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INDUCED POLARIZATION INVESTIGATION
Butts Claim Group
Sec. 1, T 15 S - R 12 E, G&SRB&M

Pima County, Arizona

for
James A. Woolsey
Tucson, Arizona

May 1963

by
HEINRICHS GEOEXPLORATION COMPANY
P. O. Box 5671 Tucson, Arizona

INTRODUCTION

On May 9 and 10, 1963, Heinrichs Geoexploration Company conducted an induced polarization survey over portions of the Butts Claim Group in Sec. 1, T 15 S - R 12 E, Pima County, Arizona. This work was performed at the request of Mr. James A. Woolsey, locator.

The work consisted of one line run N 66 W - S 66 E and was roughly centered between the two buttes near the south side of the NE¼ of Section 1. The work was performed under the direction of Mr. F. A. Seward, Jr., geophysicist in charge.

Included with this report are a sketch map showing the position of the line with respect to its location within Section 1, a sectional data sheet representing the data obtained and the self potential data in profile.

CONCLUSIONS AND RECOMMENDATIONS

1. Resistivities were found to be very low which fact tends to reduce the quality of the data and therefore the significance of minor anomalies observed.

2. The low resistivities are attributed to the outcropping volcanic rocks in the area east of station 1.5W.

3. An anomaly of questionable significance was mapped between stations 1.0W and 2.0W and is interpreted as being related to a fault contact.

4. There is a self potential anomaly centered about station 1.5W which, by association lends a degree of prestige to the I. P. anomaly.

5. It is recommended that several self potential profiles be run over the area to determine the possible existence of lateral extensions of the anomalous zone. Estimated time--1 day; estimated cost $150.00.

6. This work should be followed up by at least one I. P. line, using a 250' dipole spacing to be either located on the basis of the S. P. results if applicable or centered 250 ft. N 24°E or S 24°W of station 1.5W. Estimated time: 1 day field, 1 day office; estimated cost $380.00 +

INTERPRETATION

The rocks outcropping to the east of station 0.5W are volcanics; from 0.5W to about 2.0W alluvial fill, and at 2.0W limestone. The resistivity data indicates a fault zone between 1.0 and 1.5 W and it is concluded that this zone probably defined the contact between the volcanics and the sediments. There is a minor I. P. anomaly associated with this resistivity anomaly. Resistivities to the east are very low and it is believed that electrical penetration did not exceed the thickness of the volcanics to the east. The significance of the I. P. anomaly by itself would be very questionable due to the low resistivities encountered.

However, the association with a self potential anomaly in this region which might be caused by sulfides in an oxidizing-reducing environment plus the obvious geologic favorability for a contact metamorphic or replacement deposit in the limestone. In addition to the further geophysics recommended, the area should be mapped geologically in at least reconnaissance fashion. This might be accomplished at the same time as the self potential work at only moderately increased cost.

Respectfully submitted,

Franklin A. Seward, Jr.

Franklin A. Seward, Jr.
Geophysicist

Walter E. Heinrichs, Jr.

May 16, 1963
P. O. Box 5671
Tucson, Arizona

INDUCED POLARIZATION INVESTIGATION
Butts Claim Group
Sec. 1, T 15 S - R 12 E, G&SRB&M

Pima County, Arizona

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Respectfully submitted,

Franklin A. Seward, Jr.

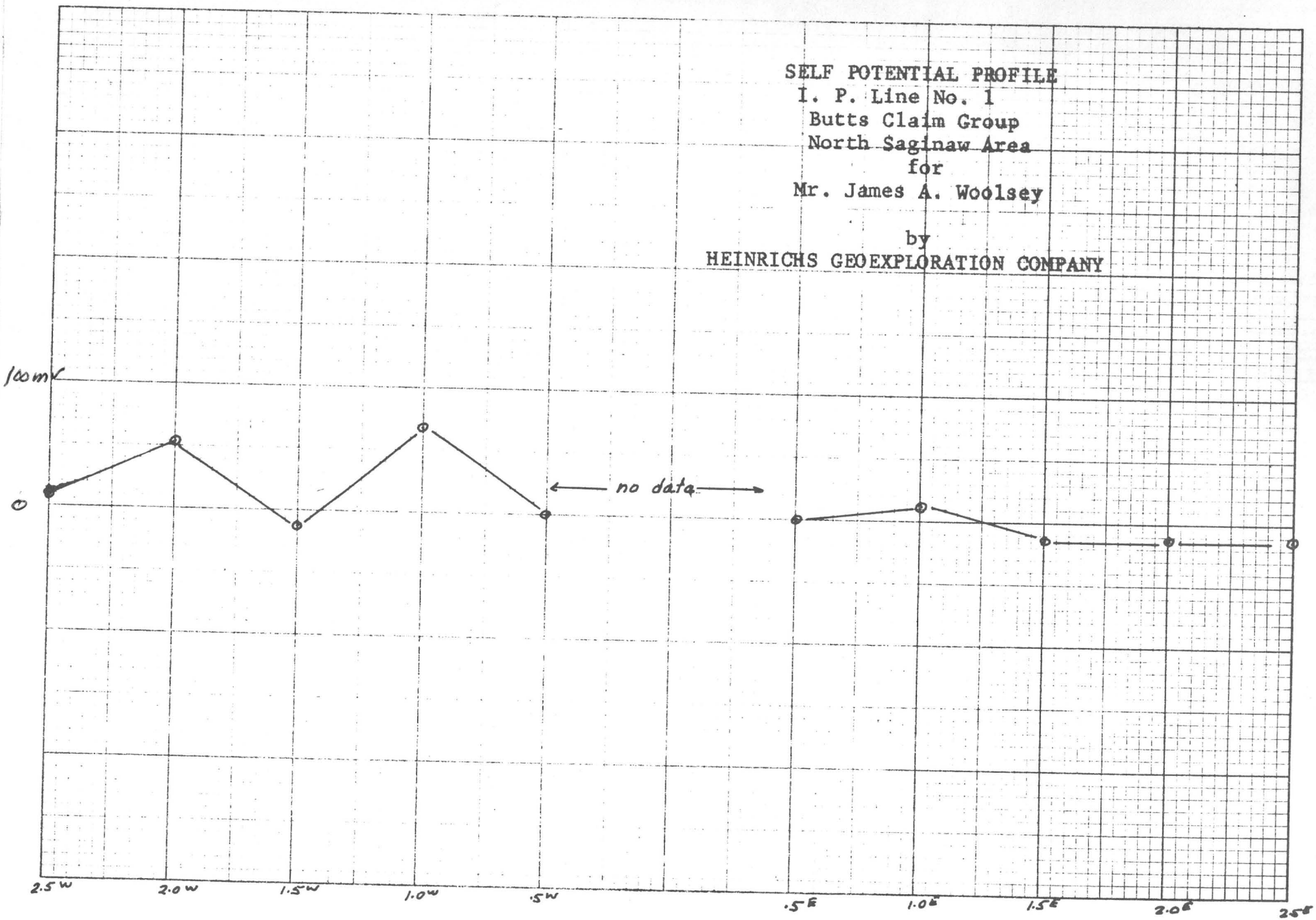
Franklin A. Seward, Jr.
Geophysicist

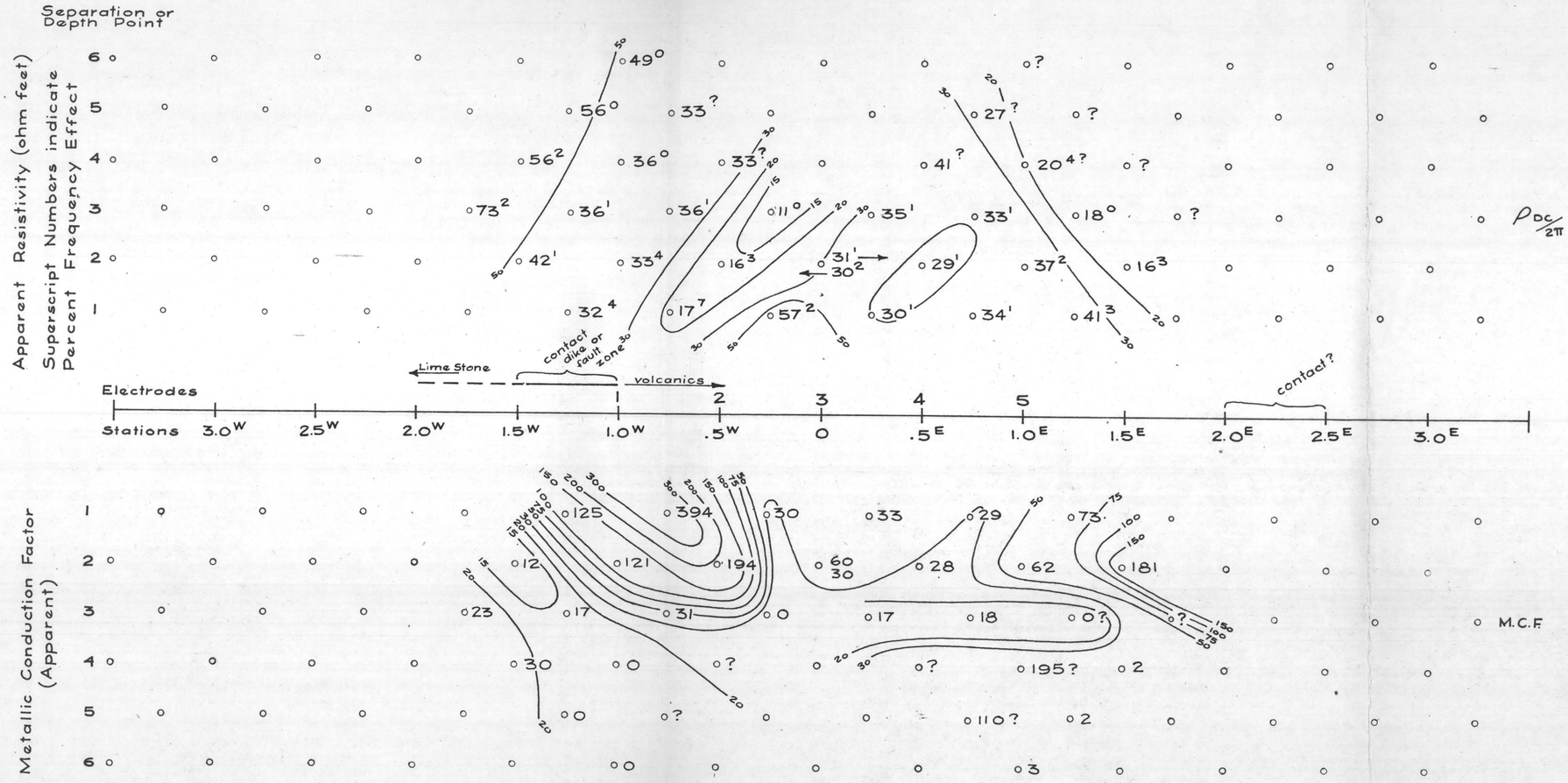
Walter E. Heinrichs, Jr.

