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I. P. Survey
Cascabel Area
Cochise County
Arizona

for

Industrial Fuels Corporation

May 1973

by

Heinrichs Geoexploration Company

GEOEX Job #817

HEINRICHS GEOEXPLORATION COMPANY

806 WEST GRANT ROAD. TUCSON. ARIZONA 85703. P.O. BOX 5964. PHONE: (602) 623-0578

May 21, 1973

Mr. Joseph H. Roediger
Vice President
Industrial Fuels Corporation
4438 East Marion Way
Phoenix, Arizona 85018

Dear Mr. Roediger:

This letter report covers the induced polarization survey completed in portions of Sections 2 and 3 Range 19E, Township 14S and Sections 34 and 35 Range 19E, Township 13S near Cascabel, Cochise County, Arizona on behalf of Industrial Fuels Corporation. Four induced polarization (I.P.) lines were completed as shown on the accompanying Induced Polarization Location and Interpretation Plan. The purpose of this survey was to determine if significant amounts of sulfide mineralization might be contained in replacement or porphyry bodies in the area.

The induced polarization data was obtained using the dual frequency technique and the dipole-dipole electrode array. Sender frequencies of 3.0 hz and 0.3 hz were employed. A dipole length of 500 feet was used on all lines with 7-electrode sending arrays. The four I.P. lines resulted in a total surface coverage of 32,000 feet and an effective subsurface coverage of 19,750 feet. GEOEX Mark 7 Multifrequency I.P. equipment was used throughout the survey.

The I.P. data is presented on psuedo-sectional data sheets, one for each line, showing apparent resistivity, percent frequency effect (PFE) and metallic conduction factor (MCF). Also shown on the sectional data sheets are the self potential (S.P.) data in profile form. The Induced Polarization Location and Interpretation Plan, at a scale of 1"=600' indicates the approximate ground position of the geophysical traverses. The four sectional data sheets, plan map, and this letter constitute the final report for this area.

GEOEX personnel involved in this project were Phil Matthews, Geophysicist, George Furniss, Crew Chief, and John Lundgren, Bruce Nelson, and Dennis Toresdahl, Technical Assistants. Report and interpretation are by Phil Matthews, assisted by the GEOEX Tucson staff.

One very weak I.P. anomaly was detected in the course of this work. Although this feature persists on each line, the chances of significant associated mineralization seem extremely doubtful. Further, in as much as this anomaly seems to roughly trace the mapped outcrop of the Abrigo and Bolsa formations and/or their contact the very weak I.P. effects noticed are likely due to minor amounts of contained I.P. responsive minerals within them, probably formational pyrite, magnetite, or carbonaceous material rather than economic concentrations of sulfide mineralization. Based on the information thus far obtained, further work does not seem warranted. If desired, one additional line could be run down Paige Canyon using very large dipoles (1500') to test the possibility of mineralization at depth although the only possible hint that such a line is justified is the slightly higher deep readings near station 5NE on Line 1.

Line 1

A very weak polarization effect is noted centered near station 5SW. Although the cause of this anomaly is probably near surface, there is the suggestion that the deeper readings may be responding to something at greater depth, as mentioned previously. The resistivity pattern is quite complex in the central portion of the line as might be expected with rock type changes occurring at approximately the same interval as the dipole spacing. The fairly abrupt changes in resistivity at 15SW and 5-10NE correlate with the bedrock-Gila conglomerate contact. The resistivity values noted on the ends of the line are typical of the Gila conglomerate. The self potential profile shows no correlation with the I.P.

Line 2

A very weak, near surface P.F.E. high is centered near 5SW. A fairly sharp decrease in frequency effects occurs northeast of station 10NE. The resistivity pattern is complex as discussed with Line 1. A drop in resistivities appears to begin near station 15NE indicating the presence of overlying Gila conglomerate to the northeast. No self potential correlation is noted.

Line 3

I.P. values just slightly above background are located between 0 and 5SW. Resistivities continue to reflect the formational changes in the area. It does not appear that any significant thickness of Gila has been encountered on either end of the line. No self potential correlation is noted.

Line 4

A weak string of I.P. values slightly above background are centered near station 10SW. As with the previous lines the central portion shows relatively high resistivities with lower values at the ends, indicating the presence of the Gila conglomerate. No self potential correlation is noted.

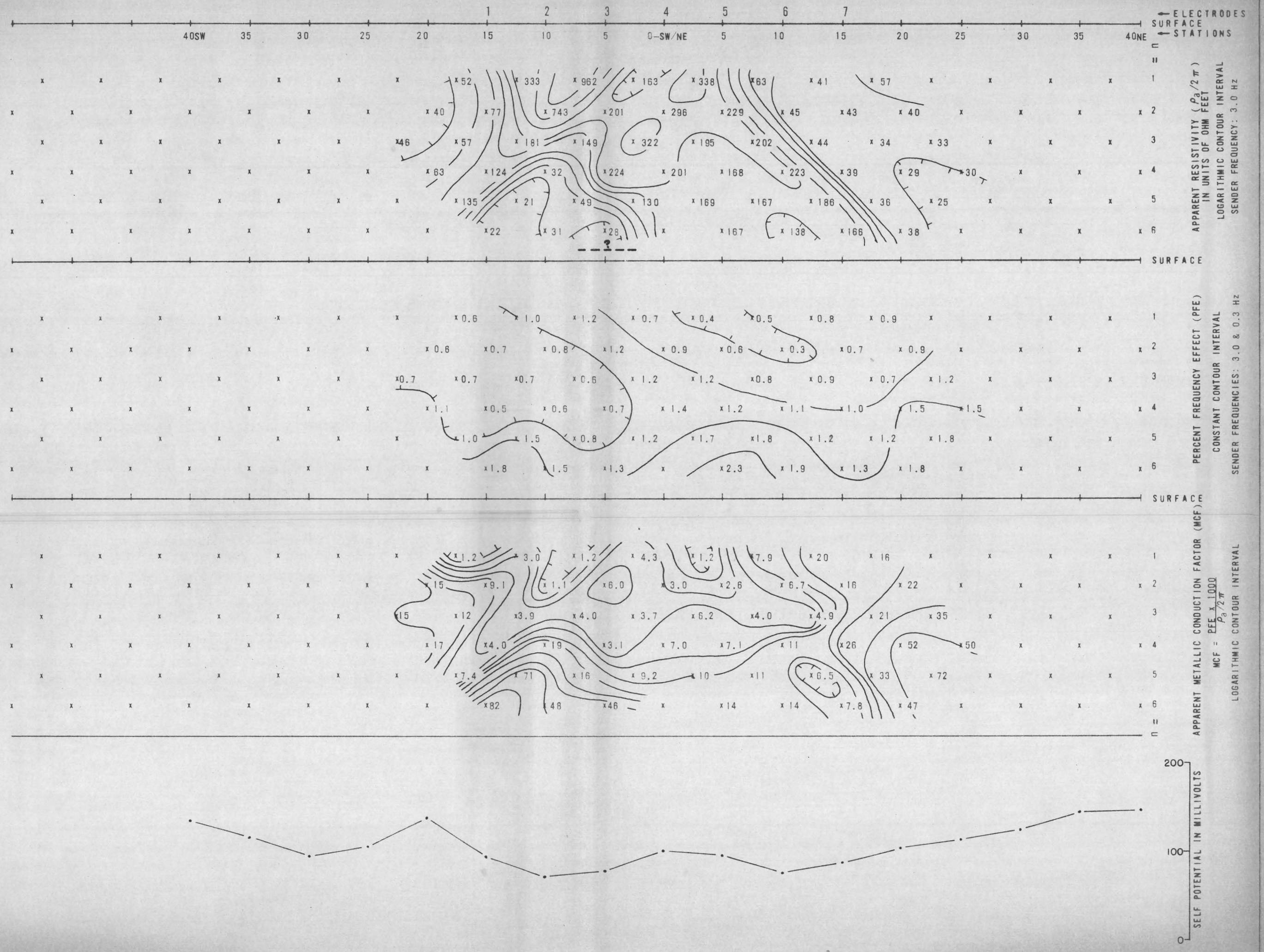
Submitted by:

for: J. Phil Matthews
Geophysicist

by:

Walter E. Heinrichs, Jr.
President

JPM:oea
May 21, 1973
P.O. Box 5964 Tucson, AZ 85703
cc: Enclosed

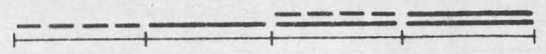


817-73

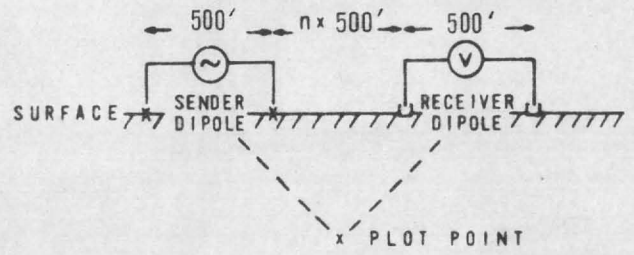
LINE NO.
I
SPREAD(S)
I
BEARING
N 60° E

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET of CASCABEL AREA for INDUSTRIAL FUELS CORPORATION

