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12
7

18

300
12
4

48
3
1440

150 x 3 x 7
300 x 1 x 6
400 x 2 x 7
400 x 1 x 7
500 x 3 x 7
1000 x 1 x 7

5,400
28,450

Introduction

At the regest of Mr. Carew McFall of SEMINCO, San Jose, California, Heinrichs Geoexploration Company of Tucson Arizona conducted and completed an extension of an induced polarization survey, recomended in a earlier report dated June 1967, over part of the Mowry Area, Santa Cruz County, Arizona, between Aug 21 and Sept 8 1967.

1-1
2-1
2-9

A total of 10 lines (11 setups) were run, resulting in 51,400' of survey coverage of which 28,450' is "satisfactory" plotted data. "A" spacing varied from 150' to 1600' depending on the expected target size and depth. For orientation and locations see the plan maps.

All data was obtained with dual frequency induced polarization techniques utilizing the collinear dipole-dipole electrode configuration. Sending frequencies were 0.05 and 3.0 hertz (cps).

The purpose of this survey was to better define zones noted or suspected from the results of the earlier survey. The course of the work was modified as it progressed dependent on results.

Data are presented on Sectional Data Sheets, one for each line, with resistivity, percent frequency effects (PFE), and metallic conduction factor (MCF) contoured in section, and self potential (SP) in profile form.

Major geologic features and some cultural features, roads, fences and shafts have also been shown on the sections

~~For the Mowry Area,~~ the interpretation has been indicated on the plan as well as on the sections. See the Basis of Induced Polarization Method appended to this report for additional details on theory, presentation, and interpretation.

chiggers

Geoex personnel involved in the field work were Keith Person, Geophysical crew Chief; Steve Cruze Technical Assistant and Jim King, present only as an observer in training. Mr. McFall's assistance as third man was greatly appreciated, and the chiggers ate us all. Interpretation, compilation, and report were by the Tucson Geoex staff under the supervision of C.S.L. + Paul Head.

C-R + Int.

Nellie

Lines 2-1, 2-4, + 2-5. These lines were run at a larger spacing (500') and an orientated as close as possible to perpendicular to the limestone-shale contact to better define the anomalies located by line 2 of the earlier survey. These lines show similar features including moderately strong anomalies. ~~[illegible]~~. The conclusion in the June report that the source of the anomaly noted on line 2 ~~was~~ is ~~[illegible]~~ within the limestone does not appear justified now. Rather the anomaly source seems to be associated with the limestone-schist contact. The data indicates that the source

is buried at least 300', or it may be oxidized or very thin near the surface. There is no apparent cutoff on depth or strike, but the minimum amount is at least 1,200' in depth and 1,500' of strike. There is only minor variation in strength along strike. Pipe is likely near vertical.

To test this area at least one hole should be drilled to intersect the contact at about 700' in depth. The location of this hole will be decided and angle dependent on the dip of the contact which is now being checked. There is no preferred location with respect to strike for the drill hole other than on or between 2-1 + 2-5

With respect to the last area
center of line 2-5, it is probable
if it goes to less than ~~300~~ 300'
that the primary source of the
anomalies was never encountered.

Self-potential — [Leave Blank]

~~Sand area~~

Lines 1 (and 2) 2-6, 2-7, 2-8

~~The lines present an extremely complicated picture of subsurface~~ which may be ~~partly due to poor orientation~~ structure. ~~A.~~ There are quartzite hills ~~on both sides south of the~~ road. The resistivity ~~of these areas~~ are ~~much higher than the buried zone~~ between.

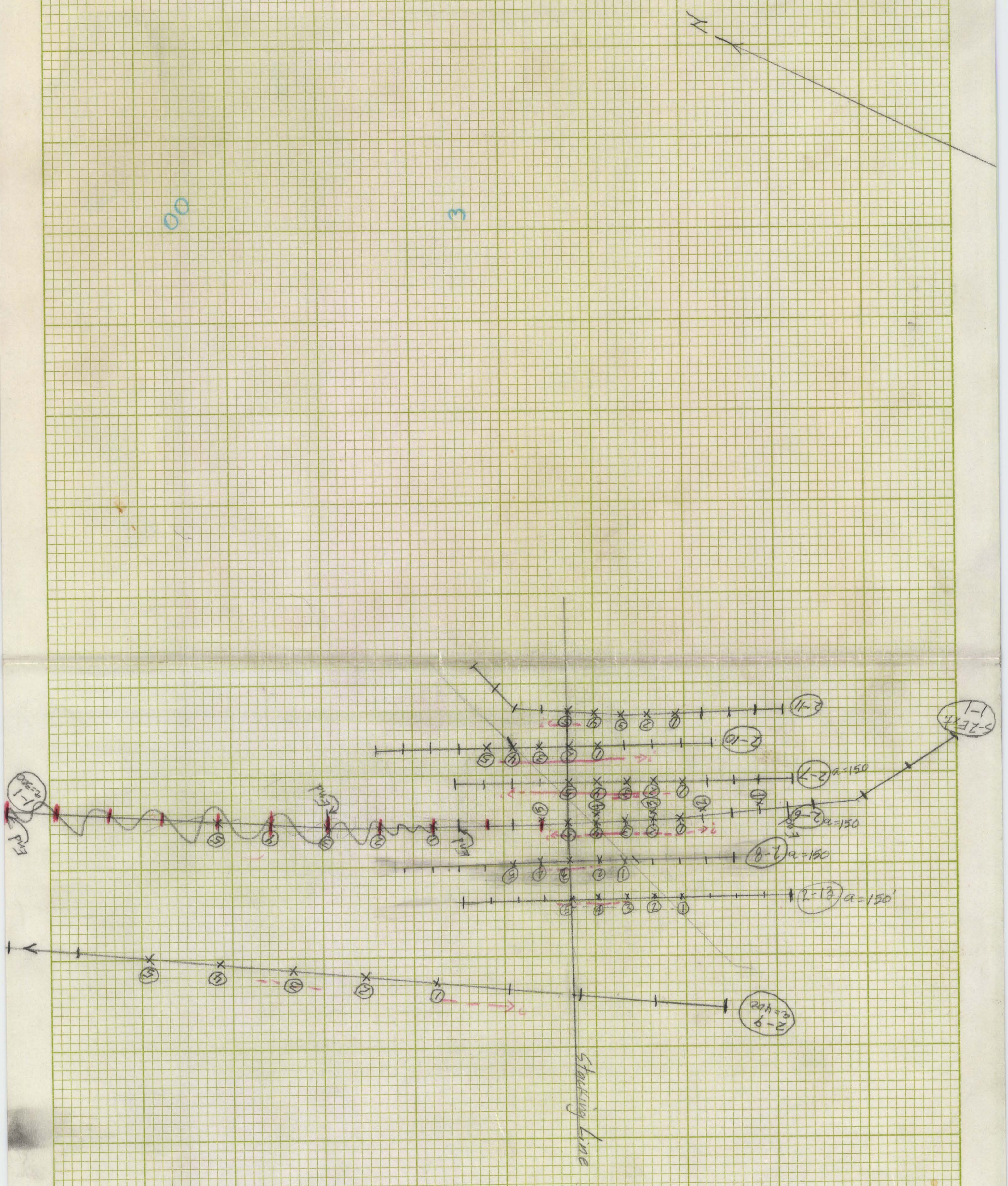
with respect to the structure!

Sand Area

Sgd 2 of line 1 +

lines 2-6, 2-7, 2-8

Line 1 was extended ~~to the~~ ~~south~~ to the south based on the anomalies noted in the earlier report.



DRAWN BY CLIFF
U.S. SMELTING

CLIENT SEMINCO PROJECT ~~Seminco~~ Mowry Phase II

FIELD WORK: START ______ COMPLETE ______

DISTRIBUTION: US Smelting & Seminco

LINE NUMBER	SPREAD NO	DIPOLE SIZE	FIELD DATA RCVD.	FIELD DATA CHKD	FIELD SECT & DATA SHEET CHKD	DRAFTING VALUES	DRAFTING CONTOURS	DRAFTING SELF POT	DRAFTING INTERPR.	DRAFTING TITLE BLK	CHK PRINT	INTERPRET	FINAL CHK	FINAL PRINT BL LINE	FINAL PRINT SEPIA	LOCATION PLAN DRAFT	LOCATION PLAN CHKD	LOCATION PLAN BL LINE	LOCATION PLAN SEPIA
1	2	300	✓	✓		/	/	/	/	/	/		✓			/	/		
2-1	1	500	✓	✓		/	/	/	/	/	/	✓	✓			/	/		
2-2	1,2	400	✓	✓		/	/	/	/	/	/	✓	✓			/	/		
2-3	1	1000	✓	✓		/	/	/	/	/	/	✓	✓			/	/		
2-4	1	500	✓			/	/	/	/	/	/	✓	✓			/	/		
2-5	1	500	✓			/	/	/	/	/	/	✓	✓			/	/		
2-6	1	150	✓			/	/	/	/	/	/	✓	✓			/	/		
2-7	1	150	✓			/	/	/	/	/	/	✓	✓			/	/		
2-8	1	150	✓			/	/	/	/	/	/	✓	✓			/	/		
2-9	1	400				/	/	/	/	/	/	✓	✓			/	/		
2-10	1	150				/	/	/	/	/	/	✓	✓			/	/		
2-11	1	150				/	/	/	/	/	/	✓	✓			/	/		
2-12	1	500				/	/	/	/	/	/	✓	✓			/	/		
2-13	1	150				/	/	/	/	/	/	✓	✓			/	/		
2-14	1	500				/	/	/	/	/	/	✓	✓			/	/		

good 1 Phase 1 show both

C_{ac}

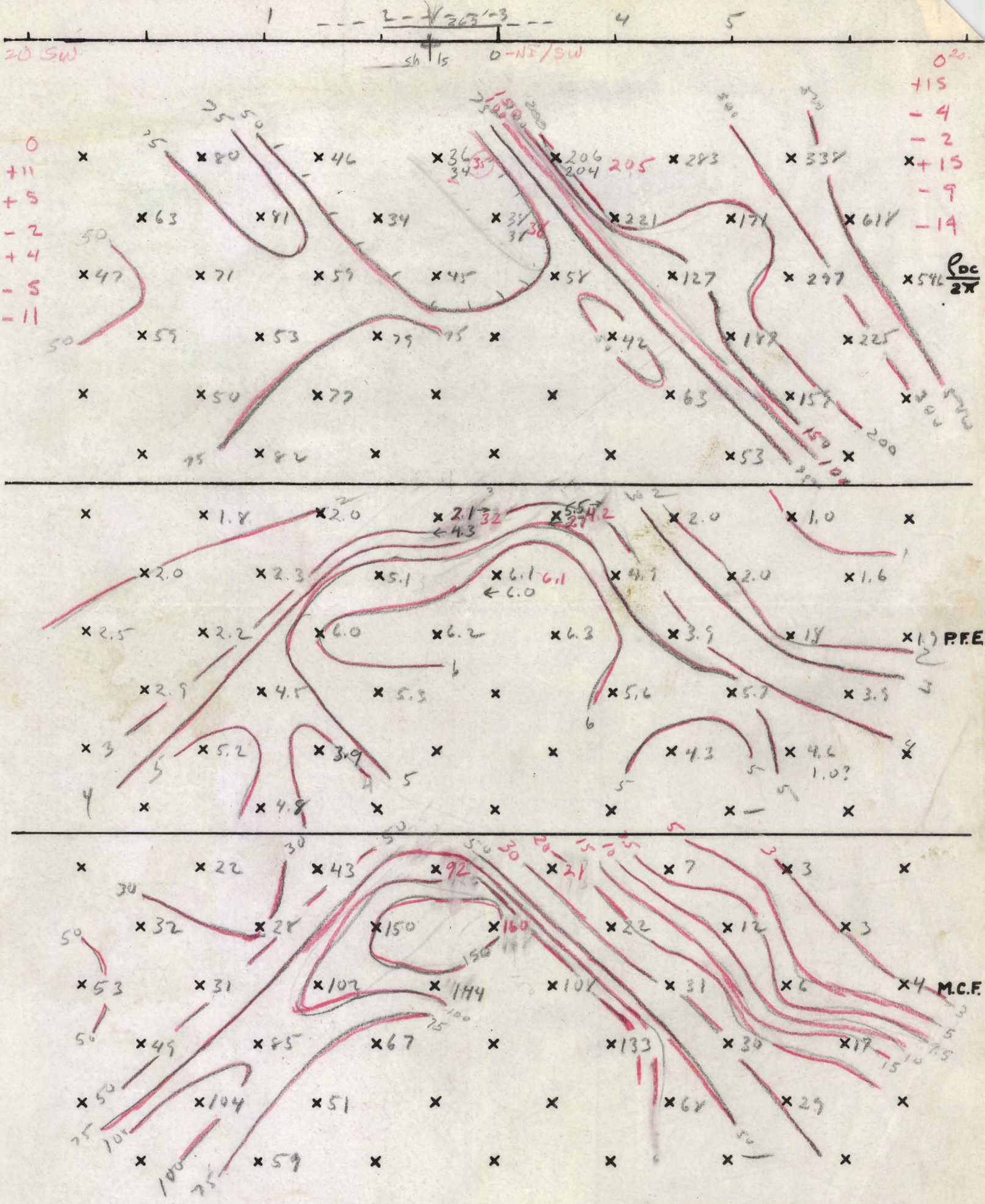
3 pits

2n − 1

2(n − 1)

2n − 2

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING N-60



AREA Mowry LINE 2-1 a = 500 ' SCALE: — DATE: 8-22-67

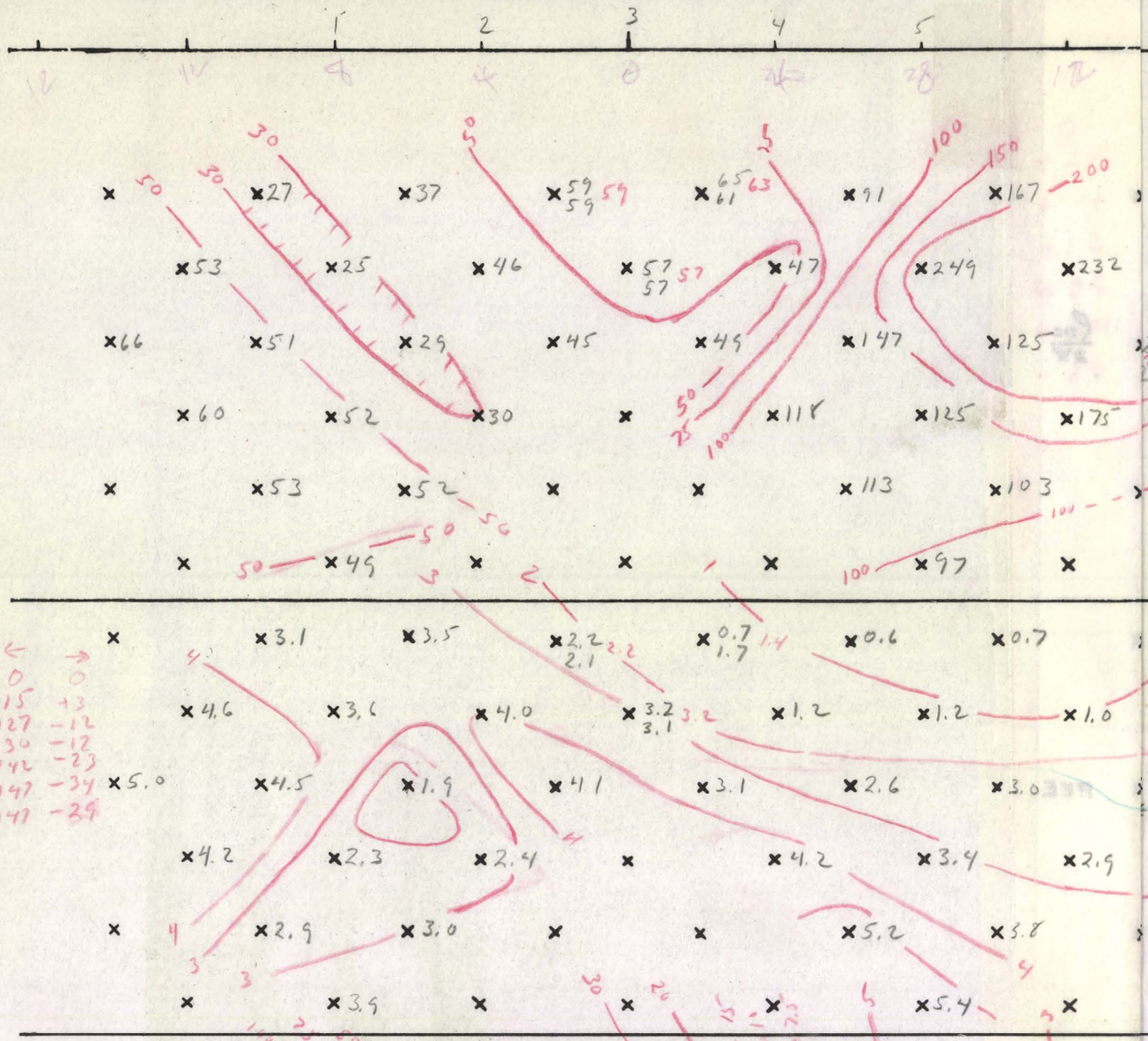
HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING S 69 W

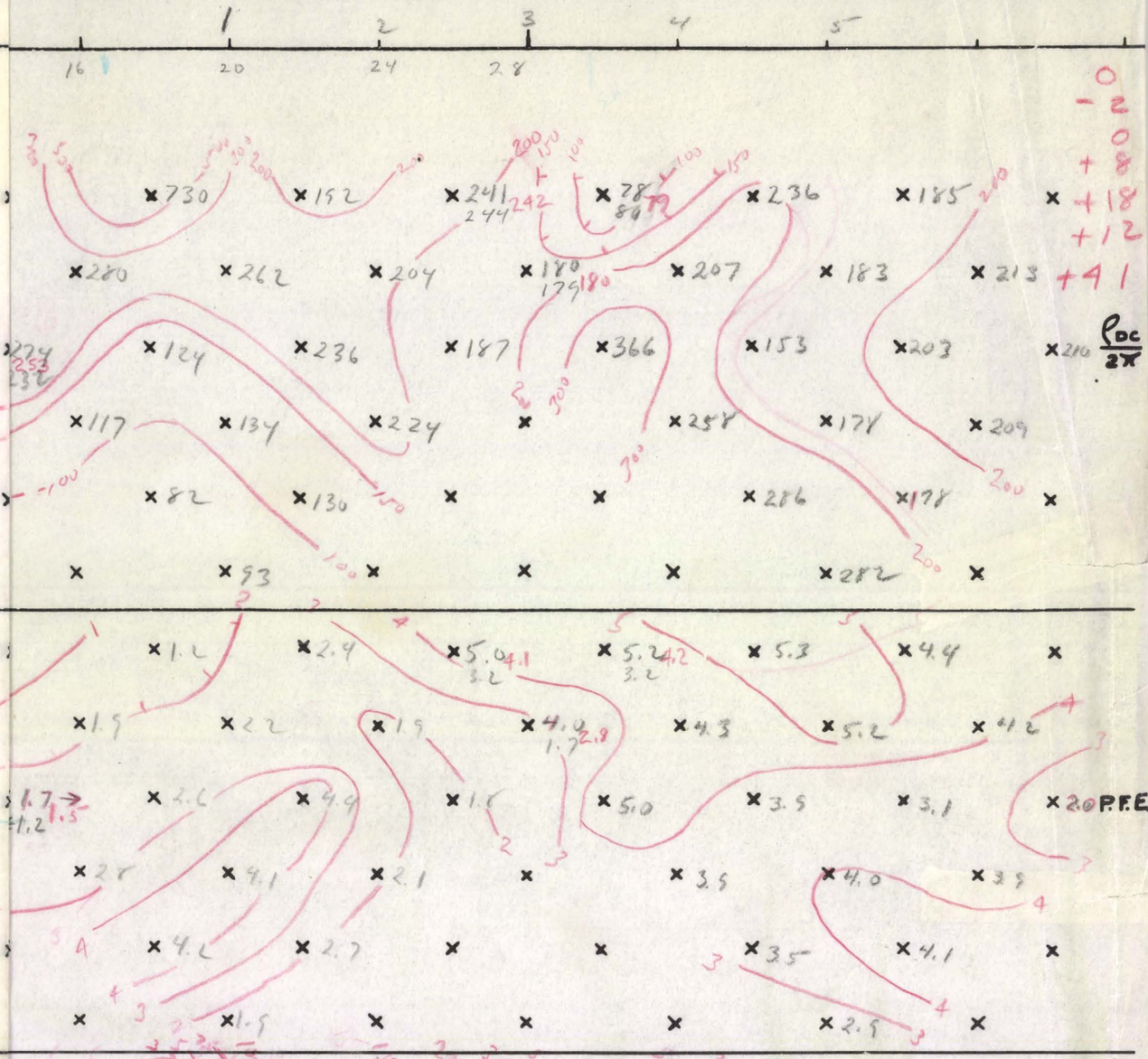
AREA Mowry LINE [illegible] a = 300 ' SCALE: — DATE: Mowry - Seminoe

LINE [illegible] 1 a = 300 ' SCALE: 1" = 300' DATE: June 67

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING



HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING N W ?



0 0
+15 +3
+27 −12
+30 −12
+42 −23
+47 −34
+47 −29

0
−2
0
+8
+18
+12
+41

P.F.E.

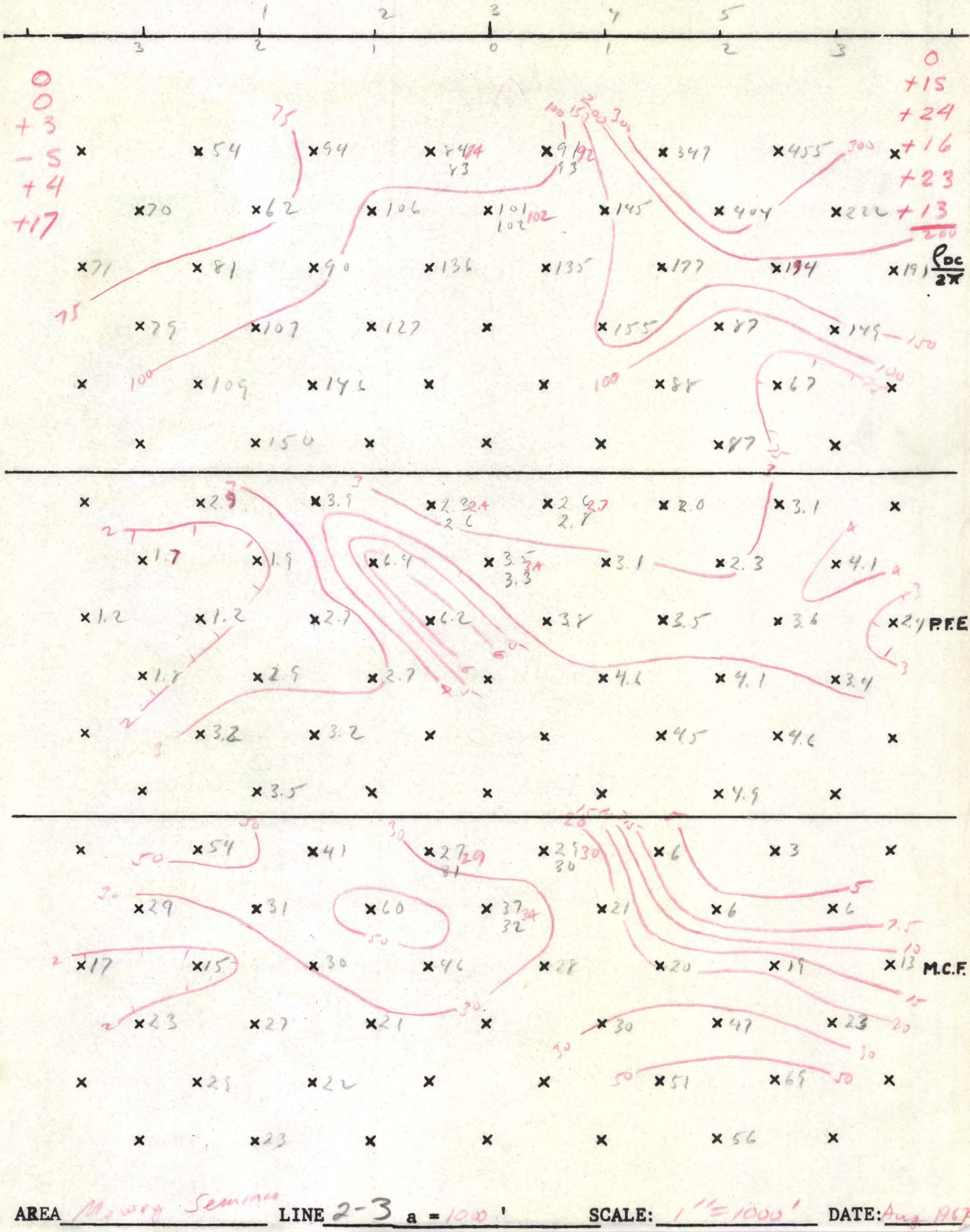
M.C.F.

$\frac{\rho_{DC}}{2\pi}$

AREA Mowry LINE 2-2 spl1 a = 200' SCALE: — DATE: 5-23

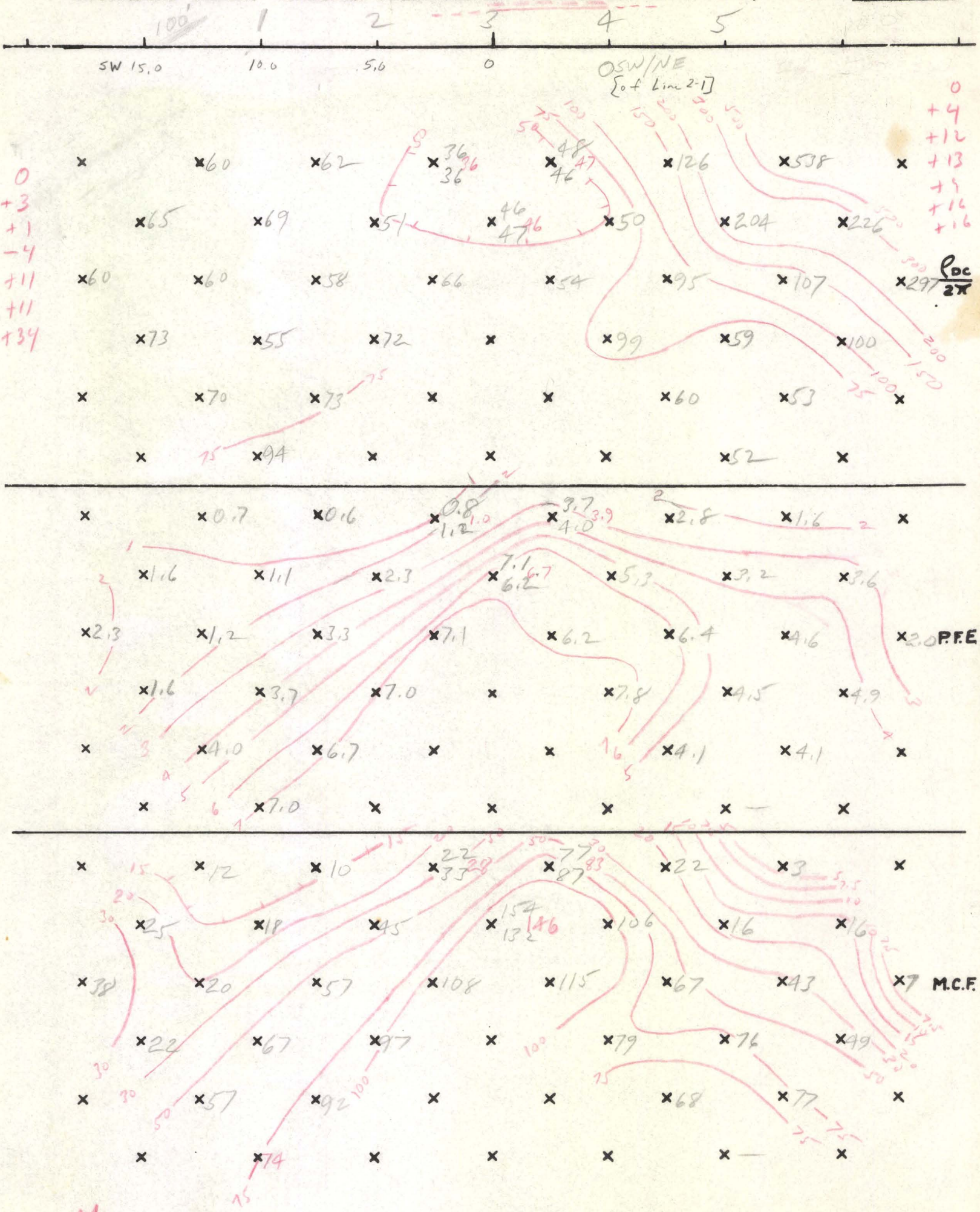
AREA Mowry LINE 2-2 spl2 a = 400' SCALE: — DATE: 5-24

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING W



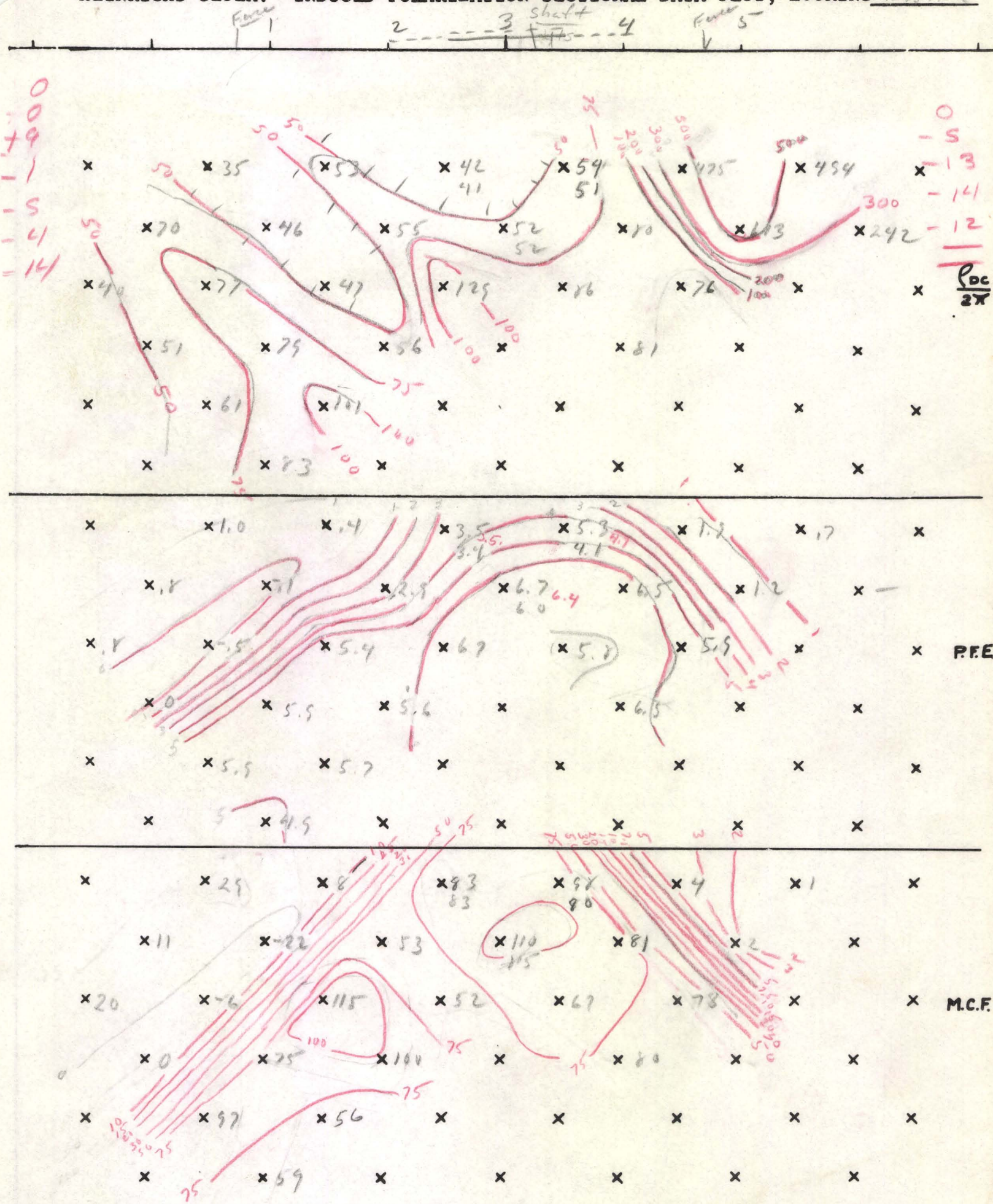
AREA Mowry Seminee LINE 2-3 a = 1000' SCALE: 1"=1000' DATE: Aug 1967

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING NW

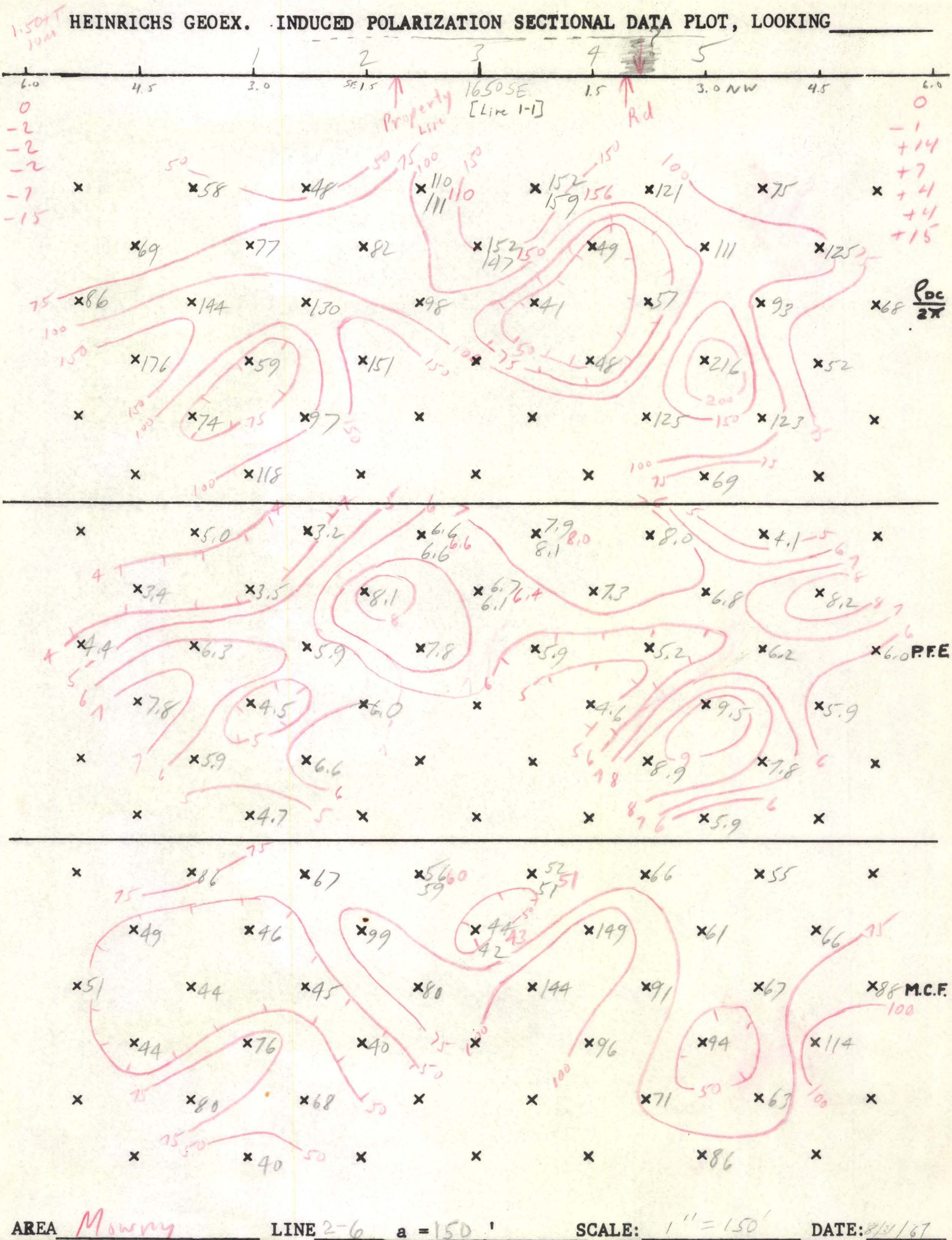


AREA Mowry LINE 2-4 a = 500 ' SCALE: — DATE: 8-30

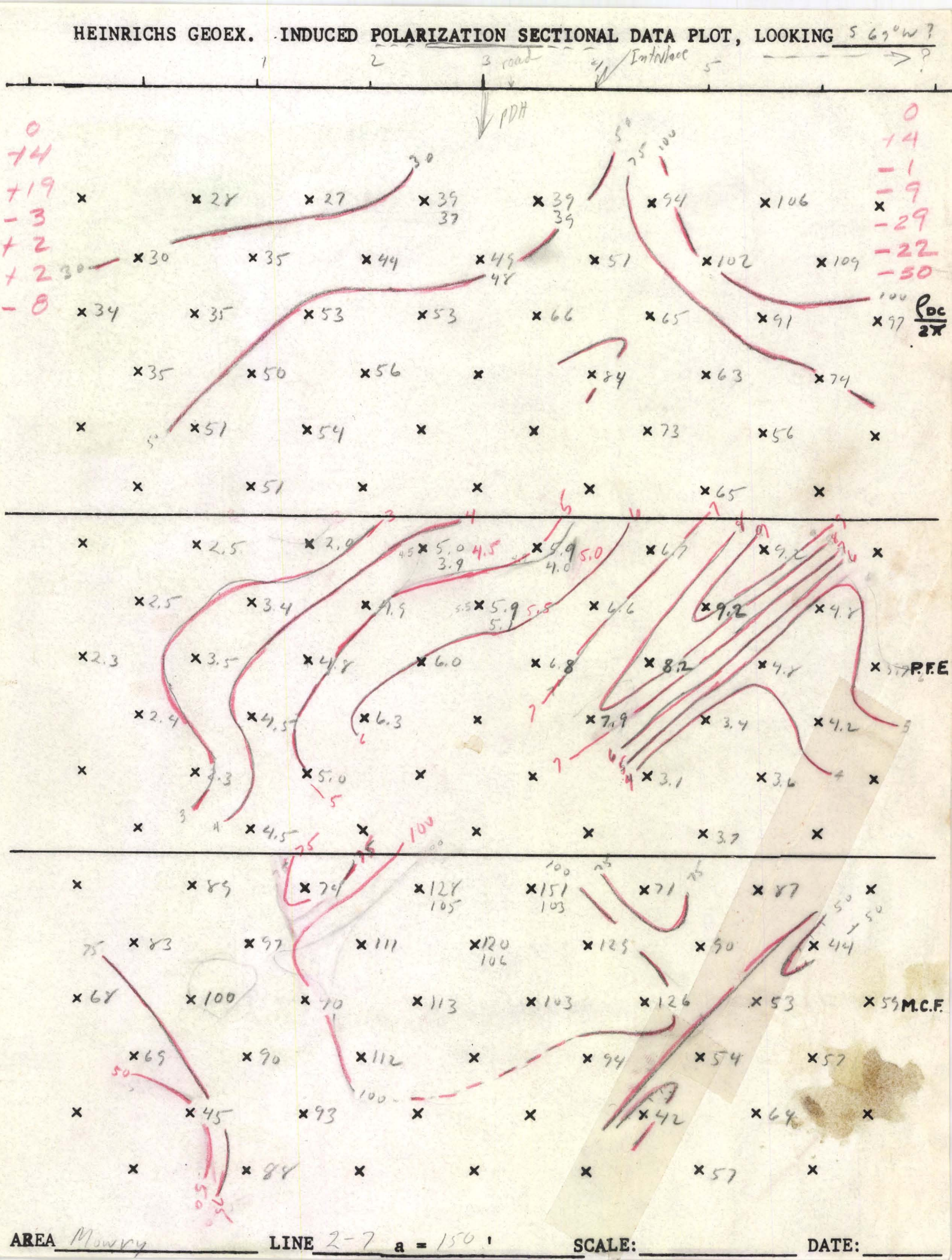
HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING West