May 16, 1963
P. O. Box 5671
Tucson, Arizona

SELF POTENTIAL PROFILE
I. P. Line No. 1
Butts Claim Group
North Saginaw Area
for
Mr. James A. Woolsey

by
HEINRICHS GEOEXPLORATION COMPANY





LEGEND

- End of Line
- Station
- No Anomaly
- Very Weak
- Weak
- Moderate
- Strong

Contour interval: Logarithmic
( ) indicates questionable data

SECTIONAL DATA SHEET

LINE No. I

INDUCED POLARIZATION SURVEY

HEINRICHS GEOEXPLORATION COMPANY

SCALE: 1" = 500' DATE: MAY 1963

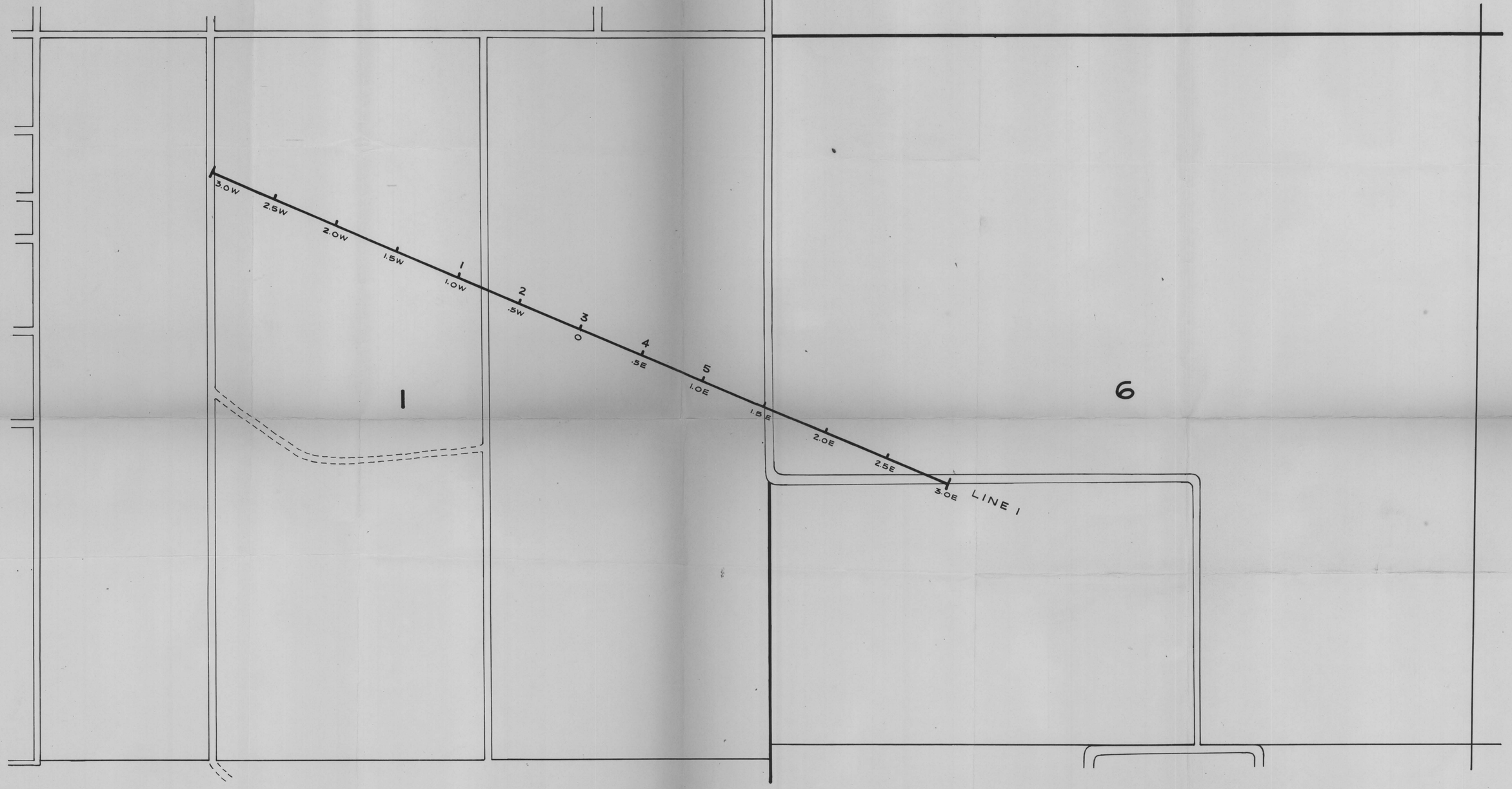
BUTTS CLAIM GROUP
SAGINAW HILL AREA
Sec. 1, T15S-R12E & Sec. 6, T15S-R13E
PIMA COUNTY, ARIZONA

for
JAMES A. WOOLSEY

R 12 E

R 13 E

T 15 S



N

BUTTS CLAIM GROUP

INDUCED POLARIZATION SURVEY

SAGINAW HILL AREA
PIMA COUNTY, ARIZ.

for
JAMES A. WOOLSEY
by
HEINRICHS GEOEXPLORATION COMPANY
DATA by: F.A.S.jr.

SCALE: 1" = 500'

MAY 1963

TECHNICAL COMMENTS
on
THE INDUCED POLARIZATION METHOD

The induced polarization method is based on the somewhat peculiar electrical properties of sulfide particles, and more particularly those of iron, copper and lead. Sulfide particles react to electrical currents somewhat in the manner of miniature electrical capacitors. A rock mass containing sulfide particles will offer a lower impedence to an alternating current than its resistance to a direct current. Hence when a direct current is applied across a pair of current electrodes in the vicinity of a disseminated sulfide body, the potential drop between two potential electrodes some given distance from the current electrodes will be greater than when an alternating current is applied to the first two electrodes. Three separate quantities are computed from the data acquired in the field. The first is the D. C. resistivity. The second is the percent frequency effect. The third quantity is the so called "metallic conduction factor" which is simply the frequency effect divided by the D. C. resistivity.

The property of induced polarization is not entirely unique to sulfide particles but with sufficient geological knowledge, anomalism due to sulfides can be normally interpreted apart from that possibly due to graphite, magnetite, clay particles, etc.

In our present routine field practice, five equally spaced

co-linear current electrodes are set. Observations are made in accordance with the dipole-dipole or Eltran configuration mode of operation in which the distance between the receiver or potential electrodes is equal to the distance between each pair of current electrodes and the separation between the center of each potential electrode set-up from the center of each pair of current electrodes is some multiple of the electrode spacing.

Selection of a given electrode spacing is determined by the objectives to be reached in a given survey. This spacing will range from very small (50 ft. or less) for very detailed surveys, up to 1,000 ft., or occasionally more, for broad reconnaissance work. Other factors involved in the selection are concerned with the anticipated physical geometry of any possibly existing mineral occurrence which must include consideration of such factors as expected depth of burial to the top of the source, the dimenstions of the source itself as well as of its electrical and other physical properties. In general the greater the spacing the greater the maximum penetration and the less the lateral definition. With this dipole-dipole (Eltran) electrode configuration, the maximum theoretical possible penetration is from 1.0 times the electrode spacing in the first separation to 3.5 times the spacing on the 6th separation. In other words, with theoretically IDEAL conditions of completely isotropic-homogeneous resistivity in every direction both lateral and vertical, (a situation we never have), using 1,000 ft. dipoles,

the information obtained in the first dipole separation represents the average electrical composition of the materials from 0 to 1,000 ft; in the third separation from 0 to 2,000 ft; in the 6th separation from 0 to 3,500 ft. Actually, penetration is a function of the absolute resistivity distribution and magnitude which are most often rather complex, In practice, empirical results have shown that under average conditions the depth of penetration may vary from 0.2 to 2.0 times the electrode spacing from first to sixth dipole separation. The I. P. data obtained is plotted at a point that represents the geometric "bottom" of a hemisphere which has a radius equal to 1/2 the dipole separation, however, it must be emphasized that this value does not necessarily represent the electrical properties at that point, but actually the average of the properties of all the materials within the hemisphere. Furthermore, in the vicinity of sharply contrasting resistivity contacts the hemisphere will be greatly distorted often providing for lateral translation of maximums and minimums. Therefore, it is unrealistic to attempt interpretation to a degree of accuracy greater than a minimum of about half the distance between any two adjacent depth points. Fortunately geological (and therefore physical property) contacts are often sharp enough to create a pattern within the data that lends itself to more or less definite analysis within the limitations above described.