RELATIVE ANOMALY STRENGTH

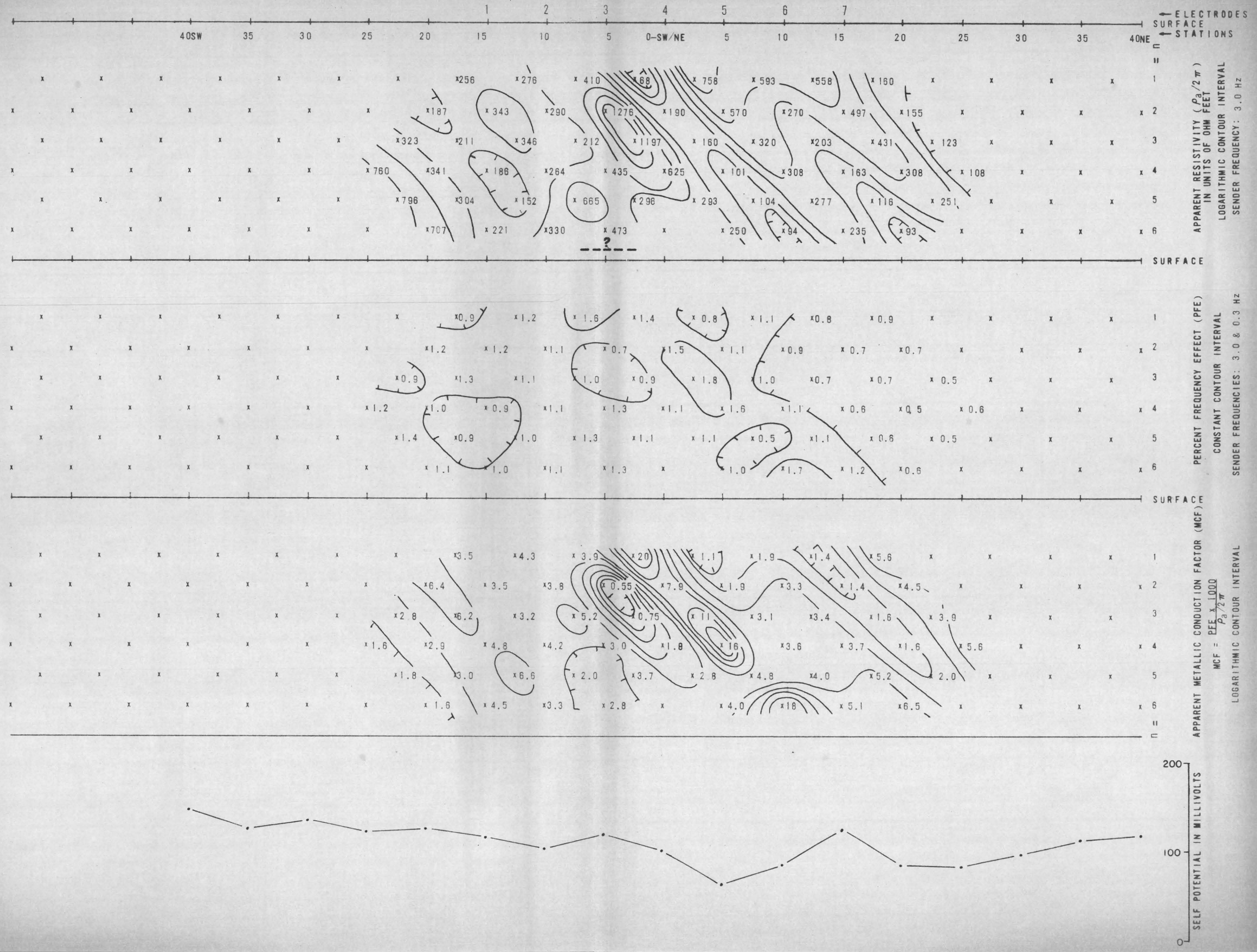


DIPOLE-DIPOLE ELECTRODE ARRAY



DATE
MAY 1973

HEINRICHS GEOEXPLORATION COMPANY
806 W. GRANT ROAD, POST OFFICE BOX 5964, TUCSON, ARIZ., 85703, PHONE: (602)623-0578

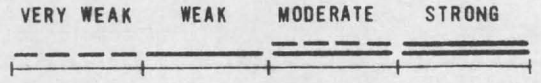


817-73

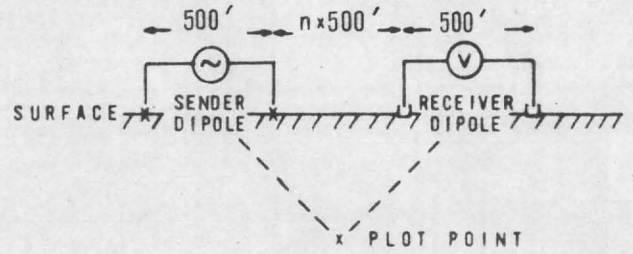
LINE NO.
2
SPREAD(S)
1
BEARING
N 60° E

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET of CASCABEL AREA for INDUSTRIAL FUELS CORPORATION

RELATIVE ANOMALY STRENGTH



DIPOLE-DIPOLE ELECTRODE ARRAY



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MAY 1973

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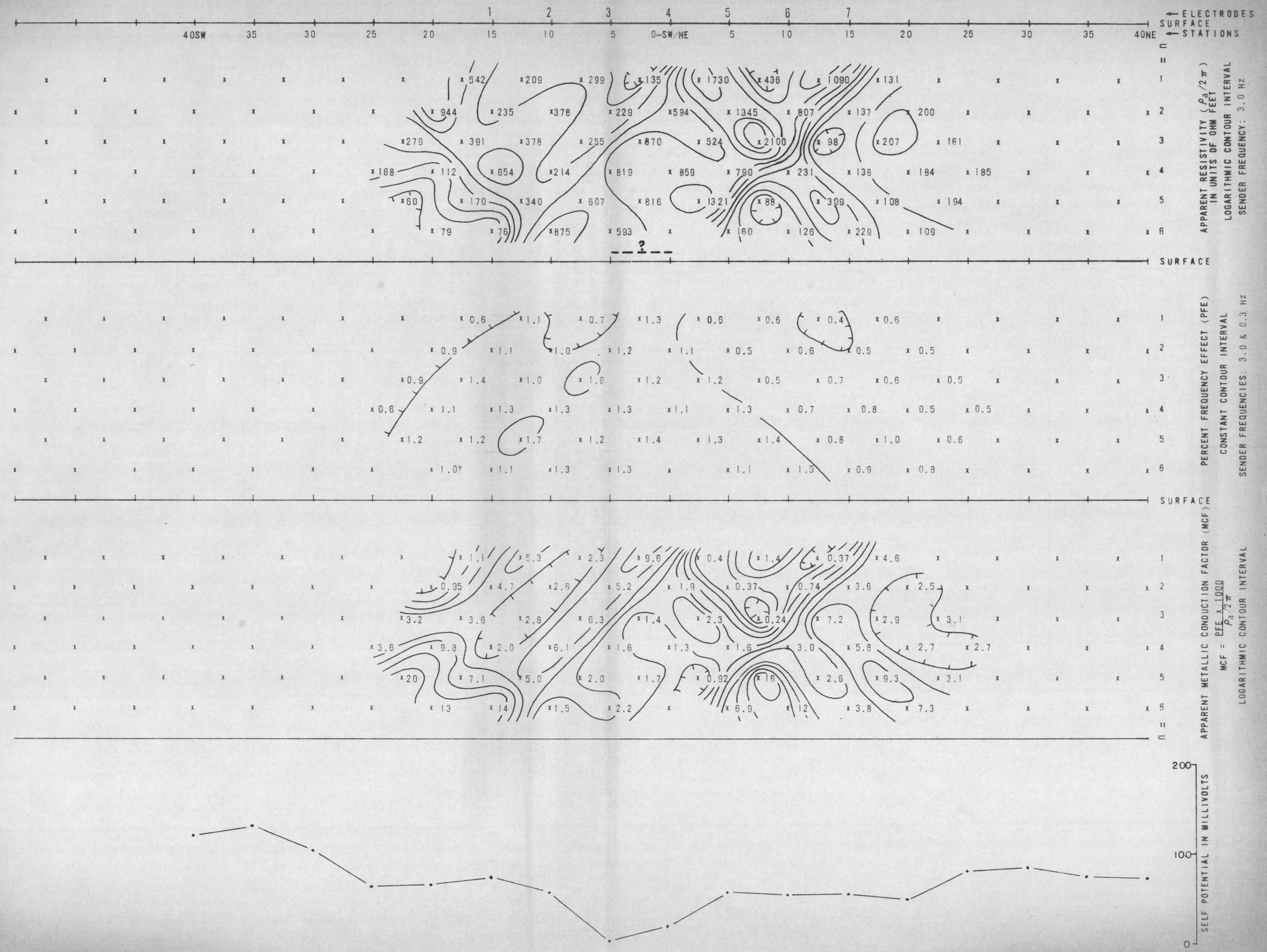


817-73

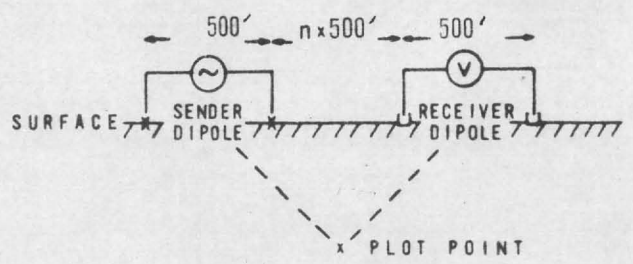
LINE NO. 3
SPREAD(S) 1
BEARING N 60° E

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET of CASCABEL AREA for INDUSTRIAL FUELS CORPORATION

RELATIVE ANOMALY STRENGTH

VERY WEAK | WEAK | MODERATE | STRONG

DIPOLE-DIPOLE ELECTRODE ARRAY



DATE
MAY 1973

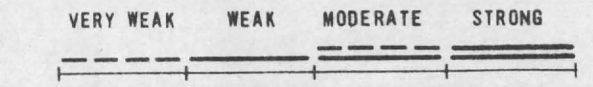
HEINRICHS GEOEXPLORATION COMPANY
806 W. GRANT ROAD, POST OFFICE BOX 5964, TUCSON, ARIZ., 85703, PHONE: (602)623-0578

817-73

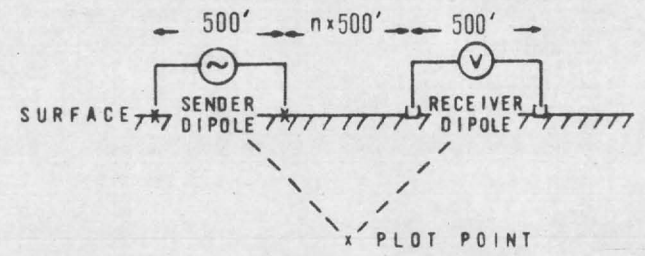
LINE NO.
4
SPREAD(S)
1
BEARING
N 60° E

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET of CASCABEL AREA for INDUSTRIAL FUELS CORPORATION

RELATIVE ANOMALY STRENGTH



DIPOLE-DIPOLE ELECTRODE ARRAY



DATE
MAY 1973

HEINRICHS GEOEXPLORATION COMPANY
806 W. GRANT ROAD, POST OFFICE BOX 5964, TUCSON, ARIZ., 85703, PHONE: (602)623-0578

LF

DOC- 1 **PAGE-** 9

LF

DOC- 1 **PAGE-** 10

LF

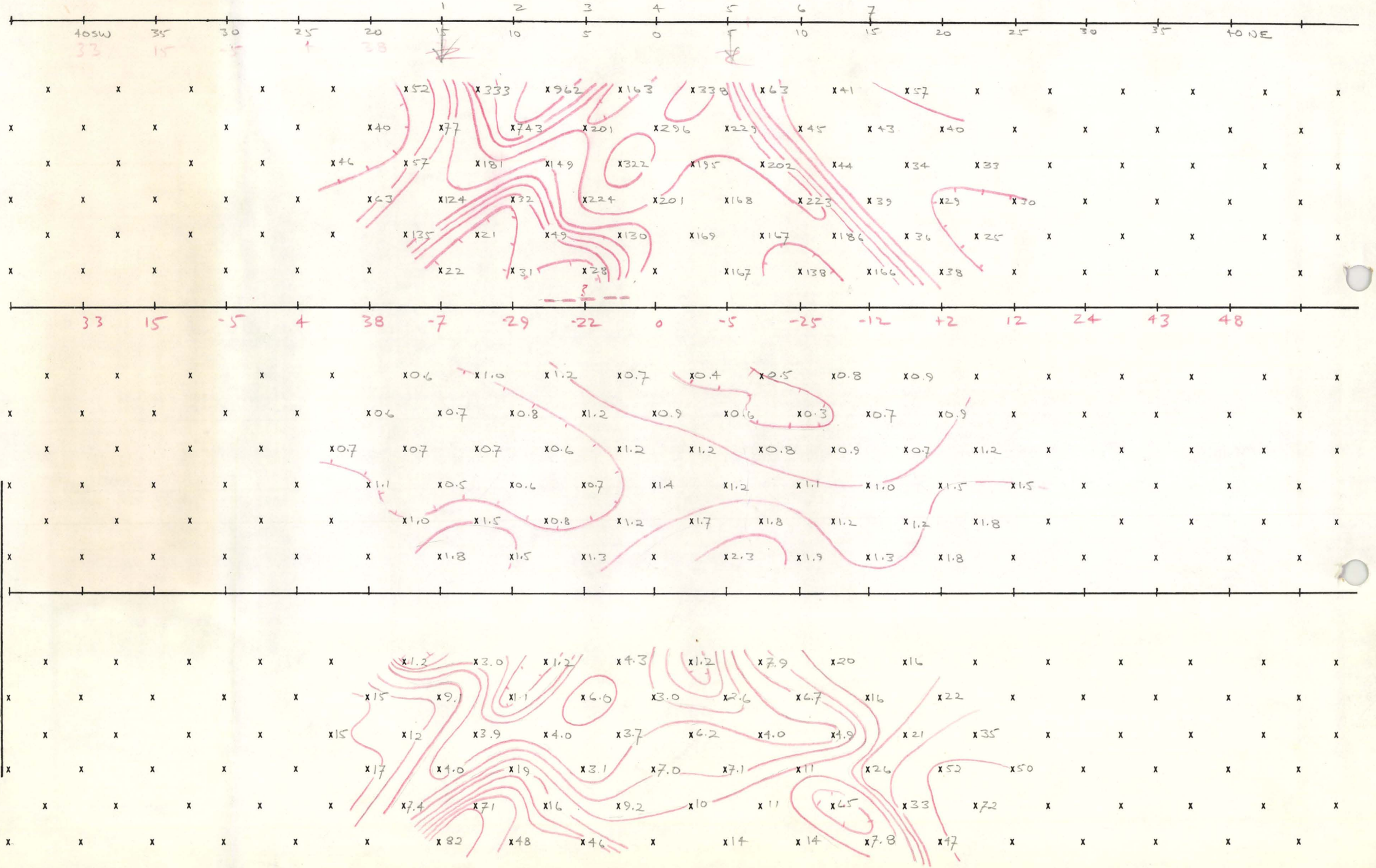
DOC- 1 **PAGE-** 11

JOB# 817 LINE# 1 SP 1 DATE ~~5-1-73~~ May 1973 a = 500'

