CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
416 W. Congress St., Suite 100
Tucson, Arizona 85701
520-770-3500
http://www.azgs.az.gov
inquiries@azgs.az.gov

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James Doyle Sell Mining Collection

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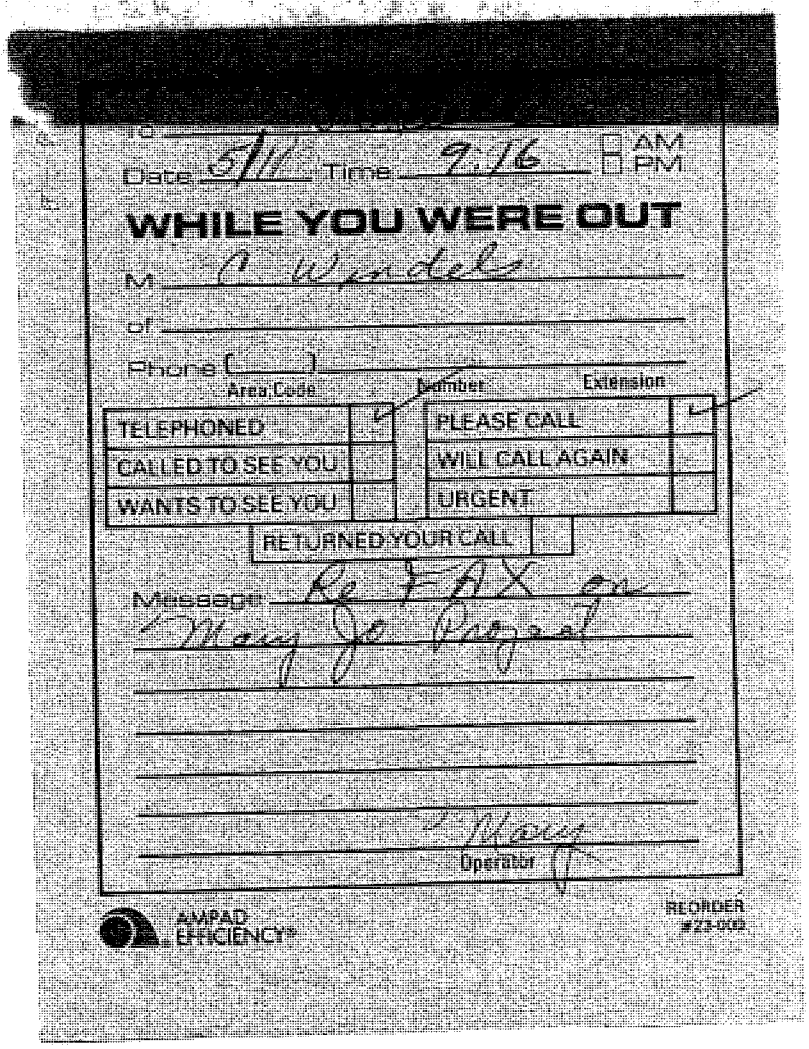


To

Date 5/11 Time 9:16 ☐ AM ☐ PM

WHILE YOU WERE OUT

M C Wardell

of

Phone ( ) —
Area Code Number Extension

TELEPHONED	☐	PLEASE CALL	☐
CALLED TO SEE YOU	☐	WILL CALL AGAIN	☐
WANTS TO SEE YOU	☐	URGENT	☐
RETURNED YOUR CALL	☐		

Message Re FAX on
Mary Jo Project

Operator

AMPAD EFFICIENCY®

REORDER #23-008

ASARCO Incorporated

DENVER EXPLORATION OFFICE

FACSIMILE TRANSMISSION

PLEASE DELIVER THE FOLLOWING PAGE(S) TO: Jim Sell

LOCATION: Tucson **DATE:** 5.11.92

FACSIMILE NO.: **TIME:** 10

SENT BY: CARL O. WINDELS
MANAGER
GEOPHYSICS AND TECHNOLOGY

MESSAGES:

5/12/92

Called Lowell & said I'd not participate at this time. 100' spacing is needed for interpretation

Hg-bugs are ?? in area.

He will talk w/ John Summers & get back to me.

ASARCO

MAY 1 1 1992

SW EXPLORATION

TOTAL NUMBER OF PAGES INCLUDING COVER PAGE 2

IF YOU DID NOT RECEIVE ALL PAGES, PLEASE CALL (303) 986-0882

ASARCO Incorporated
274 UNION BOULEVARD • SUITE 450 • LAKEWOOD, COLORADO 80228
PHONE: (303) 986-0882 FAX: (303) 986-0775

ASARCO

Exploration Department

May 11, 1992

TO: Jim Sell

FROM: C. O. Windels

Mary Joe Project
Pinal County, Arizona

There is no support for the shallow 100-300 foot target area located in the SW¼ Section 31 as shown by K. C. Coryell.

Dipole "a" spacings of 1,000 to 1,300 feet do not permit depth estimates or interpretations as shallow as 100 feet without additional detail in the area of interest (100-200 foot dipoles).

Mr. Coryell must be basing his structural and depth interpretation on other data not yet received by ASARCO.

Carl O. Windels

COW/car

Kerby Coryell 4-9-92

1270 Oct 91

density
2.5

65 claims in Sec 31 ~~T6~~ claims 39 (?)

&

State

3% roy on claim
1½ on State

25K on signing

50 net year — 2/3

1324
1170

JDS

ASARCO

Southwestern Exploration Division

April 27, 1992

Superior, East Area

C.O. Windels
Denver Office

Mary Joe Project
Pinal County, AZ

Please review the IP data, etc. and render an opinion as to the probability of bedrock at 100'-300' as he has suggested.

Coryell believes the earlier report shows the thick conglomerate response which is not on the second report lines.

However -- the fault (lineament) he shows on the foldout topo map and depth figures with KCC drill hole, does NOT exist, so I can't believe his cross-section A-A' for a down-dropped block is correct.

Help!

James D. Sell/mek

JDS:mek

James D. Sell

cc: W.L. Kurtz

ASARCO Incorporated

APR 3 0 1992

SW Exploration

4-28-92 JDS

Tim,

Received your package, thank you.

When I looked at the core of the Kennecott hole I was most impressed by the weight of the boxes, took samples for density determinations. Just received the results, enclosed. I have done considerable gravity work in dacite areas & as I recall the densities were around 2.3, confirmed by USGS work (PP342, p40) by which they got:

dacite	233'	above vitrophyre	2.26
"	158'	" "	2.23
"	108'	" "	2.38
"	58'	" "	2.26
"	10	" "	2.41
Vitrophyre			2.47

The core boxes I looked at suggested a massive block of dacite, fractures rare, without features suggesting successive eruptions, 100% core recovery. I enclose the comments of the Kennecott geologist. The core is in Tucson should you like to look at it.

The only plausible explanation to me is a deep graben (and closed) at the time of initial dacite eruption. While this may at first smack of wishful thinking ; it would be required for Elliots' IP interpretation as there is no visible strong faulting ~~bounding~~ in the dacite bounding the graben on the west.

I do have to think such a small closed basin could have some good copper values due to pre-dacite leaching of the area to the west & possibly the north.

Kirby

ELLIOT GEOPHYSICAL CO., INC.

3865 E. 34th STREET, SUITE 106 • TUCSON, ARIZONA 85713 • TEL. (602) 747-7448

April 27, 1992 REF. CY20P

Kirby C. Coryell
OLD FARM APTS #1209
6161 E. GRANT RD.
TUCSON, AZ 85712

Dear Kirby:

RE: Physical Property Laboratory Determinations
Julia Claims Project

The 2 samples that were received on 4-2-92 and 4 samples received on 4-25-92 have been run in the physical property laboratory of ELLIOT GEOPHYSICAL CO., INC. to determine the requested physical properties. The following physical property methods were run:

-Wet Bulk Density

The physical property procedures were performed following conventional techniques of laboratory analysis and are described in the attachments. The resulting data with the specific parameters and units employed are:

DEPTH feet	DENSITY gms/cc
88	2.33
251	2.35
587	2.56
837	2.52
1202	2.54
1240	2.55

The samples are being held in the laboratory for pick up.

Sincerely yours,

ELLIOT GEOPHYSICAL CO., INC.

Charles L. Elliot

Charles L. Elliot, Pres.

Registered Professional Engineer (Geophysics) CERTIFICATE NO. 6877 CHARLES L. ELLIOT Date Signed 4-27-92 Arizona U.S.A.

ATTACHMENTS: Physical Property Procedures

ENCL: Invoice

Kennecott Exploration Company
1515 East 100 South
P.O. Box 11248
Salt Lake City, Utah 84147
(801) 322-7000
FAX (801) 583-3129

Kennecott

12/91

- Hole MS-1 was cored from surface to a depth of 1270'. The hole was collared to test for a possible deep (but noisy) IP response with a possible leach zone above it. (as modelled by Kennecott).
- Hole MS-1 cut nothing but Apache Leap dacite all the way down. Absolutely no alteration of any kind was seen. The rock is as fresh as a babies bottom - Not even exotic limonites on fractures.
- The IP anomaly remains unexplained. No further work can be justified at these depths.
- Skeleton core will be stored in the SLC core shack.

Sincerely,

JDS

INDUCED POLARIZATION AND

RESISTIVITY SURVEY

MARY JO PROJECT

PINAL COUNTY, ARIZONA

FOR

MARY JO PROPERTIES, LTD.

PROJECT 0501

mining
geophysical surveys

TABLE OF CONTENTS

ACCOMPANYING THIS REPORT:

1 PROFILE

1 PLAN MAP

DISTRIBUTION:

Original & 2 copies: Kirby C. Coryell, Tucson

INDUCED POLARIZATION AND
RESISTIVITY SURVEY
MARY JO PROJECT
PINAL COUNTY, ARIZONA
FOR
MARY JO PROPERTIES, LTD.

SUMMARY:

The dacite and Whitetail formation appear to be in excess of 3000' thick in the area of the reconnaissance line. It appears the 2000' dipole did not provide adequate penetration to study the electrical properties of bedrock. Variable background IP response of 2-10 milliseconds occurs throughout Line 1 and is indicative of barren rock material. South of electrode C_5 the dacite is 2000' in depth and overlies the Whitetail formation which extends a minimum of 2000' below the dacite. The higher resistivity at depth to the north suggests an increasing thickness of dacite. Calculated true resistivities of the dacite are 50 ohmmeters and the Whitetail formation, 5 ohmmeters. A high resistivity layer of greater than 100 ohmmeters is interpreted to occur below 4000'. It is doubtful that repeatable IP data was collected to this depth.

INTRODUCTION:

An induced polarization and resistivity survey was conducted on the titled property during the period of January 13 through January 19, 1975. The field work for this survey was under the

direction of Adam L. Sotelo, technician for Mining Geophysical Surveys. The interpretation and report were carried out by Phillip A. Walen and W. Gordon Wieduwilt, geophysicists for MGS.

The survey was conducted in an attempt to delineate trends of anomalous response in bedrock underlying the dacite and Whitetail formation. One reconnaissance line was used to test the area of interest.

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 current electrodes was used, with the dipole length "a" equal to 2000'. Measurements were made for dipole separation factors "n" 1 to 6. The potential-electrodes occupied positions on both sides of the current-electrode spread, thereby providing a line coverage of approximately nine times the dipole length for a standard line of seven electrodes.

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.

DISCUSSION AND INTERPRETATION OF DATA:

LINE 1

Apparent polarization values of 2-10 ms occur across the entire traverse of Line 1 and are typical of background or barren rock response. At low signal levels extreme noise from natural earth currents and/or culture was encountered. The noise tends to mask the received IP signal and is common at large electrode spacings in a low resistivity environment. Repeated data points for "n" values of 3 and 4 below electrode C_4 suggest the IP measurements have a minimum accuracy of $\pm$3 ms. A few scattered measurements of 13-16 ms at the south end of the line are most likely attributable to erratic noise.

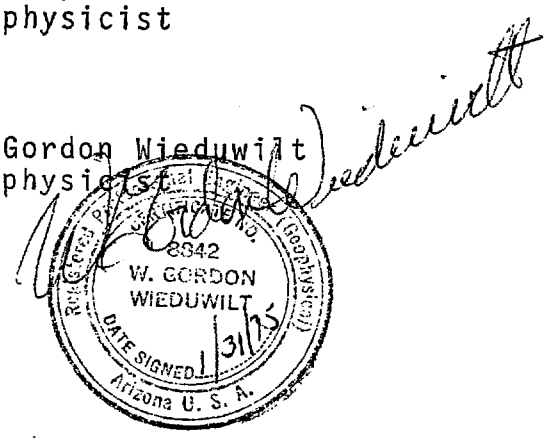
South of C_5 2000' of dacite with a calculated resistivity of 50 ohmmeters$^{\pm}$ is interpreted to overlie the Whitetail formation. Calculated resistivities of the dacite range from 50-60 ohmmeters. The Whitetail has a resistivity of 5 ohmmeters and extends to 2000' below the dacite. Increasing resistivity with depth suggests a third layer of high resistivity material likely greater than 100 ohmmeters below 4000'. The increase in resistivity to the north of C_5 is interpreted to be a result of increasing thickness of the dacite, or high resistivity material below the dacite or adjacent to the line. Low resistivity of 5 ohmmeters off the south end of the line reflect a resistivity contact near surface in the area 3000' south of C_1 and separate the dacite from the outcropping lower resistivity Whitetail to the south. The low resistivity values could also reflect interference from a near surface source such as fence, pipe or power line.

