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Project: JOHNSONLine: 1 5 1/2

Int. Cal

Date: 9-7-65

nd	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		2-3		
Rec.	30-37 1/2	—	—	—	37 1/2-45	—	—	—		CAL		
Time	100	100	30	10	30	30	3	3		1.00		
DC-1	69.5	29.0	7.20	4.12	15.4	8.6	2.49	1.39		47.5		
DC-2	67.5	29.27	—	4	15.8	7.5	2.26	1.45		46.8		
Σ	137.0	58.2	14.20	8.12	31.2	16.1	4.75	2.84		94.3		
DC-3	69.5	29.2	7.00	4.25	15.2	8.2	2.44	1.36		47.5		
Dc-4	67.5	29.2	7.2	3.9	15.9	8.1	2.27	1.43		46.8		
Σ	137.0	58.4	14.2	8.15	31.1	16.3	4.71	2.79		94.3		
DC-AV												
AC-1	67.5	28.2	7.00	4	15.0	7.95	2.31	1.40		46.0		
AC-2	67.5	28.5	"	4.05	15.2	8	"	"		46.2		
Σ	135.0	56.7	14.00	8.05	30.2	15.95	4.61	2.80		92.2		
P.	75.4				-31.5							
AC-N	.03				.03							

INDUCED POLARIZATION - RECEIVER NOTES

PAGE 3Project: Juhan Johnson Line: 1 N $\frac{1}{2}$ Int. Cal Date: 9-7-65

nd	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
Rec.	0-750	75-15	75-15	15-22.5	15-22.5	15-22.5	22.5-30	22.5-30	22.5-30	22.5-30		
Time	300	300	100	300	100	30	300	100	30	10		
DC-1	144	191.0	56.5	128.0	62.5	21.9	131.0	27.5	15.6	5.7		
DC-2	140	191	55.5	130	62.8	21.8	131	26.8	15.9	5.78		
Σ	284.0	382.0	112.0	258.0	125.3	43.7	262.0	54.3	31.5	11.48		
DC-3	145.0	192	57.0	129.0	62.5	21.8	131	27.0	15.6	5.65		
Dc-4	139	190	55.0	130.0	62.8	21.9	131	27.2	15.9	5.78		
Σ	284.0	382.0	112.0	259.0	125.3	43.7	262.0	54.2	31.5	11.43		
DC-AV												
AC-1	136.0	185	55.2	126.0	61.5	21.6	130.0	26.5	15.4	5.65		
AC-2	139	188	"	125	62-	"	128.0	"	15.6			
Σ	275.0	373.0	110.4	251.0	123.5	43.2	258.0	53.0	31.0	11.30		
P.	-16.0	-4.9		+0.6			-1.4					
AC-N	.03	.03		.03			.03					

Project: JOHNSON Line: 1 1/2 Int. Cal Date: 9-7-65

nd	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		3-4		
rec.	30-37.5	→	→	→	37.5-45	→	→	→		CAL		
Time	30	10	10	3	30	10	10	3		100		
DC-1	20.8	6-	4.98	1.99	8.1	3.50	3-	1.19		46.5		
DC-2	19.9	6.40	4.92	1.88	7.7	2.90	2.75	1.20		46.5		
Σ	40.7	12.40	9.90	3.87	15.8	6.40	5.75	2.39		93.0		
DC-3	21.0	6-	5-	1.99	8.2	3.25	3.05	1.17		46.5		
Dc-4	19.8	6.4	4.90	1.85	7.6	3.15	2.75	1.20		46.5		
Σ	40.8	12.40	9.90	3.84	15.8	6.40	5.80	2.37		93.0		
DC-AV												
AC-1	20.5	6.08	4.78	1.89	7.9	3.15	2.80	1.16		45.8		
AC-2	20.1	6.15	4.85	1.90	"	2.0	"	1.15		45.8		
Σ	40.6	12.23	9.63	3.79	15.8	6.35	5.60	2.31		91.6		
P.	-3.9				+13.9							
AC-N	.02				.02							

← LIGHTNING →

INDUCED POLARIZATION

SENDER NOTES

 Project: JUHANT JOHNSON Line: I 5 1/2 Date: 7-7-65

Send	2-3	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2
Receive	CAL	0.75 ^S	75-15 ^S	→	1.5-2.25	→	2.25 ^S -3p	→	→	→	→	3p-3.75
Time												
Range												
Current	1000	1600	1800	1600	1000	1600	1600	800	1000	1800	1600	800
Send	2-3	3-4	4-5	1-2	2-3	3-4	4-5					
Receive	→	→	→	3.75-4.50	→	→	→					
Time												
Range				410	400	300	400					
Current	1000	1800	1600	800	1000	1800	1600					