AREA Mimmy LINE 2-5 a = 500' SCALE: DATE: 9/6/69

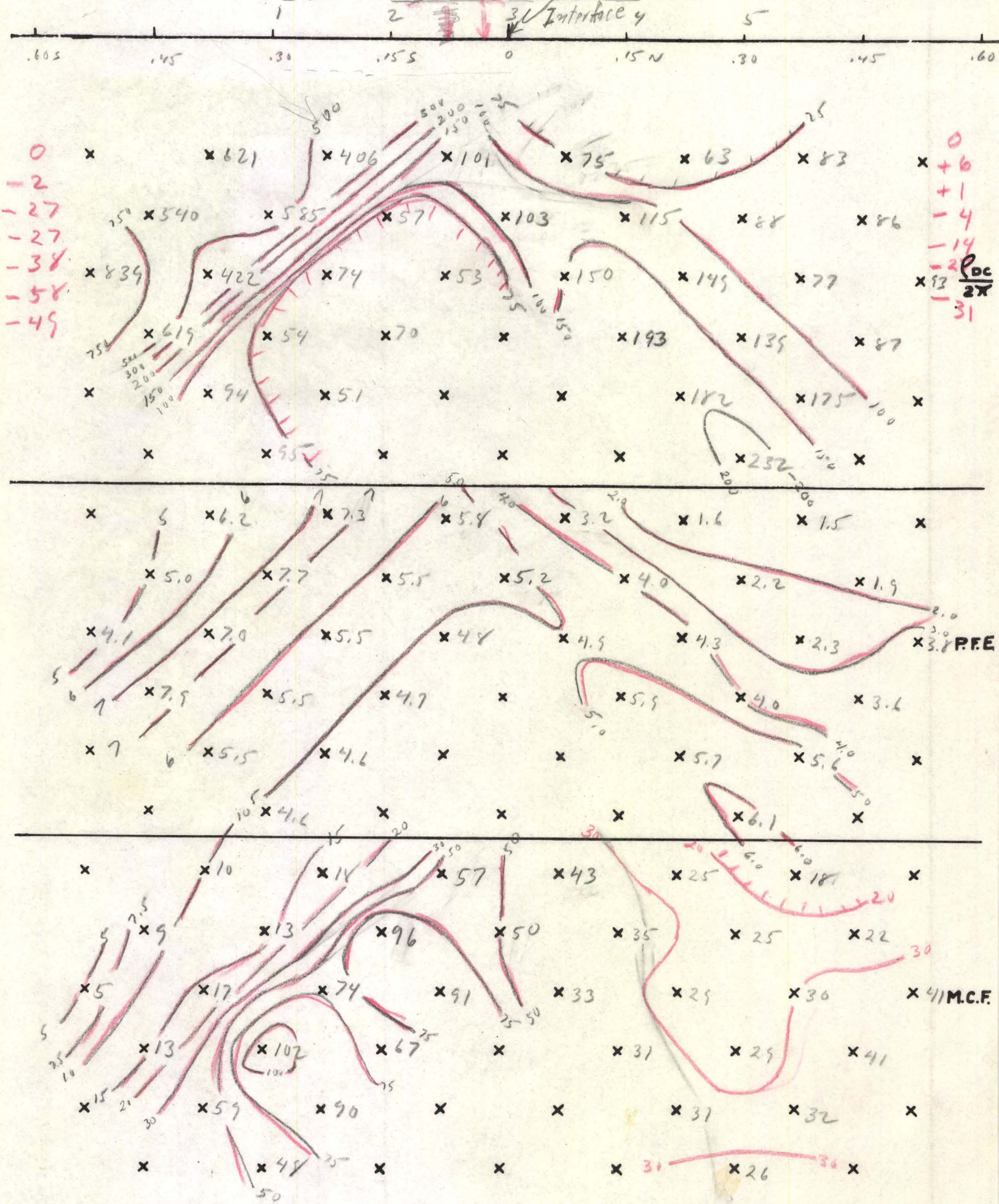

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING
1
2
3
4
5
6.0
4.5
3.0
SE 1.5
1650SE
[Line 1-1]
1.5
3.0 NW
4.5
6.0
Property Line
Rd
P.F.E
M.C.F.
AREA Mowry
LINE 2-6
a = 150'
SCALE: 1" = 150'
DATE: 8/21/67

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING S 69°W ?



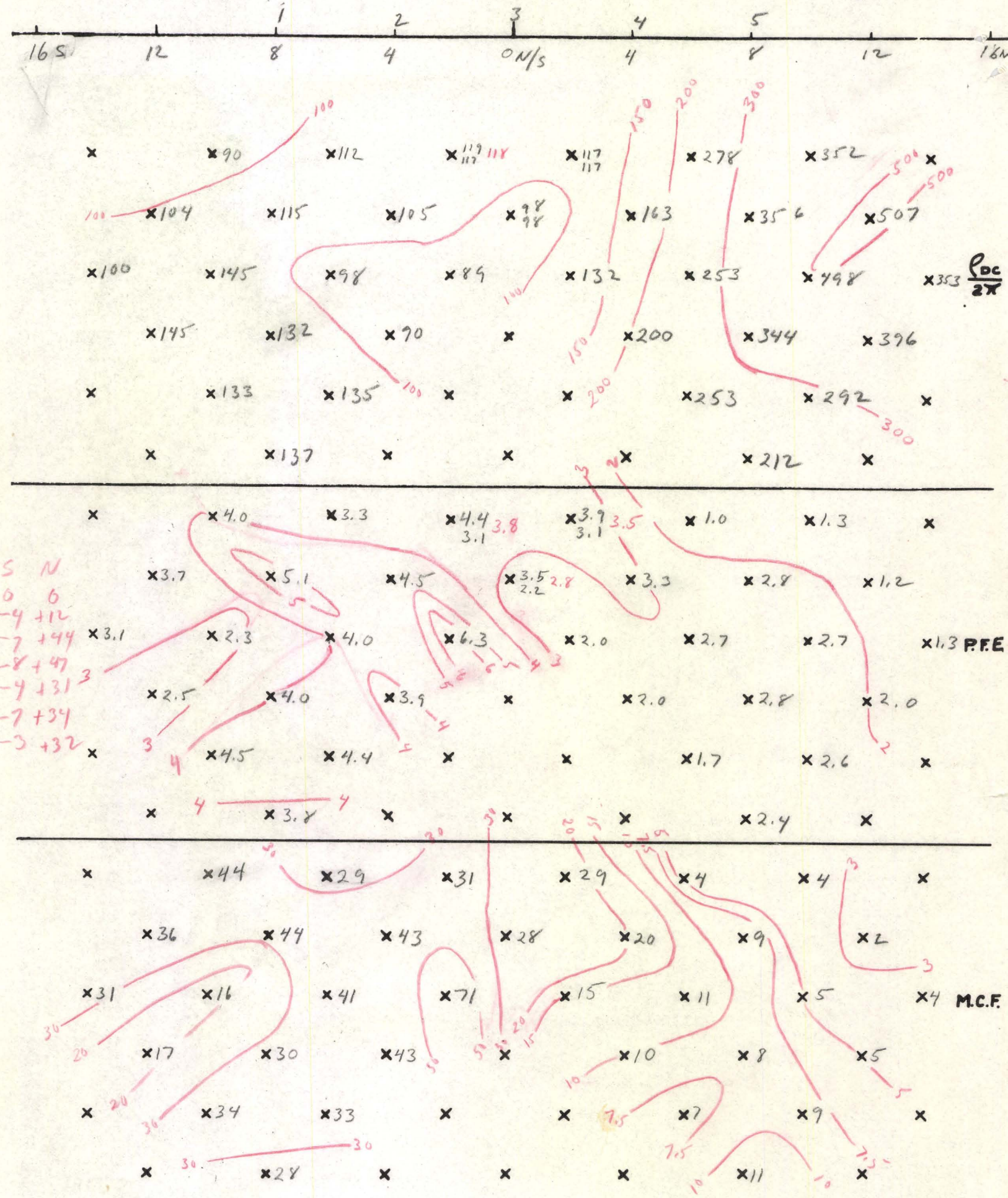
AREA Mowry LINE 2-7 a = 150' SCALE: DATE:

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING W



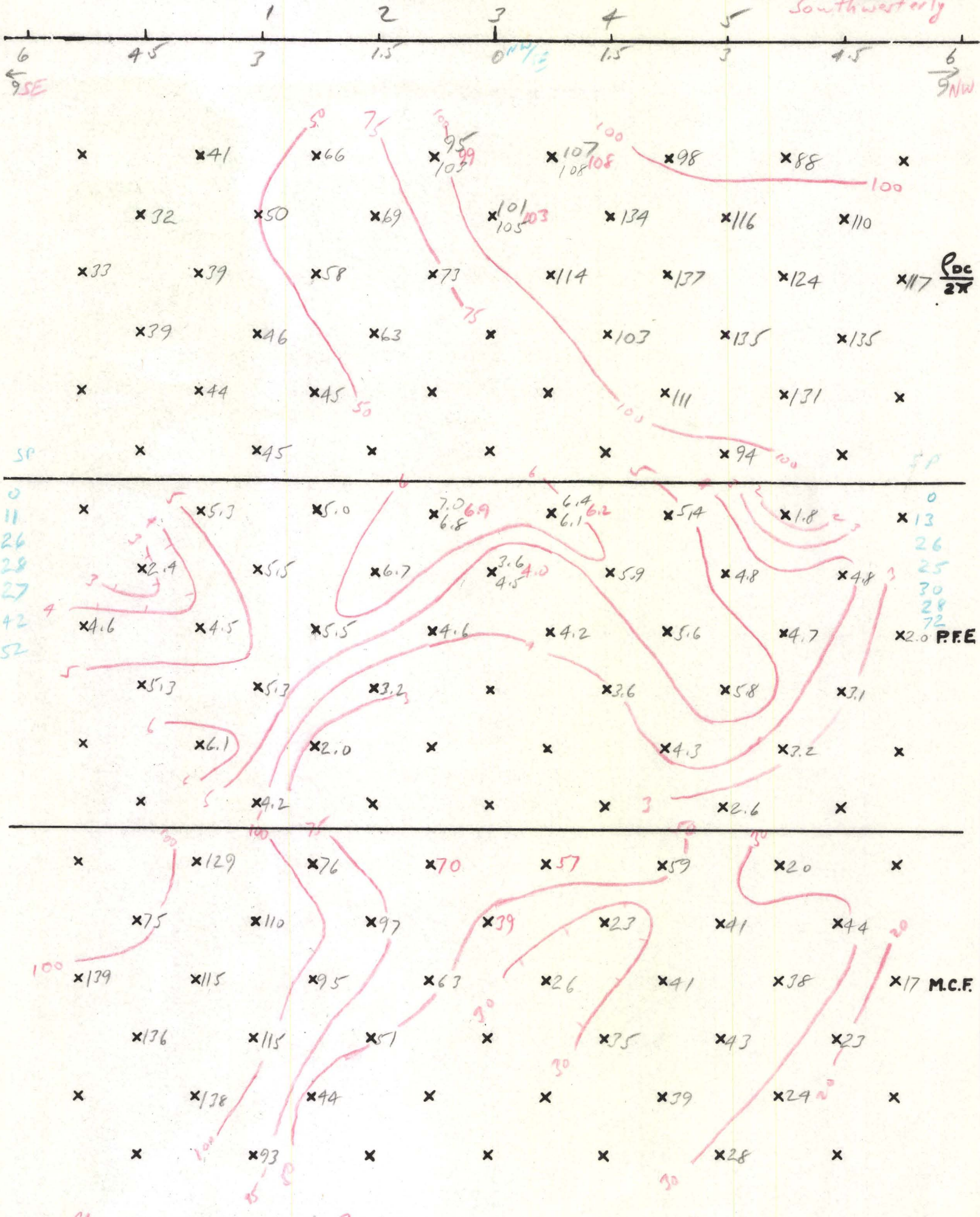
AREA Mowry LINE 2-Y a = 150' SCALE: — DATE: 9-11-67

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING S 70° W



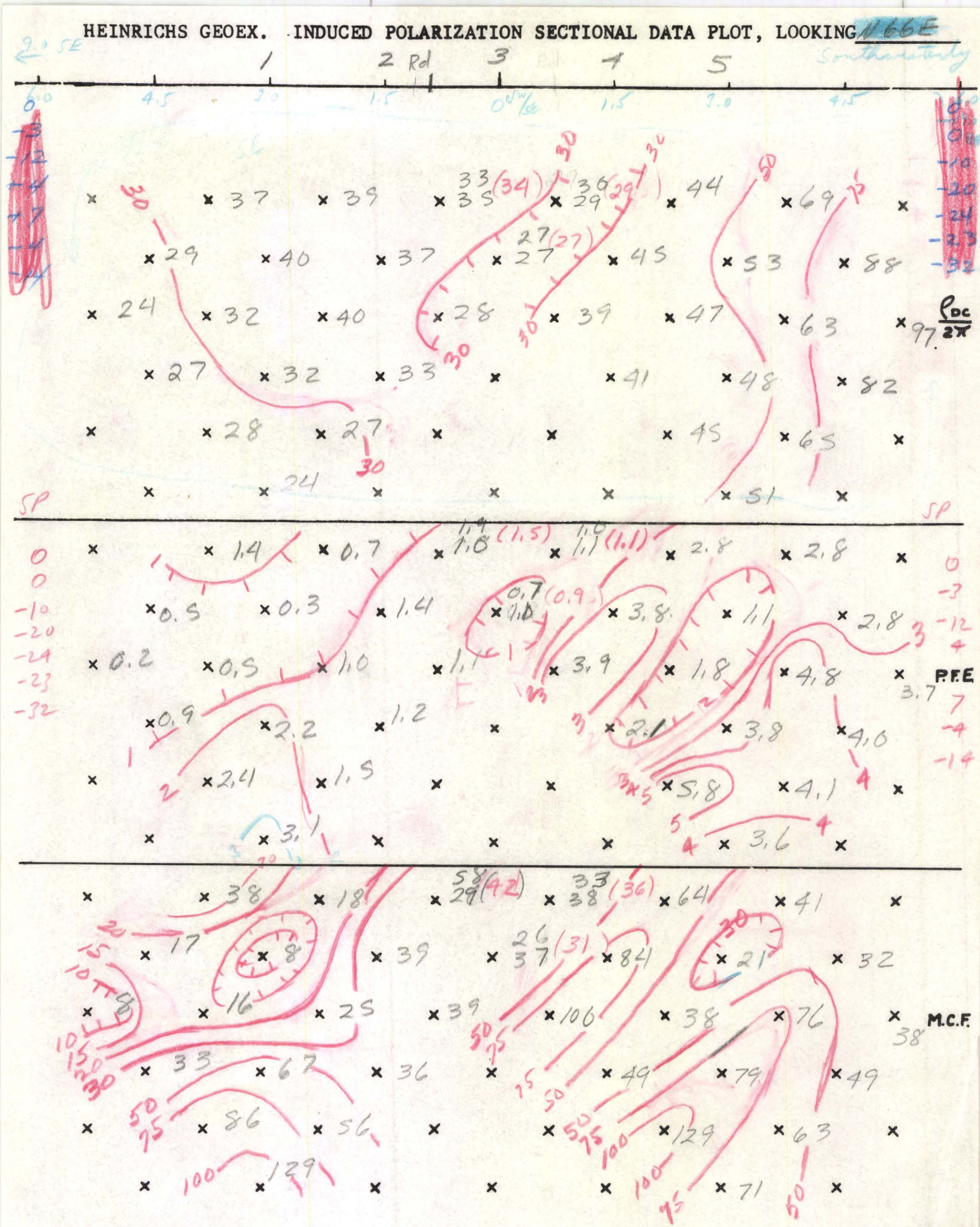
AREA Mowry LINE 2-S a = 410 ' SCALE: — DATE: 9/11/67

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING Southwesterly



AREA Money LINE 2-10 a = 150 ' SCALE: 1" = 150' DATE:

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING N 66 E



AREA MOURY LINE 2-11 a = 150 ' SCALE: 1" = 150' DATE: 9-16-62

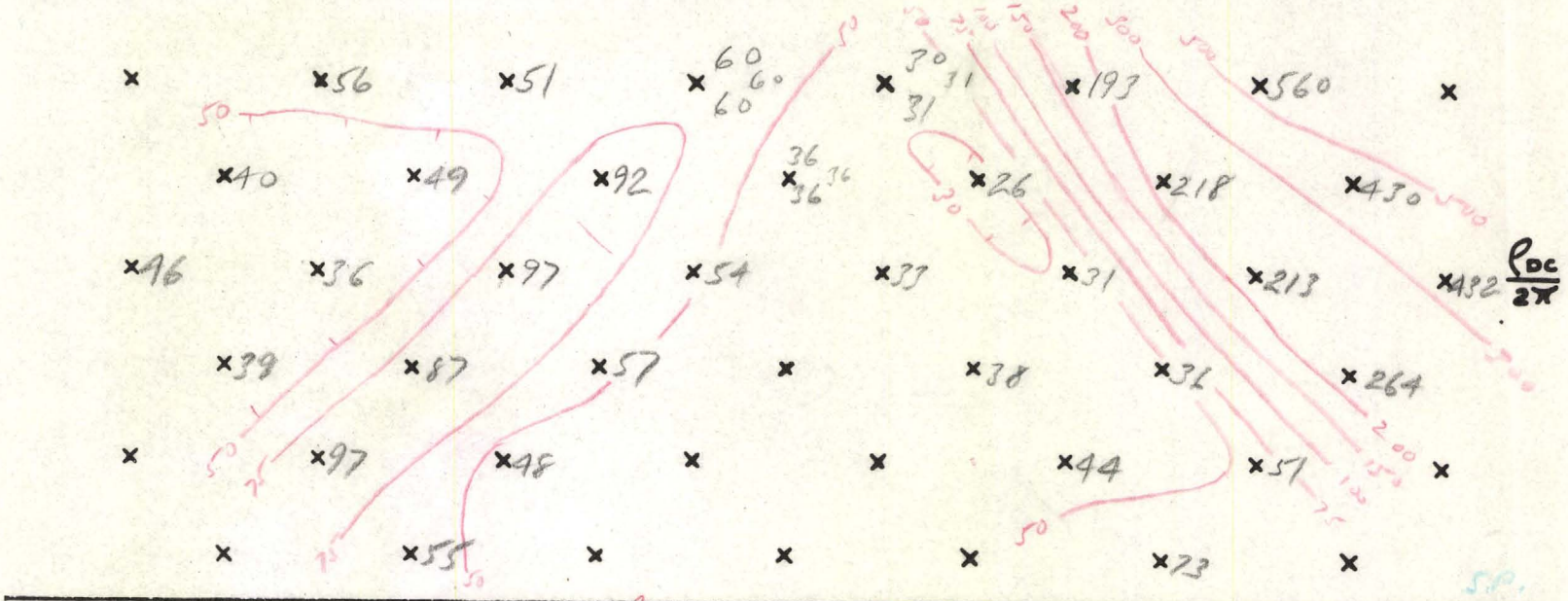
HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING N 30° W

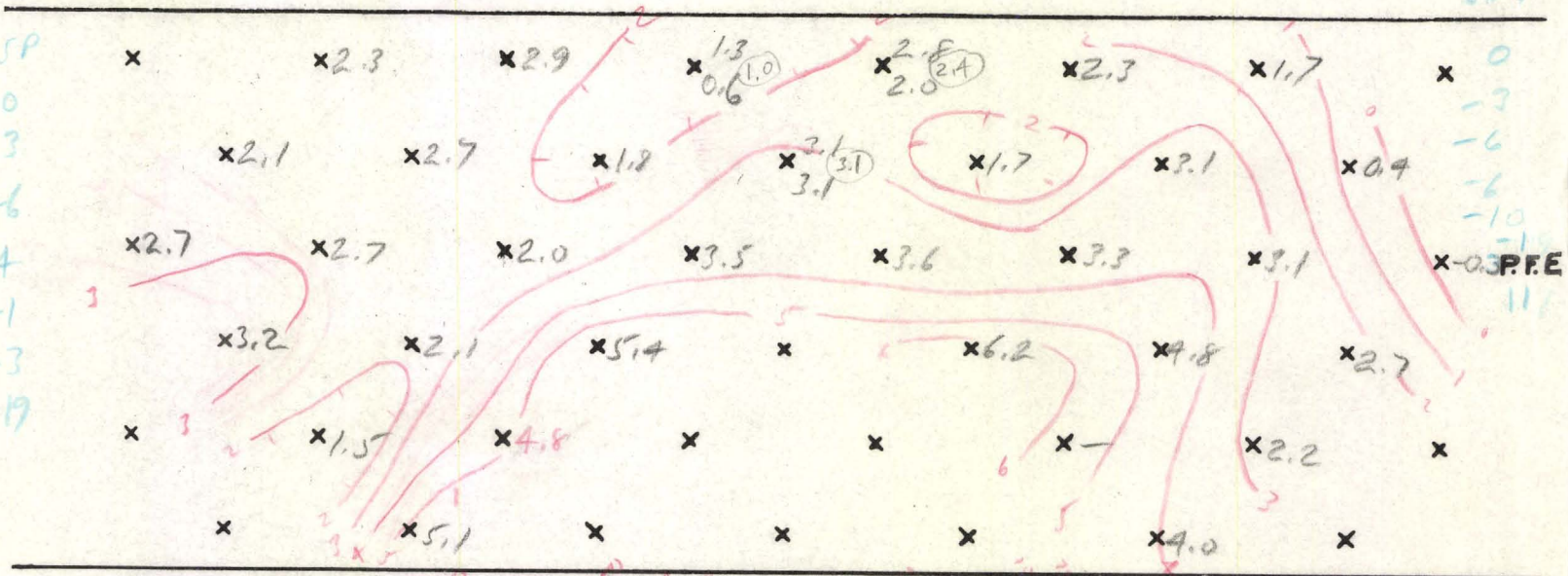
NORTHWESTERLY

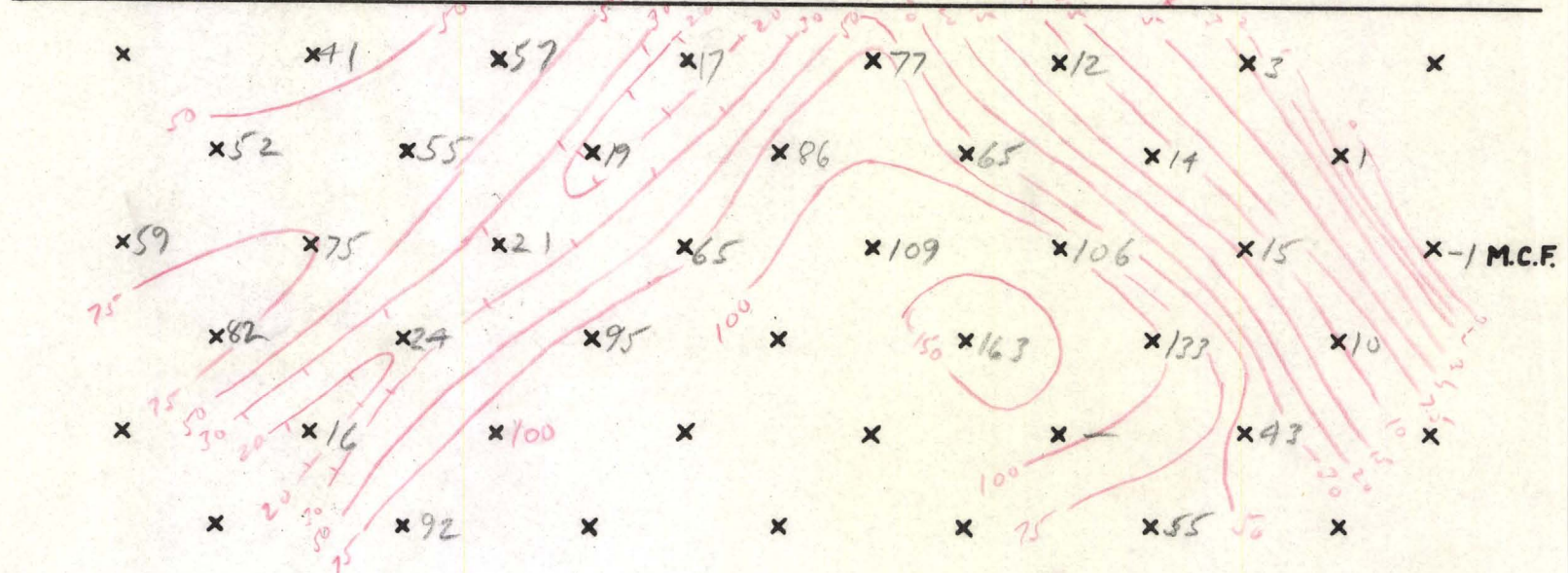
1 2 3 4 5

20 15 10 5 0 - JOINAGE 5 10 15 20

← 30SW 30NE →

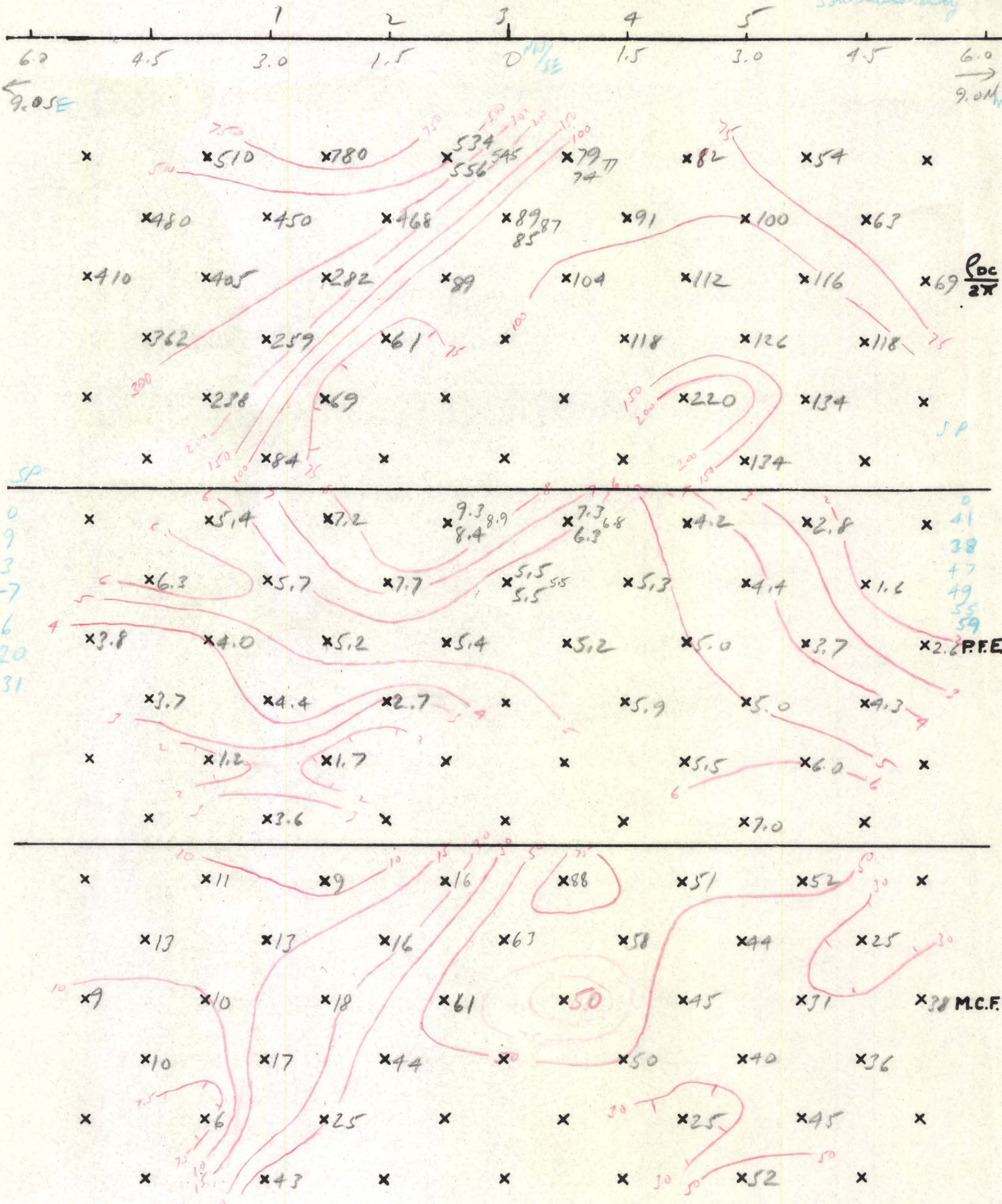






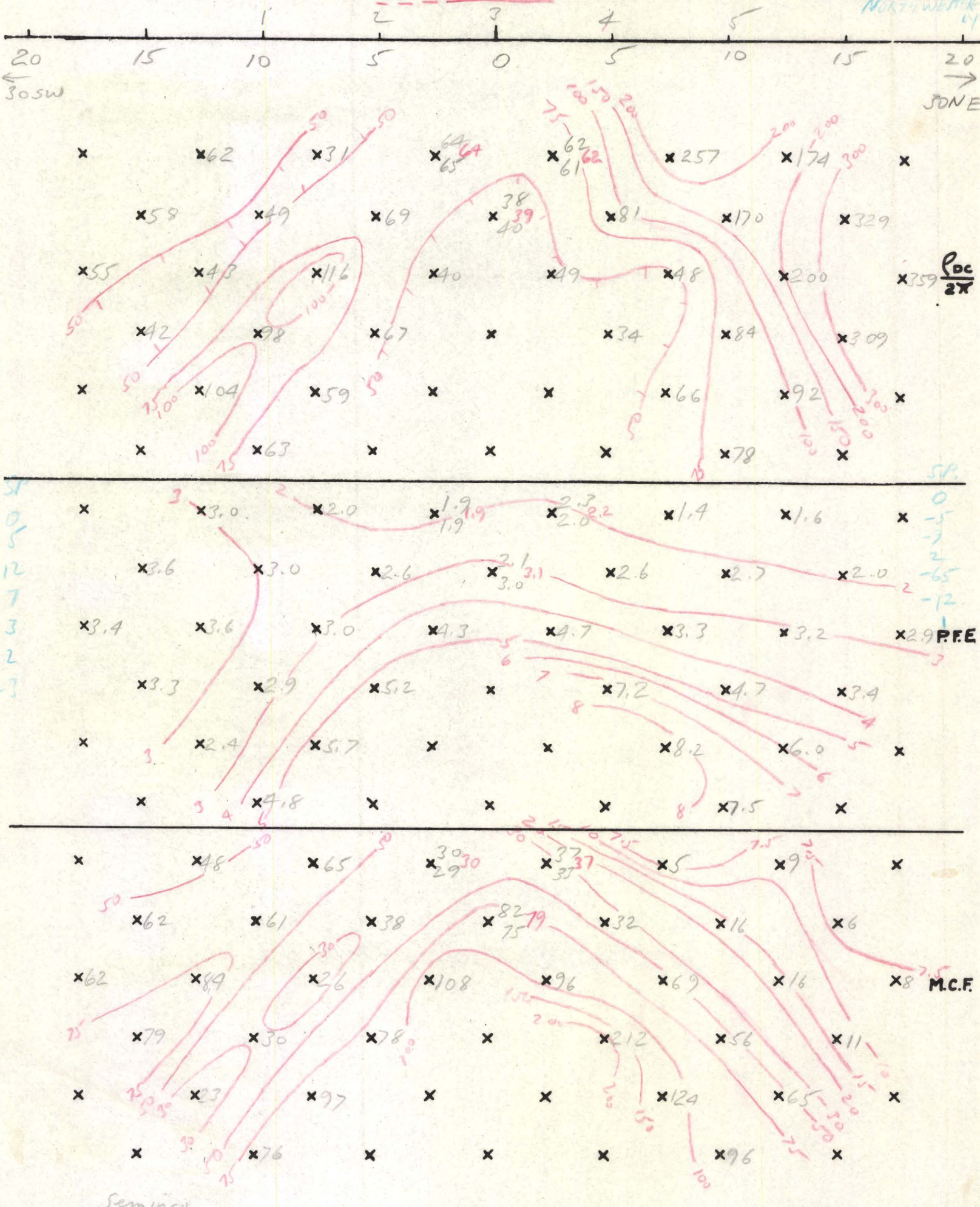
AREA Mowry (Seminco) LINE 2-12 a = 500' SCALE: 1" = 500' DATE:

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING Southwesterly



AREA Mowry LINE 2-13 a = 150' SCALE: 1" = 150' DATE:

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING ~~N 30° W~~ NORTHWESTERLY



AREA Mowry LINE 2-14 a = 500' SCALE: 1"=500' DATE: 9/23/67

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page _____

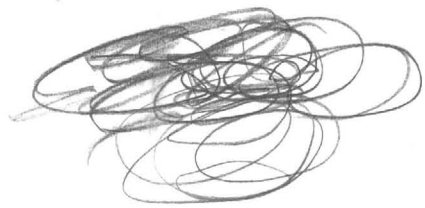
Project SEMENCO Line 1-1 SE½ Field date 8/23/67 Data page 4 Comp. date 8/23/67 . Comp by _____