Respectfully submitted,

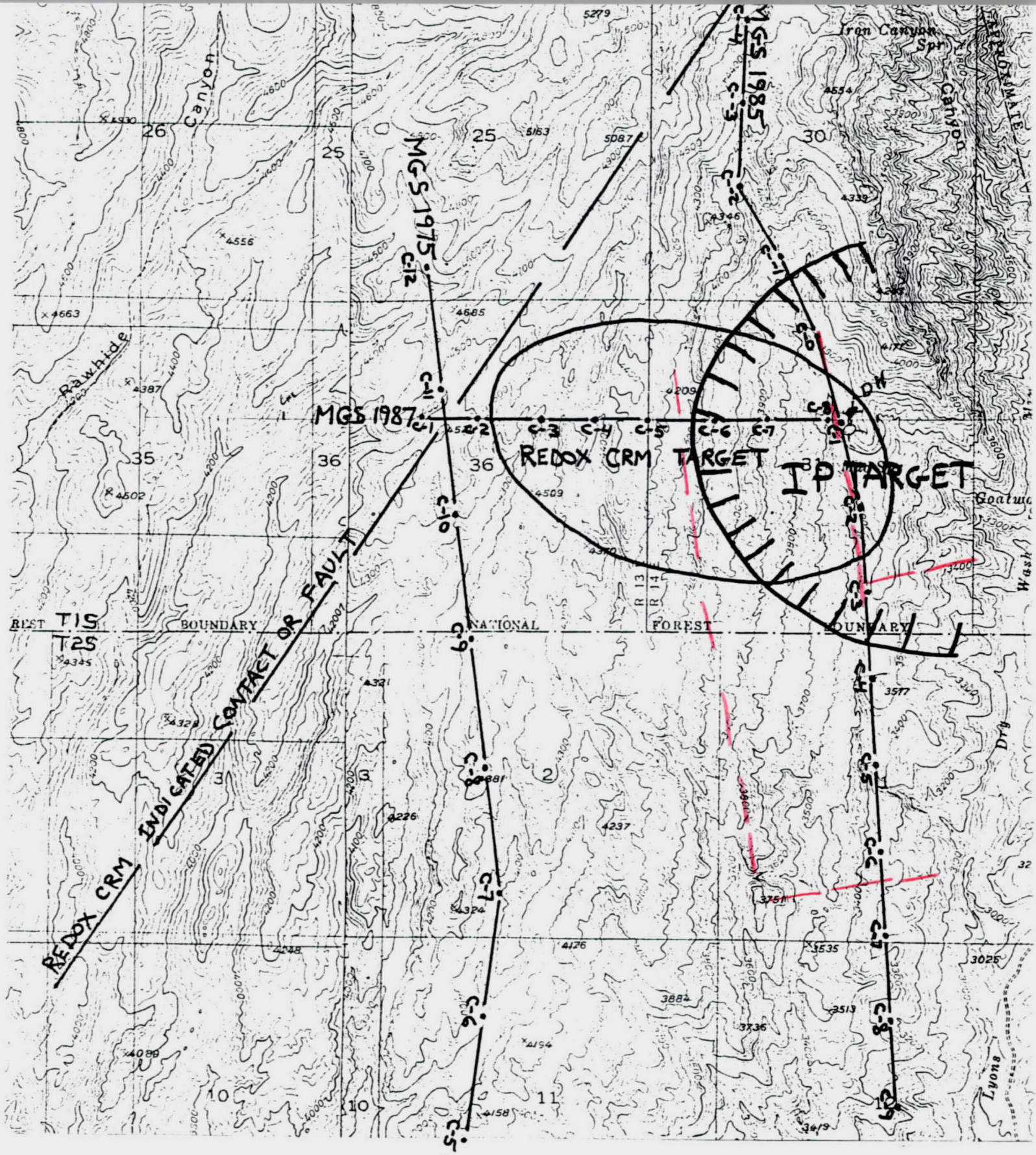
P. A. Walen/mm

Phillip A. Walen
Geophysicist

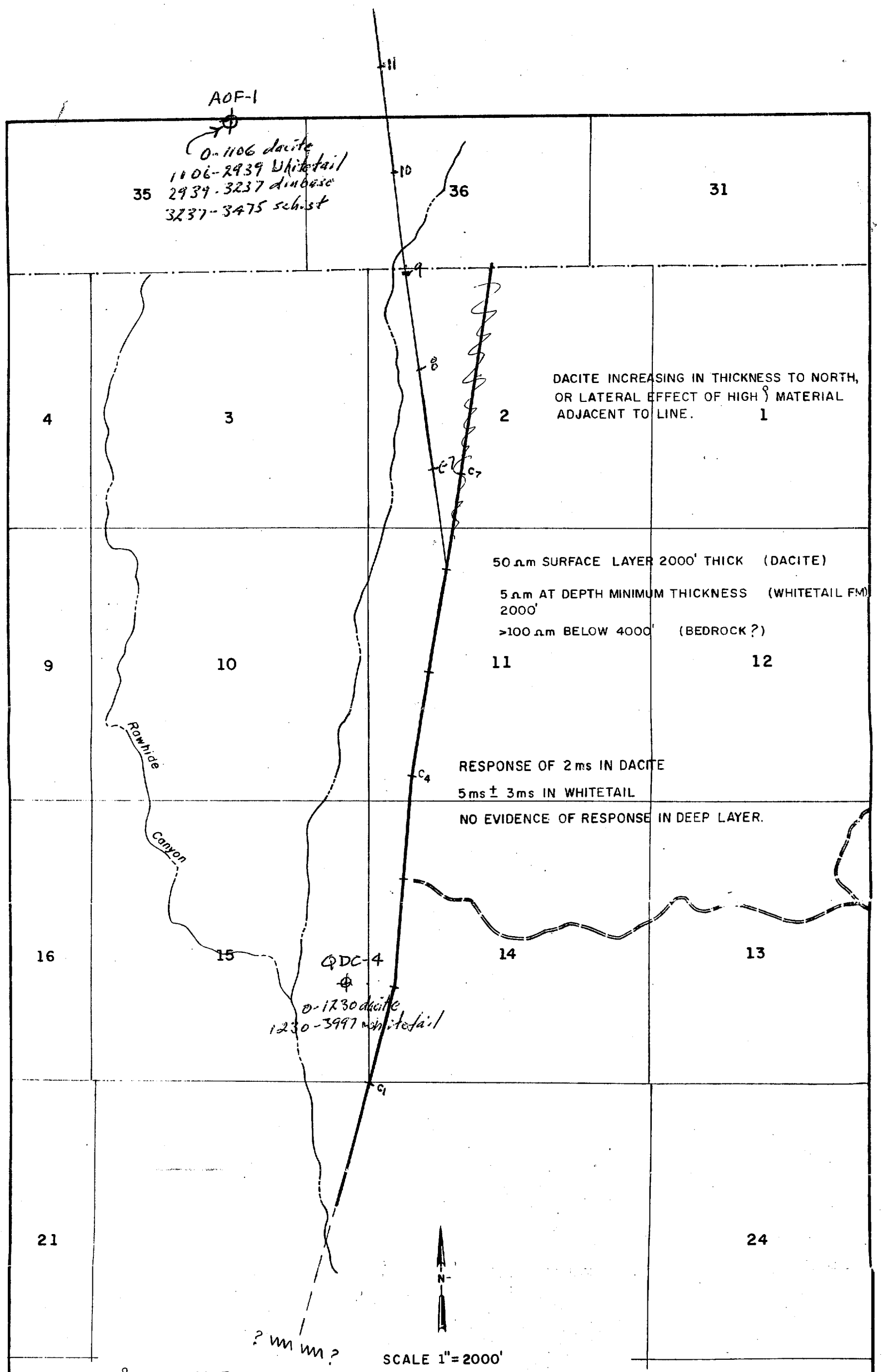
W. Gordon Wieduwilt
Geophysicist



January 31, 1975
Tucson, Arizona



SUMMARY OF
GEOPHYSICS
JULIA CLAIMS
CY07E 5-3-91



SCALE 1"=2000'

ρ ≈ 5 Ωm SOUTH OF CONTACT COULD BE INTERFERENCE (CULTURE?) OR WHITETAIL FM.

I.P. and RESISTIVITY SURVEY LOCATION MAP

MARY JO PROJECT

PINAL COUNTY, ARIZONA

for

MARY JO PROPERTIES LTD.

by

mining geophysical surveys

Registered Professional Engineer (Geophysical)
CERTIFICATE NO. 8842
W. GORDON WIEDUWILT
DATE SIGNED 1/31/78
Arizona U. S. A.

TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

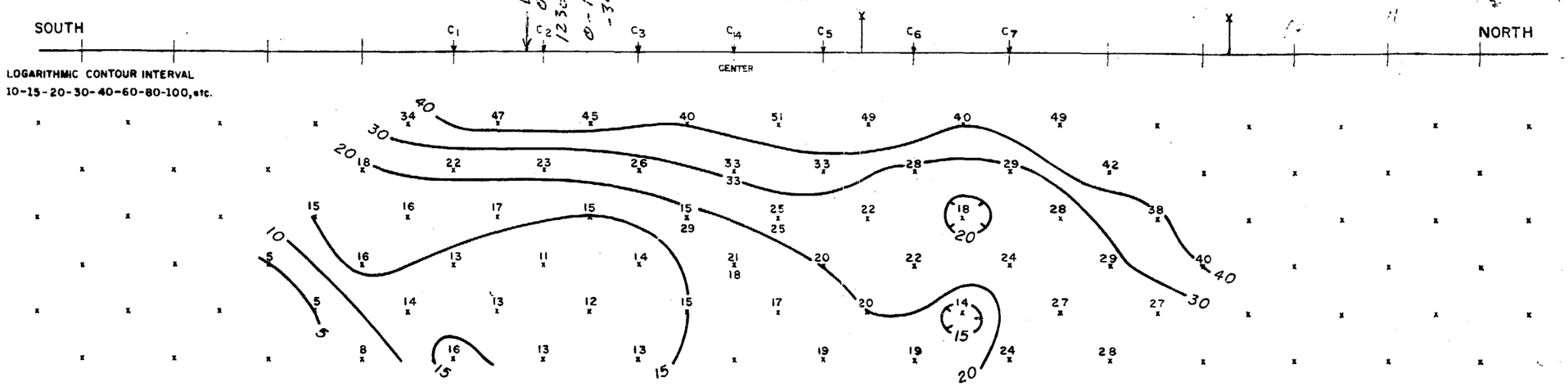
MARY JO PROJECT—PINAL COUNTY, ARIZONA

FOR

MARY JO PROPERTIES LTD.

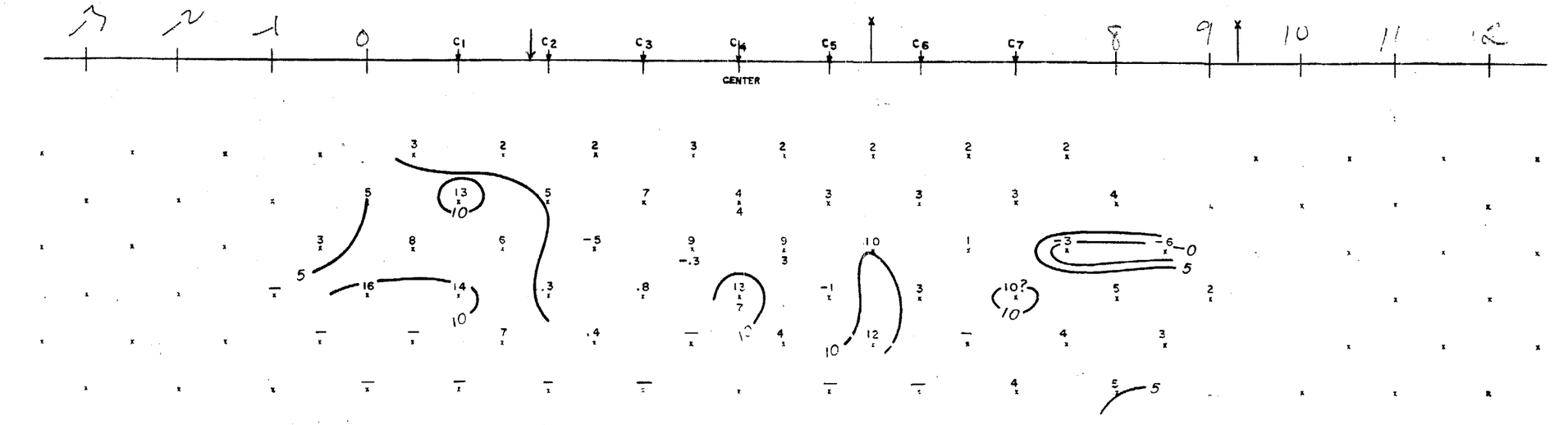
APPARENT RESISTIVITY

ohm meters

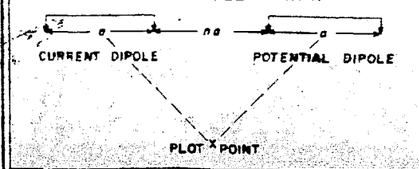


APPARENT POLARIZATION

millivolt seconds/volt



DIPOLE DIPOLE ARRAY



LINE. 1

LOOKING . . . WEST

DIPOLE LENGTH. . . . 2000'

DATE JAN. 18/1974

LEGEND

FENCE. . .

