UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

TECHNICAL LETTER NASA-7

TOPOGRAPHIC STUDIES OF PISGAH CRATER, CALIFORNIA*

by

R.E. Altenhofen, J.K. Oman and

T.M. Sousa

* Work performed under NASA Contract No. R-146

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Prepared by the Geological Survey for the National Aeronautics and Space Administration (NASA)

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UNITED STATES

DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Technical Letter
NASA - 7
June 25, 1965

Dr. Peter C. Badgley
Chief, Advanced Missions
Manned Space Science Division
NASA Headquarters
Washington, D. C. 20546

Dear Peter:

Transmitted herewith are 25 copies of:

TECHNICAL LETTER NASA-7

TOPOGRAPHIC STUDIES OF

PISGAH CRATER, CALIFORNIA*

by

R. E. Altenhofen**
J. K. Oman ***
T. M. Sousa ***

Sincerely yours,

R. M. Moxham

R. M. Moxham
Chief, Branch of Theoretical Geophysics

* Work performed under NASA Contract No. R-146
** U. S. Geological Survey, Menlo Park, California
*** U. S. Geological Survey, Washington, D. C.

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Introduction

Topographic and survey data were developed for the Pisgah Crater test site, California to:

1. Provide semi-detailed information regarding the character and shape of the surface of the Pisgah test area to facilitate study and interpretation of the effects of terrain configuration on various remote sensor records,

2. provide a series of closely spaced, recognizable points on the ground to facilitate interrelation of various remote sensor images,

3. provide a series of recognizable points on the ground, together with their precise altitude, position, and relative bearing, to facilitate field calibration and resolution analyses of the various imaging systems,

4. provide a series of points on the ground which can serve as a common reference among investigators for location of areas of sample collection or field observation.

Field control was established in December 1964 by personnel of the Topographic Division of the U.S. Geological Survey, utilizing a combination of ground and helicopter methods. The locations of preliminary grid control positions were marked in the field by paint bombs dropped from a helicopter. A computer analysis of the field control data provided information for adjustment of the preliminary points into a true grid. The true grid points were marked on the ground with strips (2' x 1') of white viscane arranged to form crosses. All targets were either wired to the ground or held in place by rocks. Subsequent to the targeting, mapping photography of the area was run on December 29 and 30, 1964 and on January 28, 1965. A part was photographed at an approximate scale of 1:4,500; other parts were photographed at a scale of approximately 1:3,000. Identifying numbers, the locations and spacing of the control points and the locations of the areas photographed are shown on the topographic map (in 8 parts) included in this report. The altitude, latitude, and longitude of each of the control points are given in tabular form in the body of this report. The locations of control points in sub-areas 1-5 are shown on the mosaics of photographs that are also included.

Topographic profiles through ground control points were developed by photogrammetric means for areas 1, 2, 4, and 5, at a scale of 1:600. In addition, a duplicate set of profiles were developed without reference to ground control for area 4. Parallel profiles are spaced at 200 feet (ground distance) apart. The profiles (each one is in three parts) and plots showing their locations and spatial relationships, are included in this report.

Introduction

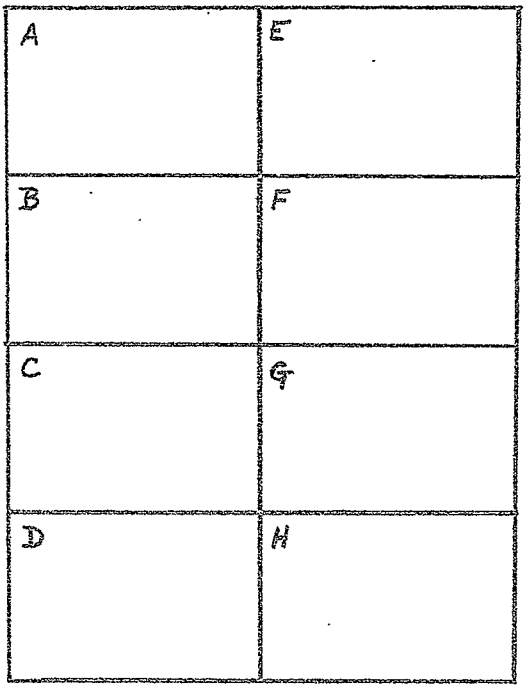
The accompanying Technical Letter NASA-7 contains topographic information on two sets of sub-areas within the Pisgah Crater test site, California. The first set of sub-areas consists of two flight paths, one beginning at Pisgah Crater and extending southeast to the margin of Lavic Lake, the other, near perpendicular, and extending in a southwesterly direction from Lavic Lake to the crest of the flows associated with Sunshine Crater. Together these flight paths form an "L." These paths have been used by investigators studying multispectral photography, color photography, and infrared imagery. Information furnished on these flight paths consists of the numerical designation, position, and altitude of a series of wing and centerline points surveyed and targeted in the field.

Five areas approximately 2000 feet by 2000 feet, considered representative of various terrain units within the Pisgah area, comprise the second set of sub-areas. These sub-areas were selected by, and have been utilized primarily by, the radar investigators. Information furnished on these areas includes plots showing the altitude and spacing of corner and intermediate points, surveyed and targeted in the field, and the location of a series of topographic profiles developed by photogrammetric means. Mosaics of aerial photographs showing sub-areas and the location of the corner and intermediate points; topographic profiles of four of the five sub-areas at a scale of 1:600; and a description of procedures used are included in the Technical Letter. Profiles of the sub-area within Lavic Lake were not developed as the maximum deviation from the horizontal was less than one foot. Two sets of profiles were developed for area 4; one set utilizing the field established control and one set developed without reference to control.

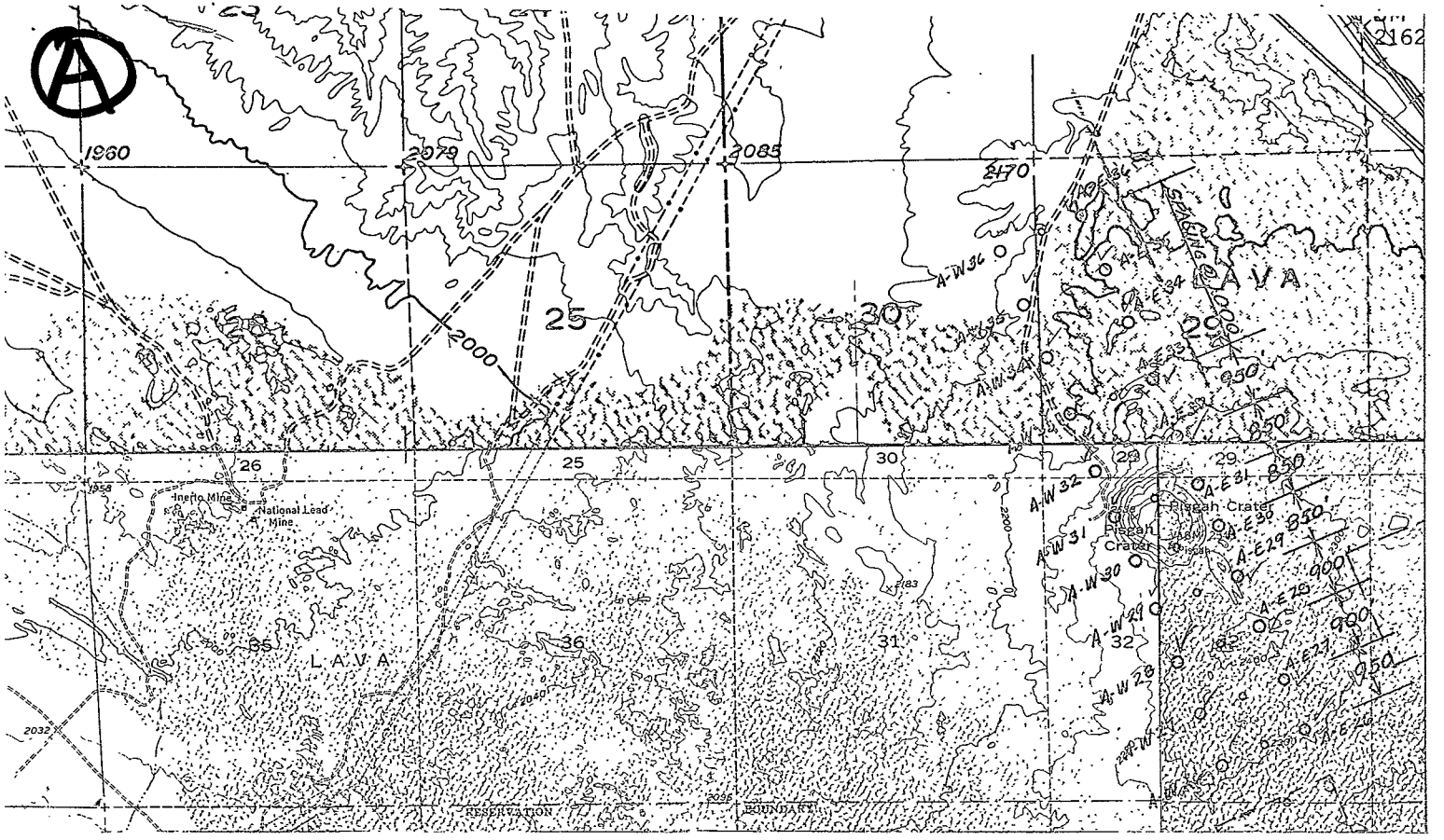
Aerial photographs, showing the location of the various target locations, are on file in the Houston data bank; copies may be obtained from Leo Childs.

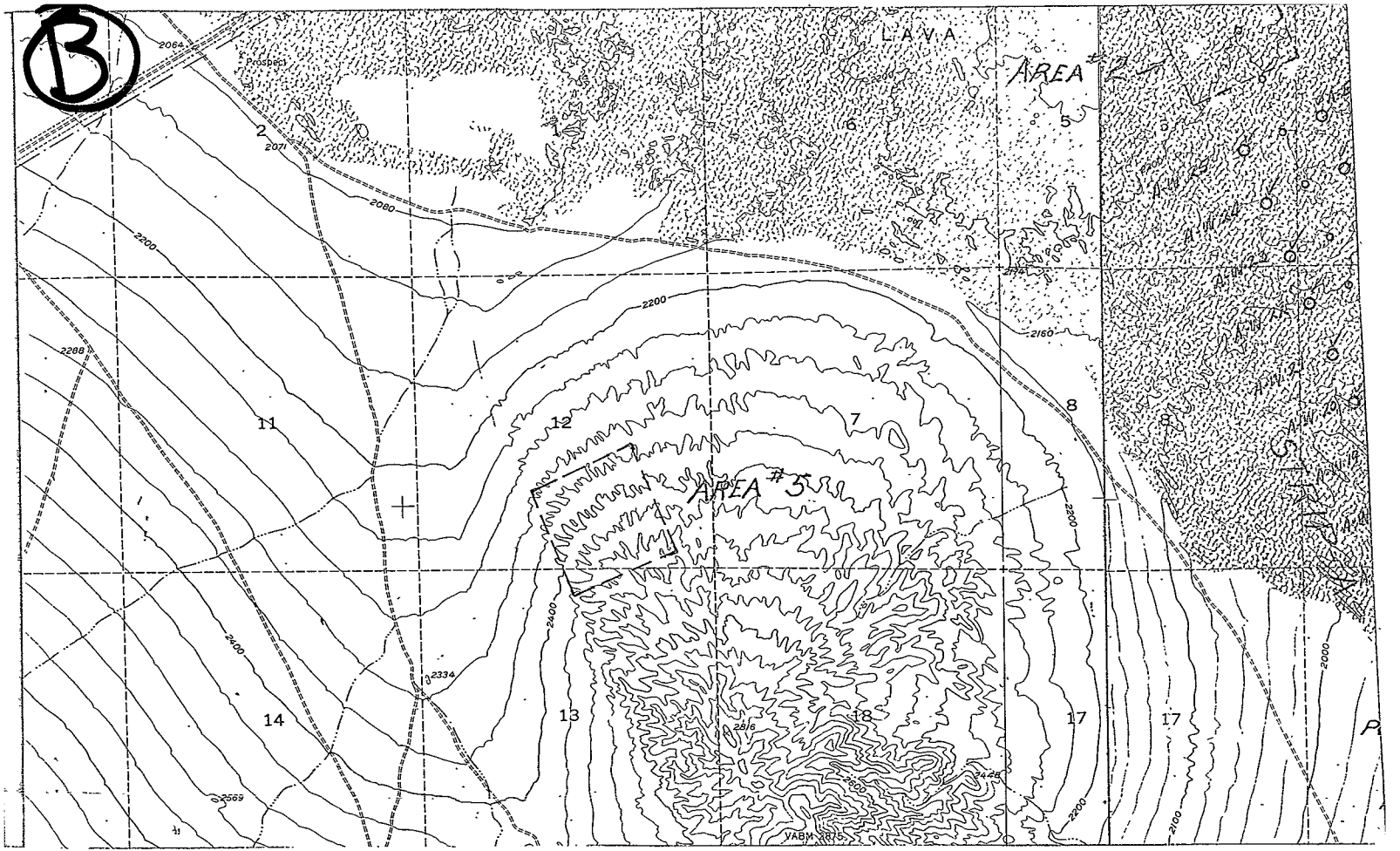
The scale, format, and method of development of the topographic data are purely experimental; we earnestly solicit your criticism and suggestions as to how the product may be improved, and your comments as to the comparative value of the controlled and uncontrolled profiles of area 4 and the desirability of providing similar data on other fundamental test sites.

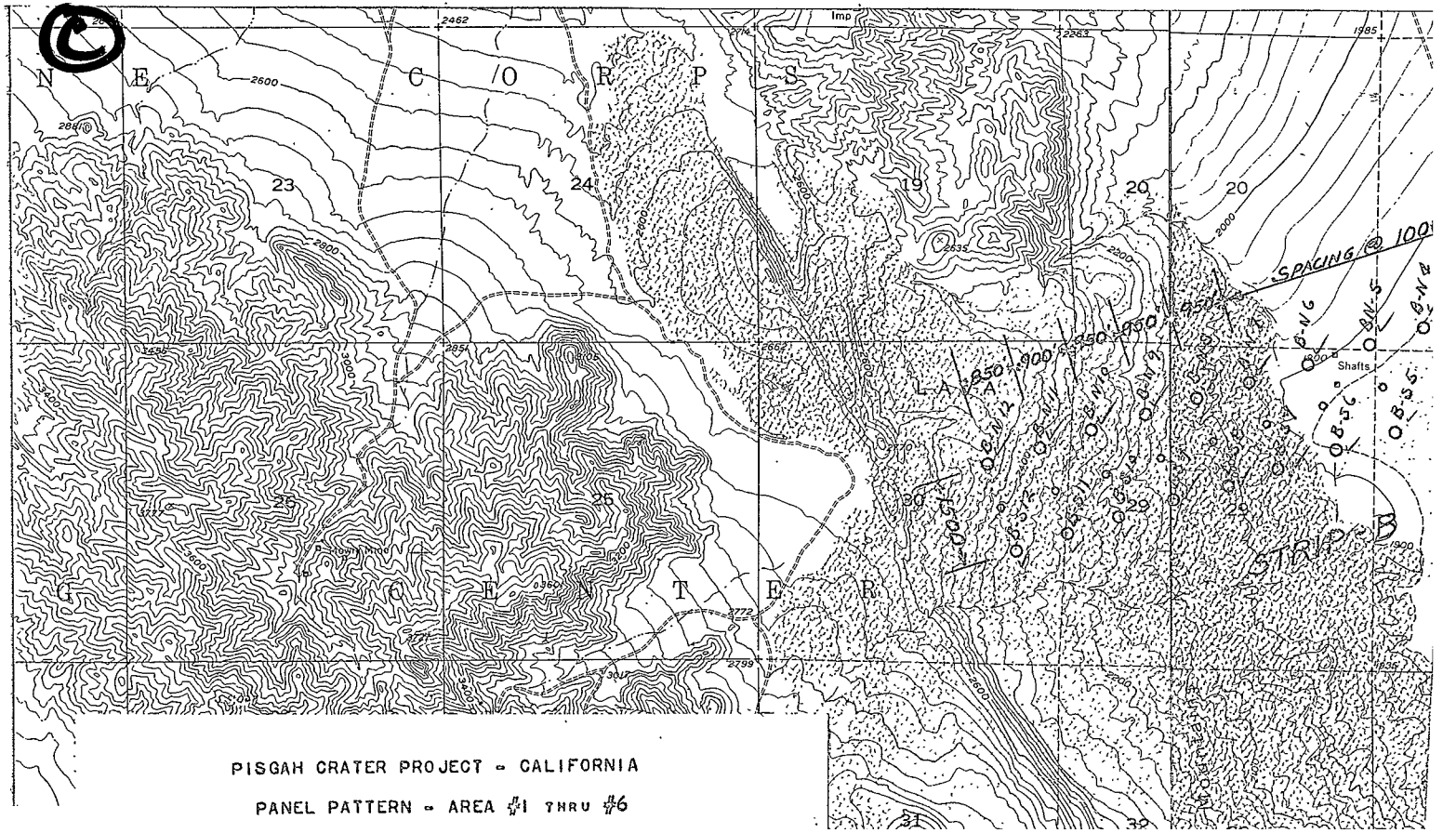
Results of related studies, based on statistical methods and designed to provide very detailed information relative to the topographic form of the various units present in the Pisgah Crater area, will be the subject of a forthcoming Technical Letter.

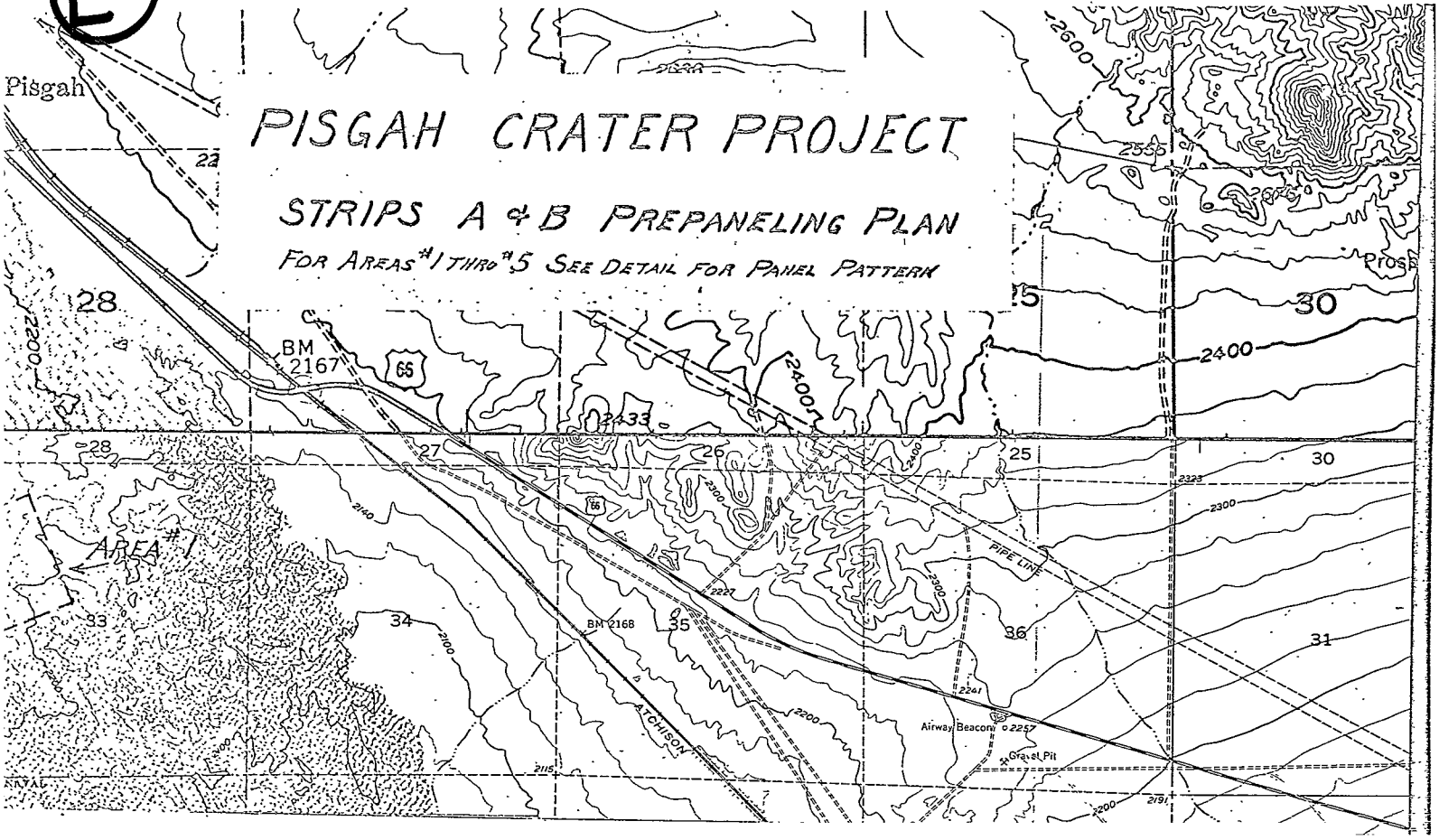


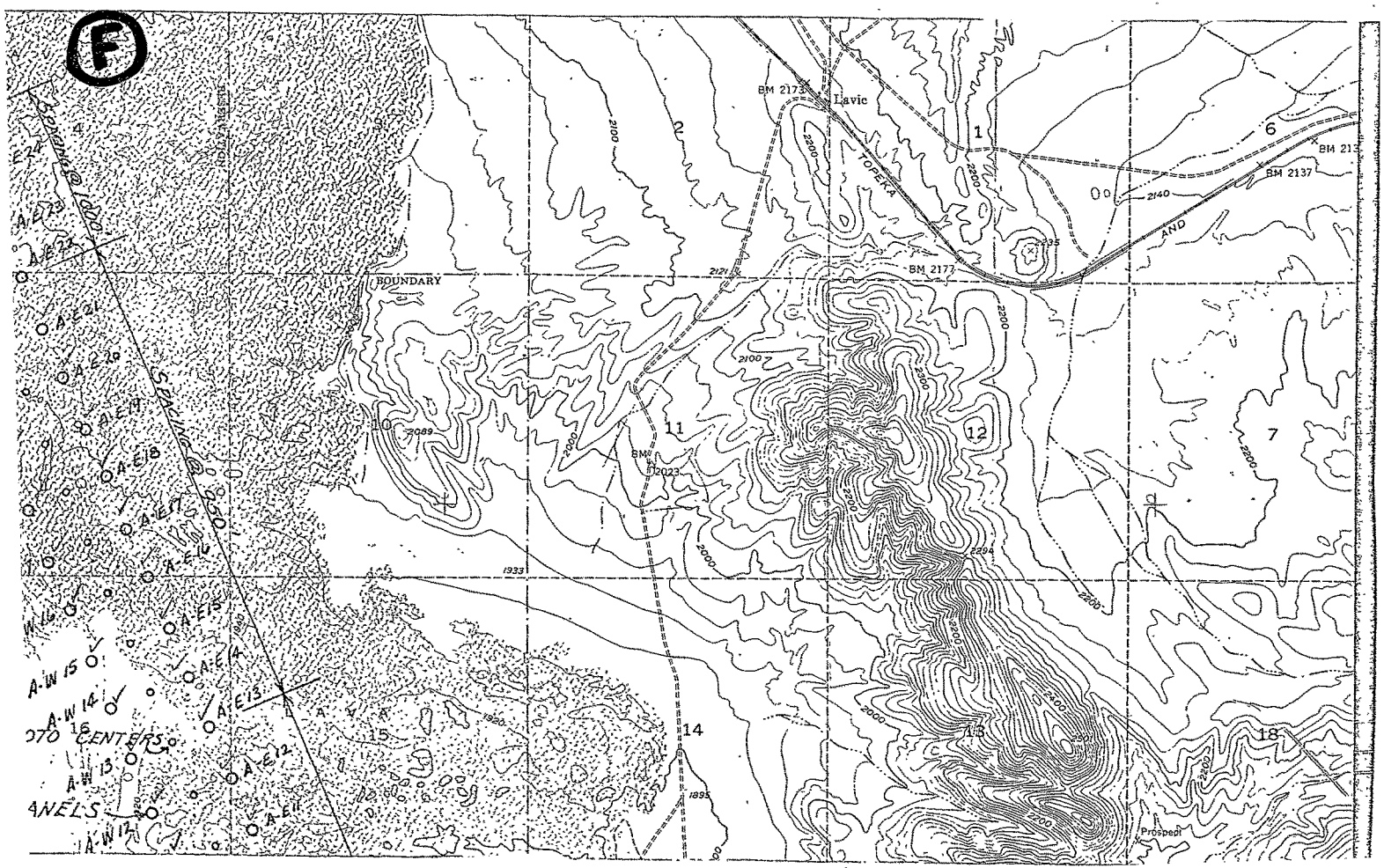
Key for assembly of topographic map (in 8 parts) showing location of control points and test areas

