CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

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Oct. 1972

INDUCED POLARIZATION AND RESISTIVITY SURVEY SAFFORD PROJECT GRAHAM COUNTY, ARIZONA

FOR

1 of 3

ESSEX INTERNATIONAL, INC.

mining
geophysical surveys

INDUCED POLARIZATION AND

RESISTIVITY SURVEY

SAFFORD PROJECT

GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

PROJECT 0237

mining
geophysical surveys

TABLE OF CONTENTS

ACCOMPANYING THIS REPORT:

1 GEOPHYSICAL PLAN MAP

2 PROFILES - LINE 6

2 PROFILES - LINE 5

1 PROFILE - LINE 4

2 PROFILES - LINE 3

DISTRIBUTION:

Original & 2 copies: Mr. E. Grover Heinrichs, Tucson

INDUCED POLARIZATION AND RESISTIVITY SURVEY SAFFORD PROJECT GRAHAM COUNTY, ARIZONA FOR ESSEX INTERNATIONAL, INC.

INTRODUCTION:

During the period of August 16 through September 12, 1972 an induced polarization and resistivity survey was performed on the titled property. The field survey was under the direction of Raymond M. Sadowski, geophysical engineer, and Robert D. Whitman, technician, for Mining Geophysical Surveys. The interpretation and final report were prepared by Raymond M. Sadowski and W. Gordon Wieduwilt.

Initially, the IP and resistivity survey was considered a test of the potential of the method to map sulfides at depths greater than 2000'. Dipole lengths of 1000' and 2000' were used and the results of the initial Line 6 provided the project with reliable data from a responsive body at a calculated depth of 2000'$\pm$. The good signal levels obtained from the 2000' dipole data encouraged Essex to continue the program. Subsequently, Lines 4, 5, and 3 were surveyed, in that order. Data from 1000' dipoles were dropped on two-thirds of Line 5 and all of Line 3 in favor of the more definite interpretative information

obtained with the 2000' dipoles. The anomalous IP response occurs at a continuing greater depth to the southwest, where examples on Line 3 indicate depths of 3500'-3800' to the response zone. A boundary to the response appears to be developing at the southeast end of the lines. The boundary characteristics are not sharp enough to indicate a complete cutoff, but suggest that the response is becoming gradationally weaker or occurs at a rapidly increasing depth beyond that boundary. Some structural features are weakly suggested by the geophysics. A survey of Line 2 was deleted at the client's request.

SURVEY PROCEDURE:

The induced polarization and resistivity measurements are made in the time-domain mode of operation. A conventional system of measurements which uses a time cycle of 2.0 seconds "on" and 2.0 seconds "off" - 2.0 seconds "on" and 2.0 seconds "off" (current reversed) was employed.

The commencement of the measurement of the secondary voltage is delayed by 0.45 seconds to avoid coupling and other transient effects. The integration is performed during the period from 0.45 seconds to 1.10 seconds after the cessation of current.

To conform to a standard presentation, the integral time constant is adjusted to give induced polarization readings equivalent to those obtained with transmitter cycles of 3.0 seconds "on" and 3.0 seconds "off", with integration of the secondary voltage during the first second of the "off" period.

Throughout the survey a conventional inline dipole-dipole array of seven electrodes was used, with dipole lengths "a" of 1000' and 2000', and data obtained from both dipoles simultaneously. The 1000' dipole data was deleted from most of Line 5 and all of Line 3. Measurements were made for dipole separation factors "n" of 1 to 6. The potential dipoles occupy positions on both sides of the current-electrode spread, thereby obtaining a line coverage of approximately nine times the dipole length for a standard line of seven electrodes. The total length of line is determined by the number of spreads or additional electrodes used.

Apparent polarization response is in units of millivolt-seconds per volt, or milliseconds (ms), and apparent resistivity is in units of ohmmeters. The data from each line is plotted in quasi-section to facilitate presentation of data at all spacings used.

DESCRIPTION OF DATA:

LINE 6 "a" = 1000'

A textbook two layer IP response is indicated, with the upper layer 5 to 7 ms to a depth of 2000'±. Below 2000' the response increases to greater than 60 ms; however, data is insufficient to calculate a true response. There is a boundary to the response 4000' southeast of the Essex baseline. Response southeast of the boundary decreases sharply or is down-faulted to a depth beyond the limit of effective penetration for the dipole.

There is no apparent resistivity contrast at the polarization interface and P_2/P_1 is assumed to be 1.0. This resistivity characteristic is similar on all lines. At-surface resistivities of 250 to 300 ohmmeters are believed related to a relatively thin (200'±) gravel cover. Variable resistivity of 100-250 ohmmeters throughout the line is related to the andesite conglomerate bedrock.

The low resistivity feature of less than 50 ohmmeters near the base line on Lines 5 and 6 has near-surface layered characteristics. Whether this layer overlies bedrock or is in the upper section of bedrock is not clear.

LINE 6 "a" = 2000'

A two layer response case is evident with better definition of the anomalous response at depth. An upper layer of 5 ms response extends to a depth of 2000'+ in the vicinity 3500' northwest of the baseline. The response decreases slightly to the southeast to 65-70 ms at an average depth of 2000'.

The abnormally sharp rise in response at the larger "n" separations 3500' northwest of the baseline likely indicates a lateral effect, i.e., a response lies adjacent to the line at a distance of 2000'-3000'. We assume from the geology, the feature lies to the northeast of the line.

A decrease in response at the southeast end of the line reflects a distinct cutoff of the response. We suggest, however, that southeast of this boundary anomalous response may continue at depths >3000'.

Resistivity values of 150 ohmmeters$^{+}_{-}$ are attributed to bedrock. The high and low resistivity variations were discussed previously ("a" = 1000').

LINE 5 "a" = 1000'

Only half a line of data was obtained since 1000' dipole data is of limited value. The anomalous response characteristics are fully covered in the 2000' dipole data below.

LINE 5 "a" = 2000'

A two layer response is evident on this line with anomalous response of 80 ms occurring at a depth of 2200'-2400' to the northwest. The anomalous response decreases slightly to 65 ms at a depth of 2000'± in the southeast half of the line.

The upper layer has a response of 5 ms+ and extends to the anomalous interface along the full length of the surveyed line.

Interestingly, the response interface appears to be relatively flat with a slight dip to the northwest. The response continues off both ends of the line, with amplitude decreasing likely as a result of greater depth (greater than 3000'), or less volume percent material at depth. A boundary to the anomalous response represents the extent of response closest to the surface.

Resistivity values of 150 ohmmeters± appear related to bedrock. No layered resistivity contrast is associated with the IP response at depth.

LINE 4 "a" = 1000'

The anomalous response occurs at a depth such that only a fraction of the true response is evident at an "n" of 6. No definitive interpretation can be obtained except to note that anomalous IP response occurs at a depth in excess of 2000'. Higher background response is noted in the upper layer at the south end of the line.

LINE 4 "a" = 2000'

A two layer case is evident with the higher apparent response at the larger "n" separations indicating a greater depth to the response than on the previous lines. The response appears to decrease to the north at a greater depth. Northwest of the baseline a response of 55-65 ms occurs at a depth of 3000'. A response of 75-80 ms occurs at a calculated depth of 2800'$\pm$ in the vicinity of the baseline. Southeast of the baseline anomalous response of 70-80 ms is calculated at a depth of 3200'+. The anomalous response continues off both ends of the line at a decreasing level and possibly at a greater depth to the southeast.

Resistivity values of slightly less than 150 ohmmeters are associated with the andesite conglomerate (bedrock). High resistivity material of 250 ohmmeters occurs near surface at the northwestern end of the line.

LINE 3 "a" = 2000' (1000' dipole data deleted)

The two layer response pattern is again similar to that seen on the previous line, with the anomaly at a greater depth and gradationally increasing in response to the southeast. A response of 45 ms, 50 ms, and 72 ms occurs at increasingly greater depths of 3000', 3200', and 3800' to the southeast. The continuation of anomalous response at increasing depth

off the northwest end of the line may be possible.

A resistivity of 150 ohmmeters± is likely related to bedrock andesites. A high resistivity feature of 250 ohmmeters southeast of the base line is relatively near-surface, either in the alluvium or at the upper surface of the bedrock.

LINE 2 was deleted from coverage for the present, and the anomaly remains open to the southwest.

SUMMARY:

Strongly anomalous IP response of 60 to 80 ms average occurs throughout the area at a depth of 2000' or greater. Depth to response increases to the south, and locally on each line there is evidence of variation in depth to the top of the response zone. This variation in depth may be caused by faulting. The structural features suggested by the geophysical data are weak, however. A response is evident to the southeast, suggesting a decrease in response or a down-faulted displacement of the response material to depth.

The resistivity of bedrock is surprisingly uniform at about 150 ohmmeters±. The resistivity of the alluvium and/or upper bedrock is at two distinctly different levels--locally on Lines 5 and 6 a zone of less than 50 ohmmeters, and

throughout the four lines areas of 250 ohmmeter material occur. We suspect variations in the content of the alluvial material could cause these differences.

We are not certain of the relationship between response and volume percent sulfides, and suggest that the mode of sulfide occurrence will have equally as great an effect on the apparent amplitude as the volume amount. We, therefore, caution that the highest amplitude response may not necessarily represent the highest percent by volume sulfide mineralization.

Since recommendations should be based on considerations other than geophysical results alone, we have not suggested specific targets. The plan map, however, shows the characteristic features of the buried response which it is hoped will assist the geologist in the development of an exploration program.

There are some features to look for as drilling progresses:

1) The character of the total sulfide occurrence; is it disseminated, veinlet, fracture-filled, etc. and if changes in the mode of occurrence are evident, is there a relationship between that mode and the higher or lower response?

2) The volume percent of total sulfides; does it vary in a direct or indirect relationship to IP response amplitude?

3) Depth to top of sulfides; does the depth to sulfides vary directly with the change in amplitude of IP response?

4) The character of the upper layer; is there evidence of geologic change in the upper layer that could be related to the change in background response?

As drilling progresses, a continual review of the geophysics should be of value to the long-term exploration program.

Respectfully submitted,

Raymond M. Sadowski

Raymond M. Sadowski
Geophysical Engineer

W. Gordon Wieduwilt

W. Gordon Wieduwilt
Geophysicist

October 9, 1972

Tucson, Arizona

TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

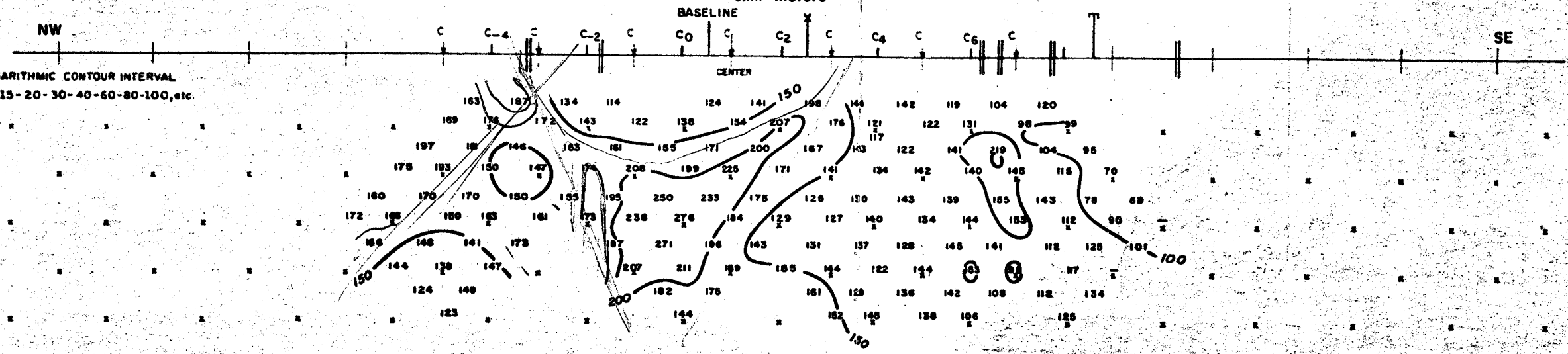
SAFFORD PROJECT - GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL INC.

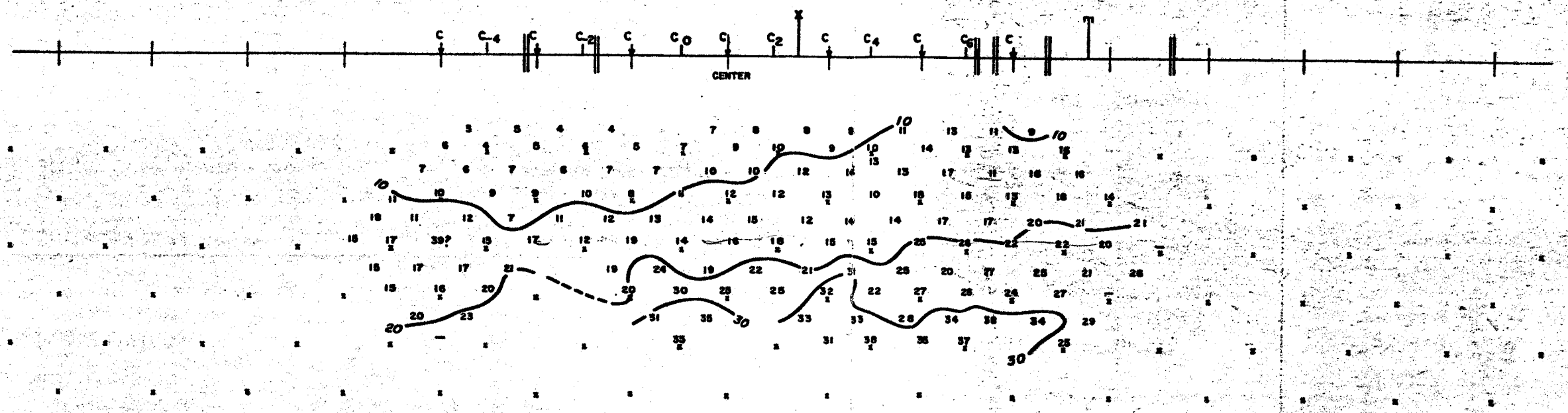
APPARENT RESISTIVITY

ohm meters

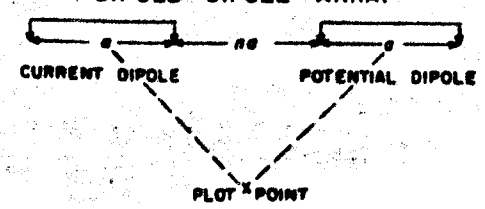


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 3

LOOKING: .....NE

DIPOLE LENGTH: ....2000'

DATE SEP. 8,9,11 / 1972

LEGEND

FENCE.....

PIPELINE.....

POWERLINE.....

ROAD, RR.

mining geophysical surveys

TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

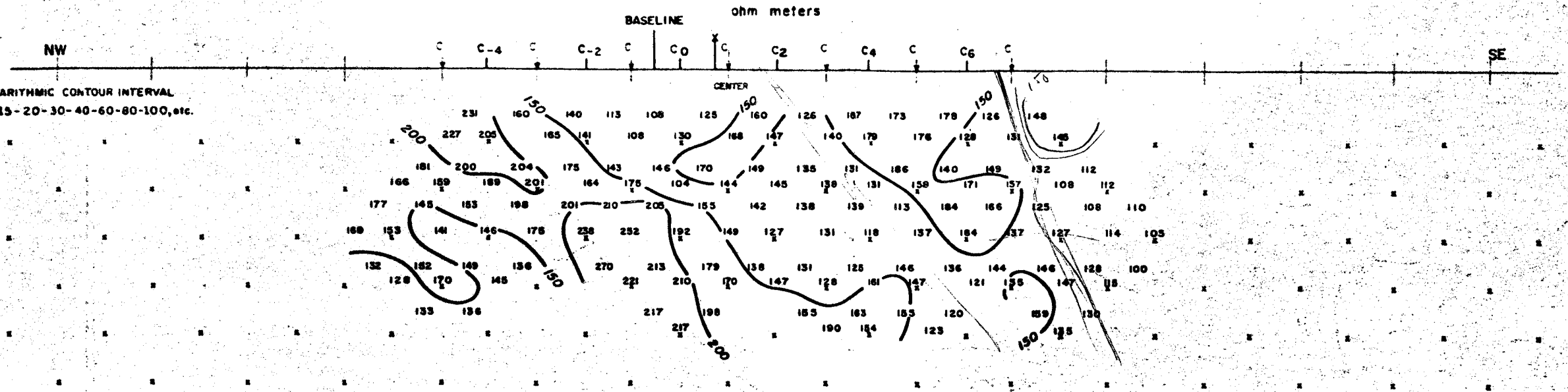
SAFFORD PROJECT - GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL INC.

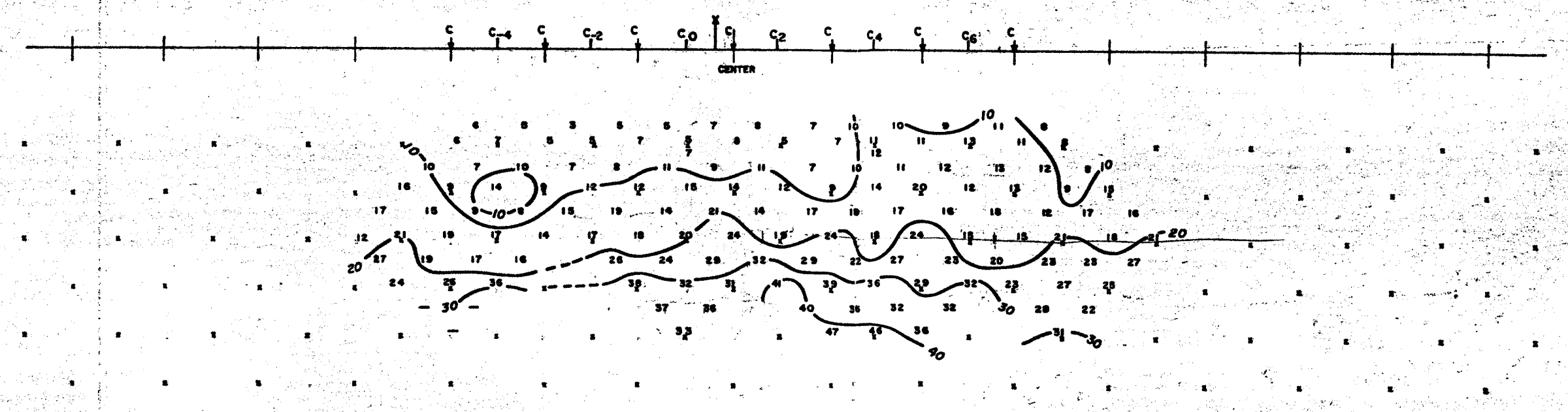
APPARENT RESISTIVITY

ohm meters

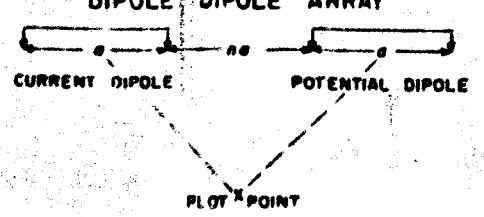


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 4

LOOKING: ..... NE

DIPOLE LENGTH: .....2000'

DATE: AUG.30, SEP.1/1972

LEGEND

FENCE .....

PIPELINE .....

POWERLINE .....

ROAD, RR .....