PIPELINE . . . .

POWERLINE

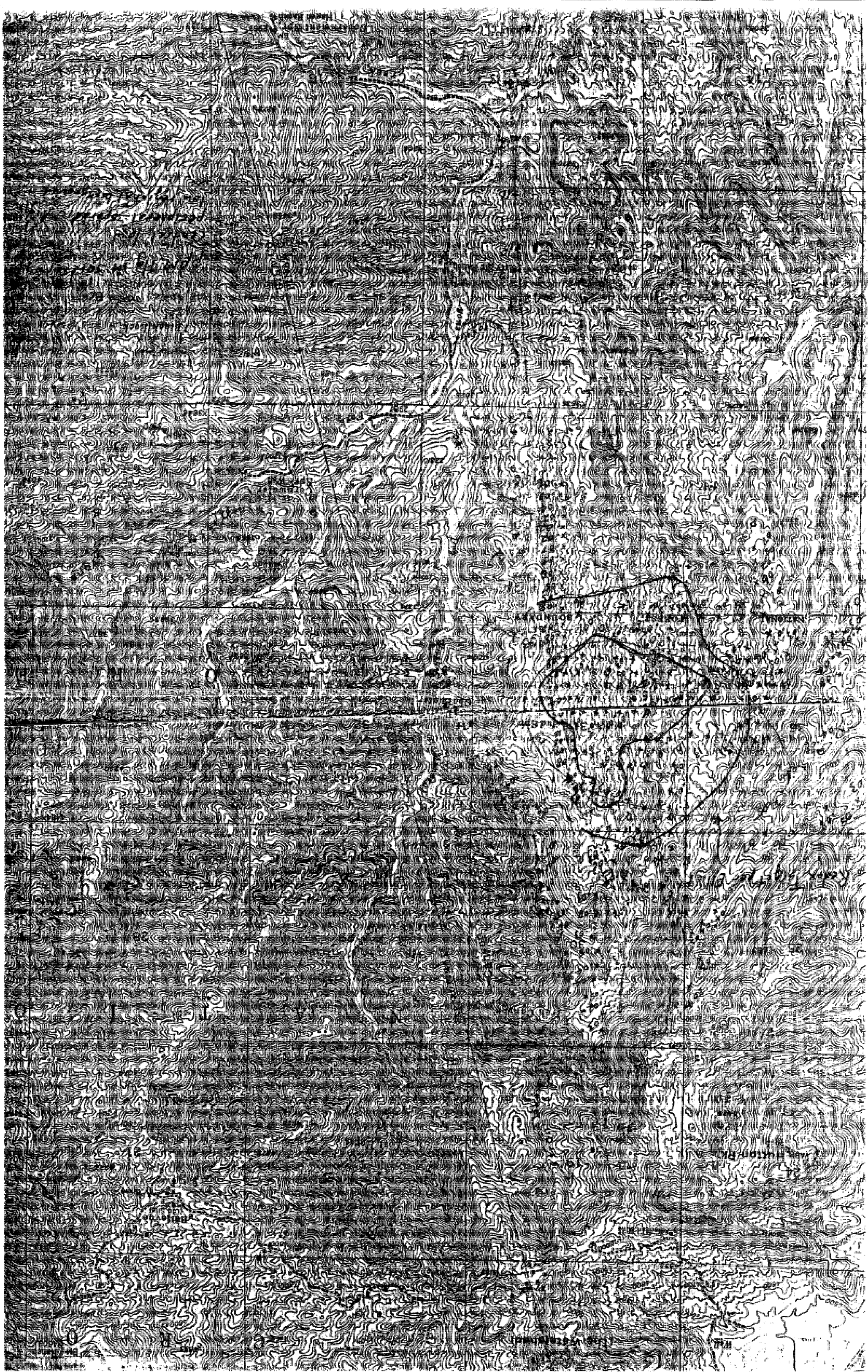
ROAD, RR.

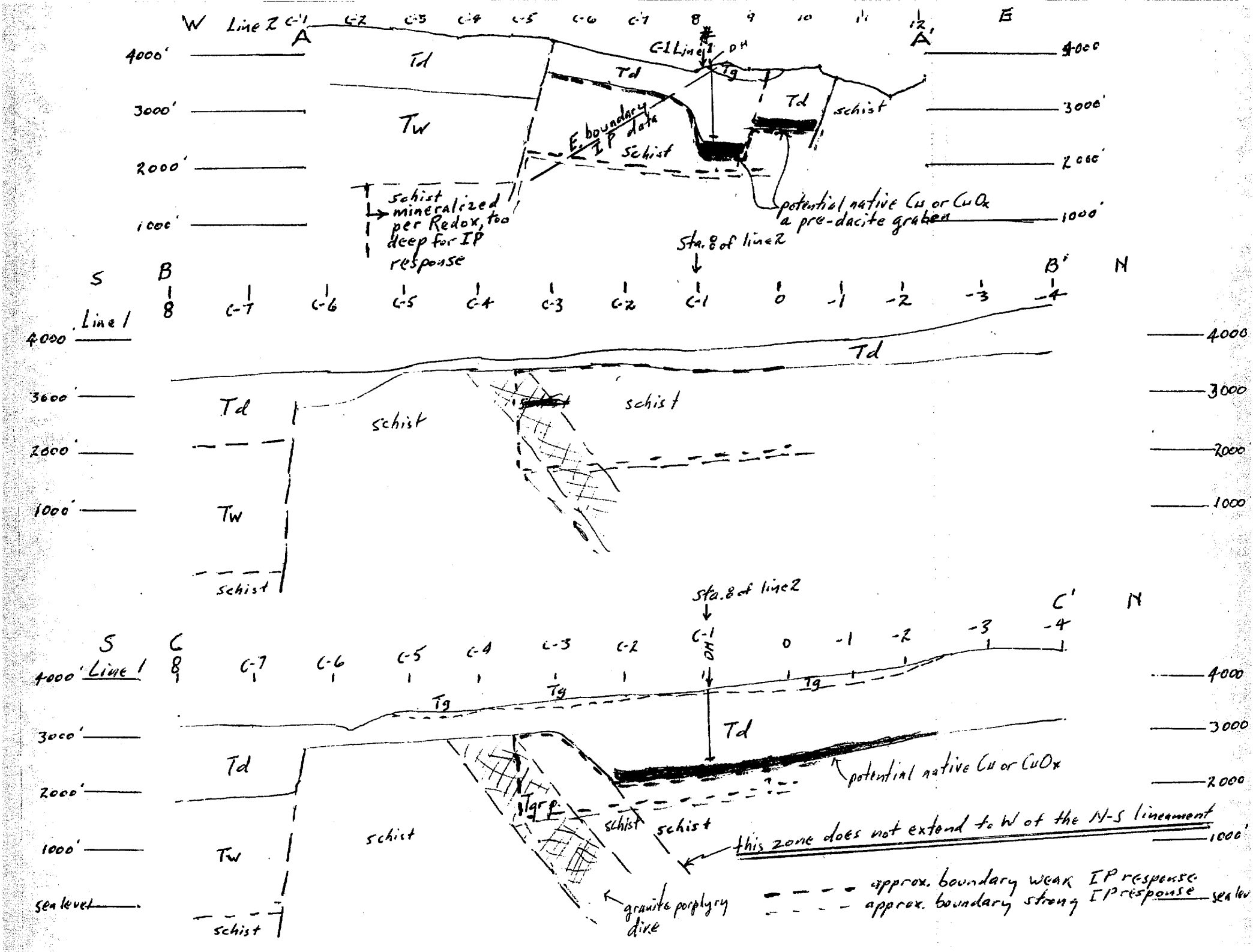
mining
geophysical surveys

M.G.S. 05

(The Watershed)
Well
American Mine
Hutton Pk
Bellevue (Old Site)
Lost Horse Spr
Mud Spr
Goatwater Spr
NATIONAL
FOREST
BOUNDARY
Red Rock Mine
Cornwater Spr Well
Fork
Black Rock Spr
Sixty Six Ranch
Hale Tank
Creek
Government Spr
Hagen Ranch
GILA CO
PINAL CO
Target per IP Method
500'
DH 1400
+2500'
100-300
500-1400
500
This zone, influencing Td thickness, does not extend to the west of the N-S lineament; all shallow response north of it is from the West
Lineament
Approx. Depth to top of weak response as estimated by KCC: from geology, drill data, + IP


NATIONAL
FOREST
BOUNDARY
Rawhide
Mud Spr
Devils
Dry
27
26
25
34
35
36
30
4556
4663
4387
4602
4423
Bacteria in Soils
Bacillus Cereus




W
Line 2
A
A'
E
4000'
3000'
2000'
1000'
Td
Tw
Tg
schist
C-1 Line 1 DH
E boundary I.P. data
schist mineralized per Redox, too deep for IP response
potential native Cu or CuOx a pre-dacite graben
Sta. 8 of line 2
S
B
B'
N
Line 1
schist
C
C'
this zone does not extend to W of the N-S lineament
Tgp
granite porphyry dike
approx. boundary weak IP response
approx. boundary strong IP response
sea level

April 9, 1992

Mr. J. D. Sell
Southwest Exploration Division, Asarco Inc.
1150 N 7th Avenue
Tucson, Az., 85719

Dear Jim,

Enclosed are data on one of my properties close to your Superior East project. Until recently I had understood the IP response to have been from + 2000'. A recent re-evaluation of the IP data revealed a weak IP response at a very much lesser depth in places, and there are reasons to believe the weak response could be very meaningful. I will briefly discuss each of the enclosures.

1. Map and X-sections

The area within the dashed green is the target as defined by IP and Redox CRM, supported by Hg and bacteria in soils and photo interpretation, the Hg and bacteria experimental but I get similar patterns with respect to the IP and Redox target in the Inspiration area. Postulating a couple hundred feet to basement may seem like wishful thinking, but that particular area is a boulder-field, I've only seen it in basal dacite, it even shows up as crinkly contours, and is supported by the IP. Postulating significant native Cu or CuOx as shown on the sections is based on the known instance in a closed basin of the area. I am convinced the graben existed in pre-dacite time, data proving it is in process.

2. IP data: summary by C.L.Elliot of 5-3-91, profiles of the lines, sketch of the 1985 line by Elliot. The 1975 line was most discouraging as to response, merely had suggestions of shallower basement to the N. on one side of the line or the other. The 1985 line revealed a strong response at $\pm$2000' , as illustrated by Elliot's sketch, enclosed. The 1987 line I aborted, not realizing the shallow response I was getting as the line proceded E could have any meaning, not realizing there had been possibly meaningful shallow response on the 1985 line.

As to the possible significance of the IP: A system such as your Superior East would provide a very weak response and there is a reason to suspect a duplicate here: specular hematite is abundant in the schist to the NE, I have noted it in logs of holes fringing the Superior East body. The greater deep response could reflect large scale pyrite, a hypogene zoning such as at Globe and possibly Superior East. Of course combinations of leaching, oxidation, enrichment, and hypogene could produce a similar pattern.

3. A copy of a high altitute photo showing the general boundaries of my claims, (except for a state section to the south). Noteworthy is the several systems of fracturing in the target area in contrast to the single system prevailing outside of it.

In summary, there is a sizeable mineralized system within the Miami-Superior-Ray area that is completely untested, the characteristics of a large part of the system can be revealed by 500' holes. The only hole in the area was stopped in dacite at 1270', but spotted in an area designated as thick dacite by C. L. Elliot in 1986 ; they didn't have the benefit of this sketch but did have all the basic data.

Environmental aspects: The area is out-of-view from any public transportation system, the geology suggests any leaching is situ could be well-contained, and the effluent from any kind of activity would involve population zero until it got to Ray.

For 23 years I've tried to get up to Washington for the summer, have never made it before mid-August. Want to get this settled before I do. Should you have interest your immediate attention is suggested as I offer a property to only one party at a time.

Sincerely,

Kirby C. Coryell

Kirby C. Coryell
Old Farm Apt/s #1209
6161 E. Grant Rd.
296-1754

For a few more months

Permanent address

11514 104th Pl. SW
Vashon, Wa. 98070
206-567-4554

Tucson, AZ 85712

Collar 3275 QDC-2 (Sec. 7)

2621

Surface - 1030 Gila Cgl.