Since we usually only effectively collect data from the

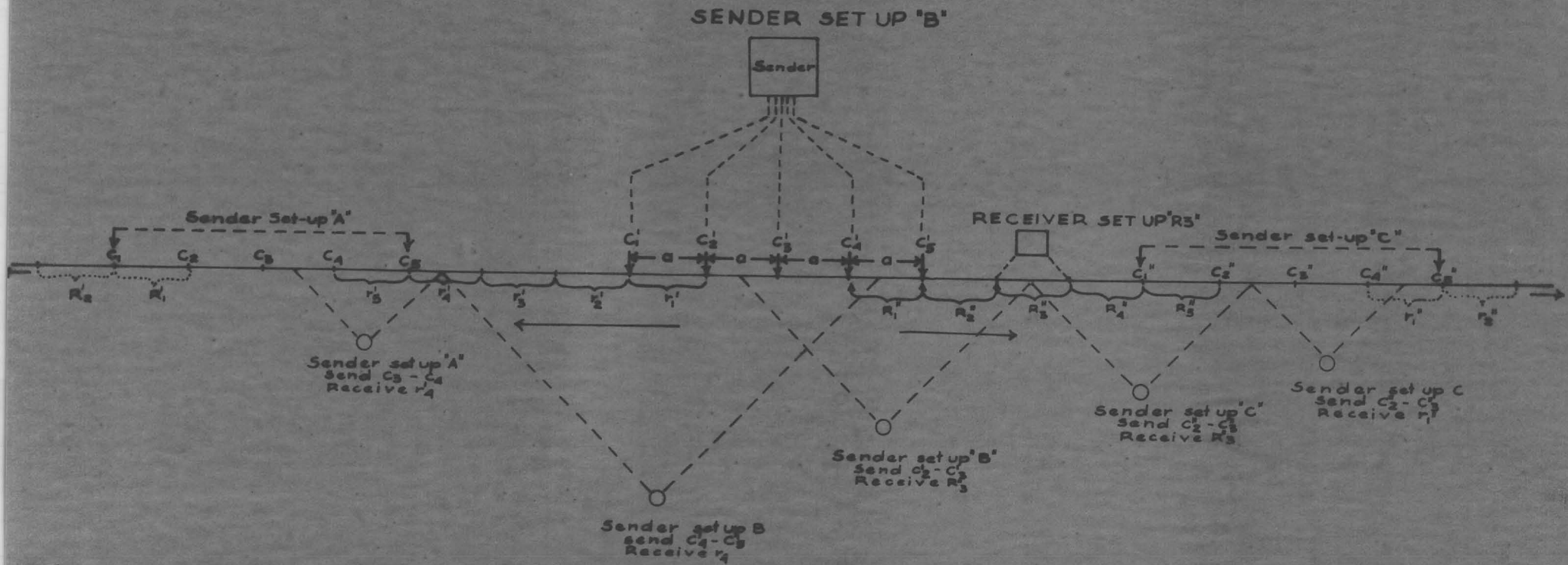
surface with essentially two dimensional coverage, the exact vertical aspects are often the most difficult to analyze. For example, it is very hard to detect the presence of a relatively poor conductor, or non-polarizing horizon, lying below a good conductor or polarizing layer, and if the upper horizon were an especially good conductor there would be no indication what so ever of the lower zone.

In the case of an alternating series of conducting and insulating horizons the affect is to average the electrical properties of the entire section with a somewhat more attenuated resultant than if the whole section were a uniform iquivalent of the same averaged conditions from surface to the point of maximum penetration. In the more usual case of non-sulfides, less conducting material, overlying a conducting (sulfides) zone that extends beyond the depth of maximum penetration, the data will show no more than background polarization effects in separations that are smaller than the thickness of the over-burden, with polarization uniformly increasing with depth until certain lateral and vertical limits related to the size, shape and position of the conducting horizon are exceeded.

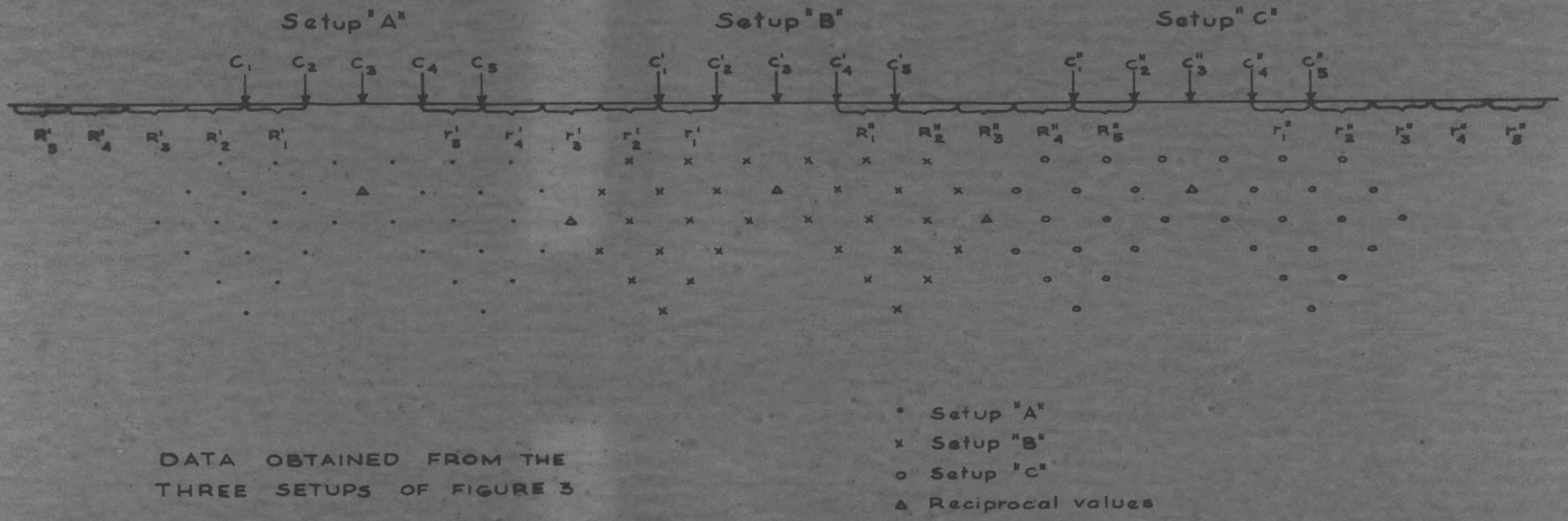
PLOTTING AND INTERPRETATION

The sectional data sheets show the D. C. resistivity plotted above the horizontal line with the percent frequency effect (PFE) plotted as a superscript thereto. The metallic

conduction factor (MCF) which is a computed value to "normalize" the PFE value for lateral resistivity variations as an aid to interpretation, is plotted below the line. Normally PFE's of 0 +/- 5% are considered to be background, 5% to 10% plus as marginal, and 10% plus as definitely anomalous. However, this scaling of values will vary to some degree conditional upon variable geological (earth electrical) conditions.



Schematic diagram illustrating the method of obtaining and plotting Eltran resistivity data. Diagram shows three separate current electrode spreads along a traverse line. In normal procedure, there are three dipole separations between current electrode spreads. The receiver setups are moved outwards from the ends of each current electrode spread usually until three dipole spacings separate the potential electrode setup from the near end of the spread. Current is "sent" to each possible pair of electrodes for each receiver setup. For instance, in Sender setup "B" when the receiver is receiving at R'_1 only C'_3 -C'_2 and C'_2-C'_1 can be "sent" so that data at 1 and 2 dipole separations is obtained respectively. When the receiver is at R'_5; C'_5-C'_4, C'_4-C'_3, C'_3-C'_2 and C'_1-C'_2 are sent and data is obtained for 3, 4, 5, and 6 dipole separations respectively. Each sender setup provides for 33 data points.



DATA OBTAINED FROM THE THREE SETUPS OF FIGURE 3

- • Setup "A"
- x Setup "B"
- o Setup "C"
- △ Reciprocal values

MAKE AS MANY copies of this as practical—(for future space use)

Appendix A

Technical Comments on The I.P. Method

The induced polarization method is based on the somewhat peculiar electrical properties of sulfide particles, and more particularly those of iron, copper and lead. Sulfide particles react to electrical currents somewhat in the manner of miniature capacitors. A rock mass containing sulfide particles will offer a lower impedence to an alternating current than its resistance to a direct current. Hence when a direct current is applied across a pair of current electrodes in the vicinity of a disseminated sulfide body, the potential drop between two potential electrodes some given distance from the current electrodes will be greater than when an alternating current is applied to the first two electrodes. Three separate quantities are computed from the data acquired in the field. The first is the D. C. resistivity. The second is the percent frequency effect. The third quantity is the so called "metallic conduction factor" (a misnomer) which is simply the frequency effect divided by the D. C. resistivity.