(A) Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
(B) Receive	0-300 SE	300-600 SE	→	600-900 SE	→	→	900-1200 SE	→	→	→		
(C) n separation	1	1	2	1	2	3	1	2	3	4		
(D) I	3	4	3	7	4	3	6	7	4	3		
(E) Vdc (avg)	348	441	100.5	276	72.9	23.6	362	56.5	22.15	8.86		
(F) DCcal 1.000	—	—	—	—	—	—	—	—	—	—		
(G) Kn x 10^{-3}	.9	.9	3.6	.9	3.6	9.0	.9	3.6	9.0	18.0		
(H) ρ dc=ExFxGx10^3/D	105	100	121	35	66	71	54	29	50	53		
(I) Vac Σ	317	407	91.5	262	67.7	22.0	340	53.5	20.9	8.70		
(J) AC noise x 2												
(K) Vac(corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal. .980	—	—	—	—	—	—	—	—	—	1.010		
(M) ρ dc/ρac=ExL/K	7.7	6.3	7.7	3.4	5.5	5.2	4.3	3.6	3.9	2.9		
(N) PFE=(M-1)(10^2)	1.077	1.063	1.077	1.034	1.055	1.052	1.043	1.036	1.039	1.029		
(O) MCF=(M-1)(10^5)/H	73	63	64	98	83	73	80	124	78	55		

Project SEMINCO Line 1-1 Field date 8/23/67 Data page 4 Comp. date 8/23/67 Comp by _____

(A) Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		Cal		
(B) Receive	1200-1500 SE	→	→	→	1500-1800 SE	→	→	→				
(C) n separation	2	3	4	5	3	4	5	6				
(D) I	6	7	4	3	6	7	4	3		1		
(E) Vdc (avg)	75.3	20.9	9.36	4.24	32.1	10.6	6.02	2.73		100.35		
(F) DCcal	—	—	—	—	—	—	—	—				
(G) Kn x 10^{-3}	3.6	9.0	18.0	31.5	9.0	18.0	31.5	50.4				
(H) ρ dc=ExFxGx10^3/D	45	27	42	44	48	27	48	46				
(I) Vac Σ	70.8	19.9	9.19	4.18	30.2	10.1	5.90	2.69		98.2		
(J) AC noise x 2												
(K) Vac (corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.980	—	1.010	—	.580	—	1.010	—		.980		
(M) ρdc/ρac =ExL/K	4.3	3.0	3.0	2.3	4.2	2.9	3.1	2.5				
(N) PFE=(M-1)(10^2)	1.043	1.030	1.030	1.023	1.042	1.029	1.031	1.025				
(O) MCF=(M-1)(10^5)/H	95	111	71	52	88	107	55	54				

1.7 4.2/4 1.5



HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Sinaloa

LINE 1-1 HALF S SP. 2 DATE 8-27-82

PAGE

SEND	45	34	45	23	34	45	12	23	34	45
RECEIVE	1.8-2.1	2.1-2.4		2.4-2.7			2.7-3.0			
RANGE	1000	1000	100	1000	100	100	1000	100	100	10
DC 1	23-	32	8.9	26	6.3	+7	36	4.6	1.2	.24 .50
DC 2	37-	36	8.9	12	4.0	1.6	10	1.3	1.3	.22 .78
DC 3	19-	34	9.0	25	6.4	1.6	35	4.6	1.2	-.06 -.48
DC 4	42-	34	8.9	10	4.0	1.6	10	1.3	1.3	.50 .78
DC 5	17-	36	9.1	25	6.3	1.6	33			-.50 -.47
DC 6	47-	33	8.9	11	4.0		9			.68 .74
DC 7	13-	34					34			-.42 -.44
DC 8	49-	33					9			+.76 .73
DC AVG.	348	441	100.5	276	72.9	23.6	362	56.5	22.15	8.86
AC 1	317	407	91.5	262	67.7	22.0	340	53.5	20.9	8.20
AC 2	317	407	91.5	262	677	22.0	340	53.5	20.9	8.20
AC AVG.										
S.P.	+8	+11		+7			+9			
AC NOISE	<.1	<.1		<.1			<.1			
POT RES.	800	700		450			600			

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Simeulue

LINE 1-1 HALF SR SP. 2 DATE

PAGE

SEND	12	23	34	45	12	23	34	45		Cal
RECEIVE	3.0-33				3.3-36					
RANGE	100	100	10 100	10	100	100	10	10		
DC 1	5.3	~~1.3~~	.34 .50	.14	1.4	.4	.11	.02		1.6
DC 2	3.6	.6	.04 .4	-.02	2.6	.7	.14	.06		2.5 OK
DC 3	5.8	1.4	-.36 .5	.15	1.1	.4	.14	-.01		1.6
DC 4	3.4	.6	-.02 .4	-.03	2.7	.7	.09	.04		2.6
DC 5	6.0	1.4	.39 .5	.18	1.0	.5	.18	-.02		
DC 6	3.3		-.04 .4	-.05	2.8	.6	.06	.10		
DC 7	6.2		.44 .60	.19	1.0		.19	-.04		
DC 8	3.0		-.06 .4	-.07	2.8		04	.12		
DC AVG.	75.3	20.9	9.36 ↓	4.24	32.1	10.6	6.02	2.73		100.35
AC 1	70.7	19.9	9.18 8.9	4.18	30.2	10.1	5.90	2.69		98.2
AC 2	70.9	19.9	9.20 8.9	4.18	30.2	10.1	5.90	2.69		98.2
AC AVG.	70.8		9.19							98.2
S.P.	+6				+13					
AC NOISE	<.1				~.01					
POT RES.	2K				1.2K					

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 1-1 HALF SE½ SP. 2 DATE 8/23/82

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-300	300-600	→	600-900	→	→	900-1200	→	→	→
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi
VOLTAGE	420	420	420	440	420	430	410	440	420	430
CURRENT	3A	4A	3A	7A	4A	3A	6A	7A	4A	3A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	Cal	
RECEIVE	1200-1500	→	→	→	1500-1800	→	→	→		
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	
VOLTAGE	410	440	420	430	410	440	420	430	80	
CURRENT	6A	7A	4A	3A	6A	7A	4A	3A	1A	

FREQUENCIES 3.0 .05

SENDER NO. 66414-5

OPERATOR Cruze

RECEIVER NO. Burr-Brown

OPERATOR Henson

COMMENTS:

4-5 3A 1X30

3-4 4A 3+100X10

2-3 7A 2.333X30

1-2 6A 2X30

1000	300	400
3	.9	1.2
12	3.6	4.8
80	9.0	12.0
60	18.0	24.0
105	31.5	42.0
168	50.4	67.2

31.5

168
3
504

60
4
240

105
4
420

168
4
672

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page _____

Project SEMINCO Line 1-1 NW 1/2 Field date 8/22/67 Data page 3 Comp. date 8/23/67. Comp by _____

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	
(B) Receive	0-300 NW	300-600 NW	→	600-900 NW		→	900-1200 NW			→	
(C) n separation	1	1	2	1	2	3	1	2	3	4	
(D) I	6	7	6	4	7	6	3	4	7	6	
(E) Vdc (avg)	647	847	202	483	92.0	35.0	283	180	54.3	23.5	
(F) DCcal 1.01	→									→	
(G) Kn x 10^{-3}	.9	.9	3.6	.9	3.6	9.0	.9	3.6	9.0	18.0	
(H) ρ dc=ExFxGx10^3/D	98	110	122	110	48	53	86	164	71	71	
(I) Vac Σ	599	778	186	446.5	86.9	33.2	270	166	51.0	22.2	
(J) AC noise x 2											
(K) Vac(corr) = $\sqrt{I^2 - J^2}$										→	
(L) AC-DC cal. .980	→										
(M) ρ dc/ρac=ExL/K	1.059	1.069	1.064	1.060	1.039	1.033	1.029	1.063	1.043	1.037	
(N) PFE=(M-1)(10^2)	5.9	6.9	6.4	6.0	3.9	3.3	2.9	6.3	4.3	3.7	
(O) MCF=(M-1)(10^5)/H	60	63	52	55	81	62	34	38	60	52	

Project SEMINCO Line 1-1 NW Field date 8/23/67 Data page 3 Comp. date 8/23/67 Comp by _____

(A) Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		Cal	
(B) Receive	1200-1500 NW			→	1500-1800 NW			→			
(C) n separation	2	3	4	5	3	4	5	6			
(D) I	3	4	7	6	3	4	7	6		1	
(E) Vdc (avg)	114	101.7	34.15	15.6	66.1	71.9	28.5	13.25		99.2	
(F) DCcal										→ 1.01	
(G) Kn x 10^{-3}	3.6	9.0	18.0	31.5	9.0	18.0	31.5	50.4			
(H) ρ dc=ExFxGx10^3/D	138	231	89	80	200	32.6	125	112			
(I) Vac Σ	108	93.3	32.0	14.7	62.45	66.3	25.9	12.4		97.2	
(J) AC noise x 2											
(K) Vac (corr) = $\sqrt{I^2 - J^2}$										→ .980	
(L) AC-DC cal.											
(M) ρdc/ρac =ExL/K	1.035	1.067	1.049	1.041	1.039	1.062	1.041	1.049			
(N) PFE=(M-1)(10^2)	3.5	6.7	4.9	4.1	3.9	6.2	4.1	4.9			
(O) MCF=(M-1)(10^5)/H	25	29	55	51	19	19	33	44			

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Seminco

LINE 1-1 HALF NW SP. 2 DATE 8-22

PAGE

SEND	12	23	12	34	23	12	45	34	23	12
RECEIVE	1.8 1.5 5	1.5 - 1.2		1.2 - .9			9 - .6			
RANGE	1000	1000	1000	1000	100	100	1000	1000	100	100
DC 1	37 | 50	60	24	26	6.2	1.3	16	15	2.4	2.6
DC 2	16 | 48	78	5	50	4.0	2.4	10	14	4.4	0
DC 3	40 | 54	62	28	24	6.3	1.0	15	13	2.1	2.6
DC 4	8 | 48	77	5	49	3.8	2.6	10	12	4.4	-.1
DC 5	43 | 46	61	30	22	6.4	1.0	16	14	2.2	2.8
DC 6	10 | 54	75	4	49	3.8	2.1	11	14	4.5	0
DC 7	46 | 51					1.1		18	2.2	2.7
DC 8	9 | 50					2.5		10	4.4	0
DC AVG.	647	847	202	483	92.6	35.0	283	180	54.3	23.5
AC 1	623 | 599	778	186	446	85.5	33.2	270	166	51.0	22.2
AC 2	623 | 599	778	186	447	86.9	33.2	270	166	51.0	22.2
AC AVG.										
S.P.	-4	+9		+9			-3			
AC NOISE	<.1	<.1		~.2			~.2			
POT RES.	1.3K	2K		1.5K			1.5K			

HEINRICHS GEOEXPLORATION CO. PROJECT
I.P. RECEIVER NOTES LINE 1-1 HALF MW SP. 2 DATE 8-22

PAGE

SEND	45	34	23	12	45	34	23	12		cal
RECEIVE	.6-.3				.3-0					
RANGE	100	100	100	100	100	100	100	.8		
DC 1	13	9.4	2.2	.8	3.8	6.6	1.6	.6		2.2
DC 2	-2	7.4	2.1	1.1	3.6	4.6	1.6	.8		1.8
DC 3	14	9.6	2.2	.8	3.9	6.6	1.6	.6+		2.2
DC 4	-1	7.2	2.1	1.0	3.5	4.6	1.6	.5		1.8
DC 5	13	9.6		.8	4.1	6.6	1.6	.6		
DC 6	-1	7.3		1.1	3.2	4.6		.8		
DC 7				.8	4.2					
DC 8				1.1	3.3		37.9			
DC AVG.	114	10.17	34.15	15.6	66.1	719	~~25.5~~	13.25		99.2
AC 1	108	93.3	32.0	14.7	62.4	66.3	25.9	12.4		97.2
AC 2	108	93.3	32.0	14.7	62.5	66.3	25.7	12.4		97.2
AC AVG.										
S.P.	-4				-3					
AC NOISE	~.2				?					
POT RES.	2.0K				1.1					

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 1-1 HALF NW SP. 2 DATE 8/23/67

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-300	300-600	→	600-900	→	→	900-1200	→	→	→
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi
VOLTAGE	400	440	400	440	440	400	450	440	440	400
CURRENT	6A	7A	6A	4A	7A	6A	3A	4A	7A	6A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Cal	
RECEIVE	12-1500	→	→	→	1500-1800	→	→	→		
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	
VOLTAGE	450	440	440	400	450	440	430	400	120	
CURRENT	3A	4A	7A	6A	3A	4A	7A	6A	1A	

FREQUENCIES 3.10 .05

SENDER NO. 6644-5

OPERATOR Cruze

RECEIVER NO. Barr-Brown

OPERATOR Henson

COMMENTS:

1-2 - 6A 2×30

2-3 - 7A 2.333×30

3-4 - 4A 3+100×10

4-5 3A - 1×30

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 2

Project SIMENCO Line 2-1 Field date SW ½ Data page 2 Comp. date 8-22-67 Comp by _____

(A) Send	45	34	45	23	34	45	12	23	34	45		
(B) Receive	0-.5 SW	.5-1.0		1.0-1.5			15-20					
(C) n separation	1	1	2	1	2	3	1	2	3	4		
(D) I	3	4	3	5	4	3	7.5	5	4	3		
(E) Vdc (avg)	409.5	91.9	19.2	153	22.6	8.5	406	67.1	15.8	78.9		
(F) DCcal 1.00												
(G) Kn x 10^{-3}	1.5	1.5	6	1.5	6	15	1.5	6	15	30		
(H) ρdc=ExFxGx10^3/D	204	34	38	46	34	43	80	81	59	79		
(I) Vac Σ	364	80.45	16.5	137	19.6	7.30	359	59.8	13.6	6.83		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	0.912											
(M) ρ dc/ρac=ExL/K	1.027	1.043	1.060	1.020	1.051	1.062	1.018	1.023	1.060	1.053		
(N) PFE=(M-1)(10^2)	2.7	4.3	6.0	2.0	5.1	6.2	1.8	2.3	6.0	5.3		
(O) MCF=(M-1)(10^5)/H	13	126	168	43	150	144	22	28	102	67		

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	12	23	34	45	12	23	34	45	1			
(B) Receive									99.85			
(C) n separation	2	3	4	5	3	4	5	6		DC CAL		
(D) I	7.5	5	4	3	7.5	5	4	3				
(E) Vdc (avg)	78.9	23.55	7.09	4.37	23.7	9.80	3.77	2.94	99.85		1.00	
(F) DCcal												
(G) Kn x 10^{-3}	6	15	30	52.5	15	30	52.5	84		AC-DC CAL		
(H) ρ dc=ExFxGx10^3/D	63	71	53	77	47	59	50	82				
(I) Vac Σ	70.6	21.0	6.19	3.84	21.1	8.70	3.27	2.56	91.0		0.912	
(J) AC noise x 2											100	
(K) Vac (corr) = $\sqrt{I^2 - J^2}$	—											
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K	1.020	1.022	1.045	1.039	1.025	1.029	1.052	1.048				
(N) PFE=(M-1)(10^2)	2.0	2.2	4.5	3.9	2.5	2.9	5.2	4.8				
(O) MCF=(M-1)(10^5)/H	32	31	85	51	53	49	104	59				

3 1.5
12 6
30 15
60 30
105 52.5
168 84

85
~~88~~
~~88~~
~~76~~
79
81
~~73~~
80

16
16
22
-12

85
80
81
79

$\frac{6}{20} \pm 10\%$

8 | 81

4

8 | 10

405
2 | 81

24.8
40.5
28.85

12

8 | 239

30
8 | 240

5

39

39
20

31
36
391

65
6 | 391

79.4
8.8
88.2

26
8
13
8 | 106
8
26

88
8 | 703
64
63

30
40
27
100

57
56
9
70 7

23
44
60
8 | 483

114
13

33
19
18
403

50

44
35
394
403
797

32
8
112

32
14
172

14
12 | 172
12
52

10
15
30
50
75
100

16 | 797

14
8 | 112
8
32

14

$\frac{(1.5)(167.7)}{2.5}$

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Mowry Line 2-1 NE½ Field date_____ Data page_____ Comp. date_____. Comp by_____

(A) Send	12	23	12	34	23	12	45	34	23	12		
(B) Receive	0-0.5NE	.5-1.0	—	1.0-1.5	—	—	1.5-2.0	—	—	—		
(C) n separation												
(D) I	7.5	6.0	7.5	4.5	6.0	7.5	3.0	4.5	6.0	7.5		
(E) Vdc (avg)	167.75	813.0	46.8	840.0	219.0	28.85	669.0	127.0	50.5	10.4		
(F) DCcal												
(G) Kn x 10^{-3}	1.5	1.5	6.2	1.5	16	15	1.5	6	15	30		
(H) ρ dc=ExFxGx10^3/D	363	206.0	38	283	221	58	338	171	127	42		
(I) Vac Σ	150.0	705.0	40.2	753.0	191.0	24.8	604.0	114.0	49.5	9.00		
(J) AC noise x 2												
(K) Vac(corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρ dc/ρac=ExL/K	2.1	5.5	6.1									
(N) ~~PFE=(M-1)(10²)~~	1.021	1.055	1.061	1.020	1.049	1.063	1.010	1.020	1.039	1.056		
(O) MCF=(M-1)(10^5)/H	3.58	37	161	7	22	108	3	12	31	133		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	45	34	23	12	45	34	23	12				
(B) Receive	2.0-2.5	—	—	—	2.5-3.0	—	—	—				
(C) n separation												DC CAL
(D) I	3.0	4.5	6.0	7.5	3.0	4.5	6.0	7.5			1	1.01
(E) Vdc (avg)	306.0	88.2	37.0	8.91	107.8	33.4	18.79/17.89	—			98.8	
(F) DCcal												
(G) Kn x 10^{-3}	6	15	30	52.5	15	30	52.5	84				
(H) ρ dc=ExFxGx10^3/D	618	297	187	63	596	225	159	53				
(I) Vac Σ	275.5	79.4	32.0	7.80	96.8	29.4	16.6/16.2	4.64			90.2	
(J) AC noise x 2												
(K) Vac (corr) =$\sqrt{I^2 - J^2}$											AC-DC	CAL
(L) AC-DC cal.												0.919
(M) ρdc/ρac =ExL/K	1.016	1.018	1.057	1.043	1.019	1.039	1.046/1.010					
(N) PFE=(M-1)(10²)												
(O) MCF=(M-1)(10^5)/H	3	6	30	68	4	17	29					

82
14
222

66
10
15 | 166

12
13
142
142

28
9
118

9.1
8

11

11

8.6

166
222
388

35 | 338

142
118
260

| 260

90.2
8 | 98.8
8.6

116
780

1.79
17.0
18.79

44
27
314

1.69
16.2
17.89

11 | 88.5
11.05

40
8 | 314

4

2
7

± 30%

33
12
153

33
10
133
153
286

11 | 286

.3

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-1 HALF SW½ SP. 1 DATE 8/22/6?

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-.5	.5-1	→	1-1.5	→	→	1.5-2	→	→	→
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi
VOLTAGE	490	490	490	380	500	490	370	380	500	490
CURRENT	3A	4A	3A	5A	4A	3A	7.5A	5A	4A	3A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	Cal	
RECEIVE	2-2.5	→	→	→	2.5-3	→	→	→		
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	
VOLTAGE	370	380	500	500	370	380	500	500	100	
CURRENT	7.5A	5A	4A	3A	7.5A	5A	4A	3A	1A	

FREQUENCIES 3.0 .05

SENDER NO. 6644-5

OPERATOR Cruze

RECEIVER NO. Burr-Brown

OPERATOR Hanson

COMMENTS:

1-2	7½	2.5 x 30
2-3	5	1.66 x 30
3-4	4	3.33 x 10
11-5	3	1 x 30

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT
LINE 2-1 HALF SW SP. 1 DATE

PAGE

SEND	1L	23	34	45	12	23	34	45		Cal
RECEIVE										
RANGE	100	100	10	10	100	10/100	10	10		100
DC 1	8.2	2.5	.86	.57 .41	3.1	1.0	.56	.38		9.4
DC 2	8.4	2.6	.86	.54 .76	2.1	1.2	.47	.41		8.3
DC 3	8.1	2.6	.98	.67 .44	3.1	1.0	.46	.35		9.4
DC 4	8.5	2.4	.96	.58 .69	2.1	1.15	.52	.40		8.3
DC 5	8.0	2.7	.86	.50	3.2	1.05	.48	.40		8.8
DC 6	8.6	2.4	.88	.64	2.0	1.1	.54	.35		
DC 7		2.8	1.03	.52		1.1	.49	41		
DC 8		2.4	.78	.76		1.1	50	34		
DC AVG.	78.5	23.55	7.09	4.37	237	9.80	3.77	2.94		77.85
AC 1	70.6	21.0	6.19	3.84	21.1	8.70	3.27	2.56		91.0
AC 2	70.6	21.0	6.19	3.84	21.1	8.70	3.27	2.56		91.0
AC AVG.										91.0
S.P.	-9				-6					95.5
AC NOISE	<.1				.02-.01					
POT RES.	800				500					

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT SIMENO

LINE 2-1 HALF SW½ SP. 1 DATE 8-22-6

PAGE

SEND.	45	34	45	23	34	45	12	23	34	45
RECEIVE	0-.5 SW	.5-1.0 SW	—	1.0-1.5	—	—	1.5-2.0	—	—	—
RANGE	1000	100/1000	100	1000	100	10/100%	1000	100	100	10/100%
DC 1	42	10	2.2	17	2.6	1.20	42	6.4	2.1	1.3
DC 2	47	11	3.2	14	3.4	1.2	40	8.5	2.4	1.0
DC 3	45	10	2.0	18	2.7	1.2	43	6.4	2.1	1.3
DC 4	47	11	3.4	14	3.4	1.2	39	8.6	2.2	1.0
DC 5	48		1.8	19	2.6			6.3	2.1	
DC 6	44		3.5	13	3.4			8.7	2.3	
DC 7			1.8					6.3		
DC 8	✓	✓	3.4							
DC AVG.	409.5	91.9	19.2	153	22.6	8.5	460	17.1	15.8	798
AC 1	364	80.4	16.5	137	19.6	7.30	359	59.8	13.6	6.83
AC 2	364	80.5	16.5	137	19.6	7.30	359	59.8	13.6	6.83
AC AVG.		80.45								
S.P.	+11	-6	—	-7	—	—	+6	—	—	—
AC NOISE	.1-.2	<.1	—	<.1	—	—	N<.1	—	—	—
POT RES.	—	1K	1K	780	—	—	115	—	—	—

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Seminco Phase 2
LINE 2-1 HALF NE SP. 1 DATE 2-24-69

PAGE

SEND	12	23	12	34	23	12		45	34	23	12
RECEIVE	0-.5	.5-1.0	—	1.0-1.5	—	—		1.5-2.0	—	—	—
RANGE	1000	1000	100	1000	1000	100		1000	10000	100	100 OK
DC 1	24	108	6.3	95	36	4.2	4.1	54	22	6.2	1.1
DC 2	9	104	7.0	78	20	4.3	3.8	77	6	7.6	1.8
DC 3	22	108	6.1	96	33	4.2	4.4	54	22	6.6	.9
DC 4	12	108	7.1	86	20	4.6	3.7	77	6	7.3	1.8
DC 5	25		6.0	94	37	4.0	4.1	55	22	6.2	.6
DC 6	13		7.3	79	17	3.8	3.2	74	3	7.0	2.0
DC 7	28				35	3.8	4.6		24	6.3	1.0
DC 8	9 ✓				19	3.8	3.4		7	7.1	2.0 (a)
DC AVG.	167.75	813 ✓	46.4	840	219	28.38		669	127	50.5	10.40
AC 1	150	705	40.2	753	191	24.8		604	114	44.5	9.00
AC 2	150	705	40.2	753	191	24.8		604	114	44.5	9.00
AC AVG.	150	705	40.2	753	191	24.8		604	114	44.5	9.00
S.P.	+15	-11	—	+2	—	—		+17	—	—	—
AC NOISE	—	<.1	—	~.1-.3	—	—		~.2	—	—	—
POT RES.	1.2K	1.2K	—	3K	—	—		3K	—	—	—

c

3.4
2.0
3.4
2.0
3.4
1.6
3.3
1.6
3.5
1.4

AC 16.2
16.2

a

1.1
2.2 → 3.3
1.9
2.1 → 3.0
1.0
1.8 → 2.8
.9
1.6 → 2.5
.8
1.9 → 2.7
1.1
1.4 → 2.5

b

14 8
10
9 16
14 6
10 14
9 11
12 7
12 14
10 11
12 10
11 13
14 7
6 20
14 4
9 15
8
9
14
8
13
12

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT _____

LINE ____ HALF ____ SP. ____ DATE ____

PAGE

SEND	45	34	23	12	45	34	23	12		Cal
RECEIVE	2.0-2.5				2.5-3.0					
RANGE	1000	100	100	100/100	100/100	100	100			100
DC 1	25	8.6 | 8.8	4.8 | 5.4		10	3.6	4.3 | 4.9			
DC 2	37	9.0 | 8.9	4.8 | 4.2		12	4.1	3.3 | 2.9			
DC 3	28	8.0 | 4.6	5.8 | 5.2		10	3.9	4.9 | 4.1			9.6 | 8.1
DC 4	33	8.8 | 8.6	5.2 | 4.6		12.5	3.8	2.7 | 3.0			8.7 | 9.1
DC 5	25	9.2 | 8.8	4.8 | 6.4		10.5	4.1	4.0 | 4.6			9.6 | 8.2
DC 6	34	9.4 | 9.9	3.8 | 4.6		12.5	3.8	2.4 | 2.6			8.6 | 9.1
DC 7	26	4.8 | 9.4	5.2 | 6.0		11	4.3	4.9 | 4.8			
DC 8	31	9.2 | 8.7	5.0 | 3.9		12	3.8	3.7 | 2.4			
DC AVG.	306	88.2	37.0	8.91	107.8	33.4	18.79 | 17.89			
AC 1	276	79.4	32.0	7.80	96.8	29.4	17.0	4.64		98.8
AC 2	275	79.4	32.0	7.80	96.8	29.4	16.2 ⓓ	4.64		89.8
AC AVG.	275.5	79.4	32.0	7.80	96.8	29.4	16.6 | 16.2	4.64		90.2 | 92
S.P.	-24				-5					
AC NOISE	2.30μ									
POT RES.	2K									

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

2.5 / 3 / 7.5

PROJECT SEMINCO Phase #2

LINE 2-1 HALF N-E SP. 1 DATE 8/21/67

PAGE 1

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-.5	.5-1	→	1-1.5	→	→	1.5-2	→	→	→
RANGE	High	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi
VOLTAGE	360	450	365	520	440	360	480	540	440	360
CURRENT	7.5A	6A	7.5A	4.5A	6A	7.5A	3A	4.5A	6A	7.5A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Cal	
RECEIVE	2-2.5	→	→	→	2.5-3	→	→	→		
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	High	
VOLTAGE	480	540	440	360	480	440	460	360	140	
CURRENT	3A	4.5A	6A	7.5A	3A	4.5A	6A	7.5A	1A	

FREQUENCIES 2.0 .05

SENDER NO. 6644-S

OPERATOR Craze

RECEIVER NO. Burr-Brown

OPERATOR Henson.

COMMENTS:

1-2 2.5 X 30

2-3 2 X 30

3-4 1.5 X 30

4-5 1 X 30

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page ____

Project SEMINCO Line 2-2 SW Field date 8-24-67 Data page 6 Comp. date 8-24-67 Comp by ____

(A) Send	45	34	45	23	34	45	12	23	34	45			
(B) Receive	0-400SW	400-800SW	—	800-1200SW	—	—	12-16W	—	—	—			
(C) n separation	1	1	2	1	2	3	1	2	3	4			
(D) I	6	6	6	8	6	6	7.5	8	6	6			
(E) Vdc (avg)	303	297	71.3	294	57.6	22.4	170.5	41.8	14.65	7.58			
(F) DCcal 1.00	—	—	—	—	—	—	—	—	—	—			
(G) Kn x 10^{-3}	1.2	1.2	4.8	1.2	4.8	12.0	1.2	4.8	12.0	29.0			
(H) ρ dc=ExFxGx10^3/D	61	59	57	37	46	45	27	25	29	30			
(I) Vac Σ	292	285	67.8	231	54.4	21.1	162	39.6	14.1	7.51			
(J) AC noise x 2													
(K) Vac(corr) = $\sqrt{I^2 - J^2}$													
(L) AC-DC cal.	.980	—	—	—	—	—	—	—	→	1.015			
(M) ρ dc/ρac=ExL/K	1.017	1.021	1.031	1.035	1.040	1.041	1.031	1.036	1.019	1.024			
(N) PFE=(M-1)(10^2)	1.7	2.1	3.1	3.5	4.0	4.1	3.1	3.6	1.9	2.4			
(O) MCF=(M-1)(10^5)/H	28	36	54	95	87	91	115	144	66	80			

Project ____ Line ____ Field date ____ Data page ____ Comp. date ____ Comp by ____

(A) Send	12	23	34	45	12	23	34	45		cal	Cal	Cal
(B) Receive	16-20	—	—	—	20-24	—	—	—				
(C) n separation	2	3	4	5	3	4	5	6		1	3	100MA
(D) I	7.5	8	6	6	7.5	8	6	6				
(E) Vdc (avg)	83.0	32.2	13.05	7.48	41.4	20.1	7.61	4.40				
(F) DCcal 1.00	—	—	—	—	—	—	—	—				
(G) Kn x 10^{-3}	4.8	12.0	24.0	42.0	12.0	24.0	42.0	67.2				
(H) ρ dc=ExFxGx10^3/D	53	51	52	52	66	60	53	49				
(I) Vac Σ	77.9	32.1	12.5	7.36	38.6	18.9	7.51	4.30				
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.980	→	→	1.015	—	—	—	→				
(M) ρdc/ρac =ExL/K	1.046	1.045	1.023	1.030	1.050	1.092	1.029	1.039				
(N) PFE=(M-1)(10^2)	4.6	4.5	2.3	3.0	5.0	4.2	2.9	3.9				
(O) MCF=(M-1)(10^5)/H	87	88	44	58	76	70	55	80				

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 980

Project SEMINCO Line 2-2spl SW½ Field date 8/24/67 Data page 6 Comp. date 8/24/67 Comp by

	① 4-5	3-4	② 4-5	2-3	③ 3-4	4-5	⑥ 1-2	2-3	3-4	4-5		
(A) Send												
(B) Receive	0-400 SW	400-800 SW	→	800-1200 SW	→	→	20-24	→	→	→		
(C) n separation	1	1	2	1	2	3	1	2	3	4		
(D) I	6	6	6	8	6	6	7.5	8	6	6		
(E) Vdc (avg)	303	297	71.3	249	57.6	22.4	41.4	20.1	7.61	4.40		
(F) DCcal 1.00												
(G) Kn x 10^{-3}	1.2	1.2	4.8	1.2	4.8	12.0	12.0	24.0	42.0	67.2		
(H) ρ dc=ExFxGx10^3/D	61	59	57	37	46	45	66	60	53	49		
(I) Vac Σ	292	285	67.8	231	59.4	21.1	38.6	18.9	7.51	4.30		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.980	.980	.980	.980	.980	.980			1.015			
(M) ρ dc/ρac=ExL/K	1.017	1.021	1.031	1.035	1.040	1.041	1.050	1.042	1.029	1.039		
(N) PFE=(M-1)(10^2)	1.7	2.1	3.1	3.5	4.0	4.1	5.0	4.2	2.9	3.9		
(O) MCF=(M-1)(10^5)/H	28	36	54	45	87	91	76	70	55	80		

Project SEMINCO Line 2-2spl SW½ Field date 8/24/67 Data page 6 Comp. date 8/24/67 Comp by

	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		Cal	Cal	Cal
(A) Send												
(B) Receive	12-16	→	→	→	16-20	→	→	→				
(C) n separation	2	3	4	5	3	4	5	6				
(D) I	7.5	8	6	6	7.5	8	6	6		1	3	100ma
(E) Vdc (avg)	170.5	41.8	14.65	7.58	83.0	34.2	13.05	7.48				
(F) DCcal 1.00												
(G) Kn x 10^{-3}	1.2	4.8	12.0	24.0	4.8	12.0	24.0	48.0				
(H) ρ dc=ExFxGx10^3/D	27	25	29	30	53	51	52	52				
(I) Vac Σ	162	39.6	14.1	7.51	77.9	32.1	12.5	7.36				
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.98	.980		1.015	.580			1.015				
(M) ρdc/ρac =ExL/K	1.031	1.036	1.019	1.029	1.096	1.045	1.023	1.030				
(N) PFE=(M-1)(10^2)	3.1	3.6	1.9	2.9	9.6	9.5	2.3	3.0				
(O) MCF=(M-1)(10^5)/H	165	144	66	80	87	88	44	58				

1000 .995

100 .580

10 1.015

$$pdc = \frac{Vdc \; Km \; DCCal}{I}$$

1,00

V_{DC} V_{ac}

$$MCE \; \frac{PFE}{pdc}$$

105) 7700

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Silver

LINE 2.6 HALF SW SP. 1 DATE 8-14

PAGE

SEND	12	23	34	45	12	23	34	45		CC
RECEIVE	1C-2C				2C-2P				1000	100
RANGE	1000	100	100	10	100	100	100	10		
DC 1	3	2.0	.2	.10	5.6	2.6	.4	.25	2	1.4
DC 2	13	2.5	.9	.01	4.4	1.5	.3	0	1	2.6
DC 3	4	2.0	.2	.16	5.6	2.6	.8	.22	2	1.4
DC 4	13	2.5	.9	-.02	4.4	1.5	.3	.02	1	2.6
DC 5	6			.17	5.6	2.6	.8	.20		
DC 6	12			-.04	4.4	1.5	.2	.06		
DC 7	4			.18				.18		
DC 8	13			-.02				.07		
DC AVG.	170.5	41.8	14.65	7.58	83.0	34.2	13.05	7.48	300.5	99.9
AC 1	162	39.5	14.1	7.50	78.0	32.1	12.5	7.35	299	97.9
AC 2	162	39.6	14.1	7.51	77.8	32.1	12.5	7.36	299	98.0
AC AVG.	162	39.6	14.1	7.51	77.9	32.1	12.5	7.36	299	97.95
S.P.	+5				0					
AC NOISE	5.1				.01					
POT RES.	1.5K				300					

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Simeon
LINE 2-W HALF SW SP. 1 DATE 9-29-

PAGE

SEND	45	34	45	23	34	45	12	27	34	45
RECEIVE	6-45W	4-8		6-12			12-18	end	one	
RANGE	1000	1000	100	1000	100	100	100	100	10	10
DC 1	14	10	2.6	16	3.6	1.2	2.8	1.4	.18	.09
DC 2	10	14	4.4	10	2.8	1.4	2.8	1.0	.03	.12
DC 3	10	11	2.6	16	3.6	1.2	2.8	1.6	.24	.04
DC 4	12	12	4.4	9	2.8	1.4	2.9	.8	-.03	.18
DC 5	9	15	2.6	17	3.6		2.7	1.6	.31	-.02
DC 6	14	10	4.4	11	2.8		2.9	.8	-.12	.22
DC 7	6	15		18					.36	-.06
DC 8	16	9		8					-.15	.26
DC AVG.	303	297	71.3	244	57.6	22.4	41.4	20.1	7.61	4.40
AC 1	292	285	67.8	231	54.4	21.1	38.6	18.9	7.51	4.30
AC 2	292	285	67.8	231	54.4	21.1	38.6	18.9	7.51	4.30
AC AVG.	292	285								
S.P.	+15	+12		+3			+2			
AC NOISE	<.1	<.1		<.1			.02			
POT RES.	700	1.3K		800			1.5K			

10 R cal

Above on 10.0
-.04
0
-.04
0

9.98
10.14
10.14
Ac 10.14

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-2sp HALFS W½ SP. 1 DATE 8/24/6

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-400	400-800	→	800-1200	→	→	1200-1600	→	→	→
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi
VOLTAGE	470	360	470	330	360	470	440	330	360	460
CURRENT	6A	6A	6A	8A	6A	6A	7.5A	8A	6A	6A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	Cal	Cal
RECEIVE	1600-2000	→	→	→	2000-2400	→	→	→		
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi
VOLTAGE	440	230	360	460	440	320	360	460	90	240
CURRENT	7.5A	8A	6A	6A	7.5A	8A	6A	6A	4A	3A

FREQUENCIES 3.0 .05

SENDER NO. 6644-5

OPERATOR Cruze

RECEIVER NO. Burr-Brown

OPERATOR Henson

COMMENTS:

Cal	Cal	Cal
Hi	Hi	Hi
20	160	100
100ma	200ma	100ma

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page _____

Project SEMINCO Line 2-2 NE1/2 Field date 8/23/67 Data page 5 Comp. date 8/23/67. Comp by _____

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	
(B) Receive	0-400NE	400-800NE	→	800-1200NE	→	→	1200-1600NE	→	→	→	
(C) n separation	1	1	2	1	2	3	1	2	3	4	
(D) I	7.5	8	7.5	6	8	7.5	6	6	8	7.5	
(E) Vdc (avg)	~~15~~	11	4.4	10.8	2.4	1.5	22.6	10	4.4	2.2	
(F) DCcal 1.000	367	403	88.6	455.8	78.6	306	836	312	98.4	37.2	
(G) Kn x 10^{-3}	1.2	1.2	4.8	1.2	4.8	12.0	1.2	4.8	12.0	24.0	
(H) ρdc=ExFxGx10^3/D	59	65	57	91	47	49	167	249	147	118	
(I) Vac Σ	352	392	84.2	444	76.2	291	813	302	94	35.0	
(J) AC noise x 2											
(K) Vac(corr) = $\sqrt{I^2 - J^2}$	↑	↑		↑			↑	↑	↑		
(L) AC-DC cal. ~~.995~~	.980	→	980	.980	980	→	.980	→	→	980	
(M) ρdc/ρac=ExL/K	1.022	1.007	1.032	1.006	1.012	1.031	1.007	1.012	1.026	1.042	
(N) PFE=(M-1)(10^2)	2.2	0.7	3.2	0.6	1.2	3.1	0.7	1.2	2.6	4.2	
(O) MCF=(M-1)(10^5)/H	87	11	56	27	26	63	14	51	18	36	

Project SEMINCO Line 2-2 NE1/2 Field date 8/23/67 Data page 5 Comp. date 8/23/67 Comp by _____

(A) Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		Cal	
(B) Receive	1600-2000NE	→	→	→	2000-2400NE	→	→	→			
(C) n separation	2	3	4	5	3	4	5	6			
(D) I	6	6	8	7.5	6	6	8	7.5		.100m	1.0
(E) Vdc (avg)	~~8.6~~	5	2.1	1.4	3.7	2.1	1.1	.76		10.00	99.6
(F) DCcal	280.6	106	41.8	20.1	115.7	43.7	196	10.76			
(G) Kn x 10^{-3}	4.8	12.0	24.0	42.0	12.0	24.0	42.0	67.2			
(H) ρdc=ExFxGx10^3/D	224	212	125	113	232	175	103	97			
(I) Vac Σ	272	101	39.7	18.7	112	41.6	185	16.0		10.05	97.5
(J) AC noise x 2											
(K) Vac (corr) = $\sqrt{I^2 - J^2}$	↑				↑	↑	↑	↑			
(L) AC-DC cal.	980	980	→	→	.980	→	→	→		1.010	.980
(M) ρdc/ρac =ExL/K	1.010	1.030	1.034	1.052	1.012	1.029	1.038	1.054			
(N) PFE=(M-1)(10^2)	1.03	3.0	3.4	5.2	1.2	2.9	3.8	5.4			
(O) MCF=(M-1)(10^5)/H	46	14	27	96	15	17	37	56			

31
31

8) 381 = 47
32
61

595
48
647

23
39

413
6) 413 = 69
36
53

26
7

6) 96 = 16

778
39
817

186
16
202

1-1

30
19
220

6) 220 = 37
18
40

446
37
483

624
37
661

25
28

6) 305 = 51

869
51
920

8) 297 = 37
24
57

37
26
257

8) 140 = $17\frac{1}{2}$
8
60

18
332
350

120
12

18
6

6) 78 = 13

28
8

8) 168

19

26

6) 51 = $8\frac{1}{2}$

12.85
12.4
13.25

26
24

29

$3\frac{1}{2}$
) 28

26
8

8) 106 = 13
26

516
33

8) 266 = 33
24
26

166
14
180

222
13
235

6) 36 = 6

16
3

2.15

933
84
1017

259
16
265

25
48

6) 505 = 84
48
25

5.6

56
66.3
719

8) 75 = 9

35
4
75

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-2 HALF NE½ SP. 1 DATE 8/23/76

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-400	400-800	→	800-1200	→	→	1200-1600	→	→	→
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi
VOLTAGE	400	270	400	380	280	400	480	380	276	400
CURRENT	7.5A	8A	7.5A	6A	8A	7.5A	6A	6A	8A	7.5A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Cal	
RECEIVE	1600-2000	→	→	→	2000-2400	→	→	→		
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	
VOLTAGE	480	370	270	390	470	370	270	390	20	
CURRENT	6A	6A	8A	7.5A	6A	6A	8A	7.5A	1A	

FREQUENCIES 1.0 .105

SENDER NO. 6644-S

OPERATOR Cruze

RECEIVER NO. Burr-Brown

OPERATOR Henson

COMMENTS:

1-2	7½	2.5x30
2-3	8	2.666x30
3-4	6	2x30
4-5	6	2x30

2.6
3
8

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Simenco
LINE 2-2 HALF NE SP. 1 DATE 8-23-69

PAGE

SEND	1L	23	12	34	23	12	45	34	23	12
RECEIVE	0-4NE	4-8		8-12			12-16			
RANGE	1000	1000	100	1000	100	100	1000	1000	1000	100
DC 1	25	25	3.7	10	3.1	1.9	14	16	1	2.9
DC 2	7	2	5.2	10	1.9	1.1	30	4	4	1.6
DC 3	23	27	3.5	8	2.7	1.7	19	16	4	2.9
DC 4	9	2	5.4	16	2.0	1.3	27	7	0	1.4
DC 5	22	27	3.4	7	2.9	1.6	17	17	6	2.8
DC 6	6		5.4	13	2.0	1.4	24	6	4	1.7
DC 7	24			11	2.7		17	16	3	
DC 8	4			12	2.2		29	4	5	
DC AVG.	15	11	4.4	10.8	2.4	1.5	22.6	10	4.9	2.2
AC 1	352	352	84.2	445	76.2	29.1	813	302	94	35.0
AC 2	352	352	84.2	444	76.2	29.1	813	302	94	35.0
AC AVG.	352	352	84.2	444	76.2	29.1	813	302	94	35.0
S.P.	+3	-15		-5			-6			
AC NOISE	<.1	<.1		<.1			<.2			
POT RES.	400	600		700			900			

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Simeon

LINE 2-2 HALF NE SP. 1 DATE 8-23-6

PAGE

SEND	45	34	23	12	45	34	23	12		cal
RECEIVE	15-20				20-29				10	
RANGE	1000	100	100	101	1000	100	100	100	@ 100%	
DC 1	12	2	2.6	1.6	9	1.7	1.2	.6	-.01	2.2
DC 2	8	8	1.4	1.2	-6	2.6	1.0	.9	-.09	2.0
DC 3	10	2	3.0	1.4	10	1.7	1.3	.7	-.02	2.2
DC 4	6	9	1.2	1.6	-3	2.3	.9	.9	-.05	2.0
DC 5	10	2	2.9	1.2	10	2.0	1.1	.6		
DC 6	6	7	1.2	1.5	-1	2.4	1.0	1.0		
DC 7	11	2			9	1.9	1.1	.4		
DC 8	6	8			-3	2.3	1.0	1.0		
DC AVG.	8.6	5	2.1	1.4	3.7	2.1	1.1	.76	99.5	99.6
AC 1	272	101	39.7	18.7	112	41.6	18.5	10.0	10.05	97.5
AC 2	272	101	39.7	18.7	112	41.6	18.5	10.0	10.05	97.5
AC AVG.	272	101	39.7	18.7	112	41.6	185	10.0		
S.P.	-11				+5					
AC NOISE	~.1-.2				~.2 μ					
POT RES.	900				215					

1.010 .580

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page _____

Project Mivvy Line 2-2 spd 2 Field date 8-25-67 Data page _____ Comp. date 9/28/67 Comp by KH

(A) Send	45	34	45	23	34	45	12	23	34	45		
(B) Receive	2-24	24-20		20-16			16-12					
(C) n separation												
(D) I ✓	3	2.5	3	4	2.5	3	1	4	2.5	3		
(E) Vdc (avg) ✓	200	508	112	640	106	46.7	609	218.5	49.1	28.1		
(F) DCcal 1.0												
(G) Kn x 10^{-3}	1.2	1.2	4.8	1.2	4.8	12	1.2	4.8	12	24		
(H) ρ dc=ExFxGx10^3/D	80	244	189	192	204	187	730	262	236	224		
(I) Vac Σ	190	483	108	613	102	45.0	590	210	46.1	27.0		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.580											
(M) ρ dc/ρac=ExL/K	1.032	1.032	1.017	1.024	1.019	1.018	1.012	1.022	1.044	1.021		
(N) PFE=(M-1)(10^2)	3.2	3.2	1.7	2.4	1.9	1.8	1.2	2.2	4.4	2.1		
(O) MCF=(M-1)(10^5)/H	40	13	9	13	9	10	2	8	19	9		

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	12	23	34	45	12	23	34	45		cal		
(B) Receive	12-8				8-4							
(C) n separation										100	1000	
(D) I	5	4	2.5	3	5	4	2.5	3		1	4	
(E) Vdc (avg)	292	41.2	13.9	9.28	114	15.5	4.85	4.14		99.6	396	
(F) DCcal												
(G) Kn x 10^{-3}	4.8	12	24	42	12	24	42	67.2				
(H) ρ dc=ExFxGx10^3/D	280	124	134	130	274	117	82	93				
(I) Vac Σ	281	39.4	13.1	9.13	110	18.6	4.70	4.10		97.6	385	
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.580			1.010	.580		1.010					
(M) ρdc/ρac =ExL/K	1.019	1.026	1.041	1.027	1.017	1.028	1.042	1.019				
(N) PFE=(M-1)(10^2)	1.9	2.6	4.1	2.7	1.7	2.8	4.2	1.9				
(O) MCF=(M-1)(10^5)/H	7	21	31	21	6	24	51	20				

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-2 HALF SW SP. 2 DATE 8/25/76

SEND	4-5	3-4	4-6	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	28-24	24-20	→	20-16	=	→	16-14	→	→	→
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi
VOLTAGE	450	520	450	540	520	450	100	540	520	450
CURRENT	3A	2.5A	3A	4A	2.5A	3A	1A	4A	2.5A	3A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	Cal	Cal
RECEIVE	14-10	→	→	→	10-6	→	→	→		
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi
VOLTAGE	420	540	520	460	420	540	530	460	210	540
CURRENT	5A	4A	2.5A	3A	5A	4A	2.5A	3A	1A	4A

FREQUENCIES 3.0 , 0.5

SENDER NO. 6644-5

OPERATOR Cruze

RECEIVER NO. Burr-Brown

OPERATOR K. Henson

COMMENTS:

Cal
Hi
30
100ma

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT SEMINCO

LINE 2-2 HALF SW½ SP. 2 DATE 8/25/6

PAGE

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	28-24	24-20		20-16						
RANGE	1000	1000	1000	1000	1000	100	1000	1000	100	100
DC 1	7	20	8	18	8	1.8	19	8	3.2	.7
DC 2	13	32	4	23	3	1.6	18	9	2.6	1.6
DC 3	7	16	6	19	6	1.8	18	11	3.2	.6
DC 4	11	32	2	18	5	1.6	18	6	2.8	1.6
DC 5	8	17	7	23	6	18	20	12	3.0	.6
DC 6	15	32	-2	20	5	16	19	6	3.0	1.6
DC 7	6	18	9	22	5		20	9	2.9	
DC 8	12	31	-1	19	3		19	7	3.1	
DC AVG.	200	508	112	140	106	46.7	609	218.5	49.1	28.1
AC 1	190	483	108	613	102	45.0	590	210	46.1	27.0
AC 2	190	483	108	613	102	45.0	590	210	46.1	27.0
AC AVG.										
S.P.	+20	-16		+8			+13			
AC NOISE	<.1	<.1		<.1			<.1			
POT RES.	4K	2.5K		1K			1.5K			

10

.02
-.12
.03
-.12
.03
-.12
.03
-.12

AC 10.13
10-13

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-2 HALF SW SP. 2 DATE 8/25/86

PAGE

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	ctr	
RECEIVE	14-10				10-6					
RANGE	1000	100	100	10	1000	100	10	10	110	1000
DC 1	7	2.4	.4	.16 -.04	3	1.2	.24	.04	1.2	17
DC 2	14	1.2	.8	0 .10	4	.6	.12	-.04	2.8	5
DC 3	6	2.4	.8	.10 0	2	1.2	.21	.15	1.2	21
DC 4	16	1.2	.8	-.14 .10	5	.6	.09	-.08	2.8 OL	4
DC 5	5			.18 -.09	3	1.2	.29	.19	1.3	20
DC 6	18			-.06 .19	5	.6	-.05	-.15	2.8	6
DC 7	2			.06 -.16	3		.31	.26	1.3	20
DC 8	18			.09 .20	5		.02	-.22	2.8	3
DC AVG.	292	11.2	13.9	9.28?	114	19.5	4.85	4.14	99.6	396
AC 1	281	39.4	13.1	9.13	110	18.6	4.70	4.10	97.5	384
AC 2	281	39.4	13.1	9.13	110	18.6	4.70	4.10	97.6	385
AC AVG.									97.55	384.5
S.P.	-1				+5					
AC NOISE	4.1				.01					
POT RES.	1.3				>50					

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page _____

Project SEMINCO Line 2-2 sp2 NE 1/2 Field date 8/24/67 Data page 7 Comp. date 8/24/67 . Comp by _____

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
(B) Receive	28-32 NE	32-36 NE	→	36-40 NE	→	→	40-44 NE	→	→	→		
(C) n separation	1	1	2	1	2	3	1	2	3	4		
(D) I	5	4	5	2.5	4	5	3	2.5	4	5		
(E) Vdc (avg)	1003.9	261.4	188.1	492.4	172.5	152.5	960.6	95.11	51.1	53.6		
(F) DCcal 1.00	→	→	→	→	→	→	→	→	→	→		
(G) Kn x 10^{-3}	1.2	1.2	4.8	1.2	4.8	12.0	1.2	4.8	12.0	24.0		
(H) ρ dc=ExFxGx10^3/D	241	781	180	236	207	366	185	183	153	258		
(I) Vac Σ	952	247	180	465	165	145	440	90	48.3	50.6		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. 1.000	.995	→	→	→	→	→	→	→	.980	→		
(M) ρ dc/ρac=ExL/K	1.050	1.052	1.040	1.053	1.043	1.050	1.044	1.052	1.039	1.039		
(N) PFE=(M-1)(10^2)	5.0	5.2	4.0	5.3	4.3	5.0	4.4	5.2	3.9	3.9		
(O) MCF=(M-1)(10^5)/H	21	7	22	22	21	14	24	28	25	15		

Project SEMINCO Line 2-2 sp2 NE 1/2 Field date 8/24/67 Data page 7 Comp. date 8/24/67 Comp by _____

(A) Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		Cal		
(B) Receive	44-48 NE	→	→	→	48-52 NE	→	→	→				
(C) n separation	2	3	4	5	3	4	5	6				
(D) I	3	2.5	4	5	3	2.5	4	5				
(E) Vdc (avg)	133	42.3	29.6	34.0	52.6	21.8	17.0	21.0				
(F) DCcal 1.000	→	→	→	→	→	→	→	→				
(G) Kn x 10^{-3}	4.8	12.0	24.0	42.0	12.0	24.0	42.0	67.2				
(H) ρ dc=ExFxGx10^3/D	213	203	178	286	210	209	178	282				
(I) Vac Σ	127	40.2	27.9	32.2	50.6	20.6	16.0	20.0				
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.995	.980	→	→	→	→	→	→				
(M) ρdc/ρac =ExL/K	1.042	1.037	1.046	1.035	1.020	1.039	1.041	1.029				
(N) PFE=(M-1)(10^2) *	4.2	3.7	4.6	3.5	2.0	3.9	4.1	2.9				
(O) MCF=(M-1)(10^5)/H	20	15	22	12	10	19	23	10				

1000R - .995

100R - .980

10R - 1.015

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2=2 HALF NE SP. 2 DATE 8/24/83

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	28-32	32-36	→	36-40	→	→	40-44	→	→	→
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi
VOLTAGE	420	546	420	500	540	420	440	500	540	420
CURRENT	5A	4A	5A	2.5A	4A	5A	3A	2.5A	4A	5A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Cal	
RECEIVE	44-48	→	→	→	48-52	→	→	→		
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Hi	Hi		
VOLTAGE	440	500	540	420	440	500	530	420		
CURRENT	3A	2.5A	4A	5A	3A	2.5A	4A	5A		

FREQUENCIES 3.0 .05

SENDER NO. 6644-5

OPERATOR Cinze

RECEIVER NO. Barr-Brown

OPERATOR Hanson

COMMENTS:

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Simanco
LINE 2+2 HALF N.E. SP. 2 DATE 8-24

PAGE

SEND	45	34	23	12	45	34	23	12		Cal
RECEIVE	47-47				47-54					
RANGE	1000	100	100	100	100	100	100	100		
DC 1	10 14	2.6	1.4	1.9	1.7	1.2	.9	1.2		
DC 2	-1	1.8	2.1	1.6	2.6	.8	.9	1.1		
DC 3	14	2.1	1.3	2.1	1.4	1.3	1.0	1.1		
DC 4	-4	1.9	2.2	1.8	2.6	1.0	1.1	.8		
DC 5	13	1.9	1.2	2.0	1.4	1.1	1.0	1.1		
DC 6	-5	2.2	2.1	1.6	2.6	1.2	1.0	.8		
DC 7	13	2.1	1.7	1.8	1.2	1.2	1.0	1.6		
DC 8	-1	2.4	2.0	1.7	2.8	1.2	1.0	1.3		
DC AVG.	153	42.3	29.6	34.0	52.6	21.8	17.0	21.0		
AC 1	127	40.2	27.9	32.2	50.6	20.6	16.0	20.0		
AC 2	127	40.2	27.9	32.2	50.6	20.6	16.0	20.0		
AC AVG.										
S.P.	-6				+29					
AC NOISE	1.2				1.2					
POT RES.	800				3K					

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Simenco
LINE 2-2 HALF NE SP. 2 DATE 8-24

PAGE

SEND	12	23	12	34	23	12	45	34	23	12
RECEIVE	2.8-3.2	3.2-3.6		3.6-4.0			4.0-4.4			
RANGE	1000	1000	1000	1000	1000	1000	1000	1000	100	
DC 1	56	8	4	24	6	10	20	6	2.6	3.2
DC 2	50	16	10	21	7	3	22	3	2.9	2.8
DC 3	55	16	4	28	7	11	19	8	2.7	3.2
DC 4	50	15	11	21	8	7	22	2	2.9	3.0
DC 5	56	16	6	26	11	9	19	8	2.9	3.1
DC 6	50	12	13	19	4	5	23	4	2.9	3.0
DC 7		15	8	27	11	9	16	5	2.8	3.2
DC 8		14	9	21	6	7	24	5	—	3.6
DC AVG.	1003.9	261.4	188.1	492.4	172.5	152.5	460.6	95.11	51.1	53.6
AC 1	951	247	180	469	165	145	440	90	48.3	50.6
AC 2	952	247	180	469	165	145	440	90	48.3	50.6
AC AVG.	952	247	180	469	165	145	440	90	48.3	50.6
S.P.	-2	+2		+8			+10			
AC NOISE	?	~.1		.1-.2			.1-.2			
POT RES.	1.2K	.9K		650			700			

44
39
40
38
41
43
45

21
2|41

21

35
34
35
34
33

17

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Mowry Line 2-3 N½ Field date 8-28 Data page_____ Comp. date 9-1 . Comp by IH

(A) Send	12	23	12	34	23	12	45	34	23	12		
(B) Receive	0-1 N	1-2		2-3			3-4					
(C) n separation												
(D) I	8	7	8	4	7	8	4	4	7	8		
(E) Vdc (avg)	222	216	67.7	463	84.8	36	607	134.7	41.4	20.6		
(F) DCcal 1.00												
(G) Kn x 10^{-3}	3	3	12	3	12	30	3	12	30	60		
(H) ρ dc=ExFxGx10^3/D	83	93	102	347	145	135	455	404	177	155		
(I) Vac Σ	212	206	64.2	445	80.6	34	587	129	39.2	19.3		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.980											
(M) ρ dc/ρac=ExL/K	1.026	1.028	1.033	1.020	1.031	1.038	1.013	1.023	1.035	1.046		
(N) PFE=(M-1)(10^2)	2.6	2.8	3.3	2.0	3.1	3.8	1.3	2.3	3.5	4.6		
(O) MCF=(M-1)(10^5)/H	31	30	32	6	21	28	3	6	20	30		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	45	34	23	12	45	34	23	12				
(B) Receive	4-5				5-6							
(C) n separation												
(D) I	4	4	7	8	4	4	7	8				
(E) Vdc (avg)	73.9	25.9	10.2	6.68	250.5	9.94	4.44	4.13				
(F) DCcal 1.00												
(G) Kn x 10^{-3}	12	30	60	105	30	60	105	168				
(H) ρ dc=ExFxGx10^3/D	222	194	87	88	191	149	67	87				
(I) Vac Σ	71.4	24.5	9.6	6.49	24.4	9.76	4.31	4.0				
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.				1.015	.980	1.015						
(M) ρdc/ρac =ExL/K	1.014	1.036	1.041	1.045	1.024	1.034	1.046	1.049				
(N) PFE=(M-1)(10^2)	1.4	3.6	4.1	4.5	2.4	3.4	4.6	4.9				
(O) MCF=(M-1)(10^5)/H	6	19	47	51	13	23	69	56				

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Mowry Line 2-3 S½ Field date 8-29 Data page_____ Comp. date 9-1-67 . Comp by KH

(A) Send	45	34	45	23	34	45	12	23	34	45		
(B) Receive	6-1	1-2	—	—	—	—	3-4	—	—	—		
(C) n separation												
(D) I	4	4	4	7	4	4	7.89	7	4	4		
(E) Vdc (avg)	124	111.7	33.8	218.3	35.4	18.1	141.8	36.4	12.0	8.48		
(F) DCcal 1.002	—	—	—	—	—	—	—	—	—	—		
(G) Kn x 10^{-3}	3	3	12	3	12	30	3	12	30	60		
(H) ρ dc=ExFxGx10^3/D	91	84	101	94	106	136	54	62	90	127		
(I) Vac Σ	118.5	107	32	206	32.6	16.7	135	35	11.45	8.38		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.580	—	—	—	—	—	—	—	—	1.015		
(M) ρ dc/ρac=ExL/K	1.026	1.023	1.035	1.039	1.064	1.062	1.029	1.019	1.027	1.027		
(N) PFE=(M-1)(10^2)	2.6	2.3	3.5	3.9	6.4	6.2	2.9	1.9	2.7	2.7		
(O) MCF=(M-1)(10^5)/H	29	27	37	41	60	46	54	31	30	21		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	12	23	34	45	12	23	34	45		cal	—	
(B) Receive	4-5	—	—	—	5-6	—	—	—				
(C) n separation												
(D) I	8	7	4	4	8	7	4	4		1	100 ma	
(E) Vdc (avg)	46.9	18.9	2.15	5.55	18.8	9.23	1.15	3.58		99.5	9.97	
(F) DCcal	—	—	—	—	—	—	—	—				
(G) Kn x 10^{-3}	12	30	60	105	30	60	105	168				
(H) ρ dc=ExFxGx10^3/D	70	81	107	146	71	79	109	150				
(I) Vac Σ	45.2	18.3	2.05	5.46	18.2	9.2	4.08	3.51				
(J) AC noise x 2										97.8	10.12	
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.580	—	1.015	—	.980	1.015	—	—				
(M) ρdc/ρac =ExL/K	1.017	1.012	1.029	1.032	1.012	1.018	1.032	1.035				
(N) PFE=(M-1)(10^2)	1.7	1.2	2.9	3.2	1.2	1.8	3.2	3.5				
(O) MCF=(M-1)(10^5)/H	24	15	27	22	17	23	29	23				

6

PAGE

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Seminoe

LINE 23 HALF S SP. 1 DATE 8-29

SEND	45	34	45	23	34	45	12	23	34	45
RECEIVE	0-1	1-2		2-3			3-4			
RANGE		100	100	1000	100	100	1000	100	100	10
DC 1	3	6	2.0	13	2.7	1.3	8	1.7	.5	.062
DC 2	8	2	1.8	14	2.7	1.7	13	1.0	.5	.118
DC 3	3	8	2.0	10	2.7	1.4	0	1.8	.5	.12
DC 4	6	3	1.6	13	2.9	1.6	13	1.0	.6	.105
DC 5	5	6	2.1	8	2.8	1.2	0	1.8	.4	.16
DC 6	4	6	1.7	16	2.9	1.5	14.5 (-1)	1.0	.6	-.04
DC 7	6	5	2.1		2.7	1.4				.34
DC 8	5	2	1.6		2.8	1.6				-.03
DC AVG.	129	111.7	33.85	218.3	35.4	18.1	141.8	36.4	12.0	8.48
AC 1	115	107	32.0	206	32.6	16.7	135	35.0	11.5	8.34
AC 2	118	107	32.0	206	32.6	16.7	135	35.0	11.4	8.38
AC AVG.	118.5	107	32.0	206	32.6	16.7	135	35.0	11.45	8.38
S.P.	0	0		+3			-8			
AC NOISE	~.1	<.1		<.1			<.1			
POT RES.	1K	1K		1K			1K			

f

.2

3.0

6

e

.9

.12

6. 36

−.20

d

48

−.36

1000

6

9

4

11

4

9

3

10

295

295

PAGE

HEINRICHS GEOEXPLORATION CO. PROJECT

I.P. RECEIVER NOTES LINE 2-3 HALF S SP. L DATE 8-24

SEND.	12	23	34	45	1L	23	34	45		cal
RECEIVE	4-5				5-6S				100	10
RANGE	100	100	10	10	150	10	10	10		
DC 1	.7	.5	.26	.06	1.0	.10	.12	.06	2.2	~~-.01~~
DC 2	2.6	.9	-.06	.68	.2 .7	-.22	.06	18	1.5	~~-.05~~
DC 3	.6	.6	.30	.17	.8 .5	.16	.08	-.04	2.2	-.01
DC 4	2.8	.7	-.10	.03	.3	-.17	.04	.14	1.5	-.05
DC 5	.5	.6	.36	.18	.8	.23	.08	-.05		-.01
DC 6	3.0	.5	-.14	0	.4	-.15	.08	.21		-.05
DC 7	.4	.8	.42	.23	.8	.23	.08	-.14		
DC 8	3.0 f	.4 e	-.20 d	-.12 c	.4	-.16	.07			9.97
DC AVG.	46.9	18.9	7.15	5.55	18.8	9.23	4.15	3.58	99.9	10.12
AC 1	45.2	18.3	7.05	5.46	18.2	9.20	4.08	3.51	97.8	10.12
AC 2	45.2	18.3	7.05	5.46	18.2	9.20	4.08	3.51	97.8	
AC AVG.	45.2	18.3	7.05	5.46	18.2	9.20	4.08	3.51	97.8	10.12
S.P.	+7				+13					
AC NOISE	< 1				< .1					
POT RES.	1.5K				2K					

(a) .58
.58
.55
.52
.45
.50
.46
.61

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SAMINCO

LINE 2-3 HALF S SP. / DATE 8-25

PAGE

SEND	4-5	34	23	12	4-5	34	23	1-2		
RECEIVE	5-6S				4SS					
RANGE	HI	HI								
VOLTAGE	480	420	340	330	480	420	340	330		
CURRENT	4A	4A	7A	8A	4A	4A	7A	8A		
SEND	4-5	34	23	12	4-5	34	123	45	34	45
RECEIVE	345				2-35			2S		0-1S
RANGE	HI									
VOLTAGE	480	420	340	330	480	420	340	480	420	480
CURRENT	4A	4A	7A	7.87	4A	4A	7A	4A	4A	4A

FREQUENCIES .05 3

SENDER NO. MK4 66445

OPERATOR

RECEIVER NO. B-B

OPERATOR

COMMENTS:

263 X 30

CAL 100 MA, 1-2

1 A, 1-2

3 A, 1-2

$$
\begin{array}{r}
133 \\
30\overline{)4004} \\
\underline{30} \\
10 \\
\underline{9} \\
10
\end{array}
$$

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Semino

LINE 2-3 HALF N SP. 1 DATE 8-29

PAGE

SEND	12	23	12	34	23	12	45	34	23	12
RECEIVE	0-1N	1-2N		2-3N			3-4			
RANGE	1000	1000	100	1000	100	100	1600	1000	100	100
DC 1	8	8	3.4	~~29~~ 16	5.0	2.2	10	3	2.8	1.2
DC 2	12	9	3.7	~~31~~ 20	3.5	1.8	33	8	1.6	1.3
DC 3	9	9	3.6	~~30~~ 16	5.1	2.2	11	2	2.8	1.3
DC 4	11	10	3.4	~~40~~ 22	3.2	1.8	29	9	1.6	1.3
DC 5	10	8	3.6	~~33~~ 42	5.2		13	3		1.3
DC 6	12	11	3.4	~~34~~ 22	3.2		27	9		1.3
DC 7	11	10					15			
DC 8	9	8		463			25			
DC AVG.	222	216	67.7	~~463.6~~	84.8	36.0	607.4	134.7	41.4	20.6
AC 1	212	206	64.2	494 445	80.6	34.0	587	129	39.2	19.3
AC 2	212	206	64.2	~~494~~ 494 445	80.6	34.0	587	129	39.2	19.3
AC AVG.	212	~~206~~	64.2	~~494/445~~	80.6	34.0	587	129	39.2	19.3
S.P.	+15	+7		~~-8~~			+7			
AC NOISE	<.1	<.1		<.1			~.1			
POT RES.	21K	21K		31K			4K			

1st + 493 down up

2

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT _____
LINE ____ HALF ____ SP. ____ DATE ____

PAGE

SEND	45	34	23	12	45	34	23	12		Cal
RECEIVE	4-5				5-6					
RANGE	100	100	100	10	100	10	10	10	10	2.0
DC 1	3.6	1.0	.8	.12	1.4	.26	.18	.06	0	2.2
DC 2	1.5	1.4	.4	.13	.4	.08	.05	.25	-.01	2.0
DC 3	3.5	1.0	.7	.23	1.5	.33	.24	.05	-.01	2.2
DC 4	1.4	1.4	.5	.18	.4	.09	.04	.18	-.01	
DC 5	3.6	1.0	.7	.14	1.2	.29	.20	.12		
DC 6	1.4	1.4	.5	.16	.8	.05	.08	.12		
DC 7				1.0	1.0	.30	.14	.12		
DC 8				2.6	1.0	.03	.10	.12		
DC AVG.	73.9	25.9	10.2	6.68	25.5	9.94	4.44	4.13	9.99	97.8
AC 1	71.4	24.7	9.6	6.51	24.4	9.76	4.31	4.00	10.15	97.8
AC 2		24.4	9.6	6.48	24.4	9.76	4.31	4.00		
AC AVG.	71.4	24.5	9.6	6.495	24.4	9.76	4.31	4.00	X	
S.P.	-10									
AC NOISE	<.1				<.1					
POT RES.	2K				2K					

1000 Rod

1.2+	2
1.4	17
1.5	4
1.6	16
1.5	4
1.5	17
	3

294
294

shaft near
4000' S

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Simenson

LINE 2-3 HALF N SP. 1 DATE 8-4

PAGE

SEND	12	23	12	34	23	12	45	34	23	12
RECEIVE	0-1N	2N	—	2-3N	—	—	3-4	—	—	—
RANGE	HI	HI	HI	HI	HI	HI	HI	HI	HI	HI
VOLTAGE	320	340	320	420	340	330	480	420	340	340
CURRENT	8A	7A	8A	4A	7A	8A	4A	4A	7A	8A
SEND	45	34	23	12	4-5	34	23	12		
RECEIVE	4-5				5-6	—	—	—		
RANGE	HI	HI	HI	HI	HI	HI	HI	HI		
VOLTAGE	480	420	340	330	480	420	340	330		
CURRENT	4A	4A	7A	8A	4A	4A	7A	8A		

FREQUENCIES ____ ____

SENDER NO.

OPERATOR

RECEIVER NO.