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M G S 0237

TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

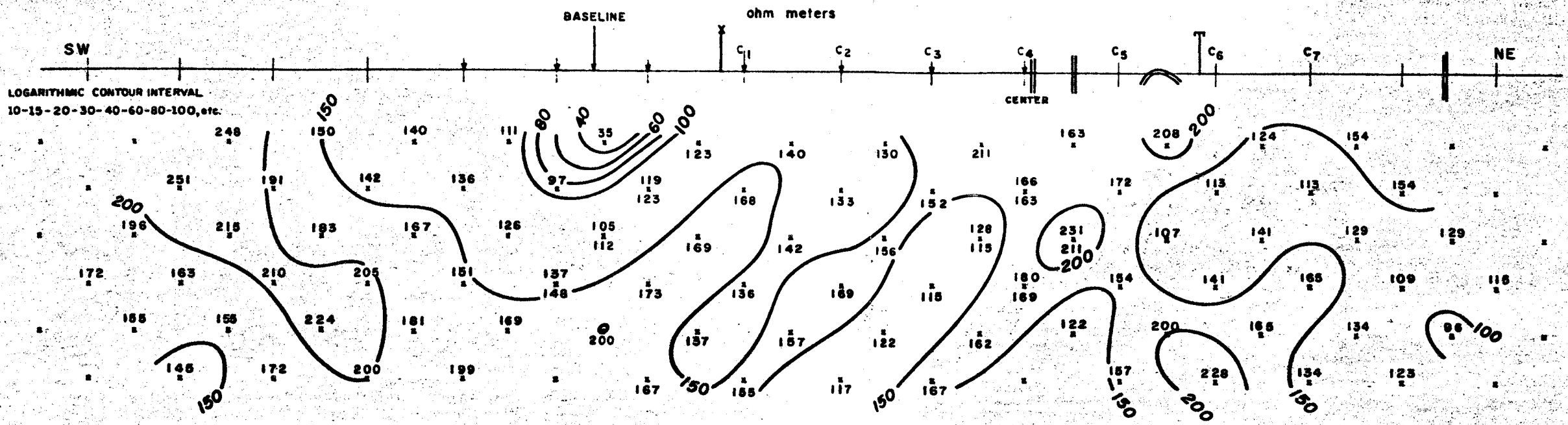
SAFFORD PROJECT - GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL INC.

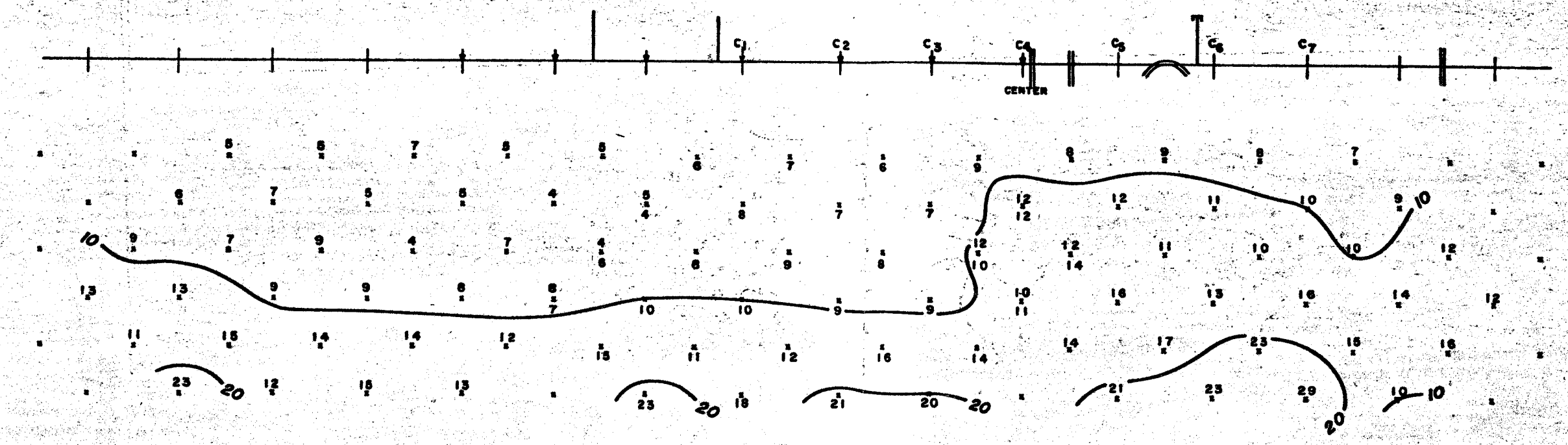
APPARENT RESISTIVITY

ohm meters

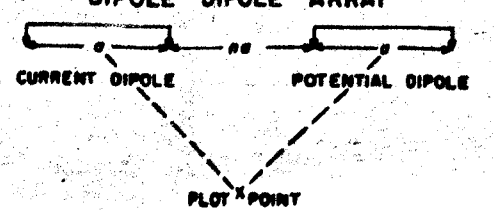


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 4

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . 1000'

DATE: AUG. 25 - 30 / 1972

LEGEND

FENCE x

PIPELINE . . . . . o

POWERLINE . . . . T

ROAD, RR. ═══ +++

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

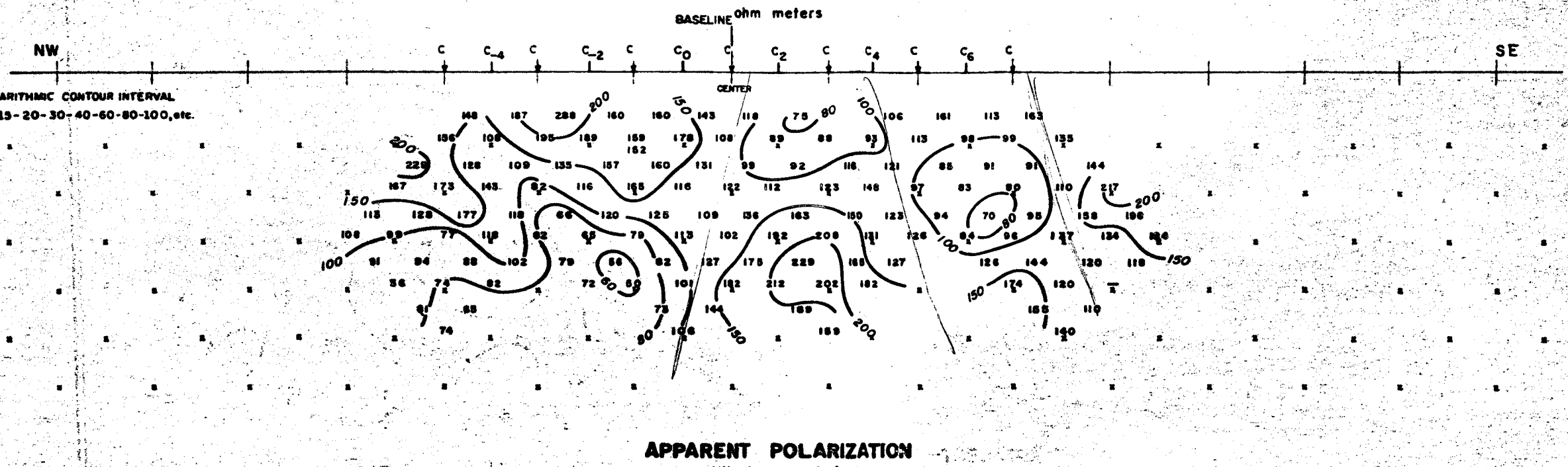
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL INC.

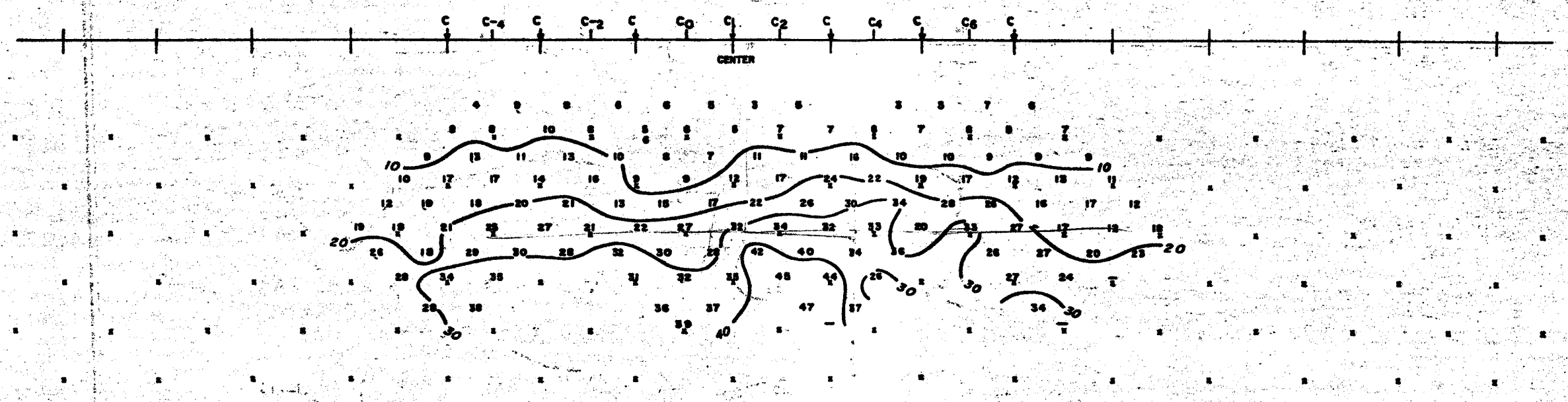
APPARENT RESISTIVITY

ohm meters

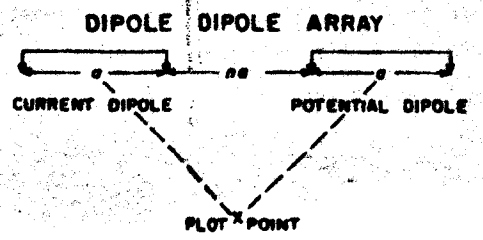


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE:. 5

LOOKING:. . . . . NE

DIPOLE LENGTH:. . . . 2000'

DATE: SEP. 2,5,7/1972

LEGEND

FENCE. . . . . .

PIPELINE . . . . . .

POWERLINE . . . . .

ROAD, RR.

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M.G.S. 0237

TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

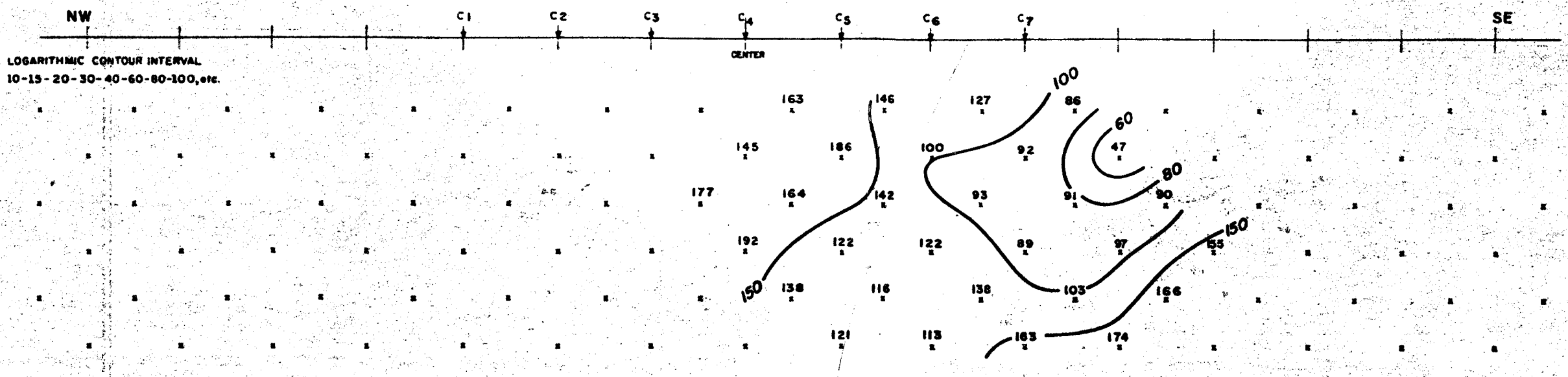
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL INC.

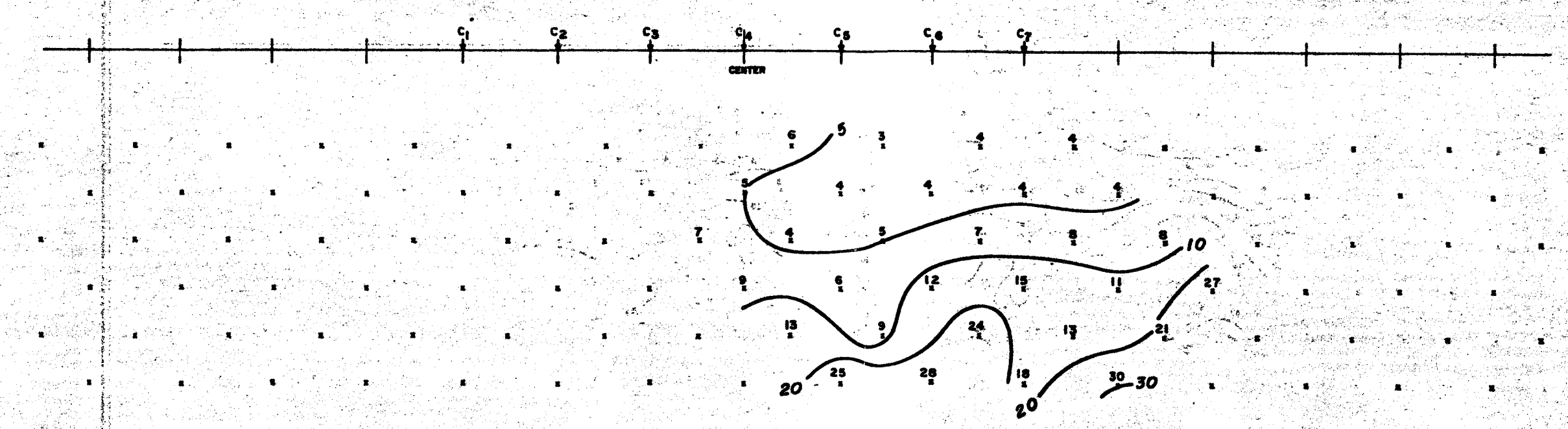
APPARENT RESISTIVITY

ohm meters

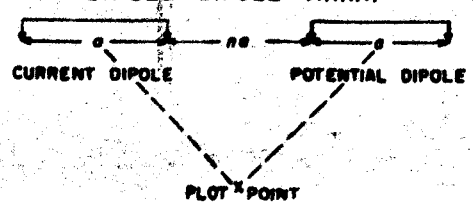


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 5

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . 1000'

DATE: SEP. 2 /1972

LEGEND

FENCE . . . . . ⊠

PIPELINE . . . . . ◇

POWERLINE . . . . . T

ROAD, RR. ——+++——

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

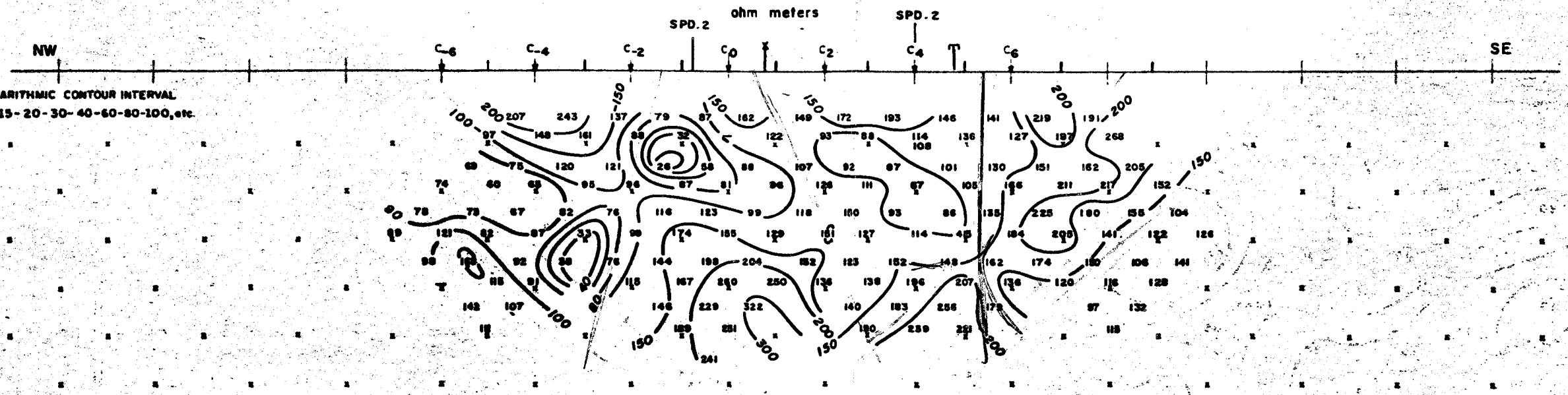
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL INC.

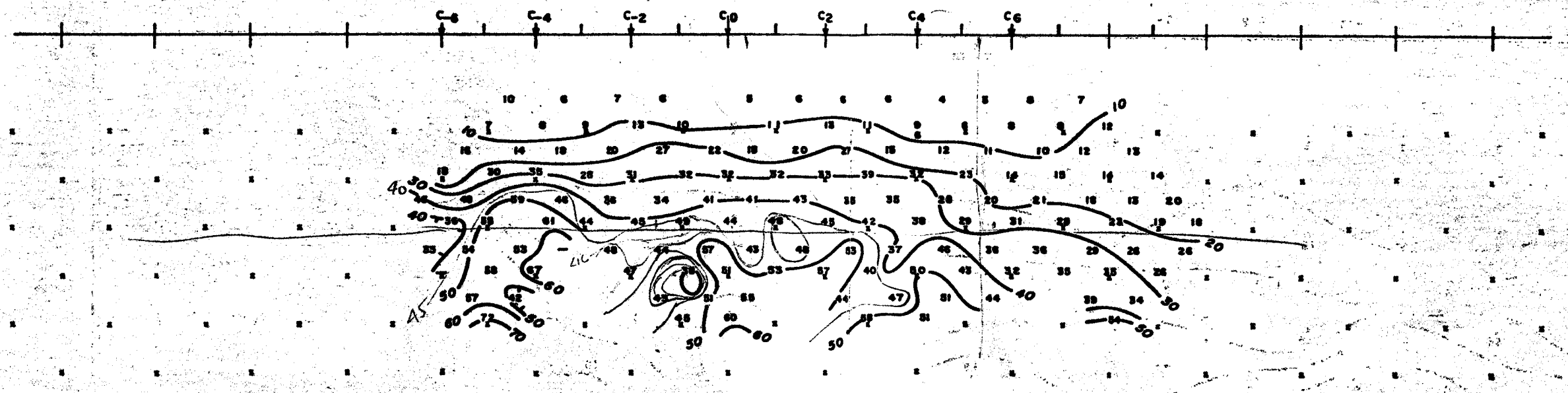
APPARENT RESISTIVITY

ohm meters

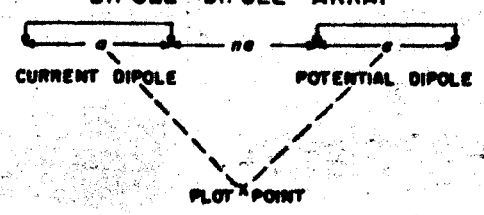


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 6

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . . 2000'

DATE:

LEGEND

FENCE x

PIPELINE . . . . . o

POWERLINE . . . . . T

ROAD, RR. ═══ ⊣⊢⊣⊢

mining geophysical surveys

TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

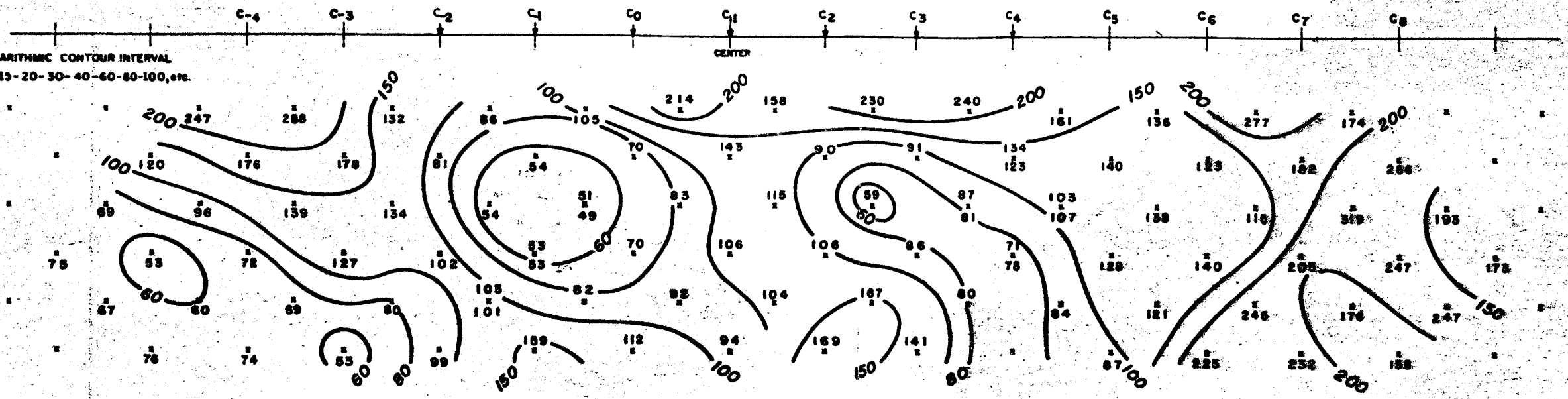
SAFFORD PROJECT - GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL INC.