The property of induced polarization is not entirely unique to sulfide particles but with sufficient geological knowledge, anomalism due to sulfides can be normaly interpreted apart from that possibly due to graphite, magnetite, clay particles, etc.

In field practice five equally spaced co-linear current electrodes are set. Observations are made in accordance with the dipole-dipole or Eltran configuration mode of operation in which the distance between the receiver or potential electrodes is equal to the distance between each pair of current electrodes and the separation between the center of each potential electrode set-up from the center of each pair of current electrodes is some multiple of the electrode spacing.

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INDUCED POLARIZATION INVESTIGATION
of the
Lil Claim Group,
Sec 14 and 15, T15S, R12E G&SRB&M
Saginaw Hill Area Pima County, Arizona

for
JAMES A. WOOLSEY
Tucson, Arizona

April, 1963

by
HEINRICHS GEOEXPLORATION COMPANY
P. O. Box 5671 Tucson, Arizona

INTRODUCTION

On April 2, 1963, Heinrichs Geoexploration Company performed an induced polarization survey over a portion of the Lil Claim Group in Sections 14 and 15, T15S, R12E G&SRB&M at the request of Mr. James A. Woolsey, Locator.

The work consisted of one East-West line providing 6000 feet of I. P. profile coverage and was performed under the direction of F. A. Seward, Jr., geophysicist in charge with C. L. Ludwig, geophysicist-observer, and F. F. Hanly and D. McCallum, assisting.

Included with this report are a sketch map at the Lil Claim Group showing the plan location of the I. P. Line, a Sectional Data sheet which is a graphical presentation of the data obtained, and a vertical curve depth interpretation. Also included is a rather detailed section titled Technical Comments on the I. P. Method which explain the I. P. technique of geophysical investigation.

CONCLUSIONS AND RECOMMENDATIONS

1. In the area processed there is no apparent I. P. anomaly and it is concluded that the volume percentage of sulfide does not exceed 0.5%.

2. The depth to bedrock is apparently quite shallow and in all probability does not exceed 100 ft.

3. Our penetration of effects measured is expected to have approached 1,000 ft. with lateral resolution to at least 500 ft. to either side of the line.

4. At least two more lines would be required to effectively write off the area down to a depth of about 1,000 ft.

PROCEDURES

The center of the I. P. Line was located approximately at the end center between Lil Claims 4 and 13 and run east and west along the claim center lines 3, 4, 13 and 14. This selection was made so as to process the greatest amount of ground within the claim group.

INTERPRETATION

As previously stated no polarization effects were noted that are considered to be related to economically significant sulfide /mineralization. From the resistivity data it is apparent that the alluvial layer is quite thin and bedrock is probably from 50 to 100 ft. below the surface. There is a metal factor contrast between the first separation data and that of greater depths that indicates a higher I. P. background in the bedrock. However, the degree of mineralization, if any, does not exceed 0.5% total sulfide by volume.

April 5, 1963
P. O. Box 5671
Tucson, Arizona

Respectfully submitted,

HEINRICHS GEOEXPLORATION CO.

Franklin A. Seward, Jr.

Registered Professional Engineer (Mining) CERTIFICATE EXPIRES WALTER L. HEINRICHS, JR. DEC. 31, 1963 ARIZONA, U. S. A.

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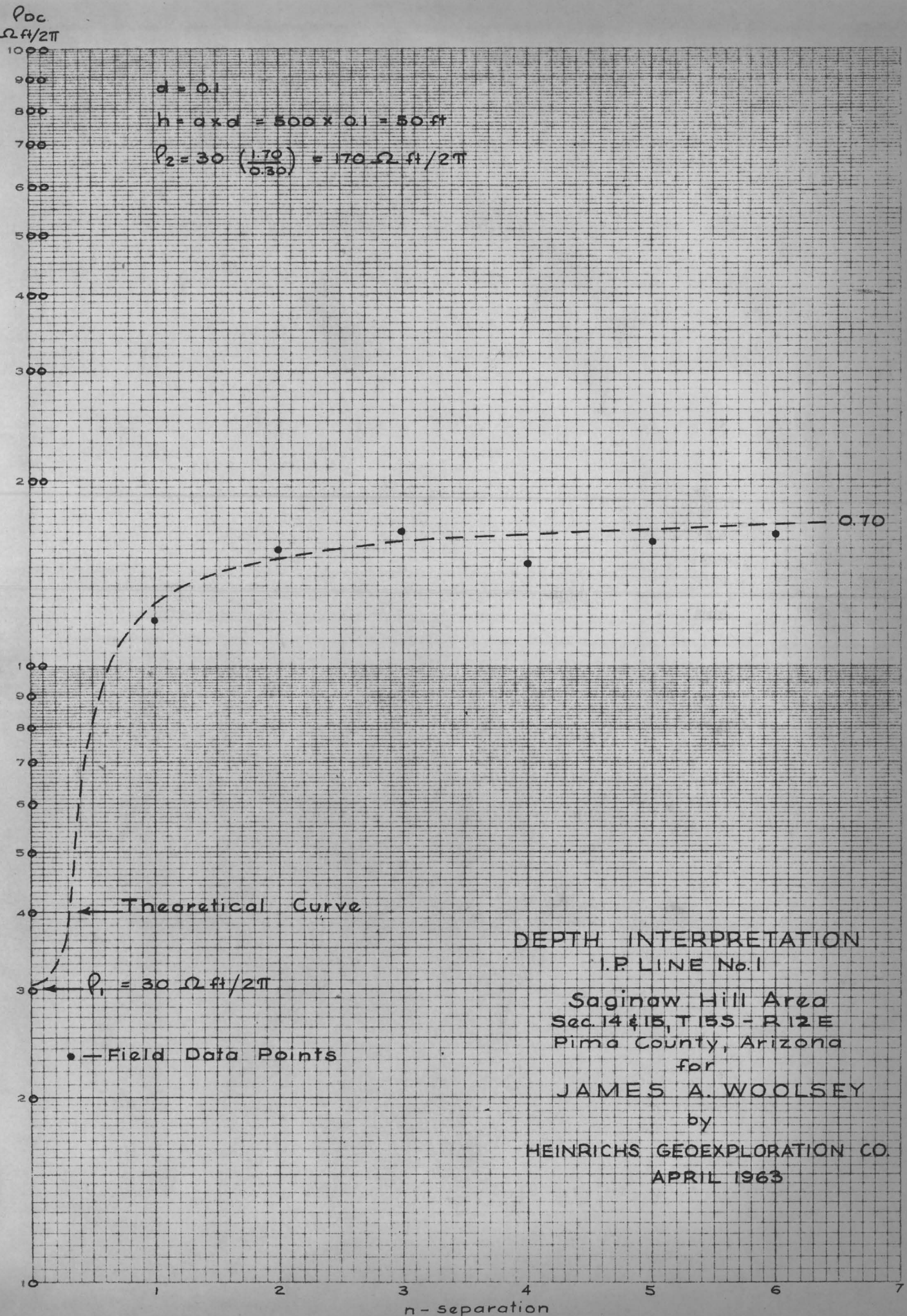
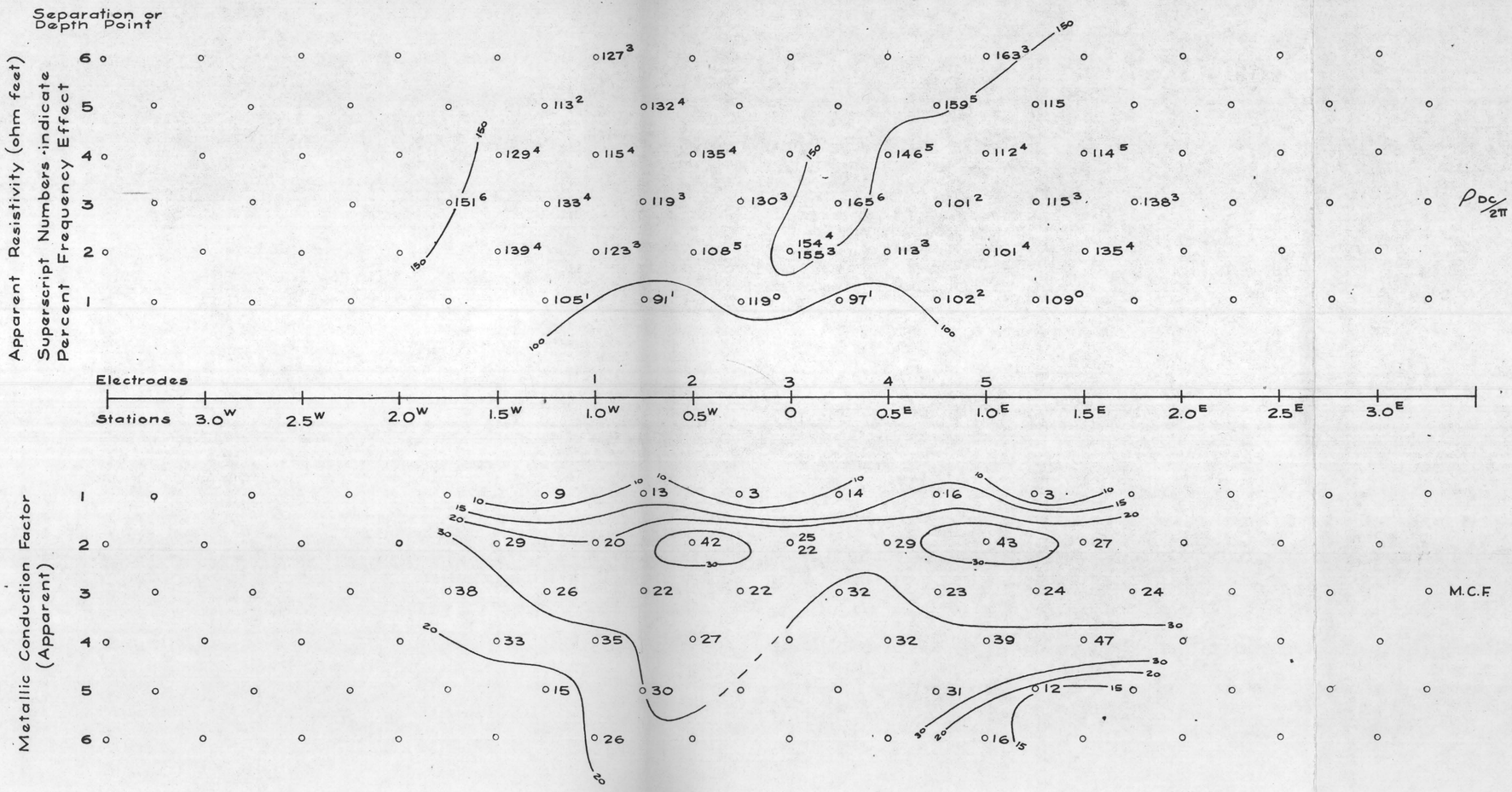