CLIENT Industrial Fuels LOOKING N 30° W FREQUENCIES 3.0 & 0.3 Hz

AREA Cascabel

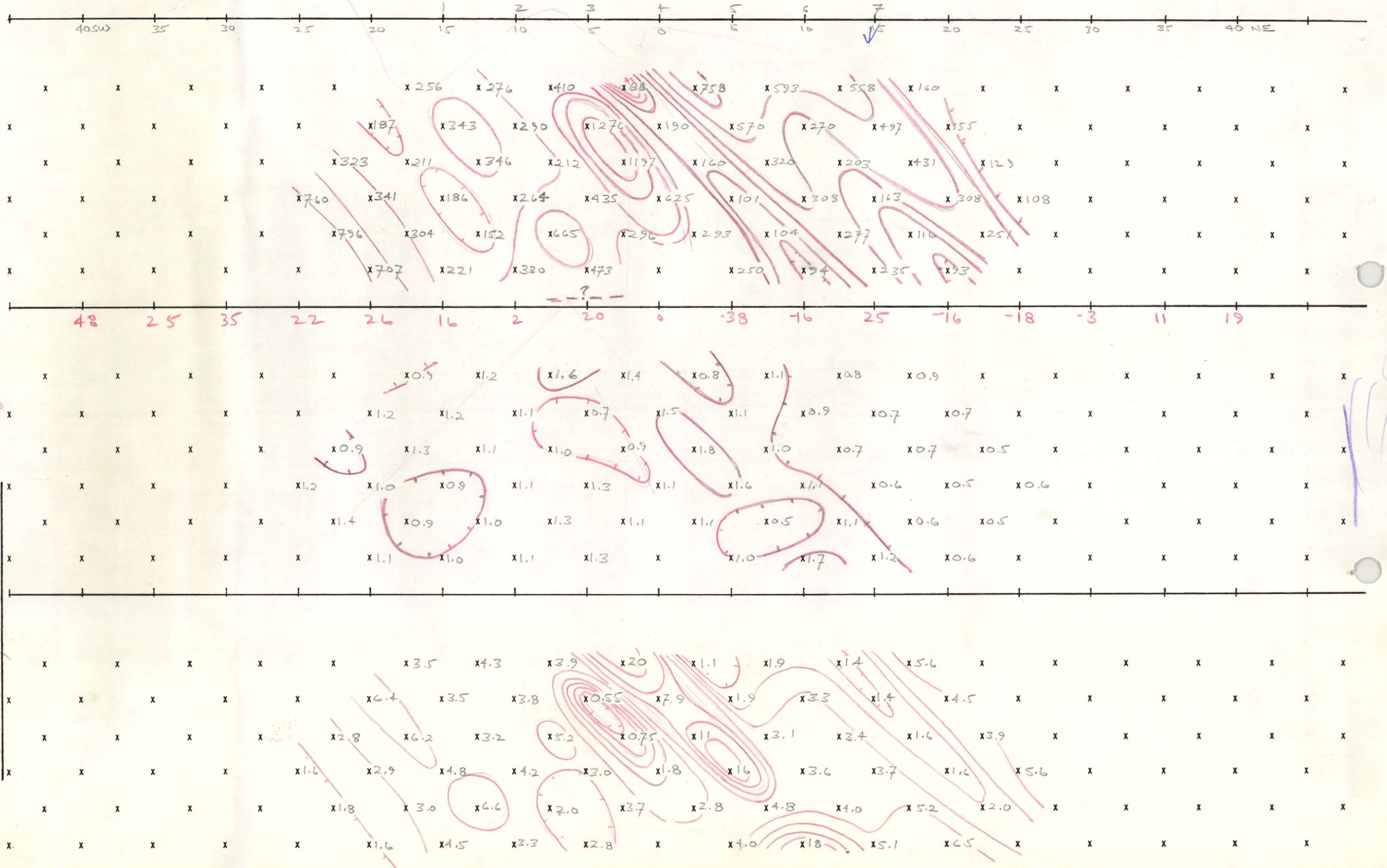
Bem N65°E



JOB# 817 LINE# 2 SP 1 a = 500' LOOKING ~~N 30° W~~ N60°E

CLIENT IFC DATE ~~5-3-73~~ May 1973 FREQUENCIES 3.0 & 0.3 Hz

AREA CASCABEL



JOB# 817 LINE# 3 SP 1 DATE 5-7-73 a = 500

CLIENT INDUSTRIAL FUELS

AREA CARCABEL

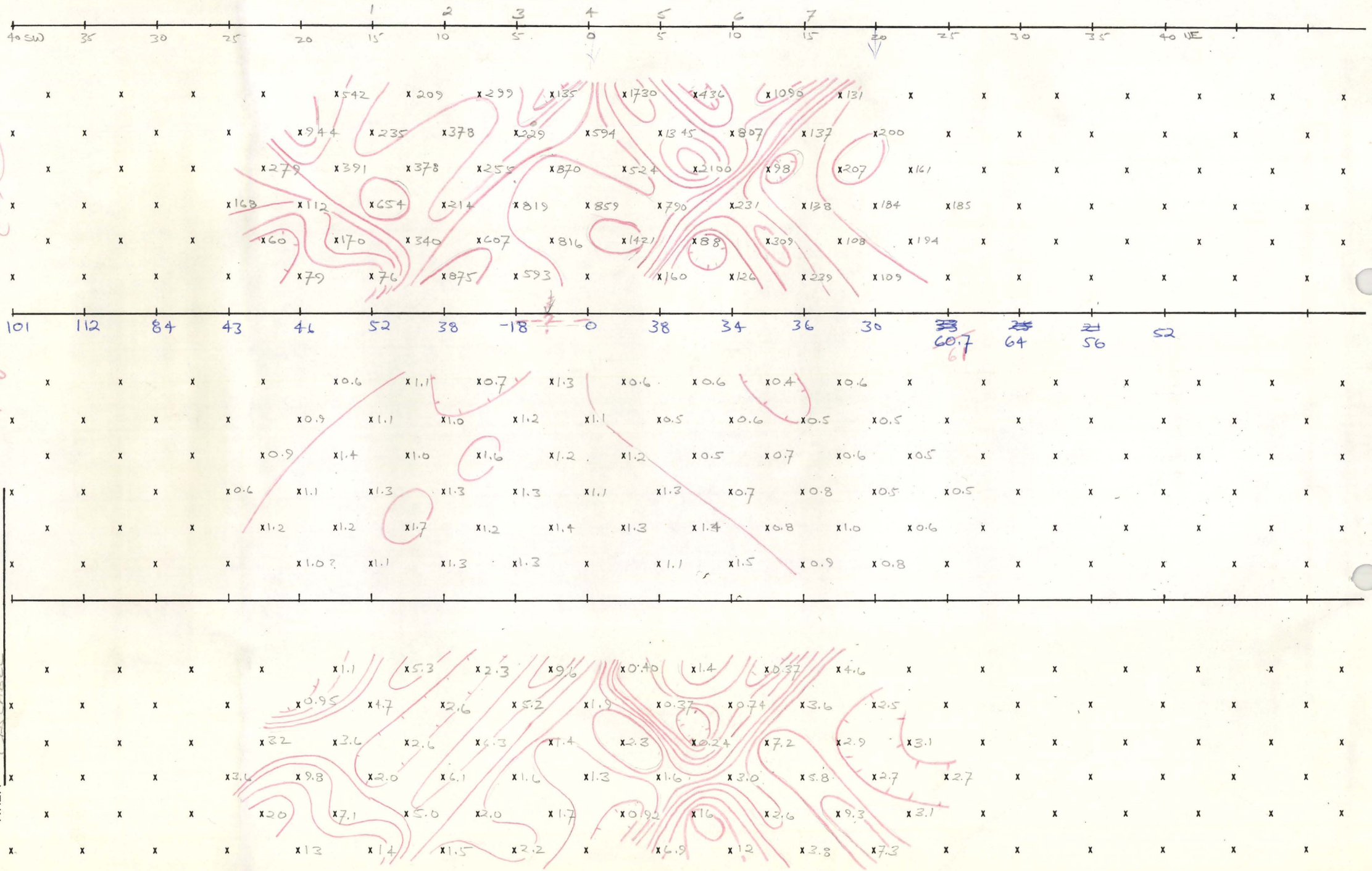
LOOKING 30°W

FREQUENCIES 3.0 & 0.3 Hz

Bar N60°E

ρ → 3.0

May 1973



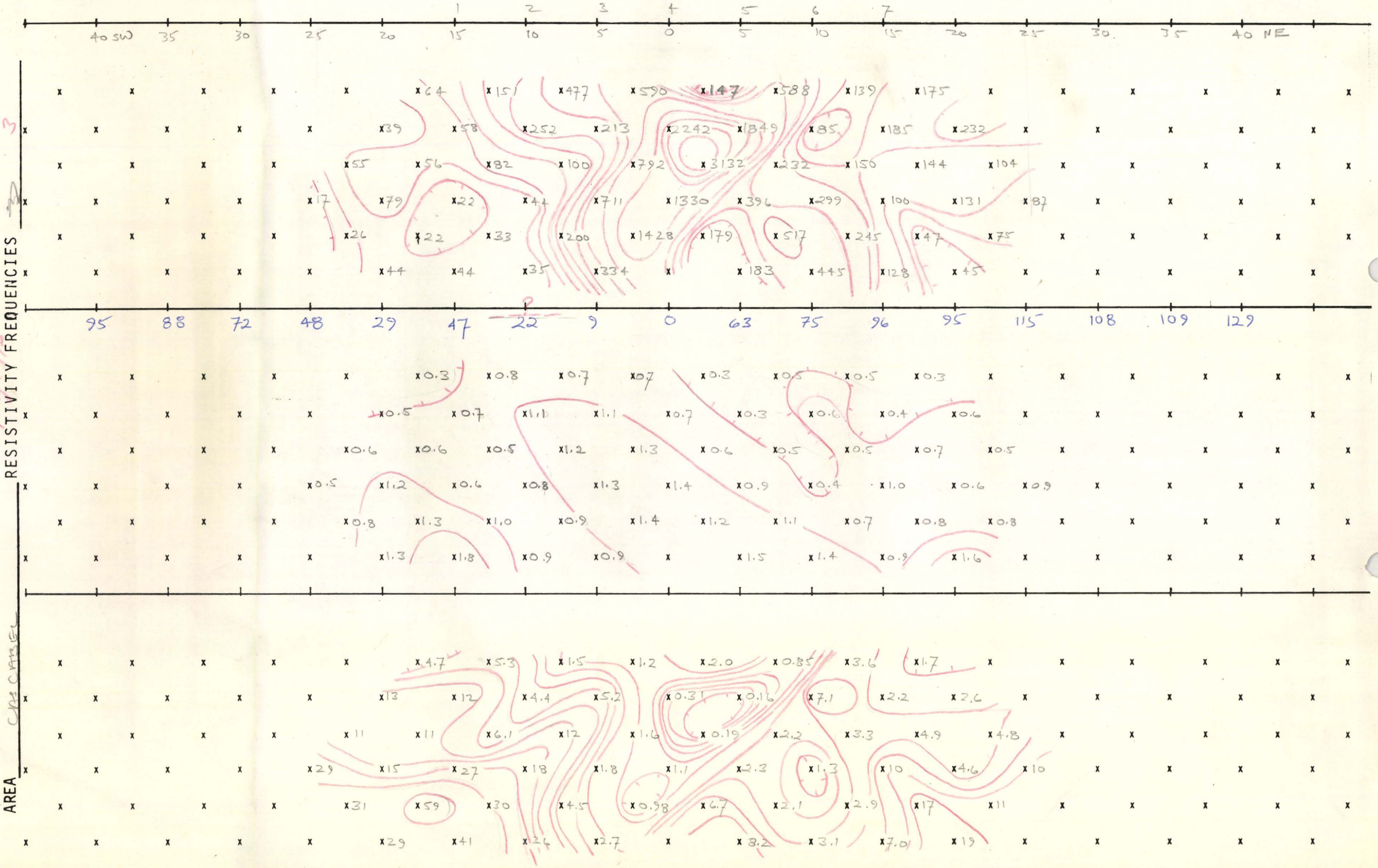
JOB# 817 LINE# 4 SP 1 a = 500'