1030 - 1902 Tdacite (topaline tuff)

1902 - 2624 Tuff-altered

2624 - 2640 bx diabase slide block? fault

2640 - 2739 TD contact w/ pt Pinal schist

QDC-5 (Sec. 18)

In Apache grp from surface (diabase) [illegible]

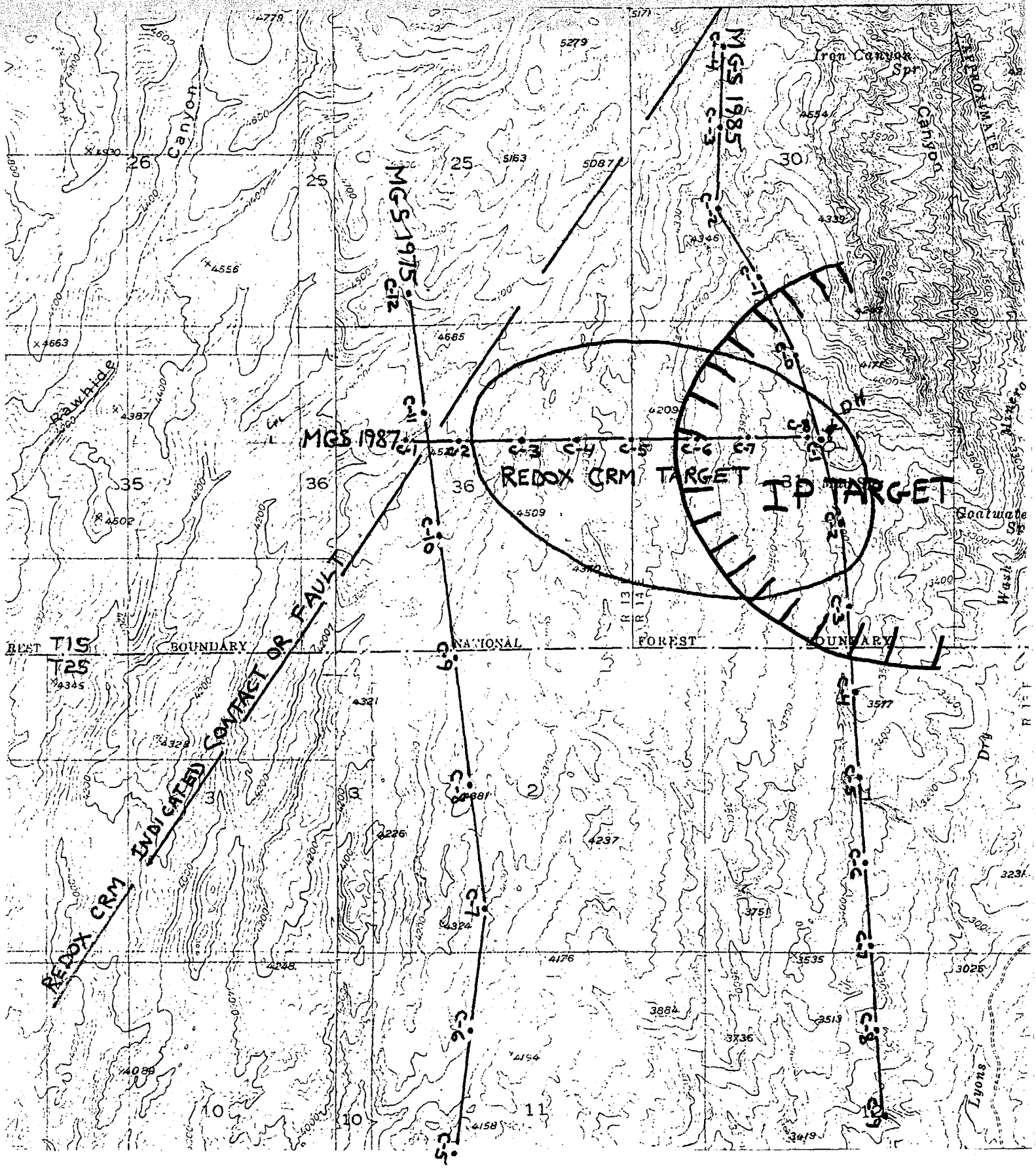
Collar BCC 3770

St. 8 strong resistivity point.

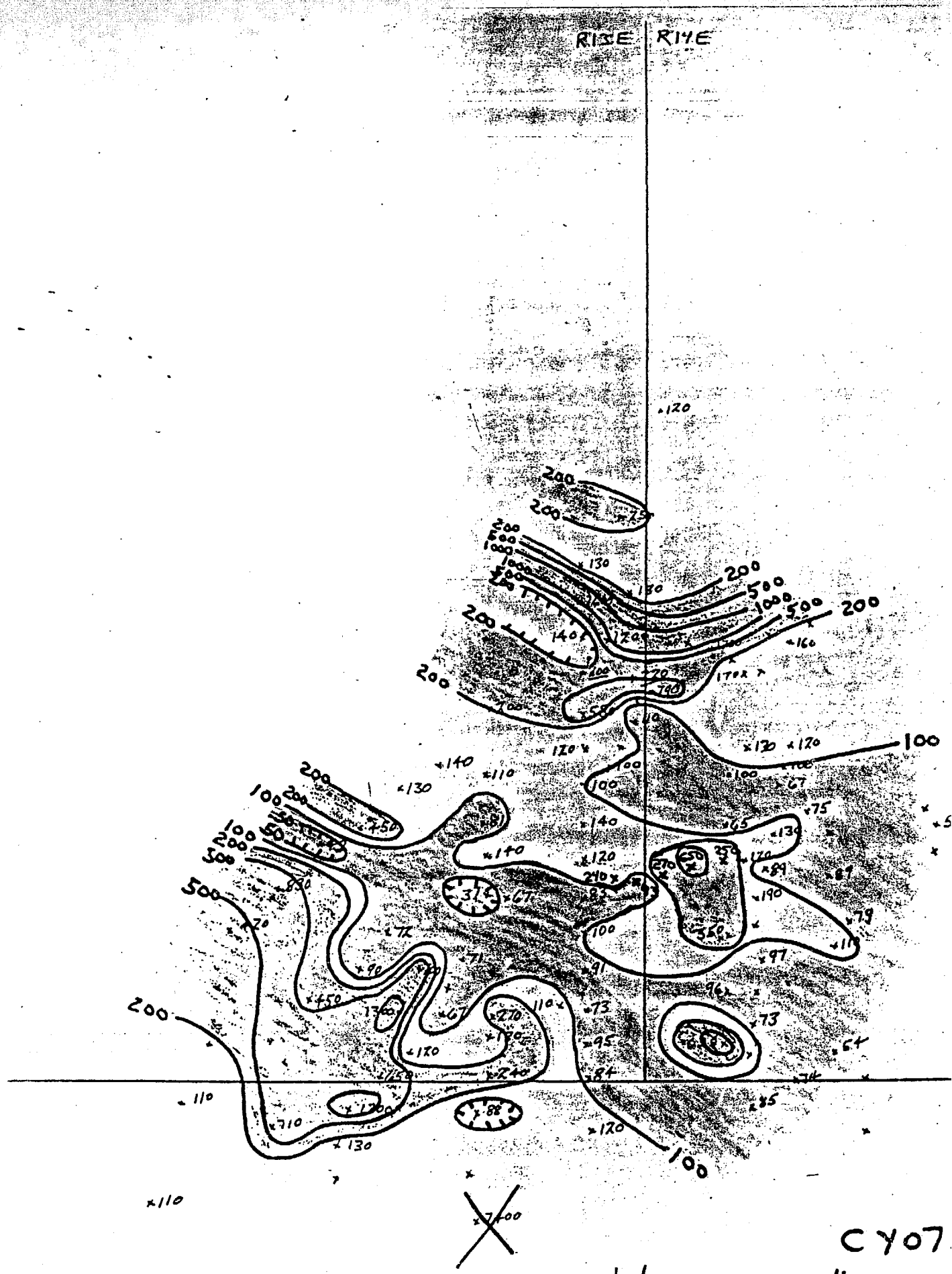
3770
-1270
2500

Sta 12

GSB (April '71) Structural block



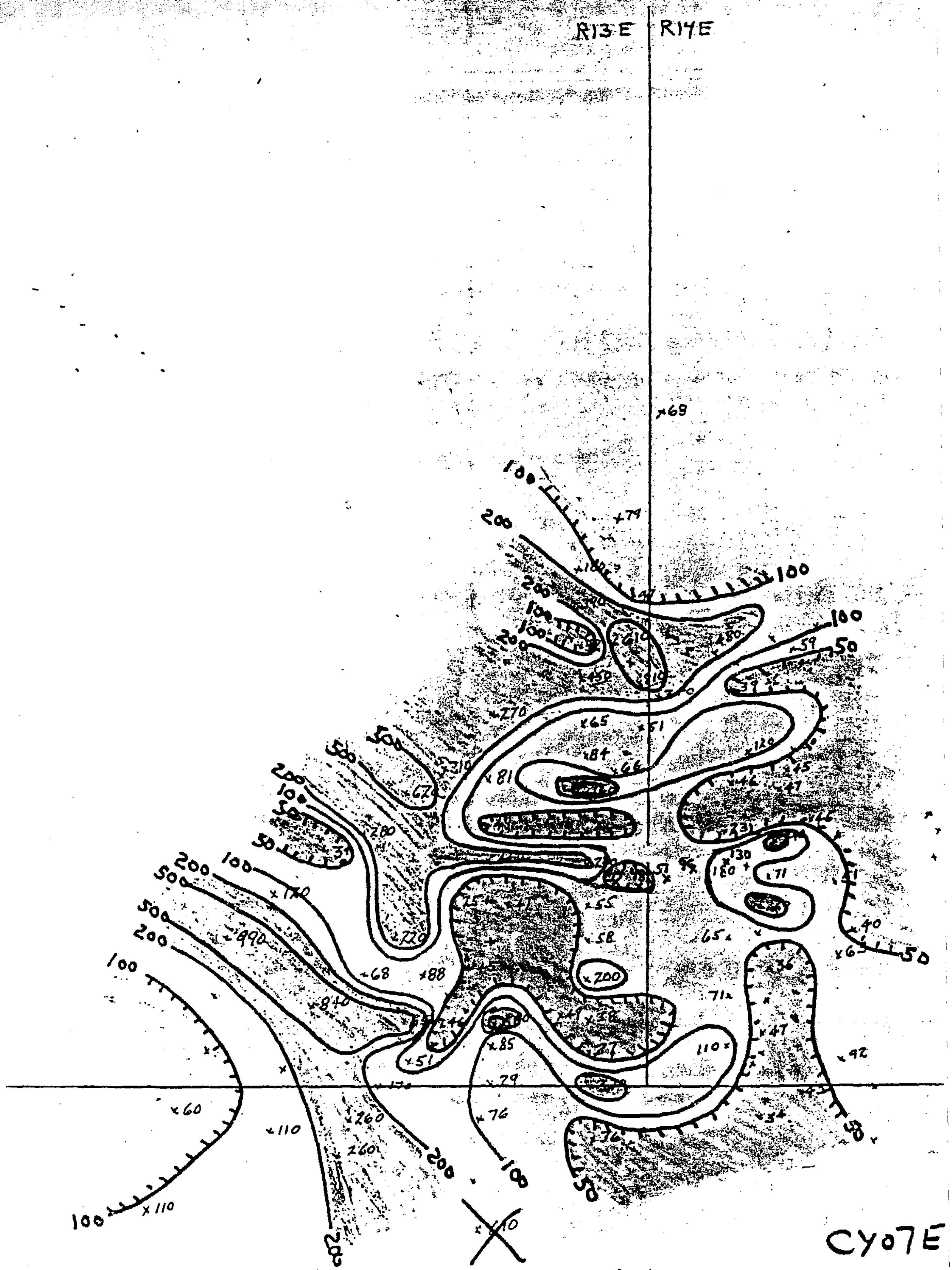
SUMMARY OF
GEOPHYSICS
JULIA CLAIMS
CY07E 5-3-91



