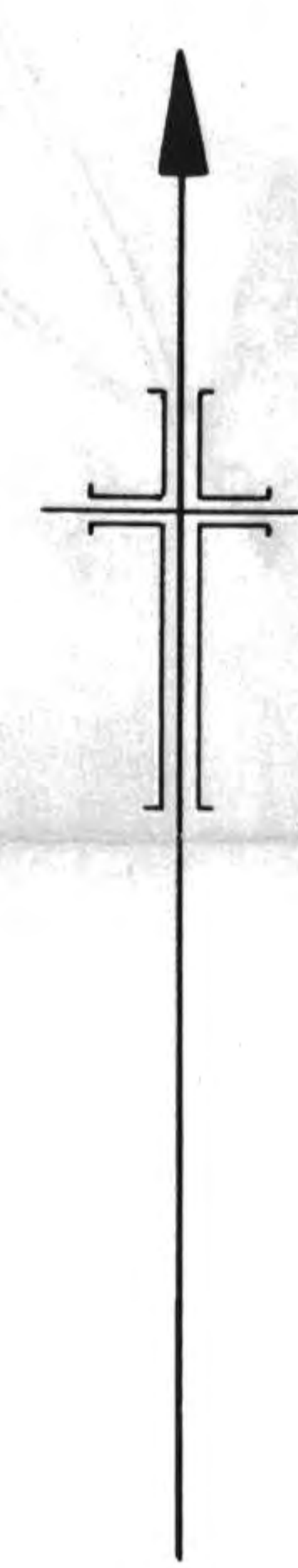
800

400

200

200



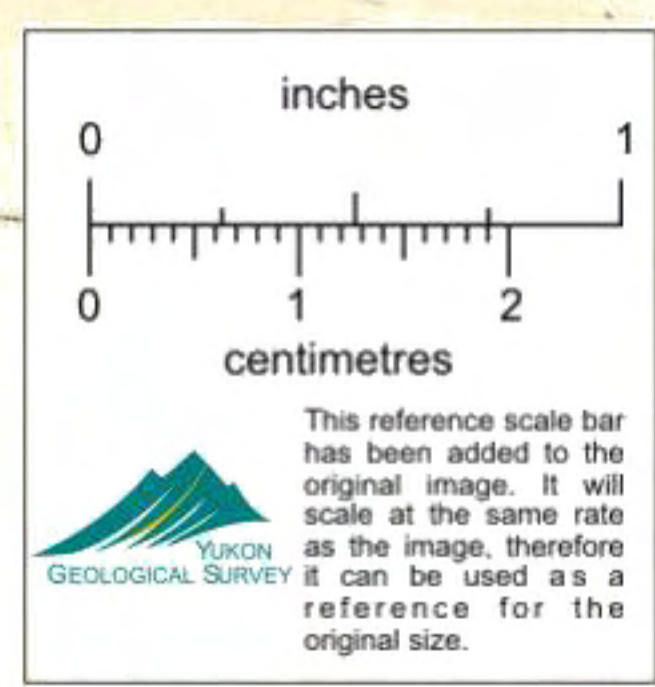
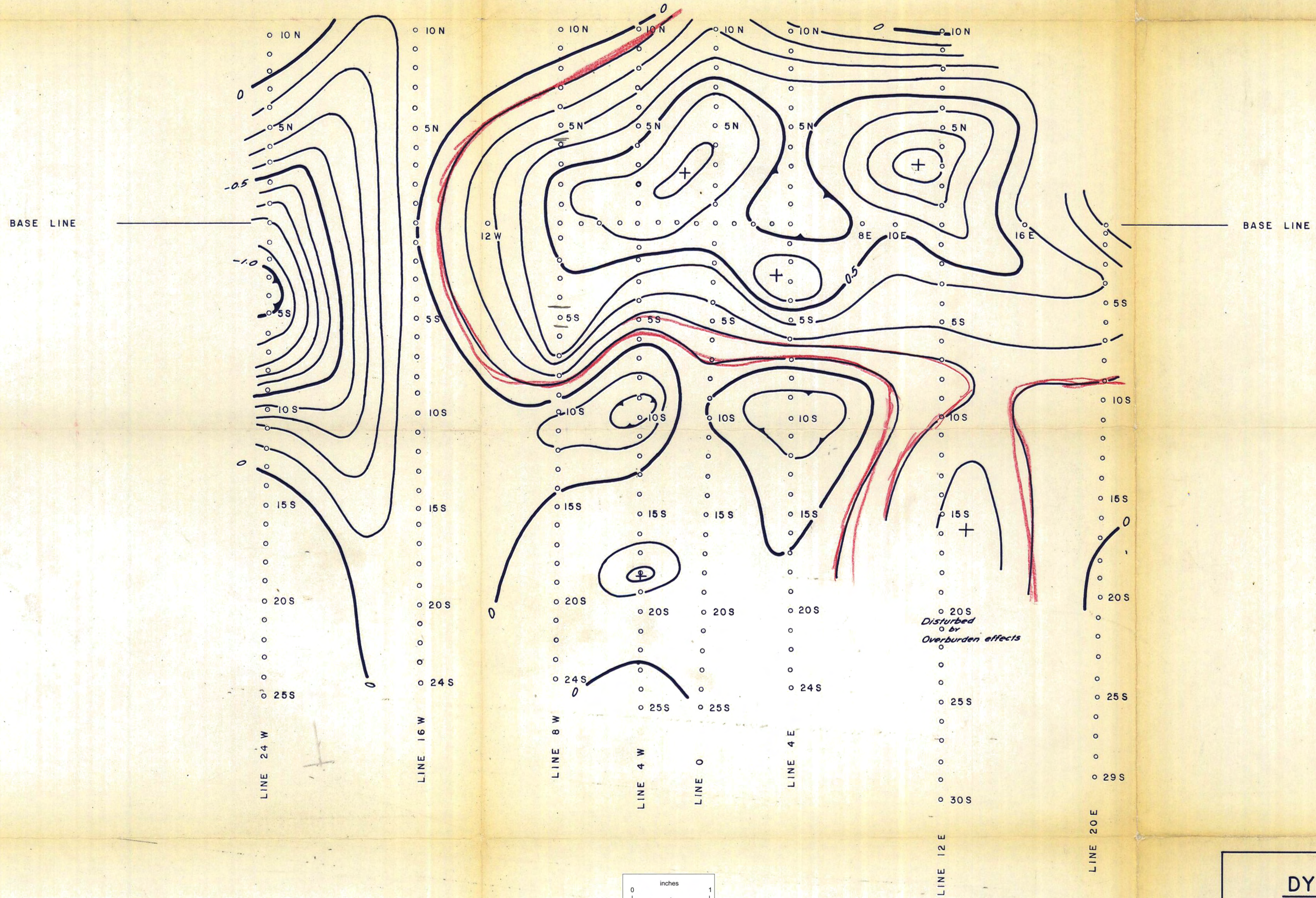
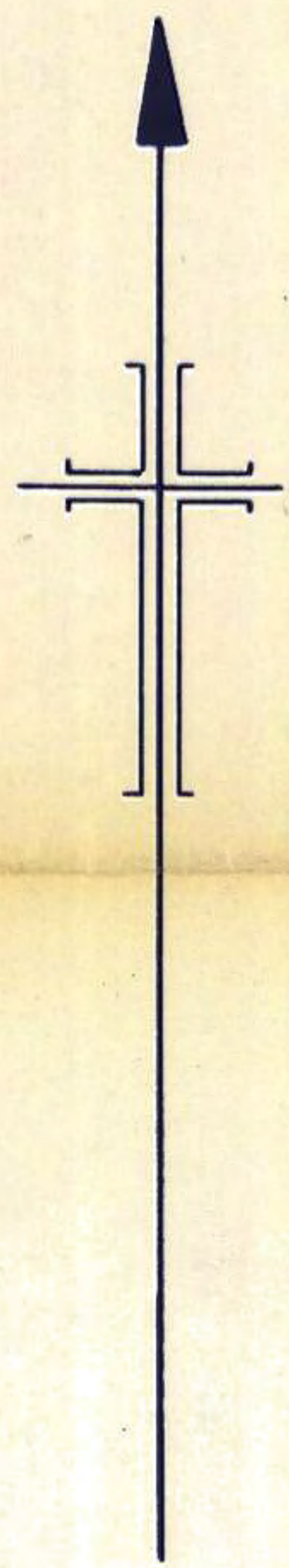


SCALE 1" = 400'

### BOUGUER MAP

C.I. = 0.2 mgal.  
R.B. Galeski

<b>DYNASTY EXPLT<sup>NS.</sup> LTD.</b>	
<b>GRAVITY METER SURVEY</b>	
<b>JAKE LAKE - HESS AREA - YUKON</b>	
ELEVATION FACTOR 0.060	AUGUST 1971
<b>AIRBORNE GRAVITY &amp; SEISMIC SERVICES</b>	