OPERATOR

COMMENTS:

100 MA - 3-4

1A - 34

3A - 34 - 320V

1.01 = 10R
.98 = 100R
.98 = 1000R

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project SEMINCO Line 2-3 Field date 8/28/87 Data page_____ Comp. date_____. Comp by_____

(A) Send	45	34	75	23	34	45	12	23	34	45		
(B) Receive	0-5	1-2		2-3			3-4					
(C) n separation	1	1	2	1	2	3	1	2	3	4		
(D) I	4	4	4	7	4	4	8	7	4	4		
(E) Vdc (avg)	122.5	111.5	33.9	21.7	35.41	18.1	142.4	36.4	12.0	8.42		
(F) DCcal 1.00												
(G) Kn x 10^{-3}	3	3	12	3	12	30	3	12	30	60		
(H) ρdc=ExFxGx10^3/D	92	84	102	93	106	136	53	62	90	126		
(I) Vac Σ	116	118	35.5	22.8	32.6	16.6	133	85	11.4	8.35		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.98	.98	.98	.98	.98	.98	.98	.98	.98	1.010		
(M) ρdc/ρac=ExL/K	1.034	0.925	0.936	0.932	1.066	1.069	1.050	1.020	1.022	1.019		
(N) PFE=(M-1)(10^2)	3.4	-7.5	-6.4	-6.8	6.6	6.9	5.0	2.0	2.2	1.9(?)		
(O) MCF=(M-1)(10^5)/H	38	-89	-63	-73	62	51	94	32	24	15		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	12	23	34	45	12	23	34	45				
(B) Receive	4-5				5-6							
(C) n separation	2	3	4	5	3	4	5	6				
(D) I	8	7	4	4	8	7	4	4				
(E) Vdc (avg)	46.6	18.2	7.19	5.52	15.02	7.12	4.17	3.44				
(F) DCcal 1.00												
(G) Kn x 10^{-3}	12	30	60	105	30	60	105	168				
(H) ρdc=ExFxGx10^3/D	70	78	108	145	71	78	110	145				
(I) Vac Σ	45.1	17.6	7.06	5.44	20.1	9.8	4.54	3.68				
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.98	.98	1.01	1.01	.98	.98	1.01	1.01				
(M) ρdc/ρac =ExL/K	1.013	1.034	1.027	1.026	0.928	0.912	0.929	0.895				
(N) PFE=(M-1)(10^2)	1.3	3.4	2.7	2.6	-7.2	-8.8	-7.1	-10.5				
(O) MCF=(M-1)(10^5)/H	19	44	25	18	-103	-113	-65	-72				

0
-5
-24
-16
-23
0-10

0
-3
-5
+4
+17

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Seminco
LINE 2-3 HALF S SP. 1 DATE 8-21

PAGE

SEND	45	34	45	23	34	45	12	23	34	45
RECEIVE	0-15	1-2		2-3			3-4			
RANGE	1000	1000	100	1000	100	100	1000	100	100	100
DC 1	8	-12	-1.2	-14	3.6	2.5	9	1.8	.5	-.08
DC 2	6	-2	-2.1	-6	1.9	.1	10	1.0	.7	.52
DC 3	8	-11	-1.2	-12	3.7	2.9	11	2.0	.6	-.50
DC 4	4	-2	-2.1	-8	1.8	.1	8	.9	.6	.52
DC 5	10	-10	-1.2	-15	3.4	2.9	12	2.0	.8	-.86
DC 6	1	-2	-2.1	-11	1.7	6	6	.9	.4	
DC 7	9	-12		-12	3.8	3.0	12	2.0	.8	
DC 8	4	-1		-8	1.6	0	7	.7	.4	(a)
DC AVG.	125.5	111.5	33.9	217	35.4	18.1	142.4	36.4	12.0	8.42
AC 1	116	118	35.5	228	32.6	16.6	133	35.0	11.4	8.35
AC 2	116	118	35.5	228	32.6	16.6	134	35.0	11.4	8.35
AC AVG.	116	118	35.5	228	32.6	16.6	133.5	35.0	11.4	
S.P.	+4	+9		+4			+9			
AC NOISE	<.1	<.1		<.1			<.1			
POT RES.	1K	1.25K		.9			1.25K			

noted (-)

b
6 8
8 10
8 6
8
8
8
8
7
8
8

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Sinarca
LINE 23 HALF ____ SP. ____ DATE ____

PAGE

SEND	12	23	34	45	12	23	34	45		col
RECEIVE	4-5				5-6		.16			
RANGE	100	100	10	10	100	100	10 all		1000	100
DC 1	2.0	.6	.20	.04	-.07	-1.0	+24	-.34	8	2.6
DC 2	1.0	.6	.04	.19	-.21	-.2	+.62	-.35	8	1.5
DC 3	2.4	.6	.19	.10	-.45	-1.2	-.16	-.30	6	2.6
DC 4	.9	.6	.12	.13	-2.2	-.2	-.60	-.44	11	1.5
DC 5	2.4	.8	.12	.06	-.04	-1.1	-.22		9	
DC 6	.8	.4	.08	.14	-2.1	-.3	-.26		)	
DC 7	2.4	.9	.12	.09	-.05	-1.2	-.16			
DC 8	.9	.4	.14	.09 (h)	-.22	-.2	-.76			
DC AVG.	46.6	18.2	7.19	5.52	19.02	9.12	4.17	3.44		
AC 1	45.1	17.6	7.06	5.44	20.1	9.8	4.54	3.88	290	97.4
AC 2	45.1	17.6	7.06	5.44	20.1	9.8	4.54	3.88	290	
AC AVG.										
S.P.	-12				-12					
AC NOISE	<.1				.1-.4					
POT RES.	1.5K				2K					

NSH


c
1
2
3
5
-6
+
-6
-6

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-3 HALF S SP. 1 DATE 8/28/67

PAGE

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-1S	1-2S	——	2-3S	——	——	3-4S	——	——	——
RANGE	HI	HI	HI	HI	HI	HI	HI	HI	HI	HI (*)
VOLTAGE	470	420	470	340	420	470	330	340	420	470
CURRENT	4A	4A	4A	7A	9A	9A	8A	7A	4A	4A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL	CAL
RECEIVE	4-5	——	——	——	5-6S	——	—— (.15)*	—— (.15)*	3A	1A
RANGE	HI	HI	HI	HI	HI	HI	HI	HI	1A	
VOLTAGE	330	340	410	470	330	340	410	460		
CURRENT	8A	7A	4A	4A	8A	7A	4A	4A		

FREQUENCIES 3 .05

SENDER NO. MK4 6644-5

OPERATOR KING

RECEIVER NO. BURR-BRN

OPERATOR HENSON

*.15

COMMENTS:

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Mining Line 2-4 NE½ Field date 8-30 Data page_____ Comp. date 8-30. Comp by_____

(A) Send	12	23	12	34	23	12	45	34	23	12		
(B) Receive												
(C) n separation												
(D) I	7	7	7	6	7	7	2	6	7	7		
(E) Vdc (avg)	165.5	223	54	503	57.8	24.9	7.17	20.4	44.3	23.3		
(F) DCcal												
(G) Kn x 10^{-3}	1.5	1.5	6	1.5	6	15	1.5	6	15	30		
(H) ρ dc=ExFxGx10^3/D	36	48	46	126	50	54	5.38	204	95	99		
(I) Vac Σ	161	210	49.9	483	53.8	23.0	6.94	193.5	40.8	21.2		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.980											
(M) ρ dc/ρac=ExL/K	1.008	1.037	1.071	1.028	1.053	1.018	1.016	1.032	1.064	1.078	?	
(N) PFE=(M-1)(10^2)	0.8	3.7	7.1	2.8	5.3	1.2	1.6	3.2	6.4	7.8		
(O) MCF=(M-1)(10^5)/H	22	97	154	22	106	115	3	16	67	79		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	45	34	23	12	45	34	23	12				
(B) Receive												
(C) n separation												
(D) I	2	6	7	7	2	6	7	7				
(E) Vdc (avg)	75.3	43.0	13.7	8.19	38.8	20	6.65	—				
(F) DCcal												
(G) Kn x 10^{-3}	6	15	30	52.5	15	30	52.5	84				
(H) ρ dc=ExFxGx10^3/D	226	107	59	60	297	100	55.3	52				
(I) Vac Σ	72.7	40.3	12.9	7.99	37.3	18.7	6.58	4.30				
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.980	—	—	1.015	.980	—	1.015	—				
(M) ρdc/ρac =ExL/K	1.036	1.046	1.045	1.041	1.020	1.049	1.041					
(N) PFE=(M-1)(10^2)	3.6	4.6	4.5	4.1	2.0	4.9	4.1	—				
(O) MCF=(M-1)(10^5)/H	16	43	126	68	7	49	77					

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Seminco
LINE 2-4 HALF NE SP. 1 DATE 8-30

PAGE

SEND	12	23	12	34	23	12	45	34	23	12
RECEIVE	0-.5 NE	.5-1.0		1.0-1.5			1.5, 2.0			
RANGE	1000	1000	100	1000	100	100	1000	1000	100	100
DC 1	4	18	4.3	16	5.1	1.6	17	9	4.1	1.2
DC 2	5	9	3.6	24	3.0	2.7	30	10	4.3	3.0
DC 3	4	19	4.6	14	5.3	2.4	17	8	2.9	.8
DC 4	6	6	3.4	24	2.7	.8	29	12	3.7	3.4
DC 5	5	19	5.0	16	5.2	2.6	16	8	3.7	.8
DC 6	4	6	3.5	23	2.6	1.6	30	11	2.4	3.6
DC 7	6	19	5.0	14	5.2	1.9	14	10	3.6	.6
DC 8	2	7	3.1	25	2.6	1.7 Ⓠ	30	11	2.7 Ⓠ	3.2
DC AVG.	165.5	223	54.0	503	57.8	24.9	217	104	44.3	23.3
AC 1	161	210	49.9	483	53.8	23.0	644	194	40.4	21.2
AC 2	161	210	49.9	483	53.8	23.0	644	193	40.8	21.2
AC AVG.										
S.P.	+3	-2		-5			+15			
AC NOISE	1.7K	1.5K		2.0K			3K			
POT RES.	.1-.2	~.3		~.2-.3			~.2			

p.1 p.1

(B) 2.4
2.6
2.1
1.0
2.9
1.4
2.2
1.1

(C) .10
22
9
23
7
24
5
26
7
21
10
22
7
24
9

(D) 4.2
2.8
3.7
3.2
3.6
4.6
3.0
3.1

(A) .15
18
36
24
31
25
30
26
31
23
33
21
34
22
32
26

(E) 1.7
3.4
1.4
3.4
2.2
3.6
2.0
3.7
3.0
3.4

13
28
18
26
19
25
20
24
19
29
16
29
17

24
16
31
12
32
14
29

h 1.6
1.3
1.7
1.2

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Seminco
LINE 2-4 HALF NE SP. 1 DATE 8-30

PAGE

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	100	
RECEIVE	2.0-2.5				2.5-3.0					
RANGE	100	100	100	100	100	100			2.	
DC 1	2.7	3.3			1.4	1.5			2.2	
DC 2	2.6	3.1			1.9	1.1			1.8	
DC 3	2.5	2.7			1.0	1.6			2.2	
DC 4	2.7	2.8			1.9	1.2			1.8	
DC 5	3.2	3.4			1.1	1.4				
DC 6	2.7	3.0			1.8	1.1				
DC 7	3.0	3.4			1.76	1.5				
DC 8	2.4	1.8c	(F)	(G)	1.64	1.0	(I)			
DC AVG.	75.3	43.0	13.75	8.19	38.8	20.0	6.65	—	99.8	
AC 1	72.7	40.3	12.9	7.99	37.3	18.7	6.57	4.30	97.8	
AC 2	72.7	40.3	12.9	7.99	37.3	18.7	6.58	4.30	97.8	
AC AVG.										
S.P.	0				+13					
AC NOISE	.1-.2				~0.1					
POT RES.	1K				1K					

(f) .15

2
15

3
12
6
12
4
14
2
14
3
13
3
15
0
18
-1
15
3
12

(g) .15

16
18
28
8
40
12
16
38
-2
52
-10
50
-4

36
10
28
10
30
14
20
24
16
9
43
-2

(j)

4
21
42
0
29
28
4
44
-11

4
48
-14
66
-28
38
-34
80
-36
78
-34

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO 8-30-66

LINE 2-4 HALF NW SP. 1 DATE

PAGE

SEND	12	23	12	34	23	12	45	34	23	12 X
RECEIVE	0-.5N	.5-1N	—	1-1.5N	—	—	1.5-2N	—	—	
RANGE	HI	HI	HI	HI	HI	HI .15	HI	HI	HI	
VOLTAGE	200	290	200	340	290	200	290	340	290	
CURRENT	7A	7A	7A	6A	7A	7A	2A	6A	7A	
SEND	45	84	23	12	45	34	23	12 X	CAL	
RECEIVE	2-2.5N	.15	—	—	2.5-3N	—	— .15	—	1A	2-3
RANGE	HI	HI	HI	HI	HI	HI	HI	HI		
VOLTAGE	290	340	290	200	290	340	290	200		
CURRENT	2A	6A	7A	7A	2A	6A	7A	7A		

FREQUENCIES .05 3

SENDER NO. 6644-5

OPERATOR

RECEIVER NO. B-B

OPERATOR

COMMENTS:

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project EMINCO Line 2-4 Field date 8-30-67 Data page_____ Comp. date_____. Comp by_____

(A) Send	45	34	45	23	34	15	12	23	34	45		
(B) Receive	0-.5 S	.5-1.0	—	1.0-1.5	—	—	1.5-2.0	—	—	—		
(C) n separation	1.5	1.5	6	1.5	6	15	1.5	6	15	30		
(D) I	4	6	4	7	6	4	7	7	6	4		
(E) Vdc (avg)	1.5	1.5	1.6	1.5	1.5	1.5	1.5			1.5		
(F) DCcal	124	144.7	31.2	289.6	51.1	17.5	277.5	80.2	23.9	9.57		
(G) Kn x 10^{-3}	1.000											
(H) ρdc=ExFxGx10^3/D	46	36	47	62	51	66	60	69	58	72		
(I) Vac Σ	117	140	28.8	282	49	16	270	778	22.2	9.09		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.980									1.015		
(M) ρ dc/ρac=ExL/K	1.040	1.012	1.062	1.006	1.023	1.071	1.007	1.011	1.033	1.070		
(N) PFE=(M-1)(10^2)	4.0	1.2	6.2	0.6	2.3	7.1	0.709	1.1	3.3	7.0		
(O) MCF=(M-1)(10^5)/H	87	~~83~~ 33	132	10 7	45	108	12	18	57	97		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	12	23	34	45	12	23	34	45		Calc		
(B) Receive	2.0-2.5	—	—	—	2.5-3.0	—	—	—		10	10	1000
(C) n separation	6	15	30	52.5	15	30	52.5	84				
(D) I	7	7	6	4	7	7	6	4				
(E) Vdc (avg)										9.98	99.85	300
(F) DCcal	64.4	28.1	11.0	5.59	28.3	16.8	8.17	4.46				
(G) Kn x 10^{-3}												
(H) ρdc=ExFxGx10^3/D	65	60	55	73	60	73	70	94				
(I) Vac Σ	62.1	27.2	10.4	5.32	27.1	16.2	7.98	4.24		10.14	97.8	295
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$										1.016	.980	.983
(L) AC-DC cal.	.980	—	—	1.015	.980	—	1.015	—				
(M) ρdc/ρac =ExL/K	1.016	1.012	1.037	1.067	1.023	1.016	1.040	1.070				
(N) PFE=(M-1)(10^2)	1.6	1.2	3.7	6.7	2.3	1.6	4.0	7.0				
(O) MCF=(M-1)(10^5)/H	25	20	67	92	38	22	57	83				

3

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Seminew
LINE 2-4 HALF SW SP. 1 DATE 8-30

PAGE

SEND	45	34	45	23	34	45	12	23	34	45
RECEIVE	6.5 SW	5-10		10-7.5		→	1.5-2.0			
RANGE	1000	1000	100	1000	100	100	1000	100	100	10
DC 1	7	10	2.9	6	2.4	1.6	7	2.1	1.2	.74
DC 2	9	-1	2.0	8	1.9	1.6	10	2.8	1.2	.24
DC 3	5	10	2.8	10	2.5	1.6	4	2.1	1.2	.68
DC 4	10	-2	1.4	7	2.0	1.3	13	2.7	1.0	.27
DC 5	3	10	2.8	10	2.5	1.6	4	2.2	1.2	.82
DC 6	10	2	2.0	6	2.0	1.1	14	2.6	1.2	.16
DC 7	3	9	2.7	9	2.8	2.0	6	2.2	1.4	.70
DC 8	9	0	2.0	5	2.0	2.4	14	2.7	1.2	.07Ω
DC AVG.	124	144.7	31.2	289.6	51.1	17.5	277.5	80.2	23.4	9.57
AC 1	117	140	28.8	282	49.0	16.0	270	77.8	22.2	9.09
AC 2	117	140	28.8	282	49.0	14.0	270	77.8	22.2	9.09
AC AVG.	117	140	28.8	282	49.0	16.0	270	77.8	22.2	9.09
S.P.	+4	+8		+1			-4			
AC NOISE	<.1	<.1		<.1			<.1			
POT RES.	1.5K	1.5K		2K			1K			

,13 (b)
30
,20
,25
,17
29

1000 K
< 10 –
< 0 –
< 10 –
– 2 –
< 12
4
9 300
295
295

4

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT
LINE 2-4 HALF SW SP. 1 DATE

PAGE

SEND	12	23	34	45	12	23	34	45		
RECEIVE	2.0-25				2.5-30					cal
RANGE	100	100	100	10	100	100	10	10	10	100
DC 1	2.6	1.2	1.0	.22	2.2	.2	.13	.18	.01	2.2
DC 2	1.9	.3	.2	.28	.2	.9	.24	.26	-.05	1.8
DC 3	2.6	1.4	1.0	.23	2.2	.2	.17	.19	+.02	2.2
DC 4	2.0	.4	.3	.29	.1	1.0	.29	.25	-.06	1.9 ok
DC 5	2.7	1.4	.9	.31	2.3	.3	.18	.06	+.02	
DC 6	2.0	.2	.2	.19	.1	1.0	.24	.37	-.06	
DC 7	2.6	1.4	1.0	.30	2.3	.3	.13	.05		
DC 8	1.9	.5	.2	.36	.1	1.0	.21	.32		
DC AVG.	64.4	28.1	11.0	5.59	28.3	16.8	8.17	4.46	2.88	99.85
AC 1	62.1	27.2	10.4	5.32	27.1	16.2	7.98	4.24	1.44	97.8
AC 2	62.1	27.2	10.4	5.32	27.1	16.2	7.98	4.24	10.14	97.8
AC AVG.	62.1	27.2	10.4	5.32	27.1	16.2	7.98	4.24	10.14	97.8
S.P.	+7				0					
AC NOISE	2.1				.01					
POT RES.	1K				1K					

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO 8-30-66

LINE 2-1 HALF SW1/4 SP. 1 DATE

PAGE

SEND	45	34	45	23	34	45	12	23	34	45
RECEIVE	0-.5S	.5-1S	—	1-1.5S	—	—	1.5-2S	—	—	—
RANGE	LOW	HI	LOW	HI	HI	LOW	HI	HI	HI	LOW
VOLTAGE	580	340	580	290	340	590	200	290	340	590
CURRENT	4A	6A	4A	7A	6A	4A	7A	7A	6A	4A
SEND	12	23	34	45	12	23	34	45	CAL	
RECEIVE	2-2.5S	—	—	—	2.5-3S	—	—	—	100MA	1-2
RANGE	HI	HI	HI	LOW	HI	HI	HI	LOW	1A	1-2
VOLTAGE	200	290	340	590	200	290	340	490	3A	1-2
CURRENT	7A	7A	6A	4A	7A	7A	6A	4A		

FREQUENCIES .05 .3

SENDER NO. 6644-5

OPERATOR

RECEIVER NO. B-B

OPERATOR

COMMENTS:

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Mommy Line 2-S SW Field date_____ Data page_____ Comp. date 9-6-67. Comp by_____

(A) Send	45	34	45	23	34	45	12	23	34	45		
(B) Receive	0-5	5-10	—	10-15	—	—	15-20	—	—	—		
(C) n separation												
(D) I	2.5	5	3	8	5	3.5	8	8	5	3.5		
(E) Vdc (avg) .970												
(F) DCcal	88	141	27	289.7	47	15.5	191.3	63.1	16.2	6.78		
(G) Kn x 10^{-3}	1.5	1.5	6	1.5	6	30	1.5	6	15	30		
(H) ρdc=ExFxGx10^3/D	51	41	52	53	55	129	35	96	47	56		
(I) Vac Σ	80.3	129.5	24.2	274	43.4	13.8	180	60.5	14.6	6.10		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. .950												
(M) ρ dc/ρac=ExL/K	1.041	1.034	1.060	1.004	1.029	1.067	1.010	1.990	1.054	1.056		
(N) PFE=(M-1)(10^2)	4.1	3.4	6.0	.4	2.9	6.7	1.0	+1	5.4	5.6		
(O) MCF=(M-1)(10^5)/H	80	83	115	8.	53	52	29	-22	115	100		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	12	23	34	45	12	23	34	45	Cal			
(B) Receive	20-25	—	—	—	25-30	—	—	—				
(C) n separation												
(D) I	7	5	5	3.5	8	8	5	3				
(E) Vdc (avg)	83.6	26.3	13.6	6.91	26	12.9	6.02	3.06	257			
(F) DCcal									.973			
(G) Kn x 10^{-3}	6	15	30	52.5	15	30	52.5	84				
(H) ρ dc=ExFxGx10^3/D	70	77	79	101	40	51	61	83				
(I) Vac Σ	78.8	23.1	12.2	6.21	24.5	13.2	5.90	2.77	245			
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K	1.008	1.995	1.059	1.057	1.008	1.000	1.059	1.049				
(N) PFE=(M-1)(10^2)	.8	-.5	5.5	5.7	.8	0	5.9	4.9				
(O) MCF=(M-1)(10^5)/H	11	-6	75	6	20	0	97	59				

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT _____
LINE 2-5 HALF SW SP. 1 DATE 9/6

SEND.	12	23	34	45	12	23	34	45	Cal	
RECEIVE	100	30	30	10	30	30	10	3		
RANGE	85.8	26.5	13.6	7.10	25.2	15.1	6.00	3.15		
DC 1	80.1	25.9	13.6	6.77	26.8	12.7	6.12	2.90		
DC 2	85.7	26.5	13.5	7.02	25.1	15.1	5.90	3.16		
DC 3	80.0	26.0	13.8	6.83	26.9	12.6	6.18	2.96		
DC 4	85.9	26.5	13.4	6.98	25.0	15.2	5.83	3.16		
DC 5	80.0	26.0	13.8	6.86	27.0	12.5	6.24	3.06		
DC 6	85.8	26.4	13.4	6.85			5.82	3.05	257	
DC 7				7.03			6.34	3.07	257	
DC 8				6.75			5.78	3.06		
DC AVG.	83.6	25.5	13.6	6.91	26.0	13.9	6.02	3.06		
AC 1	78.8	25.1	12.2	6.21	24.5	13.2	5.40	2.76	245	
AC 2	78.7	25.1	12.2	6.21	24.5	13.2	5.40	2.77	245	
AC AVG.	78.8	25.1	12.2	6.21	24.5	13.2	5.40	2.77		
S.P.	+1.2				-1.7 10					
AC NOISE	.05				.04					
POT RES.	800				600					

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-5 HALF SW SP. 1 DATE 9-6-6

SEND.	4 5	3 4	4 5	2 3	3 4	4 5	1 2	2 3	3 4	4 5
RECEIVE										
RANGE	100	300	30	300	100	30	300	100	30	10
DC 1	86.3	137	26.6	294.0	49.3	17.0	188	68.8	17.0	7.02
DC 2	91.0	145	27.5	285.0	46.2	14.2	195	57.7	15.5	6.57
DC 3	87.0	136	26.6	295.0	49.4	16.9	187	68.9	17.0	7.10
DC 4	91.6	146	27.4	284.0	46.2	14.2	195	57.4	15.4	6.52
DC 5	86.3	136	26.7	296	49.5	16.9	187	69.0	17.1	7.13
DC 6	91.0	146	27.3	284	46.2	14.0	196	57.4	15.3	6.42
DC 7										7.10
DC 8										6.40
DC AVG.	88.0	141.0	27.0	289.7	47.0	15.5	191.3	63.1	16.2	6.78
AC 1	80.3	129.0	24.2	274.0	43.4	13.8	180.	60.5	14.6	6.10
AC 2	80.3	130.0	24.2	274	43.3	13.8	180	60.4	14.6	6.16
AC AVG.	80.3	129.5	24.2	274	43.4	13.8	180	60.5	14.6	6.16
S.P.	—	+8.5	—	-10.5			-8.6			
AC NOISE	~~0~~	.06		.04			.04			
POT RES.	500	500	—	500			500			

1.5
6
15
30

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-5 HALF SW SP. 1 DATE 9/6/67

PAGE

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-500	500-10	→	10-15	→	→	15-20	→	→	→
RANGE	Lo	Hi	Lo	Hi	Hi	Lo	Hi	Hi	Hi	Lo
VOLTAGE	570	500	690	280	510	800	280	290	510	800
CURRENT	2.5A	5A	3A	8A	5A	3.5A	8A	8A	5A	3.5A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	Cal	
RECEIVE	20-25	→	→	→	25-30	→	→	→		
RANGE	Hi	Hi	Hi	Lo	Hi	Hi	Hi	Lo	Hi	
VOLTAGE	240	180	500	800	280	280	500	690	100	
CURRENT	7A	5A	5A	3.5A	8A	8A	5A	3A	2.5A	

FREQUENCIES 3.0 .05

SENDER NO. 6644-S

OPERATOR Cruze

RECEIVER NO. 10661-R

OPERATOR Henson

COMMENTS:

1-2 — 8 2.66 x 30

2-3-8

3-4-5 1.66 x 3

4-5 3.5

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project SEMINCO Line 2-5 NE½ Field date 9/6/67 Data page_____ Comp. date 9/6/67 . Comp by_____

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
(B) Receive	0-5 NE	5-10 NE	→	10-15 NE	→	→	15-20 NE	→	→	→		
(C) n separation	1	1	2	1	2	3	1	2	3	4		
(D) I	8	8	8	3	8	8	3	5	8	8		
(E) Vdc (avg)	224	287	69.7	950	106.3	45.9	988	511	40.7	21.6		
(F) DCcal 1.001	→	→	→	→	→	→	→	→	→	→		
(G) Kn x 10^{-3}	1.5	1.5	6	1.5	6	15	1.5	6	15	30		
(H) ρ dc=ExFxGx10^3/D	42	54	52	475	80	86	494	613	76	81		
(I) Vac Σ	212	267	64.0	914	92.8	42.5	96.2	455	35.5	15.9		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. .980	→	→	→	→	→	→	→	→	→	→		
(M) ρ dc/ρac=ExL/K	1.035	1.053	1.067	1.019	1.065	1.058	1.007	1.012	1.059	1.065		
(N) PFE=(M-1)(10^2)	3.5	5.3	6.7	1.9	6.5	5.8	0.7	1.2	5.9	6.5		
(O) MCF=(M-1)(10^5)/H	83	98	110	4	81	67	1	2	78	80		

Project SEMINCO Line 2-5 NE½ Field date 9/6/67 Data page_____ Comp. date 9/6/67 Comp by_____

(A) Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		Cal		
(B) Receive	20-25 NE	→	→	→	25-30 NE	→	→	→				
(C) n separation	2	3	4	5	3	4	5	6				
(D) I	2.5											
(E) Vdc (avg)	101											
(F) DCcal												
(G) Kn x 10^{-3}	6											
(H) ρ dc=ExFxGx10^3/D	242											
(I) Vac Σ	—											
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K												
(N) PFE=(M-1)(10^2)												
(O) MCF=(M-1)(10^5)/H												

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT

LINE 2-5 HALF 2-5 SP. DATE

SEND	12	23	12	34	23	12	4.5	34	23	12
RECEIVE	0-.5	.5-1.0	—	1.0-1.5	—	—	1.5-2.0	—	—	—
RANGE	1000	1000	100	1000	100	100	1000	1000	100	100
DC 1	20	14	5.1	41	8.8	3.5	24	14	3.0	1.3
DC 2	5	23	6.3	31	8.1	3.1	27	13	3.6	1.8
DC 3	20	14	4.9	40	8.7	3.7	24	18	2.9	1.3
DC 4	5	27	6.5	32	8.3	2.9	27	13	3.5	2.0
DC 5		13	4.7	39	8.1	3.6			3.0	1.1
DC 6		27	6.5	32	8.7	3.4			3.5	2.1
DC 7						3.7	26			1.1
DC 8						3.2				1.8
DC AVG.	224	287	69.7	950	106.3	45.9	988	510	42.7	21.6
AC 1	212	267	64.0	914	97.8	42.5	962	495	39.5	19.9
AC 2	212	267	64.0	914	97.8	42.5	962	495	39.5	19.9
AC AVG.										
S.P.	-5	-8	—	-1	—	—	+2	—	—	—
AC NOISE	.03	.03	—	.1	—	—	.06	—	—	—
POT RES.	700	1.2K	—	2.1K	—	—	1.5K	—	—	—

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT _____
LINE ____ HALF ____ SP. ____ DATE ____

SEND	45	34	23	12	45	34	23	12		Cal
RECEIVE	2.0-2.5				2.5-3.0					
RANGE										101
DC 1	2									2.0
DC 2	3									2.4
DC 3										2.0
DC 4										2.4
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1	101									96.8
AC 2										96.8
AC AVG.										
S.P.										
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-S HALF NE SP. 1 DATE 9/6/82

PAGE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-5	5-10	→	10-15	→	→	15-20	→	→	→
RANGE	Hi	Hi	Hi	Hi	Hi	Hi	Lo	Hi	Hi	Hi
VOLTAGE	280	280	280	300	280	280	680	500	280	280
CURRENT	8A	8A	8A	3A	8A	8A	3A	5A	8A	8A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Cal	
RECEIVE	20-25	→	→	→	25-30	→	→	→		
RANGE	Lo								Hi	
VOLTAGE	560								280	
CURRENT	2.5A								1A	

FREQUENCIES 3.0 .105

SENDER NO. 6644-S

OPERATOR Cruze

RECEIVER NO. 1066-R

OPERATOR Henson

COMMENTS:

1-2 8

2-3 - 8

3-4 - 5

4-5 - 3.5

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project SEMINCO Line 2-6 SE 1/2 Field date 8/31/67 Data page_____ Comp. date 8/31/67 . Comp by_____

(A) Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
(B) Receive	1650-1800	1800-1950	→	1950-2100	→	→	2100-2250	→	→	→		
(C) n separation	1	1	2	1	2	3	1	2	3	4		
(D) I	1	4	4	4	4	4	6	4	4	4		
(E) Vdc (avg)	354	987	327	428	183	87.1	774.5	171.2	116	67		
(F) DCcal 1.000												
(G) Kn x 10^{-3}	.45	.45	1.8	.45	1.8	4.5	.45	1.8	4.5	9.0		
(H) ρ dc=ExFxGx10^3/D	159	111	147	48	82	98	58	77	130	151		
(I) Vac Σ	321	908.5	302	406	166	79.3	724	162	107.5	61.6		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. .980												
(M) ρ dc/ρac=ExL/K	1.081	1.066	1.061	1.032	1.081	1.078	1.050	1.035	1.059	1.060		
(N) PFE=(M-1)(10^2)	8.1	6.6	6.1	3.2	8.1	7.8	5.0	3.5	5.9	6.0		
(O) MCF=(M-1)(10^5)/H	51	59	42	67	99	80	86	46	45	40		

Project SEMINCO Line 2-6 SE 1/2 Field date 8/31/67 Data page_____ Comp. date 8/31/67 Comp by_____

(A) Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		Cal	Cal
(B) Receive	2250-2400	→	→	→	2400-2550	→	→	→			
(C) n separation	2	3	4	5	3	4	5	6			
(D) I	6	4	4	4	6	4	4	4		1	3
(E) Vdc (avg)	230.9	127.6	26.2	24.6	115.1	77.9	18.9	18.8			
(F) DCcal 1.00											
(G) Kn x 10^{-3}	1.8	4.5	9.0	15.75	4.5	9.0	15.75	25.2			
(H) ρ dc=ExFxGx10^3/D	69	144	59	97	86	176	74	118			
(I) Vac Σ	219	118	24.6	23.4	108	70.8	17.5	17.6			
(J) AC noise x 2											
(K) Vac (corr) = $\sqrt{I^2 - J^2}$											
(L) AC-DC cal. .980											
(M) ρdc/ρac =ExL/K	1.034	1.063	1.045	1.066	1.044	1.078	1.059	1.047			
(N) PFE=(M-1)(10^2)	3.4	6.3	4.5	6.6	4.4	7.8	5.9	4.7			
(O) MCF=(M-1)(10^5)/H	99	94	76	68	51	44	80	40			

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Seminco
LINE 2-6 HALF SE SP. 1 DATE 8-31

PAGE

SEND	45	34	45	23	34	45	12	23	34	45
RECEIVE	1650-1750 SE	1800-1950	—	1750-2100	—	—	2100-2250	—	—	—
RANGE	1000	1000	1000	1000	1000	100	1000	1000	1000	100
DC 1	32	88	33	20	14	8.9	58	4	8	7.4
DC 2	36	20	17	34	20	6.7	43	15	8	3.5
DC 3	25	88	32	20	14	8.9	53	4	10	7.5
DC 4	38	20	18	34	17	6.6	46	17	8	3.4
DC 5	24	88	32	16	15	8.9	55	1	10	7.6
DC 6	40		18	36	22	6.7	45	17	11	3.3
DC 7	25			18	13	8.9	58	3	10	
DC 8	43			35	20	6.7	45 ✓	13	14	
DC AVG.	354	987	327	428	193	87.1	774.5	17.2	116	67.0
AC 1	321	908	302	406	166	79.3	724	162	108 @	61.6
AC 2	321	909	302	406	166	79.4	724	162	107	61.6
AC AVG.										
S.P.	-2	0	—	0	—	—	6	—	—	—
AC NOISE	—	~.1	—	~.1	—	—	~.1	—	—	—
POT RES.	2K	1.5K	—	1.5K	—	—	1K	—	—	—

act. 1

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36 2-7
14 2-1
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20 10
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HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-6 HALF SE SP. 1 DATE 8/31/67

PAGE

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	1650-1800	1800-1950	→	1950-2100	→	→	2100-2250	→	→	→
RANGE	Hi	Lo	Lo	Lo	Lo	Lo	Hi	Lo	Lo	Lo
VOLTAGE	190	600	730	700	770	730	420	700	760	720
CURRENT	1A	4A	4A	4A	4A	4A	6A	4A	4A	4A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	Cal	Cal
RECEIVE	2250-2400	→	→	→	2400-2550	→	→	→		
RANGE	Hi	Lo	Lo	Lo	Hi	Lo	Lo	Lo	Hi	Lo
VOLTAGE	420	590	760	730	410	580	770	720	200	600
CURRENT	6A	4A	4A	4A	6A	4A	4A	4A	1A	3A

FREQUENCIES 3.0 .05

SENDER NO. 6644-5

OPERATOR Cruze

RECEIVER NO. Burr-Brown

OPERATOR Henson

COMMENTS:

4-5 – 2½

3-4 – 2½

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Séminco
LINE 2-L HALF NW SP. 1 DATE

PAGE

SEND	45	34	23	12	45	34	23	12	01	
RECEIVE	1050 - 900				900 - 750					
RANGE	1000	1000	100	100	1000	100	100	100		
DC 1	14	8	1.5	1.2	5	7.6	1.4	1.2	3	1.5
DC 2	12	13	1.7	1.1	8	6.6	1.5	1.2	7	2.0
DC 3	11	4	1.5	1.1	6	7.9	1.4	1.3	3 ?	1.9
DC 4	12	14	1.7	1.1	10	6.6	1.4	1.1	5	2.0
DC 5	12	4	1.6	1.2	4	8.0	1.4	1.4		
DC 6	13	14	1.6	1.2	8	6.4	1.4	1.2		
DC 7	12	6		1.3	7	7.7	1.2	1.3		
DC 8	9	14		1.3 ⓔ	9	6.3	1.2 ⓓ	1.1 ⓑ		
DC AVG.	231.7	1276	26.2	24.6	115.1	77.9	18.9	18.8	303.5	99.6
AC 1	219	118	24.6	23.4	108	70.8	17.5	17.6	283	
AC 2	219	118	24.6	23.4	108	70.8	17.5	17.6	299 ?	97.6
AC AVG.	219	118	24.6	23.4	108	70.8	17.5	17.6	291 ?	97.6
S.P.	-5				-8					
AC NOISE	2.1				2.1					
POT RES.	2.5K				2.5K					

(c)	(d)	(e)
12	11	10
11	12	12
12	7	10
10	13	10
12	10	9
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12	12	9
10	9	11
13	9	10
10	8	11
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12	10	9
	11	11
	11	9
	8	11
	14	9
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	10	
	12	

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project SEMINCO Line 2-6NW Field date_____ Data page_____ Comp. date_____. Comp by_____

(A) Send	1 2	2 3	1 2	3 4	2 3	1 2	4 5	3 4	2 3	1 2		
(B) Receive	1650 1500	1000	1300	1350-1200			1200	1950				
(C) n separation	1	1	2	1	2	5	1	2	3	4		
(D) I	3	2	6	4	3	6	4	4	3	6		
(E) Vdc (avg)	735.4	761	508.7	1076.2	81.2	53.7	666	245.5	37.8	3.8		
(F) DCcal 1.00												
(G) Kn x 10^{-3}	.45	.45	1.8	.45	1.8	9.5	.45	1.8	4.5	9.0		
(H) ρ dc=ExFxGx10^3/D	110	152	152	121	49	41	75	111	57	48		
(I) Vac Σ	676	692	468	978	73.6	49.6	627	226	35.2	29.8		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.980											
(M) ρ dc/ρac=ExL/K	1.066	1.079	1.067	1.080	1.073	1.059	1.041	1.068	1.052	1.096		
(N) PFE=(M-1)(10^2)	6.6	7.9	6.7	8.0	7.3	5.9	4.1	6.8	5.2	4.6		
(O) MCF=(M-1)(10^5)/H	56	52	44	66	149	144	55	61	91	96		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	1 2	2 3	3 4	4 5	1 2	2 3	3 4	4 5				
(B) Receive	2250 - 2400				2400-2500							
(C) n separation	2	3	4	5	3	4	5	6				
(D) I	4	4	3	6	4	4	3	6				
(E) Vdc (avg)	277	83.1	72.3	47.5	60.1	23.1	23.4	16.4				
(F) DCcal 1.00												
(G) Kn x 10^{-3}	1.8	4.5	9.0	15.75	4.5	9.0	15.75	25.2				
(H) ρ dc=ExFxGx10^3/D	125	93	216	125	68	52	123	69				
(I) Vac Σ	251	76.7	64.7	42.8	55.6	21.4	21.3	15.2				
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. .980												
(M) ρdc/ρac =ExL/K	1.082	1.062	1.095	1.089	1.060	1.059	1.078	1.059				
(N) PFE=(M-1)(10^2)	8.2	6.2	9.5	8.9	6.0	5.9	7.8	5.9				
(O) MCF=(M-1)(10^5)/H	66	67	44	71	88	114	63	86				

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53 9 | 53

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15.5
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8 | 140
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16

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Simcoe

LINE 2-C HALF NW SP. 1 DATE 8-31

PAGE

SEND	12	23	34	45	12	23	34	45		
RECEIVE	2250	3000			2400	2550				cal
RANGE	1000	100	100	100	100	100	100	100		
DC 1	26	6.9	8.0	4.9	4.4	1.3	3.0	1.2	2.0	8
DC 2	18	6.0	7.7	4.6	4.6	1.6	1.3	1.3	2.1	6
DC 3	29	6.9	8.0	4.8	4.3	1.0	2.5	1.2	2.0	8
DC 4	19	6.2	7.7	4.6	4.8	1.8	1.3	1.3	2.1	3
DC 5	28	6.7	8.0	5.0	4.0	.9	3.0	1.2		12
DC 6	18	6.2	7.6	4.6	5.0	1.8	1.3	1.3		2
DC 7	26	6.6	8.0			.8			DC - 1.50	
DC 8	20	6.2	7.8			1.8			AC-DC - .980	
DC AVG.	277	83.1	72.3	47.5	60.1	23.1	23.4	16.4		
AC 1	251	76.7	64.7	42.8	55.6	21.4	21.3	15.2	97.5	292
AC 2	251	76.7	64.7	42.8	55.6	21.4	21.3	15.2	97.5	292
AC AVG.										
S.P.	0				+11					
AC NOISE	~.1				~.1					
POT RES.	19				7K					

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Seminoe
LINE 26 HALF NW SP. 1 DATE 8-31