APPARENT RESISTIVITY

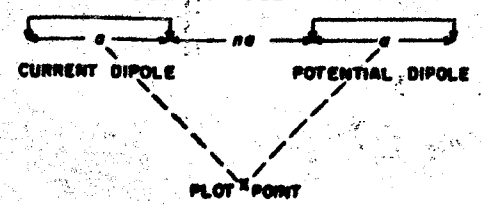
ohm meters



APPARENT POLARIZATION

millivolt seconds/volt

DIPOLE DIPOLE ARRAY



LINE: 6

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . .1000'

DATE:

LEGEND

FENCE X

PIPELINE . . . . . O

POWERLINE . . . . . T

ROAD, RR. ═══

mining geophysical surveys

MC 3237

35

36

T5S

T6S

NEAR SURFACE RESPONSE 90ms ±

2

1

6

-70 ms at 1800'-2200'

APPROXIMATE CONTACT S.E. OF WHICH RESPONSE DECREASE - POSSIBLY A DOWNFAULTED BLOCK

42
40
38
C4
30
29
31
30
17
UPPER LAYER
5 ms
28
UPPER LAYER
10 ms ±
11
12
25
23
2
18
20
14
15
15
18
STRUCTURE IMPLIED
FROM DEPTH INTERPRETATION

12

7

21
20
ROAD
18
20
21
NOT
20

LINE 6

LINE 5

LINE 4

MINE

JUAN

14

LINE 3

13

R26E

R27E

N

SCALE 1"= 500'

NOTE: DO NOT REPRODUCE WITHOUT EXPRESS PERMISSION OF ESSEX INTERNATIONAL INC.

CONFIDENTIAL

GEOPHYSICAL PLAN MAP

WITH I.P. CONTOURS AT n= 3, a= 2000'

SAFFORD PROJECT

GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL INC.

BY

mining geophysical surveys

0237 LINES 3,4,5,6 SURVEYED AUG., SEP. 1972
0256 LINE 8 SURVEYED DEC. 1972

0237
0256

ESSEX

ESSEX INTERNATIONAL, INC.
1704 WEST GRANT RD., TUCSON, ARIZONA 85705
PHONE (602) 624-7421

PROJECT: SAFFORD
PROSPECT:
NUMBER: AO21P8-771
COUNTY, STATE: GRAHAM, ARIZONA
T., R. & SECTION:
LATITUDE, LONGITUDE:

SCALE: 1" = 500'
DATE: 7/72
DATA BY:
PREPARED BY: blr

Original

32

33

34

POSSIBLE LATERAL RESPONSE WITHIN 3000' TO THE NORTHEAST
(NO EVIDENCE OF LATERAL RESPONSE AT a=1000')

RESPONSE OF 85 ms at 2000'±

POSSIBLE BOUNDARY

RESPONSE OF 80-95 ms at DEPTH OF 2200-2400'

RESPONSE OF 55-65 ms at DEPTH OF 3000'

UPPER LAYER 5 ms ±

RESPONSE OF 45 ms at 3000' ±

UPPER LAYER 5 ms ±

RESPONSE OF 75 ms AT 1500'-2000'

RESPONSE OF 65

RESPONSE OF 75-80 ms at DEPTH OF 2800'

RESPONSE OF 65 ms at DEPTH OF 2000'

UPPER LAYER 5 ms ±

RESPONSE OF 20 ms FROM 1500' TO 3000' ±

RESPONSE OF 50 ms at 3200' ±

RESPONSE OF 75 ms AT >3000'

UPPER LAYER 10 ms

UPPER LAYER 5 ms.

RESPONSE OF 80 ms at DEPTH OF 3200' ±

ESSEX BASELINE

LINE 8
a= 1000'
a= 2000'

UPPER LAYER HAS BACKGROUND RESPONSE OF TWO CHARACTERISTIC LEVELS SEPARATED BY THIS CONTACT WITH HIGHER (10 ms ±) LEVELS TO THE SOUTHEAST.

UPPER LAYER 10 ms +

RESPONSE OF 72 ms ± at 3800' ±

CONTACT
CLEAR ON
LINE 3

P.D. ROAD

SAN

8

9

10

15

16

TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

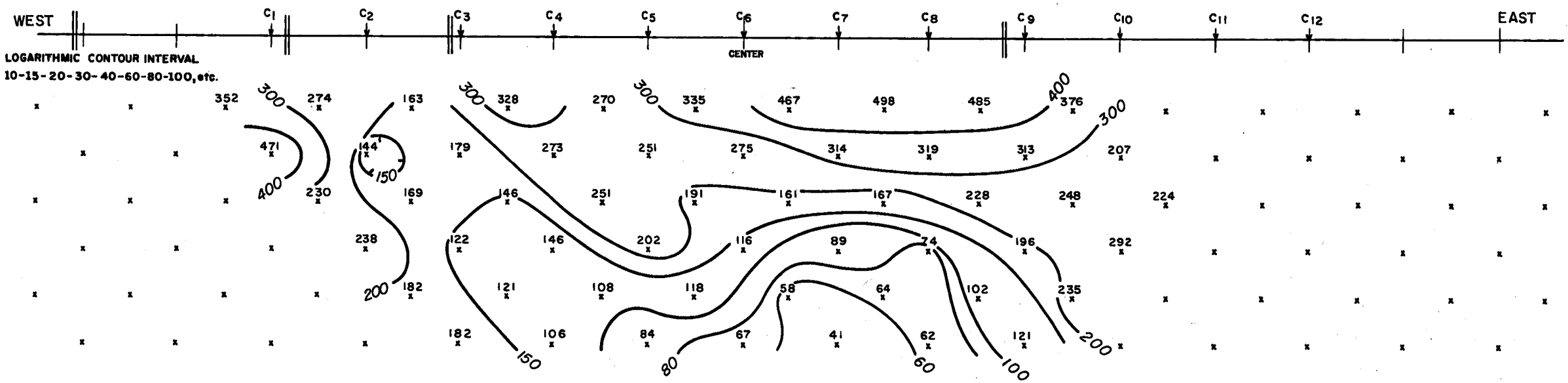
SAFFORD PROJECT - GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

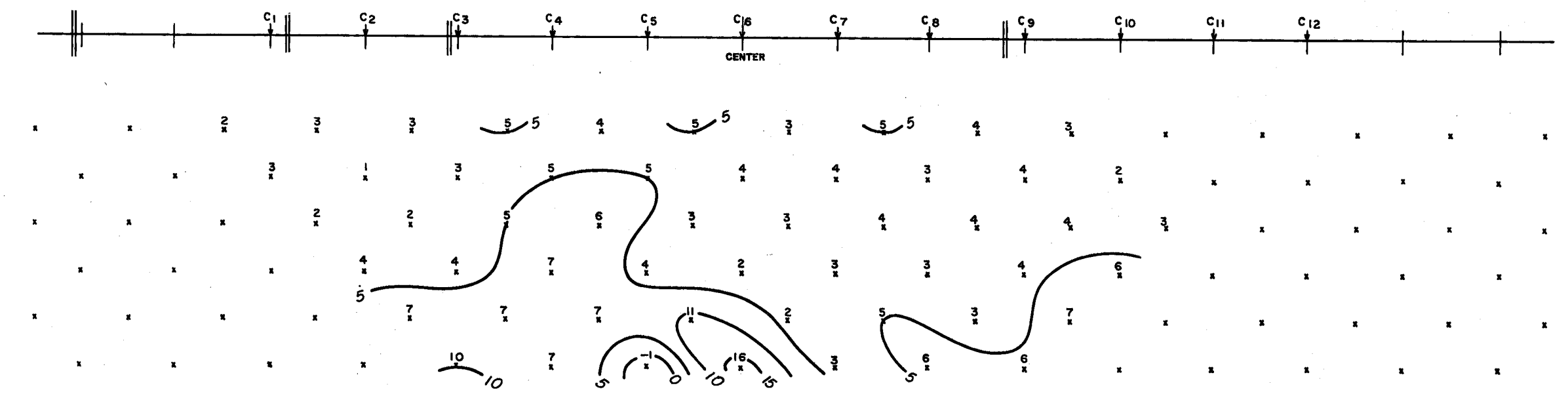
APPARENT RESISTIVITY

ohm meters

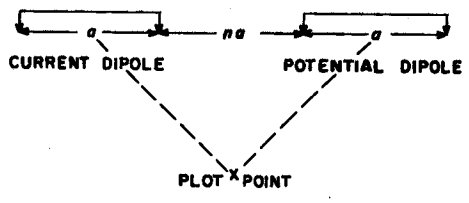


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 1

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . . 500'

DATE: JAN. 30/1975

LEGEND

FENCE. x

PIPELINE . . . . . o

POWERLINE. . . . T

ROAD, RR. ═══╫═══

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

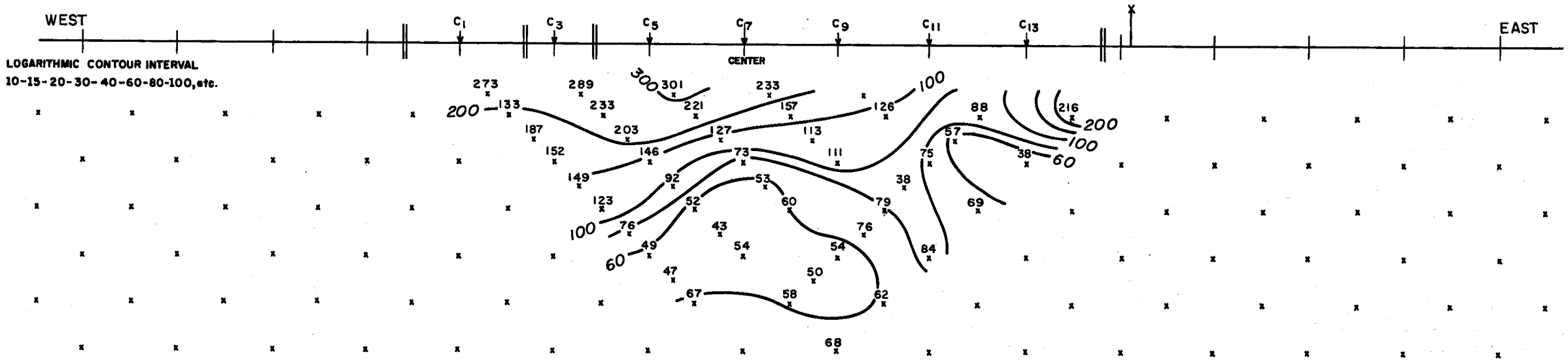
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

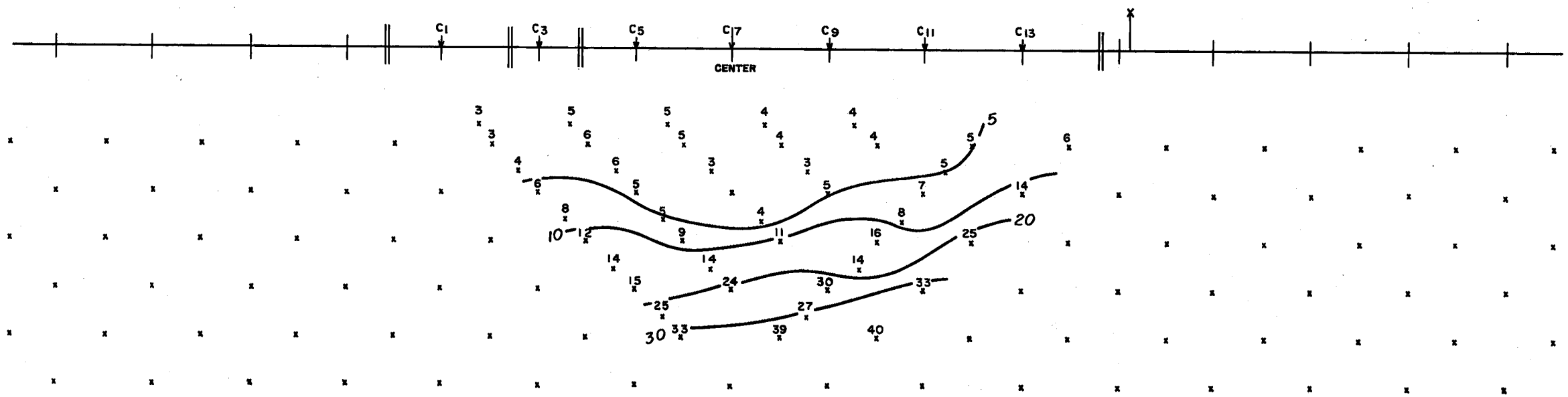
APPARENT RESISTIVITY

ohm meters



APPARENT POLARIZATION

millivolt seconds/volt



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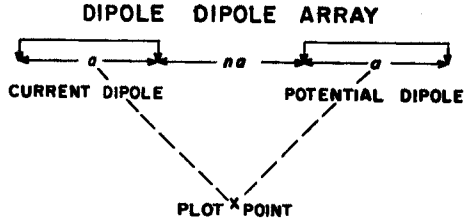

LINE: 1

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . 1000'

DATE: JAN. 31 /1975

LEGEND

FENCE. X

PIPELINE . . . . . O

POWERLINE. . . . T

ROAD, RR. ═══╫═══

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

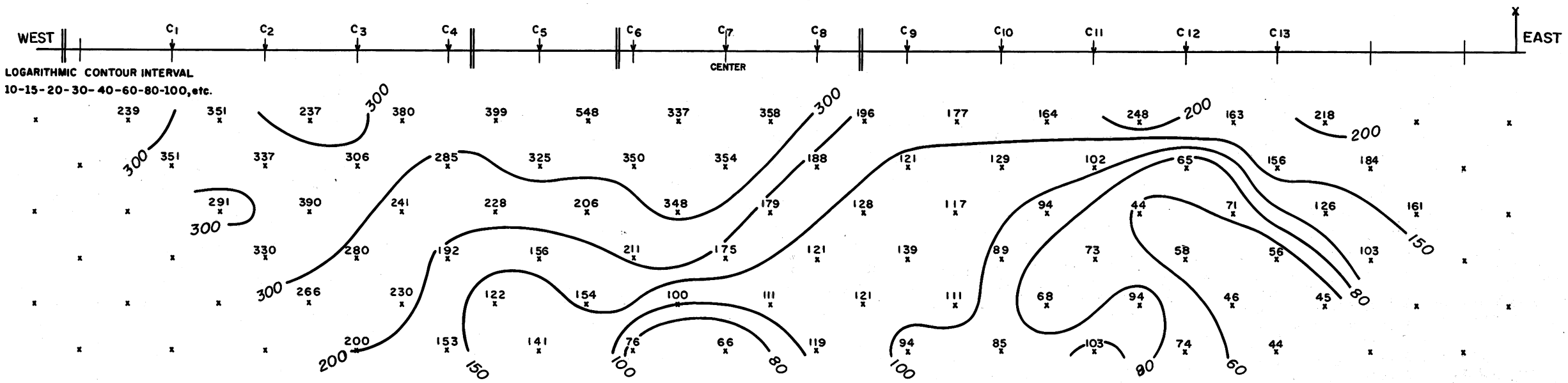
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

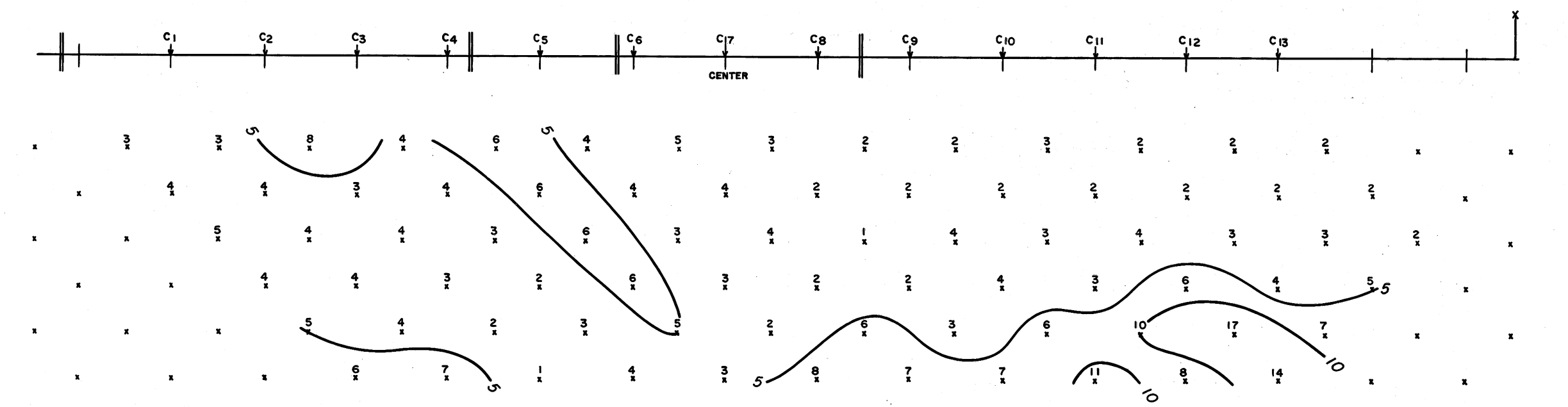
APPARENT RESISTIVITY

ohm meters

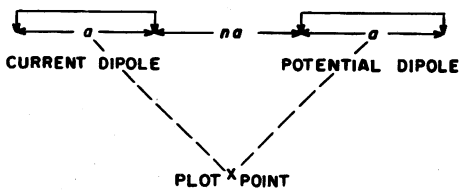


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 2

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . . 500'

DATE: FEB 3/1975

LEGEND

FENCE. x

PIPELINE . . . . . o

POWERLINE. . . . T

ROAD, RR. ═══╪══

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

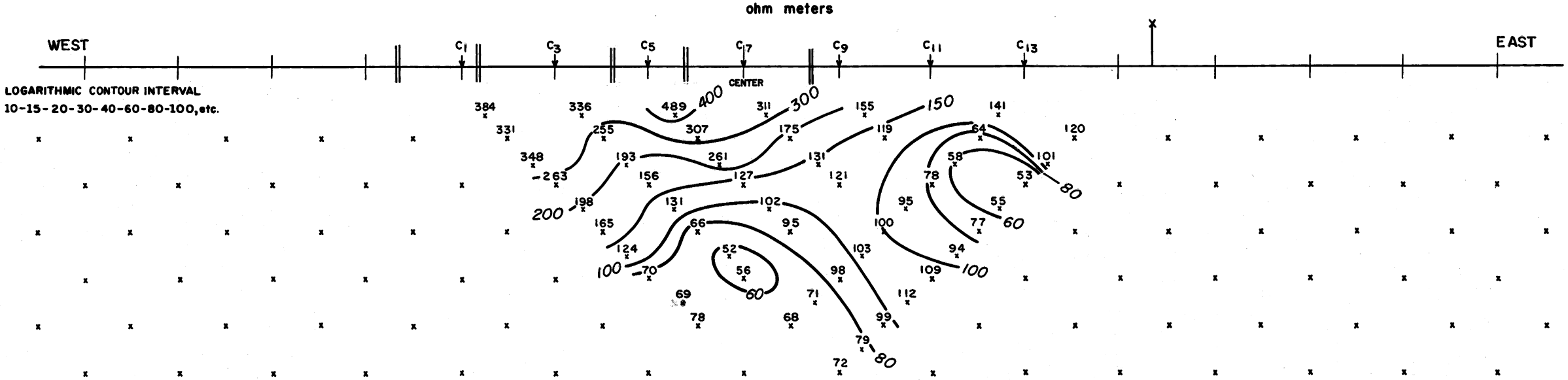
SAFFORD PROJECT - GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