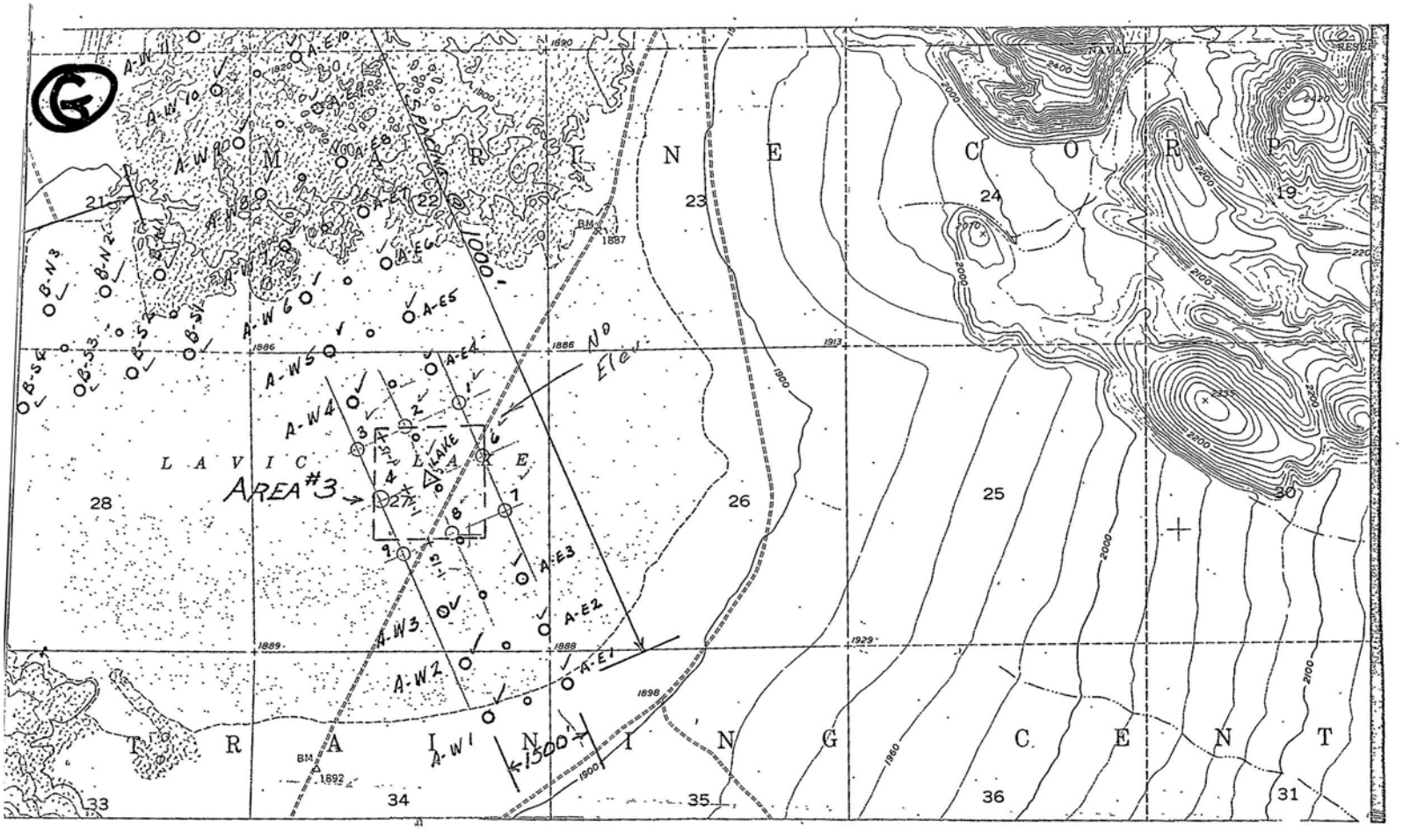

1960
2079
2085
2170
2162
2000
25
30
26
25
30
29
28
31
36
35
32
A-W36
A-W35
A-W34
A-W33
A-W32
A-W31
A-W30
A-W29
A-W28
A-E34
A-E33
A-E32
A-E31
A-E30
A-E29
A-E28
A-E27
950'
850'
900'
Spring
LAVA
Pisgah Crater
Cinder Pisgah Crater
Inerto Mine
National Lead Mine
LAVA
RESERVATION
BOUNDARY

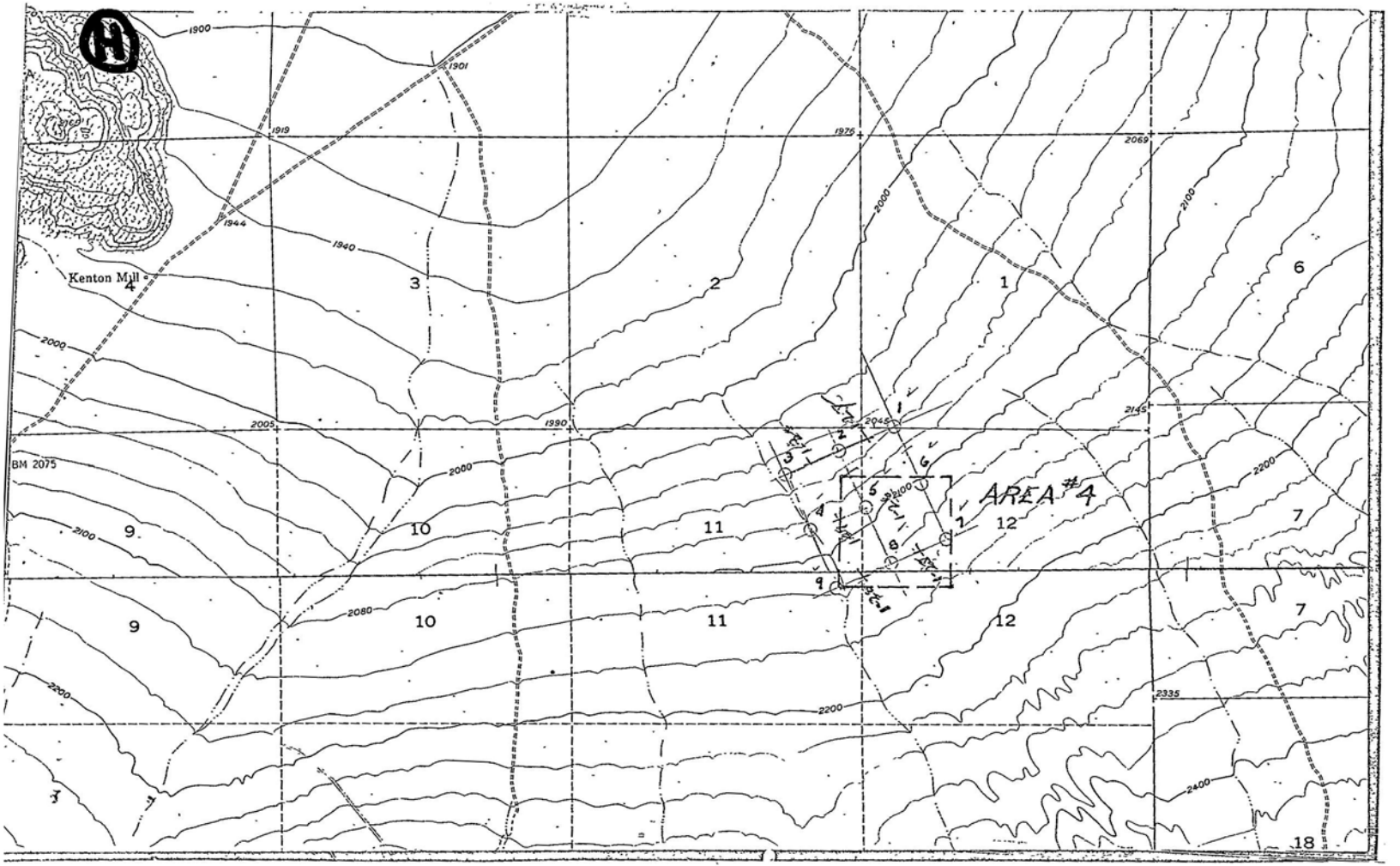

B
LAVA
AREA #2
AREA #3
2064
2071
2080
2200
2288
2160
2400
2334
2569
2816
2445
2000
2100
VABM 2875
1
2
5
6
7
8
11
12
13
14
17
18


N E C O R P S
G C E N T E R
23
24
19
20
25
26
30
29
31
32
SPACING @ 100
Shafts
STRIP B
PISGAH CRATER PROJECT - CALIFORNIA
PANEL PATTERN - AREA #1 THRU #6


PISGAH CRATER PROJECT
STRIPS A & B PREPANELING PLAN
FOR AREAS #1 THRU #5 SEE DETAIL FOR PANEL PATTERN
Pisgah
AREA #1
BM 2167
BM 2168
65
66
ATCHISON
PIPE LINE
Airway Beacon
Gravel Pit
2600
2400
2300
2200
2100
2140
2433
2323
2257
2241
2191
2115
28
27
26
25
30
31
34
35
36
33


F
SPACING @ 1000
SPACING @ 950
BOUNDARY
BM 2173
Lavic
TOPEKA
AND
BM 2137
BM 2177
BM 2023
Prospect
A-E24
A-E23
A-E22
A-E21
A-E20
A-E19
A-E18
A-E17
A-E16
A-E15
A-E14
A-E13
A-E12
A-E11
A-W15
A-W14
A-W13
A-W12
070 CENTERS
ANELS
1 2 6 7 10 11 12 13 14 15 18

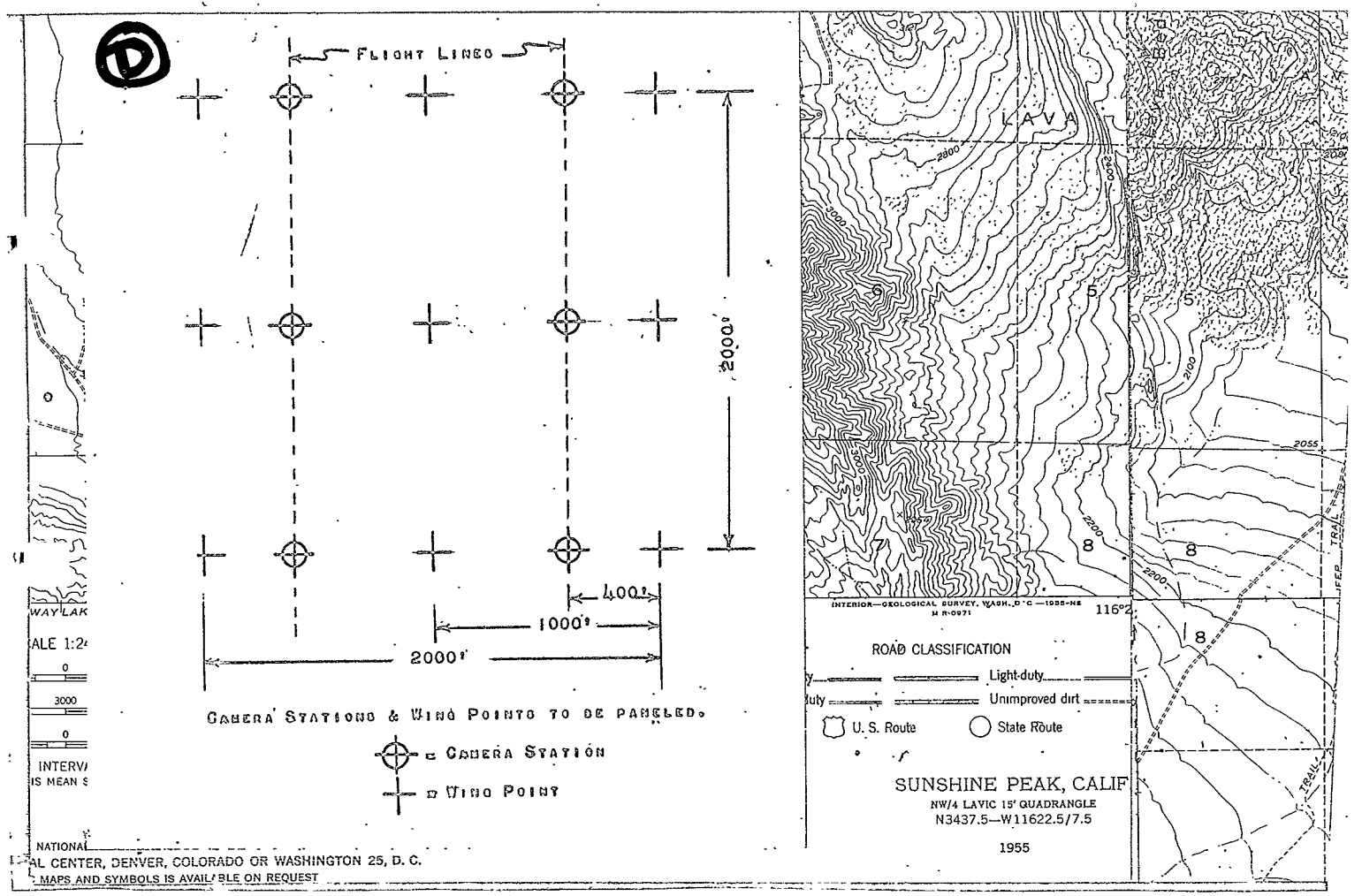

AREA #3
LAVIC LAKE
MARINE CORPS
TRAINING CENTER
NAVAL RESERVE
1000'
1500'
No Elev.
A-W1
A-W2
A-W3
A-W4
A-W5
A-W6
A-W7
A-W8
A-W9
A-W10
A-E1
A-E2
A-E3
A-E4
A-E5
A-E6
A-E7
A-E8
A-E9
A-E10
B-N2
B-N3
B-S2
B-S3
B-S4
21
22
23
24
19
28
26
25
30
33
34
35
36
31
BM 1887
BM 1892


Kenton Mill
BM 2075
AREA #4
1900
1901
1919
1975
2069
1944
1940
2000
2100
2005
1990
2045
2145
2080
2200
2335
2400
1
2
3
4
5
6
7
8
9
10
11
12
18

PISGAH CRATER, CALIFORNIA

STRIP A

STATION		ELEVATION
1	Extra	2498.35
~~5~~	~~Hill~~	~~2163.39~~
6	Able	2068.08
8	AW 29	2306.74
~~9~~	~~AW-28~~	~~2308.27~~
10	AW 27	2335.50
11	AW 26	2326.31
~~12~~	~~AW-25~~	~~2151.89~~
13	AW 24	2130.23
14	AW 23	2120.69
~~15~~	~~AW-22~~	~~2078.93~~
16	AW 21	2047.98
17	AW 20	2001.42
~~18~~	~~AW-19~~	~~1988.67~~
19	AW 18	1966.40


FLIGHT LINES
2000'
400'
1000'
2000'
CAMERA STATIONS & WIND POINTS TO BE PANELED.
= CAMERA STATION
= WIND POINT
LAVA
INTERIOR—GEOLOGICAL SURVEY, WASH., D. C.—1955—NS
M R-0971
116°2
ROAD CLASSIFICATION
Light-duty
Unimproved dirt
U. S. Route
State Route
SUNSHINE PEAK, CALIF
NW/4 LAVIC 15' QUADRANGLE
N3437.5—W11622.5/7.5
1955
TRAIL
TRAIL
WAY LAK
ALE 1:24
0
3000
0
INTERV
IS MEAN S
NATIONA
L CENTER, DENVER, COLORADO OR WASHINGTON 25, D. C.
MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

PISGAH CRATER, CALIF-
STRIP A

20	AW 17	1951.16
~~21~~	~~AW 16~~	~~1947.75~~
22	AW 15	1941.20
23	AW 14	1934.46
~~24~~	~~AW 13~~	~~1923.64~~
25	AW 12	1920.42
26	AW 11	1931.27
~~27~~	~~AW 10~~	~~1916.16~~
28	AW 9	1918.41
29	AW 8	1898.01
~~30~~	~~AW 7~~	~~1895.75~~
31	AW 6	1885.80
32	AW 5	1886.60
~~33~~	~~AW 4~~	~~1886.73~~
34	AW 3	1885.62
35	AW 2	1886.03
~~36~~	~~AW 1~~	~~1886.23~~
37	AE 29	2398.35
38	AE 28	2422.85
~~39~~	~~AE 27~~	~~2352.43~~
40	AE 26	2307.16"
41	AE 25	2162.91
~~42~~	~~AE 24~~	~~2147.47~~
43	AE 23	2107.11
45	AE 21	2045.74
~~46~~	~~AE 20~~	~~2017.47~~
47	AE 19	2007.36
48	AE 18	1997.56
~~49~~	~~AE 17~~	~~1985.16~~
50	AE 16	1952.98
51	AE 15	1954.21
~~52~~	~~AE 14~~	~~1937.35~~
53	AE 13	1927.74

PISGAH CRATER, CALIF-
STRIP A

54	AE 12	1935.72
~~55~~	~~AE 11~~	~~1935.61~~
56	AE 10	1924.96
57	AE 9	1900.38
~~58~~	~~AE 8~~	~~1898.31~~
59	AE 7	1885.77
60	AE 6	1885.95
~~61~~	~~AE 5~~	~~1885.89~~
62	AE 4	1885.99
63	AE 3	1886.63
~~64~~	~~AE 2~~	~~1884.09~~
65	AE 1	1886.84
66	AW 30	2298.34
~~67~~	~~AW 31~~	~~2323.36~~
68	AW 32	2206.43
69	AW 33	2197.45
~~70~~	~~AW 34~~	~~2176.48~~
71	AW 35	2155.28
72	AW 36	2142.58
~~73~~	~~AE 32~~	~~2322.48~~
74	AE 33	2238.88
75	AE 34	2235.56
~~76~~	~~AE 35~~	~~2198.27~~
77	AE 36	2180.27
120	Imp	2875.00
~~121~~	~~BM "51 LC"~~	~~1891.60~~
122	BM "53 LC"	2023.30
123	Pisgah	2543.00
~~124~~	~~Red~~	~~3979.10~~
125	Lavic (C&GS)	2816.10
126	Airway Beacon No. 16 (C&GS)	2256.00

K= 4.2354

154.1 CALIFORNIA ZONE 5 1/8/64 STRIP A

STATION	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE	MAPPING ANGLE	
17.00	+2.4927051 +06	+4.4543831 +05	34° 42' 46.711"	116° 21' 37.643"	+ 0. 56. 4.	AW 20
18.00	+2.4931714 +06	+4.4435542 +05	34° 42' 35.924"	116° 21' 32.270"	+ 0. 56. 7.	AW 19
19.00	+2.4935290 +06	+4.4362567 +05	34° 42' 28.649"	116° 21' 28.129"	+ 0. 56. 10.	AW 18
20.00	+2.4939269 +06	+4.4274227 +05	34° 42' 19.847"	116° 21' 23.538"	+ 0. 56. 12.	AW 17
21.00	+2.4942594 +06	+4.4186454 +05	34° 42' 11.112"	116° 21' 19.727"	+ 0. 56. 15.	AW 16
22.00	+2.4946396 +06	+4.4100211 +05	34° 42' 2.521"	116° 21' 15.343"	+ 0. 56. 17.	AW 15
23.00	+2.4950051 +06	+4.4020194 +05	34° 41' 54.546"	116° 21' 11.123"	+ 0. 56. 20.	AW 14
24.00	+2.4953884 +06	+4.3931054 +05	34° 41' 45.668"	116° 21' 6.708"	+ 0. 56. 22.	AW 13
25.00	+2.4957952 +06	+4.3835504 +05	34° 41' 36.152"	116° 21' 2.024"	+ 0. 56. 25.	AW 12
26.00	+2.4961764 +06	+4.3753291 +05	34° 41' 27.958"	116° 20' 57.621"	+ 0. 56. 27.	AW 11
27.00	+2.4965493 +06	+4.3660255 +05	34° 41' 18.695"	116° 20' 53.340"	+ 0. 56. 30.	AW 10
28.00	+2.4969117 +06	+4.3572455 +05	34° 41' 9.916"	116° 20' 48.658"		AW 9