PAGE

SEND	12	23	12	34	23	12	45	34	23		12	
RECEIVE	1650-1500	1500 —	1350 —	1350-1200	—	—	1200-1050	—	—		—	
RANGE	1000	1000	1000	1000	100	100	1000	1000	100		100	
DC 1	1.6	65	48	100	8.2	4.0	41	18	2.4	3.6	2.0	2.1
DC 2	54	71	36	98	7.1	4.4	37	19	2.7	4.5	1.6	1.4
DC 3	64	69	46	100	8.2	3.8	40	18	2.6	2.6	2.1	2.2
DC 4	62	70	35	93	7.2	4.4	38	21	2.6	2.5	1.6	1.5
DC 5	64	64	45	102	8.1	3.8	38	18	2.4	2.1	2.4	2.4
DC 6	61	72	37	92	7.2	4.4	38	22	2.4	2.6	1.8	1.5
DC 7	60	65	45		8.0	3.7	38	17	2.3	2.4	2.4	2.2
DC 8	60	72	34		7.2	4.3	40	23	2.2	2.4	1.6	1.4
DC AVG.	735.4	761	508.7	1076.2	81.2	53.7	666	245.5	37.8		31.7	
AC 1	675	692	468	998	736	49.6	627	226	35.2		29.8	
AC 2	676	692	467	977	73.6	49.6	627	226	35.2		29.8	
AC AVG.												
S.P.	-1	+15	—	-7	—	0	-3	—	—		—	
AC NOISE	2.1.2	2.4	—	2.4	—	—	.1	—	—		—	
POT RES.	4K	4K	—	2.5K	—	—	2.5K	—	—		—	

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15

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-6 HALF NW SP. 1 DATE 8/31/6

PAGE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-8
RECEIVE	1650-1500	1500-1350	→	1350-1200	→	→	1200-1050	→	→	→
RANGE	Lo	Lo	Hi	Lo	Hi	Hi	Lo	Lo	Hi	Hi
VOLTAGE	200	290	410	740	420	400	730	750	430	400
CURRENT	3A	2A	6A	4A	3A	6A	4A	4A	3A	6A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Cal 4-5	Cal 4-5
RECEIVE	1050-900	→	→	→	900-750	→	→	→		
RANGE	Lo	Lo	Hi	Hi	Lo	Lo	Hi	Hi	Lo	Hi
VOLTAGE	720	740	420	400	730	730	410	400	520	180
CURRENT	4A	4A	3A	6A	4A	4A	3A	6A	3A	1A

FREQUENCIES 3.0 1.05

SENDER NO. 6644-5

OPERATOR Cruze

RECEIVER NO. Burr-Brown

OPERATOR Henson

COMMENTS:

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Mowry Line 2-7 NE¼ Field date 9/5/67 Data page_____ Comp. date 9/5/67 . Comp by RT+

(A) Send	12	23	12	34	23	12	45	34	23	12		
(B) Receive	0-.15N	15-30	———	30-45	———	———	45-60	———	———	———		
(C) n separation												
(D) I	3.5	3.5	3.5	1.3	3	4	2.5	1.5	3.5	3		
(E) Vdc (avg)	313	317	99.5	282	84	61	613	85.5	52.7	28.95		
(F) DCcal .960	———	———	———	———	———	———	———	———	———	———		
(G) Kn x 10^{-3}	.45	.45	1.8	.45	1.8	4.5	.45	1.8	4.5	9.0		
(H) ρ dc=ExFxGx10^3/D	39	39	49	94	51	66	106	102	65	84		
(I) Vac Σ	282	283	88.8	250	78	54	530	74	46	25.4		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. .945	———	———	———	———	———	———	———	———	———	———		
(M) ρ dc/ρac=ExL/K	1.050	1.059	1.059	1.067	1.066	1.068	1.092	1.092	1.082	1.079		
(N) PFE=(M-1)(10^2)	5.0	5.9	5.9	6.7	6.6	6.8	9.2	9.2	8.2	7.9		
(O) MCF=(M-1)(10^5)/H	128	151	120	71	129	103	87	90	126	94		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	45	34	23	12	45	34	23	12		Col		
(B) Receive	.10-.75	———	———	———	.75-.90	———	———	———				
(C) n separation												
(D) I	2.5	1.4	3.5	4	2.5	2	2.5	3		2.5		
(E) Vdc (avg)	157.5	29.6	25.3	15.3	56.0	17.1	7.3	8.1		257		
(F) DCcal	———	———	———	———	———	———	———	———		.972		
(G) Kn x 10^{-3}	109	91	63	73	97	74	56	65				
(H) ρ dc=ExFxGx10^3/D	1.8	4.5	9.0	15.75	4.5	9.0	15.75	25.2				
(I) Vac Σ	142	26.7	23.1	17.7	50	15.5	8.49	7.35		242		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	———	———	———	———	———	———	———	———		.941		
(M) ρdc/ρac =ExL/K	1.049	1.048	1.034	1.031	1.057	1.042	1.036	1.037		1.000		
(N) PFE=(M-1)(10^2)	4.8	4.8	3.4	3.1	5.7	4.2	3.6	3.7				
(O) MCF=(M-1)(10^5)/H	44	53	54	42	59	57	64	57				

$$\frac{(.941)\,257}{242} = 1.000$$

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Mowry Line 2-7 SE½ Field date 5/5/67 Data page_____ Comp. date 5/9/ . Comp by KMH

					*				*			
(A) Send	45	34	45	23	34	45	12	23	34	45		
(B) Receive	0-.15	.15-.30	——	.30-.45	——	——	.45-.60	——	——	——		
(C) n separation												
(D) I	2.5	2	2.5	3.5	2	2.5	4	3.5	2	2.5		
(E) Vdc (avg)	227.5	173.5	69.6	215.7	51.4	30.8	256.7	65.5	24.4	16.2		
(F) DCcal .960	——	——	——	——	——	——	——	——	——	——		
(G) Kn x 10^{-3}	.45	.45	1.8	.45	1.8	4.5	.45	1.8	4.5	9		
(H) ρ dc=ExFxGx10^3/D	39	37	48	27	44	53	28	35	53	56		
(I) Vac Σ	205	158	62.6	203	46.3	27.5	236.8	64.0	22.0	14.4		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. .945	——	——	——	——	——	——	——	——	——	——		
(M) ρ dc/ρac=ExL/K	1.040	1.039	1.051	1.020	1.049	1.060	1.025	1.034	1.048	1.063		
(N) PFE=(M-1)(10^2)	4.0	3.9	5.1	2.0	4.9	6.0	2.5	3.4	4.8	6.3		
(O) MCF=(M-1)(10^5)/H	103	105	106	74	111	113	89	97	90	112		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

				*								
(A) Send	12	23	34	45	12	23	34	45		cal		
(B) Receive	.00-.15	——	——	——	.15-.30	——	——	——				
(C) n separation												
(D) I	4	3.5	2	2.5	3.5	3.5	2	2.5		.5		
(E) Vdc (avg)	70.2	28.5	11.5	8.87	27.5	14.3	6.77	5.30		82.8		
(F) DCcal	——	——	——	——	——	——	——	——		.967		
(G) Kn x 10^{-3}	1.8	4.5	9.0	15.75	4.5	9.0	15.75	25.2				
(H) ρ dc=ExFxGx10^3/D	30	35	50	54	34	35	51	51				
(I) Vac Σ	64.8	26.0	10.4	7.57	25.4	13.2	6.14	4.80		78.8		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	——	——	——	——	——	——	——	——		.952		
(M) ρdc/ρac =ExL/K	1.025	1.035	1.045	1.050	1.023	1.024	1.023	1.045				
(N) PFE=(M-1)(10^2)	2.5	3.5	4.5	5.0	2.3	2.4	2.3	4.5				
(O) MCF=(M-1)(10^5)/H	83	100	90	93	68	69	45	88				

952 41 52 416

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Mowry

LINE 2-7 HALF SE SP. 1 DATE 8-5-69

SEND	45	34	45	23	34	45	12	23	34	45
RECEIVE	0-150	150-300	3	300-75			450 60			
RANGE	300	300	100	300	100	30	300	100	30	30
DC 1	226	187	71.0	213	49.8	31.3	255	70.3	23.2	15.6
DC 2	229	160	68.6	225	53.0	30.2	258	68.1	25.6	16.8
DC 3	226	187	71.2	213	49.8	31.4	254	70.6	23.3	15.6
DC 4	229	160	67.4	226	53.0	30.1	255	68.6	25.6	16.8
DC 5			71.8	213		30.6	253	70.4	23.3	15.6
DC 6			67.4	226		30.0	261	68.4	25.1	16.7
DC 7			72.0							
DC 8			67.6							
DC AVG.	227.5	173.5	69.6	219.3	51.4	30.8	256.7	69.9	24.4	16.2
AC 1	205	158	62.6	203	46.3	27.5	236.5	64.0	21.95	14.4
AC 2	205	158	62.6	203	46.3	27.5	236.5	64.0	21.95	14.4
AC AVG.	205	158	62.6	203						
S.P.	+4	+14.5		-21.5			+5.2			
AC NOISE		63		.03			.04			
POT RES.	1.5K	1.7K		115			700			

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT _____
LINE ____ HALF ____ SP. ____ DATE ____

SEND	12	23	34	45	12	23	34	45		cal
RECEIVE										
RANGE	100	30	30	10	30					
DC 1	70.0	29.0	12.2	8.94	25.3	14.0	6.46	5.34		82.1
DC 2	70.6	27.5	10.7	8.80	25.8	14.5	6.98	5.24		83.0
DC 3	70.0	29.0	12.2	8.88	25.4	14.0	6.50	5.40		82.5
DC 4	70.6	27.5	10.7	8.80	25.6	14.5	7.08	5.20		83.0
DC 5	70.0			8.96	29.5		6.32	5.38		
DC 6				8.84	25.5		7.10	5.24		
DC 7										
DC 8										
DC AVG.	70.2	28.5	11.5	8.87	27.5	14.3	6.77	5.30		82.8
AC 1	64.8	26.0	10.4	7.97	25.4	13.2	6.14	4.80		78.8
AC 2	64.7	26.0	10.4	7.97	25.4	13.2	6.14	4.80		78.8
AC AVG.	64.8	26.0	10.4	7.97	25.4	13.2	6.14	4.80		78.8
S.P.	0				-10.4					
AC NOISE	.64				.64					
POT RES.	800				800					

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mowry
LINE 27 HALF N/W SP. 1 DATE 9-5-67

SEND	12	23	1	34	23	12	45	34	23	12
RECEIVE	6-15	15-30		30-45			4+6 Coil			
RANGE	300	300	100	300	100	100	1000	100	100	30
DC 1	313	312	100.0	290.0	75.3	60	596	87.0	51.3	29.4
DC 2	313	322	99.0	275.0	81.0	62	630	84.0	54.2	28.9
DC 3	313	312	100.0	288.0	95.5	60	597	87.0	51.2	29.3
DC 4	313	322	99.0	275.0	81.2	62	632	84.0	54.1	28.7
DC 5				287.0	95.0	60	597	87.0	54.1	29.2
DC 6				275.0	81.2		631			28.7
DC 7					75.2					
DC 8										
DC AVG.	313	317	99.5	282	88.0	61.3	613	85.5	52.7	28.95
AC 1	282	283	88.8	250.0	78.0	54.0	530.0	74.0	46.0	25.4
AC 2	282	283	88.8	250.0	78.0	54.0	530.0	74.0	46.0	25.4
AC AVG.	282	283	88.8	250	78	54	530	74	46	25.4
S.P.	+3.64	-5		-8			-19.520			
AC NOISE	.04	.06		0A			.04			
POT RES.	2K	5K		5K			5K			

21 21 6136

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mowry
LINE 2-7 HALF NE SP. 1 DATE 5-9

SEND	45	34	23	12	45	34	23	12		
RECEIVE										
RANGE	300	30	30	30	100	30	10	10	Cal	
DC 1	165	28.5	26.5	19.5	58.0	16.8	9.0	8.4		
DC 2	150	30.7	29.0	19.1	54.0	17.6	9.6	7.7	257.	
DC 3	165	28.5	26.4	19.7	58.2	~~19.9~~	9.0	8.4	257	
DC 4	150	30.5	24.2	19.0	53.9	~~17.6~~	9.6	7.7		
DC 5		28.5	26.4	19.6	58.2	16.7	9.0	8.4		
DC 6		30.8	24.0	19.2	53.8	17.6	9.6	7.7		
DC 7						16.8				
DC 8						17.6				
DC AVG.	157.5	29.6	25.3	19.3	56.0	17.1	9.3	8.1		
AC 1	142.0	26.7	23.1	17.7	50.0	15.5	8.49	7.4	242.	
AC 2	142.0	26.7	23.1	17.7	50.0	15.5	8.49	7.39	242.	
AC AVG.										
S.P.	+6.5				-10.2					
AC NOISE	.04				.04					
POT RES.	5K				6K					

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-Z HALF SE SP. 1 DATE 9/5/67

PAGE

SEND	4-5	3-4	4 5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-150	150-300	→	300-450	→	→	450-600	→	→	→
RANGE	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo
VOLTAGE	980	840	960	820	840	940	550	820	820	930
CURRENT	2.5A	2A	2.5A	3.5A	2A	2.5A	4A	3.5A	2A	2.5A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	Cal	
RECEIVE	600-750	→	→	→	750-900	→	→	→		
RANGE	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Hi	
VOLTAGE	550	800	820	920	480	800	810	920	330	
CURRENT	4A	3.5A	2A	2.5A	3.5A	3.5A	2A	2.5A	.80 A	

FREQUENCIES 3.0 .05

SENDER NO. 6644-5

OPERATOR Cruze

RECEIVER NO. Barr-Brown

OPERATOR Henson

COMMENTS:

1-2 468 Lo

2-3 3.5 Lo

3-4 - 2 - Lo

4-5 - 2.5 - Lo

$$\frac{VDC \times 98.0}{VAC}$$

1.01

.94 x 647

$$\frac{1.01 \times K_H \times V_{dc}}{\begin{pmatrix} .9 \\ 3.0 \\ 9.0 \end{pmatrix} (\ )}$$

I

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-7 HALF SW SP. 1 DATE 9/5/67

PAGE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-150	150-300	→	300-450	→	→	450-600	→	→	→
RANGE	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo
DC 1 V	470	780	470	500	660	540	900	580	770	400
DC 2 C	3.5A	3.5A	3.5A	1.3A	3A	4A	2.5A	1.5A	3.5A	3A
DC 3										
~~DC 4~~ Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Cal	
DC 5 Receive	600-750	→	→	→	750-900	→	→	→		
DC 6 Range	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo	
DC 7 V	886	540	770	530	870	770	540	400	900	
DC 8 C	2.5A	1.4A	3.5A	4A	2.5A	2A	2.5A	3A	2.5A	
DC AVG.	1-2- 4									
AC 1	2-3 3.5									
AC 2	3-4- 2									
AC AVG.	4-5 2.5									
S.P.										
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Mowry Line 2-8 S Field date 9/7 Data page_____ Comp. date 9-11 . Comp by KH

(A) Send	45	34	45	23	34	45	12	23	34	45		
(B) Receive	0-.3 SE	.3-.6		.6-.9			.9-1.2					
(C) n separation												
(D) I	5	4	5	1	4	5	.5	1.2	4	5		
(E) Vdc (avg)	850	488	277	902	126	58.6	699	390	66.2	39.1		
(F) DCcal 1.001												
(G) Kn x 10^{-3}	.45	.45	1.8	.45	1.8	4.5	.45	1.8	4.5	9		
(H) ρ dc=ExFxGx10^3/D	77	100	100	406	57	53	621	585	74	70		
(I) Vac Σ	807	821	259	824	117	548	699	355	61.5	36.6		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.980											
(M) ρ dc/ρac=ExL/K	1.032	1.060	1.048	1.073	1.055	1.048	1.062	1.077	1.055	1.047		
(N) PFE=(M-1)(10^2)	3.2	6.0	4.8	7.3	5.5	4.8	6.2	7.7	5.5	4.7		
(O) MCF=(M-1)(10^5)/H	42	60	48	18	96	91	10	13	74	67		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	12	23	34	45	12	23	34	45		Cal		
(B) Receive	1.2-1.5				1.5-1.8							
(C) n separation												
(D) I	.5	1.1	4	5	.5	1.2	4	5		4		
(E) Vdc (avg)	150	103.2	24.0	16.12	93.2	82.5	23.9	18.9		406		
(F) DCcal												
(G) Kn x 10^{-3}	1.8	4.5	9	15.75	4.5	9	15.75	25.2				
(H) ρ dc=ExFxGx10^3/D	540	422	54	51	839	619	94	95				
(I) Vac Σ	140	94.5	22.6	15.1	87.7	74.9	22.2	17.7		398		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K	1.050	1.070	1.055	1.046	1.041	1.079	1.055	1.046				
(N) PFE=(M-1)(10^2)	5.0	7.0	5.5	4.6	4.1	7.9	5.5	4.6				
(O) MCF=(M-1)(10^5)/H	9	17	102	90	5	13	59	48				

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-8 HALF SE SP. 1 DATE 9/7/6

PAGE

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-150	150-300	→	300-450	→	→	450-600	→	→	→
RANGE	Hi	Hi	Hi	Lo	Hi	Hi	Hi	Lo	Hi	Hi
VOLTAGE	450	440	450	540	450	440	450	640	440	440
CURRENT	5A	4A	5A	1A	4A	5A	500MA	1.2A	4A	5A

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	Cal	
RECEIVE	600-750	→	→	→	750-900	→	→	→		
RANGE	Hi	Lo	Hi	Hi	Hi	Lo	Hi	Hi		
VOLTAGE	450	600	440	440	460	640	440	440		
CURRENT	500MA	1.1A	4A	5A	500MA	1.2A	4A	5A		

FREQUENCIES 3.0 ps

SENDER NO. 6644-5

OPERATOR Cruze

RECEIVER NO. Burr-Brown

OPERATOR Henson

COMMENTS:

1-2 700

2-3 - 1.5A

3-4 - 4A

4-5 - 5A

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mowry
LINE 2-X HALF SE SP. 1 DATE 9/2

SEND	45	34	45	23	34	45	12	23	34	45
RECEIVE	0-1.5	.5-3.0		3.0-4.5			4.5-6.0			
RANGE	1000	1000	1000	1000	1000	100	1000	1000	100	100
DC 1	44	73	18	64	9	3.6	42	36	4.0	2.6
DC 2	45	63	16	97	6	3.9	56	34	5.6	2.4
DC 3	42	70	20	61	10	3.5	45	40	3.8	2.5
DC 4	44	63	11	93	9	4.0	56	32	5.5	2.4
DC 5	44	71	22	60	9	3.4	48	41	4.0	2.6
DC 6	43	62	10	92	8	4.1	54	30	5.4	2.4
DC 7				58						
DC 8				98						
DC AVG.	850	888	277	902	126	586	699	350	66.2	39.1
AC 1	807	821	259	824	117	548	649	355	61.5	36.6
AC 2	807	821	259	824	117	548	649	355	61.5	36.6
AC AVG.										
S.P.	-2	-27		0			-11			
AC NOISE	<.1	<.1		<.1			<.1			
POT RES.	5K	5K		6K			3.5K			

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mowry
LINE 2.4 HALF SE/SP. 1 DATE 8/8

SEND	12	23	34	45	12	23	34	45		Cal
RECEIVE	6.0.7.8				7.5	8.0				
RANGE	1000	100	100	100	100	100	100	100		
DC 1	12	9.2	1.7	.8	8.4	7.8	1.4	1.2		
DC 2	6	8.3	1.2	.9	6.5	7.4	2.0	1.2		
DC 3	14	9.1	1.6	.8	8.5	7.4	1.4	1.3		
DC 4	6	8.4	1.2	1.6	6.0	7.2	1.9	1.0		
DC 5	13	8.9	1.6		8.3	8.4	2.2	1.2		
DC 6	1	8.6	1.3		6.7	6.4	2.1	1.1		
DC 7						8.8	1.2	1.4		
DC 8						6.4	2.1	1.0		
DC AVG.	150	103.2	24.0	16.12	93.2	82.6	23.9	18.9		
AC 1	140	94.4	22.5	15.1	87.7	74.9	22.2	17.7		
AC 2	140	94.6	22.6	15.1	87.7	74.9	22.2	17.7		
AC AVG.		94.5								
S.P.	-20				+9					
AC NOISE	<.1				<.1					
POT RES.	6.5				415					

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Mowry Line 2 - 8N½ Field date 9-7 Data page_____ Comp. date 9-11 . Comp by KH

(A) Send	12	23	12	34	23	12	45	34	23	12		
(B) Receive	0-.65N	15.30	——	.30-.45	——	——	.45 60	——	——	——		
(C) n separation												
(D) I	.5	1	.5	4	1	.5	5	4	1	.5		
(E) Vdc (avg)	112	159	25.8	557	63.8	16.7	92 5	195	33.2	10.7		
(F) DCcal 1.000	——	——	——	——	——	——	——	——	——	——		
(G) Kn x 10^{-3}	.45	.45	1.8	.45	1.8	4.5	.45	1.8	4.5	9		
(H) ρdc=ExFxGx10^3/D	101	72	107	63	115	150	83	88	149	193		
(I) Vac Σ	104	151	27.7	537	60.1	15.6	893	187	31.2	9.50		
(J) AC noise x 2												
(K) Vac(corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal. .580	——	——	——	——	——	——	——	——	——	——		
(M) ρdc/ρac=ExL/K	1.055	1.032	1.054	1.016	1.040	1.049	1.015	1.022	1.043	1.059		
(N) PFE=(M-1)(10^2)	5.5	3.2	5.4	1.6	4.0	4.9	1.5	2.2	4.3	5.9		
(O) MCF=(M-1)(10^5)/H	54	44	50	25	35	33	18	25	29	31		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

										Cut		
(A) Send	45	34	23	12	45	34	23	12				
(B) Receive	.60-.75	——	——	——	.25 90	——	——	——				
(C) n separation												
(D) I	5	4	1	.5	5	4	1	.5				
(E) Vdc (avg)	238	68.6	15.5	5.75	103.4	38.5	11.1	4.61 ?				
(F) DCcal	——	——	——	——	——	——	——	——				
(G) Kn x 10^{-3}	1.8	4.5	9	15.75	4.5	9	15.75	25.2				
(H) ρdc=ExFxGx10^3/D	86	77	139	182	93	87	175	232				
(I) Vac Σ	229	65.7	14.6	5.56	97.6	36.4	10.3	4.41				
(J) AC noise x 2												
(K) Vac (corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.580	——	——	1.015	.580	——	——	1.015				
(M) ρdc/ρac =ExL/K	1.015	1.023	1.040	1.057	1.038	1.036	1.056	1.061				
(N) PFE=(M-1)(10^2)	1.5	2.3	4.0	5.7	3.8	3.6	5.6	6.1				
(O) MCF=(M-1)(10^5)/H	22	30	25	31	41	41	32	26				

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mowry
LINE 2-8 HALF N SP. 1 DATE 9/7

SEND	12	23	12	34	23	12	45	34	23	12
RECEIVE	0-.15	.15-.30	—	.3-.45	—	—	.45	6.	—	—
RANGE		1000	100	1000	100	100	1000	1000	100	100
DC 1	9	5	1.4	19	4.6	1.2	26	6	1.5	.8
DC 2	6	12	2.8	17	2.7	1.0	38	7	2.0	.5
DC 3	10	5	1.6	20	4.6	1.2	26	3	1.7	1.1
DC 4	3	8	2.6	18	2.7	1.0	38	11	2.2	.7
DC 5	13	9	1.6	16	4.6			4	1.8	1.0
DC 6	5	12	2.6	27	2.7			10	2.1	.7
DC 7		9 6								
DC 8		11								
DC AVG.	112	159	29.8	557	63.8	16.7	926	155	53.2	10.7
AC 1	104	151	27.1	537	60.11	15.6	893	188	31.2	9.90
AC 2	104	159	27.7	537	60.1	15.6	893	187	31.2	9.90
AC AVG.		151	27.7							
S.P.	+6	-5	—	-5	—	—	-10	—	—	—
AC NOISE	—	<.1	—	<.1	—	—	<.1	—	—	—
POT RES.	1.54	700	—	1K	—	—	1.51K	—	—	—

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mowry
LINE 2-8 HALF N SP. L DATE 2-7

SEND	45	34	23	12	45	34	23	12		Cal
RECEIVE	66 - 75				75 - 90					
RANGE	1000	100	100	10	100	100	100	10		1000
DC 1	9	3.0	1.2	.12	8.0	2.2	.6	.26		4
DC 2	9	2.7	.6	.33	3.7	2.0	1.0	.16		10
DC 3	8	3.2	1.2	.16	4.1	2.2	.6	.24		6
DC 4	9	2.7	.6	.30	3.6	2.0	1.0	.14		8
DC 5	8	3.0	1.1	.14	8.1			.46		7
DC 6	9	2.9	.6	.32	3.6			0		8
DC 7		3.0	1.2					.58		
DC 8		2.8	.6					-.16		
DC AVG.	238	68.6	15.5	5.79	103.4	38.8	11.1	4.61		406
AC 1	225	65.7	14.6	5.56	97.7	36.4	10.3	4.41		398
AC 2	229	65.7	14.6	5.56	97.6	36.4	10.3	4.41		398
AC AVG.					97.6					
S.P.	-13				-14					
AC NOISE	.02				.06					
POT RES.	700				1.2K					

a 6.0
5.6
6.0
5.6

97.6
5.8
103.4

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-8 HALF NW SP. 1 DATE 9/7/67

PAGE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-150	150-300	→	300-450	→	→	450-600	→	→	→
RANGE	Hi	Lo	Hi	Hi	Lo	Hi	Hi	Hi	Lo	Hi
VOLTAGE	450	540	450	440	540	450	440	440	530	450
CURRENT	500 MA	1A	500MA	4A	1A	500MA	5A	4A	1A	500 MA
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Cal	
RECEIVE	600-750	→	→	→	750-900	→	→	→		
RANGE	Hi	Hi	Lo	Hi	Hi	Hi	Lo	Hi	Hi	
VOLTAGE	440	430	540	450	440	430	540	450	450	
CURRENT	5A	4A	1A	500MA	5A	4A	1A	500 MA	4A	

FREQUENCIES 3.0 .105

SENDER NO. 6644-5

OPERATOR Cruze

RECEIVER NO. Burr-Brown

OPERATOR Henson

COMMENTS:

1-2 - 500

2-3 - 1.2

3-4 - 4

4-5 - 5

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Mowry Line 2-9 Field date 9-Y-67 Data page_____ Comp. date 5-11-. Comp by KH

(A) Send	12	23	12	34	23	12	45	34	23	12		
(B) Receive	0-4	.4-18	——	.8-12	——	——	1.8-7.6	——	——	——		
(C) n separation												
(D) I	6	7	6	4.5	7	6	4.5	4.0	7	6		
(E) Vdc (avg)	608	710	127	1045	247	69.0	1375	303	153.5	52.05		
(F) DCcal .960	——	——	——	——	——	——	——	——	——	——		
(G) Kn x 10^{-3}	1.2	1.2	4.8	1.2	4.8	12	1.2	4.8	12	24		
(H) ρ dc=ExFxGx10^3/D	117	117	98	278	163	132	352	356	253	200		
(I) Vac Σ	560	654	118	1020	227	64.25	1290	280	142	41.5		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. .950	——	——	——	——	——	——	——	——	——	——		
(M) ρ dc/ρac=ExL/K	1.031	1.031	1.022	1.010	1.033	1.020	1.013	1.028	1.027	1.020		
(N) PFE=(M-1)(10^2)	3.1	3.1	2.2	1.0	3.3	2.0	1.3	2.8	2.7	2.0		
(O) MCF=(M-1)(10^5)/H	26	26	22	4	20	15	4	9	11	10		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	45	34	23	12	45	34	23	12		cal		
(B) Receive	1.6-2.0	——	——	——	2.0-7.4	——	——	——				
(C) n separation												
(D) I	4.5	4.5	7.5	6.75	5	5	8	6.75		2.5		
(E) Vdc (avg)	495	194.5	112	42.3	153	85.9	57.9	22.2				
(F) DCcal	——	——	——	——	——	——	——	——				
(G) Kn x 10^{-3}	4.8	12	24	42	12	24	42	67.2				
(H) ρ dc=ExFxGx10^3/D	507	498	344	253	353	396	292	212				
(I) Vac Σ	464.5	180	103.5	39.5	143.5	80.0	53.6	20.6				
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	——	——	——	——	——	——	——	——				
(M) ρdc/ρac =ExL/K	1.012	1.027	1.028	1.017	1.013	1.020	1.026	1.024				
(N) PFE=(M-1)(10^2)	1.2	2.7	2.8	1.7	1.3	2.0	2.6	2.4				
(O) MCF=(M-1)(10^5)/H	2	5	8	7	4	5	9	11				

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT SEMINCO

LINE 2-9 HALF NW ¼ SP. / DATE 9/8/67

SEND	12	23	12	34	23	12	45	34	25	12
RECEIVE	0-.4	.9-1.8	—	.8-1.2	—	—	1.2-1.6	—	—	—
RANGE	1000	1000	300	3000	300	100	3000	1000	300	100
DC 1	612	691	146	1080	248	68.0	1370	306	150	48.0
DC 2	606	725	107	11090	245	70.2	1380	300	156	56.1
DC 3	609	692	147	1080	248	67.8	1370	307	150	48.0
DC 4	608	727	107	1090	245	70.2	1380	300	157	56.1
DC 5	610	693	147	1080	248	67.8	1370	306	150	48.0
DC 6	604	728	106	1109	246	70.2	1380	300	158	56.1
DC 7	607	691				67.8				
DC 8	605	727				70.2				
DC AVG.	604	710	127	1085	247	69.0	1375	303	153.5	52.05
AC 1	560	654	118	1020	227	64.3	1290	280	142	48.5
AC 2	560	654	118	1020	227	64.2	1290	280	142	48.5
AC AVG.		32				64.25	16			
S.P.	+12.2	+31.7	—	+73.1	—	—	-15.5	—	—	—
AC NOISE	.05	.07	—	<.1	—	—	<.04	—	—	—
POT RES.	1K	1K	—	1.7K	—	—	2K	—	—	—

261.5
2 | 523
4
12
12
3
2
10

18
3
261.5 | 250.00
23535
14650
13075
15750

-.955

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-9 HALF NW SP. 1 DATE 9/8/67

SEND	45	34	23	12	45	34	23	12	Cal	
RECEIVE	1.6-2.0				2.0-2.4				300	
RANGE	1000	300	300	100	300	100	100	30		
DC 1	500	196	110	38.5	155	88.0	55.8	24.2		
DC 2	490	193	114	43.0	151	83.8	60.0	20.3		
DC 3	501	196	110	40.0	155	88.0	55.7	24.1	230	
DC 4	490	193	114	44.8	151	83.8	60.0	20.3	293	
DC 5	501	196	110	40.0	155	88.0	55.8	24.1	230	
DC 6	488	193	114	44.6	151	83.8	60.0	20.4	293	
DC 7	501			40.0		88.0	55.6	24.0		
DC 8	488			44.5		83.7	60.0	20.5		
DC AVG.	495	194.5	112	42.3	153	85.9	57.9	22.2	261.5	
AC 1	465	180	104	39.5	143	80.0	53.5	20.6		
AC 2	464	180	103	39.5	144	80.0	53.6	20.6		
AC AVG.	464.5		103.5		143.5				250	
S.P.	+5.7				-2.0				250	
AC NOISE	<.04				<.04					
POT RES.	2K				1.5					

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mwuny

LINE 2-4 HALF N SP. 1 DATE 9-X

PAGE

SEND	12	23	12	34	23	12	45	34	23	12
RECEIVE	6-4N	.4-.8	→	.8-1.2	→	→	1.6-1.8	→	→	→
RANGE	30X200	30X233	30X200	30X150	30X233	30X200	30X150	30X133	30X233	30X200
VOLTAGE	420	330	420	480	330	420	460	420	330	420
CURRENT	6	7	6	4.5	7	6	4.5	4.0	7	6
SEND	45	34	23	12	45	34	23	12		Cal
RECEIVE	1.6-2.0	→	→	→	2.0-2.4	→	→	→		
RANGE	30X150	30X150	30X250	30X225	30X166	30X160	30X266	30X225		
VOLTAGE	460	480	360	460	520	530	380	460		10X250
CURRENT	4.5	4.5	7.5	6.75	5	5	8	6.75		2.5A

FREQUENCIES 3 105

SENDER NO. 66445

OPERATOR Hanson

RECEIVER NO. ?