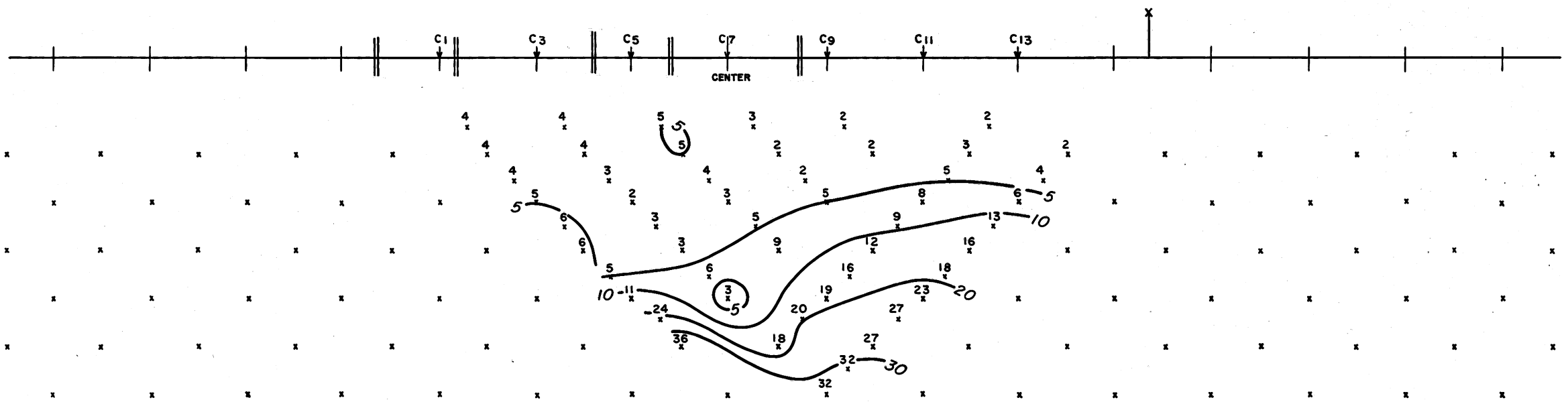
APPARENT RESISTIVITY

ohm meters

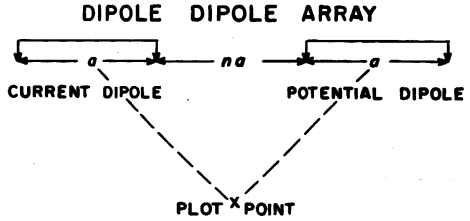


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 2

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . . 1000'

DATE: JAN. 3/ 1975

LEGEND

FENCE. x

PIPELINE . . . . . o

POWERLINE. . . . . T

ROAD, RR. ═══+++

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

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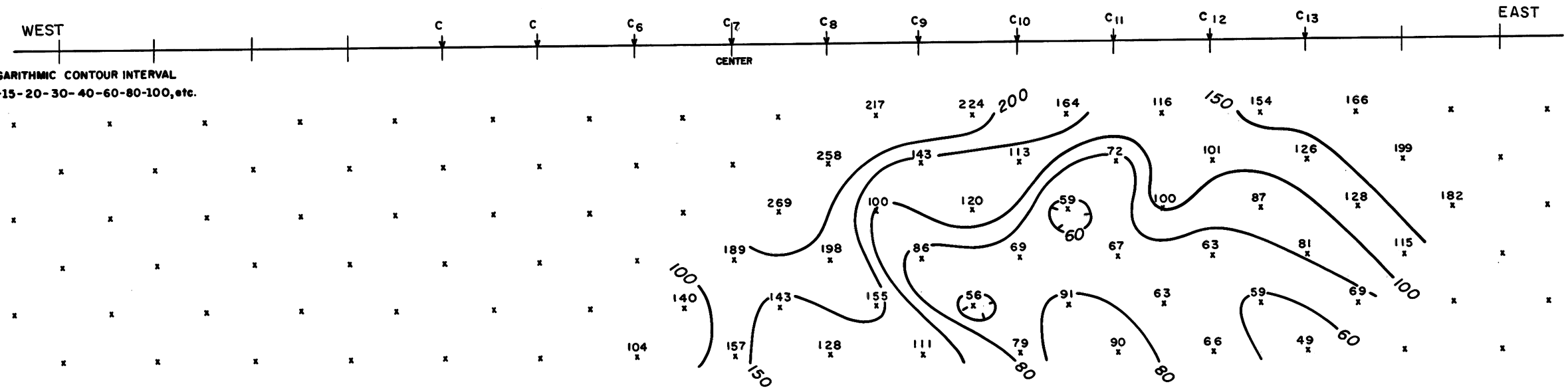
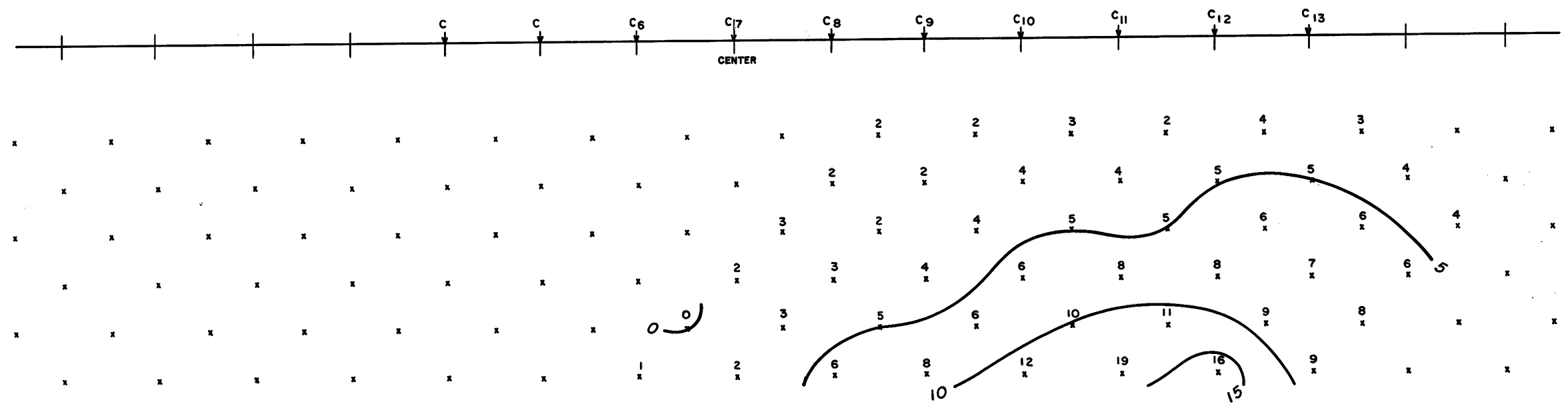
APPARENT RESISTIVITY

ohm meters

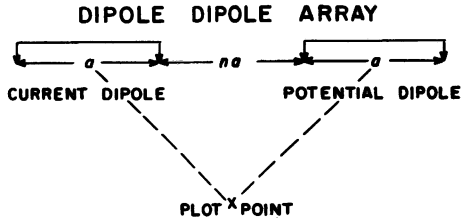


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 3

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . 500'

DATE: FEB. 9/1975

LEGEND

FENCE. x

PIPELINE . . . . . o

POWERLINE. . . . . T

ROAD, RR. ═══+++

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

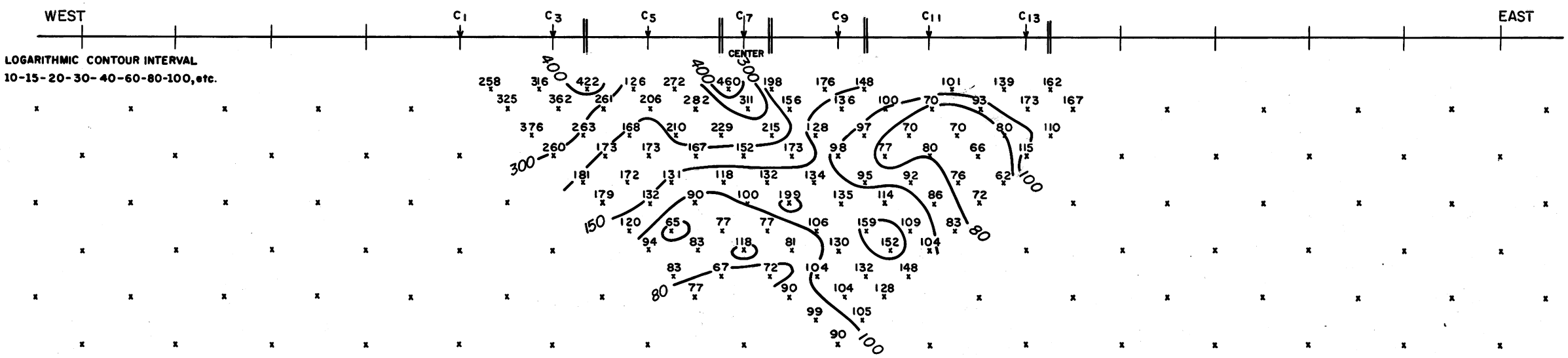
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

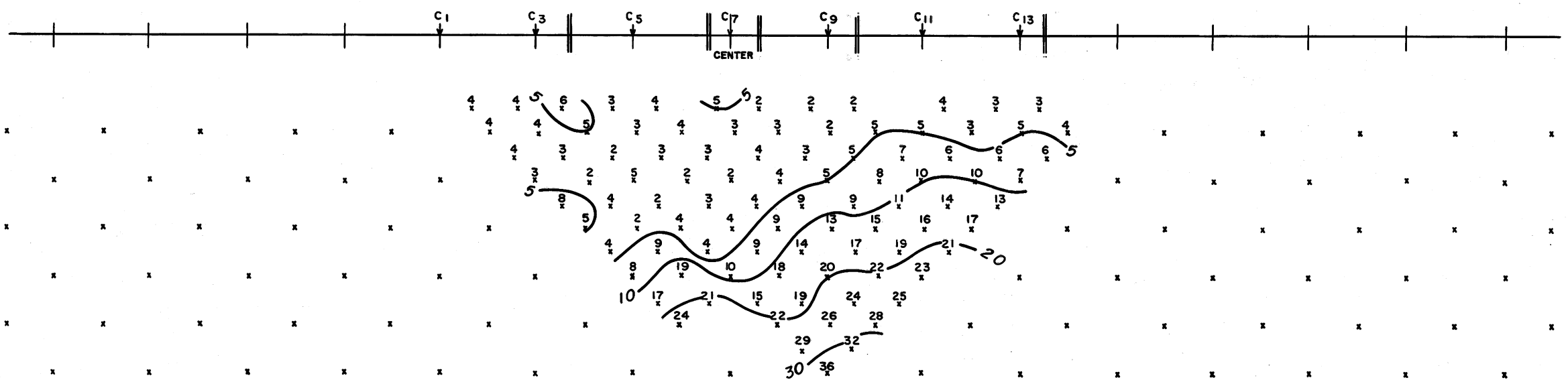
APPARENT RESISTIVITY

ohm meters

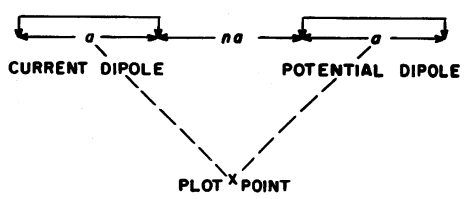


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 3

LOOKING: . . . . NE

DIPOLE LENGTH: . . . . . 1000'

DATE: FEB. 9/1975

LEGEND

FENCE. X

PIPELINE . . . . . O

POWERLINE. . . . T

ROAD, RR. ═══╫═══

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

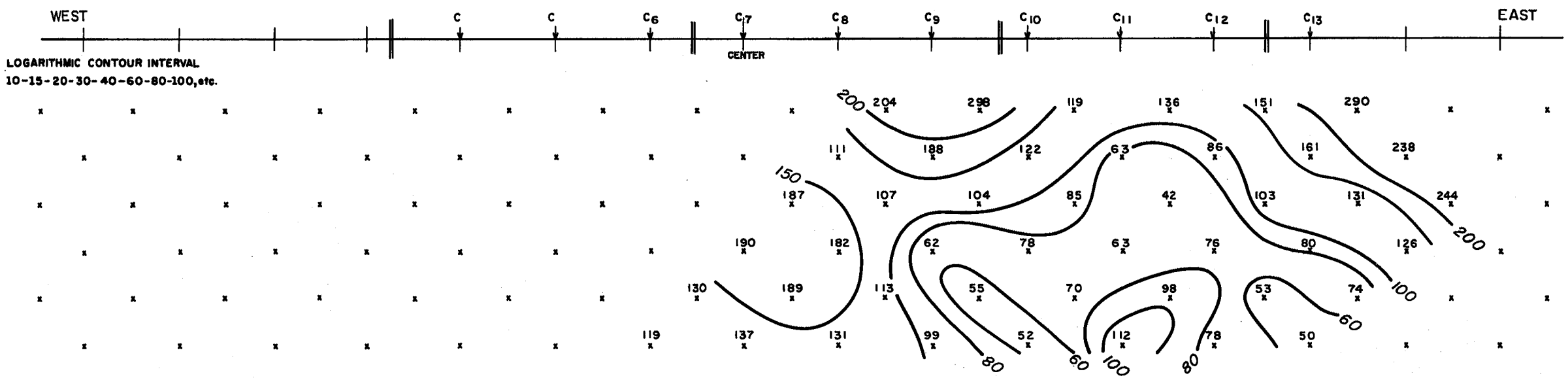
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

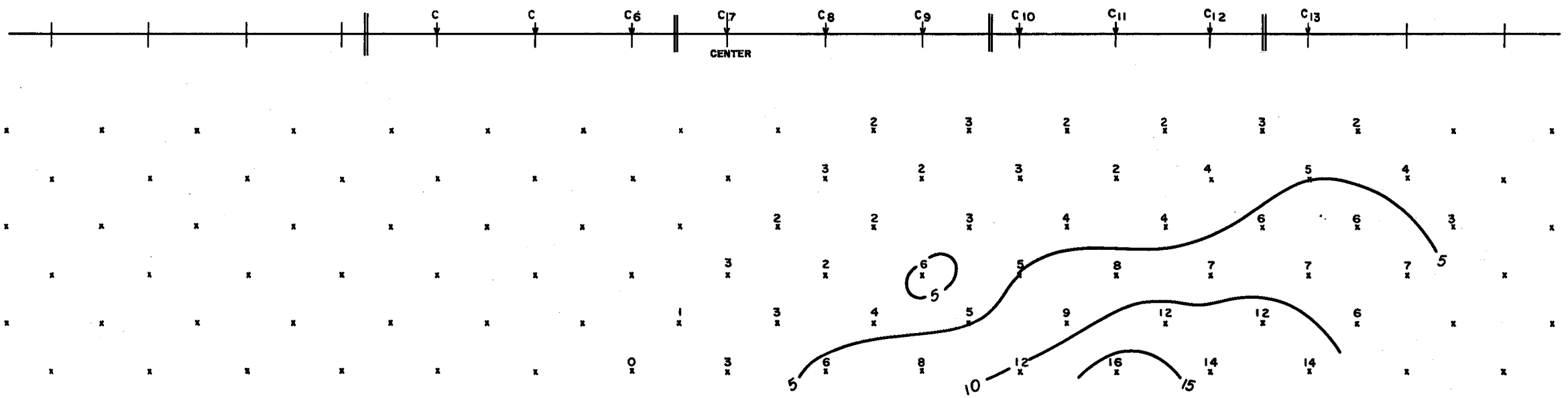
APPARENT RESISTIVITY

ohm meters

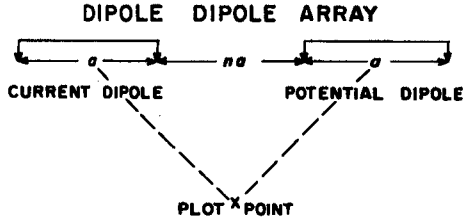


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 4

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . 500'

DATE: FEB. 13/1975

LEGEND

FENCE. x

PIPELINE . . . . . o

POWERLINE. . . . T

ROAD, RR. ═══

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

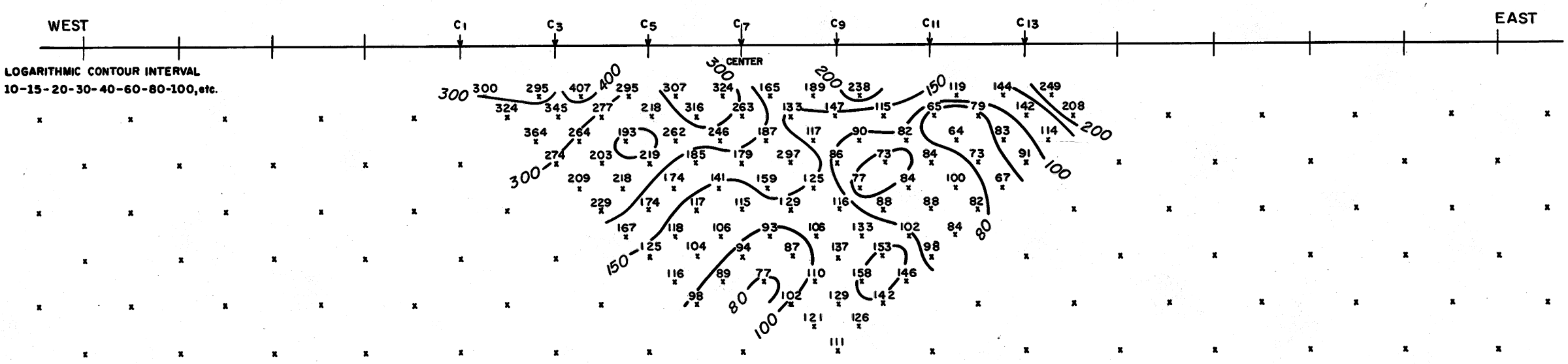
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL , INC.