154.1 CALIFORNIA ZONE 5. PISGAH CRATER PROJECT 11/8/64
PLANE COORDINATE POSITIONS
STRIP A

STATION	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE MAPPING ANGLE	
1.000	+2.5119001 +06	+4.3987542 +05	34° 41' 48.533"	116° 17' 48.869" + 0. 58. 15.	Extra
2.000	+2.5003047 +06	+4.2995541 +05	34° 40' 12.335"	116° 20' 9.692" + 0. 56. 55.	Lake
3.000	+2.5080994 +06	+4.3576702 +05	34° 41' 8.532"	116° 18' 35.210" + 0. 57. 48.	Early
4.000	+2.5075369 +06	+4.3715447 +05	34° 41' 22.349"	116° 18' 41.665" + 0. 57. 45.	Fox
9.000	+2.4884060 +06	+4.5518358 +05	34° 44' 23.791"	116° 22' 27.247" + 0. 55. 36.	AW 28
10.00	+2.4887791 +06	+4.5434126 +05	34° 44' 15.401"	116° 22' 22.940" + 0. 55. 39.	AW 27
11.00	+2.4891310 +06	+4.5352683 +05	34° 44' 7.289"	116° 22' 18.883" + 0. 55. 41.	AW 26
12.00	+2.4907387 +06	+4.4982907 +05	34° 43' 30.456"	116° 22' .341" + 0. 55. 51.	AW 25
13.00	+2.4912033 +06	+4.4882052 +05	34° 43' 20.406"	116° 21' 54.972" + 0. 55. 55.	AW 24
14.00	+2.4915794 +06	+4.4794335 +05	34° 43' 11.671"	116° 21' 50.638" + 0. 55. 57.	AW 23
15.00	+2.4919606 +06	+4.4710131 +05	34° 43' 3.280"	116° 21' 46.236" + 0. 55. 60.	AW 22
16.00	+2.4923324 +06	+4.4622281 +05	34° 42' 54.531"	116° 21' 41.954" + 0. 56. 3.	AW 21

POSITIONS STRIP A

154.1 CALIFORNIA ZONE 5

ITION	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE	MAPPING ANGLE	
54.00	+2.4971439 +06	+4.3899176 +05	34° 41' 42.230"	116° 20' 45.748"	+ 0. 56. 34.	AE 12
55.00	+2.4975345 +06	+4.3806534 +05	34° 41' 33.004"	116° 20' 41.253"	+ 0. 56. 37.	AE 11
56.00	+2.4979285 +06	+4.3719281 +05	34° 41' 24.308"	116° 20' 36.709"	+ 0. 56. 39.	AE 10
57.00	+2.4983846 +06	+4.3617533 +05	34° 41' 14.171"	116° 20' 31.448"	+ 0. 56. 42.	AE 9
58.00	+2.4988032 +06	+4.3526155 +05	34° 41' 5.064"	116° 20' 26.616"	+ 0. 56. 45.	AE 8
59.00	+2.4991799 +06	+4.3435794 +05	34° 40' 56.065"	116° 20' 22.285"	+ 0. 56. 47.	AE 7
60.00	+2.4995453 +06	+4.3356266 +05	34° 40' 48.140"	116° 20' 18.067"	+ 0. 56. 50.	AE 6
61.00	+2.4999803 +06	+4.3253425 +05	34° 40' 37.895"	116° 20' 13.064"	+ 0. 56. 53.	AE 5
62.00	+2.5003255 +06	+4.3169497 +05	34° 40' 29.538"	116° 20' 9.096"	+ 0. 56. 55.	AE 4
63.00	+2.5019094 +06	+4.2819450 +05	34° 39' 54.656"	116° 19' 50.831"	+ 0. 57. 5.	AE 3
64.00	+2.5022665 +06	+4.2733447 +05	34° 39' 46.091"	116° 19' 46.727"	+ 0. 57. 8.	AE 2
65.00	+2.5026872 +06	+4.2639092 +05	34° 39' 36.688"	116° 19' 41.879"	+ 0. 57. 10.	AE 1

154.1 CALIFORNIA ZONE 5

1/9/64
STRIP A

STATION	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE MAPPING ANGLE	
29.00	+2.4973349 +06	+4.3484848 +05	34° 41' 1.218"	116° 20' 44.279" + 0. 56. 35.	AW 8 ✓
30.00	+2.4977259 +06	+4.3395729 +05	34° 40' 52.341"	116° 20' 39.772" + 0. 56. 37.	AW 7 ✓
31.00	+2.4982062 +06	+4.3287637 +05	34° 40' 41.570"	116° 20' 34.235" + 0. 56. 41.	AW 6 ✓
32.00	+2.4985729 +06	+4.3201056 +05	34° 40' 32.947"	116° 20' 30.016" + 0. 56. 43.	AW 5 ✓
33.00	+2.4989779 +06	+4.3109638 +05	34° 40' 23.839"	116° 20' 25.347" + 0. 56. 46.	AW 4 ✓
34.00	+2.5005625 +06	+4.2753417 +05	34° 39' 48.345"	116° 20' 7.085" + 0. 56. 56.	AW 3 ✓
35.00	+2.5009444 +06	+4.2663470 +05	34° 39' 39.387"	116° 20' 2.691" + 0. 56. 59.	AW 2 ✓
36.00	+2.5013691 +06	+4.2567355 +05	34° 39' 29.810"	116° 19' 57.799" + 0. 57. 1.	AW 1 ✓
37.00	+2.4894744 +06	+4.5634461 +05	34° 44' 35.102"	116° 22' 14.220" + 0. 55. 44.	AE 29 ✓
38.00	+2.4897708 +06	+4.5571812 +05	34° 44' 28.861"	116° 22' 10.791" + 0. 55. 46.	AE 28 ✓
39.00	+2.4901445 +06	+4.5488923 +05	34° 44' 20.601"	116° 22' 6.474" + 0. 55. 48.	AE 27 ✓
40.00	+2.4904513 +06	+4.5398618 +05	34° 44' 11.603"	116° 22' 1.777" + 0. 55. 51.	AE 26 ✓

154.1 CALIFORNIA ZONE 5. 1/8/64 STRIP A

STATION	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE	MAPPING ANGLE	
41.00	+2.4921303 +06	+4.5035327 +05	34° 43' 35.418"	116° 21' 43.568"	+ 0. 56. 1.	AE 25
42.00	+2.4925137 +06	+4.4946516 +05	34° 43' 26.571"	116° 21' 39.148"	+ 0. 56. 4.	AE 24
43.00	+2.4929515 +06	+4.4850549 +05	34° 43' 17.005"	116° 21' 34.093"	+ 0. 56. 6.	AE 23
45.00	+2.4936902 +06	+4.4680597 +05	34° 43' .079"	116° 21' 25.577"	+ 0. 56. 11.	AE 21
46.00	+2.4940785 +06	+4.4593884 +05	34° 42' 51.439"	116° 21' 21.095"	+ 0. 56. 14.	AE 20
47.00	+2.4944814 +06	+4.4506224 +05	34° 42' 42.703"	116° 21' 16.442"	+ 0. 56. 16.	AE 19
48.00	+2.4948418 +06	+4.4430614 +05	34° 42' 35.168"	116° 21' 12.273"	+ 0. 56. 19.	AE 18
49.00	+2.4952169 +06	+4.4336470 +05	34° 42' 25.795"	116° 21' 7.966"	+ 0. 56. 21.	AE 17
50.00	+2.4955948 +06	+4.4252259 +05	34° 42' 17.404"	116° 21' 3.606"	+ 0. 56. 24.	AE 16
51.00	+2.4959929 +06	+4.4159055 +05	34° 42' 8.120"	116° 20' 59.021"	+ 0. 56. 26.	AE 15
52.00	+2.4963649 +06	+4.4073761 +05	34° 41' 59.623"	116° 20' 54.733"	+ 0. 56. 29.	AE 14
53.00			34° 41' 51.010"	116° 20' 50.242"		AE 13

POSITIONS SHIP "A"

154.1 CALIFORNIA ZONE 5.

STATION	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE	MAPPING ANGLE	
78.00	+2.5034162 +06	+4.2475689 +05	34° 39' 20.407"	116° 19' 33.479"	+ 0. 57. 15.	A-East
121.0	+2.4984510 +06	+4.2458455 +05	34° 39' 19.516"	116° 20' 32.942"	+ 0. 56. 41.	BM "51 LC"
122.0	+2.5045059 +06	+4.2462175 +05	34° 42' 36.707"	116° 19' 16.465"	+ 0. 57. 25.	BM "53 LC"
123.0	+2.4883519 +06	+4.5717956 +05	34° 44' 43.542"	116° 22' 27.508"	+ 0. 55. 36.	Pisgah
126.0	+2.5099412 +06	+4.5428617 +05	34° 44' 11.394"	116° 18' 9.412"	+ 0. 58. 3.	Airway Beacon #16 (C&GS)

POSITIONS STRIP "A"

1542 CALIFORNIA ZONE 5

STATION	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE	MAPPING ANGLE	
8.000	+2.4880341 +06	+4.5603619 +05	34° 44' 32.284"	116° 22' 31.538"	+ 0. 55. 34.	AW 29
66.00	+2.4876290 +06	+4.5680969 +05	34° 44' 39.999"	116° 22' 36.242"	+ 0. 55. 31.	AW 30
67.00	+2.4872729 +06	+4.5761938 +05	34° 44' 48.065"	116° 22' 40.352"	+ 0. 55. 29.	AW 31
68.00	+2.4869471 +06	+4.5839911 +05	34° 44' 55.830"	116° 22' 44.106"	+ 0. 55. 27.	AW 32
120.0	+2.4832366 +06	+4.3749483 +05	34° 41' 29.656"	116° 23' 32.574"	+ 0. 54. 59.	Imp
125.0	+2.4816876 +06	+4.3943878 +05	34° 41' 49.128"	116° 23' 50.751"	+ 0. 54. 49.	Lavic (C&GS)

POSITIONS STRIP "A"

179.3 CALIFORNIA ZONE 5

STATION	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE MAPPING ANGLE	
5.000	+2.4791033 +06	+4.6640395 +05	34° 46' 16.245"	116° 24' 16.572" + 0. 54. 34.	Hill
6.000	+2.4838016 +06	+4.6938780 +05	34° 46' 45.017"	116° 23' 19.686" + 0. 55. 6.	Able
7.000	+2.4822070 +06	+4.6930204 +05	34° 46' 44.421"	116° 23' 38.816" + 0. 54. 55.	Baker
69.00	+2.4865735 +06	+4.5928954 +05	34° 45' 4.696"	116° 22' 48.410" + 0. 55. 24.	AW 33
70.00	+2.4861691 +06	+4.6029967 +05	34° 45' 14.752"	116° 22' 53.061" + 0. 55. 21.	AW 34
71.00	+2.4857892 +06	+4.6114370 +05	34° 45' 23.160"	116° 22' 57.450" + 0. 55. 19.	AW 35
72.00	+2.4854265 +06	+4.6198775 +05	34° 45' 31.565"	116° 23' 1.634" + 0. 55. 17.	AW 36
74.00	+2.4879865 +06	+4.5991342 +05	34° 45' 10.641"	116° 22' 31.357" + 0. 55. 34.	AE 33
75.00	+2.4875321 +06	+4.6090113 +05	34° 45' 20.483"	116° 22' 36.611" + 0. 55. 31.	AE 34
76.00	+2.4871565 +06	+4.6177283 +05	34° 45' 29.165"	116° 22' 40.944" + 0. 55. 28.	AE 35
77.00	+2.4867556 +06	+4.6268611 +05	34° 45' 38.261"	116° 22' 45.572" + 0. 55. 26.	AE 36

POSITIONS: STRIP "A"

1794 — CALIFORNIA ZONE 5

STATION	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE MAPPING ANGLE	
73.00	+2.4883706 +06	+4.5900495 +05	34° 45' 1.594"	116° 22' 26.930"	AE 32 ✓
			+ 0. 55. 36.		
124.0	+2.5143673 +06	+4.7106136 +05	34° 46' 56.570"	116° 17' 12.959"	Red
			+ 0. 58. 35.		

STRIP "B" 2800*E 00700*

1-19-64

PISGAH CRATER
STRIP B, ~~AREAS 3 & 4~~

STATION	ELEVATION
1 BN 12	2552.99
2 BN 11	2410.61
~~3 BN 10~~	~~2313.02~~
4 BN 9	2161.95
5 BN 8	2047.46
~~6 BN 7~~	~~1925.10~~
7 BN 6	1901.58
8 BN 5	1893.18
~~9 BN 4~~	~~1886.85~~
10 BN 3	1885.82
11 BN 2	1885.66
~~12 BN 1~~	~~1885.92~~
13 BS 12	2356.60
14 BS 11	2263.48
~~15 BS 10~~	~~2184.33~~
16 BS 9	2105.25
17 BS 8	2017.94
~~18 BS 7~~	~~1950.55~~
19 BS 6	1885.54
20 BS 5	1885.44
~~21 BS 4~~	~~1885.38~~
22 BS 3	1885.34
23 BS 2	1885.36
~~24 BS 1~~	~~1885.57~~

POSITIONS STRIP 'B'

154.1 CALIFORNIA ZONE. 5.

STATION		X COORDINATE	LATITUDE Y COORDINATE	LONGITUDE MAPPING ANGLE
20.00	BS 5	+2.4922648 +06	34° 40' 21.275" +4.3072708 +05	116° 21' 45.787" + 0. 55. 60.
21.00	BS 4	+2.4931720 +06	34° 40' 24.074" +4.3102497 +05	116° 21' 34.868" + 0. 56. 6.
22.00	BS 3	+2.4942031 +06	34° 40' 27.153" +4.3135300 +05	116° 21' 22.460" + 0. 56. 13.
23.00	BS 2	+2.4951460 +06	34° 40' 29.982" +4.3165450 +05	116° 21' 11.114" + 0. 56. 20.
24.00	BS 1	+2.4962108 +06	34° 40' 33.149" +4.3199203 +05	116° 20' 58.299" + 0. 56. 27.

154.2 CALIFORNIA ZONE. 5.

STATION		X COORDINATE	LATITUDE Y COORDINATE	LONGITUDE MAPPING ANGLE
1.000	BN 12	+2.4855359 +06	34° 40' 16.787" +4.3016442 +05	116° 23' 6.451" + 0. 55. 14.
2.000	BN 11	+2.4863914 +06	34° 40' 19.305" +4.3043286 +05	116° 22' 56.158" + 0. 55. 20.
3.000	BN 10	+2.4872813 +06	34° 40' 22.259" +4.3074584 +05	116° 22' 45.444" + 0. 55. 26.
4.000	BN 9	+2.4881447 +06	34° 40' 24.898" +4.3102664 +05	116° 22' 35.053" + 0. 55. 32.
13.00	BS 12	+2.4859790 +06	34° 40' 3.012" +4.2877907 +05	116° 23' 1.413" + 0. 55. 17.
14.00	BS 11	+2.4869154 +06	34° 40' 5.804" +4.2907629 +05	116° 22' 50.146" + 0. 55. 23.
15.00	BS 10	+2.4877038 +06	34° 40' 8.292" +4.2934053 +05	116° 22' 40.658" + 0. 55. 28.
50.00	Imp	+2.4832366 +06	34° 41' 29.656" +4.3749483 +05	116° 23' 32.574" + 0. 54. 59.

154.1 CALIFORNIA ZONE 5. POSITIONS STRIP B (SHEETS B-1 B-2)

STATION		X COORDINATE / LATITUDE	Y COORDINATE / LONGITUDE	MAPPING ANGLE
5.000	BN 8 ✓	+2.4889287 +06	34° 40' 27.382" +4.3129031 +05	116° 22' 25.616" + 0. 55. 37.
6.000	BN 7 ✓	+2.4898195 +06	34° 40' 29.880" +4.3155727 +05	116° 22' 14.900" + 0. 55. 43.
7.000	BN 6 ✓	+2.4907927 +06	34° 40' 31.893" +4.3177666 +05	116° 22' 3.206" + 0. 55. 50.
8.000	BN 5 ✓	+2.4917860 +06	34° 40' 35.431" +4.3215061 +05	116° 21' 51.242" + 0. 55. 57.
9.000	BN 4 ✓	+2.4926742 +06	34° 40' 38.047" +4.3242953 +05	116° 21' 40.554" + 0. 56. 3.
10.00	BN 3	+2.4937328 +06	34° 40' 41.270" +4.3277262 +05	116° 21' 27.812" + 0. 56. 10.
11.00	BN 2 ✓	+2.4947133 +06	34° 40' 44.117" +4.3307647 +05	116° 21' 16.015" + 0. 56. 17.
12.00	BN 1 ✓	+2.4957597 +06	34° 40' 47.282" +4.3341372 +05	116° 21' 3.419" + 0. 56. 24.
16.00	BS 9 ✓	+2.4886394 +06	34° 40' 10.552" +4.2958419 +05	116° 22' 29.410" + 0. 55. 35.
17.00	BS 8 ✓	+2.4894796 +06	34° 40' 13.357" +4.2988131 +05	116° 22' 19.294" + 0. 55. 41.
18.00	BS 7 ✓	+2.4903184 +06	34° 40' 15.911" +4.3015321 +05	116° 22' 9.201" + 0. 55. 46.
19.00	BS 6 ✓	+2.4913983 +06	34° 40' 19.422" +4.3052583 +05	116° 21' 56.200" + 0. 55. 54.

Outline of Procedure for Photogrammetric Compilation
of Profiles on the Pisgah Crater Project

Source information:

A. Aerial photography:

1. Six inch Metrogon lens
2. Flight height, 1500 feet above ground
3. Two strips of three exposures each (2 models each) for each area

B. Field control:

1. Position (X, Y) and elevation (Z) on a grid pattern of nine points in each of the five areas. The grid interval of 1000 feet determined a 2000 ft. square area. The Airborne Control (ABC) system enabled the Field Surveys Branch to spot temporary control positions and elevations in the proximity of final locations. Distances and azimuths to true locations were computed and used to locate panels on the ground.

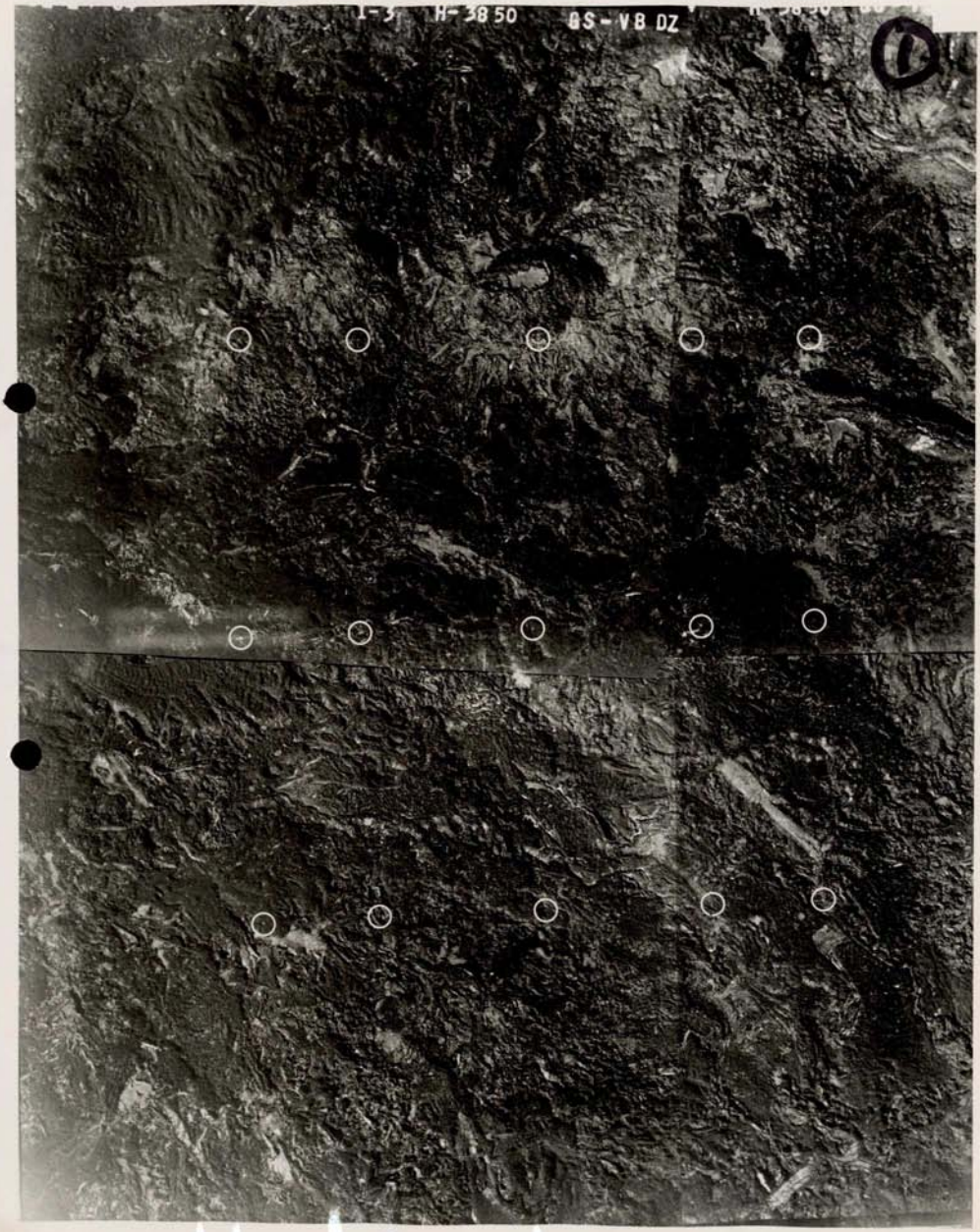
II. Aerotriangulation:

The large photo scale (1:3000) produced a model scale of 1" = 50 feet. A digitized Kelsh plotter derived model coordinates of the control point panel images. The four models covering an area were given a Least Square analytical adjustment to the control point positions. Relative photogrammetric planimetric error within a 4-model block did not exceed 0.3 ft. Least squares residuals on control points exhibited large spreads due, doubtless, to difficulties in the field operations. Photogrammetric positions held the model in a block and served to maximize the internal relative accuracy. All panel images were PUG-marked (drilled through the emulsion) to guarantee consistency of observation by operators in both the aerotriangulation and profiling phases.