INDUCED POLARIZATION

SENDER NOTES

Project: JAHAN + JOHNSONLine: I N 1/2Date: 9-7-65

Send	3-4	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5
Receive	CAL	0-75 ^N	75-115 ^N	→	1.5-2.25 ^N	→	→	2.25-3.0	→	→	→	3.0-37 ^N
Time												
Range												
Current	1000	800	1000	800	1800	1000	800	1600	1800	1000	800	1600
Send	3-4	2-3	1-2	4-5	3-4	2-3	1-2					
Receive	→	→	→	3.75-4.5 ^N	→	→	→					
Time												
Range												
Current	1800	1000	800	1600	1800	1000	800					

INDUCED POLARIZATION - RECEIVER NOTES

PAGE

1

Project: Juhan JohnsonLine: 1 5 1/2Int. Cal 90.0 Date: 9-7-65

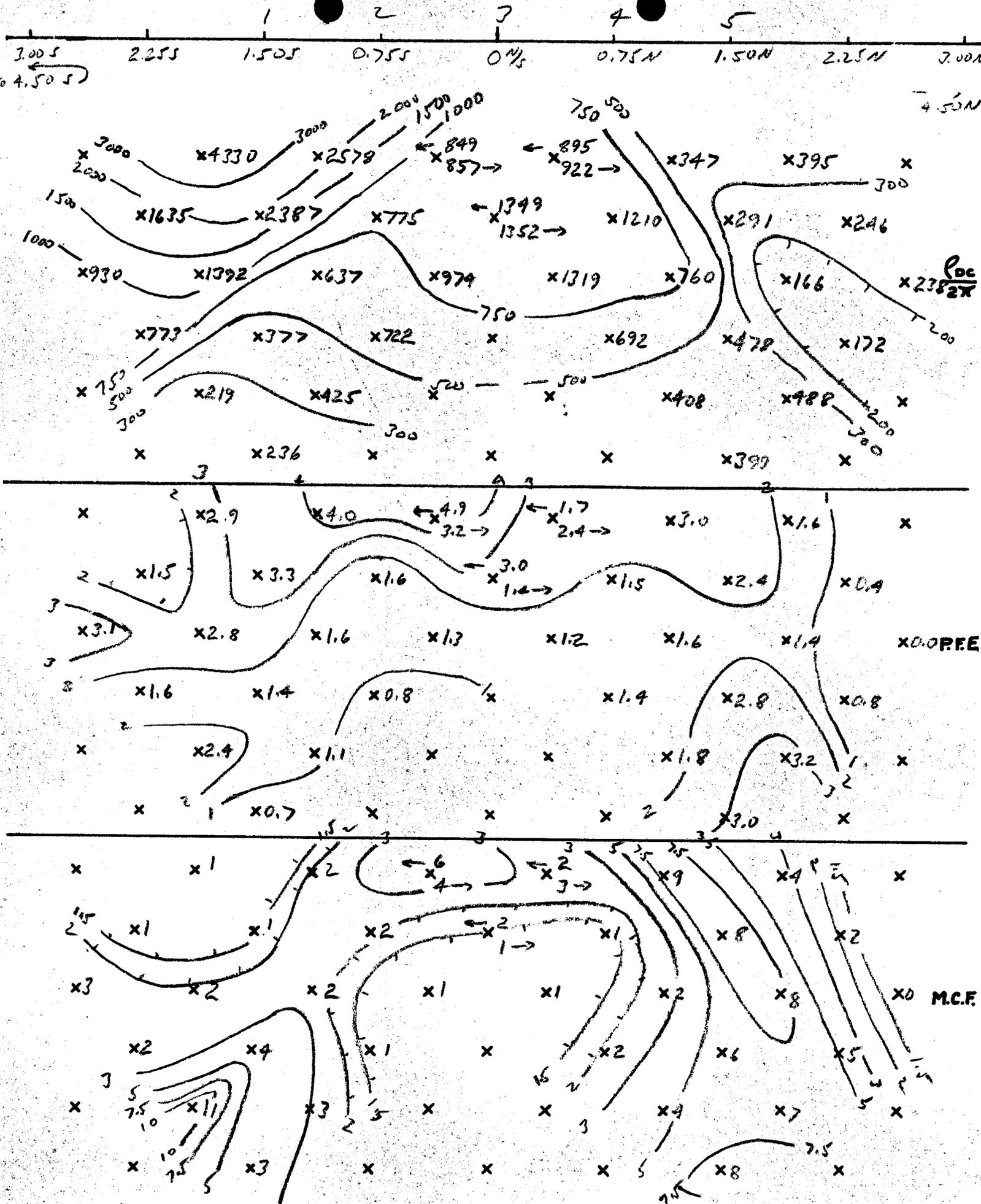
nd	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Rec.	0-750	7 1/2-15	→	15-22 1/2	1/2	→	22 1/2-	30	→	→		
Time	1000	1000	300	1000	100	100	1000	300	30	30		
DC-1	3 →	320.0	114.0	539.0	65.0	32.2	720.0	125.5	24.6	22.5		
DC-2	3 —	320	113	541	64.8	33.0	732	124.5	23.4	21.7		
Σ	600.0	640.0	227.0	1080.0	129.8	65.2	1452.0	240.0	48.0	24.2		
DC-3	300.0	320.	113.0	539.0	65.0	32.5	720.0	126.0	24.9	22.4		
Dc-4	300.0	320	112.0	541	64.8	32.8	730	124	23.2	21.8		
Σ	600.0	640.0	225.0	1080.0	129.8	65.3	1450.0	250.0	48.1	24.2		
DC-AV												
AC-1	295.0	305.0	109.5	520.0	64.0	32.2	705	121.0	23.6	22.0		
AC-2	295-	305	110-	518	63.8	"	705	"	23.7	12		
Σ	590.0	610.0	219.5	1038.0	127.8	64.4	1410.0	242.0	47.3	24.0		
P.	-47.5	+66.9		-36.9			-6.1					
AC-N	.03	.03		.03			.03					