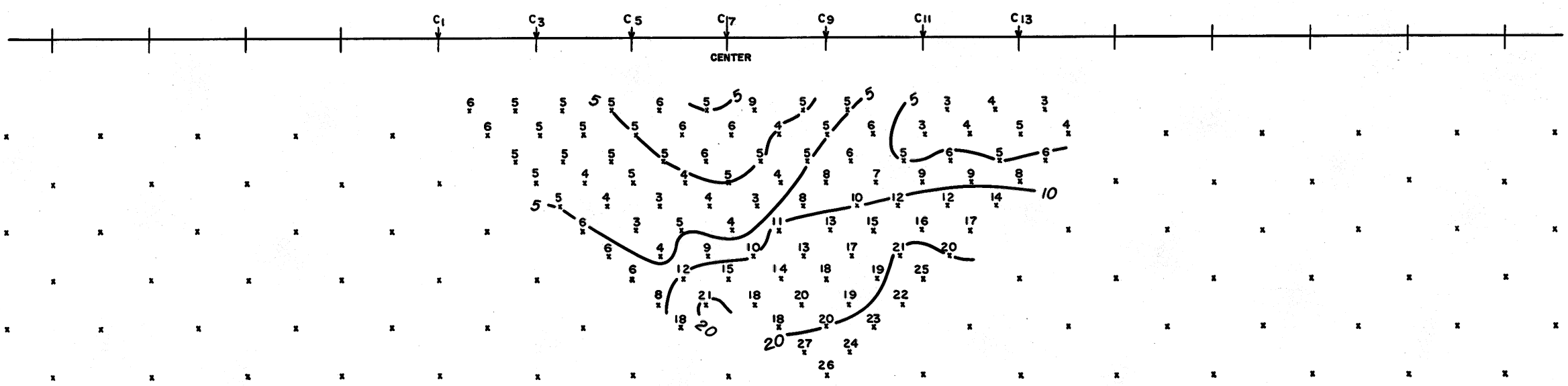
APPARENT RESISTIVITY

ohm meters

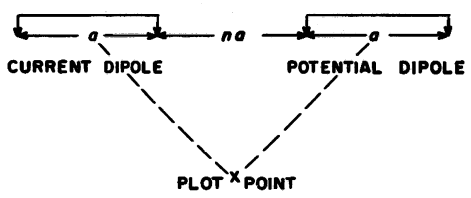


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 4

LOOKING: . . . . NE

DIPOLE LENGTH: . . . . 1000'

DATE: FEB. 13/1975

LEGEND

FENCE. X

PIPELINE . . . . . O

POWERLINE. . . . . T

ROAD, RR. ═══+++═══

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

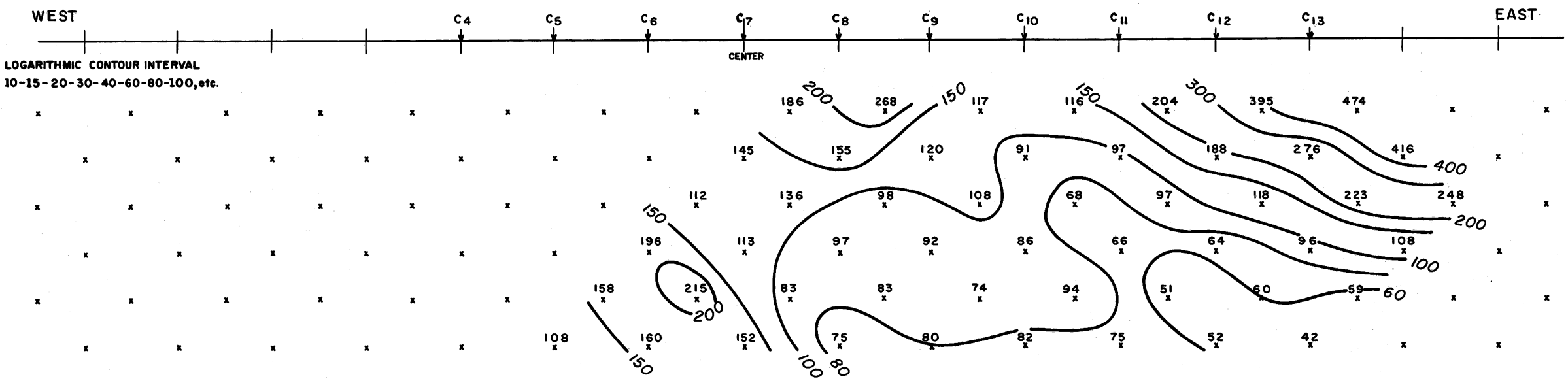
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

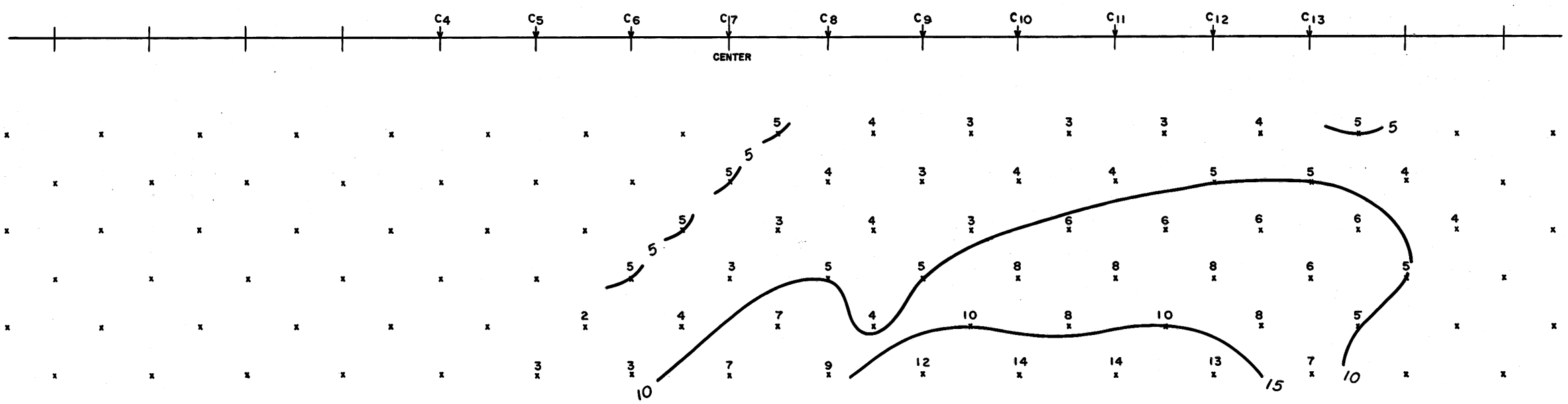
APPARENT RESISTIVITY

ohm meters

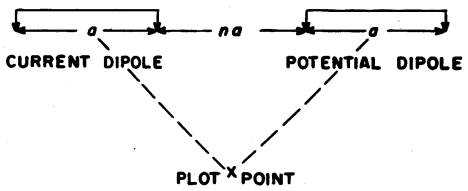


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 5

LOOKING: . . . NORTH

DIPOLE LENGTH: . . . . .500'

DATE: FEB. 15-16/1975

LEGEND

FENCE. X

PIPELINE . . . . . O

POWERLINE. . . . . T

ROAD, RR. ═══╫═══

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

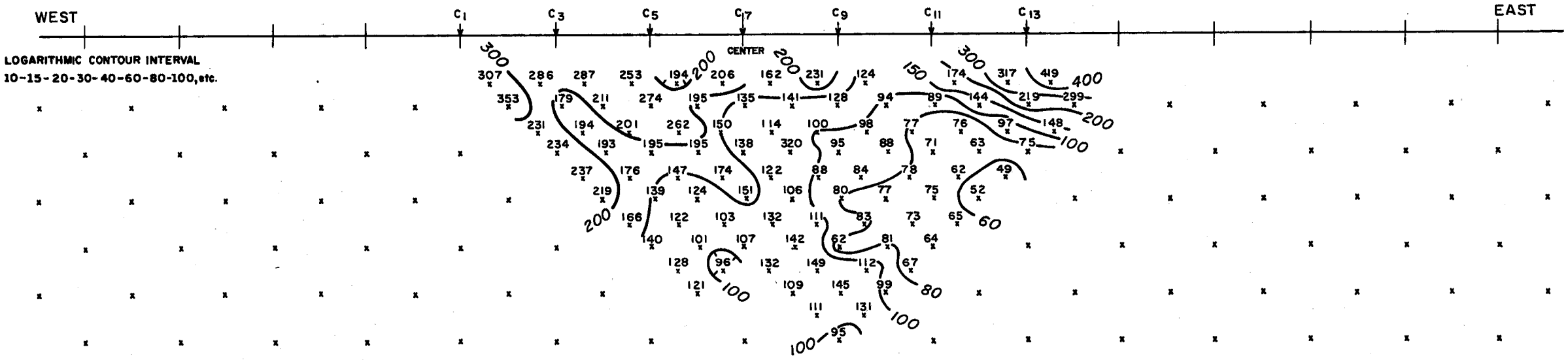
SAFFORD PROJECT — GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

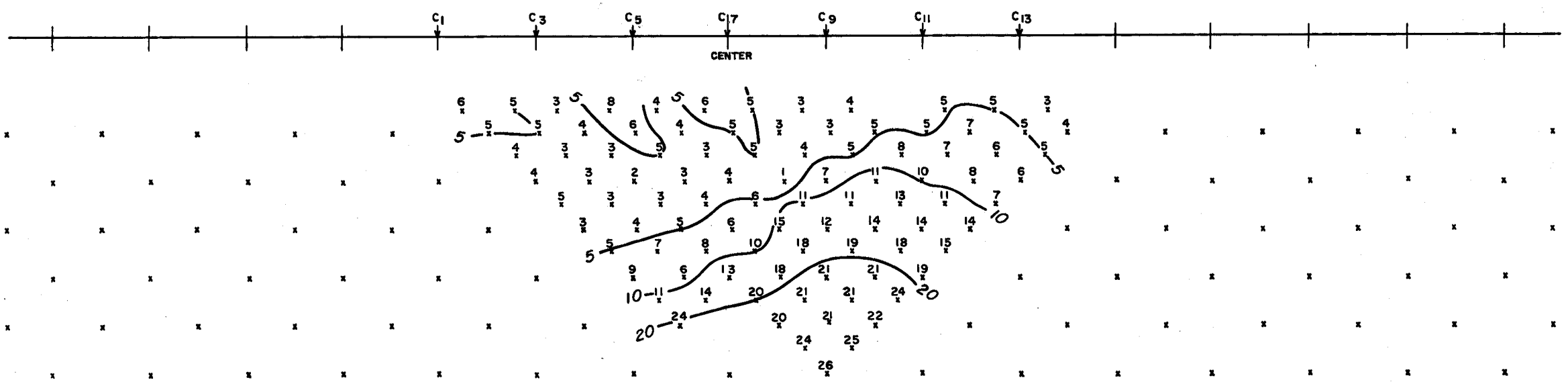
APPARENT RESISTIVITY

ohm meters

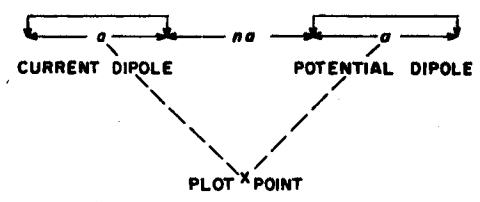


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 5

LOOKING: . . . NORTH

DIPOLE LENGTH: . . . . . 1000'

DATE: FEB. 15-16 / 1975

LEGEND

FENCE. X

PIPELINE . . . . . O

POWERLINE. . . . . T

ROAD, RR. ═══╪╪╪

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INDUCED POLARIZATION AND RESISTIVITY SURVEY SAFFORD PROJECT GRAHAM COUNTY, ARIZONA

2 of 3

FOR

ESSEX INTERNATIONAL, INC.

Dec. 1972

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INDUCED POLARIZATION AND

RESISTIVITY SURVEY

SAFFORD PROJECT

GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

PROJECT 0256

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TABLE OF CONTENTS

ACCOMPANYING THIS REPORT:

1 GEOPHYSICAL PLAN MAP

1 PROFILE

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INDUCED POLARIZATION AND RESISTIVITY SURVEY SAFFORD PROJECT GRAHAM COUNTY, ARIZONA FOR ESSEX INTERNATIONAL, INC.

INTRODUCTION:

During the period of December 7 through 9, 1972 a partial line of data was collected as part of the continued studies of anomalous IP response trends at the titled property. The field survey was under the direction of Robert D. Whitman, technician for Mining Geophysical Surveys.

This test line (Line 8) was run NE'ly across the previous IP grid (see MGS report 0237 dated October 9, 1972) as shown on the enclosed plan map. Extremely high response occurs near surface at the NE end of the line. The high response material appears to extend to the south at a depth of 1500' to 2000' at line center, increasing to greater than 3000' at the southerly end of the line.

SURVEY PROCEDURE:

The induced polarization and resistivity measurements are made in the time-domain mode of operation. A conventional system of measurements which uses a time cycle of 2.0 seconds "on"

and 2.0 seconds "off" - 2.0 seconds "on" and 2.0 seconds "off" (current reversed) was employed.

The commencement of the measurement of the secondary voltage is delayed by 0.45 seconds to avoid coupling and other transient effects. The integration is performed during the period from 0.45 seconds to 1.10 seconds after the cessation of current.

To conform to a standard presentation, the integral time constant is adjusted to give induced polarization readings equivalent to those obtained with transmitter cycles of 3.0 seconds "on" and 3.0 seconds "off", with integration of the secondary voltage during the first second of the "off" period.

Throughout the survey a conventional inline dipole-dipole array of seven electrodes was used, dipole lengths "a" = 1000' and 2000', with readings at the two dipole spacings being read simultaneously. Measurements were made for dipole separation factors "n" of 1 to 6. The 2000' dipole data was not extended to the southwest to complete the line coverage.

Apparent polarization response is in units of millivolt-seconds per volt, or milliseconds (ms), and apparent resistivity is in units of ohmmeters. The data from each line is plotted in quasi-section to facilitate presentation of data at all spacings used.

DESCRIPTION OF DATA:

LINE 8, "a" = 1000'

Near surface IP response of 80 to 90 ms occurs north of a contact 1500' north of electrode C_7. The response south of this contact has a background value of 6 ms$^{\pm}$ increasing to 75 ms at 1500' to 2000' in the vicinity of line center (C_4). The background response appears to increase to 20 ms at a depth of 1500'$^{+}$ at the south end of the line.

Resistivity values present a complex pattern with a layer of 300 ohmmeter high resistivity material at surface directly south of the high response zone and extending 3000' to the south. Low resistivity material of less than 20 ohmmeters at depth and to the north appears related to the anomalous response material in part. However, variable high resistivity material occurs throughout the area with no apparent direct relationship to the IP response.

LINE 8, "a" = 2000'

The near surface anomalous response appears to lie 2000' north of C_7, has a southerly dip, and a true response of 90 ms. Anomalous response continues to depth to the south with a response of 75 ms$^{\pm}$ at greater than 3000'. The anomalous response pattern is incomplete but suggests a steep S'ly dipping contact possibly stepping down to the south.

Resistivity values decrease with depth over high but variable surface resistivities.

SUMMARY:

Anomalous response of 90 ms$^{+}_{-}$ occurs near surface at the north end of the profile. The response appears as a series of step slopes occurring progressively deeper to the south. At the south end of the line a response of 70 ms is calculated at greater than 3000' deep (from the 2000' dipole data). A moderate response of 20 ms occurs from 1500' to the deeper interface at the south end of the line.

Respectfully submitted,

R. D. Whitman/mw

Robert D. Whitman
Geophysical Technician

W. Gordon Wieduwilt
Geophysicist

Tucson, Arizona
December 14, 1972

TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

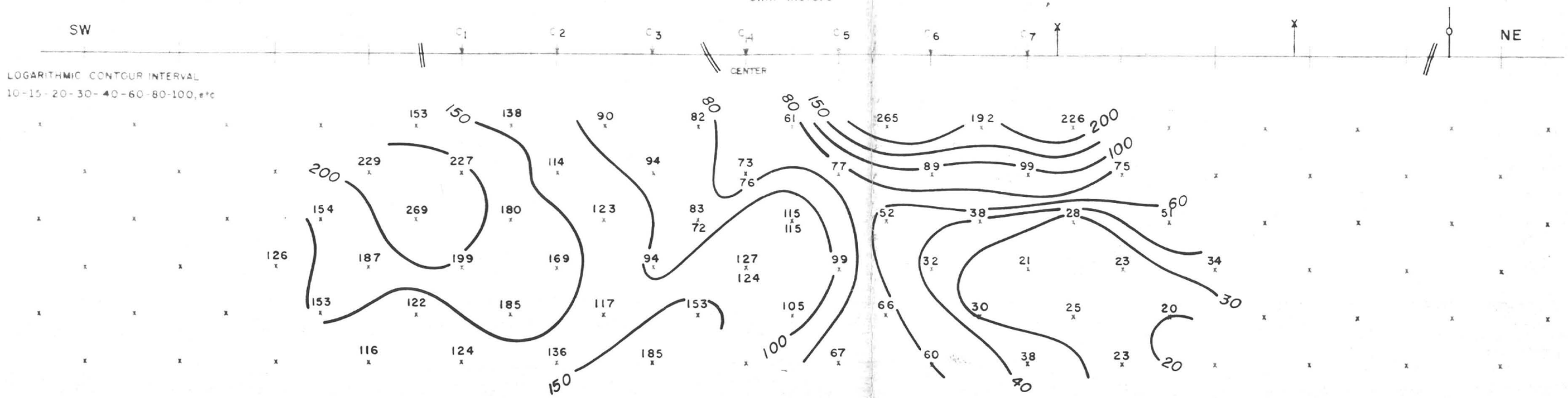
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

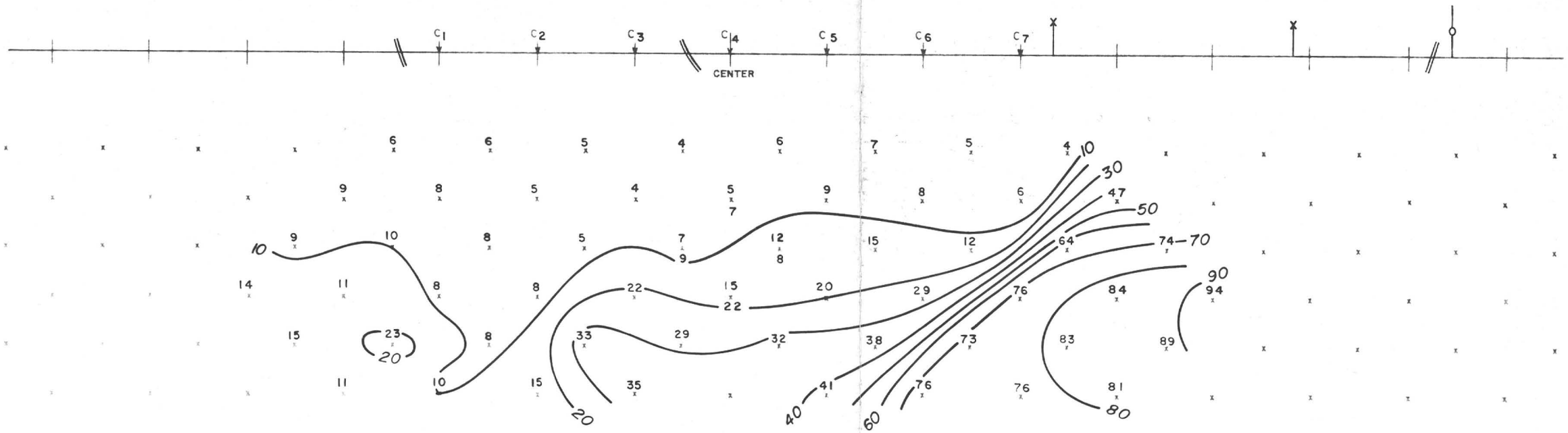
APPARENT RESISTIVITY

ohm meters

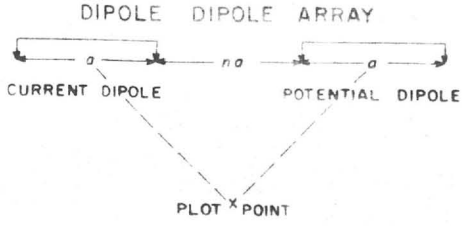


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE 8

LOOKING . . . WEST

DIPOLE LENGTH . . . . 1000'

DATE DEC., 7-9, 1972

LEGEND

FENCE x

PIPELINE . . . . . o

POWERLINE . . . . . T

ROAD, RR . . . . . ++++

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

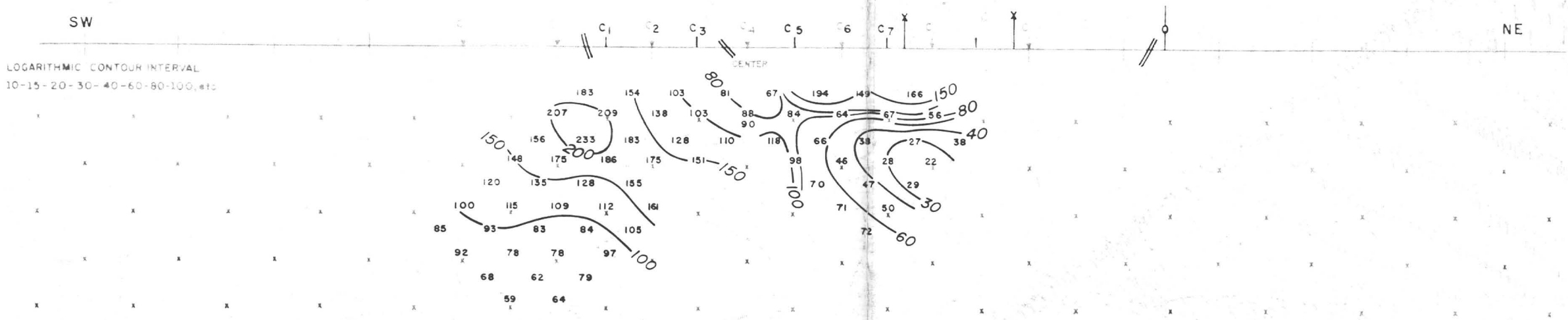
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