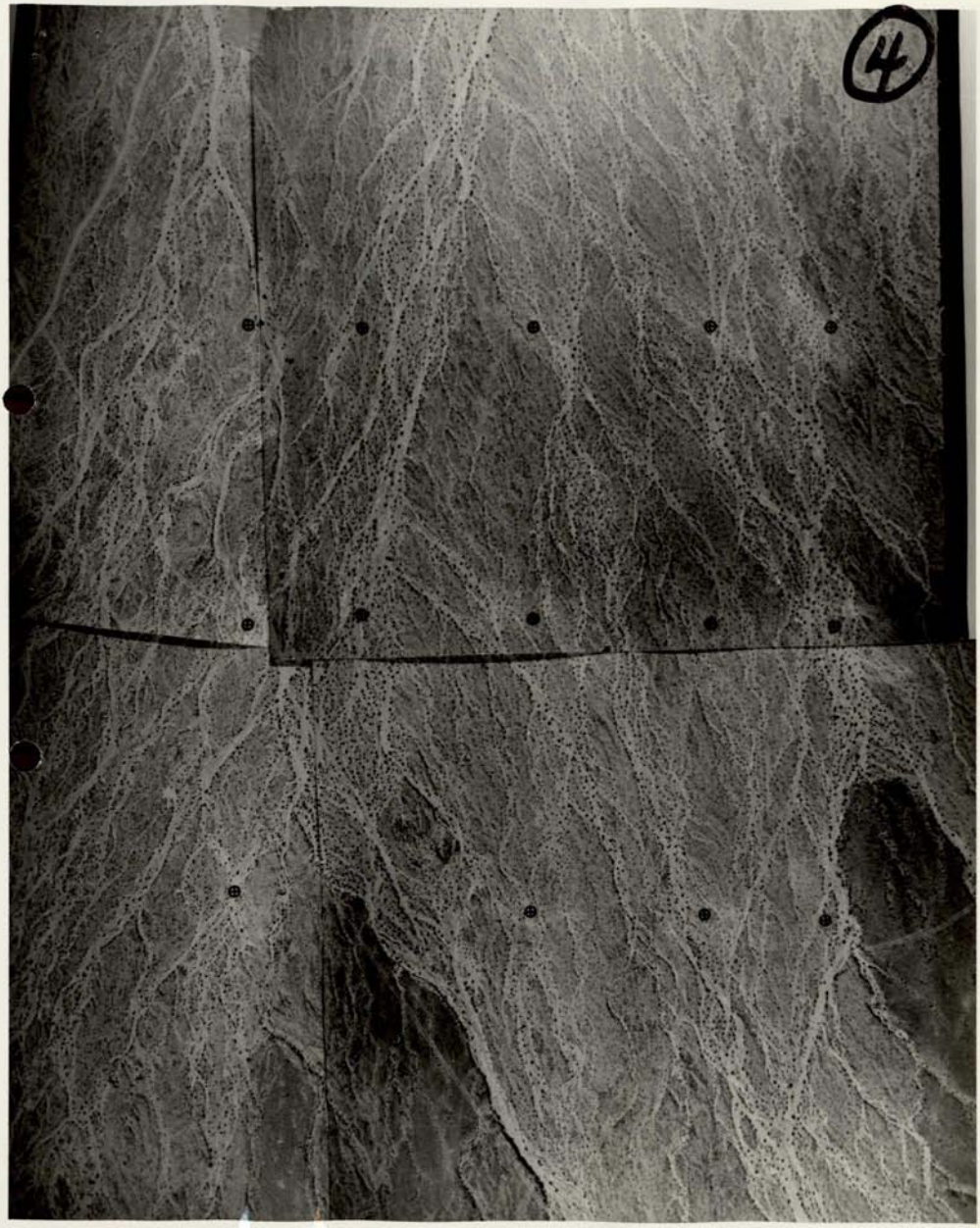
III. Profile compilation:

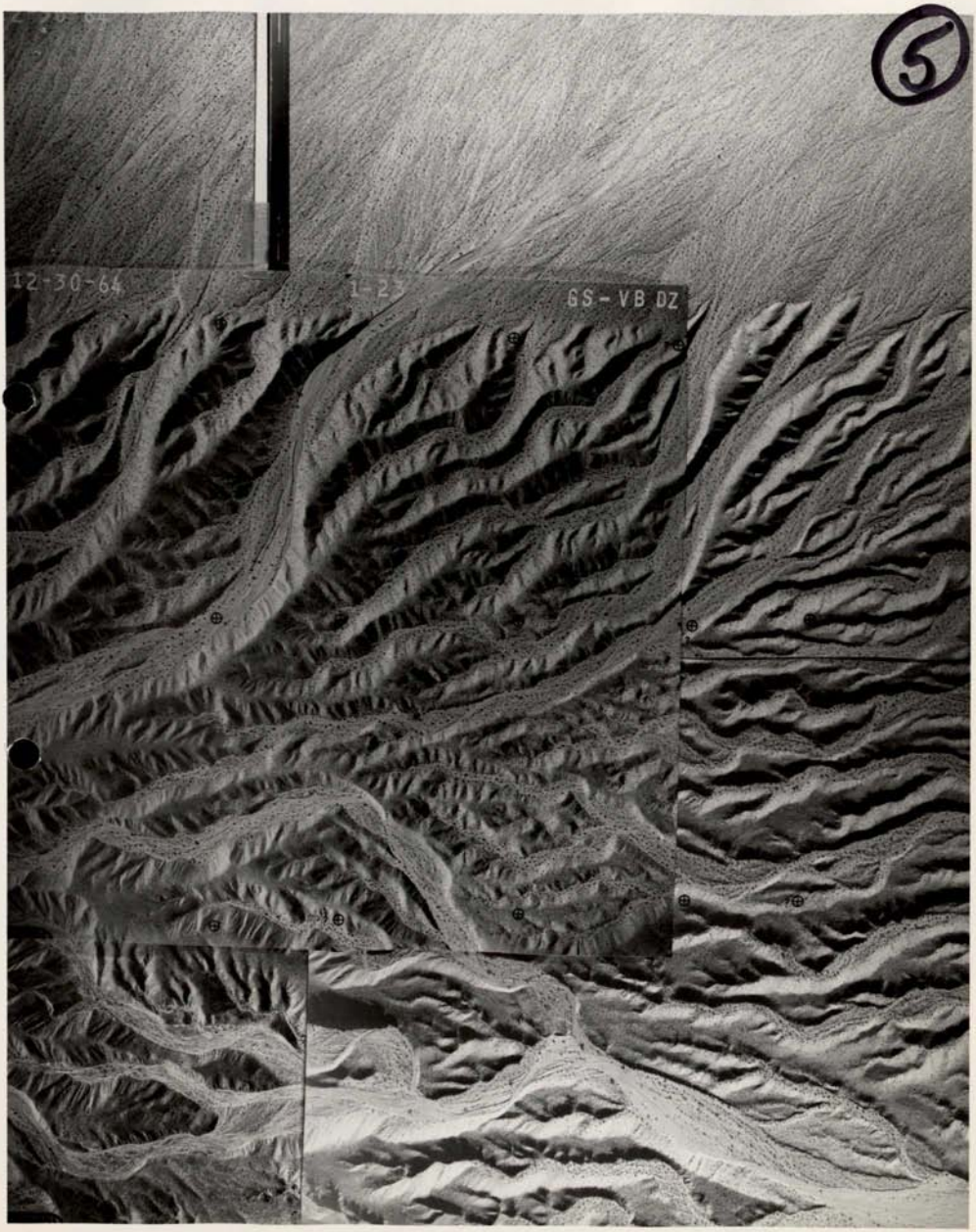
A planimetric plot of the photogrammetrically determined control point positions served to hold the models and to fix the profile lines. Four triplets of profiles were drawn in each of the areas 1, 2, 4, 5 (Area 3 was too flat to profile). The three paneled control points which determine the center line of a triplet were never collinear due to inaccuracies in the grid on the ground. Therefore, each profile line is broken into two straight line segments. Similarly, the companion pair in a triplet, being parallel to and 200 feet from the center line, are broken. The location of all profiles are shown on the planimetric plots.

Model elevations on given control points were set to within one foot. Model elevation reading tolerance was $\pm$ 0.1 foot. Profiles (scale 1" = 50 ft.) were drawn on a vertically mounted paper by means of the tracing table profiling attachment.