Amended
4-29-87

CY07
1" = 200
4-87

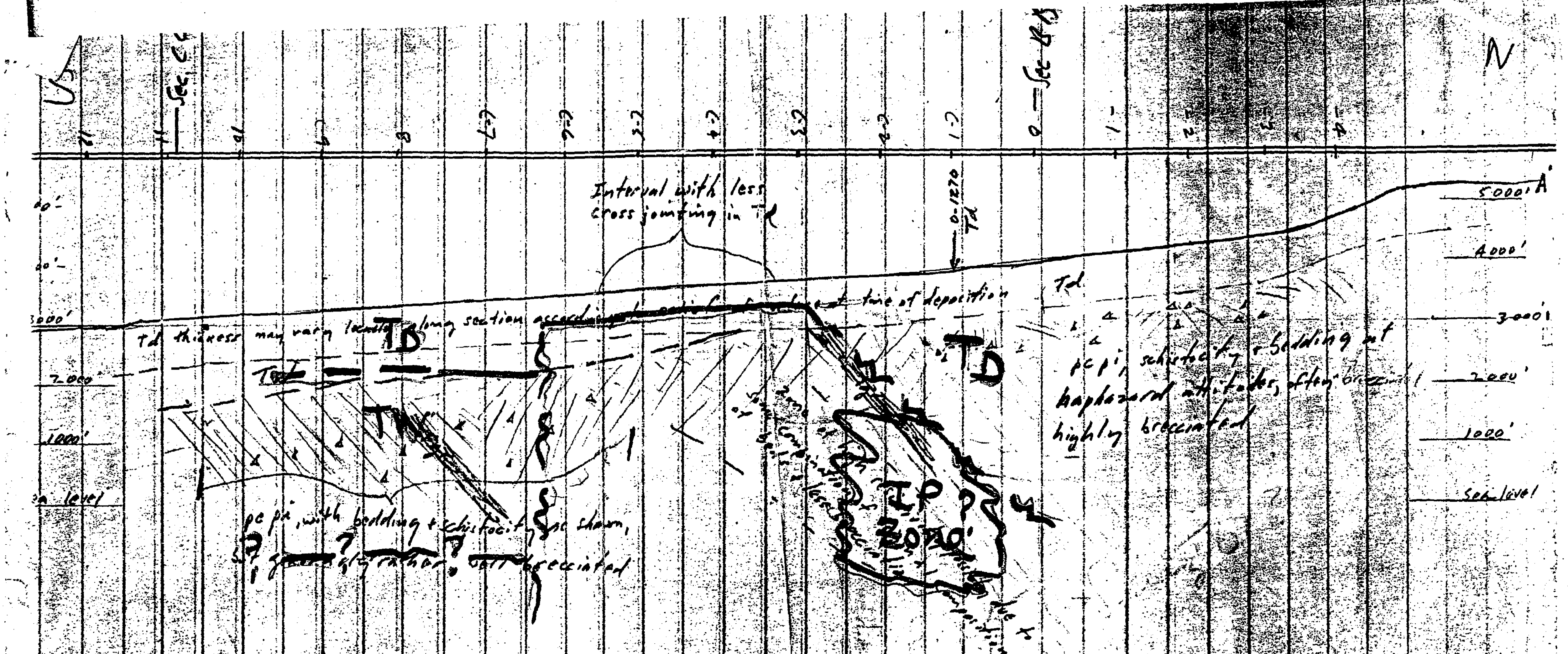
J



CY07E
1" = 2000
4-87

Amended
4-29-87

K

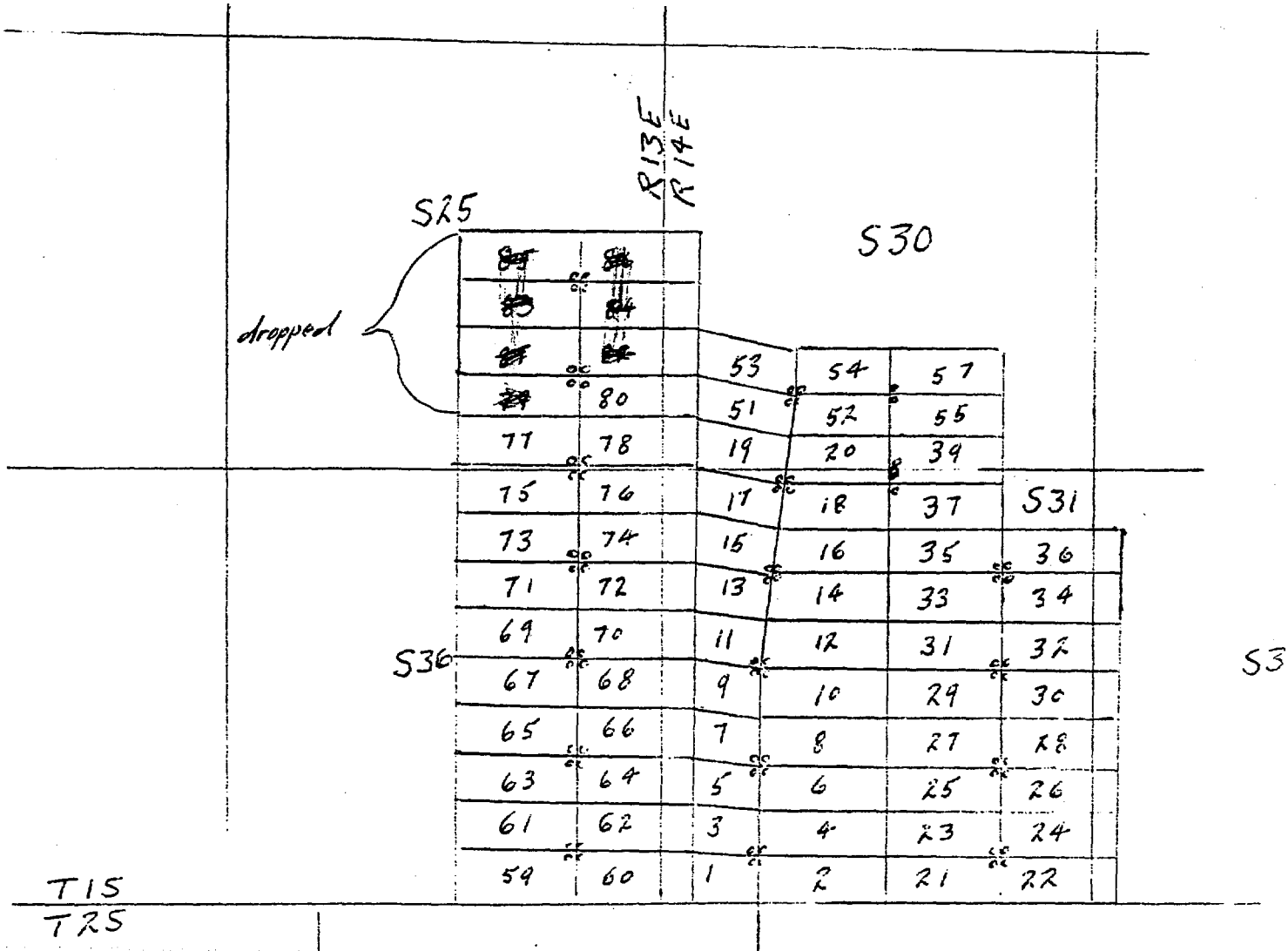


Section along strong, wide fault zone in basement units reflected in Td by close spaced jointing of same attitude.

Above print of geology best guess by K.C. Coryell prior to IP Line, all incorrect except for the dike of Tgr which still seems probable. In red is C.L. Elliots depiction of the geology per his evaluation of the IP line.

CY07E
1-86

JULIA LODE MINING CLAIMS
PIONEER MINING DISTRICT
PINAL COUNTY, ARIZONA



INDUCED POLARIZATION AND

RESISTIVITY SURVEY

JULIA PROPERTY

PINAL COUNTY, ARIZONA

FOR

KIRBY CORYELL & ASSOCIATES

MGS Project
1514

mining
geophysical surveys inc

TABLE OF CONTENTS

ACCOMPANYING THIS REPORT:

1 PROFILE

1 PLAN MAP

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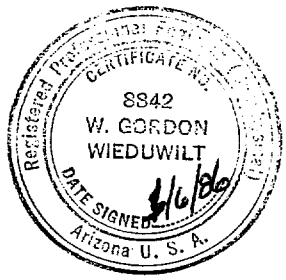
INDUCED POLARIZATION AND
RESISTIVITY SURVEY
JULIA PROPERTY
PINAL COUNTY, ARIZONA

FOR

KIRBY CORYELL & ASSOCIATES



INTRODUCTION:

During the period of December 29, 1985 through January 1, 1986 an induced polarization and resistivity survey was performed on the titled property. The field program was designed by Kirby Coryell, client; the field survey under the supervision of Tim Nordstrom, technician for Mining Geophysical Surveys, Inc.

One N-S profile with an "a" spacing of 1350' was surveyed as a reconnaissance study of the site. No interpretation of the data is required by MGS and the production rate is reduced according to the terms of the contract. Original field notes and profile plot have been given to Kirby Coryell January 6, 1986.

A camp site was established at Mud Springs as access was difficult to the site. The line was built and read in about 2½ days over the New Year's holiday. It was hoped that the Ray Mine would be shut down on the 31st and 1st, thereby reducing the possible "noise" interference from D.C. powered mine equipment. There was no observable difference in noise levels for data read on the 30th or 31st, however.

SURVEY PROCEDURE:

A conventional dipole-dipole electrode array of seven current electrodes was used for the survey. A dipole size of 1350' was used and measurements were made for separation factors "n" of ½ and 1 to 6. The potential electrodes occupied positions on both sides of the current electrode spread thereby providing a minimum line coverage of nine times the dipole length for a standard line of seven electrodes.

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

INSTRUMENTATION:

The induced polarization and resistivity measurements are made in the time-domain mode of operation using an EGC model R20A receiver (S/N 2014), and an EGC model 45A transmitter (S/N 109) and model MP45A power supply (S/N 101) with a capability of transmitting a maximum of 10 amps of current to the ground. 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 measurements of the secondary voltage is delayed by 0.50 second to avoid coupling and other transient effects. The integration is performed during the period from

0.50 to 1.70 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.

DATA ACQUISITION:

A series of consecutive apparent induced polarization readings are obtained and entered in the field notes. Usually if three to five consecutive readings are of the same value, the average reading is considered acceptable. In areas where signal levels are not sufficient to override 'telluric noise, the readings will have considerable scatter. When this occurs, each reading is entered in the field data sheet and also in a histogram form. The class interval for our histograms is five units, which changes with gain setting used (column 30 or 31 on field data sheets). Consecutive readings are acquired until the density of readings about a particular value results in a "bell-shaped" display. This shape indicates to the operator that a sufficient number of readings have been taken to produce a reasonably accurate average value. When the amplitude of noise plus signal increases, the operator may switch the gain setting, as mentioned previously, or switch the receiver to a mode where 2 or 5 measurements are averaged by the receiver. This is noted by a 2 or 5 in column 33 on the field data sheet. The standard deviation for readings

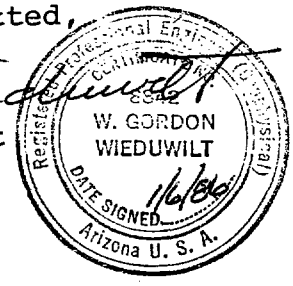
where averages are calculated is noted in columns 70-74 of the field notes.

'Telluric noise interference is evident in most all the IP data at "n" = 2 through 6. The increase in 'telluric activity is noticeably evident at "n" of 3 and greater due to lower signal levels at the larger dipole separations. The resistivity averages greater than 100 ohmmeters in the north half and less than 50 ohmmeters in the south half of the line. The south half especially is an environment in which low signal levels can be badly affected by 'telluric noise.

The overall data quality of this survey is considered fair to good, except where no reading (NR) could be obtained or negative values suggest poor quality data. A repeat diagonal Rx at 0,-1 shows fairly good repeat quality except at "n" = 5 and 6.

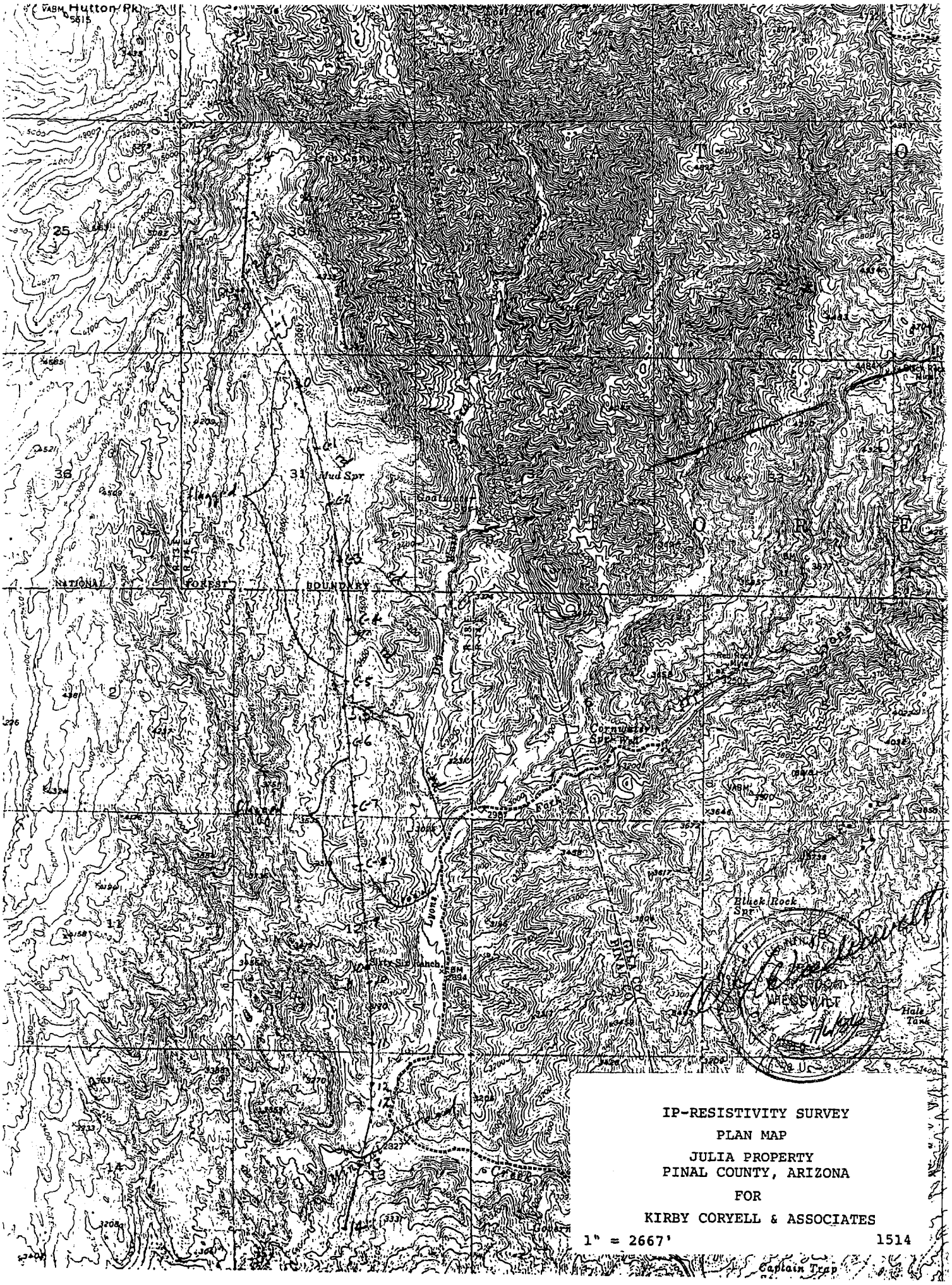
Respectfully submitted,

W. Gordon Wieduwilt
Geophysicist



January 6, 1986

Tucson, Arizona



IP-RESISTIVITY SURVEY

PLAN MAP

JULIA PROPERTY
PINAL COUNTY, ARIZONA

FOR

KIRBY CORYELL & ASSOCIATES

1" = 2667'