DEPTH INTERPRETATION
I.P LINE No. 1

Saginaw Hill Area
Sec. 14 & 15, T 15S - R 12E
Pima County, Arizona
for
JAMES A. WOOLSEY
by
HEINRICHS GEOEXPLORATION CO.
APRIL 1963



LEGEND

- End of Line
- Station
- No Anomaly
- Very Weak
- Weak
- Moderate
- Strong

Contour interval: Logarithmic
( ) indicates questionable data

SECTIONAL DATA SHEET

LINE No. 1

INDUCED POLARIZATION SURVEY

HEINRICHS GEOEXPLORATION COMPANY

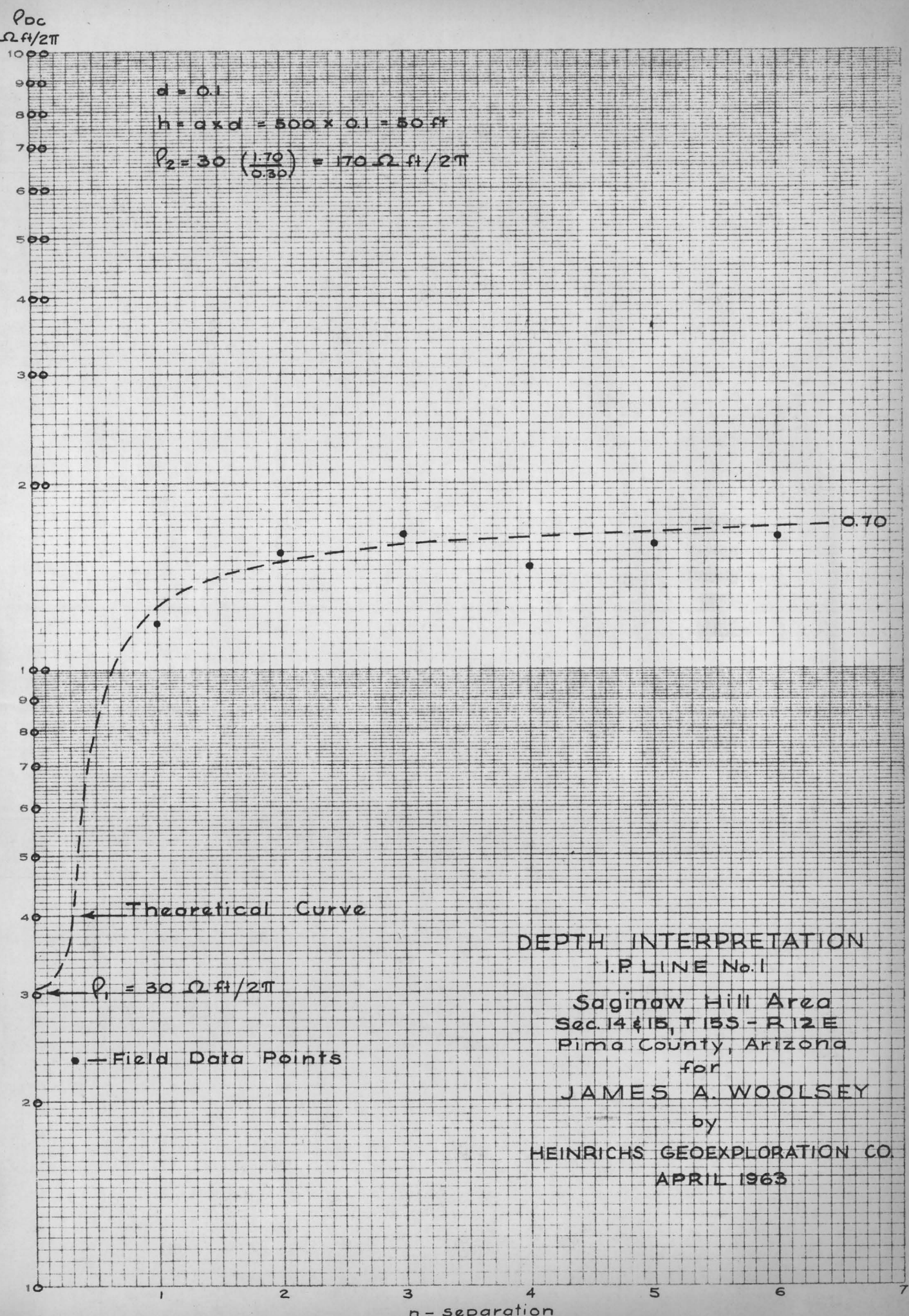
SCALE: 1" = 500' DATE: April 1963

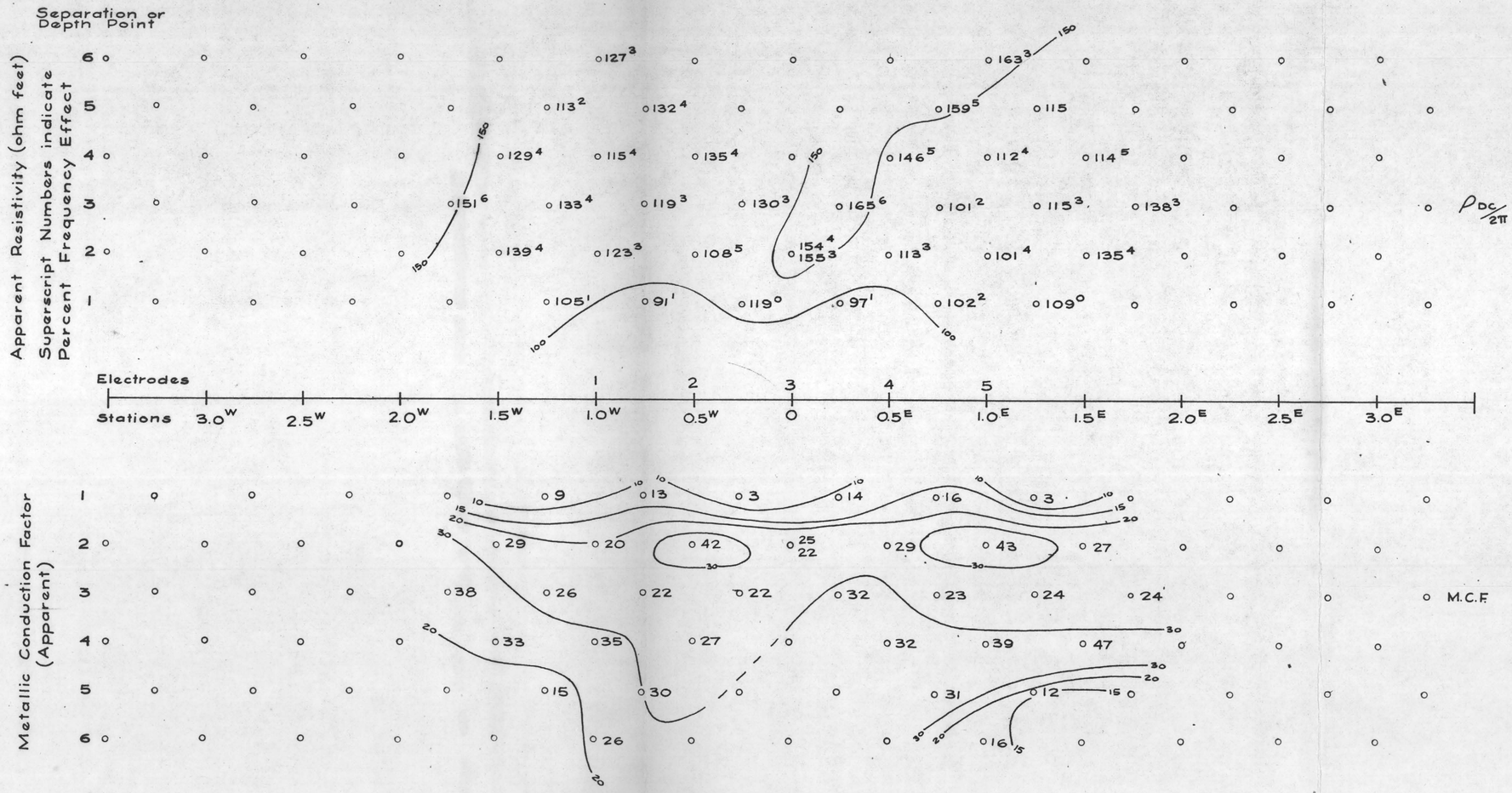
SAGINAW HILL AREA

Sec. 14 & 15, T15S-R12E Pima Co., Arizona

for

JAMES A. WOOLSEY





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Contour interval: Logarithmic
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SECTIONAL DATA SHEET