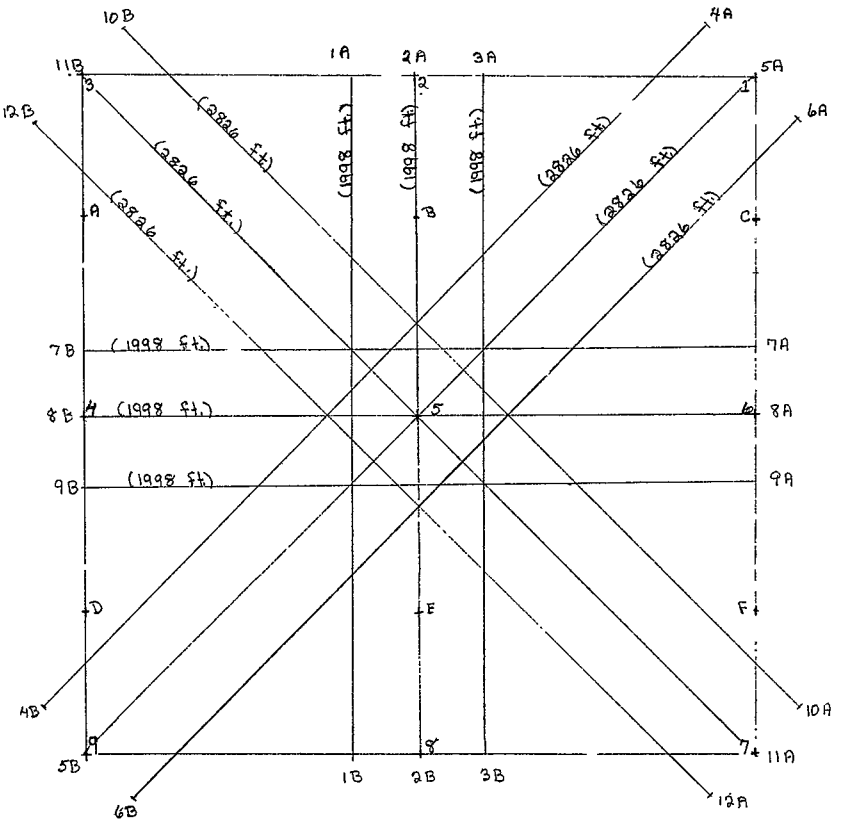

I-3 H-3850 BS-VB DZ


1-28-65
2-4
GS-VBDZ
2


4


5
12-30-64
1-23
GS-VB DZ

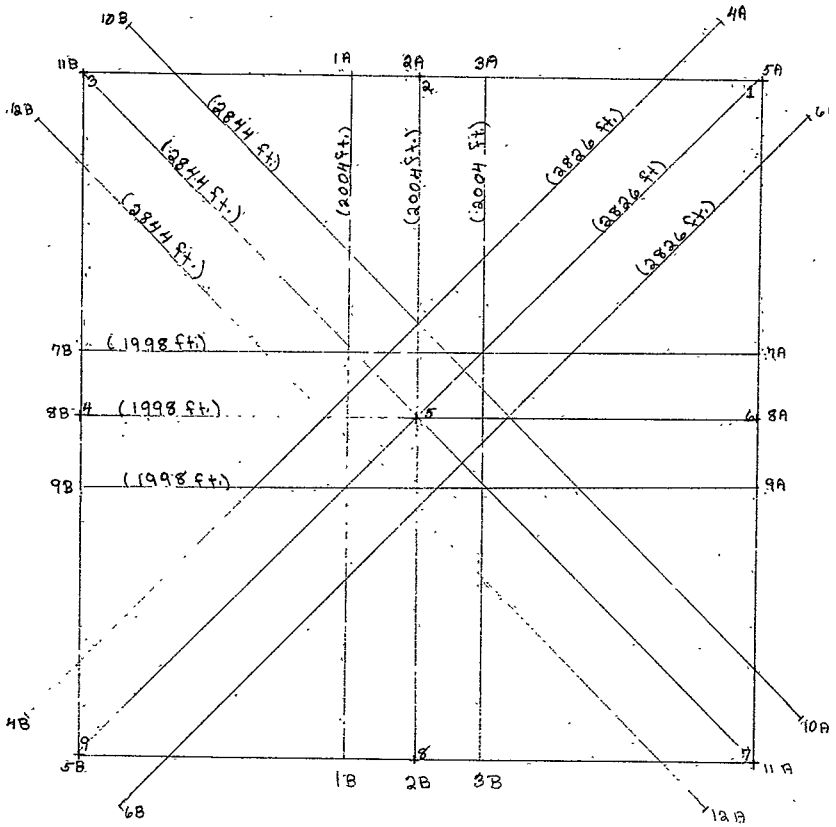
Pisgah Crater Project



Profile Area 5

+ Panel Positions

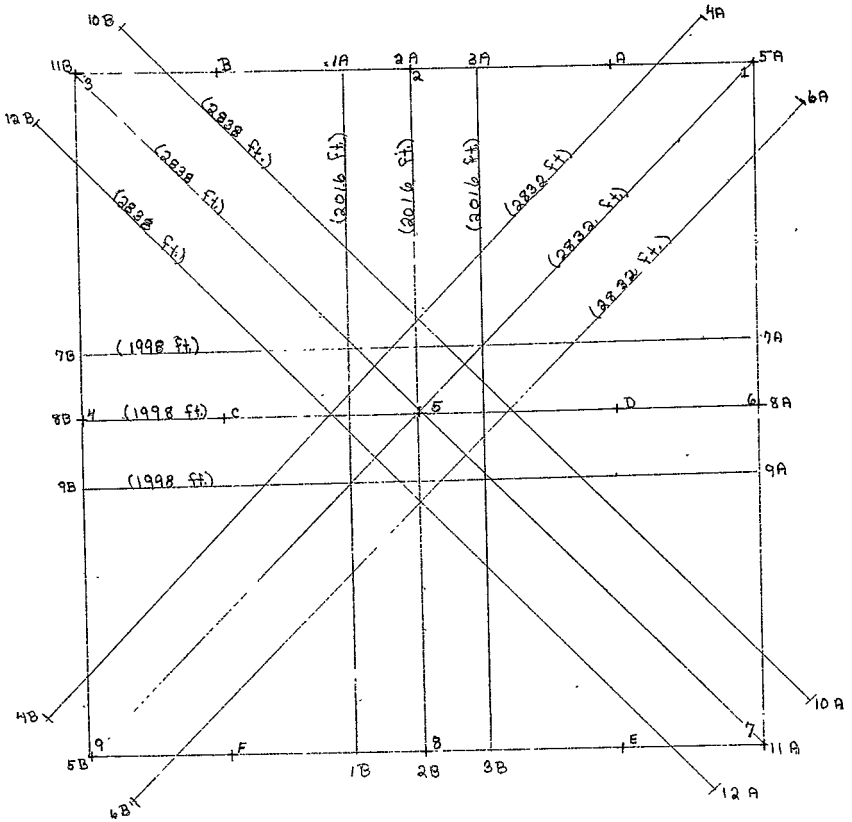
Pisgah Crater Project



Profile Area H

+ Panel Positions

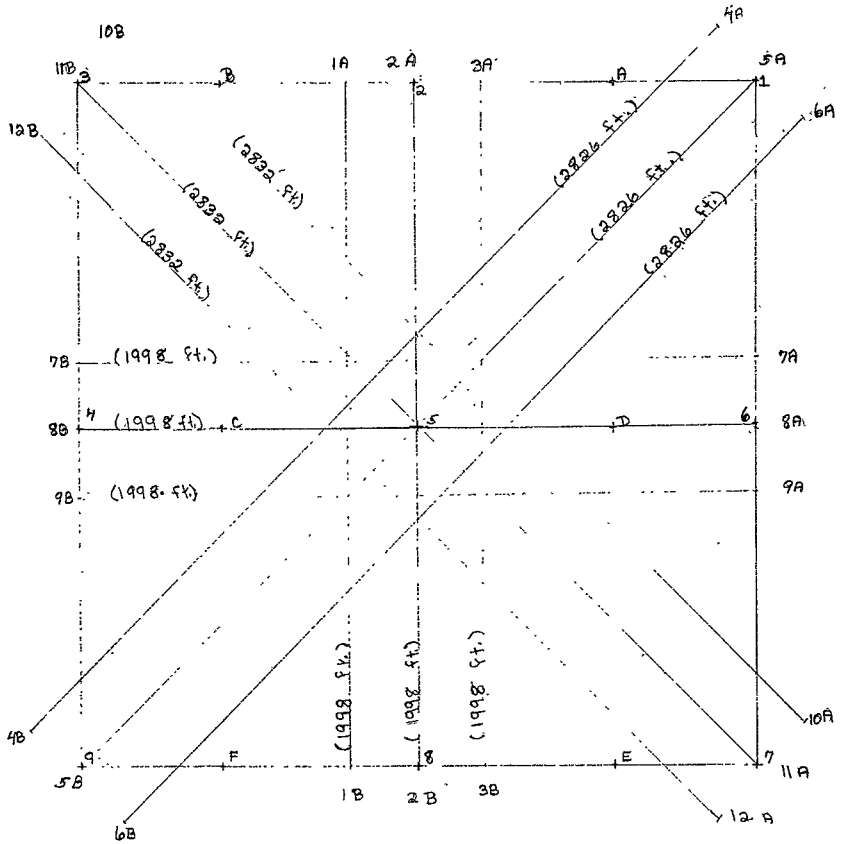
Pisgah Crater Project



Profile Area 2

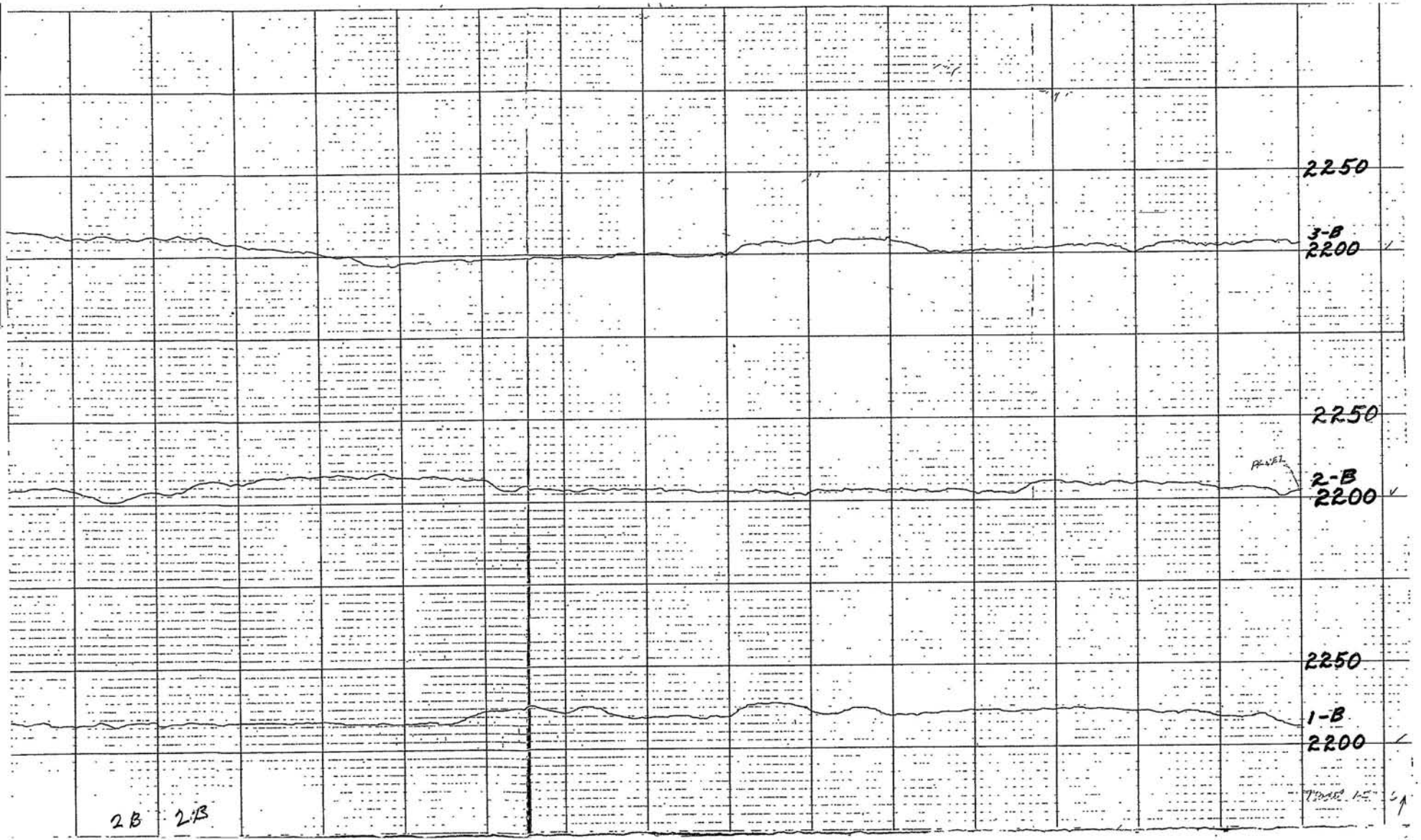
+ Panel Positions

Pisgah Crater Project



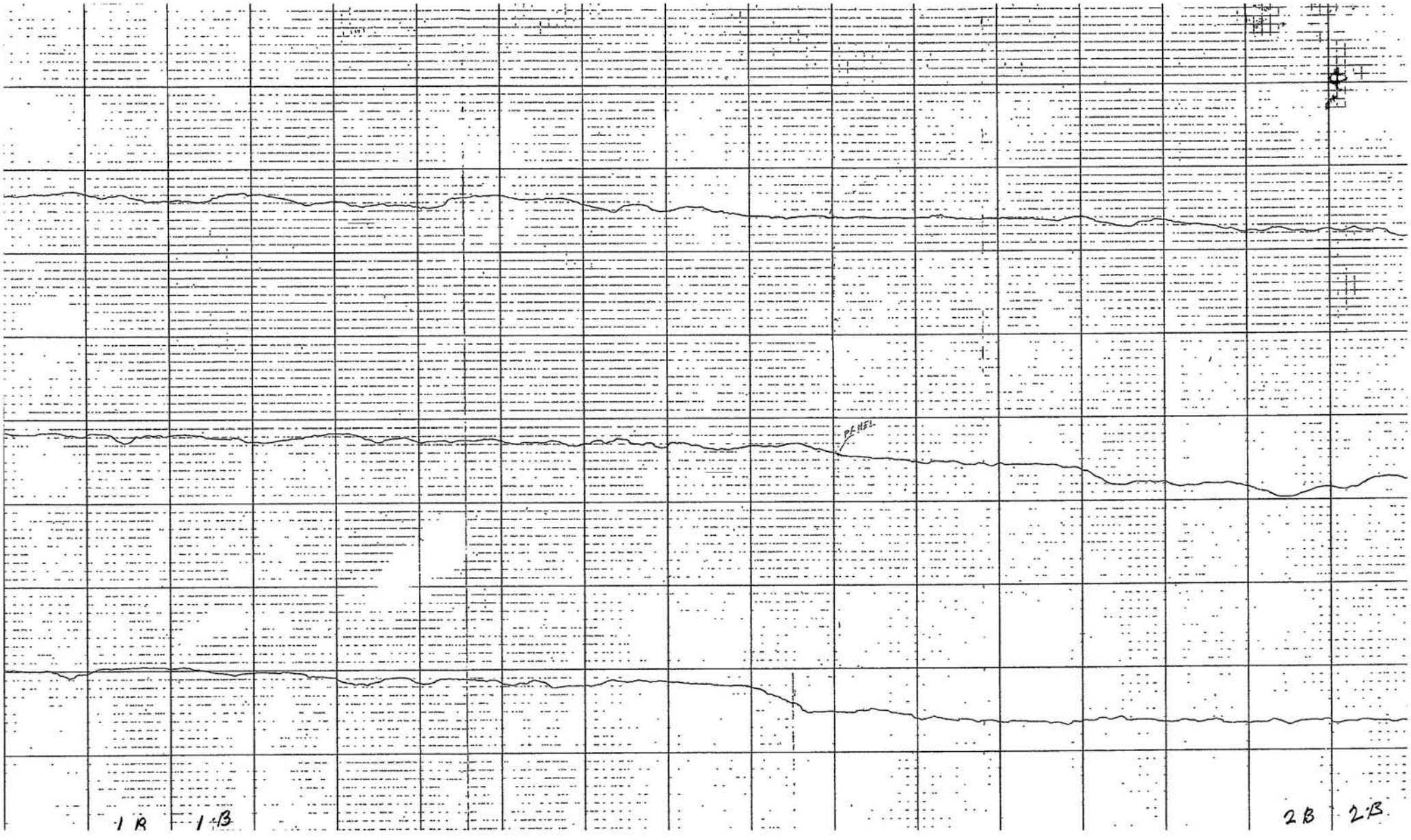
Profile Area 1

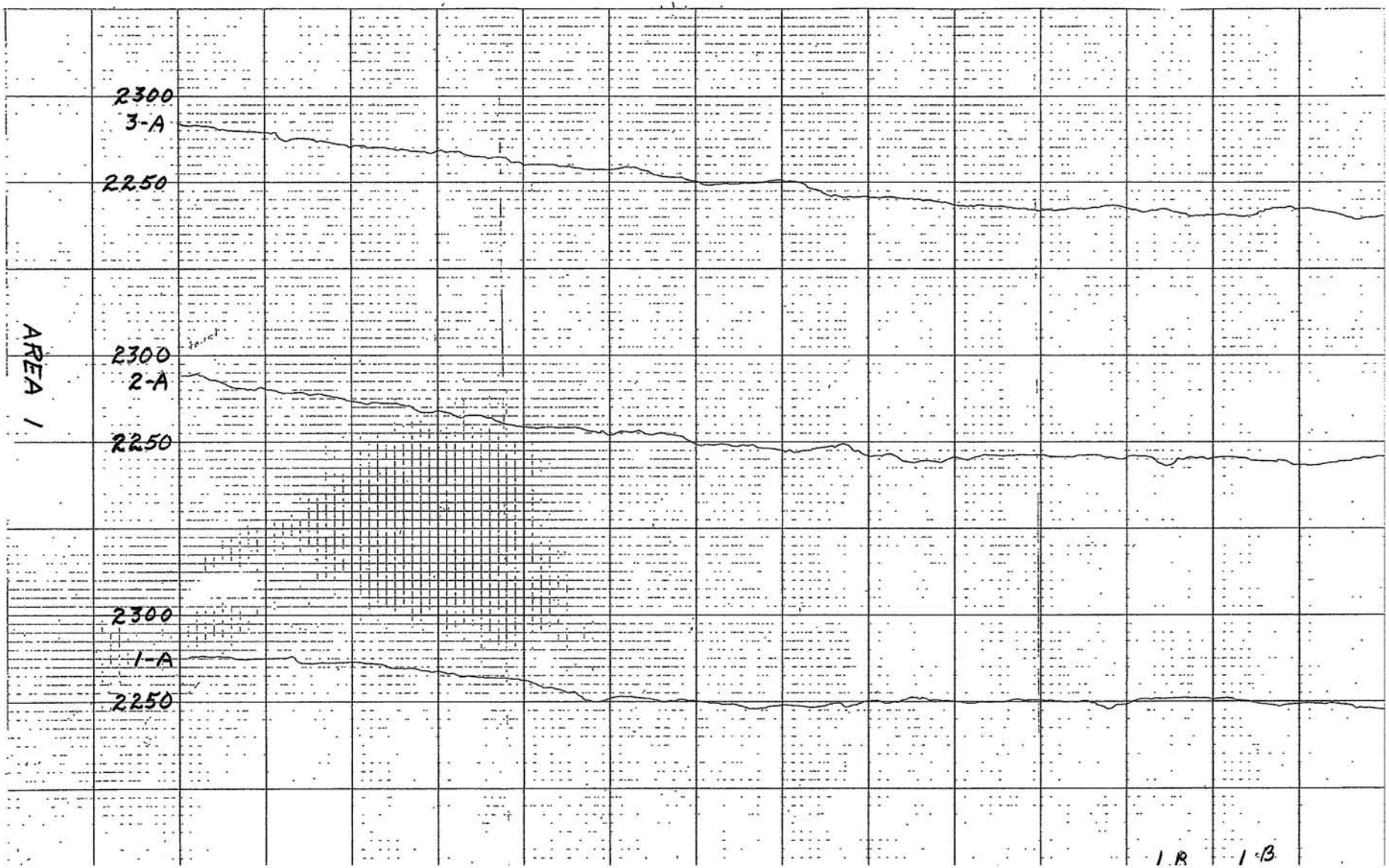
+ Panel Positions