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Project Johnson Line 1 Field date 9-7-65 Data page 1 Comp. date 1 Page 1
 Project Johnson Line 1 Field date 9-7-65 Data page 1 Comp. date 1 Page 1
 Project Johnson Line 1 Field date 9-7-65 Data page 1 Comp. date 1 Page 1

	Line	Field date	Data page	Comp. date	Comp by
(A) Send	1-2	2-3	1-2	3-4	2-3
(B) Receive	0-750	750-1500	1500-2250	2250-3000	
(C) n separation	300	300	100	300	100
(D) I	0.8	1.0	0.8	1.6	0.8
(E) Vdc (avg)	284.0	382.0	112.0	258.5	125.3
(F) Dccal	1.073				
(G) Kn x 10 ⁻³	2.25	2.25	9.0	2.25	2.25
(H) dc=ExFxGx10 ³ /D	857	922	1352	347	1210
(I) dc	275.0	373.0	110.4	251.0	123.5
(J) AC noise x 2	.06	.06	.06	.06	.06
(K) Vac (corr) = $\sqrt{I^2 - J^2}$	985	1000			
(L) AC-DC cal.					
(M) dc/Eac=ExL/K	1.017	1.009	.994	1.014	.999
(N) PFE=(M-1)(10 ²)	1.732	0.924	-0.114	1.430	-0.115
(O) MCF=(M-1)(10 ⁵)/H	2.4	1.3	1	4.9	1
Project	-16.0	-4.9	+0.6	-1.4	
(A) Send	4-5	3-4	2-3	1-2	4-5
(B) Receive	2000-3750			3750-4500	
(C) n separation	30	10	10	30	10
(D) I	1.6	1.8	1.0	0.8	1.6
(E) Vdc (avg)	40.75	12.4	9.90	3.86	15.8
(F) Dccal	1.073				
(G) Kn x 10 ⁻³	9.0	22.5	45.0	78.75	22.5
(H) dc=ExFxGx10 ³ /D	296	166	478	408	238
(I) Vac	40.6	12.23	9.63	3.79	15.8
(J) AC noise x 2	.04			.04	
(K) Vac (corr) = $\sqrt{I^2 - J^2}$					
(L) AC-DC cal.					
(M) dc/Eac=ExL/K	.989	.999	1.013	1.003	.985
(N) PFE=(M-1)(10 ²)	-1.104	-0.114	1.328	0.318	-1.500
(O) MCF=(M-1)(10 ⁵)/H	-4.2	-1.8	3.6	1.4	-6.0
	-3.8			+13.9	