LINE No. 1

INDUCED POLARIZATION SURVEY

HEINRICHS GEOEXPLORATION COMPANY

SCALE: 1" = 500' DATE: April 1963

SAGINAW HILL AREA

Sec. 14 & 15, T15S-R12E Pima Co., Arizona

for

JAMES A. WOOLSEY

R 12 E

T 15 S

10 | 11
15 | 14

11 | 12
14 | 13

19 | 18 | 17 | MINERALS WITHDRAWN | 1

20 | 16 | 15 | | 2

3.0W 2.5W 2.0W 1.5W 1.0W 0.5W 0 0.5E 1.0E 1.5E 2.0E 2.5E 3.0E

LINE No. 1

	14	13	4	3
	12	11	6	5
	10	9	8	7

15 | 14
22 | 23

14 | 13
23 | 24

N

HEINRICHS GEOEXPLORATION COMPANY
P.O. Box 5671 Tucson, Arizona

SKETCH MAP
INDUCED POLARIZATION SURVEY
FOR
JAMES A. WOOLSEY

LIL CLAIM GROUP — SAGINAW HILL AREA
SEC. 14 & 15, T15S - R12E
PIMA COUNTY, ARIZONA

SCALE: 1" = 500'	CONTOUR INTERVAL:	REVISIONS
	DATA BY: F.A.S. Jr.	
DATE: APRIL 1963	SHEET OF	
DRAWN BY: i. b.	DRAWING NO.:	FILE:

R 12 E

T 15 S

10 | 11
15 | 14

11 | 12
14 | 13

20	19	18	17	MINERALS WITHDRAWN
	16	15		1
				2

3.0W 2.5W 14 2.0W 1.5W 1.0W 13 0.5W 0 0.5E 4 1.0E 1.5E 2.0E 3 2.5E 3.0E LINE No. 1

	12	11	6	5
	10	9	8	7

15 | 14
22 | 23

14 | 13
23 | 24

N

HEINRICHS GEOEXPLORATION COMPANY
P.O. Box 5671 Tucson, Arizona

SKETCH MAP
INDUCED POLARIZATION SURVEY
FOR
JAMES A. WOOLSEY

LIL CLAIM GROUP — SAGINAW HILL AREA
SEC. 14 & 15, T 15 S - R 12 E
PIMA COUNTY, ARIZONA

SCALE: 1" = 500'	CONTOUR INTERVAL:	REVISIONS
	DATA BY: F. A. S. Jr.	
DATE: APRIL 1963	SHEET OF	
DRAWN BY: i. b.	DRAWING NO.:	FILE:

INTRODUCTION

On January 31, 1964, at the request of J. A. Woolsey Heinrichs Geoexploration Company conducted and completed an induced polarization survey on the Duval Extension claim group in Section 32, T. 17 S., R. 12 E., Pima County, Arizona.

This survey consisted of one spread of 500-foot spaced dipole-dipole configuration, dual frequency induced polarization data, giving a total of 6,000 feet of line surveyed and 3,500 feet of plotted data. A plan location map and a sectional data sheet of results are included.

Personnel involved were Chris S. Ludwig, geophysicist, F. Hanly and R. Palmer, technical assistants.

CONCLUSIONS AND RECOMMENDATIONS

1. No induced polarization effects typical of economic-grade porphyry-type sulfide mineralization were encountered in the vicinity of the traverse down to about 1,000 feet below surface.

2. A very weak zone of I. P. effects of questionable economic significance was encountered between 0.75W and 0.25E. This zone probably has from 0.25 to 0.75 percent total sulfide by volume.

3. We recommend several more lines of induced polarization on the same spacing, oriented parallel to and 1,500

INDUCED POLARIZATION SURVEY

DUVAL EXTENSION CLAIMS
Twin Buttes Mining District
Pima County, Arizona

for

J. A. WOOLSEY
Tucson, Arizona

January 1964

by

HEINRICHS GEOEXPLORATION COMPANY
P. O. Box 5671 Tucson, Arizona

feet north and south of the present traverse in order to determine if the zone of minor effects is the fringe or extension of a better zone.

INTERPRETATION

This line shows mainly variations of typical background magnitude in the percent frequency effects and metallic conduction factors, except from about 0.75W to 0.25E where the effects are 1½ times background. This zone of slightly stronger effects shows up mainly in the percent frequency effects rather than in the metallic conduction factors or resistivities. This zone is apparently slightly higher in sulfide content than the surrounding rocks, perhaps having a total sulfide content, by volume, of 0.25 to 0.75 percent. This is not in itself of likely economic interest, but may be the fringe or extension of a larger and higher grade zone.

In general, the resistivities increase with depth whereas the frequency effects and metal factors decrease with depth, indicating no probable sulfide improvement with depth to 1000'±

Respectfully submitted,
HEINRICHS GEOEXPLORATION COMPANY

Chris L. Ludwig

Chris S. Ludwig
Geophysicist

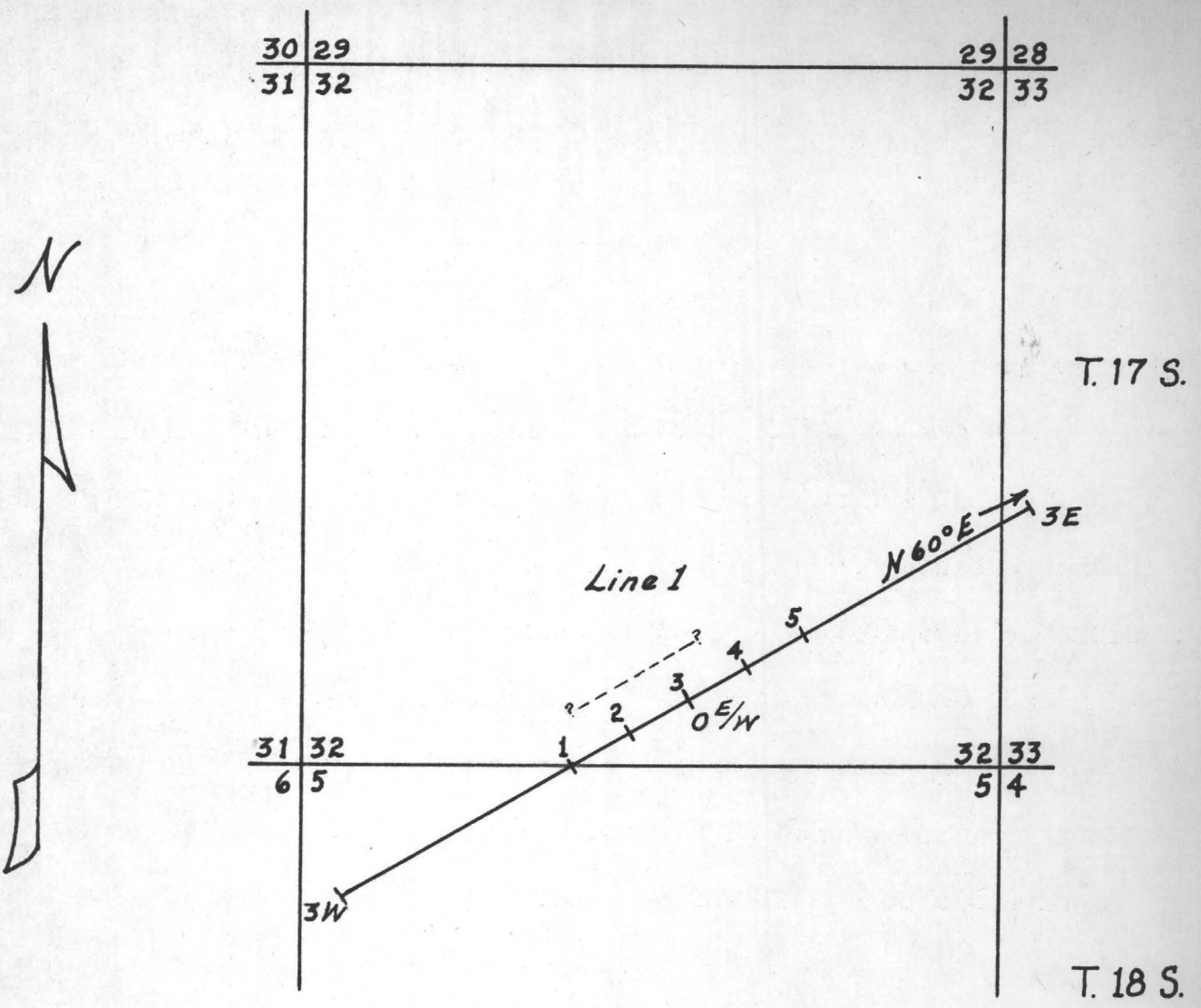
Approved:

Walter E. Heinrichs, Jr.
President and General Manager

Registered Professional Engineer (Mining) CERTIFICATE EXPIRES WALTER E. HEINRICHS, JR. DEC. 31, 19 64 ARIZONA, U. S. A.