CLIENT Industrial Fuels Exploration DATE 5-9-73 May 1973

AREA Gas Chimney

BEARING N60°E (30m) FREQUENCIES 3.0 & 0.3 Hz

RESISTIVITY FREQUENCIES



I. P. RECEIVER NOTES, JOB No. _____, AREA Cascabel

LINE 4, HALF NE, SR. 1, a = 500, BEARING N60° E

SENDER STA. 0 = ELECTRODE No. 4, DATE May 9/73

PAGE 1

HEINRICHS GEOEX

SEND	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	5-6
RECEIVE	0-5NE	→	5-10NE	→	→	10-15NE	→	→	→	15-20NE
MULTIPLIER	10	1.0	100	10	1.0	10	10	10	1.0	1.0
PFE	0.5	0.9	0.1	0.5	1.1	0.3	0.1	0.4	1.2	0.3
CUR. (AMPS)	1.0									
POINT No.										
SEP. (n)										
H. F. MV	384	34.7	096	365	51.6	383	301	204	43.3	90.3
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000	1.5	6	1.5	6	15	15	6	15	30	1.5
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	590	213	147	2242	792	588	1849	3132	1330	139
DRIFT MCF	1.2	5.2	2.0	0.31	1.6	0.85	0.16	0.19	1.1	3.6
S. P.	+62.9	+11.9	→	→	→	+20.9	→	→	→	-0.7
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO._____, AREA Cascabel

LINE 4, HALF_____, SR._____, a = _____, BEARING_____

SENDER STA._____ = ELECTRODE NO._____, DATE_____

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	1-2
RECEIVE					20-25NE					
MULTIPLIER	1.0	1.0	1.0	0.1	10	1.0	0.1	0.1	0.1	0.1
PFE	0.4	0.3	0.7	1.0	0.1	0.2	0.3	0.2	0.9	1.3
CUR. (AMPS)	1.0									
POINT NO.										
SEP. (n)										
H. F. MV	13.8	15.1	12.9	3.34	114	30.1	7.79	9.74	9.63	2.13
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000	6	15	30	52.5	1.5	6	15	30	52.5	84
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	85	232	396	179	175	185	150	299	517	183
DRIFT MCF	7.1	2.2	2.3	6.7	1.7	2.2	3.3	1.3	2.1	8.2
S. P.					+20.0					
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cescabel

LINE 4, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 3

HEINRICHS GEOEX

SEND	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5	3-4	6-7
RECEIVE	25-30 NE	—	—	—	→	30-35 NE	—	—	→	35-40 NE
MULTIPLIER	1.0	1.0	0.1	0.1	0.1	1.0	0.1	0.1	0.1	0.1
PFE	0.4	0.5	0.8	0.5	1.2	0.3	0.4	0.6	0.7	0.7
CUR. (AMPS)	1.0	—	—	—	—	—	—	—	—	—
POINT NO.										
SEP. (n)										
H. F. MV	37.7	09.4	3.27	4.56	5.18	06.8	4.27	0.88	1.49	2.82
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE $K_n/1000$	6	15	30	52.5	84	15	30	52.5	0.484	30
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c									1.5	
3.0 MV $\rho/2\pi$	232	144	100	245	445	104	131	47	128	87
DRIFT MCF	2.6	4.9	10	2.9	3.1	4.8	4.6	17	7.0	10
S. P.	-6.8	—	—	—	—	+0.8?	—	—	→	+20.2
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 4, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 4

HEINRICHS GEOEX

SEND	5-6	4-5			Cal					
RECEIVE	→	→			#2-3					
MULTIPLIER	0.1	.01								
PFE	0.6	1.4			-0.2					
CUR. (AMPS)	1.0	→								
POINT NO.										
SEP. (n)										
H. F. MV	1.39	.524			97.7					
DRIFT	—	—								
1.0 PFE $K_n/1000$	52.5	84								
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	75	45								
DRIFT MCF	11	19								
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

NOTE: ERROR ON NULL POT READINGS BETWEEN USE SEPARATE PFE CAL EACH HALF

JPM

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 4, HALF SW, SP. 1, a = 500, BEARING S60°W

SENDER STA. 0 = ELECTRODE NO. 4, DATE May 9/73

PAGE 5

HEINRICHS GEOEX

SEND	SP	SP	3-4	2-3	3-4	4-5	5-6	6-7	1-2	2-3
RECEIVE	0-5 SW	5-10 SW	10-15 SW	15-20 SW					20-25 SW	
MULTIPLIER			10	10	1.0	1.0	1.0	1.0	1.0	1.0 0.1
PFE			0.4	0.5	0.8	0.9	1.0	1.1	0.0	0.4
CUR. (AMPS)	1.0									
POINT NO.										
SEP. (n)			2							
H. F. MV			0290	092	38.3	0.61	21.6	24.8	39.2	08.8
DRIFT			—	—	—	—	—	—	—	—
1.0 PFE $K_n/1000$			1.5	1.5	6	15	30	52.5	1.5	6
0.3 PFE P_{CAL}										
0.1 PFE PFE_C										
3.0 MV $P/2\pi$			477	151	252	100	711	1428	64	58
DRIFT MCF			1.5	5.3	4.4	12	1.8	0.98	4.7	12
S. P.	+8.5	+13.2	+24.8	-17.1					+18.9	
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 4, HALF _____, SR. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 6

HEINRICHS GEOEX

SEND	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6	1-2
RECEIVE					25-30 SW					
MULTIPLIER	0.1	0.1	0.1	0.1	0.1	0.1	0.1	.01	0.1	0.1
PFE	~~0.4~~ 0.2	0.5	0.6	0.6	0.2	0.3	~~0.4~~ 0.3	0.7	0.6	0.3
CUR. (AMPS)	1.0									
POINT NO.										
SEP. (n)										
H. F. MV	4.96	1.35	3.47	3.63	5.98	3.41	0.68	.569	0.38	3.35
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000	15	30	52.5	84	6	15	30	52.5	84	15
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	82	44	200	334	39	56	22	33	35	55
DRIFT MCF	6.1	18	4.5	2.7	13	11	27	30	26	11
S. P.					+24.0					+15.4
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 4, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 7

HEINRICHS GEOEX

SEND	2-3	3-4	4-5	1-2	2-3	3-4		Cal		
RECEIVE	→	→	→	35-40	→	→		0-5 SW		
MULTIPLIER	0.1	0.1	.01	0.1	0.1	0.1				
PFE	0.9	1.0	1.5?	0.2	0.5	1.0		-0.3		
CUR. (AMPS)	1.0	→	→	→	→	→				
POINT NO.										
SEP. (n)										
H. F. MV	2.40	0.39	.473	0.51	0.46	.482		91.2		
DRIFT	—	—	—	—	—	—		—		
1.0 PFE K_n/1000	30	52.5	84	30	52.5	84				
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	79	22	44	17	26	44				
DRIFT MCF	15	59	41	29	31	29				
S. P.				+7.7						
NOISE										
POT RES.										
CULT & CMTS										

PoT Reading 0007 To 1008 Pages 5-6-7 Add 10

I. P. SENDER NOTES

JOB NO. _____ AREA CASCABELL

LINE 4, HALF NE, SP. 1, DATE May 9, 73

PAGE 1

HEINRICHS GEOEX

SEND	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	
RECEIVE	0-5NE	→	5-10NE	→	→	10-15NE	→	→	→	
RANGE	10x100	10x100	10x100	→	→	10x100	→	→	→	
VOLTAGE	540	450	600	520	450	420	600	550	450	
CURRENT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
SEND	5-6	4-5	3-4	2-3	1-2					
RECEIVE	15-20NE	→	→	→	→					
RANGE	10x100	10x100	→	→	→					
VOLTAGE	300	440	600	520	450					
CURRENT	1.0	1.0	1.0	1.0	1.0					

FREQUENCIES 3.0 0.3

SENDER NO. 18701

OPERATOR SL

RECEIVER NO.

OPERATOR

COMMENTS:

1-2 2B

2-3 2B

3-4 2B

4-5 2B

5-6

6-7 2C

I. P. SENDER NOTES

JOB No. _____ AREA Cascabell

LINE 4, HALF NE, SP. 1, DATE May 9

PAGE 2

HEINRICHS GEOEX

SEND	6-7	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4
RECEIVE	20-25 NE	→	→	→	→	→	25-30 NE			
RANGE	10X100	→	→	→	→	→	10X100	→	→	→
VOLTAGE	400	300	440	600	520	440	460	360	440	600
CURRENT	1.0	→	→	→	→	→	1.0	→	→	→
SEND	2-3	6-7	5-6	4-5	3-4	6-7	5-6	4-5		
RECEIVE	25-30 NE	30-35 NE	→	→	→	35-40 NE	→	→		
RANGE	10X100	→	→	→	→	→	→	→		
VOLTAGE	520	400	300	440	600	400	300	440		
CURRENT	1.0	→	→	→	→	→	→	→		

FREQUENCIES	3.0 0.3
SENDER No.	18701
OPERATOR	SR
RECEIVER No.	
OPERATOR	

COMMENTS:

1-2 2B
2-3 2B
3-4 2B
4-5
5-6
6-7 2-C

I. P. SENDER NOTES

JOB No. _____ AREA Cascabell

LINE 4, HALF SW, SP. 1, DATE May 9

PAGE 3

HEINRICHS GEOEX

SEND	3-4	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	45
RECEIVE	10-15 SW	15-20 SW	→			→	20-25 SW	→		→
RANGE	10X100	→								→
VOLTAGE	590	520	590	420	280	390	420	520	580	420
CURRENT	1,000	→								→
SEND	5-6	6-7	1-2	2-3	3-4	4-5	5-6			
RECEIVE	20-25	SW →	25-30 SW	→			→			
RANGE	10X100	→					→			
VOLTAGE	270	390	420	500	580	410	260			
CURRENT	1,000	→					→			

FREQUENCIES 3.0 0.3

SENDER No. 18701

OPERATOR BJ

RECEIVER No.