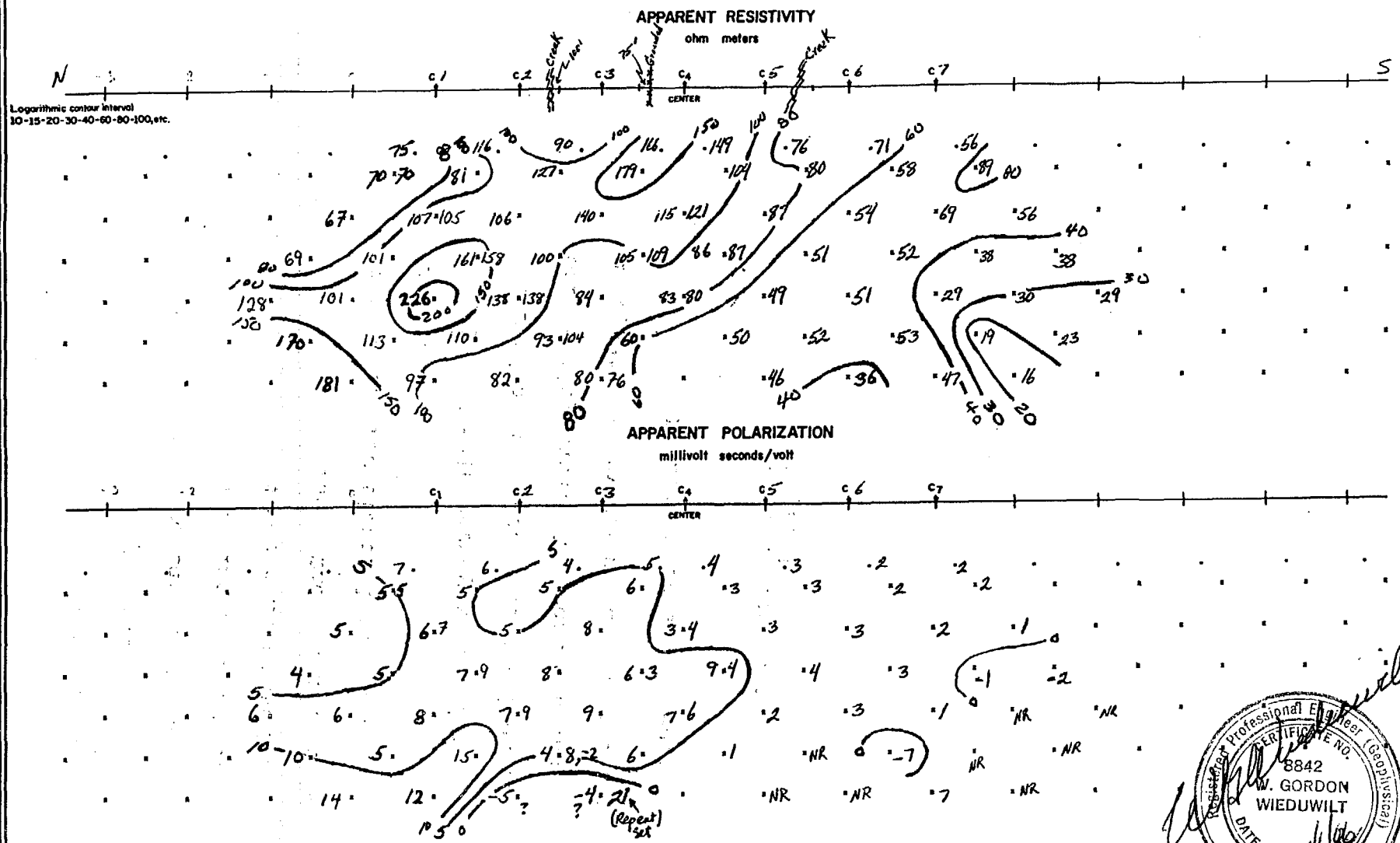
1514

TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

JULIA PROPERTY, PINAL COUNTY, ARIZONA

FOR

Kirby Coryell & Associates



DIPOLE DIPOLE ARRAY

CURRENT DIPOLE — POTENTIAL DIPOLE

PLOT POINT

LINE: 1

LOOKING: East

DIPOLE LENGTH: 1350'

DATE: 12-30-85

LEGEND

FENCE

PIPELINE

POWERLINE

ROAD, RR.

Registered Professional Engineer (Geophysicist)
CERTIFICATE NO. 8842
W. GORDON WIEDUWILT
DATE SIGNED 1/6/86
Arizona U. S. A.

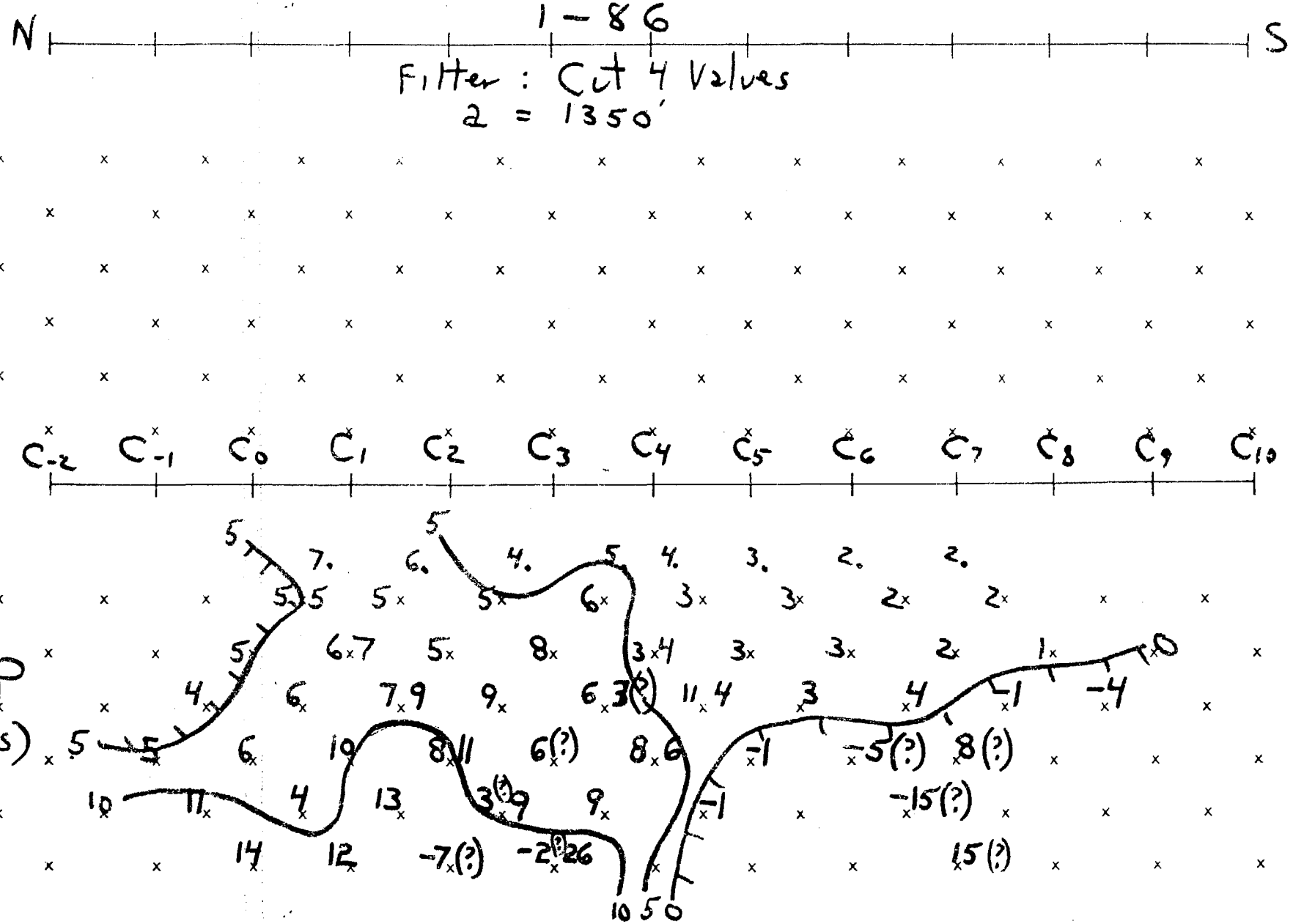
mining geophysical surveys INC 1514

INDUCED POLARIZATION – RESISTIVITY SURVEY DIPOLE-DIPOLE ARRAY

Julia Property

CY07E

1-86

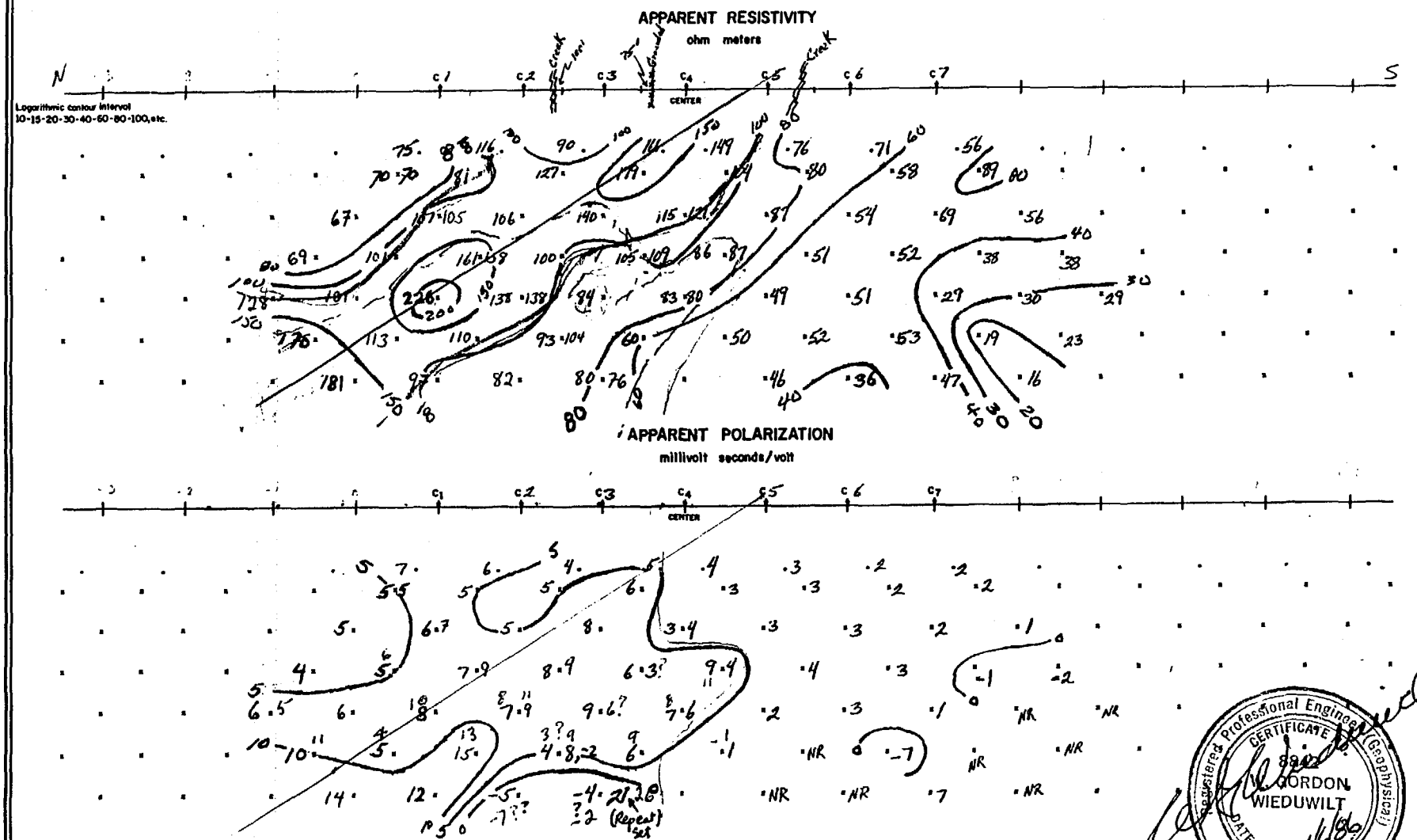


TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

JULIA PROPERTY, PINAL COUNTY, ARIZONA

FOR

Kirby Coryell & Associates



DIPOLE DIPOLE ARRAY

CURRENT DIPOLE — POTENTIAL DIPOLE

PLOT POINT

LINE: 1

LOOKING: East

DIPOLE LENGTH: 1350'