OPERATOR King

COMMENTS:

3
12
30
60
105
148

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page _____

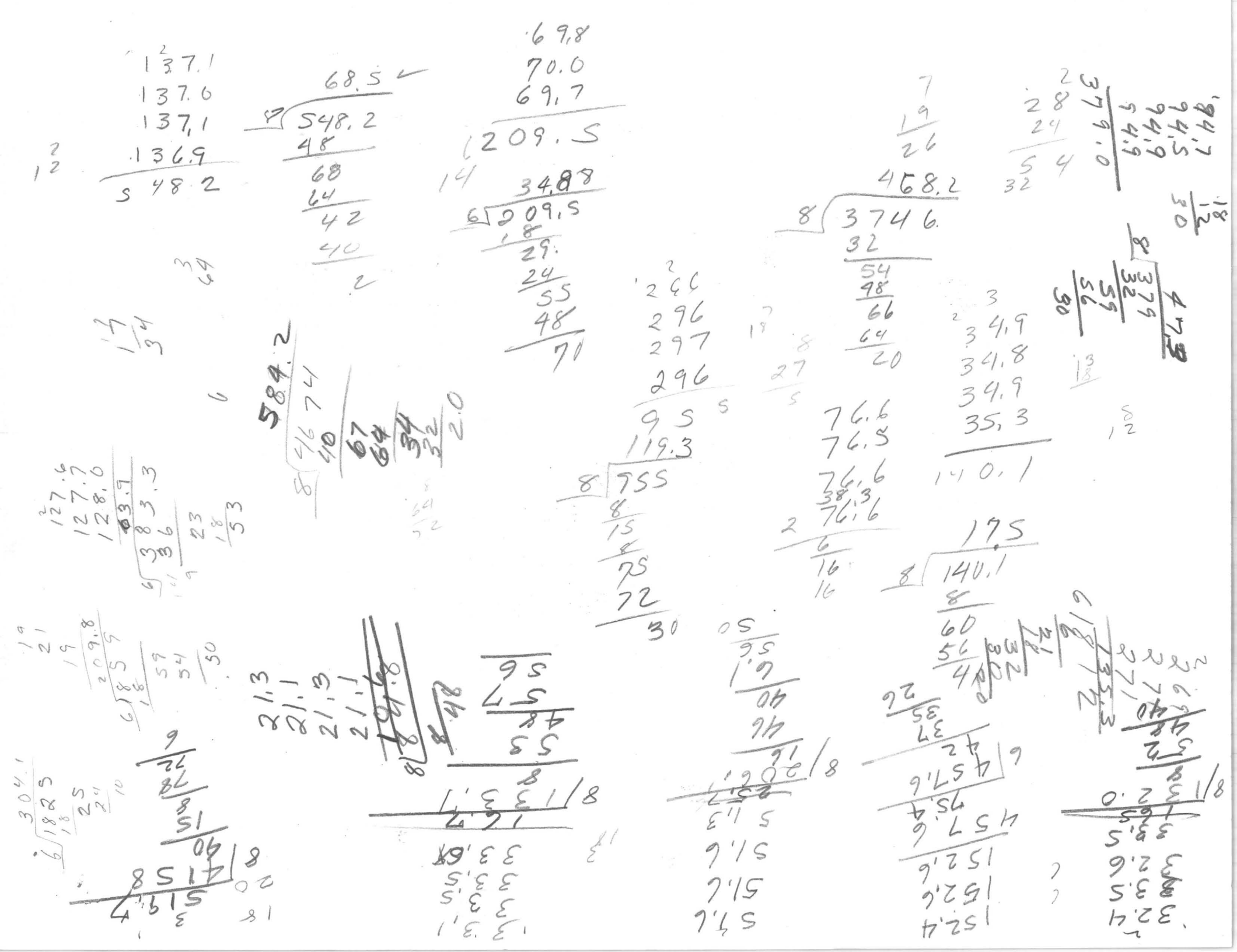
Project EMINCO Line 2-9SE½ Field date 9-8-67 Data page _____ Comp. date 9-10-67 Comp by _____

SP 1

(A) Send	45	34	45	23	34	45	12	23	34	45		
(B) Receive	0-.4	.4-.8	———	.8-1.0	———	———	1.2-1.6	———	———	———		
(C) n separation	1	1	2	1	2	3	1	2	3	4		
(D) I	3	3	3	6	3	4.5	6	6	4.5	4.5		
(E) Vdc (avg)	304.1	309.8	63.9	584.2	68.5	34.9	468.2	149.3	38.3	17.5		
(F) DCcal .960	———	———	———	———	———	———	———	———	———	———		
(G) Kn x 10^{-3}	1.2	1.2	4.8	1.2	4.8	12	1.2	4.8	12	24		
(H) ρdc=ExFxGx10^3/D	117	119	98	112	105	89	96	115	98	90		
(I) Vac Σ	278	282	58.65	537.5	62.25	31.2	427.5	135	35	16.		
(J) AC noise x 2												
(K) Vac(corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal. .950	———	———	———	———	———	———	———	———	———	———		
(M) ρdc/ρac=ExL/K	1.039	1.044	1.035	1.033	1.045	1.063	1.040	1.051	1.040	1.039		
(N) PFE=(M-1)(10^2)	3.9	4.4	3.5	3.3	4.5	6.3	4.0	5.1	4.0	3.9		
(O) MCF=(M-1)(10^5)/H	33	37	36	29	43	71	44	44	41	43		

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	12	23	34	45	12	23	34	45	Col			
(B) Receive	1.6-2.0	———	———	———	2.0-2.4	———	———	———				
(C) n separation	2	3	4	5	3	4	5	6				
(D) I	6	6	4.5	5.0	6	7.5	5	5				
(E) Vdc (avg)	135.3	75.4	25.8	16.7	51.9	47.3	16.5	10.6	261			
(F) DCcal .960	———	———	———	———	———	———	———	———			.950	
(G) Kn x 10^{-3}	4.8	12	24	42	12	24	42	67.2				
(H) ρdc=ExFxGx10^3/D	104	145	132	135	100	145	133	137				
(I) Vac Σ	124	70.0	23.55	15.2	47.8	43.85	15.0	9.7	245			
(J) AC noise x 2												
(K) Vac (corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal. .950	———	———	———	———	———	———	———	———				
(M) ρdc/ρac =ExL/K	1.037	1.023	1.040	1.049	1.031	1.025	1.045	1.038				
(N) PFE=(M-1)(10^2)	3.7	2.3	4.0	4.9	3.1	2.5	4.5	3.8				
(O) MCF=(M-1)(10^5)/H	36	16	30	33	31	17	34	28				



HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-7 HALF ~~SP.~~ 1/2 SP. 1 DATE 9/8/67

SEND	45	39	45	23	39	45	12	23	39	45
RECEIVE	0-.4	.4-.8	—	.8-1	2	—	—	1.2-	1.6	—
RANGE	1000	300	100	1000	100	100	1000	300	100	30
DC 1	305	310	63.6	584	67.1	33.8	464	152	41.6	14.1
DC 2	302	309	64.0	585	70.0	36.0	473	144	35.0	20.4
DC 3	306	311	63.7	583	67.0	33.9	463	152	41.6	14.1
DC 4	302	310	64.0	585	70.0	36.1	472	144	34.9	20.7
DC 5	307	310	63.9	582	66.9	33.7	463	153	41.5	14.2
DC 6	303	309	64.1	586	70.2	36.0	474	144	35.1	20.7
DC 7				583	66.7		463	152	41.6	14.6
DC 8				586	70.2		474	144	35.0	20.7
DC AVG.	304.1	209.8	63.9	584.2	68.5	34.9	468.2	149.3	38.3	17.5
AC 1	278	282	58.7	538	62.2	31.2	428	135	35.0	16.0
AC 2	278	282	58.6	537	62.3	31.2	427	135	35.0	16.0
AC AVG.	278	282	58.65	537.5	62.25	31.2	427.5	135	35.0	16.0
S.P.	-3.9A	-2.9	—	-1.1	—	—	+4.3	—	—	—
AC NOISE	<.04	<.04	—	<.04	—	—	<.03	—	—	—
POT RES.	1.5K	5K	—	5K	—	—	3K	—	—	—

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-1 HALF SE SP. / DATE 7/8/67

SEND	12	23	34	45	12	23	34	45	Cal	
RECEIVE	1.6 - 2.0				2.0 - 2.4					
RANGE	300	100	100	30	100	100	30	30		
DC 1	143	84.0	18.0	24.6	51.8	47.9	16.5	11.4		
DC 2	126	68.6	33.3	8.50	52.4	47.0	17.0	9.7		
DC 3	143	84.0	18.1	25.0	51.6	48.0	16.6	11.5		
DC 4	128	68.4	33.4	8.50	52.1	46.9	16.0	9.8		
DC 5	143	84.1	18.0	25.0	51.3	48.3	17.6	11.3		
DC 6	128	68.5	33.6	8.50	52.4	46.2	15.9	10.0	260	
DC 7			18.1	25.1	51.9	48.2	17.6	11.0	262	261
DC 8			33.5	8.49	52.3	46.5	15.8	10.1	260	
DC AVG.	135.3	75.4	25.8	16.7	51.9	47.3	16.5	10.6	262	
AC 1	124	70.0	23.5	15.2	47.8	43.8	15.0	9.7		
AC 2	124	70.0	23.6	15.2	47.8	43.9	15.0	9.7		
AC AVG.	124	70.0	23.55	15.2	47.8	43.85	15.0	9.7	245	
S.P.	-2.8				+4.7				245	
AC NOISE	<.04				<.04					
POT RES.	4K				6K					

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mowry

LINE 2-9 HALF S SP. 1 DATE 9-Y

PAGE

SEND	45	34	45	23	34	45	12	23	34	45
RECEIVE	6-.45	4-8	—	8-12	→	→	1 2 1.6	—	—	—
RANGE	30X100	30X100	30X100	30X200	30X100	30X150	30X200	30X200	30X150	30X150
VOLTAGE	310	320	310	280	320	460	400	280	480	470
CURRENT	3	3	3	6	3	4.5	6	6	4.5	4.5
SEND	12	23	34	45	12	23	34	45		Cal
RECEIVE	1.6-2.0	—	—	—	2.0-2.4	—	—	—		
RANGE	30X206	30X200	30X150	30X166	30X200	30X250	30X166	30X166		
VOLTAGE	400	280	480	520	410	360	510	520		180
CURRENT	6	6	4.5	5.0	6	7.5	5	5		2.5

FREQUENCIES ____ ____

SENDER NO.

OPERATOR

RECEIVER NO.

OPERATOR

COMMENTS:

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Project SEMINCO Line 2-10 Field date 9-15-67 Data page 2 Comp. date _____. Comp by _____

(A) Send	12	23	12	34	23	12	45	34	23	12		
(B) Receive	0-150'	150'-300'		300'-450'			450'-600'					
(C) n separation												
(D) I	1	1	1	1	1	1	1	1	1	1		
(E) Vdc (avg)	209.5	235.5	56.5	215.5	73.9	25.1	196	63.9	30.2	11.35		
(F) DCcal 1.010												
(G) Kn x 10^{-3}	.45	.45	1.8	.45	1.8	4.5	.45	1.8	4.5	9.0		
(H) ρdc=ExFxGx10^3/D	95	107	101	98	134	111.4	88	116	137	103		
(I) Vac Σ	186	210	51.8	194	66.2	22.9	183	57.9	27.2	10.4		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	0.950											
(M) ρ dc/ρac=ExL/K	1.070	1.064	1.036	1.054	1.059	1.042	1.018	1.048	1.056	1.036		
(N) PFE=(M-1)(10^2)	7.0	6.4	3.6	5.4	5.9	4.2	1.8	4.8	5.6	3.6		
(O) MCF=(M-1)(10^5)/H	74	60	36	55	23	26	20	41	41	35		

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	45	34	23	12	45	34	23	12	Cal			
(B) Receive	600-750'				750'-900'							
(C) n separation												
(D) I	1	1	1	1	1	1	1	1/7				
(E) Vdc (avg)	60.6	28.2	14.8	6.38	25.8	14.1	8.23	3.64	99			
(F) DCcal 1.010												
(G) Kn x 10^{-3}	1.8	4.5	9.0	15.75	4.5	9.0	15.75	25.2				
(H) ρ dc=ExFxGx10^3/D	110	124	135	111	117	135	131	94				
(I) Vac Σ	55.0	25.6	13.3	5.82	24.0	13.0	7.58	3.38	94			
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	0.950											
(M) ρdc/ρac =ExL/K	1.048	1.047	1.058	1.043	1.020	1.031	1.032	1.026				
(N) PFE=(M-1)(10^2)	4.8	4.7	5.8	4.3	2.0	3.1	3.2	2.6				
(O) MCF=(M-1)(10^5)/H	44	38	43	39	17	23	24	28				

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-10 HALF SE SP. 1 DATE 9-15-67

SEND	4S	3W	4S	2S	3W	4S	1E	2S	3W	4S
RECEIVE	0-150	150-300	—	300-450	—	—	450-	600	—	—
RANGE	300	300	100	100	100	30	100	30	30	10
DC 1	236	226	58.3	46.3	36.6	14.5	90.1	27.2	12.5	7.24
DC 2	237	225	57.5	47.0	39.8	17.3	90.4	27.5	13.2	6.58
DC 3	236	226	58.2	46.0	36.4	14.4	90.1	27.2	12.5	7.24
DC 4	237	225	57.8	46.8	39.2	17.4	90.4	27.6	13.2	6.60
DC 5	236	226	58.2	45.9	36.5	14.5	90.1	27.1	12.4	7.35
DC 6	237	225	57.8	46.8	39.7	17.4	90.5	27.6	13.2	6.44
DC 7				46.5	36.5	14.5	90.1	27.2	12.4	7.42
DC 8				45.9	39.5	17.4	90.6	27.6	13.2	6.50
DC AVG.	473	451	115.9	92.66	76.2	31.84	180.56	54.94	25.61	13.86
AC 1	212	201	52.8	42.0	34.0	14.5	83.6	24.7	11.6	6.38
AC 2	212	201	52.8	42.8	34.0	14.5	83.6	24.7	11.5	6.38
AC AVG.	424	402	105.6	84.0	68.0	29.0	167.2	49.4	23.1	12.76
S.P.	+10.7	+14.6	—	+1.7	—	—	-0.7	—	—	—
AC NOISE	<.04	<.04	—	<.04	—	—	<.04	—	—	—
POT RES.	5K	4K	—	2K	—	—	1K	—	—	—

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-10 HALF SE SP. / DATE 9-15-67

PAGE 2

SEND	12	23	34	45	12	23	34	45	Cal	
RECEIVE	600-	750			750	-900				
RANGE	30	10	10	10	10	10	10	3	300	
DC 1	17.4	9.20	5.84	3.94	6.98	4.82	3.53	2.72		
DC 2	18.2	7.74	3.94	1.62	7.55	3.70	2.01	0.80		
DC 3	17.3	9.16	5.90	4.00	6.95	4.84	3.54	2.73	100	
DC 4	18.2	7.65	5.85	1.60	7.60	3.70	2.00	0.79	97.5	
DC 5	17.3	9.28	4.00	4.02	6.90	4.85	3.58	2.74	100	
DC 6	18.2	7.61	5.84	1.58	7.62	3.70	2.00	0.75	97.5	
DC 7	17.3	9.34	3.98	3.98	6.86	4.85	3.60	2.75		
DC 8	18.2	7.55	5.92	1.58	7.62	3.66	1.98	0.74		
DC AVG.	35.5	16.9	10.10	5.59	14.51	8.54	5.57	3.51	197.5	
AC 1	16.5	7.70	4.45	2.60	6.60	3.85	2.50	1.60	94.0	
AC 2	16.5	7.70	4.45	2.60	6.62	3.85	2.50	1.60	94.0	
AC AVG.	33.0	~~14.40~~	8.90	5.20	13.22	7.70	5.00	3.20	188	
S.P.	15.0	~~15.0~~			+10.0					
AC NOISE	4.04				4.06					
POT RES.	2K				2K					

24°

PAGE

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Sominco

LINE 2-10 HALF SE SP. 1 DATE 9-15

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-150'	150-300	→	300-450	→	→	450-600'	→	→	→
RANGE	low	low	low	low	low	low	low	low	low	low
VOLTAGE	400	460	400	540	460	400	380	540	460	400
CURRENT	1A	1A	1A	1A	1A	1A	1A	1A	1A	1A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	cal	
RECEIVE	600-750	→	→	→	750	→	→	→	1-2	
RANGE	low	low	low	low	low	low	low	low	low	
VOLTAGE	380	540	460	400	380	540	460	400	380	
CURRENT	1A	1A	1A	1A	1A	1A	1A	1A	1A	

FREQUENCIES .05 3.0

SENDER NO. 13371-S

OPERATOR R. Palmer

RECEIVER NO. 10661-R

OPERATOR J. King

COMMENTS:

Dodge power take off used.

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

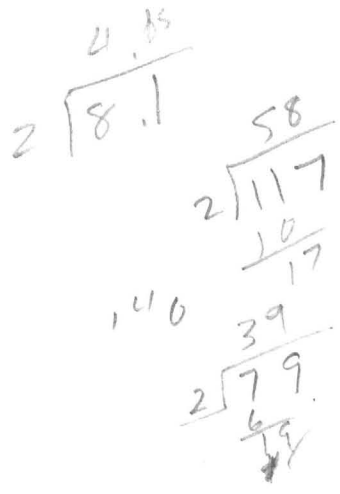
Page_____

Project SEMINCO Line 2-10 S24E 1/2 Field date 9-15-67 Data page_____ Comp. date 9-15-67. Comp by R.P.

(A) Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
(B) Receive	0-150'	150-300	→	300-450	→	→	450-600	→	→	→		
(C) n separation	1	1	2	1	2	3	1	2	3	4		
(D) I	1A	→	→	→	→	→	→	→	→	→		
(E) Vdc (avg)	473	451	115.9	92.66	76.2	31.84	180.56	54.74	25.61	13.86		
(F) DCcal	.506											
(G) Kn x 10^{-3}	.45	.45	1.8	.45	1.8	4.5	.45	1.8	4.5	9.0		
(H) ρ dc=ExFxGx10^3/D	108	103	105	~~31~~ 76	69	73	41	50	58	63		
(I) Vac Σ												
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$	424	402	105.6	84.0	68.0	29.0	167.2	49.4	23.1	12.76		
(L) AC-DC cal.	.952											
(M) ρ dc/ρac=ExL/K												
(N) PFE=(M-1)(10^2)	6.1	6.8	4.5	5.0	6.7	4.6	5.3	5.5	~~24~~ 5	3.2		
(O) MCF=(M-1)(10^5)/H	57	66	43	~~240~~ 76	97	63	129	110	~~128~~ 50	51		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		cal		
(B) Receive	600-750	→	→	→	750-900	→	→	→		1-2		
(C) n separation	2	3	4	5	3	4	5	6				
(D) I	1A	→	→	→	→	→	→	→				
(E) Vdc (avg)	35.5	16.9	10.1	5.59	14.51	8.54	5.57	3.51		197.5		
(F) DCcal												
(G) Kn x 10^{-3}	1.8	4.5	9.0	15.75	4.5	9.0	15.75	25.2				
(H) ρ dc=ExFxGx10^3/D	32	39	46	45	33	39	44	45				
(I) Vac Σ												
(J) AC noise x 2		15.4										
(K) Vac (corr) = $\sqrt{I^2 - J^2}$	33.0	~~14.4~~	8.90	5.20	13.22	7.70	5.00	3.20		188		
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K		4.5	5.7									
(N) PFE=(M-1)(10^2)	~~2.2~~	~~11.6~~	~~8.1~~	2.0	4.6	5.3	6.1	4.2				
(O) MCF=(M-1)(10^5)/H	~~69~~ 75	~~300~~ 115	176	44	139	136	138	93				



HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

24°

PAGE

PROJECT SEMINCO

LINE 2-10 HALF NW SP. 1 DATE 9-15

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-150'	150-300	→	300-450	→	→	450-	600	→	→
RANGE	low	low	low	low	low	low	low	low	low	low
VOLTAGE	380	560	380	460	560	360	380	440	540	350
CURRENT	1A	1A	1A	1A	1A	1A	1A	1A	1A	1A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	cal	
RECEIVE	600-750	→	→	→	750-900	→	→	→	4-5	
RANGE	low	low	low	low	low	low	low	low	low	
VOLTAGE	360	440	520	350	360	440	520	350	380	
CURRENT	1A	1A	1A	1A	1A	1A	1A	1A	1A	

FREQUENCIES 105 3.0

SENDER NO. 13671-S

OPERATOR R. Palmer

RECEIVER NO. 10661-R

OPERATOR J. King

COMMENTS:

Dodge power take off used.

$V = IR$

1.05 Z

AC
DC

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-10 HALF NW SP. 1 DATE 9-15-67

SEND	12	23	12	34	23	12	45	34	23	12
RECEIVE	0-130	130-300	—	300-450	—	—	450-600	—	—	—
RANGE	300	300	100	300	100	30	300	100	30	30
DC 1	211	241	51.0	215	74.0	251	196	63.9	30.4	11.4
DC 2	208	230	62.0	215	73.9	251	196	64.0	30.0	11.3
DC 3	211	241	51.0	215	74.0	251	196	63.8	30.4	11.4
DC 4	208	230	62.0	215	73.8	251	196	64.0	30.0	11.3
DC 5	211	241	51.0	216	74.0	251	196	63.6	30.3	11.4
DC 6	208	230	62.0	215	73.9	251	196	64.0	30.0	11.3
DC 7										
DC 8										
DC AVG.	209.5	235.5	56.5	215.5	73.9	251	196	63.9	30.2	11.35
AC 1	186	210	51.8	194	66.2	22.9	183	57.9	27.2	10.4
AC 2	186	210	51.8	194	66.2	22.9	183	57.9	27.2	10.4
AC AVG.	186	210	51.8	194	66.2	22.9	183	57.9	27.2	10.4
S.P.	+12.6	+12.9	—	-1.0	—	—	+50			
AC NOISE	<.04	<.02	—	<.02	—	—	<.04			
POT RES.	4K	7K	—	10K	—	—	7K			

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT SEMINCO

LINE 2-10 HALF NW SP. 1 DATE 9-15-69

PAGE 4

SEND	45	34	23	12	45	34	23	12	Cal	
RECEIVE	600-750				750-900				300	
RANGE	100	30	30	10	30	30	10	10		
DC 1	61.0	28.0	13.6	4.85	26.1	14.6	8.85	3.02		
DC 2	60.1	27.5	16.0	8.18	25.5	13.6	7.62	4.20		
DC 3	61.0	27.9	13.6	4.79	26.1	14.6	8.82	3.06		
DC 4	60.2	29.5	16.1	8.26	25.5	13.6	7.65	4.25	100	
DC 5	61.2	27.7	13.6	4.75	26.1	14.6	8.80	3.00	98	
DC 6	60.1	29.6	16.2	8.25	25.5	13.5	7.66	4.28	100	
DC 7	61.3	27.6	13.5	4.68	26.2	14.6	8.84	2.78	98	
DC 8	60.6	29.6	16.2	8.32	25.5	13.6	7.62	4.28		
DC AVG.	60.6	28.2	14.8	6.38	25.8	14.1	8.23	3.59	99	
AC 1	55.0	25.6	13.3	5.81	24.0	13.0	7.58	3.38	94	
AC 2	55.0	25.6	13.3	5.82	24.0	13.0	7.58	3.38	94	
AC AVG.	55.0	25.6	13.3	5.815	24.0	13.0	7.58	3.38	94	
S.P.	-2.3				144.2					
AC NOISE	1.02				1.04					
POT RES.	5K				7K					

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project SEMINCO Line 2-11SE Field date 9-16-67 Data page_____ Comp. date_____. Comp by_____

(A) Send	45	34	45	23	34	45	12	23	34	45		
(B) Receive	0-150	150-300	—	300-450	—	—	450-600	—	—	—		
(C) n separation	1	1	2	1	2	3	1	2	3	4		
(D) I	2	1	2	2	1	2	2	2	1	2		
(E) Vdc (avg)	128	78.0	29.5	172.6	20.6	12.6	164	43.9	8.89	7.23		
(F) DCcal 1.005	—	—	—	—	—	—	—	—	—	—		
(G) Kn x 10^{-3}	.45	.45	1.8	.45	1.8	4.5	.45	1.8	4.5	9.0		
(H) ρdc=ExFxGx10^3/D	29	35	27	39	37	28	37	40	40	33		
(I) Vac Σ	12.1	73.8	27.9	164	19.4	11.9	154.5	41.8	8.40	6.82		
(J) AC noise x 2												
(K) Vac(corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal. 0.955	—	—	—	—	—	—	—	—	—	—		
(M) ρdc/ρac=ExL/K	1.010	1.010	1.010	1.007	1.014	1.011	1.014	1.003	1.010	1.012		
(N) PFE=(M-1)(10^2)	1.1	1.0	1.0	0.7	1.4	1.1	1.4	0.3	1.0	1.2		
(O) MCF=(M-1)(10^5)/H	38	29	37	18	39	39	38	8	25	36		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	12	23	34	45	12	23	34	45	Cal			
(B) Receive	600-750	—	—	—	750-900	—	—	—				
(C) n separation	2	3	4	5	3	4	5	6				
(D) I	2	2	1	2	2	2	1	2				
(E) Vdc (avg)	32.4	13.95	3.53	3.38	10.7	6.00	1.78	1.90	99.5 —			
(F) DCcal 1.005	—	—	—	—	—	—	—	—				
(G) Kn x 10^{-3}	1.8	4.5	9.0	15.75	4.5	9.0	15.75	25.2				
(H) ρdc=ExFxGx10^3/D	29	32	32	27	24	27	28	24				
(I) Vac Σ	30.8	13.25	3.30	3.18	10.2	5.68	1.66	1.76	95.0 —			
(J) AC noise x 2												
(K) Vac (corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal. 0.955	—	—	—	—	—	—	—	—				
(M) ρdc/ρac =ExL/K	1.005	1.005	1.022	1.015	1.002	1.009	1.024	1.031				
(N) PFE=(M-1)(10^2)	0.5	0.5	2.2	1.5	0.2	0.9	2.4	3.1				
(O) MCF=(M-1)(10^5)/H	17	16	69	56	8	33	86	129				

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-1L HALF SE SP. L DATE 9-16-4

SEND	45	34	45	23	34	45	12	23	34	45
RECEIVE	0-150	150-300	—	300'-450'	—	—	450'-600'	—	—	—
RANGE	300	100	100	300	30	30	300	100	10	10
DC 1	129	78.8	30.1	176	13.4	19.6	164	44.0	8.55	7.45
DC 2	127	77.4	28.8	169	27.8	5.6	164	43.8	9.20	6.95
DC 3	129	78.6	29.9	177	13.2	19.7	164	44.0	8.60	7.45
DC 4	127	77.4	29.0	169	28.0	5.6	164	43.8	9.21	6.95
DC 5	129	78.6	30.0	177	13.0	20.0	164	44.0	8.58	7.58
DC 6	127	77.4	29.0	169	28.1	5.5	164	43.8	9.18	6.98
DC 7			29.9	177	13.0	20.0			8.58	7.53
DC 8			29.0	167	28.0	5.0			9.21	6.98
DC AVG.	128	78.0	29.5	172.6	20.6	12.6	164	43.9	8.89	7.23
AC 1	121	73.8	28.0	164	19.4	11.9	154	41.8	8.40	6.82
AC 2	121	73.8	27.8	164	19.4	11.9	155	41.8	8.40	6.82
AC AVG.	121	73.8	27.9	164	19.4	11.9	154.5	41.8	8.40	6.82
S.P.	0	-9.5	—	-10.0	—	—	-4.0	—	—	—
AC NOISE	<.02	<.04	—	<.02	—	—	<.02	—	—	—
POT RES.	1K	1K	—	2K	—	—	2K	—	—	—

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-11 HALF SE SP. L DATE 9-16-67

PAGE 6

SEND	12	23	34	45	12	23	34	45	Cal	
RECEIVE	600'-750'				750'-900'					
RANGE	100	30	10	10	30	10	3	3	300	
DC 1	33.2	12.5	1.70	1.55	11.4	5.12	0.77	2.96		
DC 2	31.7	15.4	5.38	5.22	10.0	6.88	2.78	.84		
DC 3	33.2	12.5	1.70	1.54	11.5	5.12	0.77	2.98	90.0	
DC 4	31.6	15.4	5.35	5.22	10.0	6.88	2.78	.84	109	
DC 5	33.4	12.5	1.70	1.55	11.5	5.10	0.78	2.97	90.0	
DC 6	31.5	15.4	5.35	5.24	10.0	6.88	2.80	.80	109	
DC 7	33.4		1.70	1.50	11.5	5.09	0.77	3.00		
DC 8	31.5		5.35	5.24	9.90	6.89	2.79	.80		
DC AVG.	32.4	13.95	3.53	3.38	10.7	6.00	1.78	1.90	99.5	
AC 1	30.8	13.3	3.30	3.18	10.2	5.68	1.66	1.76	95.0	
AC 2	30.8	13.2	3.30	3.18	10.2	5.68	1.66	1.76	95.0	
AC AVG.	30.8	13.25	3.30	3.18	10.2	5.68	1.66	1.76	95.0	
S.P.	+1.2				-8.6					
AC NOISE	<.01				<.02					
POT RES.	5K				4K					

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Seminco

LINE 2-11 HALF S24°E SP. 1 DATE 9-16

PAGE

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-150'	150-300	→	300-450	→	→	450-600	→	→	→
RANGE	Low	hi	low	hi	hi	low	hi	hi	hi	low
VOLTAGE	690	270	670	260	270	670	110	260	270	670
CURRENT	2A	1A	2A	2A	1A	2A	2A	2A	1A	2A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	cal	
RECEIVE	600-750	→	→	→	750-900	→	→	→	1-2	
RANGE									hi	
VOLTAGE	110	260	270	670	110	260	270	670	60	
CURRENT	2A	2A	1A	2A	2A	2A	1A	2A	1A	

FREQUENCIES ____ ____

SENDER NO.

OPERATOR

RECEIVER NO.

OPERATOR

COMMENTS :

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project SEMINCO Line 2-11 NW Field date 9-16-67 Data page_____ Comp. date_____. Comp by_____

(A) Send	12	23	12	34	23	12	45	34	23	12			
(B) Receive	0-150'	150-300	—	300-450	—	—	450-600	—	—	—			
(C) n separation	1	1	2	1	2	3	1	2	3	4			
(D) I	2	2	2	1	2	2	2	1	2	2			
(E) Vdc (avg)	146	132	29.5	97.5	49.0	17.3	304.5	29.3	20.7	9.03			
(F) DCcal 1.010	—	—	—	—	—	—	—	—	—	—			
(G) Kn x 10^{-3}	.45	.45	1.8	.45	1.8	4.5	.45	1.8	4.5	9.0			
(H) ρ dc=ExFxGx10^3/D	33	30	27	44	45	39	69	53	47	41			
(I) Vac Σ	136	124	27.8	90.0	44.8	15.8	281	27.5	19.3	8.40			
(J) AC noise x 2													
(K) Vac(corr) = $\sqrt{I^2 - J^2}$													
(L) AC-DC cal. 0.949	—	—	—	—	—	—	—	—	—	—			
(M) ρ dc/ρac=ExL/K	1.019	1.010	1.007	1.028	1.038	1.039	1.028	1.011	1.018	1.020			
(N) PFE=(M-1)(10^2)	1.9	1.0	0.7	2.8	3.8	3.9	2.8	1.1	1.8	2.0			
(O) MCF=(M-1)(10^5)/H	58	33	26	64	84	100	41	21	38	49			

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	45	34	23	12	45	34	23	12	Cal				
(B) Receive	600-750	—	—	—	750-900	—	—	—					
(C) n separation	2	3	4	5	3	4	5	6					
(D) I	1.5	1	2	2	1.5	1	2	2					
(E) Vdc (avg)	72.9	13.8	10.5	5.63	31.9	9.04	8.12	4.01	99.0 K				
(F) DCcal 1.010	—	—	—	—	—	—	—	—	—				
(G) Kn x 10^{-3}	1.8	4.5	9.0	15.75	4.5	9.0	15.75	25.2					
(H) ρ dc=ExFxGx10^3/D	88	63	48	95	97	82	65	51					
(I) Vac Σ	67.3	12.5	9.60	5.05	29.2	8.25	7.90	3.675	99.0 K				
(J) AC noise x 2													
(K) Vac (corr) = $\sqrt{I^2 - J^2}$													
(L) AC-DC cal. 0.949	—	—	—	—	—	—	—	—	—				
(M) ρdc/ρac =ExL/K	1.028	1.048	1.038	1.058	1.037	1.040	1.041	1.036					
(N) PFE=(M-1)(10^2)	2.8	4.8	3.8	5.8	3.7	4.0	4.1	3.6					
(O) MCF=(M-1)(10^5)/H	32	76	79	129	38	49	63	71					

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HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT SEMINCO

LINE 2-11 HALF NW SP. 1 DATE 9-16

PAGE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-150	150-300 →		300-450 →			450-600 →			
RANGE										
VOLTAGE	110	260	110	260	260	110	650	260	260	110
CURRENT	2A	2A	2A	1A	2A	2A	2A	1A	2A	2A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Cal	
RECEIVE	600-750 →				750-900 →				4-5	
RANGE										
VOLTAGE	500	260	260	110	500	260	260	110	350	
CURRENT	1.5A	1A	2A	2A	1.5A	1A	2A	2A	1A	

FREQUENCIES .05 3.0

SENDER NO.

OPERATOR R. Palmer

RECEIVER NO.

OPERATOR J. King

COMMENTS:

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-11 HALF NW SP. 1 DATE 9-16-8

PAGE 7

SEND	12	23	12	34	23	12	45	34	23	12
RECEIVE	0-150'	150-300'		300'-450'			450'-600'			
RANGE	300	300	100	300	100	30	300	100	30	30
DC 1	146	132	29.8	98.0	50.0	18.6	305	28.2	22.5	11.5
DC 2	146	132	29.2	97.0	48.0	16.3	304	30.5	19.0	6.6
DC 3	146	132	29.8	98.0	49.9	18.4	305	08.1	22.5	11.5
DC 4	146	132	29.2	97.0	47.9	16.0	304	30.5	18.9	6.5
DC 5	146	132	29.9	98.0	50.0	18.3	305	28.0	22.6	11.6
DC 6	146	132	29.4	97	48.0	16.2	304	30.6	18.8	6.5
DC 7			29.9		50.1	18.5		28.0	22.6	11.6
DC 8			29.2		48.0	16.1		30.5	18.7	6.4
DC AVG.	146	132	29.5	97.5	49.0	17.3	304.5	29.3	20.7	9.03
AC 1	136	124	27.8	90.0	44.8	15.8	281	27.5	19.3	8.40
AC 2	136	124	27.8	90.0	44.8	15.8	281	27.5	19.3	8.40
AC AVG.	136	124	27.8	90.0	44.8	15.8	281	27.5	19.3	8.40
S.P.	-3.3	-8.96		+15.5	+16		+3.0			
AC NOISE	2.02	2.04		2.02			2.02			
POT RES.	21K	4K		4K			4K			

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-11 HALF NW SP. 1 DATE 9-16-87

SEND	45	34	23	12	45	34	23	12	Cal	
RECEIVE	600-750'				750-900'					
RANGE	100	30	30	10	100	30	10	10	300	
DC 1	71.2	16.6	8.0	2.60	32.0	9.60	7.25	5.12		
DC 2	74.2	11.5	12.9	8.62	31.8	8.48	9.02	2.90		
DC 3	71.2	16.0	8.00	2.78	31.9	9.58	7.20	5.10	114	
DC 4	74.5	11.5	13.1	8.66	31.9	8.48	9.06	2.90	84.0	
DC 5	71.2	15.9	8.00	2.45	31.9	9.60	7.19	5.20	114	
DC 6	74.6	11.4	13.1	8.50	31.9	8.51	9.01	2.86	84.0	
DC 7	71.3	16.1	7.8	2.62	31.9	8.45	7.19	5.20		
DC 8	74.7	11.4	13.0	8.78	32.0	9.65	9.04	2.82		
DC AVG.	72.9	13.8	10.5	5.63	31.9	9.04	8.12	4.01	99	
AC 1	67.2	12.5	9.60	5.05	29.2	8.25	7.40	3.68	94.0	
AC 2	67.4	12.5	9.60	5.05	29.2	8.25	7.40	3.67	94.0	
AC AVG.	67.3	12.5	9.60	5.05	29.2	8.25	7.40	3.675	94.0	
S.P.	-11.0				-9.9					
AC NOISE	2.01				2.02					
POT RES.	5K				3K					

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-12 HALF N60E SP. 1 DATE 9/19

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0 — 5		— 10			— 15				— 20
RANGE	300	100	30	1000	30	30	3000	300	10	10
DC 1	98 96	494 494	148 147	316 314	110 115	73 86	920 920	124 126	697 736	428 410
DC 2	100 96	500 496	147 146	316 314	110 105	97 64	920 920	124 125	640 768	444 503
DC 3	98 96	498 498	146 144	316 314	118 107	79 85		124 125	675 750	422 483
DC 4	99 96	496 496	147 149		118 87	88 77			683 757	482 545
DC 5	98 96		146 146		126 101	92 71			710 764	427 492
DC 6					121 117	90 77			635 820	430 370
DC 7					102 113	83 82			630 724	473 442
DC 8									630 782	499 436
DC AVG.	97.2	49.4	14.65	315	10.79	8.09	920	124.7	7.62	4.54
AC 1	96	48.0	14.2	308	10.6	7.8	910	121	6.80	4.27
AC 2	96	48.0	14.2	308	10.6	7.8	900	121	6.80	4.27
AC AVG.	96	48.0	14.2	308	10.6	7.8	905	121	6.80	4.27
S.P.	-2.9	-3.3	→	-0.1	→	→	-3.6	→	→	→
AC NOISE	.08	.06	→	.18	→	→	.08	.38	→	→
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-12 HALF NCOE SP. 1 DATE 7-19

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL	
RECEIVE	20			25				30	4-5	
RANGE	300	100	10	10	100	100	10	10	300	
DC 1	176 176	480 495	440 385	316 358	710 725	297 292	348 300	320 300	98	
DC 2	176 176	484 493	462 423	264 436	688 716	303 298	377 292	324 221	11	
DC 3		482 483	402 366		690 662	303 312	353 302	257 403	11	
DC 4		486 495	376 384		755 753	297 317	356 250	287 321	11	
DC 5		486 493	412 463		708 686	284 324	403 266	228 367		
DC 6			400 478		720 680	265 342	438 245			
DC 7			300 537		698 700		506 168			
DC 8			363 580		710 684					
DC AVG.	176	48.7	4.17	3.31	70.6	30.2	3.33	2.97	98	
AC 1	175.5	47.3	3.98?	2.87	71.0	29.3	3.27?	2.85	98	
AC 2	175.5	47.3	3.98?	2.87	70.6	29.5	3.25?		98	
AC AVG.	175.5	47.3	3.98	2.87	70.8	29.4	3.26	2.85	98	
S.P.	+8.7				+11.7					
AC NOISE	.14	.78			.18		1.+			
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Sinaloa

LINE #2-12 HALF E ½ SP. 1 DATE 9/20

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-500	500 - 1000	1000 - 1500	→	→	→	1500 - 2000	→	→	→
RANGE	10	→	→	→	→	→	→	→	→	→
VOLTAGE	80	90	80	120	90	~~120~~	320	180	120	120
CURRENT	2.5	2.5	2.5	2.5	2.5	3.8	2.5	3.5	3.5	3.6
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Cal	
RECEIVE	2000 - 2500	→	→	→	2500 - 3000	→	→	→	1000	
RANGE	10	→	→	→	→	→	→	→	→	
VOLTAGE	320	180	120	120	320	180	120	120		
CURRENT	2.5	3.5	3.5	3.5	2.5	3.5	3.5	3.5		

FREQUENCIES .05 1

SENDER NO. 1467-25

OPERATOR W.F.

RECEIVER NO. 3641

OPERATOR B.F.