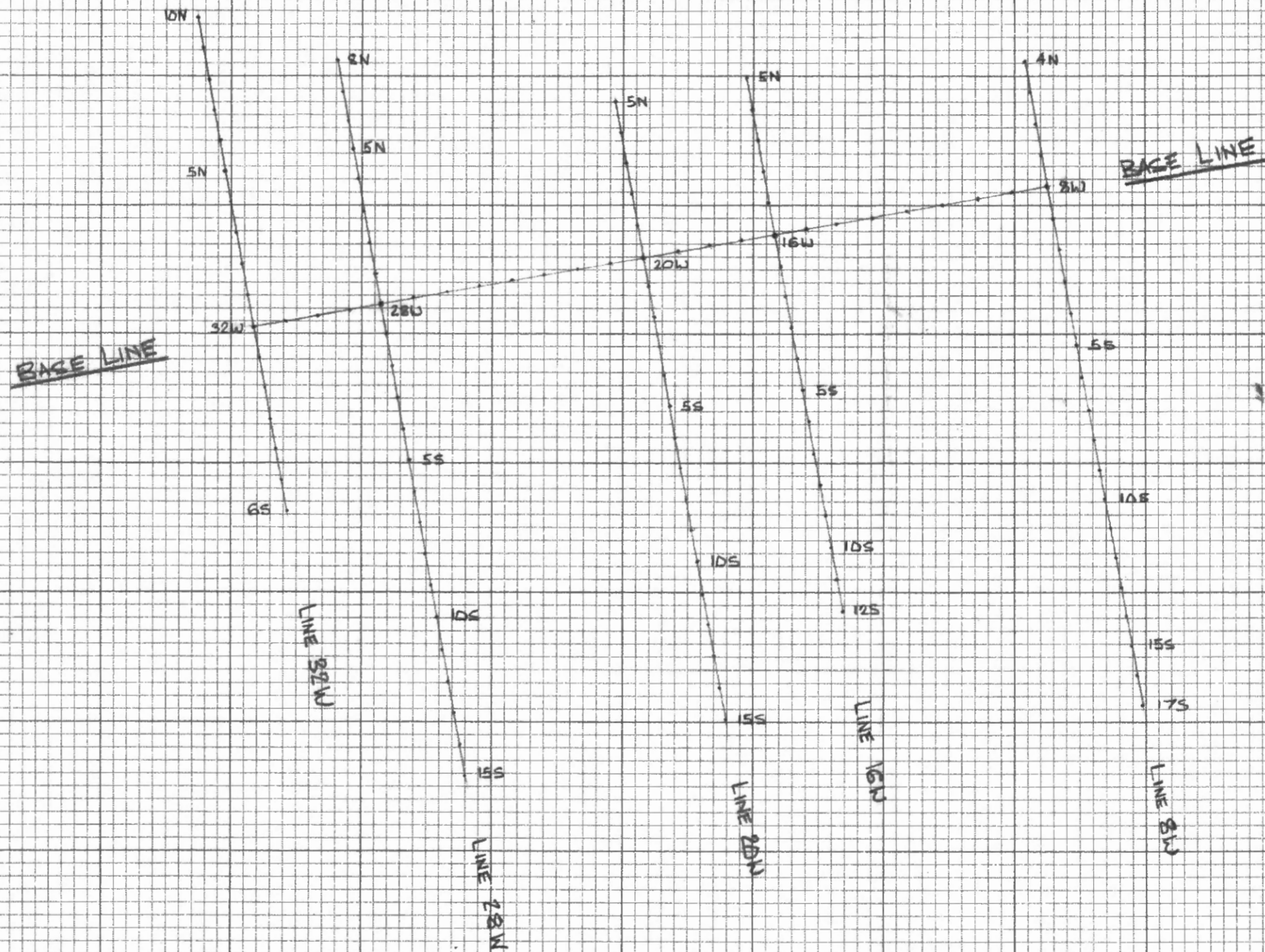
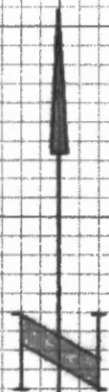
SCALE 1" = 400'

### RESIDUAL MAP

C.I. = 0.1 mgal.  
R. B. Galeski

<b>DYNASTY EXPLTNS. LTD.</b>	
<b>GRAVITY METER SURVEY</b>	
<b>JAKE LAKE - HESS AREA - YUKON</b>	
ELEVATION FACTOR 0.060	AUGUST 1971
<b>AIRBORNE GRAVITY &amp; SEISMIC SERVICES</b>	

GRAVITY LAT. CORR. LINE  
0-00



DYNASTY EXPLORATION

SCALE 1" = 400'