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING West



Project Johnson

Line 1512

HEINRICH'S GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Field date 9-7-60 Data page 1 Comp. date . Comp by DA

(A) Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
(B) Receive	0.750	750/150	0	1500-2250	0	0	2250-3000	0	0	0		
(C) n separation	1000	1000	300	1000	100	100	1000	300	30	30		
(D) I	1.6	1.8	1.6	1.0	1.6	1.6	0.8	1.00	1.8	1.6		
(E) Vdc (avg)	600.0	640.0	226.0	1080.0	129.8	65.25	1451.0	250.0	48.05	29.2		
(F) Dccal	1.061											
(G) Kn x 10 ⁻³	7.225	7.225	9.00	2.25	9.0	22.5	2.25	9.0	27.5	45.0		
(H) dc=ExFxGx10 ³ /D	895	849	1349	2578	775	974	4330	2387	637	722		
(I) Pac	590.0	610.0	219.5	1038.0	127.8	64.4	1410.0	242.0	47.3	24.0		
(J) AC noise x 2	0	0	0	0	0	0	0	0	0	0		
(K) Vac(corr) = $\sqrt{I^2 - J^2}$	978	1,000										
(L) AC-DC cal.												
(M) dc/Pac=ExL/K	994	1,026	1,007	1,017	993	990	1,006	1,010	993	986		
(N) PFE=(M-1)/(10 ²)	-0.617	2.649	0.730	1.740	-0.7116	-1.0113	0.623	1.033	-0.716	-1.408		
(O) MCF=(M-1)/(10 ⁵)/H	-47.5	+66.9	-32.9	-6.1								

Project	Line	Field date	Data page	Comp. date	Comp by
(A) Send	1-2	2-3	3-4	4-5	2-3
(B) Receive	2000-3700		3750-4500		CAL
(C) n separation	100	100	30	30	100
(D) I	0.8	1.0	1.8	1.0	1.6
(E) Vdc (avg)	137.0	58.3	14.2	8.14	2.82
(F) Dccal	1.061				
(G) Kn x 10 ⁻³	9.0	22.5	45.0	78.75	126.0
(H) dc=ExFxGx10 ³ /D	1635	1392	377	425	236
(I) Vac	135.0	56.7	14.0	8.05	2.80
(J) AC noise x 2	0	0	0	0	0
(K) Vac (corr) = $\sqrt{I^2 - J^2}$					
(L) AC-DC cal.					
(M) dc/Pac=ExL/K	992	1,005	992	989	985
(N) PFE=(M-1)/(10 ²)	-0.85	0.528	-0.814	-1.111	-1.507
(O) MCF=(M-1)/(10 ⁵)/H	-0.1	0.2	-2.4	-3.3	-6.3

+5.4

-31.5

Heinrichs Geoeexploration Company
P. O. Box 5671 Tucson, Arizona

by

J. T. Juhan

for

INDUCED POLARIZATION SURVEY
JOHNSON CAMP AREA
COCHISE COUNTY, ARIZONA

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BASIS OF INDUCED POLARIZATION METHOD	1a
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INDUCED POLARIZATION LOCATION AND INTERPRETATION PLAN	
SECTIONAL DATA SHEET - LINE 1	

INTRODUCTION

At the request of Mr. J. T. Juhan, Heinrichs Geoexploration Company conducted and completed a preliminary reconnaissance induced polarization survey in the west half of Section 17, T 15 S, R 23 E, Cochise County, Arizona, during the interim September 3 to September 7, 1965.

One induced polarization line was surveyed, 9000 feet long, with 5250 feet of subsurface plotted data. The line was centered in the half section and oriented north-south and surveyed on a 750 foot dipole spacing.

The selection of a 750 foot spacing was made to concentrate the information in the area of interest and give sulfide information down to about 1000 feet below the surface.

Measurements were made with the dual frequency, induced polarization technique on a dipole-dipole electrode configuration. Sending frequencies were 0.05 and 3.0 cycles per second.

The data are presented on a sectional data sheet, showing resistivity, percent frequency effect (PFE) and metallic conduction factor (MCF), contoured in section with self potential (SP) in profile form. Geology and topography, as obtained from the U.S.G.S. map of the area, is also presented. An induced polarization location and interpretation plan is also included.

Heinrichs personnel involved in the field work were Dan Anderson, Geophysical Crew Chief; Rex Montierth and David Jones, Technical Assistants. Report is by Chris S. Ludwig, Chief Geophysicist.