OPERATOR DS

COMMENTS:

1-2 2B
2-3 2B
3-4 2B
4-5 2B
5-6 2B
6-7 2B

I. P. SENDER NOTES

JOB No. _____ AREA Cascabell

LINE 4, HALF SW, SP. 1, DATE May 9

PAGE 4

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4			
RECEIVE	30-35	SW →			35-40	SW →				
RANGE	10X100	→								
VOLTAGE	420	500	560	420	420	500	560			
CURRENT	1.007	→								
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES	3.0 + 0.3
SENDER No.	18701
OPERATOR	RJ
RECEIVER No.	
OPERATOR	DJP

COMMENTS:

I. P. RECEIVER NOTES, JOB NO. _____, AREA Casebel

LINE 3, HALF NE, SP. 1, a = 500, BEARING N 60° E

SENDER STA. 0 = ELECTRODE NO. 4, DATE May 4/73

PAGE 1

HEINRICHS GEOEX

SEND	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	5-6
RECEIVE	0-5NE	→	5-10NE	→	→	10-15NE	→	→	→	15-20NE
MULTIPLIER	1.0	1.0	100	1.0	1.0	10	10	1.0	1.0	10
PFE	1.0	1.0	0.4	0.9	1.0	0.4	0.3	1.0	0.9	0.2
CUR. (AMPS)	1.0	→								
POINT NO.										
SEP. (n)										
H. F. MV	90.3	38.4	0116	99.4	58.3	292	225	35.2	28.8	731
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE $K_n/1000$	1.5	6	1.5	6	0.6 + 15	185	6	15	30	1.5
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c					1.7 +					
3.0 MV $\rho/2\pi$	135	229	1730	594	870	436	1345	524	859	1090
DRIFT MCF	9.6	5.2	0.40	1.9	1.4	1.4	0.37	2.3	1.3	0.37
S. P.	+37.6	-4.0	→	→	→	+2.4	→	→	→	-6.0
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 3, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	1-2
RECEIVE	→	→	→	→	20-25NE	→	→	→	→	→
MULTIPLIER	10	10	1.0	1.0	1.0	1.0	0.1	0.1	0.1	0.1
PFE	0.4	0.3	1.1	1.1	~~0.4~~ 0.4	0.3	0.5	0.5	1.2	0.9
CUR. (AMPS)	1.0	→	→	→	0.9	1.0	→	→	→	→
POINT NO.										
SEP. (n)										
H. F. MV	135	141	26.5	27.2	~~[illegible]~~ 787	22.9	6.54	7.74	1.68	1.91
DRIFT	–	–	–	–	–	–	–	–	–	–
1.0 PFE $K_n/1000$	6	15	30	52.5	1.5	6	15	30	52.5	84
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	807	2100	790	1421	~~[illegible]~~ 131	137	37.5	231	88	160
DRIFT MCF	0.74	0.24	1.6	0.92	4.6	3.6	7.2	3.0	16	6.9
S. P.	→	→	→	→	+30.7	→	→	→	→	→
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO._____, AREA Cascabel

LINE 3, HALF_____, SR._____, a = _____, BEARING_____

SENDER STA._____ = ELECTRODE NO._____, DATE_____

PAGE 3

HEINRICHS GEOEX

SEND	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5	3-4	6-7
RECEIVE	25-30NE	→	→	→	→	30-35NE	→	→	→	35-40NE
MULTIPLIER	1.0	1.0	0.1	0.1	0.1	1.0	0.1	0.1	0.1	0.1
PFE	0.3	0.4	0.6	0.6	1.3	0.3	0.3	0.8	0.7	0.3
CUR. (AMPS)	0.9	1.0	→	→	→	0.9	1.0	→	→	0.9
POINT NO.										
SEP. (n)										
H. F. MV	30.2	13.9	4.64	5.91	1.50	09.7	6.17	2.07	2.86	5.57
DRIFT	–	–	–	–	–	–	–	–	–	–
1.0 PFE K_n/1000	6	15	30	52.5	84	15	30	52.5	84	30
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	~~189~~ 200									
3.0 MV $\rho/2\pi$	~~207~~	207	138	309	126	~~148~~ 161	184	108	239	~~156~~ 185
DRIFT MCF	2.5	2.9	5.8	2.6	12	3.1	2.7	9.3	3.8	2.7
S. P.	+3.0	→	→	→	→	-8.0	→	→	→	-3.8
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 3, HALF _____, SR. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 4

HEINRICHS GEOEX

SEND	5-6	4-5									Cal
RECEIVE	→	→									3-4
MULTIPLIER	0.1	0.1									1.0
PFE	0.4	0.6?									0.2
CUR. (AMPS)	1.0 →										
POINT NO.											
SEP. (n)											
H. F. MV	3.72	1.30								3.0	1004
DRIFT	—	—									—
1.0 PFE $K_n/1000$	52.5	84									
0.3 PFE ρ_{CAL}											
0.1 PFE PFE_c											
3.0 MV $\rho/2\pi$	194	109									
DRIFT MCF	3.1	7.3									
S. P.	→	→									
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 3, HALF NE, SP. 1, a = 500, BEARING N60° E

SENDER STA. 0 = ELECTRODE NO. 4, DATE May 4/73

PAGE 1

HEINRICHS GEOEX

SEND	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	5-6
RECEIVE	0-5NE	→	5-10NE	→	→	10-15NE	→	→	→	15-20NE
MULTIPLIER	1.0	1.0	100	1.0	1.0	10	10	1.0	1.0	10
PFE	1.0	1.0	0.4	0.9	1.0	0.4	0.3	1.0	0.9	0.2
CUR. (AMPS)										
POINT NO.										
SEP. (n)										
H. F. MV	90.3	38.4	0.116	99.4	58.3	292	225	352	28.8	731
DRIFT	–	–	–	–	–	–	–	–	–	–
1.0 PFE / K_n/1000					0.6					
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c					1.7					
3.0 MV / $\rho/2\pi$										
DRIFT / MCF										
S. P.	+37.6	-4.0	→	→	→	+2.4	→	→	→	-6.0
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 3, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	1-2
RECEIVE	→	→	→	→	20-25AE	→	→	→	→	→
MULTIPLIER	10	10	1.0	1.0	1.0	1.0	0.1	0.1	0.1	0.1
PFE	0.4	0.3	1.1	1.1	~~1.18~~ 04	0.3	0.5	0.5	1.2	0.9
CUR. (AMPS)										
POINT NO.										
SEP. (n)										
H. F. MV	135	141	26.5	27.2	~~28.8~~ 78	22.9	6.54	7.74	1.68	1.91
DRIFT	–	–	–	–	–	–	–	–	–	–
1.0 PFE / K_n/1000										
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / $\rho/2\pi$										
DRIFT / MCF										
S. P.	→	→	→	→	+30.7	→	→	→	→	→
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 3, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 3

HEINRICHS GEOEX

SEND	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5	3-4	6-7
RECEIVE	25-30NE	→				30-35NE	→			35-40NE
MULTIPLIER	1.0	1.0	0.1	0.1	0.1	1.0	0.1	0.1	0.1	0.1
PFE	0.3	0.4	0.6	0.6	1.3	0.3	0.3	0.8	0.7	0.3
CUR. (AMPS)										
POINT NO.										
SEP. (n)										
H. F. MV	30.2	13.9	4.64	5.91	1.50	09.7	6.17	2.07	2.86	5.57
DRIFT	–	–	–	–	–	–	–	–	–	–
1.0 PFE / K_n/1000										
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / $\rho/2\pi$										
DRIFT / MCF										
S. P.	+3.0	→				-8.0	→			-3.8
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE _____, HALF _____, SP. _____, a = _____, BEARING _____

SLIDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 4

HEINRICHS GEOEX

SEND	5-6	4-5									Col
RECEIVE											3-4
MULTIPLIER	0.1	0.1									1.0
PFE	0.4	0.6?									.02
CUR. (AMPS)											
POINT NO.											
SEP. (n)											
H. F. MV	3.72	1.30								3.0	1004
DRIFT	–	–									–
1.0 PFE / K_n/1000											
0.3 PFE / ρ_{CAL}											
0.1 PFE / PFE_c											
3.0 MV / $\rho/2\pi$											
DRIFT / MCF											
S. P.											
NOISE											
POT RES.											
CULT & CUTS											

I. P. RECEIVER NOTES, JOB NO. _____, AREA Caserbel

LINE 3, HALF SW, SP. 1, a = 500, BEARING S 60° W

SENDER STA. 0 = ELECTRODE NO. 4, DATE May 7/73

PAGE 5

HEINRICHS GEOEX

SEND	SP	SP	3-4	2-3	3-4	4-5	5-6	6-7	1-2	2-3
RECEIVE	0-5SW	5-10SW	10-15SW	15-20SW	—	—	—	→	20-25SW	—
MULTIPLIER			10	10	1.0	1.0	1.0	1.0	10	1.0
PFE			0.5	0.9	0.8	1.4	1.1	1.2	0.4	0.9
CUR. (AMPS)	1.0	—	—	—	—	—	—	—	—	→
POINT NO.										
SEP. (n)										
H. F. MV			200	140	63.3	17.1	27.4	15.6	363	39.4
DRIFT			–	–	–	–	–	–	–	–
1.0 PFE $K_n/1000$			1.5	1.5	6	15	30	82.5	1.5	6
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$			299	209	378	255	819	816	542	235
DRIFT MCF			2.3	5.3	2.6	+76.3	1.6	1.7	1.1	4.7
S. P.	-18.2	+56.4	~~[illegible]~~ +14.0	-6.4	—	—	—	→	-2.8	—
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 3, HALF _____, SP. _____, α = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 6

HEINRICHS GEOEX

SEND	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6	1-2
RECEIVE	20-25 SW	→	→	→	26-30	→	→	→	→	30-35 SW
MULTIPLIER	1.0	0.1	1.0	0.1	10	1.0	1.0	0.1	0.1	1.0
PFE	0.8	1.1	1.0	1.1	0.7	1.2	1.1	1.5	1.1	0.7
CUR. (AMPS)	1.0	→	→	→	→	→	→	→	→	→
POINT NO.										
SEP. (n)										
H. F. MV	26.3	7.16	11.6	7.09	158	26.2	21.9	6.50	10.46	18.7
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE $K_n/1000$	15	30	52.5	84	6	15	30	52.5	84	15
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	378	214	607	593	944	391	654	340	875	279
DRIFT MCF	2.6	6.1	2.0	2.2	0.95	3.6	2.0	5	1.5	3.2
S. P.	→	→	→	→	+40.8	→	→	→	→	+28.6
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cassebel

LINE 3, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 7

HEINRICHS GEOEX

SEND	2-3	3-4	4-5	1-2	2-3	3-4			Cal	
RECEIVE	30-35SW	→	→	35-40SW	→	→			0-5	
MULTIPLIER	0.1	0.1	0.1	0.1	0.1	0.1				
PFE	0.9	1.0	0.9	0.4	1.0	0.8?			-0.2	
CUR. (AMPS)	1.0	→	→	→	→	→				
POINT NO.										
SEP. (n)										
H. F. MV	3.74	3.26	0.91	5.63	1.15	0.95?			1004	
DRIFT	—	—	—	—	—	—				
1.0 PFE K_n/1000	30	52.5	0.6 84	30	52.5	84				
0.3 PFE P_{CAL}										
0.1 PFE PFE_c			2.4							
3.0 MV $\rho/2\pi$	112	170	76	168	60	79				
DRIFT MCF	9.8	7.1	14	3.6	20	12.7				
S. P.	→	→	→	-11.8						
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabell

LINE 3, HALF NE, SP. 1, a = 500, BEARING N 80 E

SENDER STA. 0 = ELECTRODE NO. 4, DATE May 4

PAGE 1

HEINRICHS GEOEX

SEND	0-5NE	→	5-10NE			10-15NE	→		→	
RECEIVE	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	
MULTIPLIER	10x100									
PFE										
CUR. (AMPS)	1.0									
POINT NO.	660 mv	500	550	660	500	480	550	660	500	
SEP. (n)										
H. F. MV										
DRIFT	15-20NE	→			→					
1.0 PFE K_n/1000	5-6	4-5	3-4	2-3	1-2					
0.3 PFE P_{CAL}										
0.1 PFE PFE_c	10x100									
3.0 MV $P/2\pi$										
DRIFT MCF	1.0									
S.P. mv	320	480	550	660	480					
NOISE										
POT RES.										
CULT & CMTS										

(1-2 4B) (2-3 4B) (3-4 2C)

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 3, HALF NE, SP. 1, a = 500, BEARING N 60 E

SENDER STA. 0 = ELECTRODE NO. 4, DATE MAY 4

PAGE 2

HEINRICHS GEOEX

SEND		20-25NE	→	→	→	→	→				
RECEIVE		6-7	5-6	4-5	3-4	2-3	1-2				
MULTIPLIER		~~10x100~~	10x100	—	—	—	—				
PFE		3x300									
CUR. (AMPS)		~~1.0~~ 0.9	1.0	—	—	—	—				
POINT NO.		~~340~~									
SEP. (n)		610	310	460	540	650	480				
H. F. MV											
DRIFT		25-30NE	→	→	→	→	30-35NE				
1.0 PFE	K_n/1000	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5	3-4	
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_C	3x300	10x100	—	—	—	3x300	10x100	—	—	
3.0 MV	$\rho/2\pi$										
DRIFT	MCF	0.9	1.0	—	—	—	0.9	1.0	—	—	
S. P.											
NOISE		610	300	460	540	650	640	300	460	540	
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. _____, AREA CASCABELL

LINE 3, HALF NE, SR. 1, a = 500, BEARING N60 E

SENDER STA. 0 = ELECTRODE NO. 4, DATE MAY 4

PAGE 3

HEINRICHS GEOEX

SEND		35-40NS	→	→							
RECEIVE		6-7	5-6	4-5							
MULTIPLIER		3x300	10x100	10x100							
PFE											
CUR. (AMPS)		0.9	1.0	1.0							
POINT NO.											
SEP. (n)											
H. F. MV		640	300	450							
DRIFT											
1.0 PFE	$K_n/1000$										
0.3 PFE	P_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$P/2\pi$										
DRIFT	MCF										
S. P.											
NOISE											
POT RES.											
CULT & CMTS											

I. P. SENDER NOTES

JOB No. _____ AREA Cascadell

LINE 3, HALF SW, SP. 1, DATE May 7

PAGE 6

HEINRICHS GEOEX

SEND	3-4	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5
RECEIVE	10-15 SW	15-20 SW	→	→	→	→	20 25 SW	→	→	→
RANGE	10X100	10X100	10X100	10X100	10X100	10X100	10X100	→	→	→
VOLTAGE	550	300	500	420	300	650	480	320	500	400
CURRENT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	→	→	→
SEND	5-6	6-7	1-2	2-3	3-4	4-5	5-6			
RECEIVE	→	→	25-30 SW	→	→	→	→			
RANGE	10X100	→	→	→	→	→	→			
VOLTAGE	320	650	250	360	500	400	250			
CURRENT	1.0	→	→	→	→	→	→			

FREQUENCIES 3.0 0.3

SENDER No. 18701

OPERATOR DR

RECEIVER No.