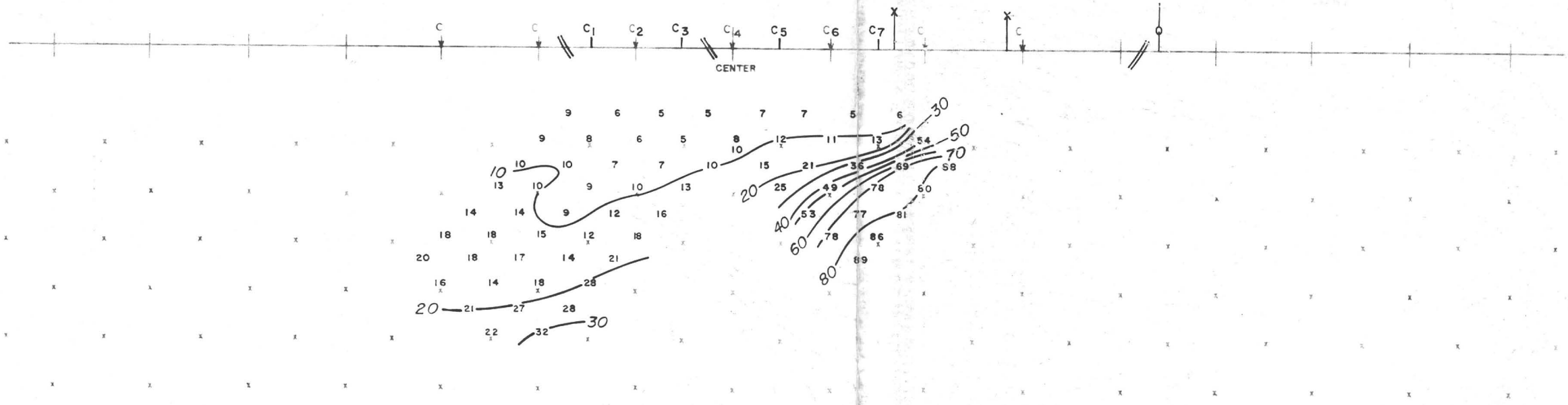
APPARENT RESISTIVITY

ohm meters

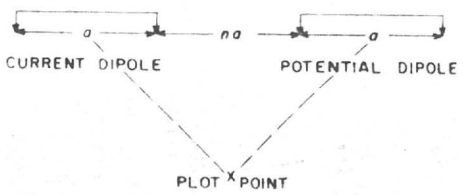


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE 8

LOOKING . . . . WEST

DIPOLE LENGTH . . . . 2000'

DATE DEC. 7,9/1972

LEGEND

FENCE

PIPELINE

POWERLINE

ROAD, RR

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INDUCED POLARIZATION AND RESISTIVITY SURVEY SAFFORD PROJECT GRAHAM COUNTY, ARIZONA

3 of 3

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Feb. 1975

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INDUCED POLARIZATION AND

RESISTIVITY SURVEY

SAFFORD PROJECT

GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

PROJECT 0505

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TABLE OF CONTENTS

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10 PROFILES: 5 LINES, EACH AT "a" = 500' & 1000'

1 PLAN MAP

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INDUCED POLARIZATION AND
RESISTIVITY SURVEY
SAFFORD PROJECT
GRAHAM COUNTY, ARIZONA
FOR
ESSEX INTERNATIONAL, INC.

INTRODUCTION:

During the period of January 28 through February 17, 1975 an induced polarization and resistivity survey was performed on the titled property. The field survey was under the direction of Phillip A. Walen, geophysicist; the interpretation and final report by W. Gordon Wieduwilt, geophysicist for Mining Geophysical Surveys.

Five lines were surveyed using 500' and 1000' dipoles, with double density readings on the 1000' dipoles requested by Essex in an effort to detail the characteristics of shallow bedrock and the trends of deeper sulfide mineralization.

SUMMARY:

Anomalous IP response of greater than 45 ms (with our system of measurements 10-20 ms could represent 1% total disseminated sulfides by volume) occurs at depths estimated from 1000' to 1400' to 1500' along the east margin of the property. The IP response at depth is related to known sulfide mineralization. An increase in the true or intrinsic response is indicative of a relatively higher volume % of total sulfides. The economic

significance of variations in % total sulfides is beyond the capability of the method, however.

It is possible, but not clearly apparent, that the response material may come closer to surface farther east. There is evidence to support a rapidly increasing depth to response to the west where depth to response in the center of the present coverage could be as much as 2000' to 2500' or more. On Line 1 there is a suggestion that the response is in a very flat W'ly dip and could again come close (1500'$\pm$) to surface in the vicinity of C_3-C_4. The strike of this near surface response trend along the east margin is NW-SE, with a marked offset in strike on Line 5 suggesting structure(?).

An earlier survey in the Fall of 1972 outlined this same zone of relatively shallow response but in broad coverage, using 1000' and 2000' dipoles. The salient feature about the earlier survey was the marked increase in depth to response to the southwest, suggesting structure closely parallel the profiles with a downfaulted block to the west of Line 5-72. The recent coverage pretty well confirms this feature and adds detail to the area of shallowest response. An area of "high background" or weakly anomalous response near surface west of the fault was outlined by the 1972 survey. The significance of this weak anomaly is not apparent other than its possible importance as a bedrock feature.

The additional detailed information obtained from the recent survey indicates low resistivity patterns in the near-surface rock that appear unrelated to the deep IP response trend. These are dike-like and/or tabular zones of low resistivity material that occur within 1000' of surface. These low resistivity trends if in bedrock are interpreted as highly altered zones--whether by faulting, fracturing, weathering, intrusion, or by whatever means, is not evident to us. These zones are believed to represent a rock so destroyed as to allow a considerable amount of moisture to enter the zone and produce a relatively low resistivity (conducting) trend. The dip of these low resistivity trends is from flat lying to E'ly and vary in depth from 150'$\pm$ at the eastern edge to 500'-1000' in the center of the area surveyed. The strike of these low resistivity trends is NNE'ly.

There is no evidence that sulfide mineralization is associated with the low resistivity features, nor does it occur in the bedrock adjacent to them. We cannot say definitely that these zones do not extend to depth into the response horizon below; however, evidence strongly supports their being mainly above the IP response zone. A relationship between the low resistivity zones and the sulfide mineralization is yet to be established.

SURVEY PROCEDURE:

The induced polarization and resistivity measurements are made in the time-domain mode of operation. A conventional system of measurements which uses a time cycle of 2.0 seconds "on" and 2.0 seconds "off" - 2.0 seconds "on" and 2.0 seconds "off" (current reversed) was employed.

The commencement of the measurement of the secondary voltage is delayed by 0.45 seconds to avoid coupling and other transient effects. The integration is performed during the period from 0.45 seconds to 1.10 seconds after the cessation of current.

To conform to a standard presentation, the integral time constant is adjusted to give induced polarization readings equivalent to those obtained with transmitter cycles of 3.0 seconds "on" and 3.0 seconds "off", with integration of the secondary voltage during the first second of the "off" period.

Throughout the survey a conventional inline dipole-dipole array was used, with the dipole lengths "a" equal to 500' and 1000'. Measurements were made for dipole separation factors "n" 1 to 6. Double density data was obtained on the 1000' dipole by reading every 500'. The potential-electrodes occupied positions on both sides of the current-electrode spread. The line coverage was limited by the property boundaries and did not exceed about 7500' per line.

Apparent polarization response is in units of millivolt-seconds per volt, or milliseconds (ms), and apparent resistivity

is in units of ohmmeters. The data is plotted in quasi-section to facilitate presentation of data.

DESCRIPTION OF DATA:

LINE 1 - "a" = 500'

A low resistivity zone of 15 ohmmeters$^{\pm}$ occurs below a depth of 500'-600' centered below electrode C_7. The low resistivity zone is estimated to be at least 1000' thick. An apparent E'ly dipping trend of relatively low resistivity material of 100 ohm-meters$^{\pm}$ occurs in the vicinity of C_2 and may be part of a dike feature further to the west.

Background response of 3-5 ms occurs throughout the line with a slight increase to 7-10 ms response at depth that by itself is not considered significant.

LINE 1 - "a" = 1000'

A flat W'ly dipping low resistivity zone occurs at about 150' from surface in the vicinity of electrode C_{12} to a depth of 500'$^{\pm}$ in the vicinity of C_7, increasing rapidly to greater than 1000' off the west end of the line. We interpret the low resistivity as coming from two zones.

The anomalous IP response at depth also reflects a W'ly dip, with response increasing to 70 ms below 1500' in the vicinity of C_9-C_{10}. The response increases in depth to the west. A suggestion of a decrease in response in the vicinity of C_3-C_4

indicates 40 ms at 2000'± and likely gradationally increasing with depth.

LINE 2 - "a" = 500'

A broad low resistivity zone extends from C_9 to C_{13} and lies at a depth of 150'±. Within this zone an E'ly dipping tabular body of 15-20 ohmmeters lies centered near C_{12}. A buried dike-like resistivity low occurs at a depth of greater than 500' in the vicinity of C_6-C_7.

Background response of 2-4 ms occurs throughout the line to a depth of 1000'+, with variations of up to 8-10 ms occurring locally in the near surface material. The modest increase in response at the larger separations on the east end of the line indicates an increase in response to greater than 30 ms below about 1300'-1400'. In the west half of the line no increase is noted within the effective depth penetration of this spread.

LINE 2 - "a" = 1000'

Two distinct low resistivity bodies are shown: 1) an E'ly dipping tabular body in the vicinity of C_{11}-C_{12}, and 2) a dike or finite body at a depth of approximately 1000' centered below C_7. A low resistivity of 45 ohmmeters± is estimated for these zones within a background of 200 ohmmeters±. Below the surface, resistivities of 400-500 ohmmeters occur in a wedge-shaped layer from C_{10}, increasing in thickness to the west.

Anomalous IP response values of 45 ms occur below 1500' in the vicinity of C_{11}. The response shows a marked decrease in the vicinity of the buried low resistivity body below C_7, but continues to the west at greater depth.

LINE 3 - "a" = 500'

An irregular shaped zone of 50 ohmmeters rock occurs from C_{10} to C_{12}. The zone is likely made up of multiple bodies occurring within 100'-200' of surface. The bodies appear to dip E'ly.

Background IP response of 2-4 ms occurs throughout the area sampled, with an increase in response at depth centered below C_{11}-C_{12}. The response at depth is estimated at greater than 25 ms below 1000'-1300'.

LINE 3 - "a" = 1000'

Two prominent low resistivity zones occur on this line similar to Line 2: 1) a shallow body of 50 ohmmeters lies at a depth of 150'$\pm$ centered below C_{11} and dips E'ly, and 2) a buried dike or finite body centered below C_6 and at a depth of 1000'+. The deeper body has a variable resistivity characteristic suggesting layering, but likely over a width of less than 1500'.

Background response of 3-4 ms occurs in the surface layer throughout the line. Anomalous IP response of 55 ms occurs below 1400' in the vicinity of C_{11}-C_{12}. The response dips flat W'ly and is estimated at 2500'$\pm$ in the vicinity of C_6.

LINE 4 - "a" = 500'

A low resistivity zone of 50 ohmmeters indicates a dike-like trend about 500' wide and at a depth 150'±. The trend has a multiple dike or E'ly dipping tabular zone superimposed upon it by a second narrow zone of low resistivity rock in the vicinity of C_7-C_8.

Background response of 2-3 ms occurs throughout the line, with increasing apparent response at depth below C_{11}-C_{12}. This increase in response could reflect a minimum 35 ms response at a depth of 1000'.

LINE 4 - "a" = 1000'

Two low resistivity dike trends of about 50 ohmmeters similar to that seen on Line 3 indicate: 1) the near surface body is centered at C_{11}-C_{12}, is about 500' wide, at a depth of 150'-200' and dips E'ly, and 2) a second body is at a depth of 1000'+ centered below C_8 with a W'ly dip.

In the east half of the line background response of 3-4 ms occurs to a depth of 1000'-1200'. Below that depth an anomalous response of 34 ms occurs with a flat W'ly dip to a boundary at C_8. West of C_8 the depth to response increases rapidly. Slightly higher background response of 5-6 ms occurs west of C_{11}, reflecting a subtle change in the character of the near surface rock.

LINE 5 - "a" = 500'

Two flat easterly dipping tabular low resistivity zones occur in the east half of Line 5. The shallowest zone occurs in the vicinity of C_{10}-C_{11} at a depth of 200'$\pm$ and has a resistivity of 45 ohmmeters. The second zone at a greater depth occurs below C_8, but may have a near-surface manifestation in the vicinity of C_5-C_6.

Anomalous IP response of greater than 20 ms occurs at a depth of 1200' below background response of 3-4 ms. It appears that the low resistivity zone at depth and the anomalous response are at least partially related.

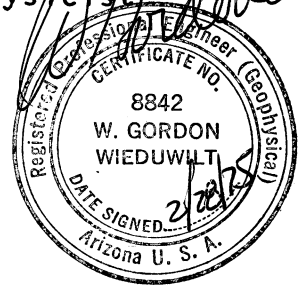
LINE 5 - "a" = 1000'

A near-surface low resistivity zone 500'-1000' wide occurs in the vicinity of C_{10}-C_{11}. The E'ly dip is not apparent at the larger dipole, although the resistivity decreases to the east. The second low resistivity trend at depth has faded out or occurs at greater than 3000'.

Anomalous IP response of 25 ms$\pm$ occurs at a depth of 1000'+ in the vicinity of C_9-C_{10}. Slightly higher values of 10-15 ms at 500'-1000' are centered about C_{12}-C_{13} and reflect the continuing strike of shallow response as seen on the previous four lines. The apparent offset in response to the west at depth on this line may be a reflection of W'ly dip.

Respectfully submitted,

W. Gordon Wieduwilt
Geophysicist



February 28, 1975

Tucson, Arizona

TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

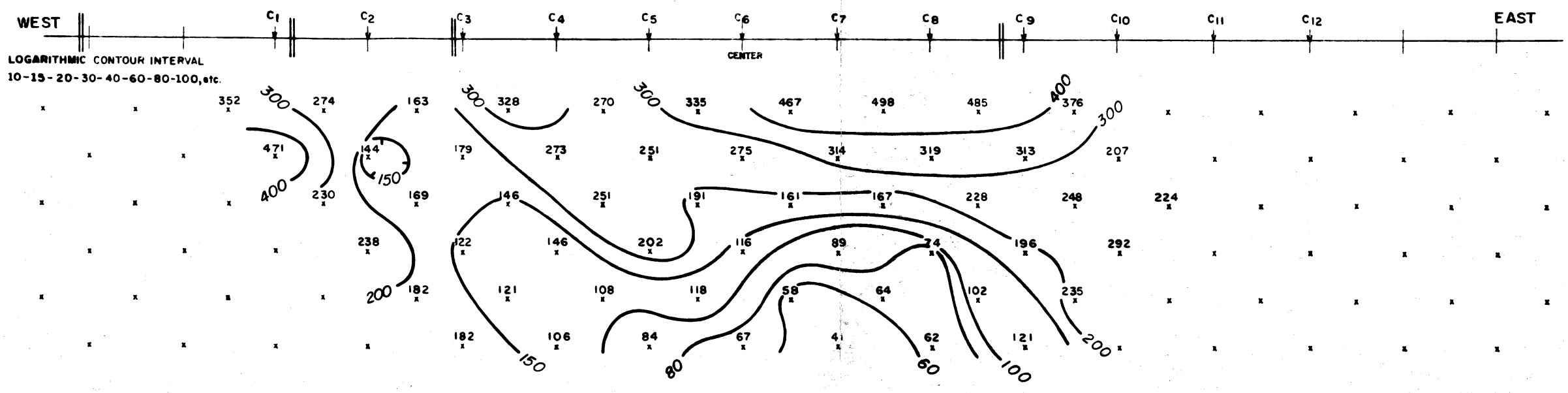
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

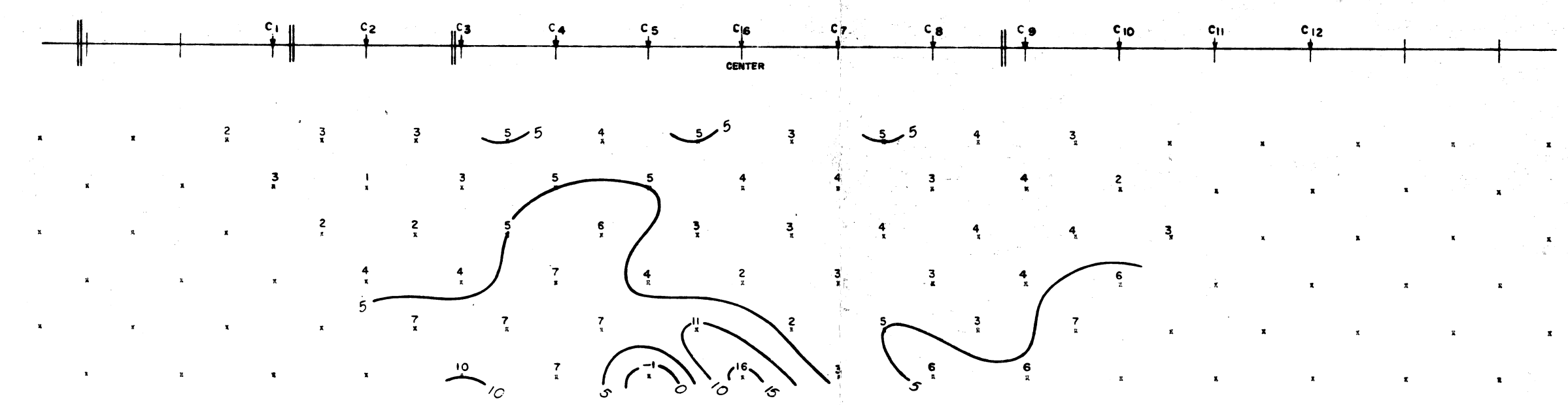
APPARENT RESISTIVITY

ohm meters

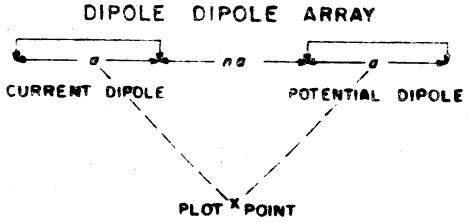


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE. 1

LOOKING: . . . . NE

DIPOLE LENGTH: . . . 500'

DATE JAN. 30/1975

LEGEND

FENCE. x

PIPELINE . . . . ◊

POWERLINE . . . T

ROAD, RR. ═══+++

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

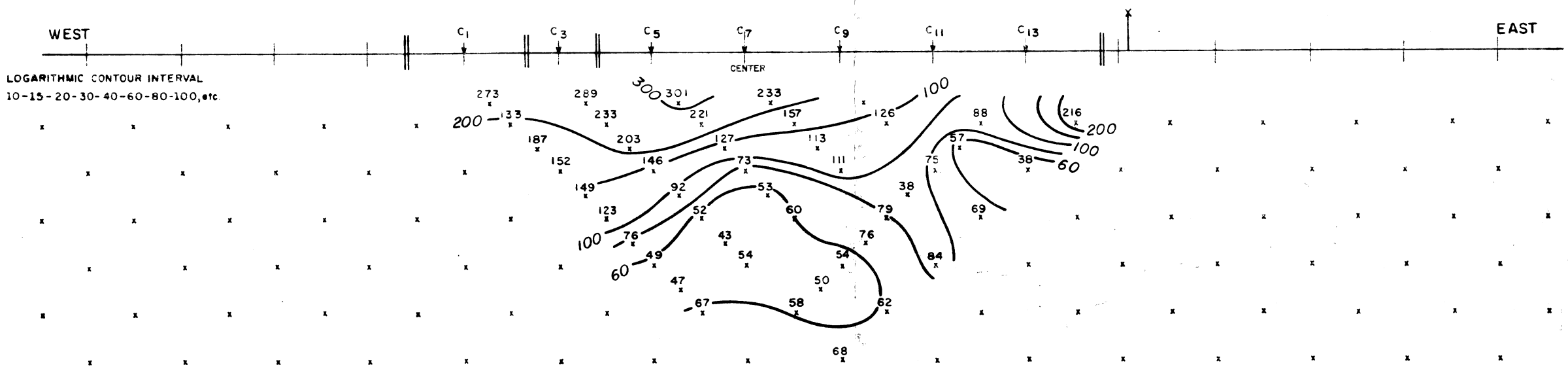
SAFFORD PROJECT – GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL, INC.