CONCLUSIONS AND RECOMMENDATIONS

1. The only induced polarization anomalism found on the line is a very weak anomaly of questionable significance between 0 N/S and 0.75 N.
2. This anomaly is associated with a sharp resistivity contact near 0 N/S, being on, or just north, of this contact.
3. The geology as mapped in this area shows nothing to explain the sharp resistivity contact, since there is apparently only Glance Limestone conglomerate, covered with a thin layer of alluvium which would not normally give this type of an effect.

However, it is possible that there is enough variation in electrical properties within the Glance itself to cause the change, but not be mapped as a geological change.

4. The anomaly is of such strength and size that a sulfide cause is questionable. Even if sulfide is the cause, it is probably not economic in grade or size.
5. Self potentials show only background variations along the line except for a minor low at 0.75 S. There is no correlating I. P. anomalism and, therefore, this S.P. low is not considered significant.
6. Unless there is further positive geological evidence supporting an economic cause of this minor anomaly, or a needed answer, it is recommended that no further geophysical work be done in this area.

INTERPRETATION

This line shows resistivities typical of limey sediments and indicates a sharp contact in the vicinity of 0 N/S, with lower resistivity material to the north, and a higher material to the south. The asymmetry of the resistivity pattern indicates that the contact is not vertical or not normal to the line or both.

The PFE's are quite low and are background, or just slightly above background, in value. The MCF's are very low and also background except they exhibit a consistent pattern of slightly higher values which point between 0 N/S and 0.75 N and are the reason for the very weak questionable interpretation here. Whatever the source of the anomalism is, it is quite narrow and probably low grade in mineralization and within 300 feet of the surface.

The self potentials show a total variation of about 75 millivolts, which is just slightly above background. The low point is near 0.75 S and has no correlating I. P. anomalism, and is, therefore, not considered as being significant.