OPERATOR GF

COMMENTS: 1-2 4B 4-5 2C
2-3 4B 5-6
3-4 2B 6-7 2B

1-2

I. P. SENDER NOTES

JOB NO. _____ AREA CASCADE

LINE 3, HALF SW, SP. 1, DATE May 7

PAGE 25

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4			
RECEIVE	30-35a	→		→	35-48p					
RANGE	10x100	→					→			
VOLTAGE	250	320	550	400	250	320	550			
CURRENT	1.0	→					→			
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 3.0 0.3

SENDER NO. 18701

OPERATOR 2R

RECEIVER NO.

OPERATOR GF

COMMENTS:

1-2 4B 4-5 2C

2-3 4B

3-4 2B

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 2, HALF NE, SR. 1, a = 500, BEARING N 60° E

SENDER STA. 0 = ELECTRODE NO. 4, DATE May 2/73

PAGE 1

HEINRICHS GEOEX

SEND	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	5-6
RECEIVE	0-5NE	→	5-10NE	→	→	10-15NE	→	→	→	15-20NE
MULTIPLIER	1.0	10	10	1.0	1.0	10	1.0	1.0	1.0	10
P.F.E	1.2	0.5	0.6	1.3	0.7	0.9	0.9	1.6	0.9	0.6
CUR. (AMPS)	1.0	→	→	→	→	→	→	→	→	→
POINT NO.										
SEP. (n)										
H. F. MV	45.8	215	512	32.0	80.9	400	96.1	10.8	21.1	377
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE $K_n/1000$	1.5	6	1.5	6	15	1.5	6	15	30	1.5
0.3 PFE P_{CAL}										
0.1 PFE PFE_c										
3.0 MV $P/2\pi$	68	1276	758	190	1197	593	570	160	625	558
DRIFT MCF	20	0.55	1.1	7.9	0.75	1.9	1.9	11	1.8	1.4
S. P.	-38.2	→	+21.9	→	→	+41.1	→	→	→	-41.0
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 2, HALF _____, SR. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	1-2
RECEIVE				→	20-25NE					→
MULTIPLIER	1.0	1.0	0.1	0.1	1.0	1.0	1.0	1.0	0.1	0.1
P.F.E	0.7	0.8	1.4	0.9	0.7	0.5	0.5	0.9	0.3	0.8
CUR. (AMPS)	1.0									→
POINT NO.										
SEP. (n)										
H. F. MV	45.5	21.6	34.1	5.66	108.2	83.7	13.7	10.4	2.00	3.02
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000	6	15	30	52.5	1.5	6	15	30	52.5	84
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	270	320	101	293	160	497	203	308	104	250
DRIFT MCF	3.3	3.1	16	2.8	5.6	1.4	3.4	3.6	4.8	4.0
S. P.					-2.0					
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Casaabal

LINE _____, HALF _____, SR. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 3

HEINRICHS GEOEX

SEND	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5	3-4	6-7
RECEIVE	25-30NE					30-35NE				35-40NE
MULTIPLIER	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
P.F.E	0.5	0.5	0.4	0.9	1.5	0.3	0.3	0.4	1.0	0.4
CUR. (AMPS)	1.0									
POINT NO.										
SEP. (n)										
H. F. MV	26.2	29.1	5.49	5.35	1.13	8.69	10.76	2.284	2.83	3.65
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000	6	15	30	52.5	84	15	30	52.5	84	30
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	155	431	163	277	94	129	308	116	235	108
DRIFT MCF	4.5	1.6	3.7	4.0	18	3.9	1.6	5.2	5.1	5.6
S. P.	+15.4					+14.0				+7.6
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 2, HALF _____, SP. _____, a = _____, BEARING N60-E

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 4

HEINRICHS GEOEX

SEND		5-6	4-5			UNL					
RECEIVE		→	→			2-3					
MULTIPLIER		0.1	0.1			1.0					
PFE		0.3	0.4			-0.2					
CUR. (AMPS)		1.0	→								
POINT NO.											
SEP. (n)											
H. F. MV		4.85	1.12			101.3					
DRIFT		–	–			–					
1.0 PFE	$K_n/1000$	525	84								
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	251	93								
DRIFT	MCF	2.0	6.5								
S. P.											
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO._____, AREA CASCABEL

LINE 2, HALF SW, SR. 1, a = 500, BEARING S 60° W

SENDER STA. 0 = ELECTRODE NO. -4, DATE 5-3-73

PAGE 5

HEINRICHS GEOEX

SEND	SP	SP	3-4	2-3	3-4	4-5	5-6	6-7	1-2	2-3
RECEIVE	0-5SW	5-10SW	10-15SW	15-20SW					20-25SW	
MULTIPLIER			10	10	1.0	1.0	1.0	0.1	10	1.0
PFE			1.4	1.0	0.9	0.8	1.1	0.9	0.7	1.0
CUR. (AMPS)										
POINT NO.										
SEP. (n)										
H. F. MV			274	184	484	142	145	566	171	573
DRIFT			—	—	—	—	—	—	—	—
1.0 PFE $K_n/1000$			1.5	1.5	6	15	30	525	1.5	6
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$			410	276	290	212	435	296	256	343
DRIFT MCF			3.9	4.3	3.8	5.2	3.0	3.7	3.5	3.5
S. P.	+20.9	-13.5	+14.1	+10.7					-4.7	
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO._____, AREA CASCABEL

LINE 2, HALF_____, SP._____, a = _____, BEARING_____

SENDER STA._____ = ELECTRODE NO._____, DATE_____

PAGE 6

HEINRICHS GEOEX

SEND	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6	1-2
RECEIVE	20-25SW	→	→	→	25-30SW	→	→	→	→	30-35SW
MULTIPLIER	1.0	0.1	1.0	0.1	1.0	1.0	0.1	0.1	0.1	1.0
PFE	0.9	0.9	1.1	1.1	1.0	1.1	0.7	0.8	0.9	0.7
CUR. (AMPS)										
POINT NO.										
SEP. (n)										
H. F. MV	23.1	8.81	12.7	5.63	31.2	14.1	6.21	2.90	3.94	21.6
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000	15	30	0.7+52.5	84	6	15	30	52.5	84	15
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c			1.6+							
3.0 MV $\rho/2\pi$	346	264	665	473	187	211	186	152	330	323
DRIFT MCF	3.2	4.2	2.0	2.8	6.4	6.2	4.8	6.6	3.3	2.8
S. P.					12.6+					10.1-
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO._____, AREA CARMABEL

LINE 2, HALF_____, SR._____, a = _____, BEARING_____

SENDER STA._____ = ELECTRODE NO._____, DATE_____

PAGE 7

HEINRICHS GEOEX

SEND		2-3	3-4	4-5	1-2	2-3	3-4		CAL		
RECEIVE		30-35SW	→	→	35-40SW	→	→		3-4		
MULTIPLIER		1.0	0.1	0.1	1.0	1.0	0.1				
PFE		0.8	0.7	0.8	1.0	1.2	0.9		-0.2		
CUR. (AMPS)											
POINT NO.											
SEP. (n)											
H. F. MV		11.4	5.80	2.64	25.4	15.2	8.44		100.3		
DRIFT		—	—	—	—	—	—				
1.0 PFE	K_n/1000	30	52.5	84	30	52.5	84				
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	341	304	221	760	796	707				
DRIFT	MCF	2.9	3.0	4.5	23.4+	1.8	1.6				
S. P.					1.6	~~1.8~~					
NOISE											
POT RES.											
CULT & CMTS											

Sender

I. P. ~~RECEIVER~~ NOTES, JOB NO. _____, AREA SENDER

LINE N, HALF E, SR. _____, a = _____, BEARING NE

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 1

HEINRICHS GEOEX

SEND	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	5-6
RECEIVE	0-5	~~5-10~~	~~5-10 NE~~	→	→	10-15	→	→	→	15-20
MULTIPLIER	10x100	10x100	→	→	→	→	→	→	→	→
PFE										
CUR. (AMPS)	1.0	1.0	→	→	→	→	→	→	→	→
POINT NO.										
SEP. (n)										
H. F. MV	280	320	550	280	320	750	540	280	320	360
DRIFT										
1.0 PFE / $K_n/1000$										
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / $\rho/2\pi$										
DRIFT / MCF										
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

I. P. ~~RECEIVER~~ Sender NOTES, JOB No._____, AREA_____

LINE VA, HALF E, SP._____, a = _____, BEARING_____

SENDER STA._____ = ELECTRODE No._____, DATE_____

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	1-2
RECEIVE	15-20				20-25					
MULTIPLIER	10x100									
PFE										
CUR. (AMPS)	1.0									
POINT NO.										
SEP. (n)										
H. F. MV	740	540	280	320	350	360	740	540	280	320
DRIFT										
1.0 PFE / K_n/1000										
0.3 PFE / P_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / P/2π										
DRIFT / MCF										
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

Scribed

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 1/11, HALF E, SR. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 3

HEINRICHS GEOEX

SEND	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5	3-4	6-7
RECEIVE	25-30	→	→	→	→	30-35	→	→	→	35-40
MULTIPLIER	10x100	→	→	→	→					
PFE										
CUR. (AMPS)	1.0	→	→	→	→					
POINT NO.										
SEP. (n)										
H. F. MV	340	360	740	540	270	340	380	720	540	340
DRIFT										
1.0 PFE $K_n/1000$										
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$										
DRIFT MCF										
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

Sender

I. P. RECEIVER NOTES, JOB NO. _____, AREA Cascabel

LINE 7M, HALF E, SR. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 4

HEINRICHS GEOEX

SEND		5-6	4-5			CAL					
RECEIVE		35-40	→								
MULTIPLIER		10x100	—								
PFE											
CUR. (AMPS)		1.0	—								
POINT NO.											
SEP. (n)											
H. F. MV		360	720								
DRIFT											
1.0 PFE	$K_n/1000$										
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$										
DRIFT	MCF										
S. P.											
NOISE											
POT RES.											
CULT & CMTS											