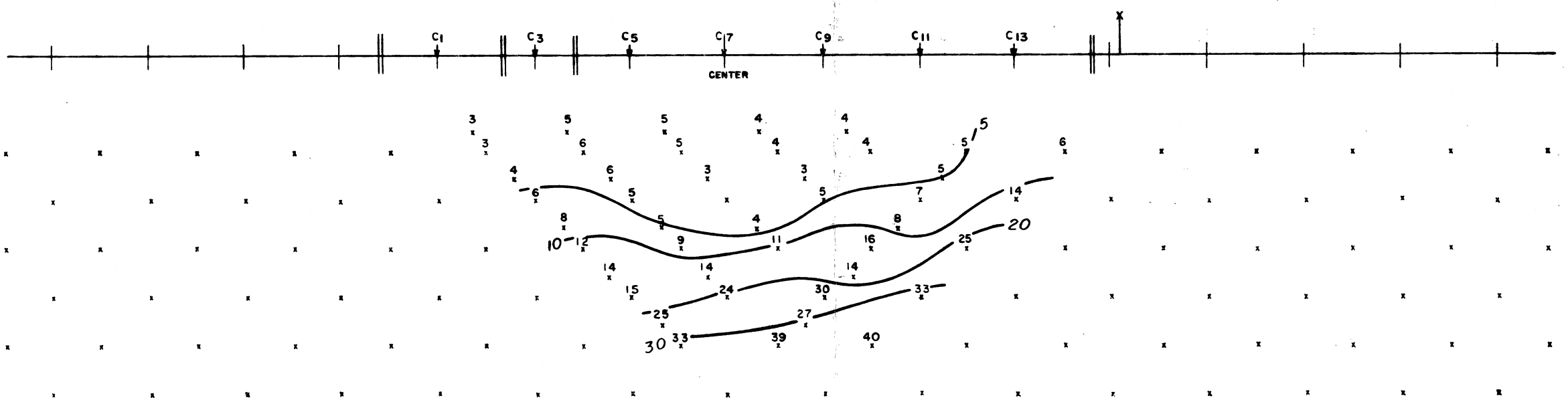
APPARENT RESISTIVITY

ohm meters

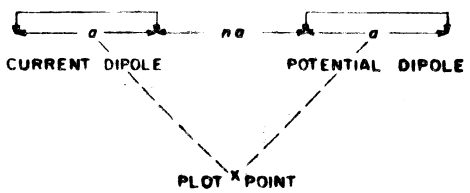


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 1

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . 1000'

DATE: JAN. 31 /1975

LEGEND

FENCE X

PIPELINE . . . . . O

POWERLINE . . . . T

ROAD, RR. ═══

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

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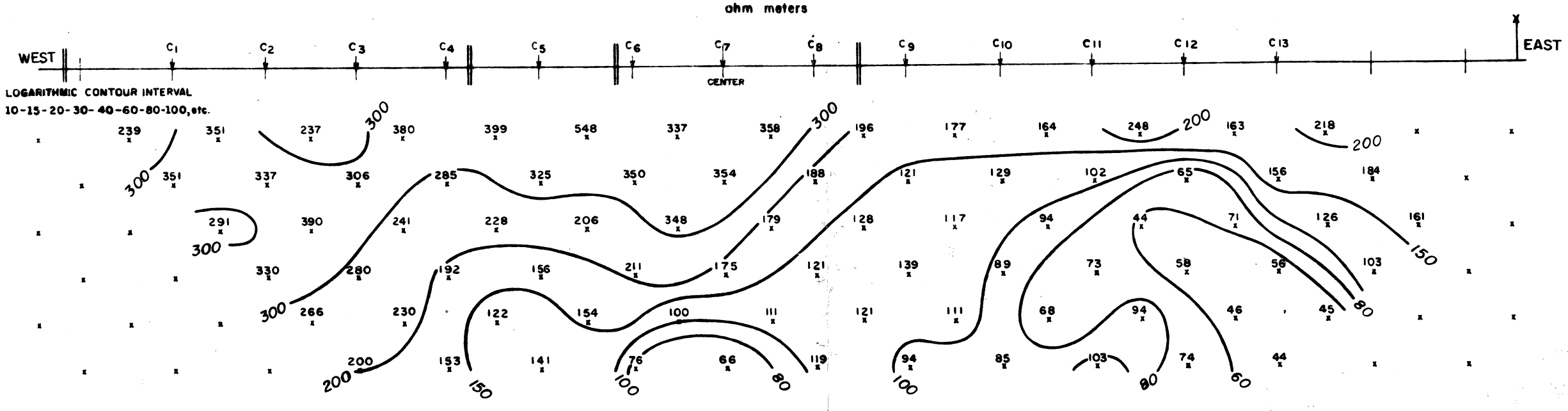
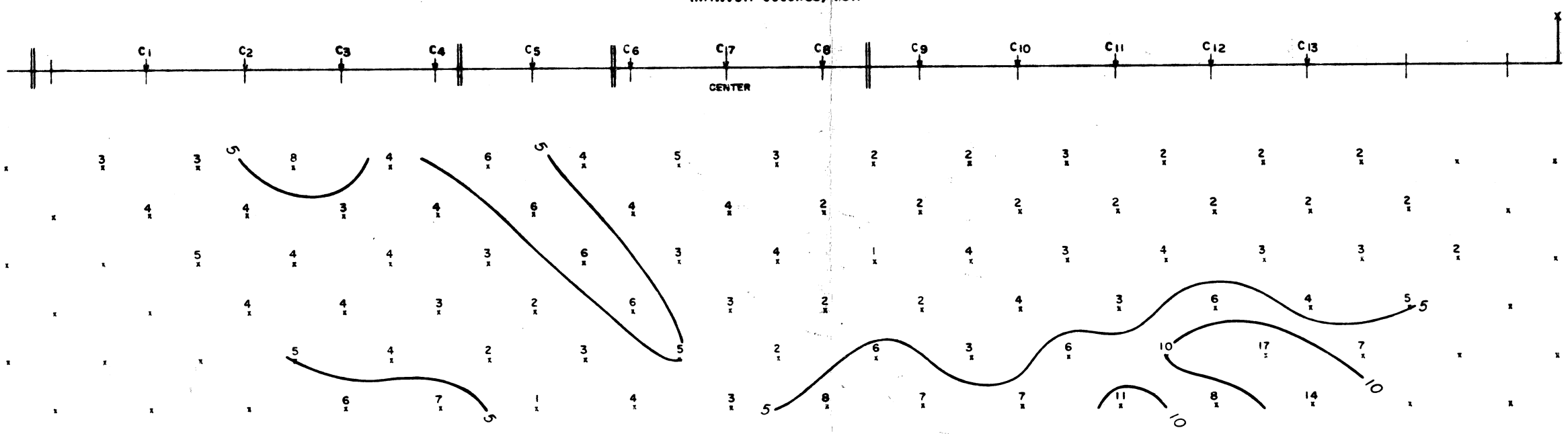
APPARENT RESISTIVITY

ohm meters



APPARENT POLARIZATION

millivolt seconds/volt



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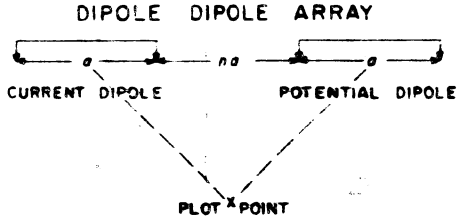

LINE: 2

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . . 500'

DATE: FEB 3/1975

LEGEND

FENCE X

PIPELINE . . . . . O

POWERLINE . . . . T

ROAD, RR. ═══ ╫╫

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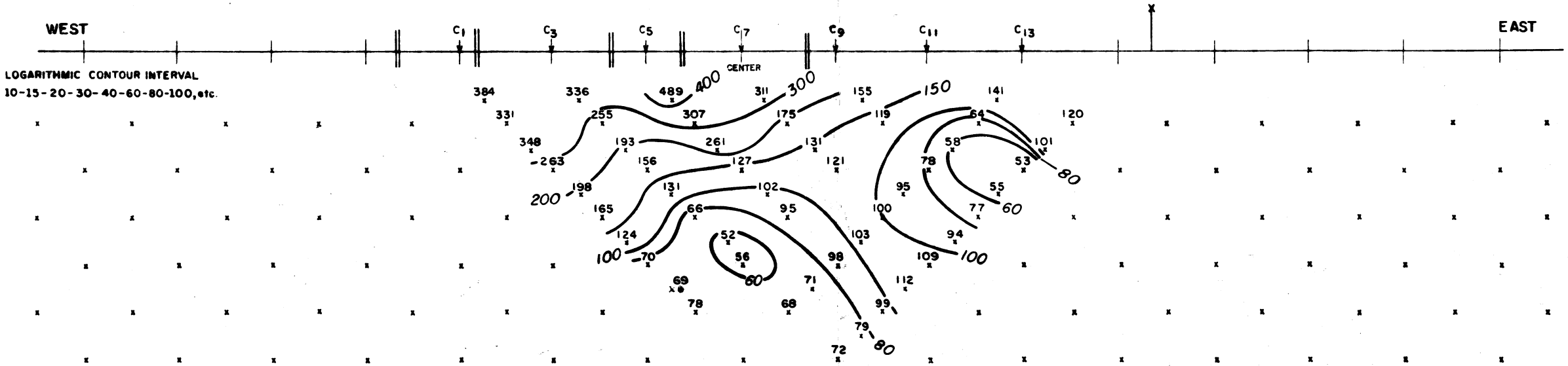
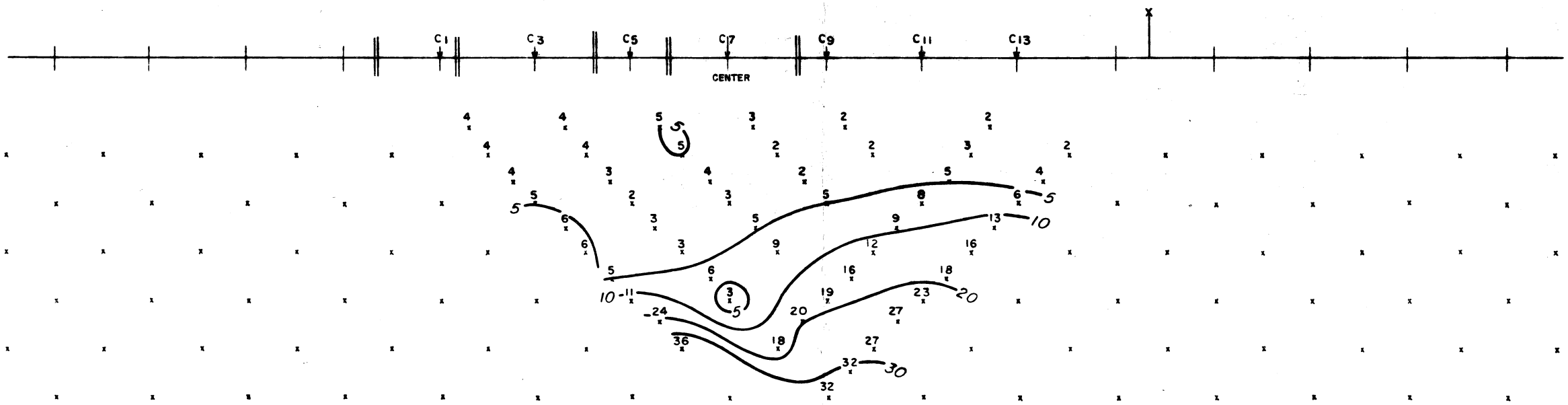
APPARENT RESISTIVITY

ohm meters



APPARENT POLARIZATION

millivolt seconds/volt



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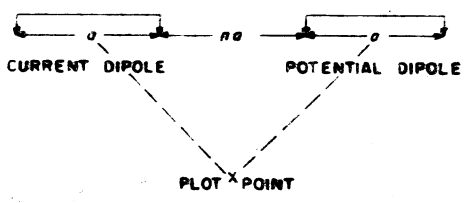

LINE: 2

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . . 1000'

DATE: JAN. 3/ 1975

LEGEND

FENCE. x

PIPELINE . . . . . ◊

POWERLINE . . . . . T

ROAD, RR. ═══ +++

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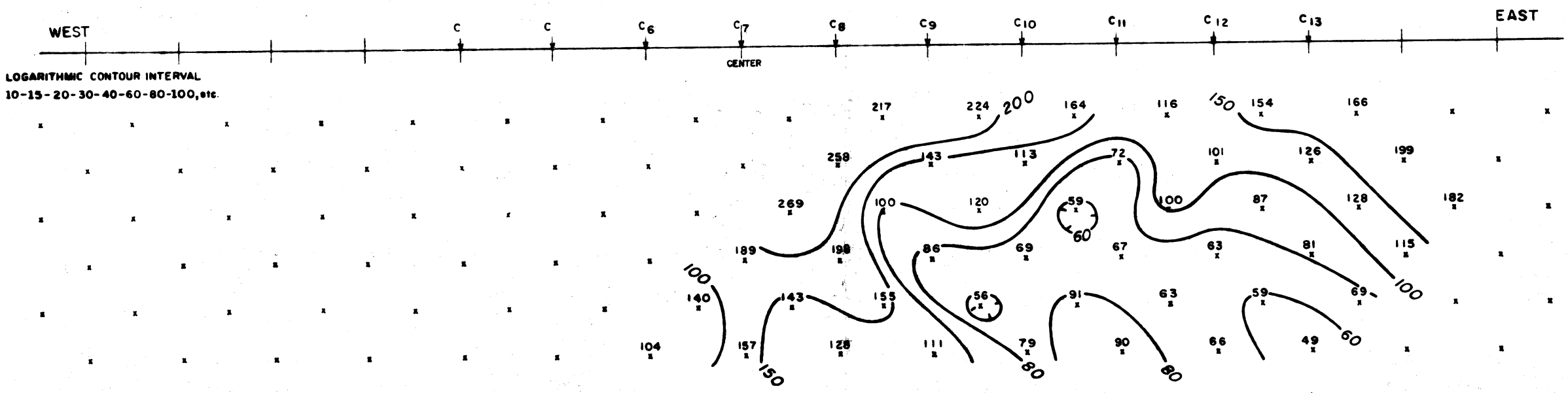
ESSEX INTERNATIONAL, INC.

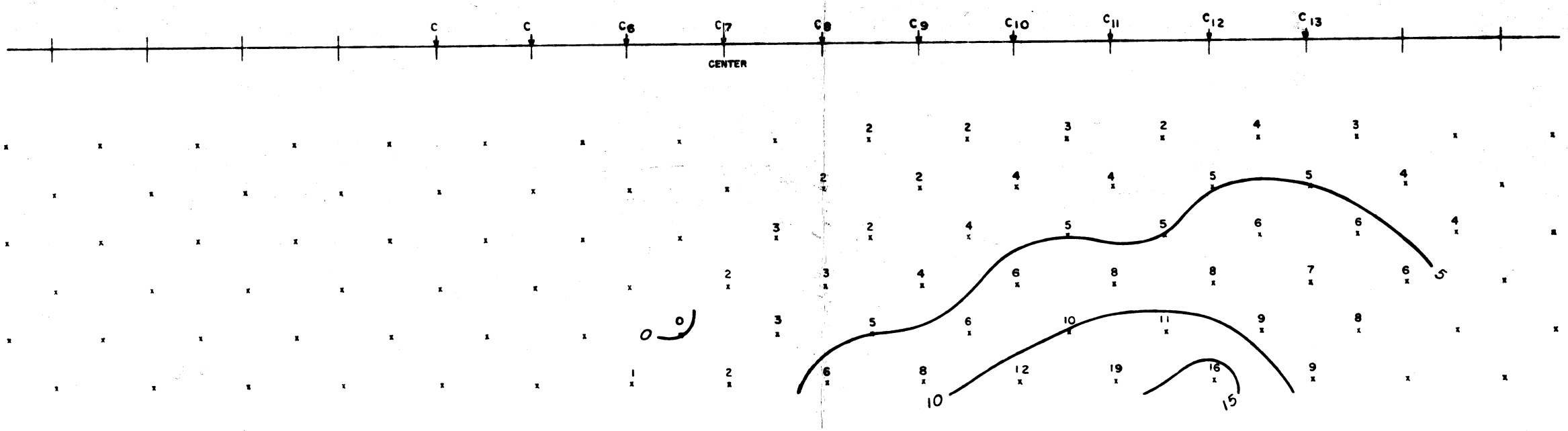
APPARENT RESISTIVITY

ohm meters

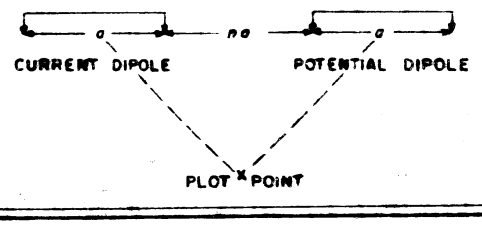


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE 3

LOOKING . . . . . NE

DIPOLE LENGTH . . . . 500'

DATE: FEB. 9/1975

LEGEND

FENCE X

PIPELINE . . . . . O

POWERLINE . . . . T

ROAD, RR. ═══ ╫╫╫

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

SAFFORD PROJECT - GRAHAM COUNTY, ARIZONA

FOR

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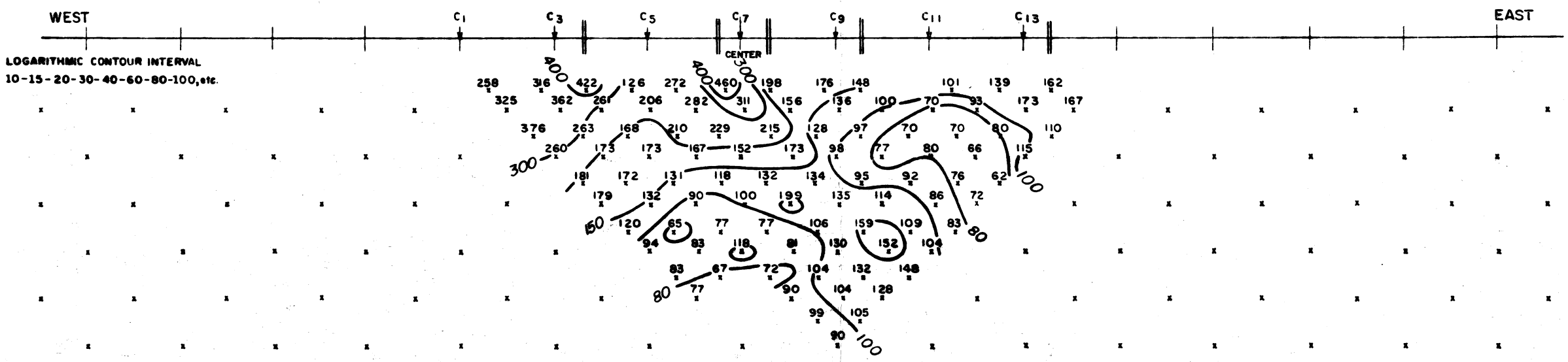
APPARENT RESISTIVITY

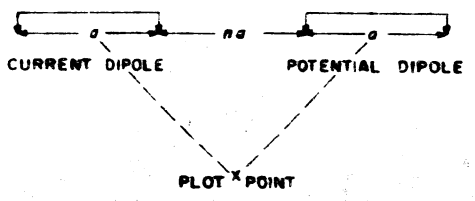
ohm meters



APPARENT POLARIZATION

millivolt seconds/volt

DIPOLE DIPOLE ARRAY



LINE: 3

LOOKING: . . . . . NE

DIPOLE LENGTH: . . . . . 1000'

DATE: FEB. 9/1975

LEGEND

FENCE X

PIPELINE . . . . . ϕ

POWERLINE . . . . . T

ROAD, RR. ═══+++

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TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