Respectfully submitted

HEINRICHS GEOEXPLORATION

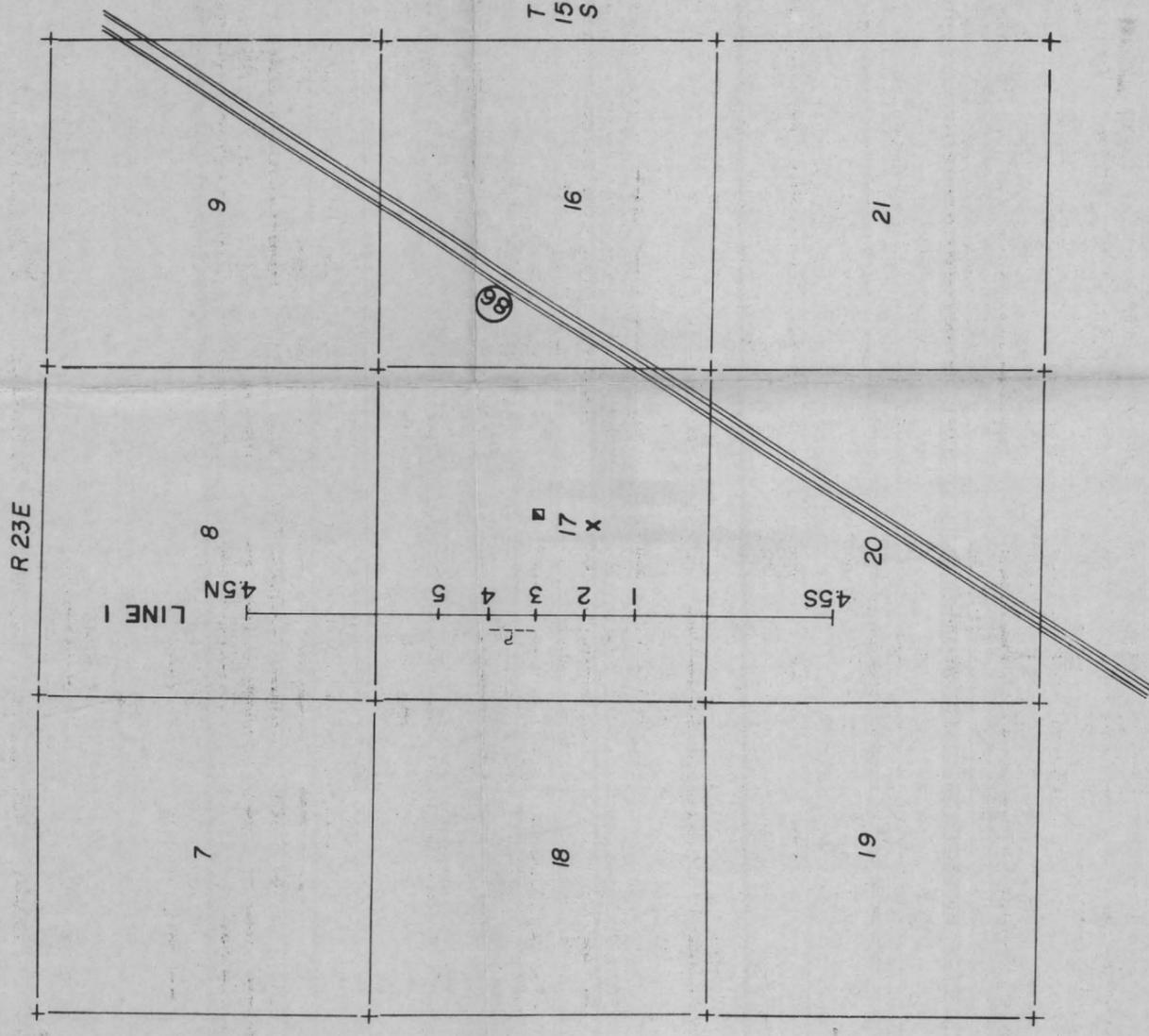
Chris S. Ludwig

Chris S. Ludwig
Senior Geophysicist

September 13, 1965



HEINRICHS GEOEXPLORATION COMPANY



JOHNSON AREA
COCHISE COUNTY, ARIZ.

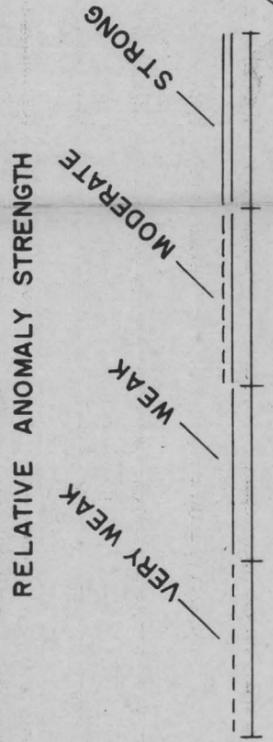


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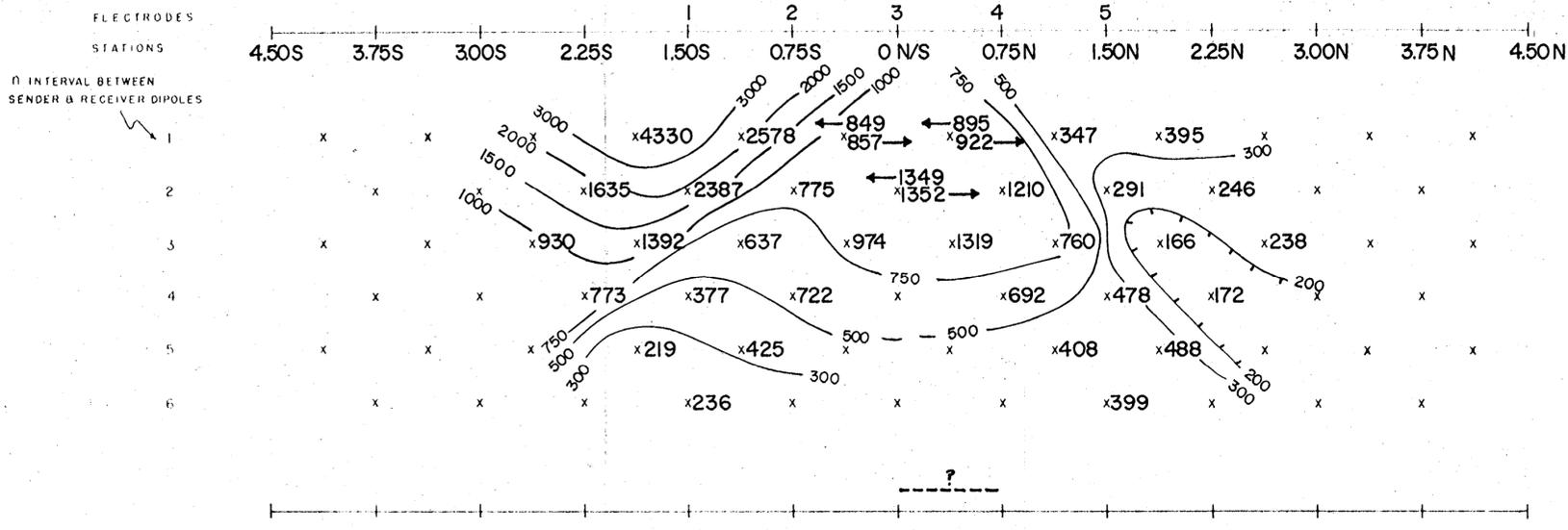
INDUCED POLARIZATION LOCATION
& INTERPRETATION PLAN