February 4, 1964
P. O. Box 5671
Tucson, Arizona 85703

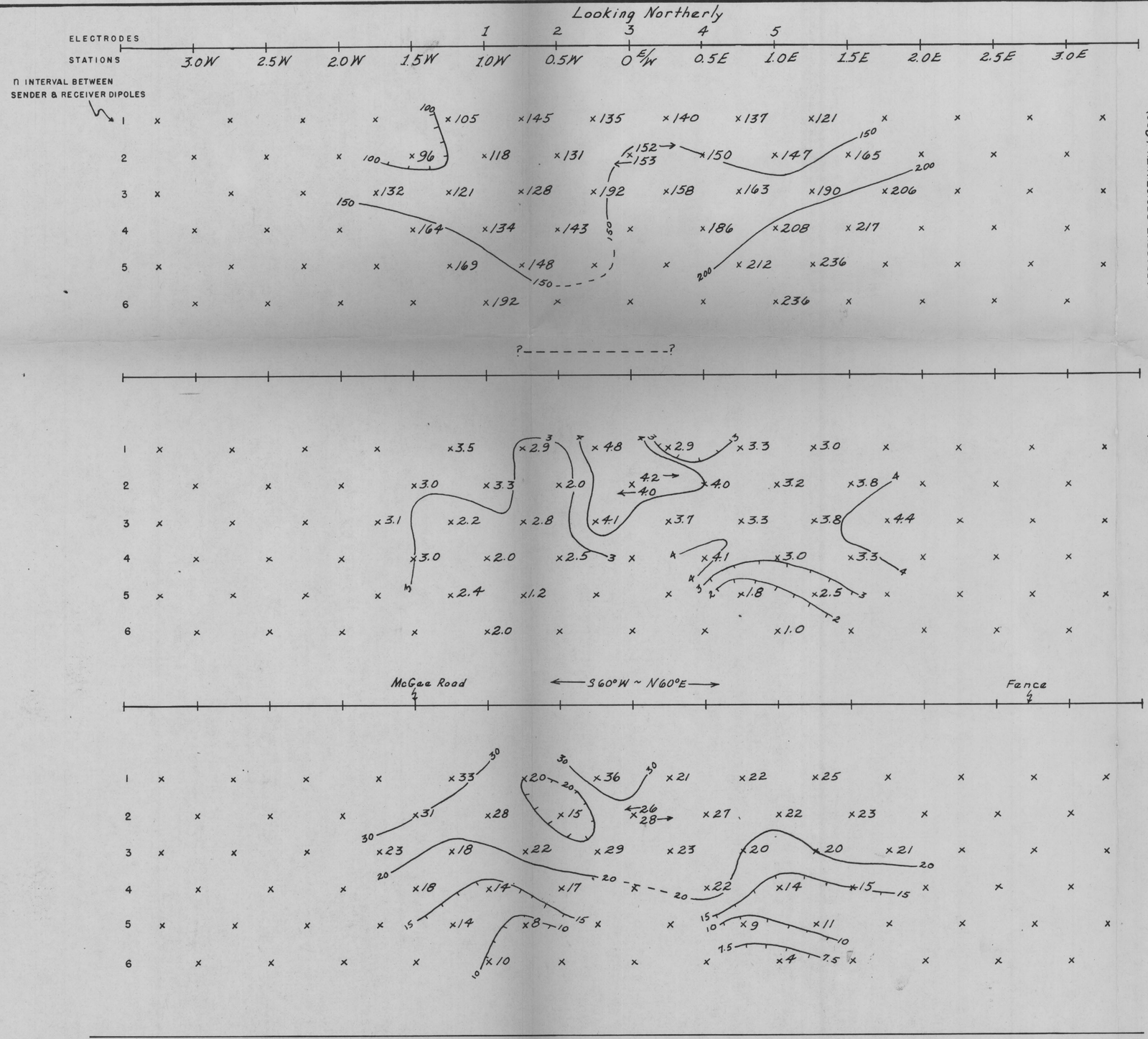
R. 12 E.



Location of
Induced Polarization Traverse
Duval Extension Claims,
Twin Buttes Mining District
by
Heinrichs Geoexploration Company
for
J. A. Woolsey
February 1964

Scale: 4" = 1 mile

0 ½ 1



APPARENT RESISTIVITY (ρ_{DC}) IN UNITS OF $\frac{\text{OHM FEET}}{2\pi}$

CONTOUR INTERVAL LOGARITHMIC

SENDER FREQUENCY: 0.05 c.p.s.

PERCENT FREQUENCY EFFECT (PFE)

CONTOUR INTERVAL CONSTANT

SENDER FREQUENCIES: 0.05 & 3.0 c.p.s.

APPARENT "METALLIC CONDUCTION" FACTOR (MCF)

$\left(\text{MCF} = \frac{\text{PFE} \times 1000}{\rho_{DC}}\right)$

CONTOUR INTERVAL LOGARITHMIC

EXPLANATION

ELECTRODE ARRAY: 500' — n x 500' — 500'

SENDER DIPOLE — RECEIVER DIPOLE

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

SECTIONAL DATA SHEET

LINE No. 1

INDUCED POLARIZATION TRAVERSE

Duval Extension Claims,
Twin Buttes Mining District

HEINRICHS GEOEXPLORATION COMPANY

SCALE: 1" = 500' DATE: February 1964

FOR

J. A. WOOLSEY
Tucson, Arizona

INDUCED POLARIZATION SURVEY

DUVAL EXTENSION CLAIMS
Twin Buttes Mining District
Pima County, Arizona

for

J. A. WOOLSEY
Tucson, Arizona

January 1964

by

HEINRICHS GEOEXPLORATION COMPANY
P. O. Box 5671 Tucson, Arizona

INTRODUCTION

On January 31, 1964, at the request of J. A. Woolsey Heinrichs Geoexploration Company conducted and completed an induced polarization survey on the Duval Extension claim group in Section 32, T. 17 S., R. 12 E., Pima County, Arizona.

This survey consisted of one spread of 500-foot spaced dipole-dipole configuration, dual frequency induced polarization data, giving a total of 6,000 feet of line surveyed and 3,500 feet of plotted data. A plan location map and a sectional data sheet of results are included.

Personnel involved were Chris S. Ludwig, geophysicist, F. Hanly and R. Palmer, technical assistants.

CONCLUSIONS AND RECOMMENDATIONS

1. No induced polarization effects typical of economic-grade porphyry-type sulfide mineralization were encountered in the vicinity of the traverse down to about 1,000 feet below surface.

2. A very weak zone of I. P. effects of questionable economic significance was encountered between 0.75W and 0.25E. This zone probably has from 0.25 to 0.75 percent total sulfide by volume.

3. We recommend several more lines of induced polarization on the same spacing, oriented parallel to and 1,500

feet north and south of the present traverse in order to determine if the zone of minor effects is the fringe or extension of a better zone.

INTERPRETATION

This line shows mainly variations of typical background magnitude in the percent frequency effects and metallic conduction factors, except from about 0.75W to 0.25E where the effects are 1½ times background. This zone of slightly stronger effects shows up mainly in the percent frequency effects rather than in the metallic conduction factors or resistivities. This zone is apparently slightly higher in sulfide content than the surrounding rocks, perhaps having a total sulfide content, by volume, of 0.25 to 0.75 percent. This is not in itself of likely economic interest, but may be the fringe or extension of a larger and higher grade zone.

In general, the resistivities increase with depth whereas the frequency effects and metal factors decrease with depth, indicating no probable sulfide improvement with depth to 1000'±.

Respectfully submitted,
HEINRICHS GEOEXPLORATION COMPANY

Chris S. Ludwig

Chris S. Ludwig
Geophysicist

Approved:

Walter E. Heinrichs, Jr.
President and General Manager

Registered Professional Engineer (Mining) CERTIFICATE EXPIRES WALTER E. HEINRICHS, JR. 64 ARIZONA, U.S.A.