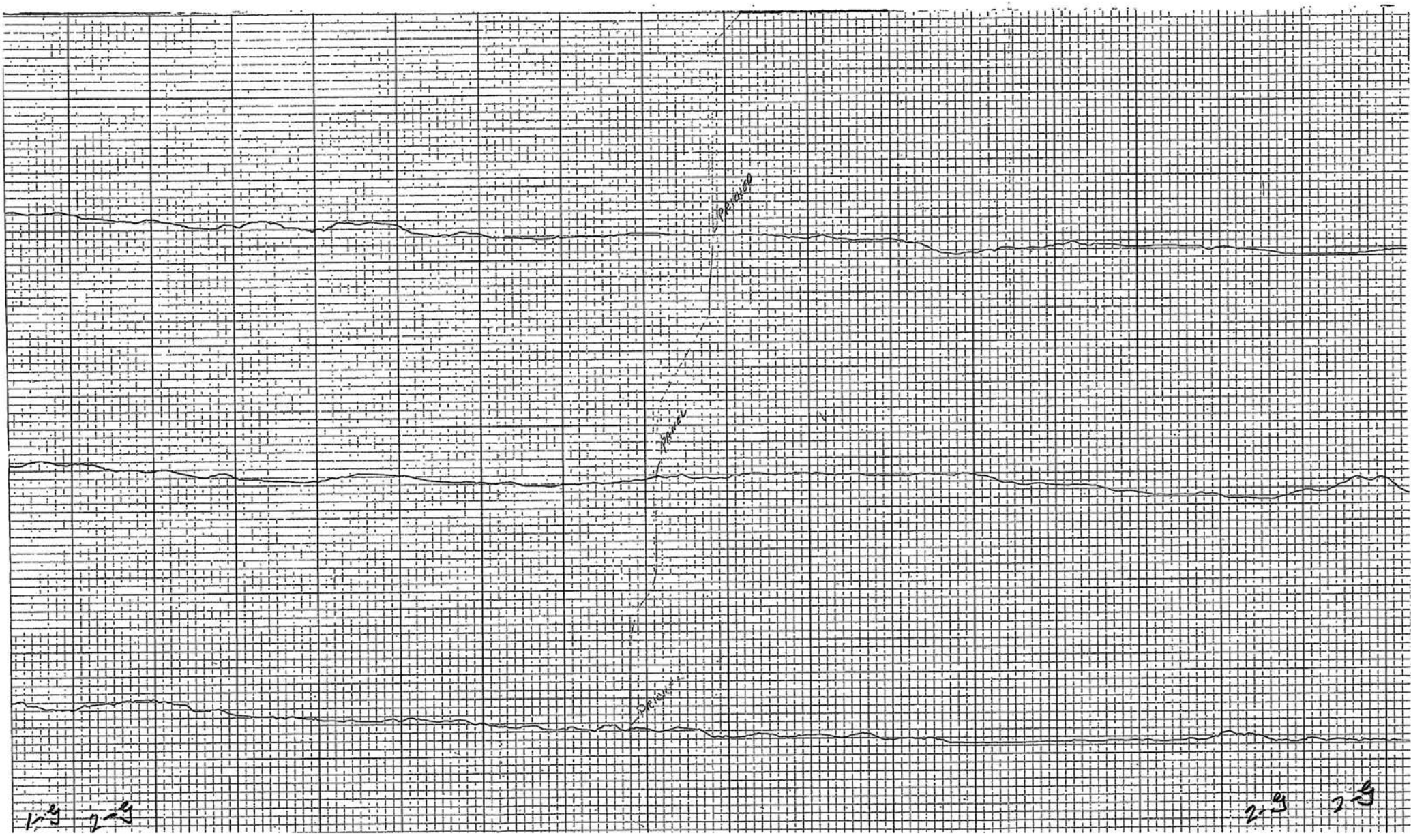


Area 1

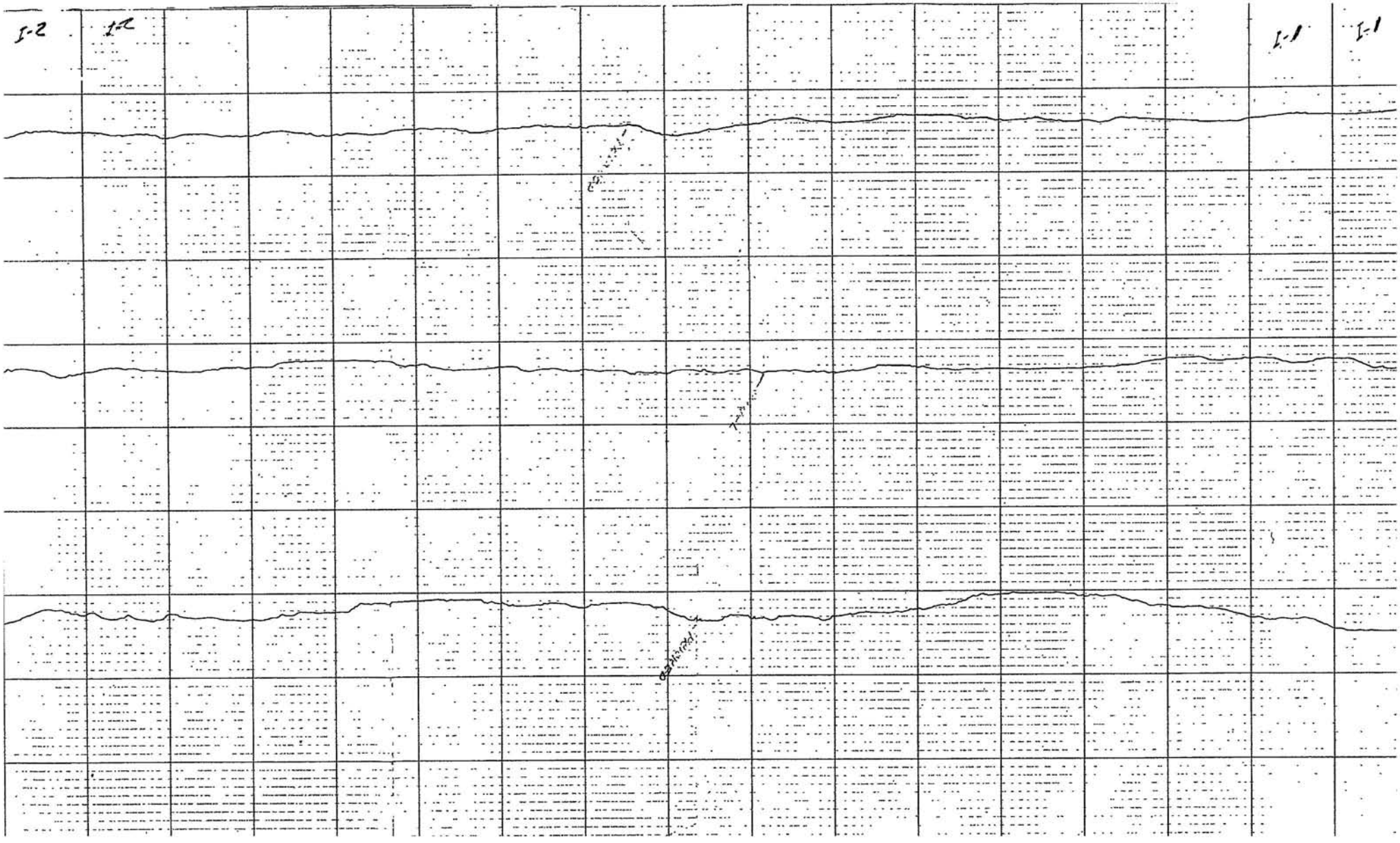
Area 1

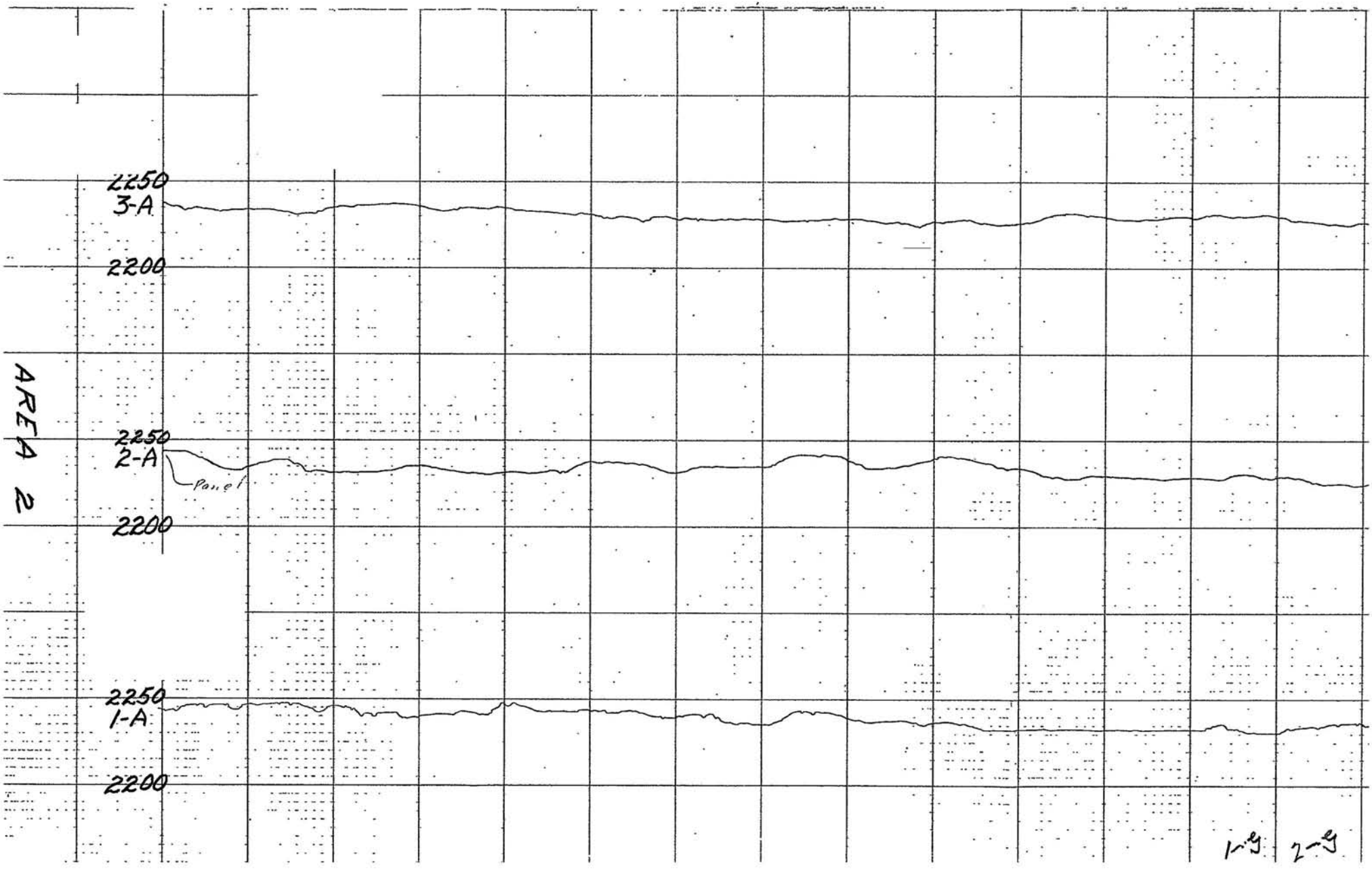

PLHEL
1R
1B
2B
2B

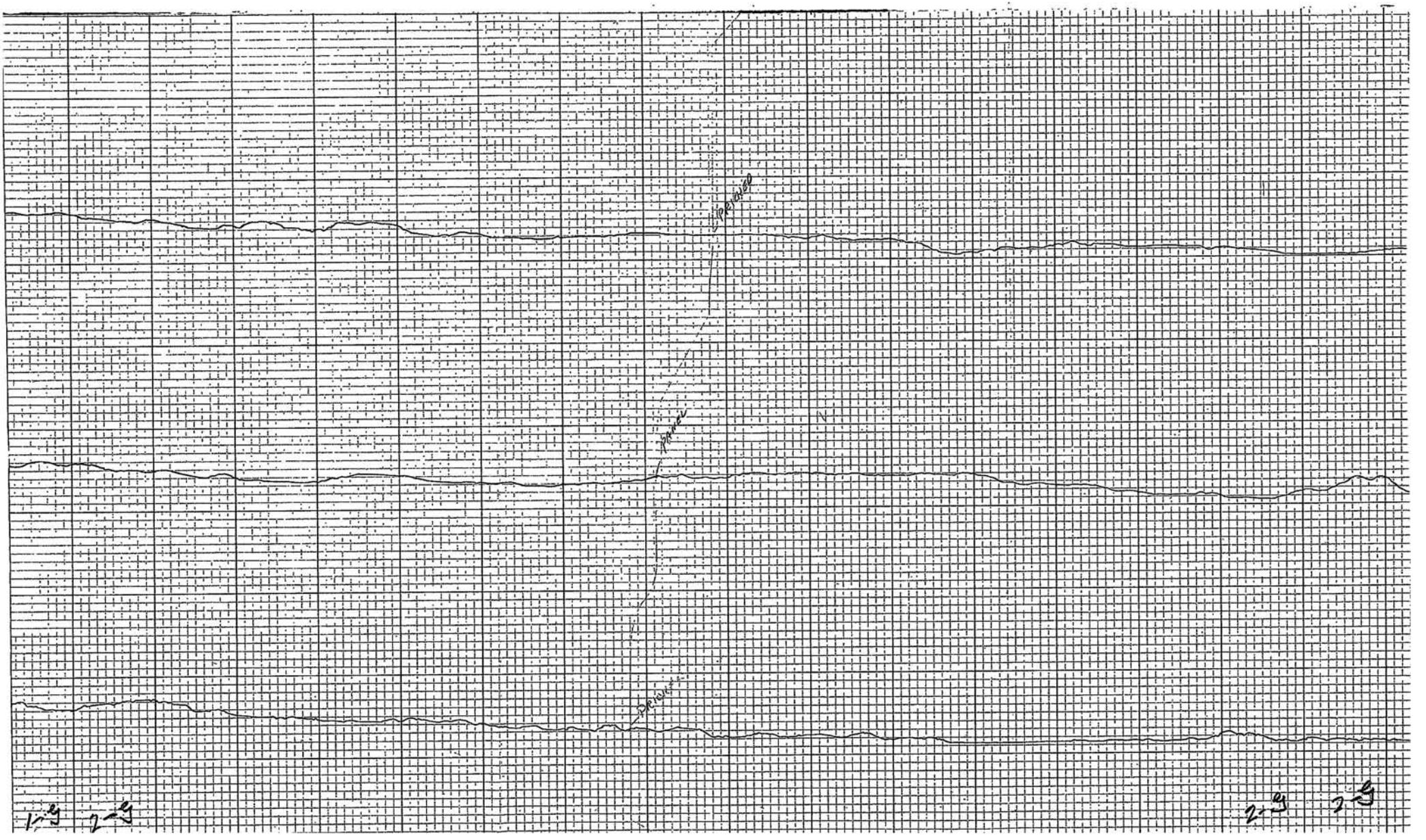

2300
3-A
2250
AREA 1
2300
2-A
2250
2300
1-A
2250
1-R
1-B

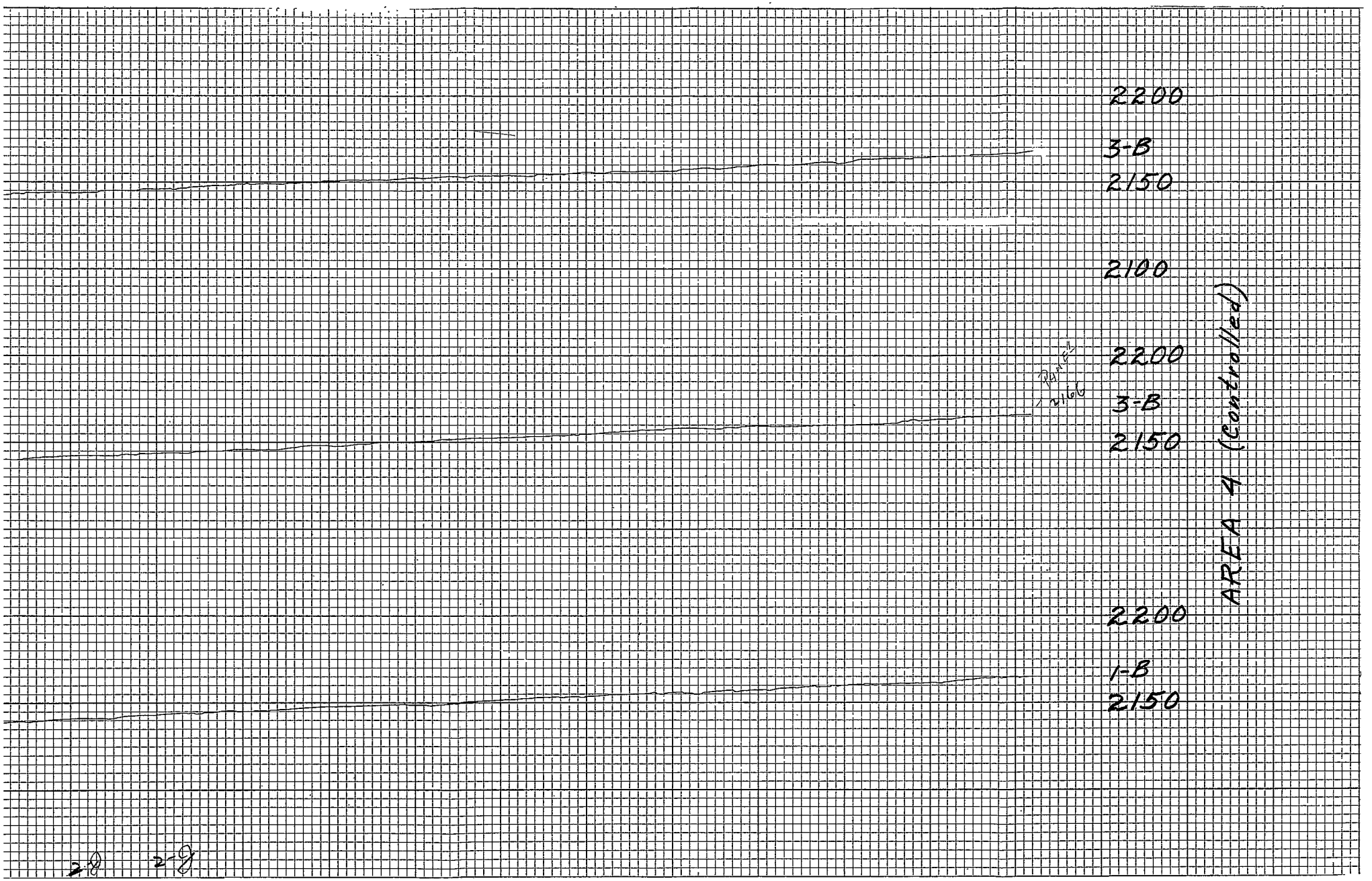

Ipsilateral
Ipsilateral
Contralateral
N
1-g
2-g
2-g
2-g

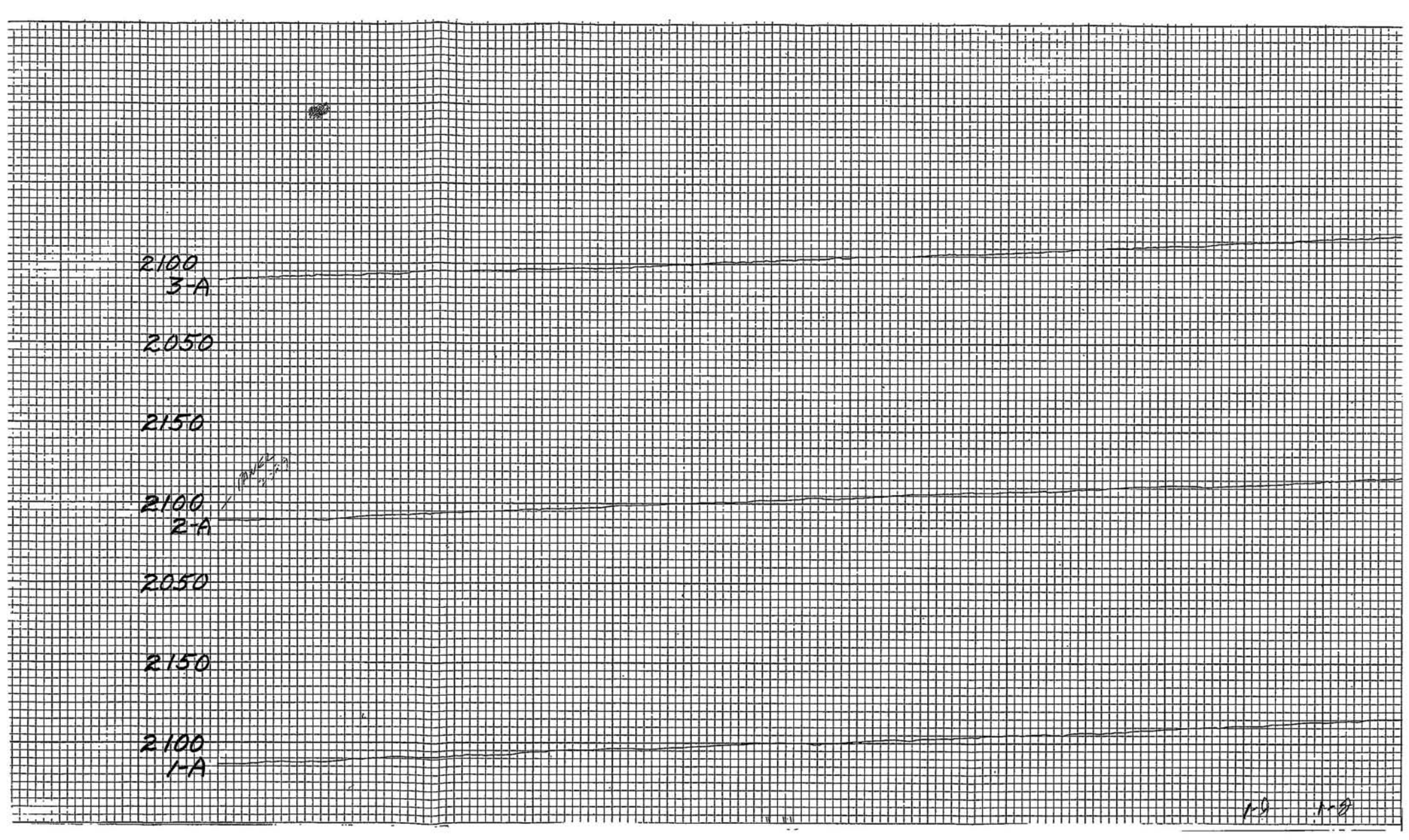

2250
9-A
2200
2250
8-A
2200
2250
7-A
2200
1-1
1-1

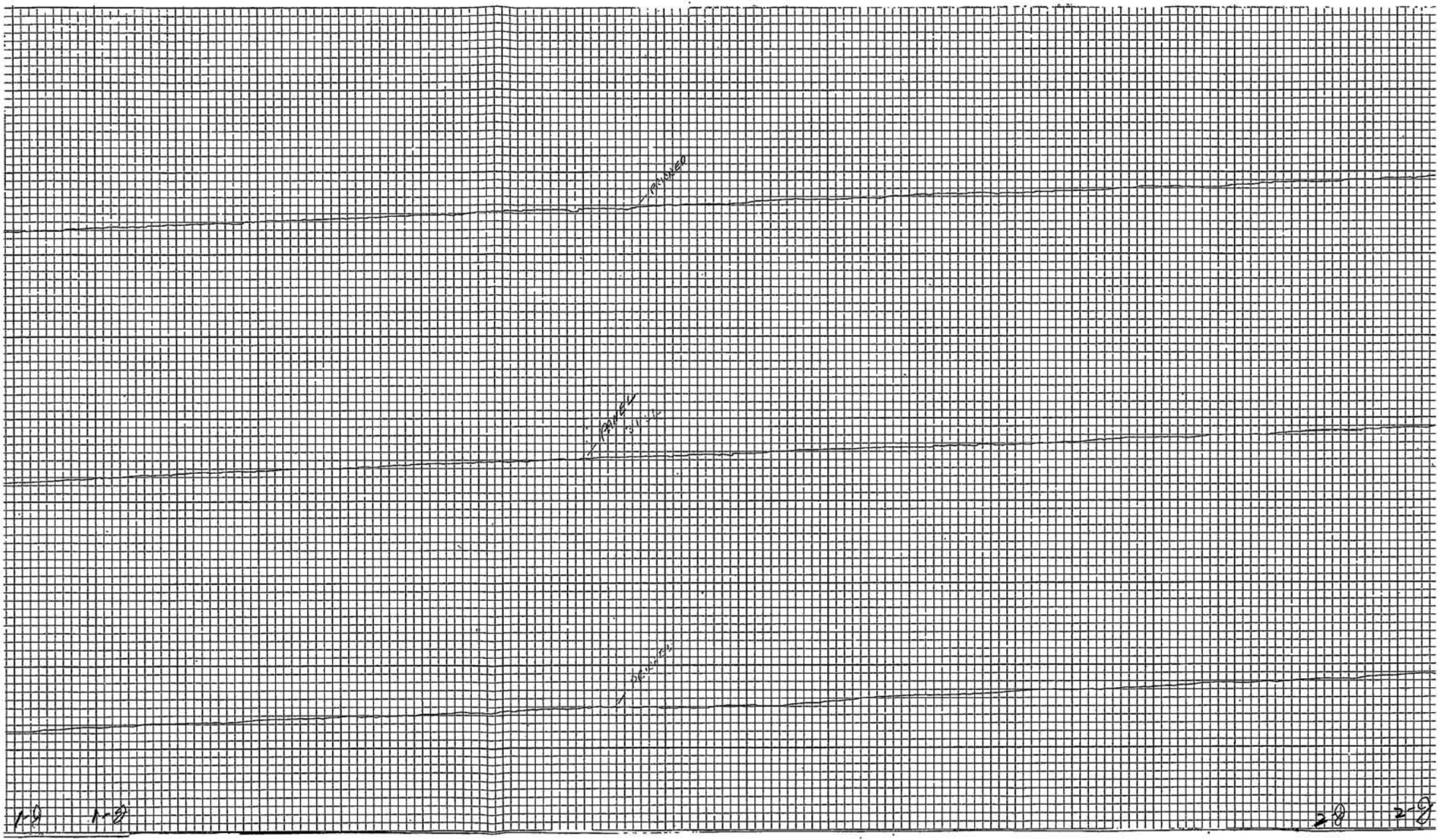

I-2
I-2
I-1
I-1

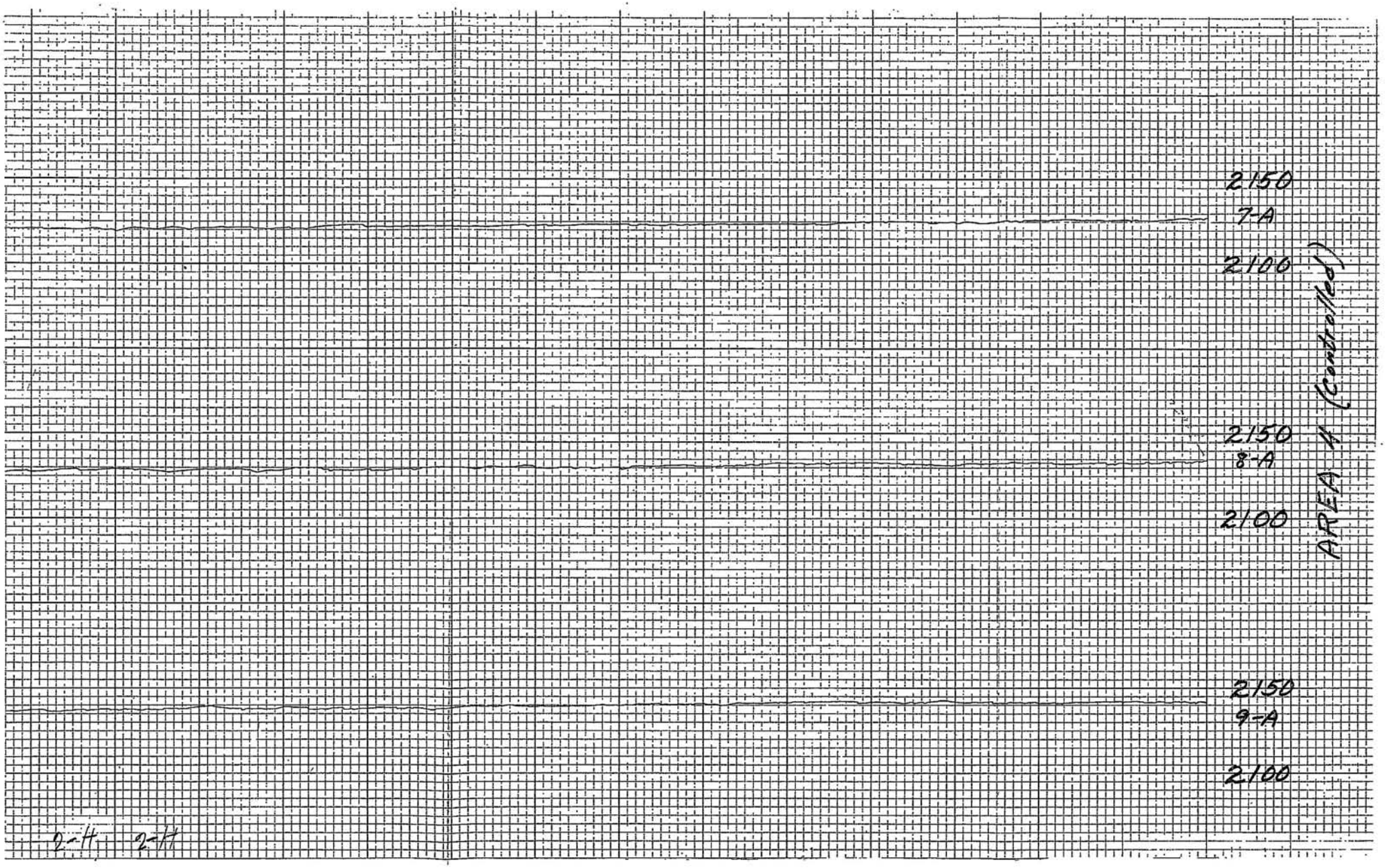

2250
3-A
2200
AREA 2
2250
2-A
Panel
2200
2250
1-A
2200
1-g
2-g