FOR

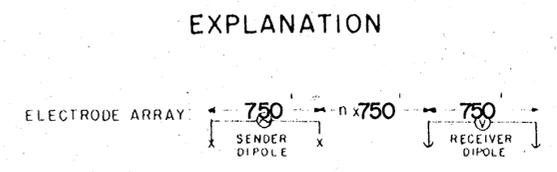
J. T. JUHAN



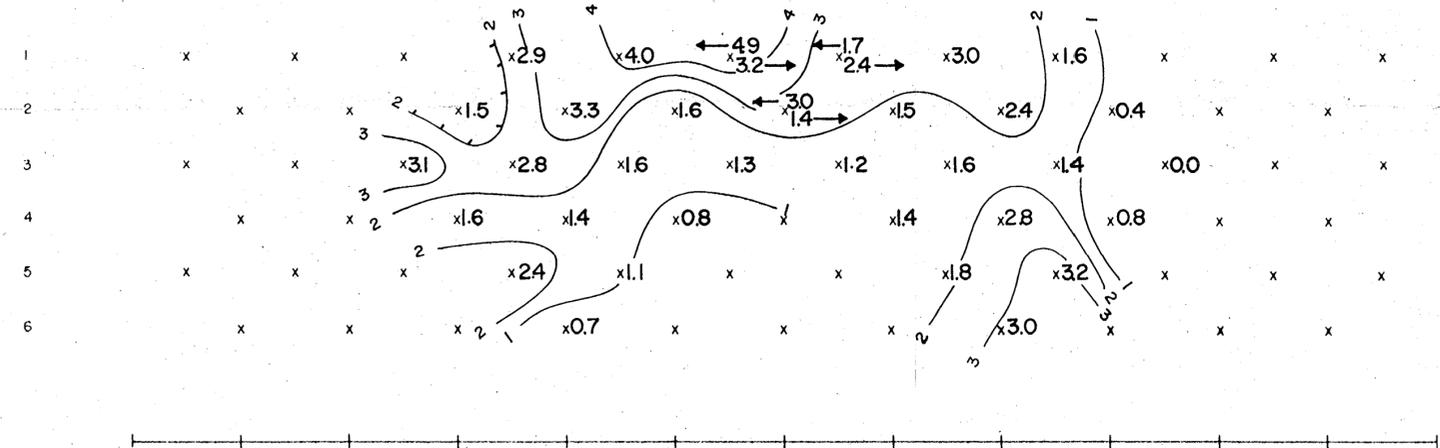
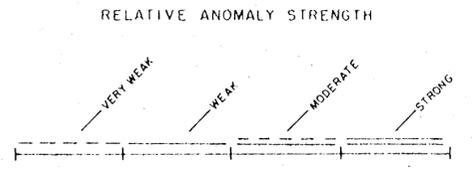
Scale 2" = 1 MILE Date SEPT. 1965



APPARENT RESISTIVITY (DC) IN UNITS OF OHM FEET
 CONTOUR INTERVAL LOGARITHMIC
 SENDER FREQUENCY .005 C.P.S.