1-2 23 USE 4B

I. P. RECEIVER NOTES, JOB NO. _____, AREA CARCABEL SENDER

LINE 2, HALF SW, SR. 1, a = 500, BEARING S 60° W

SENDER STA. 0 = ELECTRODE NO. 4, DATE 5-3-73

PAGE 5

HEINRICHS GEOEX

SEND	3-4	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5
RECEIVE	10-15SW	15-20SW	—	—	—	→	20-25SW	—	—	—
MULTIPLIER	10X100	10X100	10X100	10X100	10X100	10X100	10X100	10X100	10X100	10X100
PFE										
CUR. (AMPS)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
POINT NO.										
SEP. (n)										
H. F. MV	580	300	580	720	400	300	300	300	580	720
DRIFT										
1.0 PFE K_n/1000	5-6	6-7	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4
0.3 PFE P_{CAL}	→	→	25-30SW	—	—	—	→	30-35SW	—	—
0.1 PFE PFE_c	10X100	10X100	10X100	10X100	10X100	10X100	10X100	10X100	10X100	10X100
3.0 MV $P/2\pi$	1.0	1.0	1.0	1.0						
DRIFT MCF	400	300	300	320	580	720	380	300	300	560
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA CASCABEL SENDER

LINE 2, HALF SW, SR. 1, a = 500, BEARING S 60° W

SENDER STA. 0 = ELECTRODE NO. 4, DATE 5-3-73

PAGE 6

HEINRICHS GEOEX

SEND	4-5	1-2	2-3	3-4						
RECEIVE	30-35SW	35-40SW	→	→						
MULTIPLIER	10X100	→	→	→						
PFE										
CUR. (AMPS)	1.0	→	→	→						
POINT NO.										
SEP. (n)										
H. F. MV	520	280	320	520						
DRIFT										
1.0 PFE / $K_n/1000$										
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / $\rho/2\pi$										
DRIFT / MCF										
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. ____, AREA CRCABEL

LINE 1, HALF NE, SP. 1, a = 500, BEARING N 60 E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 5-1-73

PAGE 1

HEINRICHS GEOEX

SEND	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	5-6
RECEIVE	0-5NE →		5-10NE			→	10-15NE			15-20NE
MULTIPLIER	10	1.0	10	1.0	1.0	1.0	1.0	1.0	0.1	1.0
PFE	0.7	1.2	0.4	0.9	1.2	0.5	0.6	1.2	1.4	0.8
CUR. (AMPS)	1.0									
POINT NO.										
SEP. (n)										
H. F. MV	110	33.9	~~233~~ 228	49.8	21.7	42.5	38.5	13.1	6.77	27.6
DRIFT	–	–	–							
1.0 PFE K_n/1000	1.5	6	1.5	6	15	1.5	6	15	30	1.5
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	163	201	338	296	322	63	229	195	201	41
DRIFT MCF	4.3	6.0	1.2	3.0	3.7	7.9	2.6	6.2	7.0	20
S. P.	-4.7 →		20.7 –			13.8+				+14.0
NOISE										
POT RES.			12K							
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA _____

LINE _____, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	1-2
RECEIVE	15-20NE	→	→	→	20-25NE	→	→	→	→	→
MULTIPLIER	0.1	1.0	0.1	0.1	1.0	0.1	0.1	0.1	0.1	0.1
PFE	0.3	0.8	1.2	1.7	0.9	0.7	0.9	1.1	1.8	2.3
CUR. (AMPS)	1.0	→	→	→	→	→	→	→	→	→
POINT NO.										
SEP. (n)										
H. F. MV	7.64	13.6	5.67	3.25	38.0	7.31	2.98	7.52	3.20	2.01
DRIFT	-	-	-	-	-	-	-	-	-	-
1.0 PFE K_n/1000	6	15	30	1.2 52.5	1.5	6	15	30	52.5	84
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c				2.7						
3.0 MV $\rho/2\pi$	45	202	168	169	57	43	44	223	167	167
DRIFT MCF	6.7	4.0	7.1	10	16	16	~~30~~ 4.9	11	11	14
S. P.					9.1+	→	→	→	→	→
NOISE										
POT RES.										
CULT & CMTS										

0.1 0.1 0.1 — 0.1 0.3 — 0.1 0.2

I. P. RECEIVER NOTES, JOB NO. _____, AREA _____

LINE _____, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 3

HEINRICHS GEOEX

SEND	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5	3-4	6-7
RECEIVE	25-30 NE	→	→	→	→	30-35 NE	→	→	→	35-40 NE
MULTIPLIER	0.1	0.1	0.1	0.1	0.1	0.1	.01	.01	0.1	.01
PFE	0.9	0.7	1.0	1.2	1.9	1.2	1.5	1.2	1.3	1.5
CUR. (AMPS)	1.0	→	→	→	→	→	→	→	→	→
POINT NO.										
SEP. (n)										
H. F. MV	6.70	2.26	1.32	3.57	1.66	2.22	.980	.696	1.99	1.019
DRIFT	+.1	-	-	-	-	-	-	-	-	-
1.0 PFE K_n/1000	6	15	0.6 30	52.5	84	15	1.1 30	52.5	84	30
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c			1.4				2.0			
3.0 MV $\rho/2\pi$	40	34	39	186	138	33	29	36	166	30
DRIFT MCF	22	21	26	6.5	14	35	52	33	7.8	50
S. P.	12+	→	→	→	→	19.5+				5.0+
NOISE										
POT RES.										
CULT & CMTS										

0.1 0.4 0.7 — 0.3 0.4 1.0 1.2 0.2 0.9

I. P. RECEIVER NOTES, JOB NO. _____, AREA _____

LINE _____, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 4

HEINRICHS GEOEX

SEND		5-6	4-5					CAL			
RECEIVE		35-40 NE	→					2-3			
MULTIPLIER		·01	·01					1.0			
PFE		1·8	1·8					0.0			
CUR. (AMPS)		1.0	→								
POINT NO.											
SEP. (n)											
H. F. MV		·475	·458					101.0			
DRIFT		-	–					–			
1.0 PFE	K_n/1000	52.5	1.284								
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c		2·2								
3.0 MV	$\rho/2\pi$	25	38								
DRIFT	MCF	72	47								
S. P.											
NOISE											
POT RES.											
CULT & CMTS											

1.8 1.6

I. P. RECEIVER NOTES, JOB NO. ____, AREA CASCABEL

LINE 1, HALF SW, SR. 1, a = 500, BEARING S 60°W

SENDER STA. 0 = ELECTRODE NO. 4, DATE 5-1-73

PAGE 5

HEINRICHS GEOEX

SEND		S-P	SP	3-4	2-3	3-4	4-5	5-6	6-7	1-2	2-3
RECEIVE		0-5SW	5-10SW	10-15SW	15-20SW	→	→	→	→	20-25SW	→
MULTIPLIER				10	10	10	0.1	0.1	0.1	1.0	1.0
PFE				1.2	1.0	0.8	0.6	0.7	1.2	0.6	0.7
CUR. (AMPS)				1.0	→	→	→	→	→	→	→
POINT NO.											
SEP. (n)											
H. F. MV				648	224	125	10.01	7.55	2.50	34.9	13.0
DRIFT				—	—	—	—	—	—	—	—
1.0 PFE	K_n/1000			1.5	1.5	6	15	30	52.5	1.5	6
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$			962	333	743	149	224	130	52	77
DRIFT	MCF			1.2	3.0	1.1	4.0	3.1	9.2	1.2	9.1
S. P.		-22.0	-7.0	22.5+	44.5+	→	→	→	→	34.0-	
NOISE											
POT RES.											
CULT & CMTS											

— — — — — 0.2 — —

I. P. RECEIVER NOTES, JOB NO. _____, AREA _____

LINE 1, HALF SW, SR. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 6

HEINRICHS GEOEX

SEND	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6	1-2
RECEIVE	20-25SW	→	→	→	25-30SW	→	→	→	→	30-35SW
MULTIPLIER	1.0	0.1	.01	.01	0.1	0.1	0.1	.01	.01	0.1
PFE	0.7	0.6	0.8	1.3	0.6	0.7	0.5	1.5	1.5	0.7
CUR. (AMPS)	1.0	→	→	→	→	→	→	→	→	→
POINT NO.										
SEP. (n)										
H. F. MV	12.2	1.07	.938	.332	6.78	3.86	4.19	.410	.368	3.11
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000	15	30	52.5	84	6	15	30	52.5	0.784	15
0.3 PFE P_{CAL}										
0.1 PFE PFE_C									1.4?	
3.0 MV $P/2\pi$	181	32	49	28	40	57	124	21	31	46
DRIFT MCF	3.9	19	16	46	15	12	4.0	71	48	15
S. P.					-8.5					+19.3
NOISE										
POT RES.										
CULT & CMTS	—	0.9	0.8	2.5	0.1	0.2	0.1	2.6	2.3	0.3

I. P. RECEIVER NOTES, JOB NO. _____, AREA _____

LINE _____, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 7

HEINRICHS GEOEX

SEND	2-3	3-4	4-5	1-2	2-3	3-4					
RECEIVE	30-35SW	→	→	35-40SW	→	→					
MULTIPLIER	0.1	0.1	.01								
PFE	1.1	1.0	1.8?								
CUR. (AMPS)	1.0	→	→								
POINT NO.											
SEP. (n)											
H. F. MV	2.13	2.60	.265								
DRIFT	—	—	—								
1.0 PFE K_n/1000	30	52.5	84								
0.3 PFE ρ_{CAL}											
0.1 PFE PFE_c											
3.0 MV $\rho/2\pi$	63	135	22								
DRIFT MCF	17	7.4	82								
S. P.				18.0+							
NOISE											
POT RES.											
CULT & CMTS											

0.2 0.2 3.7

Sender

I. P. RECEIVER NOTES, JOB No. [illegible], AREA CYBERABEL

LINE _____, HALF _____, SP. _____, α = _____, BEARING _____

SENDER STA. _____ = ELECTRODE No. _____, DATE 5/1/73

PAGE 1

HEINRICHS GEOEX

SEND	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	5-6
RECEIVE	0-5 NE →		5-10 NE →			10-15 NE →				15-20 NE
MULTIPLIER	10x100	10x100	10x100	10x100	10x100	10x100	10x100	10x100	10x100	10x100
PFE										
CUR. (AMPS)	1.0	1.0	1.0	1.0	1.0	1.00	1.0	1.0	1.0	1.0
POINT NO.										
SEP. (n)										
H. F. MV	470	480	200	460	480	320	200	460	470	500
DRIFT										
1.0 PFE $K_n/1000$										
0.3 PFE P_{CAL}										
0.1 PFE PFE_c										
3.0 MV $P/2\pi$										
DRIFT MCF										
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

Sender

I. P. ~~Receiver~~ Notes, Job No. ____, Area Cascabel

Line ____, Half ____, Sp. ____, a = ____, Bearing ____

Sender Sta. ____ = Electrode No. ____, Date 5/1/73

Page 2

HEINRICHS GEOEX

Send	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	1-2
Receive	15-20WE	→	→	→	20-85WE	→	→	→	→	→
Multiplier	10x100	10x100	10x100	10x100	10x100	10x100	10x100	10x100	10x100	10x100
PFE										
Cur. (amps)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Point No.										
Sep. (n)										
H. F. Mv	320	200	460	470	410	490	320	200	450	470
Drift										
1.0 PFE / K_n/1000										
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / $\rho/2\pi$										
Drift / MCF										
S. P.										
Noise										
Pot Res.										
Cult & Cmts										

Sender

I. P. ~~Receiver~~ Notes, Job No. ____, Area Cascabel

Line ____, Half ____, Sp. ____, a = ____, Bearing ____

Sender Sta. ____ = Electrode No. ____, Date 5/1/73

Page 3

HEINRICHS GEOEX

Send	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5	3-4	6-7
Receive	25-30 mE	→	→	→	→	30-35 mE	→	→	→	35-40 mE
Multiplier	10x100	→	→	→	→	→	→	→	→	→
PFE										
Cur. (amps)	1.0	→	→	→	→	→	→	→	→	→
Point No.										
Sep. (n)										
H. F. Mv	400	490	320	200	450	400	490	320	200	400
Drift										
1.0 PFE $K_n/1000$										
0.3 PFE P_{CAL}										
0.1 PFE PFE_c										
3.0 MV $P/2\pi$										
Drift MCF										
S. P.										
Noise										
Pot. Res.										
Cult & Cmts										