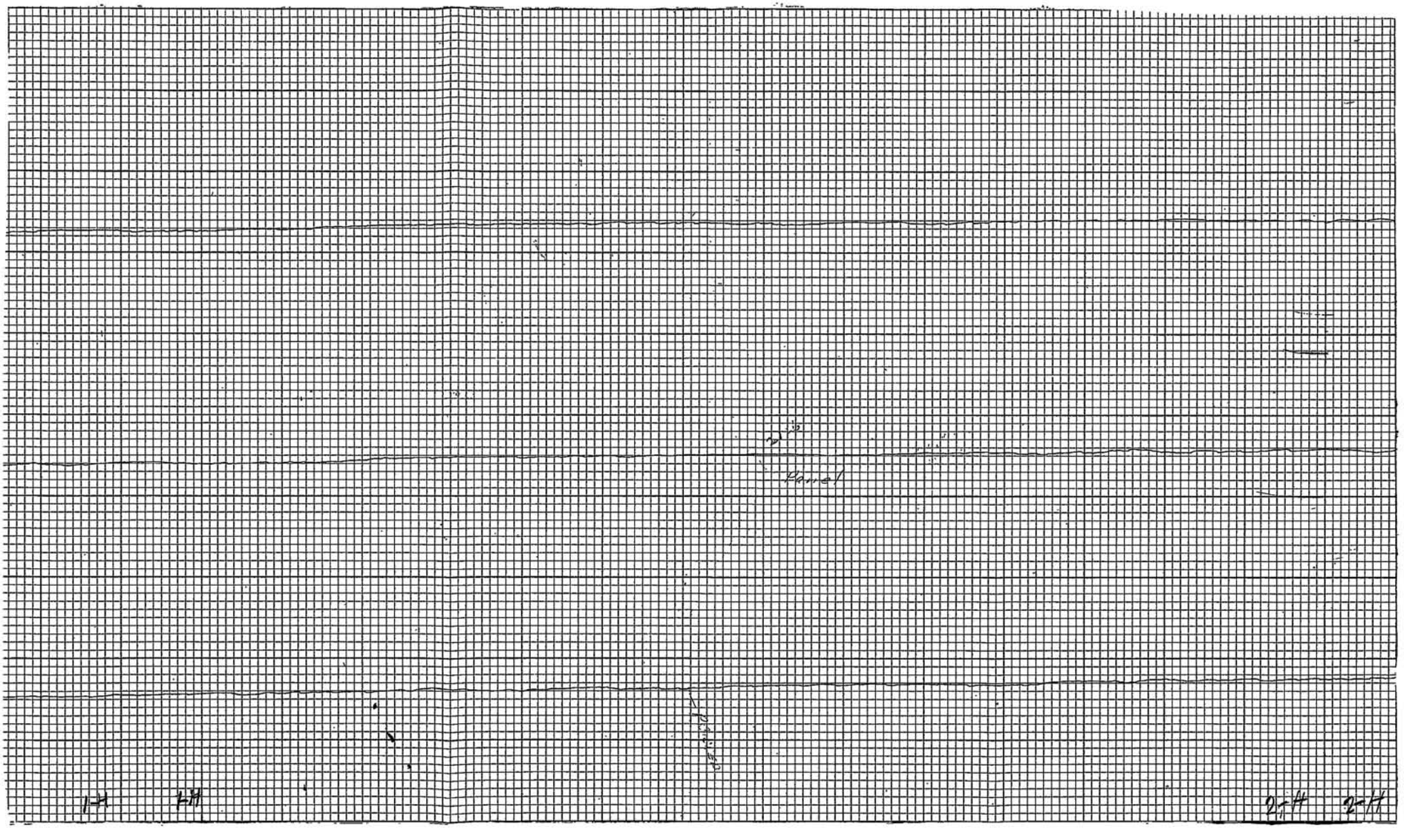

Ipsilateral
Ipsilateral
Contralateral
N
1-g
2-g
2-g
2-g

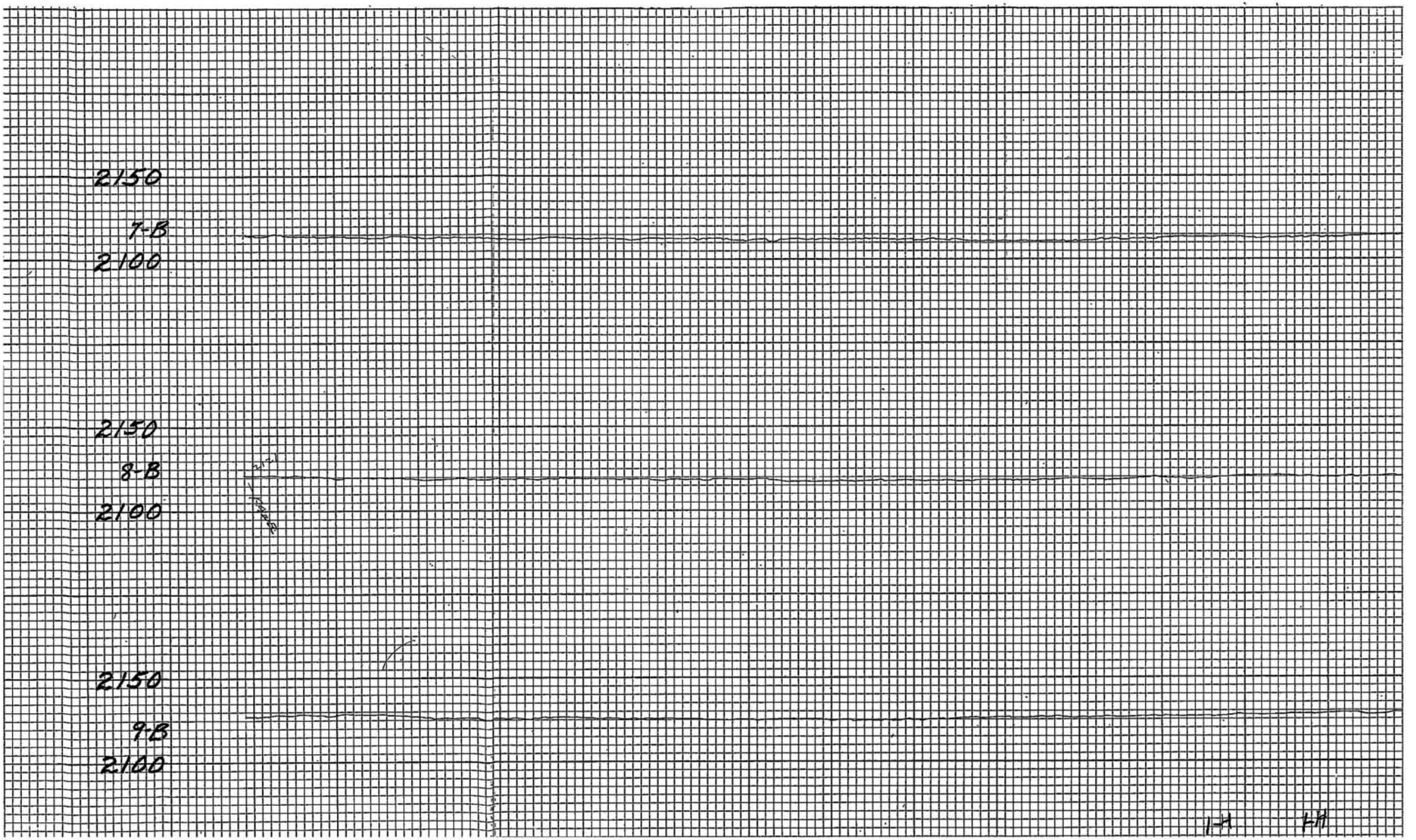

2200
3-B
2150
2100
2200
3-B
2150
2200
1-B
2150
AREA 4 (Controlled)
2-B
2-B


2100
3-A
2050
2150
2100
2-A
2050
2150
2100
1-A
1-9
1-9


1-8
1-8
2-8
2-8


2150
7-A
2100
2150
8-A
2100
2150
9-A
2100
AREA II (Control)
0-H
2-H


Barrel


2150
7-B
2100
2150
8-B
2100
2150
9-B
2100

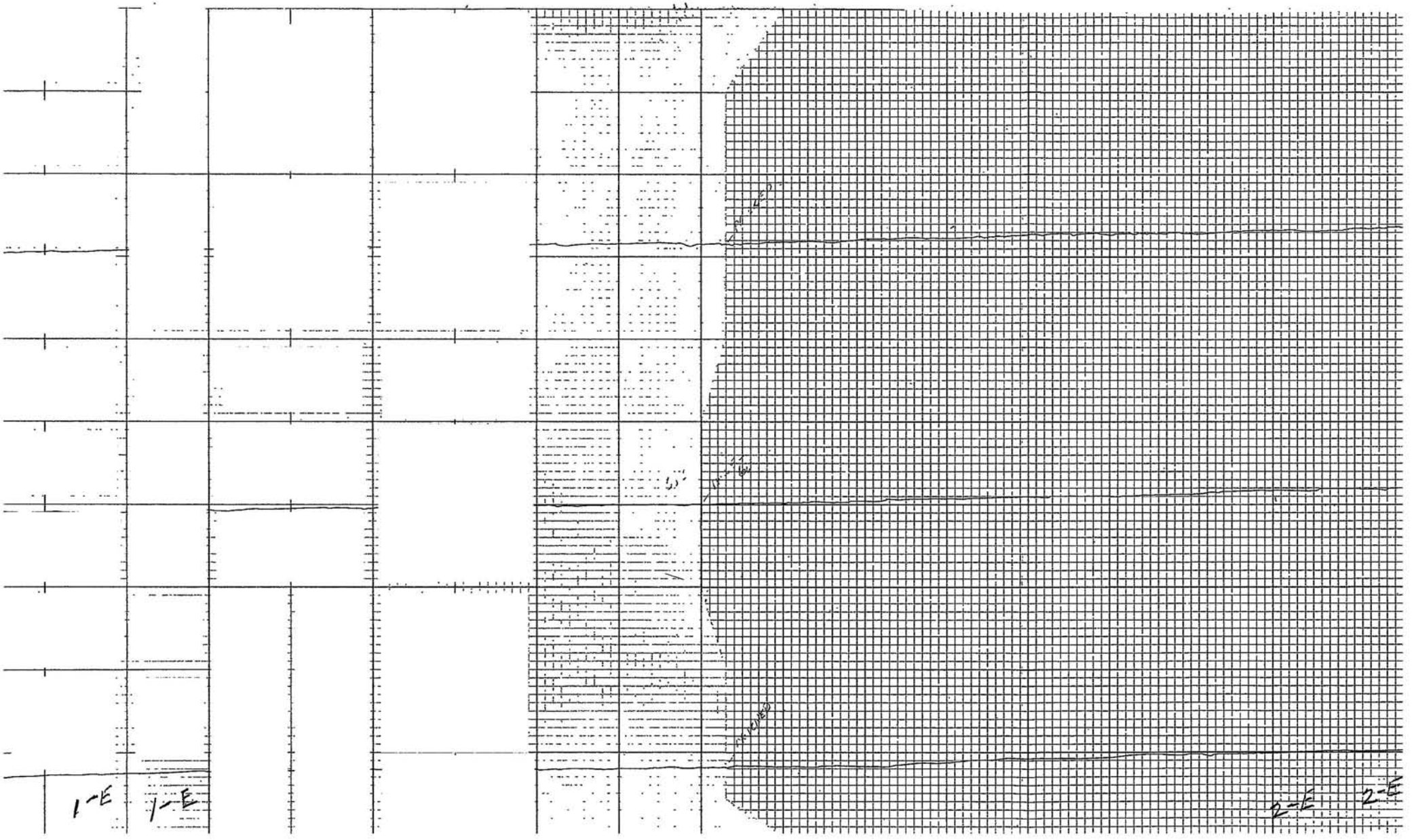
3-B

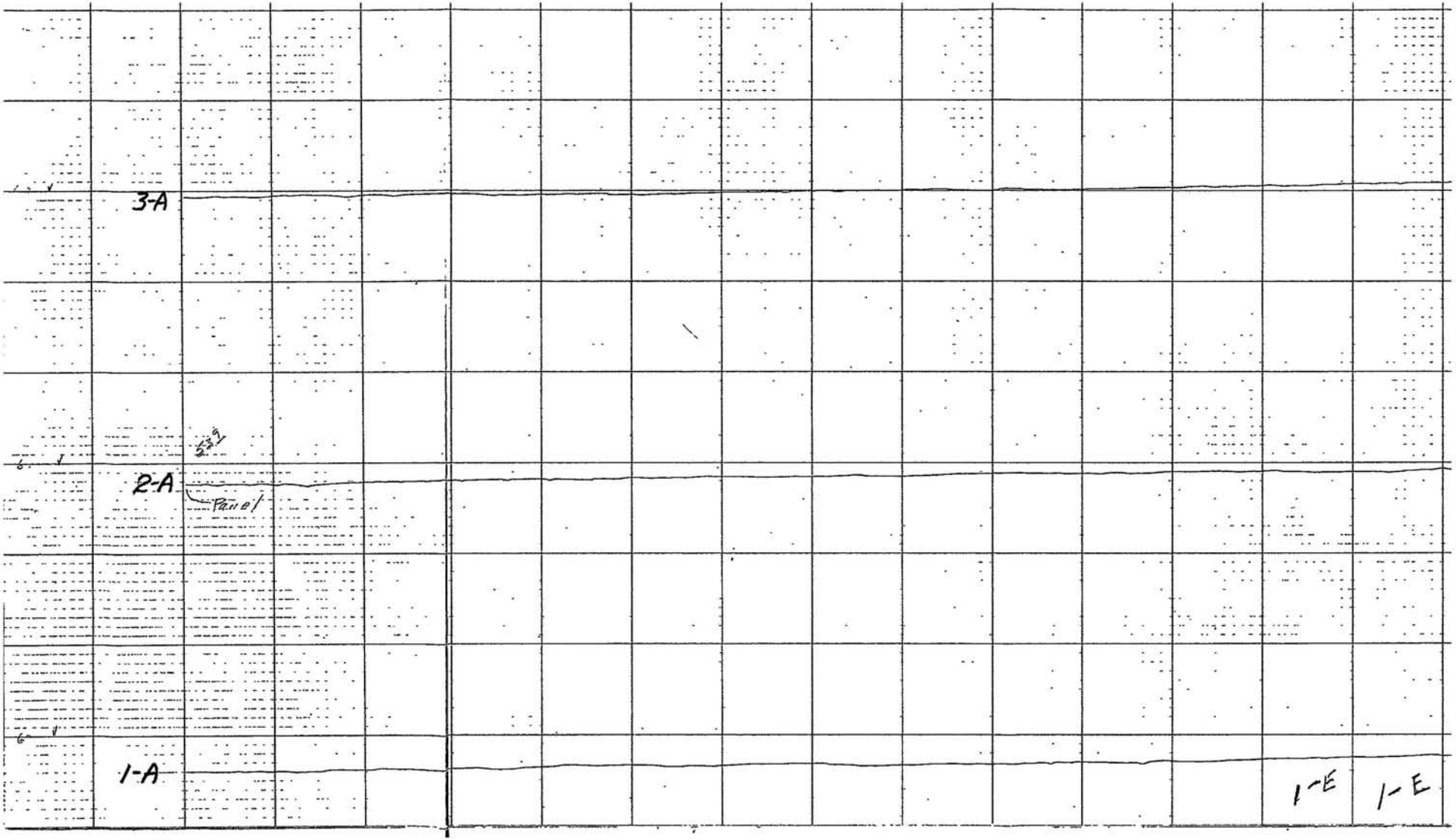
2-B

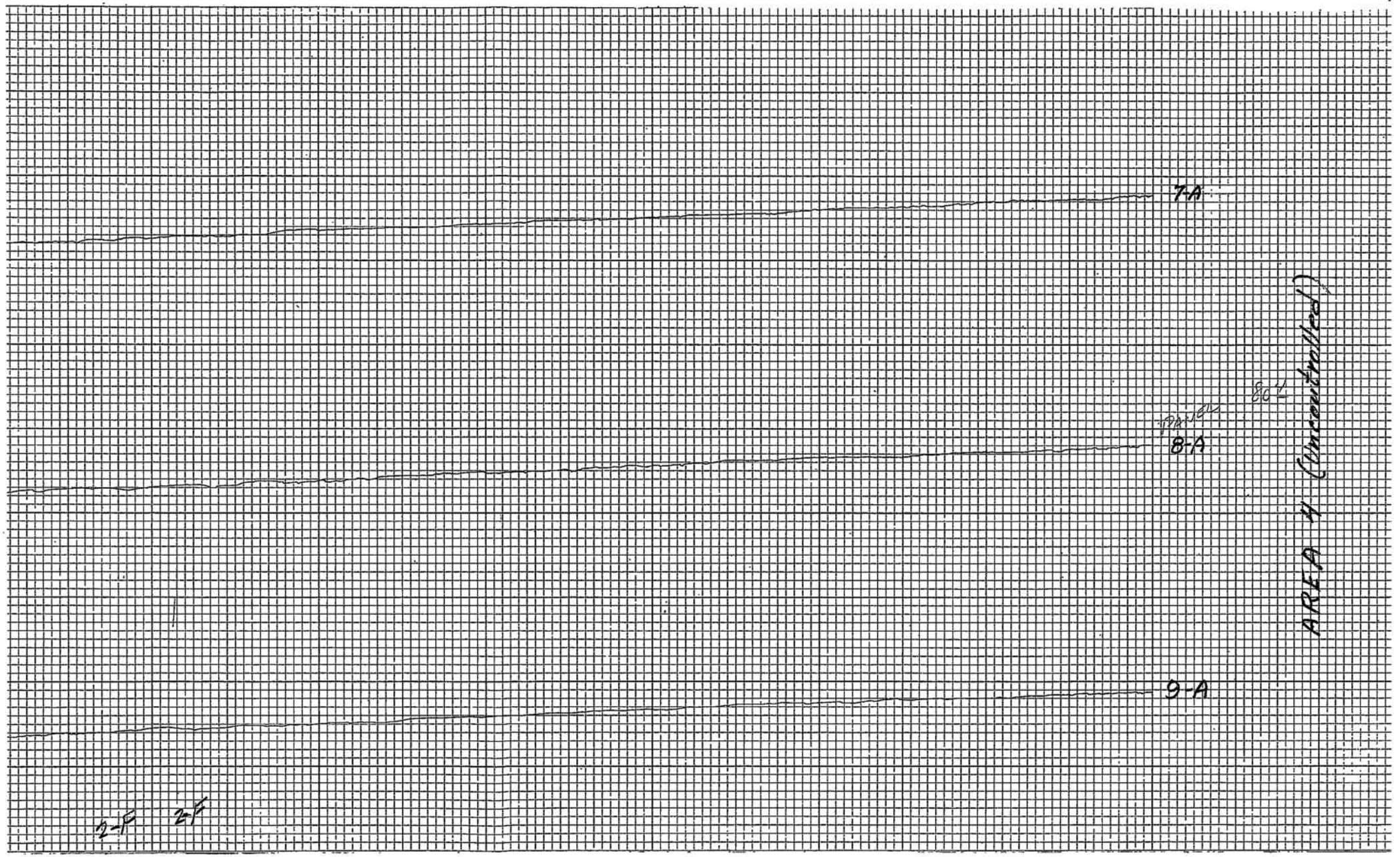
1-B

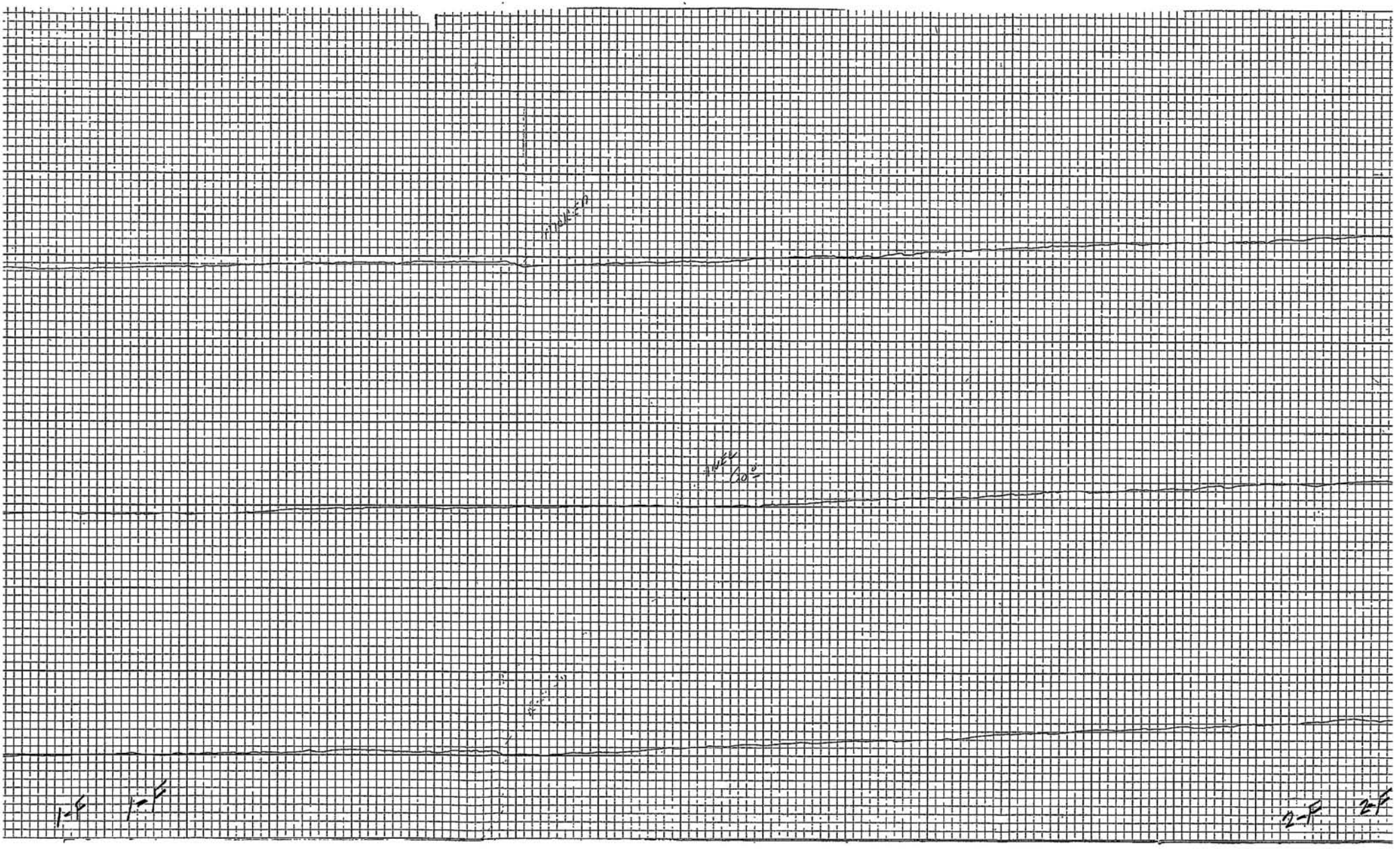
2-E 2-E

Pressure (psia)