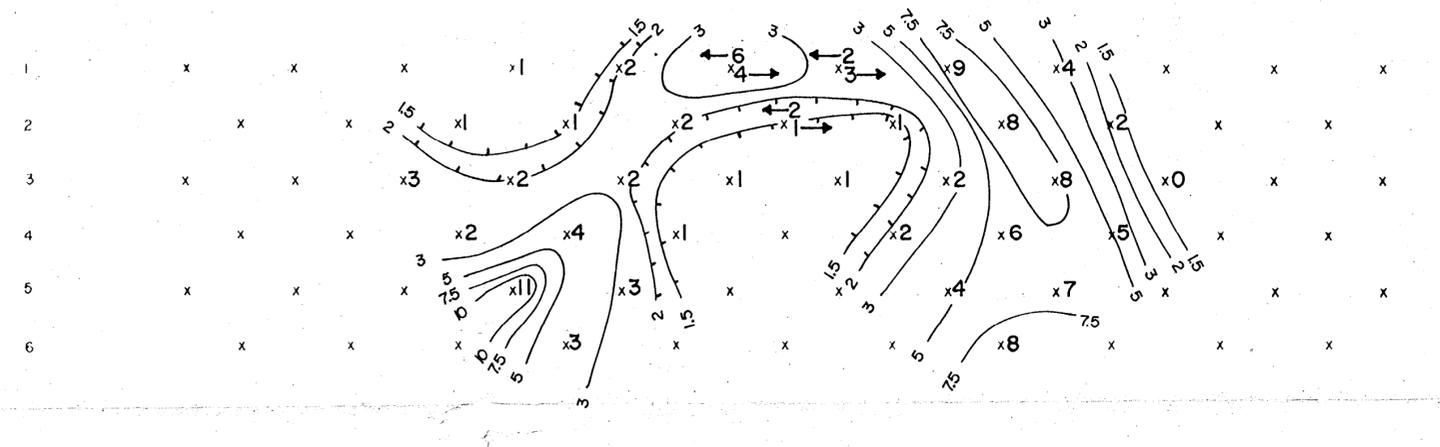


EXPLANATION



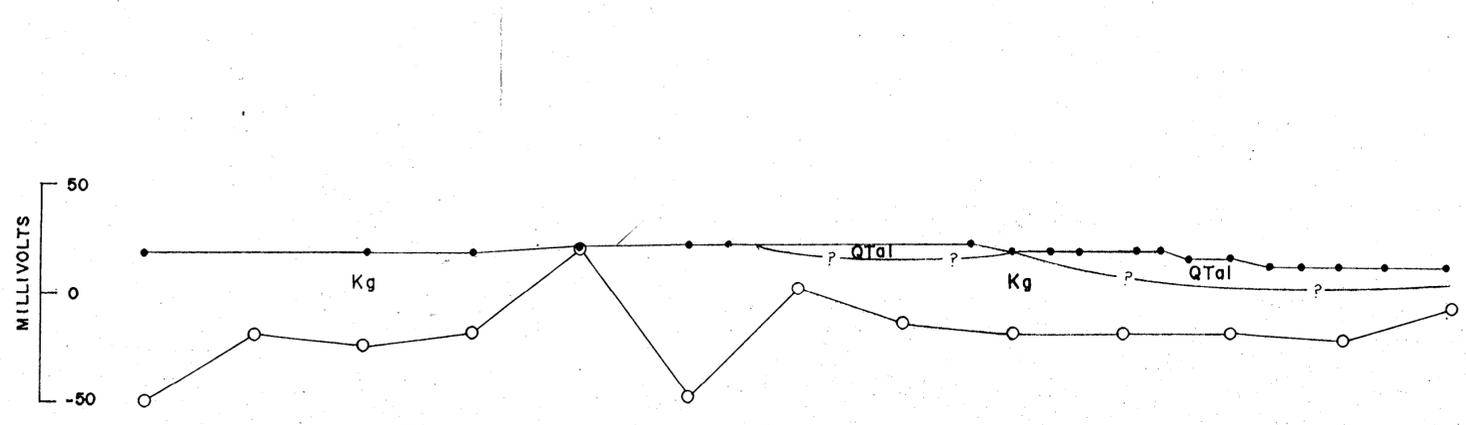
PERCENT FREQUENCY EFFECT (PFE)
 CONTOUR INTERVAL CONSTANT
 SENDER FREQUENCIES: .005 & 3.0 C.P.S.

LOOKING WEST



APPARENT "METALLIC CONDUCTION" FACTOR (MCF)
 (MCF = PFE x 1000)
 CONTOUR INTERVAL LOGARITHMIC

JOHNSON AREA
 SECTIONAL DATA SHEET
 LINE NO. 1
 INDUCED POLARIZATION TRAVERSE
 HEINRICHS GEOEXPLORATION COMPANY
 SCALE: 1" = 750' DATE: SEPT. 1965
 FOR
 J.T. JUHAN



SELF POTENTIAL
 SURFACE PROFILE
 GEOLOGY, ETC.

== 4800 ELEV
 == 4700 IN
 == 4600 FEET

QTal - QUATERNARY ALLUVIUM
 Kg - CRETACEOUS GLANCE
 LIMESTONE CONGLOMERATE