DATE: 12-30-85

LEGEND

FENCE

PIPELINE

POWERLINE

ROAD, RR

Registered Professional Engineer (Geophysical)
CERTIFICATE NO. 8844
GORDON WIEDUWILT
DATE SIGNED 1/86
Arizona U. S. A.

mining geophysical surveys INC. 1514

INDUCED POLARIZATION AND RESISTIVITY SURVEY

JULIA CLAIMS

PINAL COUNTY, ARIZONA

FOR

KIRBY CORYELL & ASSOCIATES

MGS 1705

mining geophysical surveys inc

TABLE OF CONTENTS

ACCOMPANYING THIS REPORT:

1 LOCATION MAP

1 PROFILE

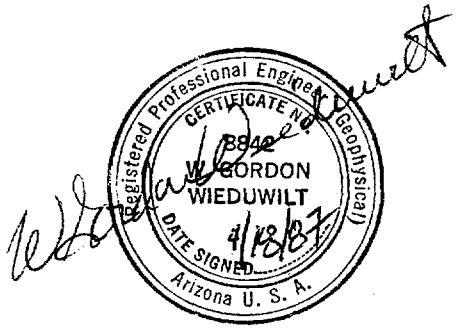
DISTRIBUTION:

ORIGINAL & 2 COPIES: Kirby C. Coryell, Tucson

INDUCED POLARIZATION AND
RESISTIVITY SURVEY
JULIA CLAIMS
PINAL COUNTY, ARIZONA

FOR

KIRBY CORYELL & ASSOCIATES



INTRODUCTION:

During the period of April 13 through 16, 1987 an induced polarization and resistivity survey was performed on the titled property. The field survey was designed by Kirby Coryell, client. The field crew was supervised by T. R. Nordstrom, party chief for Mining Geophysical Surveys, Inc.

The east-west profile was laid out to test the possibility of shallow premineral rocks beneath thin dacite cover. This is in addition to a N-S profile surveyed in December 1985 (MGS 1514).

Because of difficult access, the client recommended a camp site be established at Mud Springs. A five-man crew and two vehicles were supplied by MGS to expedite the job in rugged terrain. Only a partial line was read as the target area of limited size could be tested to depth within the center of the spread.

It was hoped that premineral rocks at depth would contain sulfide mineralization such that an IP response of anomalous amplitude would occur associated with those rocks. No anomalous IP response was observed in the area tested.

Resistivity layering indicates a locally thicker section of dacite (high resistivity) in the eastern half of the line, with

low resistivity material believed to be Tertiary Whitetail or equivalent beneath the dacite. This low resistivity material extends to depth.

The client requested that no interpretation be submitted by the contractor. The production rate has been reduced to accommodate this request.

SURVEY PROCEDURE:

A conventional dipole-dipole electrode array of seven current electrodes was used for the survey. A dipole size of 1000' was used and measurements were made for separation factors "n" of ½ and 1 to 6. The potential electrodes occupied positions on both sides of the current electrode spread; however, only the central portion of the line was covered as this was the target area of interest.

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

Instrumentation: The induced polarization and resistivity measurements are made in the time-domain mode of operation using an EGC model R20A receiver (S/N 2008), and an EGC model 45A transmitter (S/N 109) and model P45A power supply (S/N 304) with a capability of transmitting a maximum of 10 amps of current to the ground. 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 measurements of the secondary voltage is delayed by 0.50 second to avoid coupling and other transient effects. The integration is performed during the period from 0.5 to 1.70 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.

Data Acquisition: A series of consecutive apparent induced polarization readings are obtained and entered in the field notes. Usually if three to five consecutive readings are of the same value the average reading is considered acceptable. In areas where signal levels are not sufficient to override 'telluric noise, the readings will have considerable scatter. When this occurs each reading is entered in the field data sheet and also in a histogram form. The class interval for our histograms is five units, which changes with gain setting used (column 30 or 31 on field data sheets). Consecutive readings are acquired until the density of readings about a particular value results in a "bell-shaped" display. This shape indicates to the operator that a sufficient number of readings have been taken to produce a reasonably accurate average value.

When the amplitude of noise plus signal increases, the

operator may switch the gain setting, as mentioned previously, or switch the receiver to a mode where 2 or 5 measurements are averaged by the receiver. This is noted by a 2 or 5 in column 33 on the field data sheet.

The standard deviation for readings where averages are calculated is noted in columns 70-74 of the field notes. The standard error noted in columns 75 to 80.

Data Quality: 'Telluric noise interference is evident in most all the IP data at "n" = 2 through 6. The increase in 'telluric activity is noticeably evident at "n" of 3 and greater due to lower signal levels at the larger dipole separations. The resistivity averages greater than 100 ohmmeters at surface throughout the line but less than 50 ohmmeters off the ends of the line and at depth. The west half especially is an environment in which low signal levels can be badly affected by 'telluric noise.

The overall data quality of this survey is considered fair to good, except where no reading (NR) could be obtained or negative values suggest poor quality data. The repeat diagonals show fairly good repeatability of within 1 to 2 ms.

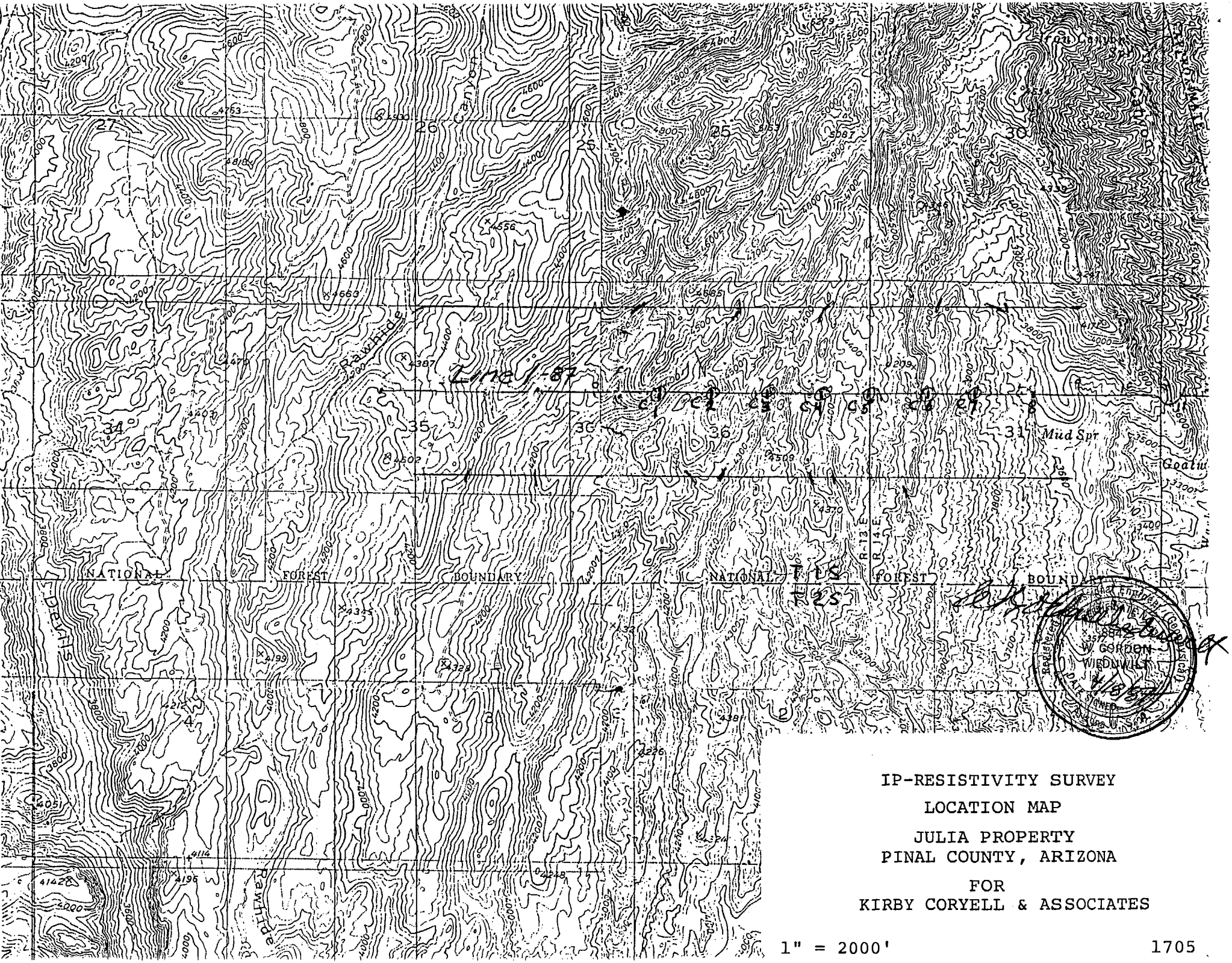
Respectfully submitted,

W. Gordon Wieduwilt
Geophysicist

April 18, 1987

Tucson, Arizona

mining geophysical surveys inc



IP-RESISTIVITY SURVEY

LOCATION MAP

JULIA PROPERTY
PINAL COUNTY, ARIZONA

FOR
KIRBY CORYELL & ASSOCIATES

1" = 2000'

1705

TIME DOMAIN INDUCED POLARIZATION AND RESISTIVITY SURVEY

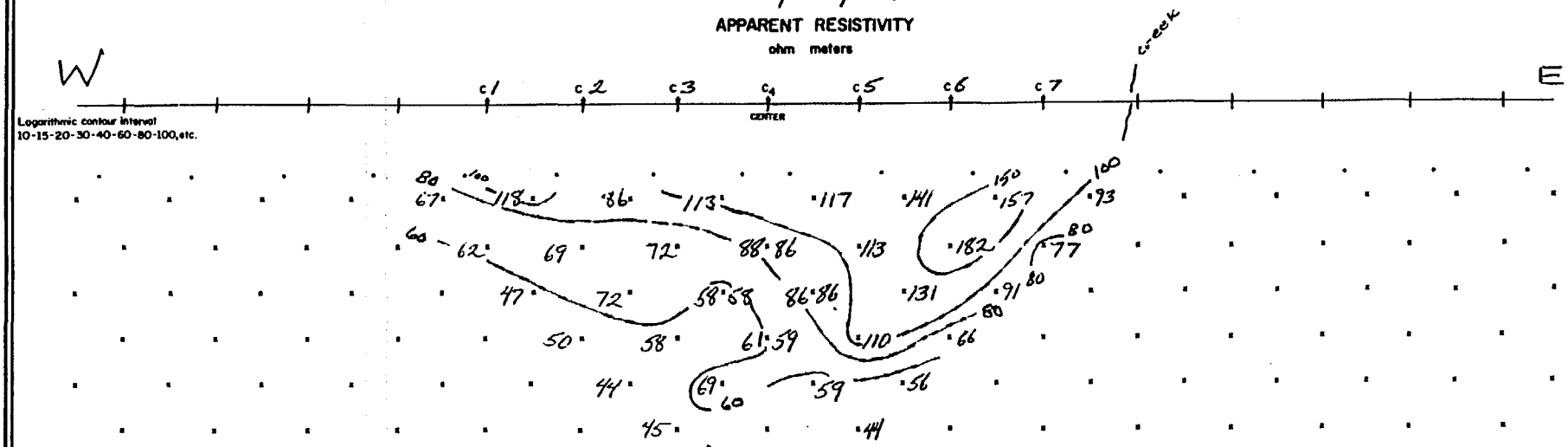
Julia Claims, Pinal County, Arizona

FOR

Kirby Coryell & Associates

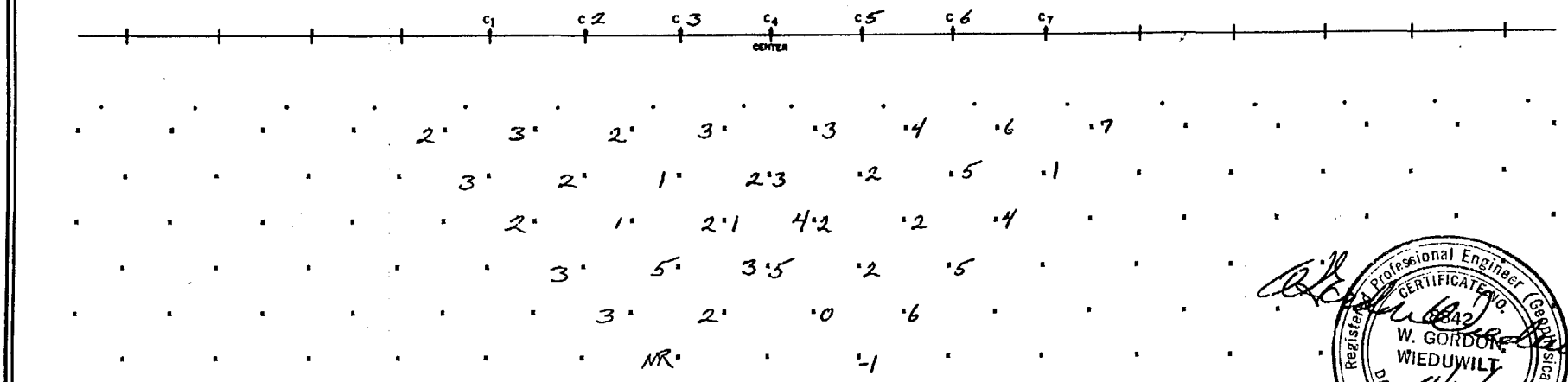
APPARENT RESISTIVITY

ohm meters



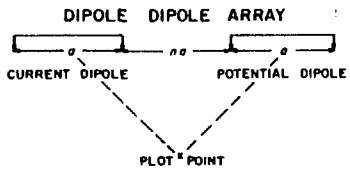
APPARENT POLARIZATION

millivolt seconds/volt



Registered Professional Engineer (Geophysical)
CERTIFICATE NO. 6842
W. GORDON WIEDUWILT
DATE SIGNED 4/18/87
Arizona U. S. A.