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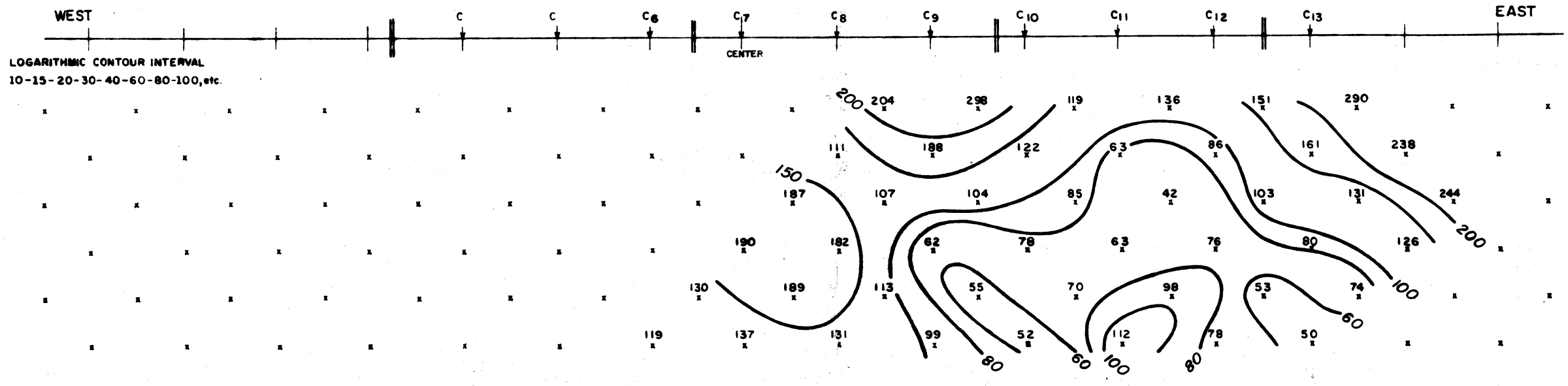
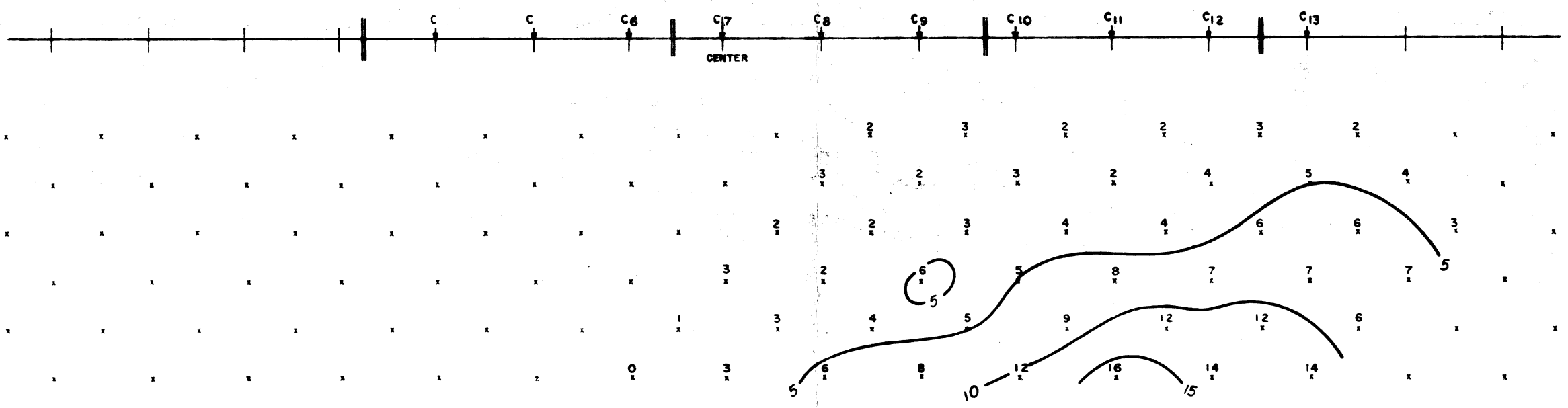
APPARENT RESISTIVITY

ohm meters

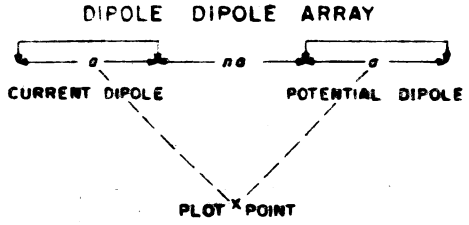


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 4

LOOKING . . . . . NE

DIPOLE LENGTH: . . . . 500'

DATE: FEB. 13/1975

LEGEND

FENCE x

PIPELINE . . . . . ◊

POWERLINE . . . . T

ROAD, RR. ═══╪═══

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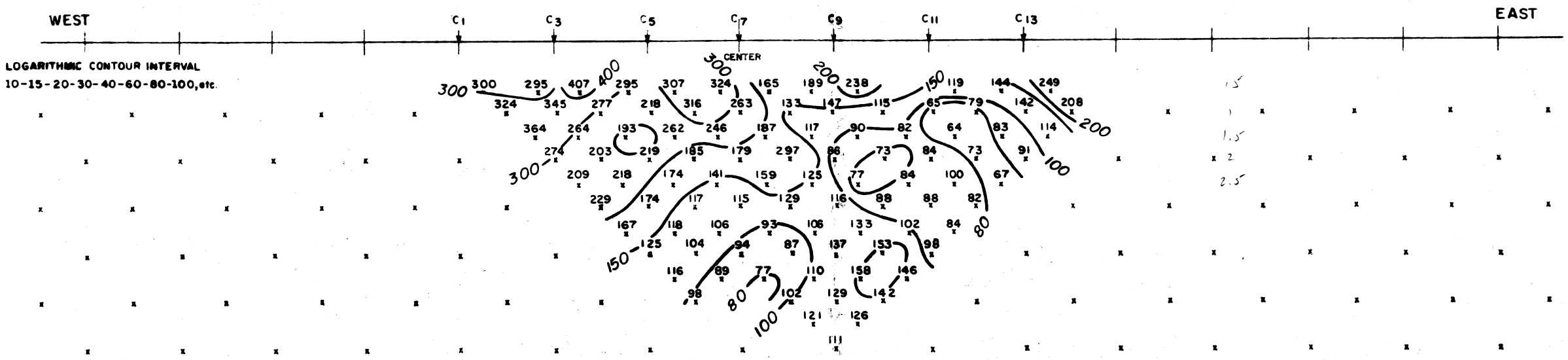
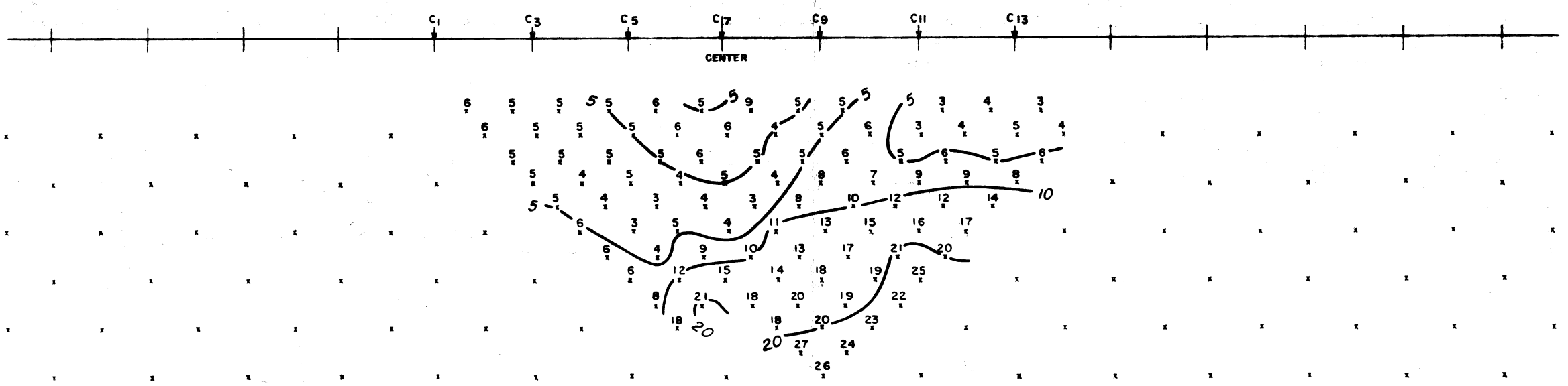
APPARENT RESISTIVITY

ohm meters

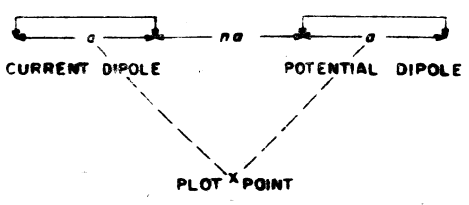


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE. 4

LOOKING. . . . . NE

DIPOLE LENGTH. . . . 1000'

DATE: FEB. 13/1975

LEGEND

FENCE. X

PIPELINE . . . . . O

POWERLINE . . . . T

ROAD, RR. ═══╪══

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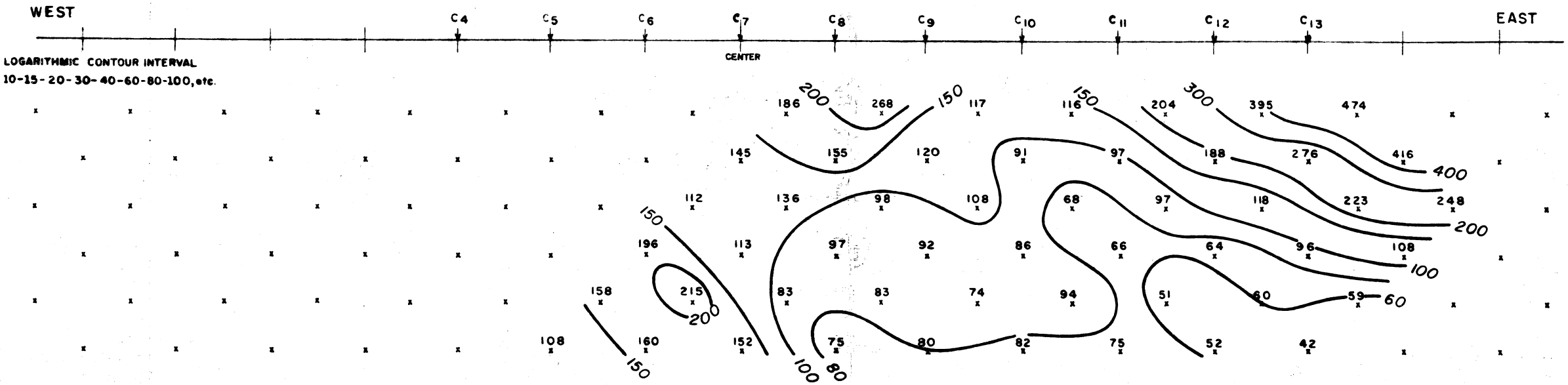
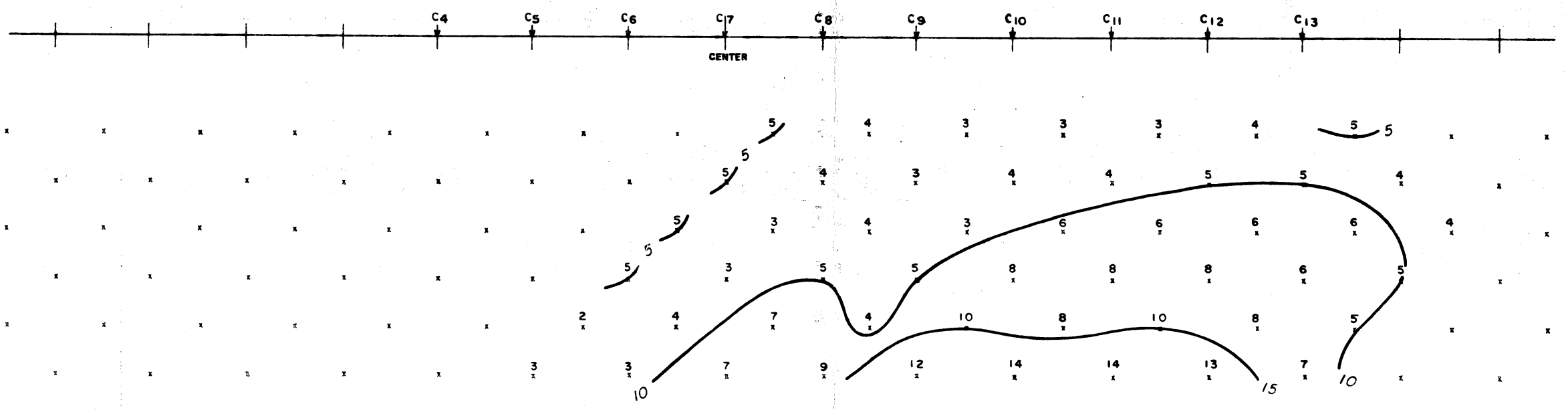
APPARENT RESISTIVITY

ohm meters

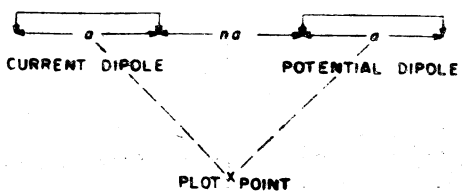


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 5

LOOKING . . . NORTH

DIPOLE LENGTH: . . . . 500'

DATE: FEB. 15-16/1975

LEGEND

FENCE. x

PIPELINE . . . . . o

POWERLINE. . . . T

ROAD, RR. ═══ +++

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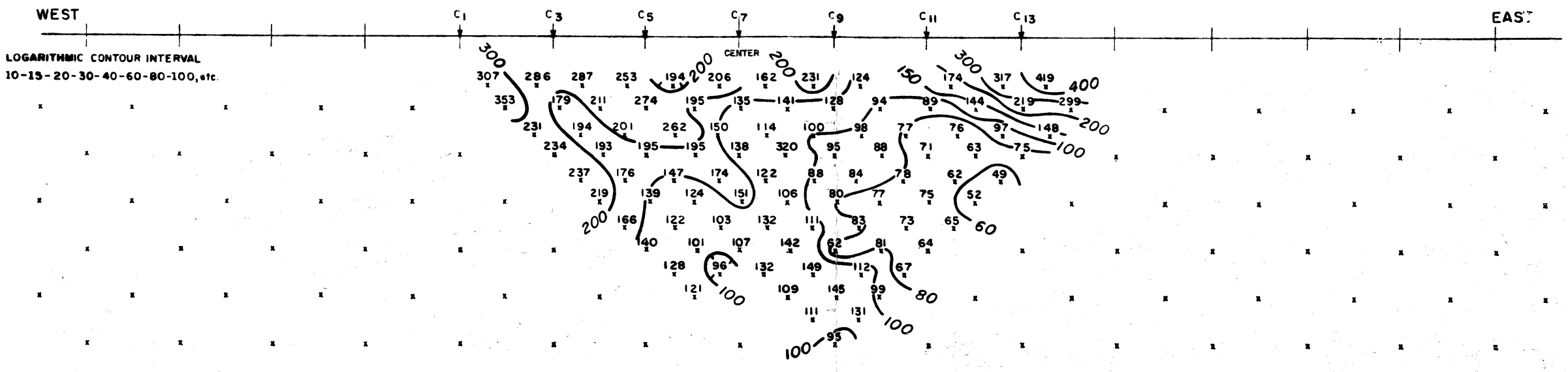
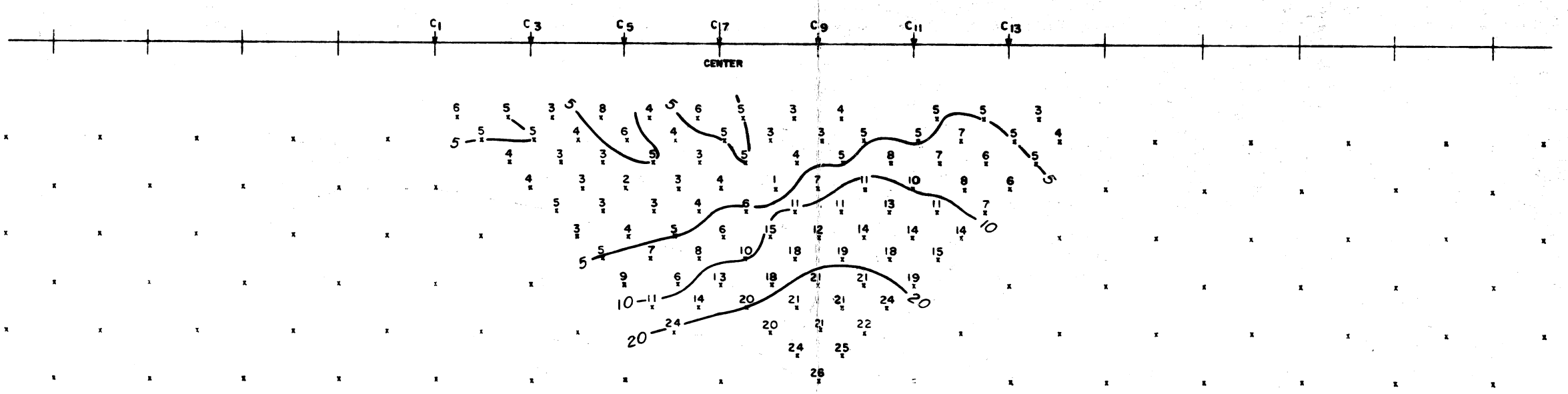
APPARENT RESISTIVITY

ohm meters

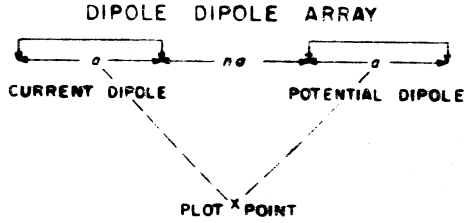


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE: 5

LOOKING . . . NORTH

DIPOLE LENGTH: . . . . . 1000'

DATE: FEB. 15-16 / 1975

LEGEND

FENCE x

PIPELINE . . . . . o

POWERLINE . . . . . T

ROAD, RR. ═══ +++

mining geophysical surveys

M.G.S. 0505

GEOPHYSICAL PLAN MAP
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Original set of maps have been colored to identify certain features:

IP RESPONSE

The 10 ms contour value is shaded red towards increasing response. Data from both the 500' ('75) and 1000' ('72) has been used to show these areas of relatively shallow response. The red hatched zone outlines the area of shallowest response.

RESISTIVITY TRENDS

Yellow and orange along dot-dashed lines mark zones of low resistivity material.

The yellow indicates zones that occur within 500' of surface.

The orange indicates zones that occur at 500' or greater.

March 1, 1975

Project 0505

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LINE 1-'75

LINE 2-'75

LINE 3-'75

LINE 4-'75

LINE 5-'75

SHALLOW LOW ∫ TRENDS

I.P. RESPONSE APPEARS LAYERED 40 ms AT 2000' GRADATIONALLY INCREASING WITH DEPTH

DEEP LOW ∫ TREND 500'±

DEEP

SHALLOW

SHALLOW LOW ∫ TREND 150' DEEP DIKE OR TABULAR 600'± WIDE

RESPONSE OF 45-70 ms AT 1500'

RESPONSE OF 45-50 ms AT 1500'

RESPONSE OF 55 ms AT 1400'

RESPONSE OF 50-55 ms AT 1400'±

RESPONSE OF 25 ms AT 1000'

RESPONSE OF 10-15 ms AT 500'-1000'

DEEP LOW ∫ TREND 1000'±

SHALLOW LOW ∫ TREND 200'±

RESPONSE VALUES AT n=5, a=500'

RESPONSE VALUES AT n=3, a=1000'

LINE 5-'72

LINE 6-'72

LINE 3-'72

LINE 4-'72

N

SCALE 1" = 500'

GEOPHYSICAL PLAN MAP

SAFFORD PROJECT

GRAHAM COUNTY, ARIZONA

FOR

ESSEX INTERNATIONAL INC.

BY

mining
geophysical surveys

Registered Professional Engineer (Geophysicist)
CERTIFICATE NO.
8842
W. GORDON
WIEDUWILT
DATE SIGNED
3/1/75
Arizona U. S. A.

0327-0505