1-E
1-E
2-E
2-E


3-A
2-A
Panel
1-A
1-E
1-E


7-A
8-A
9-A
AREA H (Uncontrolled)
2-F
2-F


1-F
1-F
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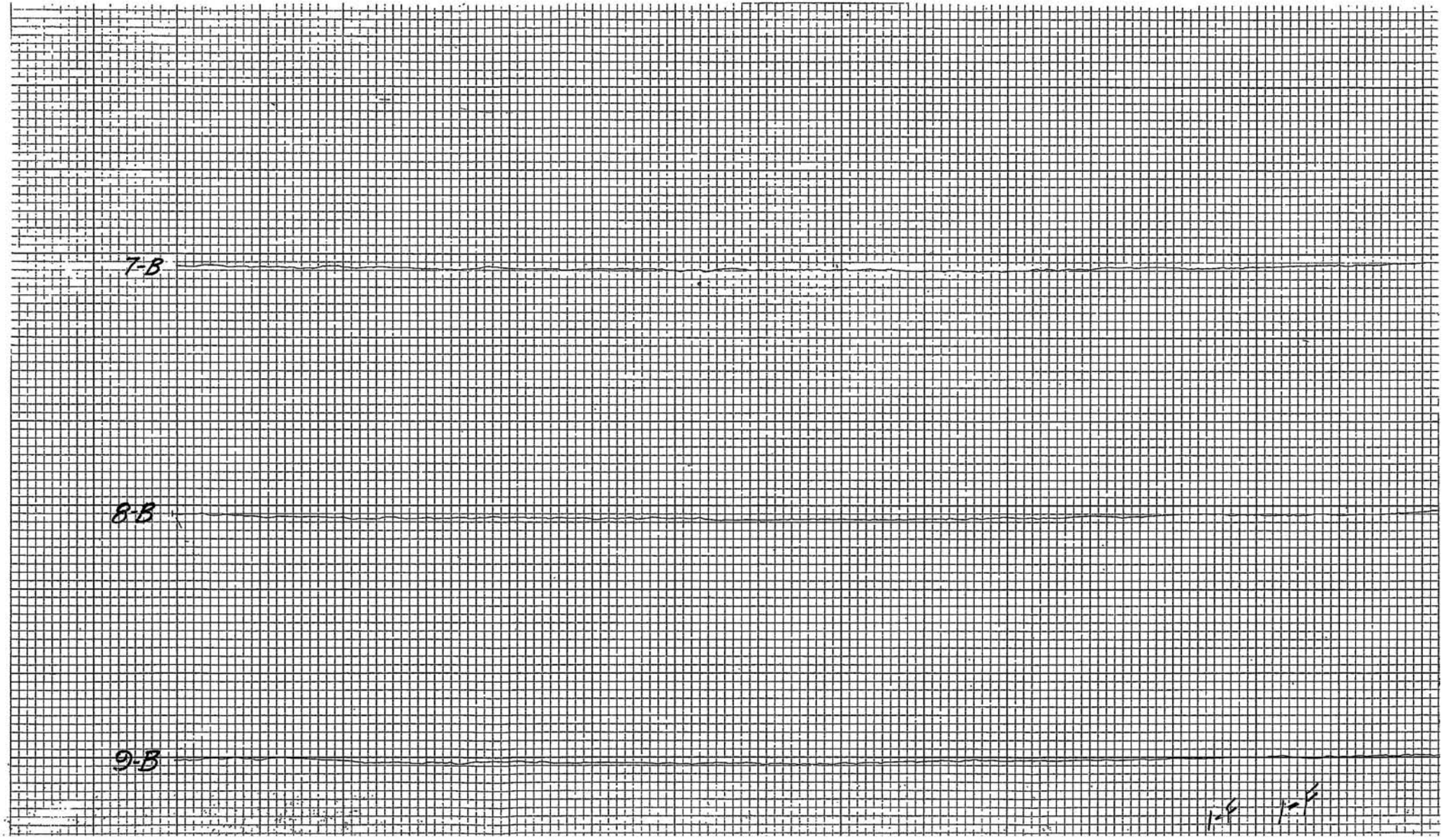
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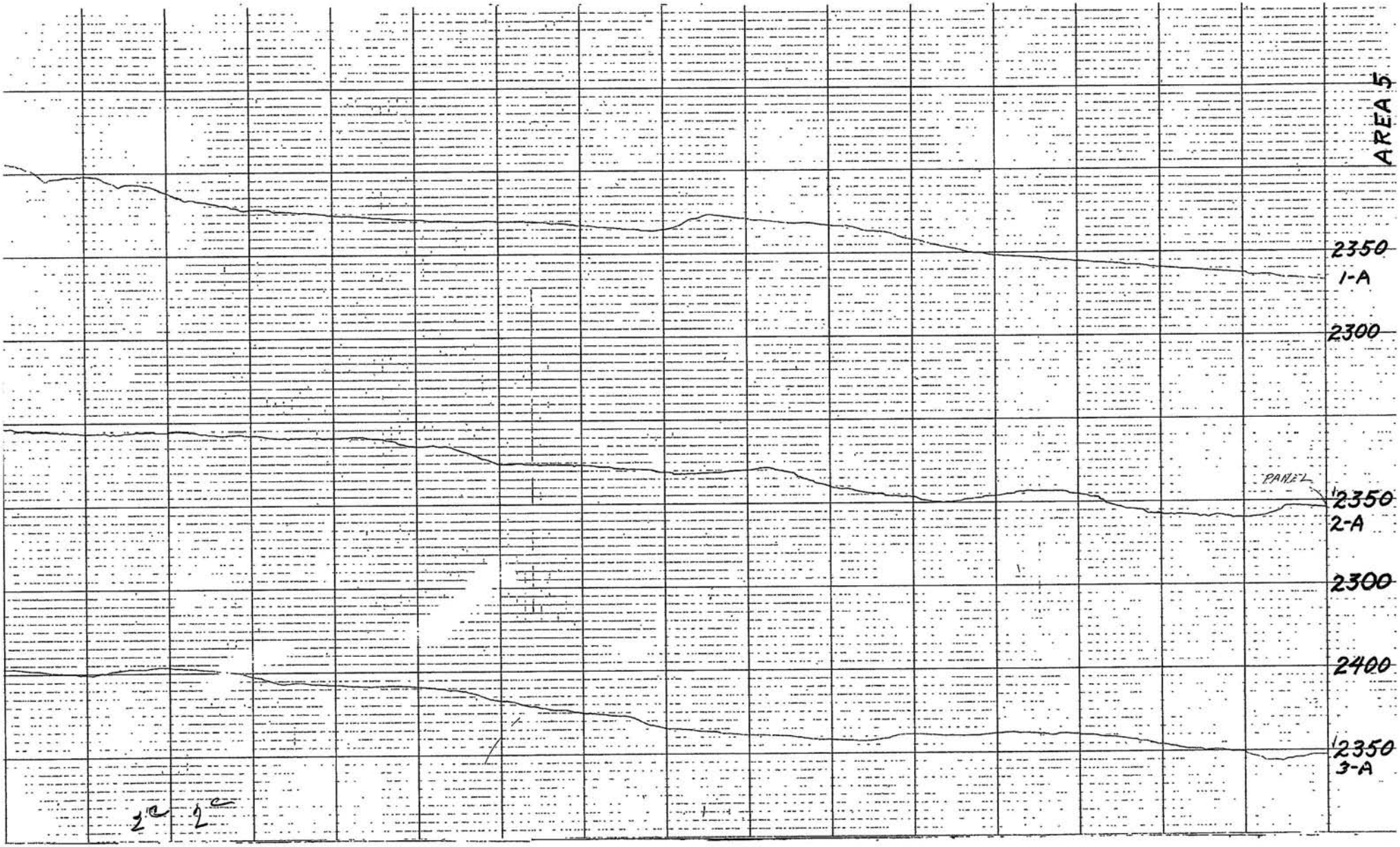
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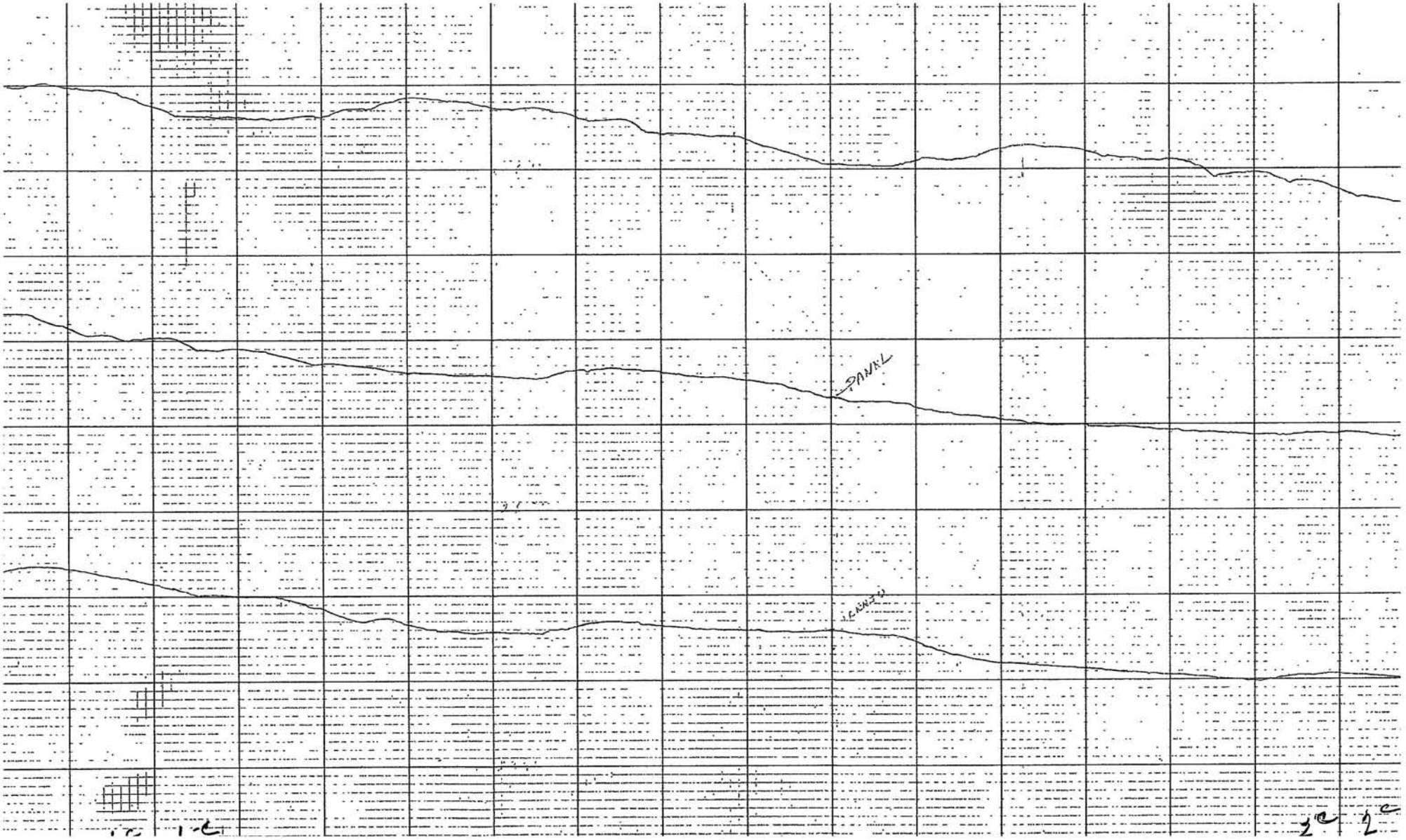
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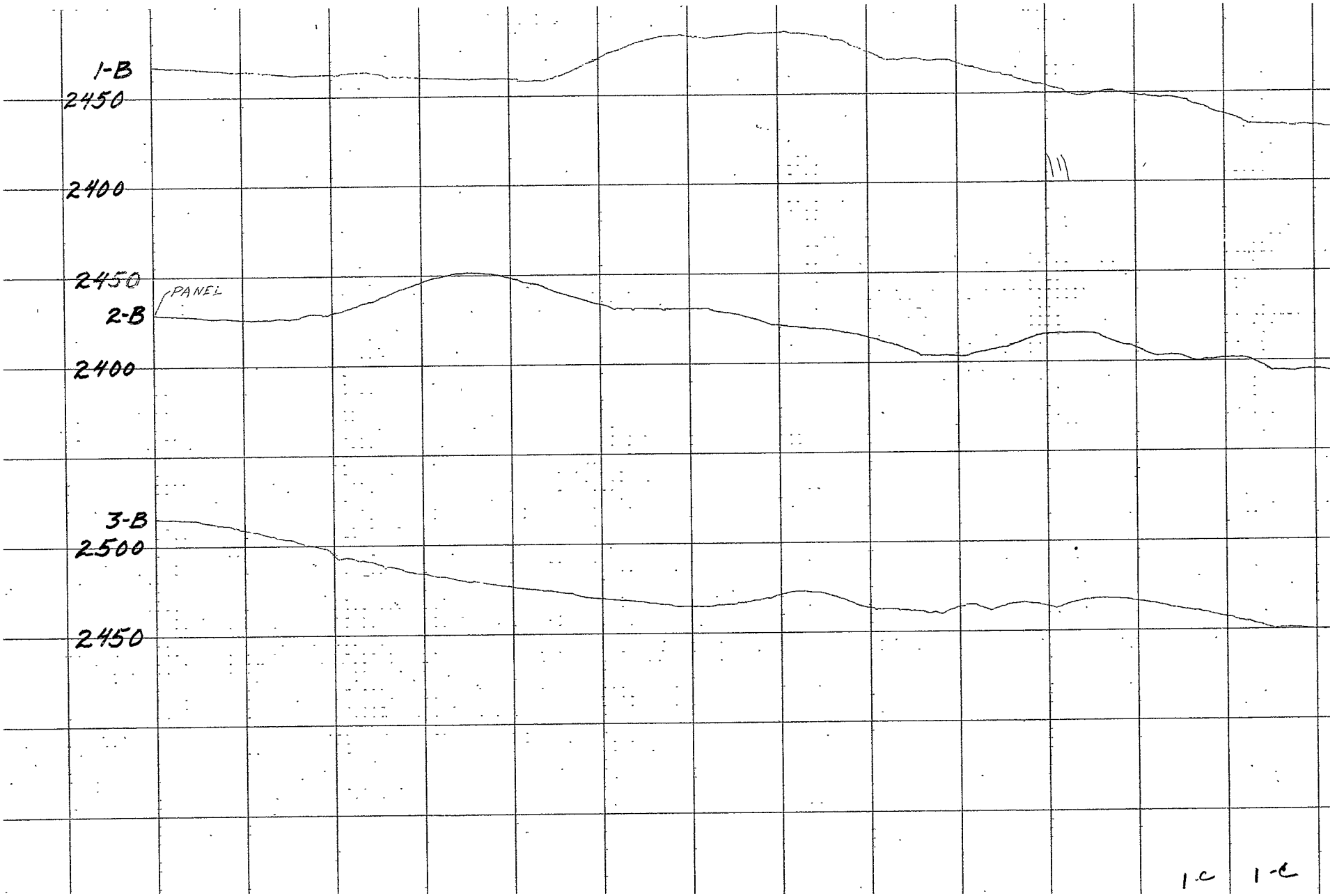
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3-B
2500
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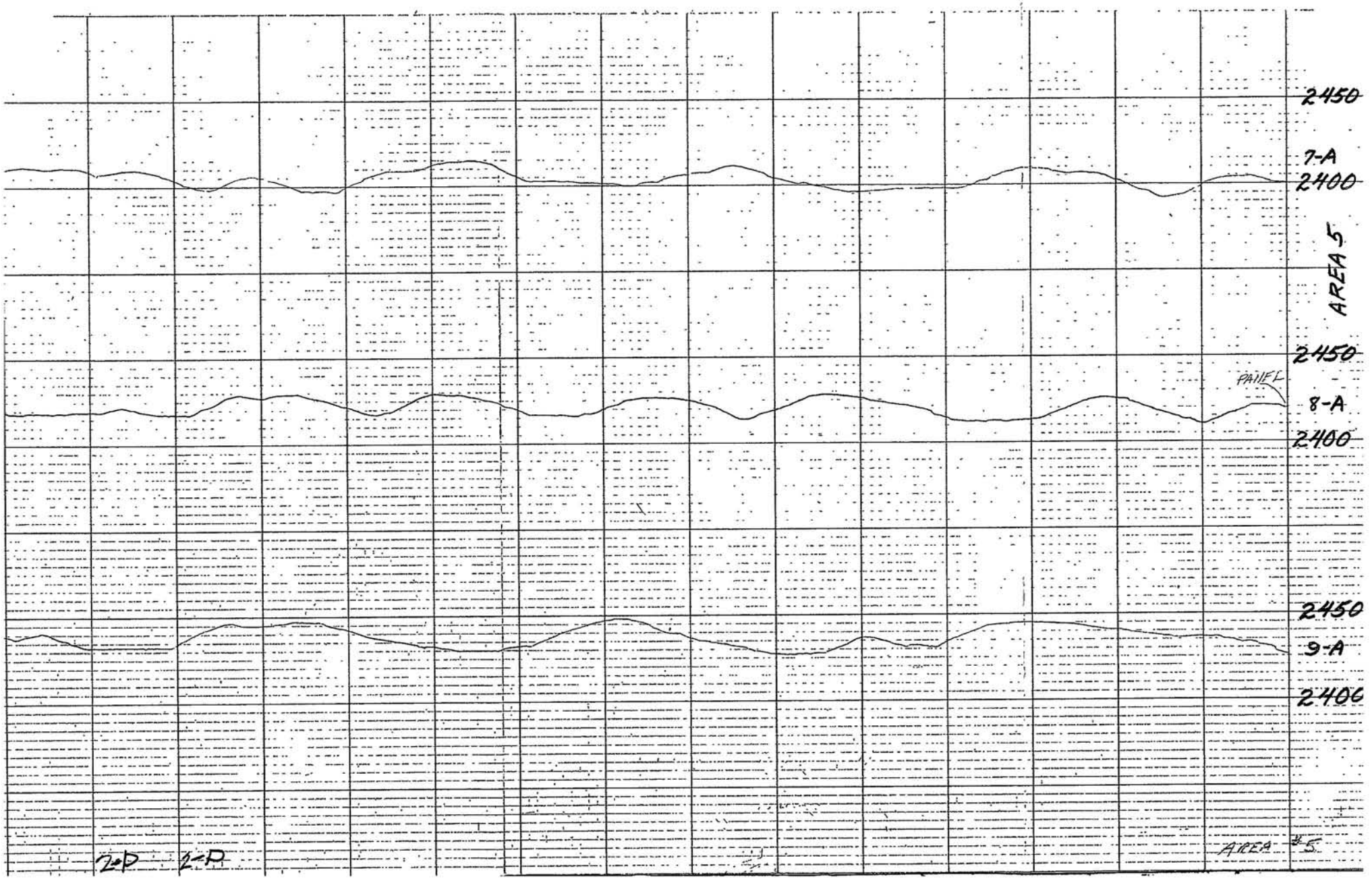
1-C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AREA #5
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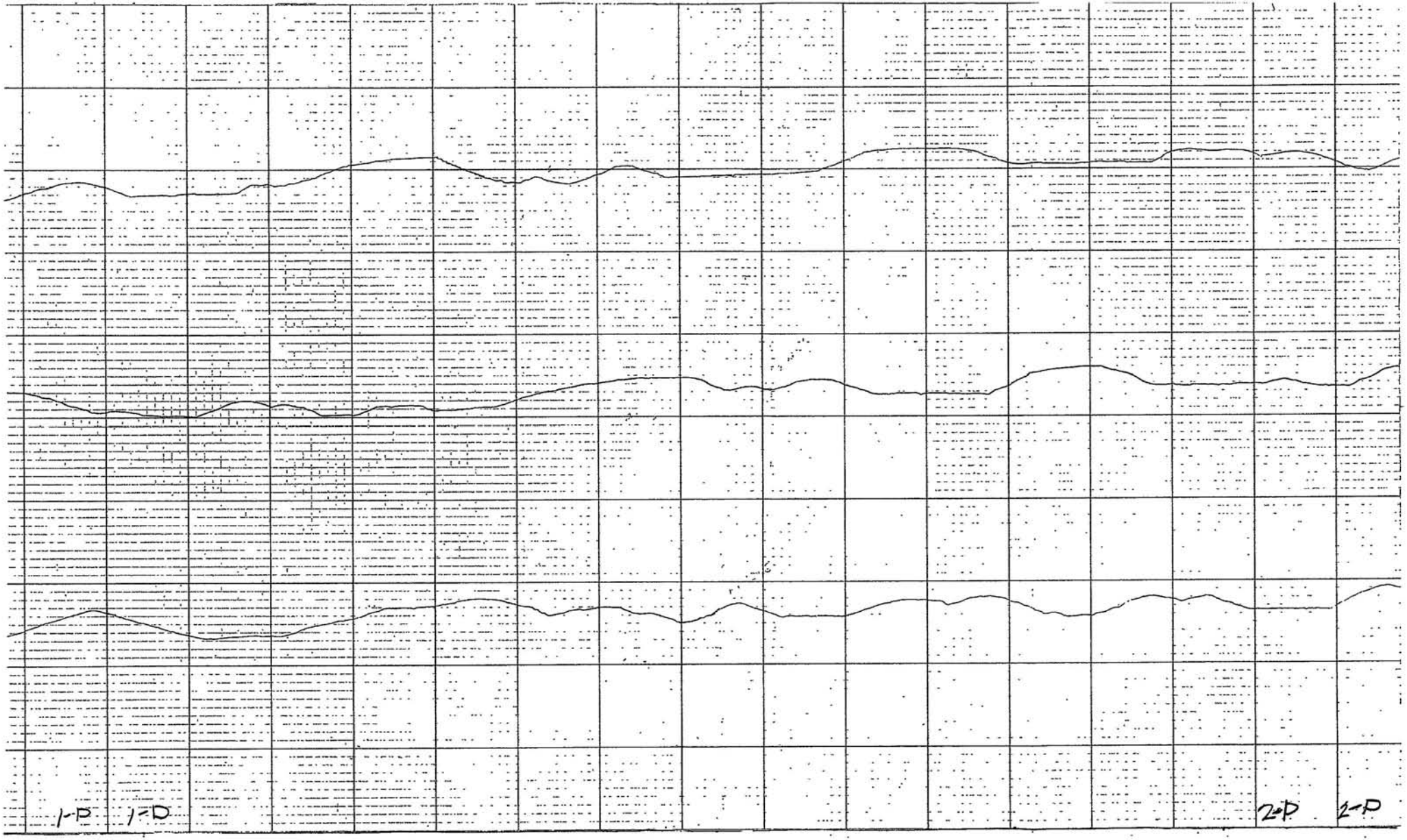
2-P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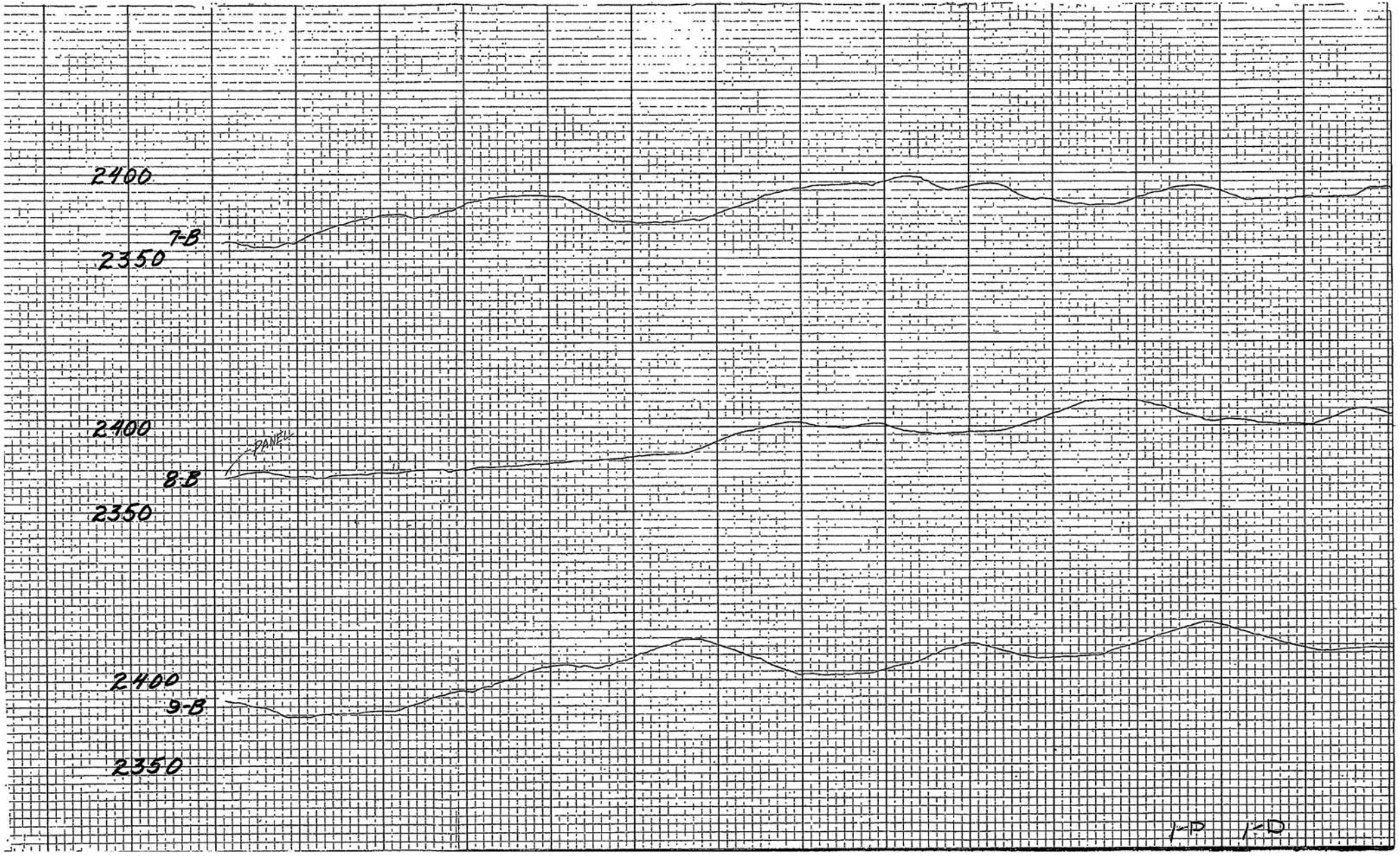
2-D
2-D


2400
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PANEL
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9-B
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1-D
1-D