DIPOLE DIPOLE ARRAY



LINE: 1

LOOKING: North

DIPOLE LENGTH: 1000'

DATE 4-15-87

LEGEND

FENCE

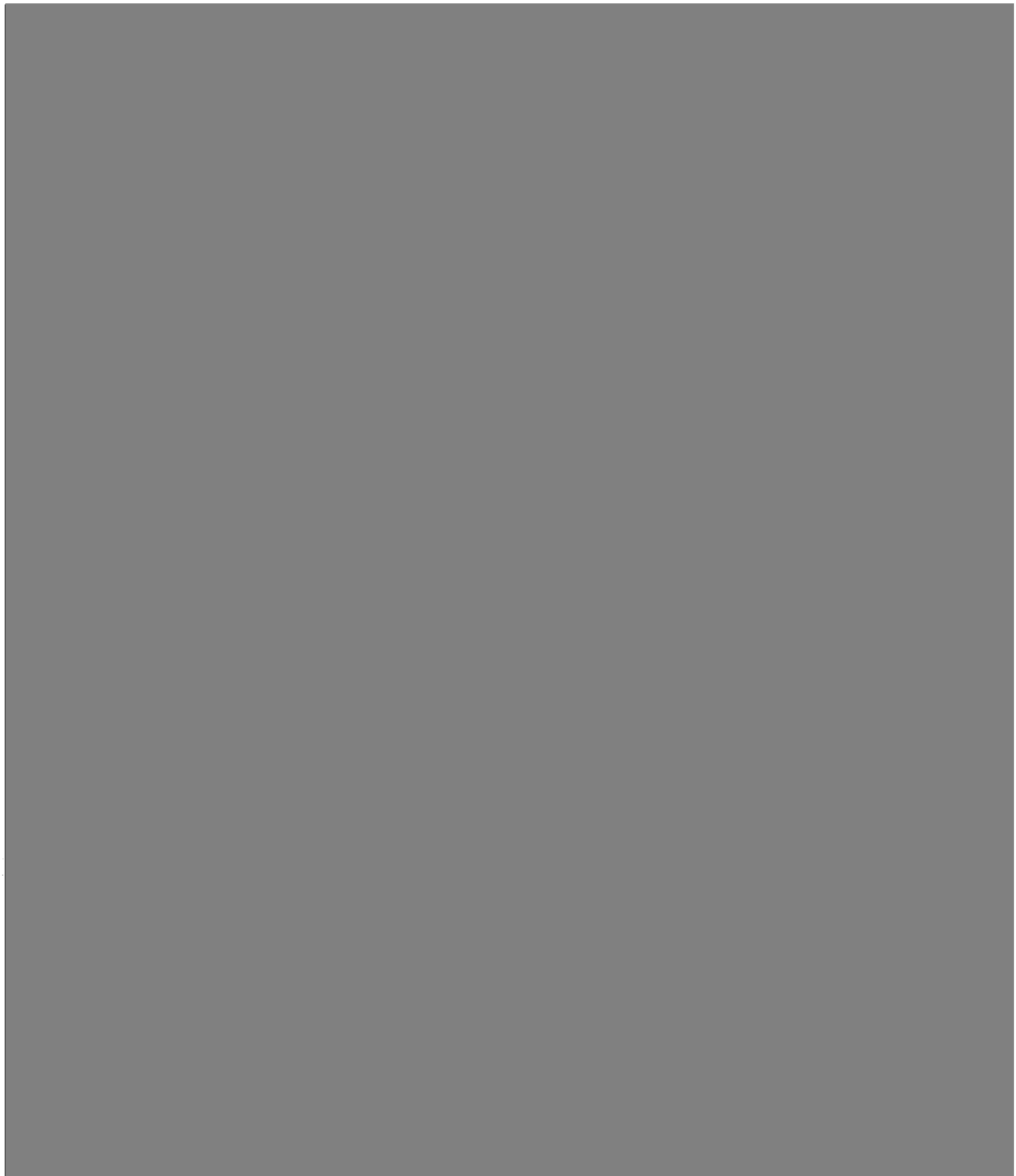
PIPELINE

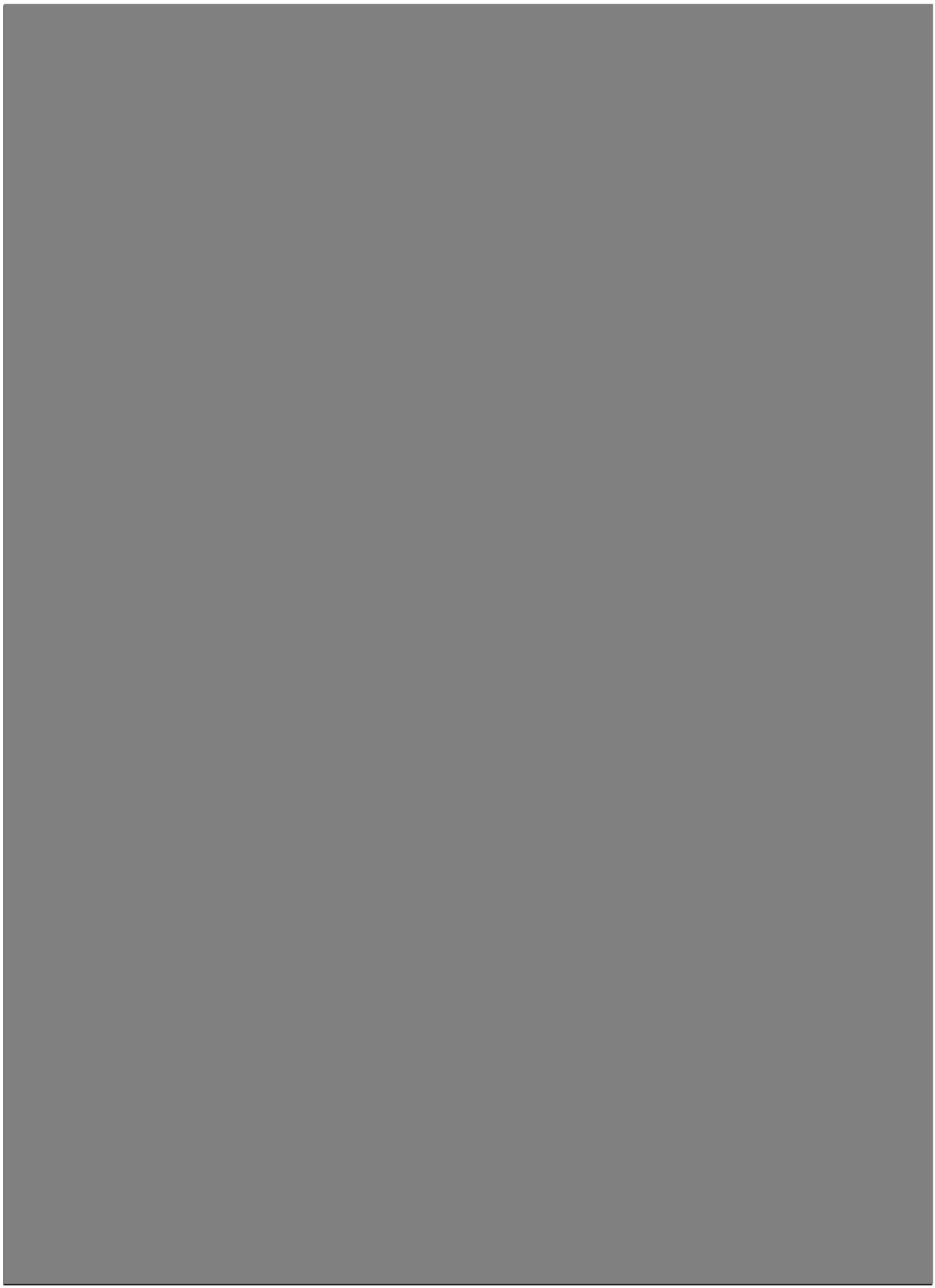
POWERLINE

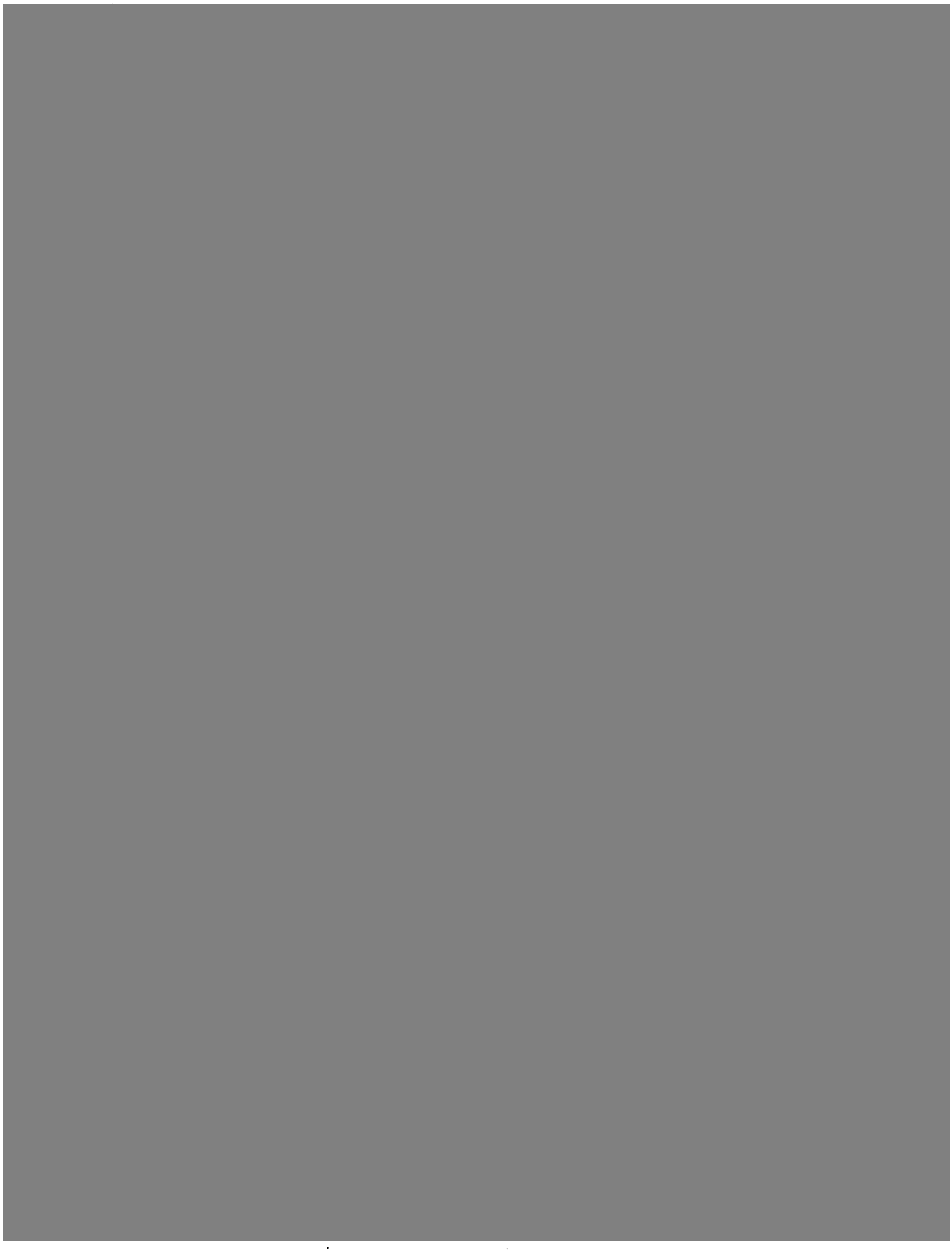
ROAD, RR

mining geophysical surveys INC. 1705

GEOPHYSICS, VOL. 46, NO. 8 (AUGUST 1981); P. 1169–1181, 14 FIGS., 1 TABLE.







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