Sender

I. P. ~~RECEIVER~~ NOTES, JOB NO ____, AREA Cascade 1

LINE ____, HALF ____, SR. ____, a = ____, BEARING ____

SENDER STA. ____ = ELECTRODE NO. ____, DATE 5/1/73

PAGE 4

HEINRICHS GEOEX

SEND		5-6	4-5								
RECEIVE		35-DONE →									
MULTIPLIER		10×100 →									
PFE											
CUR. (AMPS)		1.0 →									
POINT NO.											
SEP. (n)											
H. F. MV		490	320								
DRIFT											
1.0 PFE	$K_n/1000$										
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$										
DRIFT	MCF										
S. P.											
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. ____, AREA CRSCABEL

LINE ____, HALF ____, SR. ____, a = ____, BEARING ____

SENDER STA. ____ = ELECTRODE NO. ____, DATE ____

PAGE ____

HEINRICHS GEOEX

SEND	~~SR~~	SR	3-4	2-3	3-4	4-5	5-6	6-7	1-2	2-3
RECEIVE	0-5SW	5-10SW	10-15SW	15-20SW	→	→	→	→	20-25SW	→
MULTIPLIER			10x100	10x100	10x100	10x100	10x100	10x100	10x100	10x100
PFE										
CUR. (AMPS)			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
POINT NO.										
SEP. (n)										
H. F. MV			200	380	200	320	480	700	380	300
DRIFT										
1.0 PFE $K_n/1000$										
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$										
DRIFT MCF										
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. _____, AREA _____ PAGE _____

LINE _____, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE No. _____, DATE _____

HEINRICHS GEOEX

SEND	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6	1-2
RECEIVE	20-25SW	→	→	→	25-30SW	→	→	→	→	30-35SW
MULTIPLIER	10x100	10x100	10x100	10x100	10x100	10x100	10x100	10x100	10x100	10x100
PFE										
CUR. (AMPS)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
POINT No.										
SEP. (n)										
H. F. MV	200	300	380	400	360	400	200	300	380	360
DRIFT										
1.0 PFE / $K_n/1000$										
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / $\rho/2\pi$										
DRIFT / MCF										
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. _____, AREA _____ PAGE _____

LINE _____, HALF _____, SP. _____, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

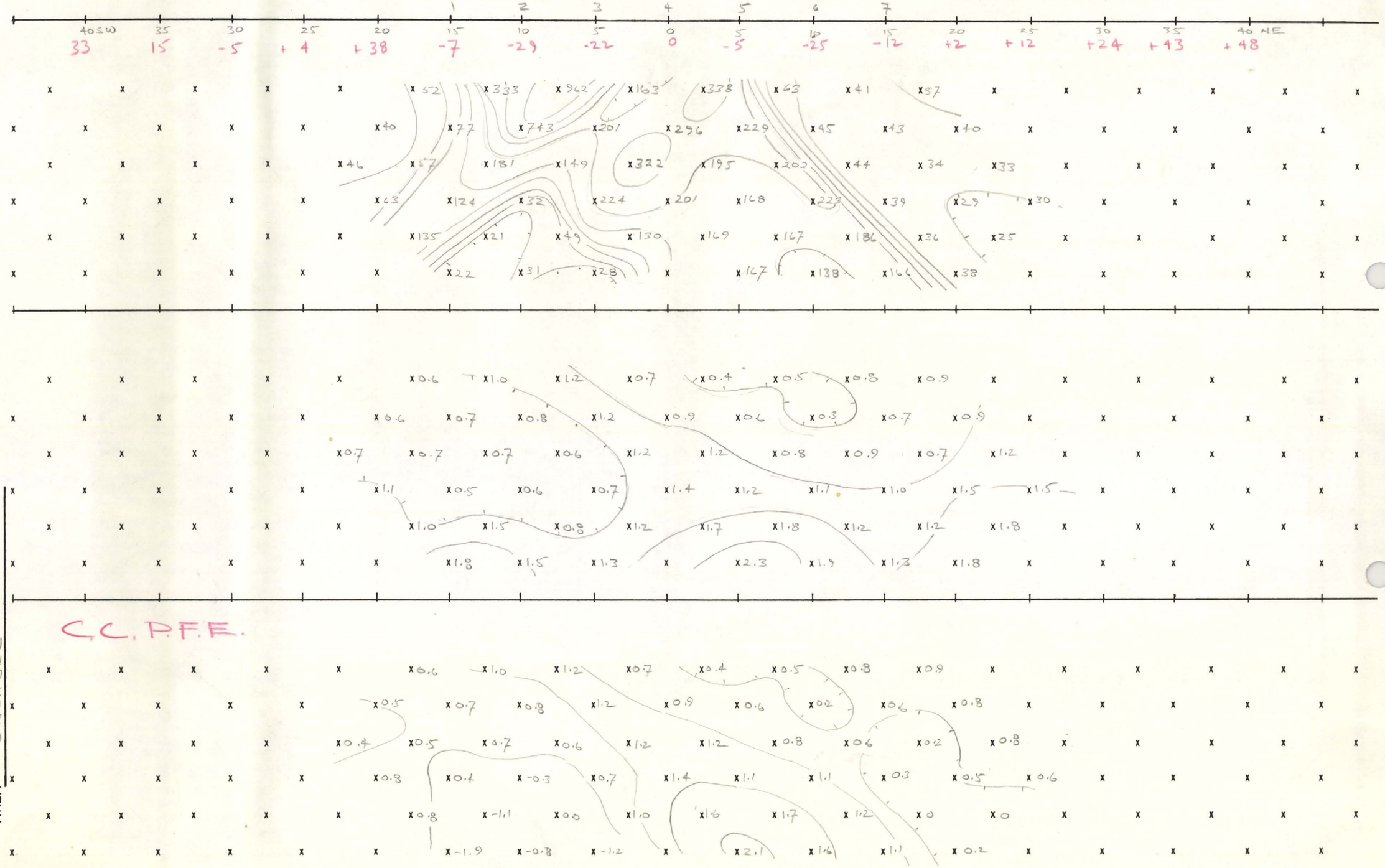
HEINRICHS GEOEX

SEND	2-3	3-4	4-5	1-2	2-3	3-4				
RECEIVE	30-35SW	→	→	35-40SW	→	→				
MULTIPLIER	10X100	10X100	10X100	10X100						
PFE										
CUR. (AMPS)	1.0	1.0	1.0							
POINT NO.										
SEP. (n)										
H. F. MV	360	200	320							
DRIFT										
1.0 PFE / $K_n/1000$										
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / $\rho/2\pi$										
DRIFT / MCF										
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

JOB# 817 LINE# 1 SP 1 a = 500' LOOKING N 30° W

CLIENT Industrial Fuels DATE 5-1-73 FREQUENCIES 0.3 & 0.3 Hz

AREA Cascabel



HEINRICHS GEOEXPLORATION COMPANY

806 WEST GRANT ROAD, TUCSON, ARIZONA 85703, P.O. BOX 5964, PHONE: (602) 623-0578

April 13, 1973

Mr. Joseph H. Roediger
Vice-President
Industrial Fuels Corporation
4438 East Marion Way
Phoenix, Arizona 85018

Re: Proposed I.P. Survey
Cascabel Area, Cochise
County, AZ
GEOEX Job # 817

Dear Mr. Roediger:

Persuant to our discussion at our office this Tuesday, and including your consultant, Mr. Charles W. Shannon, we herewith submit this proposal-contract letter for your approval to conduct an induced polarization (I.P.) survey in your Cascabel Area, Cochise County, Arizona.

Four parallel, single spread, 7-electrode I.P. lines are initially planned, oriented about N60°E, separated about 1500 feet and positioned to cover the main area of interest. This coverage should give information as to possible sulfide mineralization down to perhaps 750 feet below surface. Based on these results, a larger dipole (deeper penetrating) spread and/or fill-in detail coverage may be considered.

A three man crew plus necessary equipment to obtain this I.P. coverage would be charged at $250.00 per work day plus expenses. Expenses include $48.00 per day living expenses for the three man crew and $15.00 per day plus $0.15 per mile per vehicle (and one four wheel drive vehicle should suffice). Other direct job related expenses will be billed at our invoice cost plus 15 percent.

Our normal work schedule is based on a five day week and an eight hour work day. Travel time up to one hour per day each way between the job site and crew base will not be charged. Overtime in excess of this schedule will be charged at $37.50 per hour for three man crew plus expenses as above.

Standby time due to inclement weather or client request will be charged at half the daily rate plus expenses as above.

Final data compilation, computation, and drafting will be charged at $10.00 per hour. Final interpretation and report will be charged at $18.75 per hour. Rough field plots and preliminary field interpretations will be available during the project as needed.

We estimate that it would take about 6 field days to complete the four initial lines. One deeper penetrating line would take 2 or 3 additional days. If fill-in detail coverage is involved, it would probably take 1 1/2 days per spread. On this basis, we estimate a total billing of about $2500.00 for the first four lines including final drafting, interpretation, and report. Including 3 additional days for a deeper penetrating line (or 2 fill-in lines), the total billing would be approximately $3600.00.

GEOEX will save the client harmless from all Workmen's Compensation liability, public liability and property damage liability incurred by GEOEX employees. All property permits, brushing and trespass liability, and related costs which are incurred on behalf of the client will be chargeable to the client at GEOEX cost plus 15 percent. All special insurance premiums, bonds, fees, duties, licenses, taxes, trespass permits, and related special fees, if any, will be billed to the client at GEOEX cost plus 15 percent.

Payments are due on presentation. Billings may be submitted weekly with final payment due on presentation of final report.

Our crew availability at this time is such that we can start the field work during the first or second week in May.

Your understanding and approval of the above may be indicated by signing as provided below on the attached copy of this letter and returning it to us together with a $1000.00 advance on account.

Sincerely yours,

Heinrichs GEOEXploration Co.

Chris S. Ludwig

Chris S. Ludwig
Chief Geophysicist

CSL:oek
cc: Mr. Charles W. Shannon
Date: April 17, 1973
Accepted by: Joseph H. Roediger
Title: Vice-President

REINRICHS
GEOEX
Cable: GEOEX

April 17, 1973

REC'D APR 20 1973 REC'D

BOX 5964 TUCSON, ARIZONA 85703
Phone: (AREA 602) 623-0578

Dear Mr. Ludwig,

Enclosed is the executed copy of your letter contract relating to the I.P. Survey to be conducted in the Cascabel Area of Cochise County.

The requested advance is being forwarded to you directly from the main office in Detroit. I would appreciate being advised of the starting date as soon as your schedule permits fixing this date. I can be reached in Phoenix at 959-3809.

Sincerely,

Joe Rodriguez

April 13, 1973

Mr. Joseph H. Roediger
Vice-President
Industrial Fuels Corporation
4438 East Marion Way
Phoenix, Arizona 85018

Re: Proposed I.P. Survey
Cascabel Area, Cochise
County, AZ

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Sincerely yours,

Heinrichs GEOEXploration Co.

Chris S. Ludwig

Chris S. Ludwig
Chief Geophysicist

CSL:oek

cc: Mr. Charles W. Shannon

Date: _____

Accepted by: _____

Title: _____

4/10/73

Castabel Prospect
Paige Canyon
porphyry target

Mr. Shannon Consultant
to Mr. Joseph H. Roediger
V.P.
Industrial Fuels Corp

oxidation ? some galena

Write contract letter
City National Bank Detroit
copy to Shannon
schedule Early May

6 days a = 500' 7 elec 4 lines
3 day ? 1 line of degen ~ 1000'

2400
1200
3600

Industrial Fuels, Corporation 4/3/73

Mr. Shannon, Charles Salt Lake

Mr. Roediger

I.P. SE Arizona

Set up conference

April 10, 1973 A.M.

here

Charles W. Shannon
Geological Engineer

2186 BLAINE AVENUE
SALT LAKE CITY, UTAH 84108 PHONE (801) 467-3988

INDUSTRIAL FUELS CORPORATION

JOSEPH H. ROEDIGER
VICE-PRESIDENT
4438 E. MARION WAY
PHOENIX, ARIZ. 85018
602/9~~47-0570~~ 959-3809

22255 GREENFIELD RD.
SOUTHFIELD, MICH. 48075
313/353-8010