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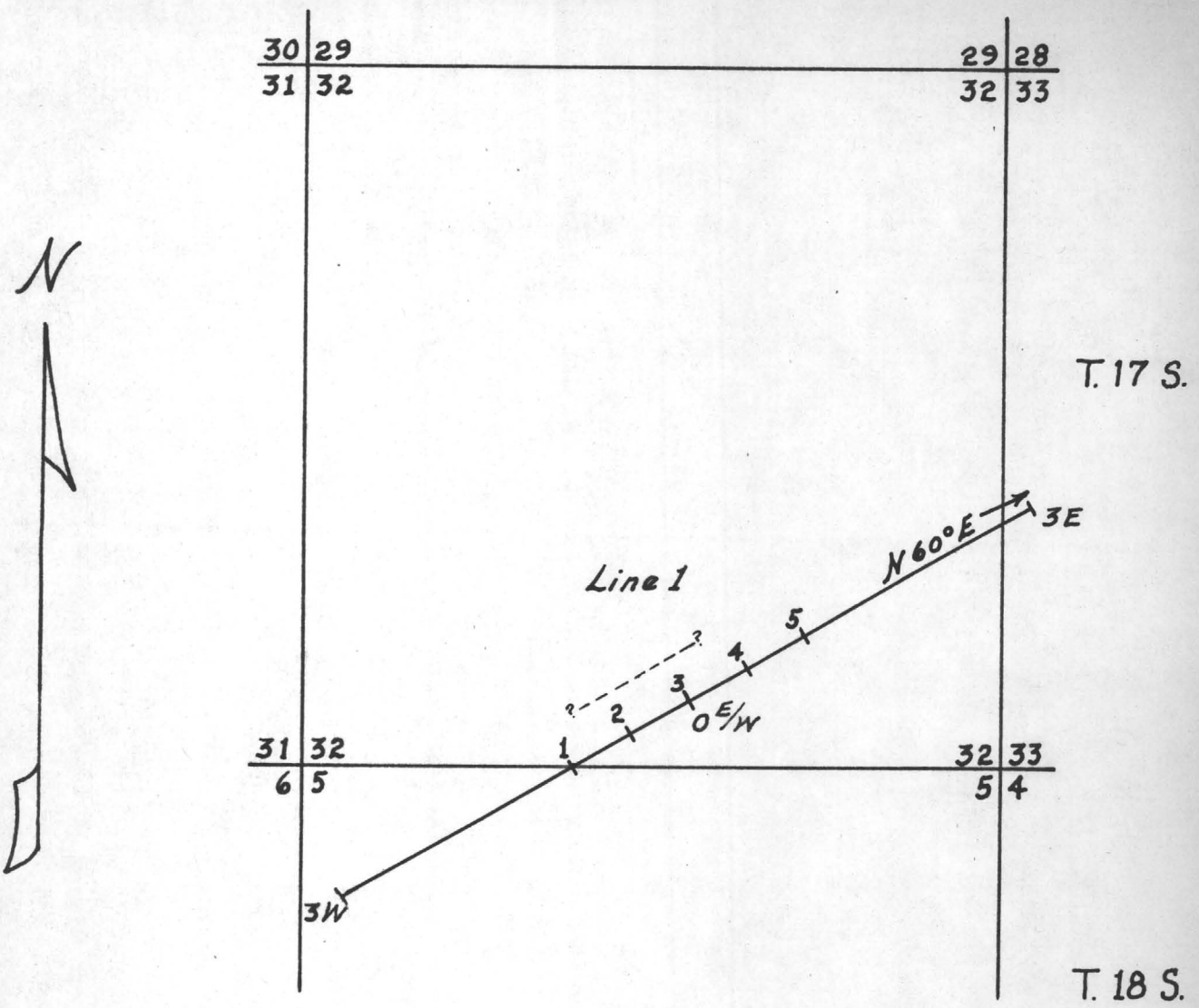
R. 12 E.



Location of
Induced Polarization Traverse
Duval Extension Claims,
Twin Buttes Mining District
by
Heinrichs Geoexploration Company
for
J. A. Woolsey
February 1964

Scale: 4" = 1 mile

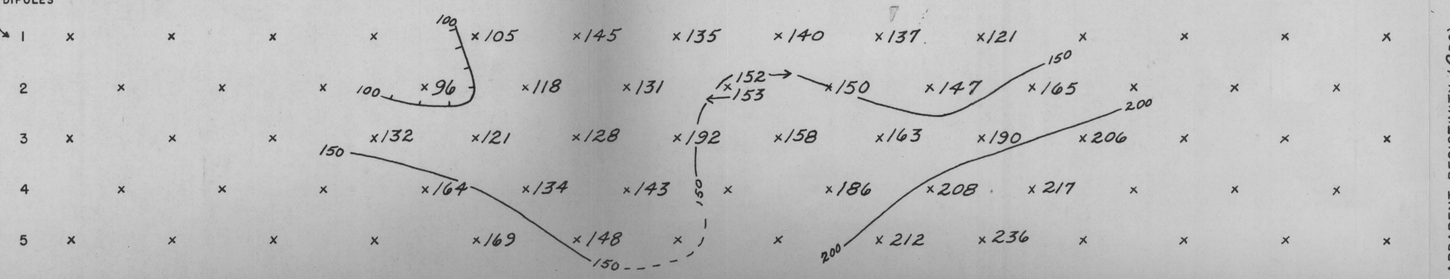
0 ½ 1

Looking Northerly

ELECTRODES 1' 2 3 4 5

STATIONS 3.0W 2.5W 2.0W 1.5W 1.0W 0.5W 0 E/W 0.5E 1.0E 1.5E 2.0E 2.5E 3.0E

n INTERVAL BETWEEN SENDER & RECEIVER DIPOLES



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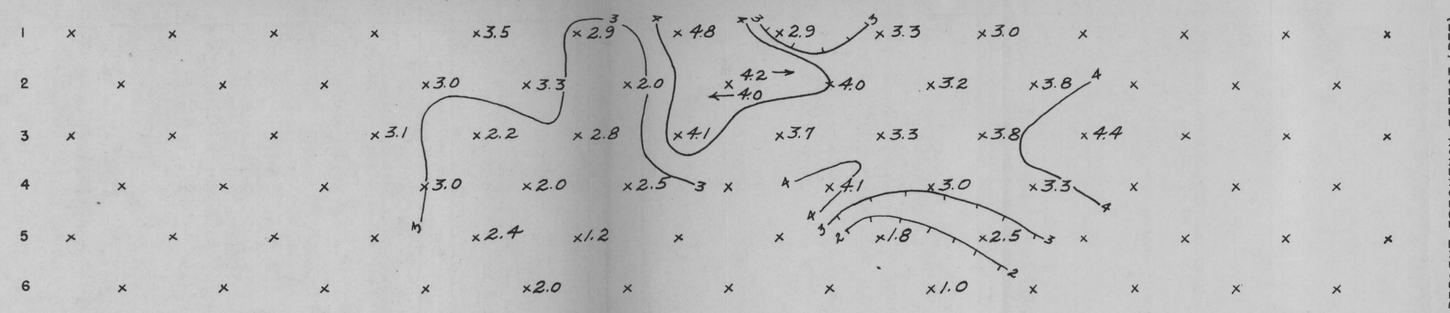
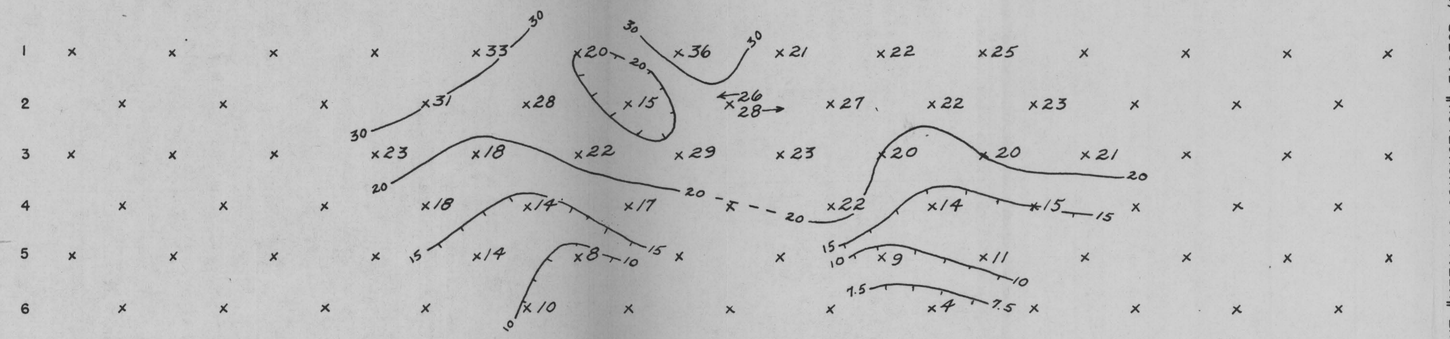


McGee Road ←S60°W ~ N60°E→ Fence



APPARENT RESISTIVITY (ρ_{DC}) IN UNITS OF OHM FEET

CONTOUR INTERVAL LOGARITHMIC 2 Π

SENDER FREQUENCY: 0.05 c.p.s.

PERCENT FREQUENCY EFFECT (PFE)

CONTOUR INTERVAL CONSTANT

SENDER FREQUENCIES: 0.05 & 3.0 c.p.s.

APPARENT "METALLIC CONDUCTION" FACTOR (MCF)

$\left(MCF = \frac{PFE \times 1000}{\rho_{DC}}\right)$

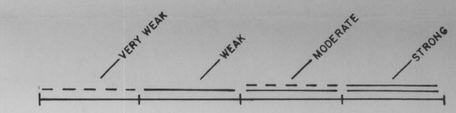
CONTOUR INTERVAL LOGARITHMIC

EXPLANATION

ELECTRODE ARRAY: 500' — n x 500' — 500'

SENDER DIPOLE — RECEIVER DIPOLE

RELATIVE ANOMALY STRENGTH



SECTIONAL DATA SHEET

LINE No. 1

INDUCED POLARIZATION TRAVERSE

Duval Extension Claims,
Twin Buttes Mining District

HEINRICHS GEOEXPLORATION COMPANY

SCALE: 1" = 500' DATE: February 1964

FOR

J. A. WOOLSEY
Tucson, Arizona