COMMENTS:

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page _____

Project SEMINCO Line 2-12 N60 Field date 9-19 Data page _____ Comp. date 9-19 . Comp by Bob

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
(B) Receive	0 — 5		— 10			— 15				— 20		
(C) n separation												
(D) I	2.5	2.5	2.5	2.5	2.5	3.8	2.5	3.5	3.5	3.6		
(E) Vdc (avg)	97.2	49.4	14.65	315	10.79	8.09	920	124.7	7.02	4.54		
(F) DCcal	1.020									→		
(G) Kn x 10^{-3}	1.5	1.5	6	1.5	6	15	1.5	6	15	30		
(H) ρdc=ExFxGx10^3/D	60	30	36	193	26	33	560	218	21	38		
(I) Vac Σ	96	48.0	14.2	308	10.6	7.8	905	121	6.80	4.27		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	1.000									→		
(M) ρ dc/ρac=ExL/K												
(N) PFE=(M-1)(10^2)	1.3	2.81	3.1	2.3	1.7	3.6	1.7	3.1	3.3	6.2		
(O) MCF=(M-1)(10^5)/H	22	93	86	12	65	109	3.0	14	106	163		
	−2.9	−3.3		−0.1			−3.6					

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL			
(B) Receive	20 —			— 25				— 30	4-5			
(C) n separation	2.5	3.5	3.5	3.5	2.5	3.5	3.5	3.5				
(D) I	1											
(E) Vdc (avg)	176	48.7	4.17	~~3.31~~	70.6	30.2	3.33	2.97	98			
(F) DCcal	1.020							→				
(G) Kn x 10^{-3}	6	15	30	52.5	15	30	52.5	84	73			
(H) ρ dc=ExFxGx10^3/D	430	213	36	49	432	264	51	73				
(I) Vac Σ	175.5	47.3	3.98	2.87	70.8	29.4	3.26	2.85	95			
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	1.000							→				
(M) ρdc/ρac =ExL/K												
(N) PFE=(M-1)(10^2)	0.4	3.1	4.8	—	−0.3	2.7	2.2	4.0				
(O) MCF=(M-1)(10^5)/H	1.0	15	133		—	10	43	55				
	+8.7				+11.7							

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-12 HALF S60W SP. 1 DATE 7-19

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-5		10			15				20
RANGE	100	300	30	300	100	30	300	30	30	10
DC 1	492 494	97 98	145 146	83 84	372 385	93 84	91 91	202 197	160 158	463 472
DC 2	492 494	97 98	146 145	83 84	377 378	89 87	92 92	200 199	158 159	464 477
DC 3			147 143		376 378	88 88	92 91	201 197	159 157	470 456
DC 4					377 377	88 91		202 196	160 158	468 475
DC 5					376 380	88 87			159 156	466 464
DC 6										
DC 7										
DC 8										
DC AVG.	49.3	97.5	14.56	83.5	37.7	8.82	91.5	19.92	15.83	4.68
AC 1	47.6	95.5	13.9	80.0	36.5	8.4	88	19.1	15.3	4.37
AC 2	47.6	95.5	13.9	80.0	36.5	8.4	88	19.1	15.3	4.37
AC AVG.	47.6	95.5	13.9	80.0	36.5	8.4	88	19.1	15.3	4.37
S.P.	+3.1	-9.3	→	+9.6	→	→	-5.3	→	→	→
AC NOISE	.07	.10	→	.08	→	→	.06	→	→	→
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-12 HALF SCONSP. 1 DATE 9-19

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL	
RECEIVE	30			25			2	30	1-2	
RANGE	30	10	10	3	10	10	10	3	300	
DC 1	161 168	364 606	724 695	217 213	715 730	498 490	690 763	177 180	98	
DC 2	164 165	622 585	719 723	228 206	743 740	492 456	705 724	162 154	98	
DC 3	164 166	824 623	676 716	198 222	696 762	475 472	729 715	176 176	98	
DC 4	162 169	596 583	700 724	222 245	734 764	499 458	760 723	188 171	98	
DC 5		622 580	710 736	~~175~~	620 910	443 463	745 687	163 160		
DC 6		608 569	708 708	~~175 230~~	710 842	462 466	745 697	202 161		
DC 7		620 572	~~717 742~~	212 252		445 436	758 695	188 154		
DC 8				186 250	716	418 469		191 163		
DC AVG.	16.48	5.93	7.09	2.14	7.46	4.63	7.24	1.731	98	
AC 1	15.8	5.67	6.80	2.01	7.06	4.33	7.04	1.63	96.5	
AC 2	15.7	5.67	6.80	2.01	7.04	4.33	7.02	1.62	96.5	
AC AVG.	15.75	5.67	6.80	2.01	7.05	4.33	7.03	1.625	96.5	
S.P.	-1.9				-15.5					
AC NOISE	.09				.11					
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Seminco

LINE 2-12 HALF W E SP. 1 DATE 9/19/87

PAGE 1

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-500	500 - 1000		1000 - 1500	→		1500 - 2000		→	
RANGE	10	→								
VOLTAGE	300	120	300	90	120	300	80	90	120	300
CURRENT	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL	
RECEIVE	2000 - 2500	→			2500 - 3000		→		500	
RANGE	10	→						→		
VOLTAGE	80	90	120	300	80	120	200	330		
CURRENT	2.5	2.5	2.5	2.5	2.5	3.6	4.0	2.7		

FREQUENCIES .05 3

SENDER NO. 146725

OPERATOR M.F.

RECEIVER NO. 3641

OPERATOR B.F.

COMMENTS:

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project SEMINCO Line 2-12-5½ SCOW Field date 9-19 Data page_____ Comp. date_____. Comp by_____

(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—5		10			15				20		
(C) n separation												
(D) I	2.5									→		
(E) Vdc (avg)	49.3	97.5	14.56	83.5	37.7	8.82	91.5	19.92	15.83	4.68		
(F) DCcal	1.020											
(G) Kn x 10^{-3}	1.5	1.5	6	1.5	6	15	1.5	6	15	30		
(H) ρdc=ExFxGx10^3/D	31	60	36	51	92	54	56	49	97	57		
(I) Vac Σ	47.6	95.5	13.9	80.0	36.5	8.40	88.0	19.1	14.3	4.37		
(J) AC noise x 2												
(K) Vac(corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal. 1.5	.984											
(M) ρ dc/ρac=ExL/K												
(N) PFE=(M-1)(10^2)	2.0	0.6	3.1	2.9	1.8	3.5	2.3	2.7	2.0	5.4		
(O) MCF=(M-1)(10^5)/H	64	10	81	57	19	65	41	55	21	95		
	+3.1	-9.3		+9.6			-5.3					

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL			
(B) Receive	20			25				30	1-2			
(C) n separation												
(D) I	2.5				→	3.6	4.0	2.7				
(E) Vdc (avg)	16.48	5.93	7.11	~~2.10~~	7.46	~~4.63~~ 4.54	7.84	1.731	98			
(F) DCcal	1.020											
(G) Kn x 10^{-3}	6	15	30	52.5	15	30	52.5	84				
(H) ρ dc=ExFxGx10^3/D	40	36	87	48	46	39	97	55				
(I) Vac Σ	15.75	5.67	6.80	2.01	7.05	4.33	7.03	1.625	96.5			
(J) AC noise x 2												
(K) Vac (corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal. 1.5	.984											
(M) ρdc/ρac =ExL/K												
(N) PFE=(M-1)(10^2)	2.1	2.7	2.1	4.8	2.7	3.2	1.5	5.1				
(O) MCF=(M-1)(10^5)/H	52	75	24	100	54	82	16	92				

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Semine

LINE A-13 HALF W SP. L DATE 9-21

PAGE 3

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-150		300			450			600	
RANGE	1000	100	30	300	30	30	300	100	30	10
DC 1	1320 1310	712	172 176	184 184	218 212	82 81	120 119	562 562	~~108 98~~	444 463
DC 2	1320 1310	704	174 175	184 184	218 212	80 83	120 119	558 562	100 101	470 446
DC 3		712 704	173 176		213 217	80 83		558 564	97 102	438 478
DC 4		712 704	175 175						98 102	462 457
DC 5	?								102 97	463 470
DC 6										464 435
DC 7										492 436
DC 8										
DC AVG.	1315	70.8	17.46	184	21.45	8.13	119.5	56.1	10.00	4.598
AC 1	1200	65.8	16.5	176	20.3	7.7	116	53.6	9.5	4.34
AC 2	1200	65.8	16.5	176	20.3	7.7	116	53.6	9.5	4.34
AC AVG.	+40.8	-2.9 →	→	+8.6 →	→	→	+2.3 →	→	→	→
S.P.	.06	.06 →	→	.04 →	→	→	.06 →	→	→	→
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-13 HALF N SP. L DATE 9-21

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL	
RECEIVE	600			750				900	4-5	
RANGE	100	30	10	10	30	30	10	3	30	
DC 1	356 347	261 259	548 550	488 495	136 136	129 135	333 345	178 194	250	
DC 2	356 347	262 258	579 546	495 482	135 137	131 133	333 352	182 193	252	
DC 3	358 345	263 256	564 565	490 493	136 135	130 134	336 345	172 198	250	
DC 4		261 260	564 563	499 477		129 134	335 336	167 208	252	
DC 5			568 536				342 342	160 210		
DC 6							337 340	179 198		
DC 7								174 195		
DC 8										
DC AVG.	35.2	25.98	5.60	4.91	13.59	13.19	3.40	1.86	25.1	
AC 1	34.3	24.9	5.32	4.64	13.2	12.6	3.20	1.74	25.0	
AC 2	34.3	24.9	5.32	4.64	13.2	12.6	3.20	1.73	25.0	
AC AVG.	34.3	24.9	5.32	4.64	13.2	12.6	3.20	1.735	25.0	
S.P.	+6.4				+4.0					
AC NOISE	.05				.06					
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Sinimco

LINE #2-13 HALF 12½ SP. 1 DATE 9/21

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-150	150 - 300		300 - 450		→	450 - 600			→
RANGE	10	—	—	—	—	—	—	—	—	→
VOLTAGE	800	800	800	660	800	800	200	660	800	800
CURRENT	.350	.400	.350	1.0	.400	.350	1.0	1.0	.400	.350
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CHK	
RECEIVE	600 - 750	—	—	→	750 - 900			→		
RANGE	10	—	—	—	—	—	—	→		
VOLTAGE	200	660	800	800	200	660	800	800		
CURRENT	1.0	1.0	.400	.350	1.0	1.0	400	.350		

FREQUENCIES .05 .3

SENDER NO. 146725

OPERATOR J.J. S.

RECEIVER NO. 3641

OPERATOR B. S.

COMMENTS:

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project SEMINOCO Line 2-13 W½ Field date 9-21 Data page_____ Comp. date 9-21 . Comp by BOB

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
(B) Receive	0—150	—	— 300	—	—	— 450	—	—	—	— 600		
(C) n separation												
(D) I	.35	.40	.35	1.0	.40	.35	1.0	1.0	.40	.35		
(E) Vdc (avg)	1315	70.8	17.46	184	21.45	8.13	119.5	56.1	10.00	4.598		
(F) DCcal	.996	—	—	—	—	—	—	—	—	→		
(G) Kn x 10^{-3}	0.45	0.45	1.8	0.45	1.8	4.5	0.45	1.8	4.5	9.0		
(H) ρ dc=ExFxGx10^3/D (534)	1690	79	89	82	91	104	54	100	112	118		
(I) Vac Σ	1200	65.8	16.5	176	20.3	7.70	116	53.6	9.50	4.34		
(J) AC noise x 2	BAD TEST READING											
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.996	—	—	—	—	—	—	—	—	→		
(M) ρ dc/ρac=ExL/K												
(N) PFE=(M-1)(10^2)	9.3	7.3	5.5	4.2	5.3	5.2	2.8	4.4	5.0	5.9		
(O) MCF=(M-1)(10^5)/H	~~118~~	92	62	51	58	~~115~~ 50	52	44	45	50		
	+40.8	-2.9		+8.6			+2.3					

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	4-5	3-4	2-3	1-2	4-3	3-4	2-3	1-2	CAL			
(B) Receive	600	—	—	— 780	—	—	—	—	900	4-5		
(C) n separation												
(D) I	1.0	1.0	.40	.35	1.0	1.0	.40	.35				
(E) Vdc (avg)	35.2	25.98	5.60	4.91	13.59	13.19	3.40	1.86	25.1			
(F) DCcal	.996	—	—	—	—	—	—	—	→			
(G) Kn x 10^{-3}	1.8	4.5	9.0	15.75	4.5	9.0	15.75	25.2				
(H) ρ dc=ExFxGx10^3/D	63	116	126	220	69	118	134	134				
(I) Vac Σ	34.5	24.9	5.32	4.64	13.2	12.6	3.20	1.735	25.0			
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.996	—	—	—	—	—	—	—	→			
(M) ρdc/ρac =ExL/K												
(N) PFE=(M-1)(10^2)	1.6	3.7	5.0	5.5	2.6	4.3	6.0	7.0				
(O) MCF=(M-1)(10^5)/H	25	31	40	25	38	36	45	52				
	+6.4				+4.0							

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Seminco
LINE 2-13 HALF S SP. 1 DATE 9-21

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0 - 150		300			450				600
RANGE	300	3000	100	1000	300	30	1,000	300	100	10
DC 1	166 163	1240 1230	457 473	698 692	262 261	204 199	400 400	99 101	618 633	692 653
DC 2	166 163	1240 1230	482 458	698 690	262 257	205 186	400 400	99 101	623 627	682 685
DC 3			462 483	698 692	262 258	204 197			620 630	684 698
DC 4					261 259	213 186			618 632	660 693
DC 5						189 197				647 672
DC 6						201 187				
DC 7										
DC 8										
DC AVG.	164.5	1235	47.30	694.6	260.2	19.71	400	100.5	62.5	6.76
AC 1	155	1140	44.8	647	241	18.7	380	95	59.4	6.58
AC 2	155	1140	44.8	649	241	18.7	380	95	59.4	6.58
AC AVG.	155	1140	44.8	648	241	18.7	380	95	59.4	6.58
S.P.	+8.6	-5.6	→	-10.2		→	+12.9			←
AC NOISE	.12	.09	→	.15	∿	.58 ↑	.12			→
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-13 HALF S SP. 1 DATE 9-13

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	C+L	
RECEIVE	600			750				900	1-2	
RANGE	300	100	30	10	100	30	30	10	30	
DC 1	93 93	358 361	285 296	452 436	326 315	164 163	155 158	330 335	24.5	
DC 2	94 94	359 362	292 289	460 417	326 313	167 157	155 159	335 328	24.9	
DC 3	93 94	358 362	289 288	435 443	328 310	164 153	154 154	326 350	24.6	
DC 4			287 290	415 463	328 310	164 153	154 161	315 367	24.8	
DC 5			286 290	415 424			154 158	333 316	25.0	
DC 6							156 163		24.8	
DC 7									24.7	
DC 8									24.7	
DC AVG.	93.5	36.0	28.8	4.35	31.9	16.08	15.17	3.34	24.77	
AC 1	88	34.6	27.6	4.27	30.7	15.5	15.0	3.23	24.7	
AC 2	88	34.6	27.6	4.27	30.7	15.5	15.0	3.21	24.8	
AC AVG.	88	34.6	27.6	4.27	30.7	15.5	15.0	3.22	24.75	
S.P.	+13.6	→	→	→	+11.3	→	→	→		
AC NOISE	.06	→	→	→	.06	∿ .30	→	→		
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT_____

LINE #2-13 HALF S½ SP. 1 DATE 9/21

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-150	150 - 300		300 - 450		→	450 - 600			→
RANGE	10									→
VOLTAGE	200	660	200	800	660	200	800	800	666	200
CURRENT	1.0	1.0	1.0	400	1.0	1.0	.350	.400	1.0	1.0
SEND	1-2	2-3	3-4	4-5	1-2	2-3		4-5	CHK	
RECEIVE	600 - 750			→	750 - 900			→	2:50	
RANGE	10							→		
VOLTAGE	800	800	640	200	800	800	640	200		
CURRENT	.350	.400	1.0	1.0	.350	.400	1.0	1.0		

FREQUENCIES .05 3

SENDER NO. 146725

OPERATOR D.F.

RECEIVER NO. 3641

OPERATOR B.F.

COMMENTS:

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page ____

Project SEMINCO Line 2-13 5½ Field date 9-21 Data page ____ Comp. date 9-21 . Comp by Bob

(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—150	—	—300	—	—	—450	—	—	—	600		
(C) n separation												
(D) I	1.0	1.0	1.0	.400	1.0	1.0	.350	.400	1.0	1.0		
(E) Vdc (avg)	164.5	1235	47.30	694.6	240.2	19.71	400	100.5	62.5	6.76		
(F) DCcal	1.013	—	—	—	—	—	—	—	—	→		
(G) Kn x 10^{-3}	0.45	0.45	1.8	0.45	1.8	4.5	0.45	1.8	4.5	9.0		
(H) ρ dc=ExFxGx10^3/D	74	556	85°	780°	468	89°	510°	456°	282	61°		
(I) Vac Σ	155	1140	44.8	648	241	18.7	380	95	59.4	6.58		
(J) AC noise x 2												
(K) Vac(corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	1.00	—	—	—	—	—	—	—	—	→		
(M) ρ dc/ρac=ExL/K												
(N) PFE=(M-1)(10^2)	6.3	8.4	5.5	7.2	7.7	5.4	5.4	5.7	5.2	2.7		
(O) MCF=(M-1)(10^5)/H	85	15	65	9.3	16	61	11	13	18	44		
	+8.6	-5.6		+0.2			+12.9					

Project ____ Line ____ Field date ____ Data page ____ Comp. date ____ Comp by ____

(A) Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL			
(B) Receive	600	—	—	—750	—	—	—	900	1-2			
(C) n separation												
(D) I	.350	.400	1.0	1.0	.350	.400	1.0	1.0				
(E) Vdc (avg)	93.5	36.0	28.8	4.35	31.9	16.08	15.17	3.34	24.77			
(F) DCcal	1.013	—	—	—	—	—	—	→				
(G) Kn x 10^{-3}	1.8	4.5	9.0	15.75	4.5	9.0	15.75	25.2				
(H) ρ dc=ExFxGx10^3/D	480	405	259°	69°	410	362	238°	84°				
(I) Vac Σ	88	34.6	27.6	4.27	30.7	15.5	15.0	3.22	24.75			
(J) AC noise x 2												
(K) Vac (corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	1.00	—	—	—	—	—	—	→				
(M) ρdc/ρac =ExL/K												
(N) PFE=(M-1)(10^2)	6.3	4.0	4.4	4.7	3.8	3.7	1.2	3.6				
(O) MCF=(M-1)(10^5)/H	13	9.9	17	25	9.3	10	5.6	43				
	+13.6				+11.3							

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Seminco

LINE #14 HALF C+ SP. 1 DATE 9/20

PAGE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-500	500 - 1000		1000 - 1500	→		1500 - 2000			→
RANGE	10	→	→	→	→	→	→	→	→	→
VOLTAGE	280	320	280	200	320	280	320	200	320	280
CURRENT	3.5	3.5	3.5	3.0	3.5	3.5	2.5	3.0	3.5	3.5
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Ch	
RECEIVE	2000 - 2500	→	→	→	2500 - 3000	→	→	→	1.0	
RANGE	10	→	→	→	→	→	→	→	→	
VOLTAGE	320	200	320	280	320	200	320	280		
CURRENT	2.5	3.0	3.5	3.5	2.5	3.0	3.5	3.5		

FREQUENCIES .05 .3

SENDER NO. 146225

OPERATOR M.F.

RECEIVER NO. 3641

OPERATOR B.F.

COMMENTS:

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMINCO
LINE 2-14 HALF N SP. I DATE 8-22

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0—5		10			15				20
RANGE	300	300	30	1000	100	30	1000	100	30	10
DC 1	147 149	142 140	221 222	505 506	464 466	109 112	286 284	836 833	110 112	385 380
DC 2	148 149	143 141	222 218	505 506	463 467	113 112	286 284	836 833	108 108	365 382
DC 3	148 148	142 140	222 217		462 467	113 113			111 108	396 402
DC 4			226 218		463 466	112 113			110 110	367 450
DC 5			220 220						115 106	356 440
DC 6										360 428
DC 7										
DC 8										
DC AVG.	296	283	04.1	1011	92.9	22.5	570	166.9	22.0	7.83
AC 1	146	139	21.5	502	45.5	10.8	283	81.7	10.7	3.67
AC 2	146	139	21.5	500	45.5	10.8	281	81.6	10.7	3.67
AC AVG.	292	278	43.0	1002	91.0	21.6	564	163.3	21.4	7.34
S.P.	-4.9	-4.2	→	+10.6	→	→	-67.4	→	→	→
AC NOISE	.08	0.7	→	.09	→	→	.08	→	→	→
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT SEMUCO
LINE 2-14 HALF N SP. 1 DATE 9-22

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	C&L	
RECEIVE	20			25				30	4-5	
RANGE	300	100	30	10	100	100	10	10	300	
DC 1	136 134	396 394	94 97	410 414	593 586	318 295	600 606	286 345	98	
DC 2	136 134	387 397	94 97	445 387	593 584	305 304	598 617	318 320	99	
DC 3		390 399	94 99	442 406	595 580	306 303	584 621	325 321	98	
DC 4		393 407	98 97	465 400	596 580	308 303	610 592	316 323	99	
DC 5		385 398	95 98	492 394			623 576	354 316		
DC 6								328 296		
DC 7								337 295		
DC 8								340 294		
DC AVG.	270	78.9	19.27	8.70	117.7	60.9	12.09	6.42	197	
AC 1	133	38.4	9.25	4.03	57.5	29.6	5.73	3.00	98	
AC 2	133	38.4	9.25	4.05	57.5	29.6	5.73	3.00	98	
AC AVG.	266	76.8	18.50	8.08	115.0	59.2	11.46	6.00	196	
S.P.	+53.4	→	→	→	+12.5	→	→	→		
AC NOISE	.09	→	→	→	.13	→	→	→		
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Seminco

LINE 12-14 HALF W ½ SP. 1 DATE 9/22

PAGE

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-500	500 - 1000		1000 - 1500		→	1500 - 2000			→
RANGE	10	—								→
VOLTAGE	320	240	320	310	240	320	280	310	200	320
CURRENT	2.5	3.5	2.5	3.5	3.5	2.5	3.5	3.5	3.0	2.5
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CHK	
RECEIVE	2000 - 3500			→	2500 - 3000			→	1.0	
RANGE	280	310	200	320	280	310	200	320		
VOLTAGE										
CURRENT	3.5	3.5	3.0	2.5	3.5	3.5	3.0	2.5		

FREQUENCIES .05 3

SENDER NO. 146735

OPERATOR J.T.F.

RECEIVER NO. 3641

OPERATOR B.S.

COMMENTS:

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

N60E 560W

PROJECT Semivco
LINE 2-14 HALF S SP. 1 DATE 2-22

PAGE 1

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	2-3
RECEIVE	3-6		10			15				20
RANGE	300	300	30	100	100	10	300	100	30	10
DC 1	101 100	150 150	162 162	695 706	394 394	667 662	143 144	280 285	227 230	578 538
DC 2	101 100	150 150	162 162	700 702	394 394	666 658	142 144	280 286	228 229	552 557
DC 3				696 704		666 658	142 144	280 286	229 228	558 549
DC 4									227 229	565 553
DC 5									228 228	552 530
DC 6										565 556
DC 7										
DC 8										
DC AVG.	201	300	32.4	140.1	78.8	13.26	286	56.6	45.7	11.07
AC 1	99	148	15.8	69.0	38.6	6.40	140	27.6	22.3	5.30
AC 2	99	148	15.8	69.0	38.6	6.38	139	27.6	22.3	5.28
AC AVG.	198	296	31.6	138.0	77.2	12.78	279	55.2	44.6	10.58
S.P.	+4.6	+6.6	→	-4.5	→	→	-4.3	→	→	→
AC NOISE	.08	.03	→	.041	→	→	.06	→	→	→
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT SEMINCO

LINE 2-14 HALF S SP. 1 DATE 2-21

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	C2L	
RECEIVE	20			25				30	1-2	
RANGE	100	30	30	10	30	10	10	3	300	
DC 1	340 325	100 97	97 95	270 292	130 123	476 462	603 576	184 175	99	
DC 2	340 325	101 96	97 96	261 275	127 126	497 470	590 587	177 177	98	
DC 3	338 326	101 95	97 95	282 277	128 125	483 465	590 584	188 188	99	
DC 4		101 96		276 264	128 126	495 480	592 588	192 189	98	
DC 5				295 262		495 467	577 576	188 187		
DC 6				284 254		486 466	585 582	186 187		
DC 7								183 177		
DC 8								175 180		
DC AVG.	66.4	19.69	19.24	5.51	25.3	9.58	11.70	3.67	197	
AC 1	32.2	9.55	9.4	2.62	12.3	4.66	5.74	1.76	99	
AC 2	32.2	9.55	9.4	2.62	12.3	4.66	5.74	1.76	99	
AC AVG.	64.4	19.10	18.80	5.24	24.6	9.32	11.48	3.52	198	
S.P.	-0.7			→	-4.8			→		
AC NOISE	.06			→	.06			→		
POT RES.										

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Seminco Line 2-14 Field date_____ Data page_____ Comp. date_____. Comp by_____

(A) Send	1-2	2-3	1-2	2-4	2-3	1-4	4-5	5-6	2-3	1-2		
(B) Receive												
(C) n separation												
(D) I	3.5	3.5	3.5	3.0	3.5	3.5	2.5	3.0	3.5	2.5		
(E) Vdc (avg)	296	283	44.1	101.1	92.9	22.5	570	166.9	22.0	7.83		
(F) DCcal	.508											
(G) Kn x 10^{-3}	1.5	1.5	6	1.5	6	15	1.5	6	15	30		
(H) ρ dc=ExFxGx10^3/D	64	62	38	257	81	49	174	170	48	34		
(I) Vac Σ	292	278	43.0	100.2	91.0	21.6	564	163.3	21.9	7.34		
(J) AC noise x 2												
(K) Vac(corr) =$\sqrt{I^2 - J^2}$	USE 1.005											
(L) AC-DC cal.	~~.505~~											
(M) ρ dc/ρac=ExL/K												
(N) PFE=(M-1)(10^2)	1.9	2.3	3.1	1.4	2.6	4.7	1.6	2.7	3.3	7.2		
(O) MCF=(M-1)(10^5)/H	30	37	82	5	32	96	9	16	69	212		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		CAL		
(B) Receive												
(C) n separation												
(D) I	2.5	3.0	3.5	3.5	2.5	3.0	3.5	3.5		1000		
(E) Vdc (avg)	270	78.9	19.27	8.70	117.7	60.9	12.09	6.42		197		
(F) DCcal								→		.508		
(G) Kn x 10^{-3}	6	15	30	52.5	15	30	52.5	84				
(H) ρ dc=ExFxGx10^3/D	327	200	84	66	359	309	92	78				
(I) Vac Σ	266	76.8	18.50	8.04	115.0	59.2	11.46	6.00		196		
(J) AC noise x 2												
(K) Vac (corr) =$\sqrt{I^2 - J^2}$												
(L) AC-DC cal.								→		.995		
(M) ρdc/ρac =ExL/K												
(N) PFE=(M-1)(10^2)	2.0	3.2	4.7	8.2	2.9	3.4	6.0	7.5				
(O) MCF=(M-1)(10^5)/H	6	16	56	124	8	11	65	96				

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Seminco Line 2-14 W½ Field date_____ Data page_____ Comp. date_____. Comp by_____

(A) Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
(B) Receive												
(C) n separation												
(D) I	2.5	3.5	2.5	3.5	3.5	2.5	3.5	3.5	3.0	2.5		
(E) Vdc (avg)	201	300	324	140.1	78.8	13.26	2.86	56.6	45.7	11.07		
(F) DCcal	.508											
(G) Kn x 10^{-3}	1.5	1.5	6	1.5	6	15	1.5	6	15	30		
(H) ρ dc=ExFxGx10^3/D	61	65	40	31	69	40	62	49	116	67		
(I) Vac Σ	198	306	31.6	138.0	77.2	12.78	2.79	55.2	44.6	10.58		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	1.005											
(M) ρ dc/ρac=ExL/K												
(N) PFE=(M-1)(10^2)	2.0	1.9	3.0	2.0	2.6	4.3	3.0	3.0	3.0	5.2		
(O) MCF=(M-1)(10^5)/H	33	29	75	65	38	108	48	61	26	78		

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5				
(B) Receive												
(C) n separation												
(D) I	3.5	3.5	3.0	2.5	3.5	3.5	3.0	2.5		1000		
(E) Vdc (avg)	66.4	19.69	19.24	5.51	25.3	9.58	11.70	3.67		197		
(F) DCcal								→		.508		
(G) Kn x 10^{-3}	6	15	30	52.5	15	30	52.5	84				
(H) ρ dc=ExFxGx10^3/D	58	43	98	59	55	42	104	63				
(I) Vac Σ	64.4	19.10	18.80	5.24	24.6	9.32	11.48	3.52		198		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.								→		1.005		
(M) ρdc/ρac =ExL/K												
(N) PFE=(M-1)(10^2)	3.6	3.6	2.9	5.7	3.4	3.3	2.4	4.8				
(O) MCF=(M-1)(10^5)/H	62	84	30	97	62	79	23	76				

Mr. Cliff A. Mar
U. S. SMELTING
P. O. BOX 1980
SAAT LAKE CITY, UTAH

HEINRICHS GEOEXPLORATION COMPANY
808 W. GRANT ROAD - P. O. BOX 5671
TUCSON, ARIZONA 85703
Area Code 602 Phone 623-0578
Geophysical Exploration Research Engineering

SUBJECT: DATE: 9/25/67

2ND FOLD

Dear Mr. Mark:

Enclosed is a Preliminary data sheet.

Very truly yours,

HEINRICHS GEOEXPLORATION COMPANY

Chris S. Ludwig
Senior Geophysicist

CSL:jc
Enclosure

1ST FOLD

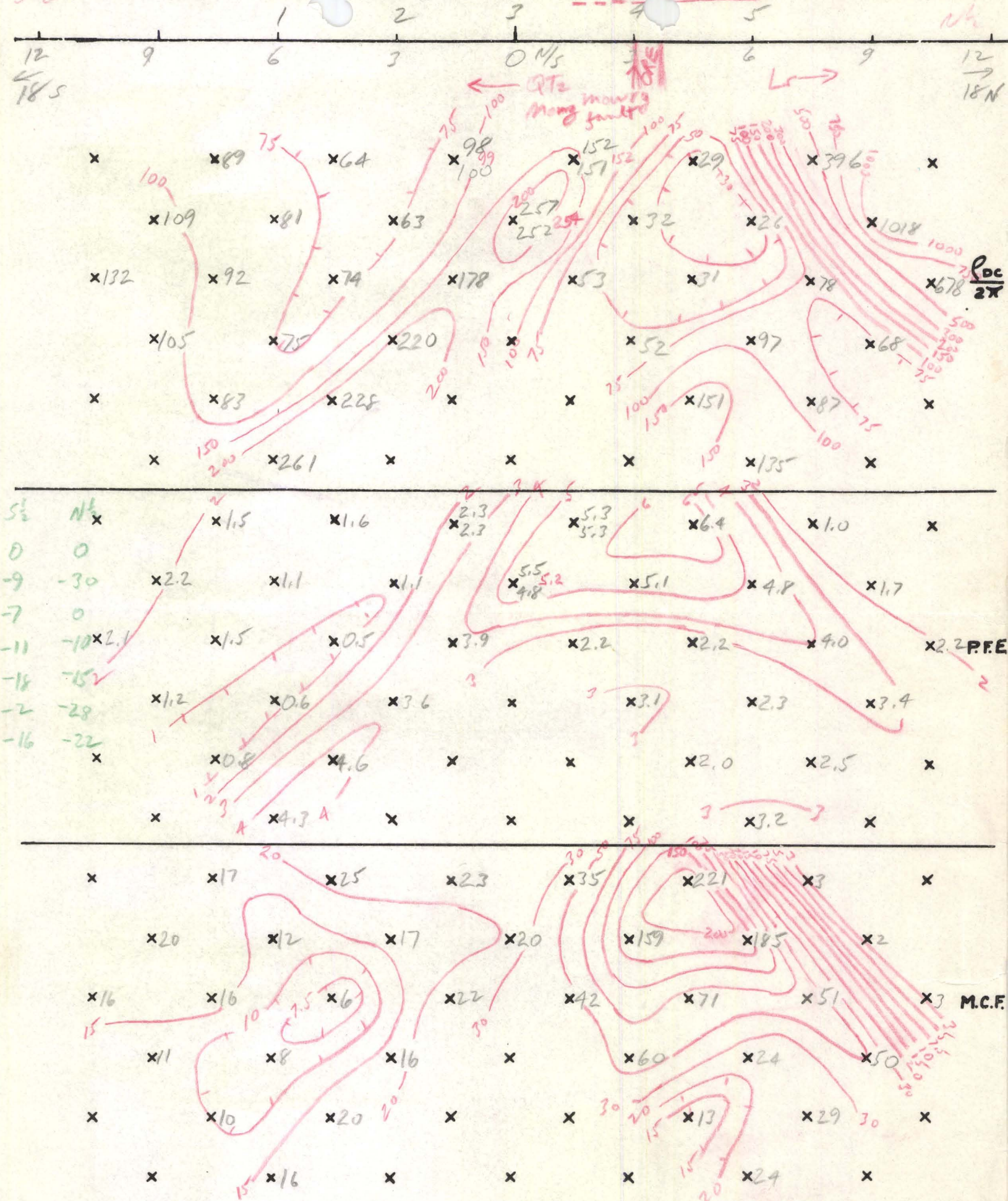
PLEASE REPLY TO ——→ SIGNED

DATE SIGNED

SEND WHITE AND PINK COPIES WITH CARBON INTACT. PINK COPY IS RETURNED WITH REPLY.

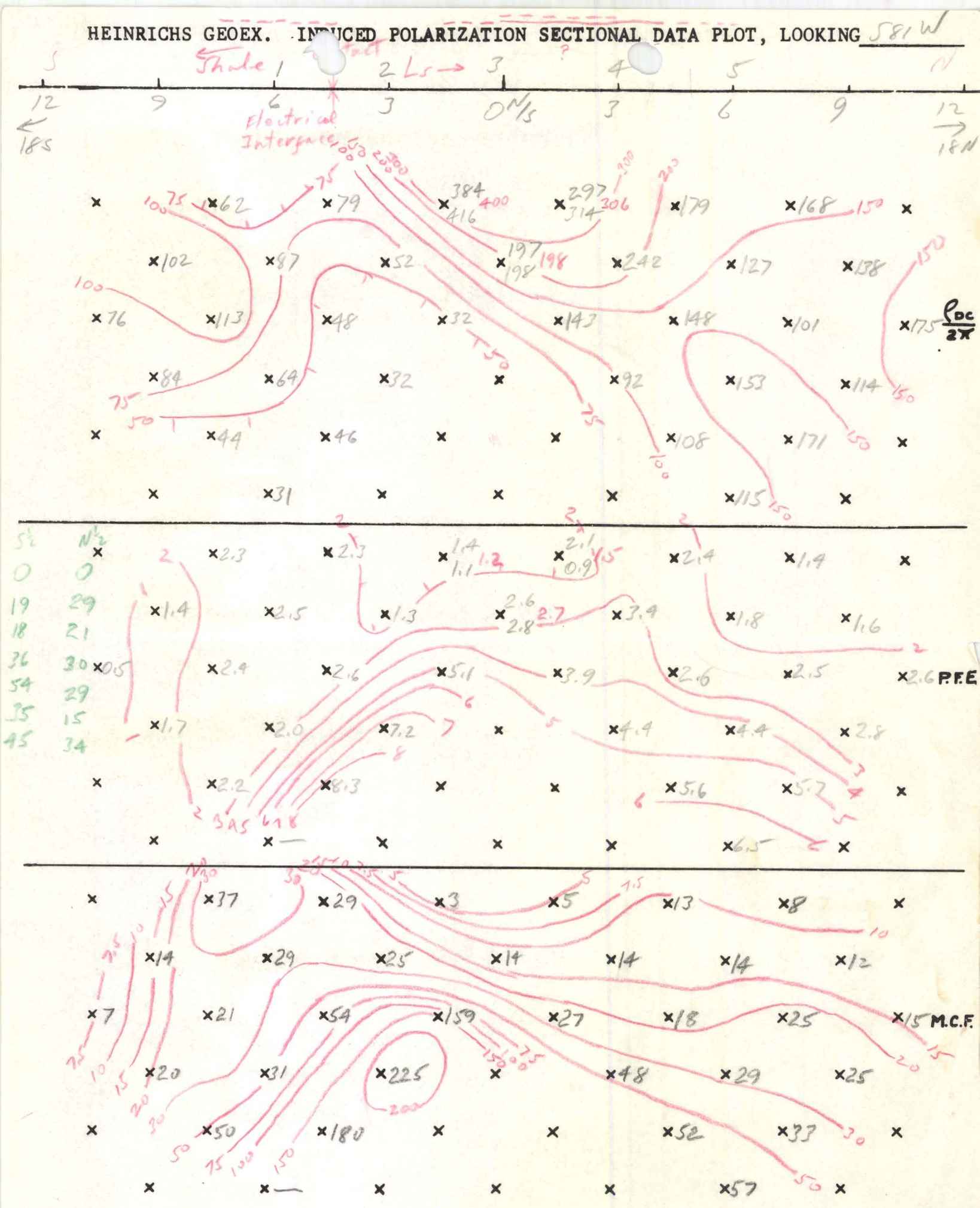
DETACH THIS COPY—RETAIN FOR ANSWER

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING S 81 W



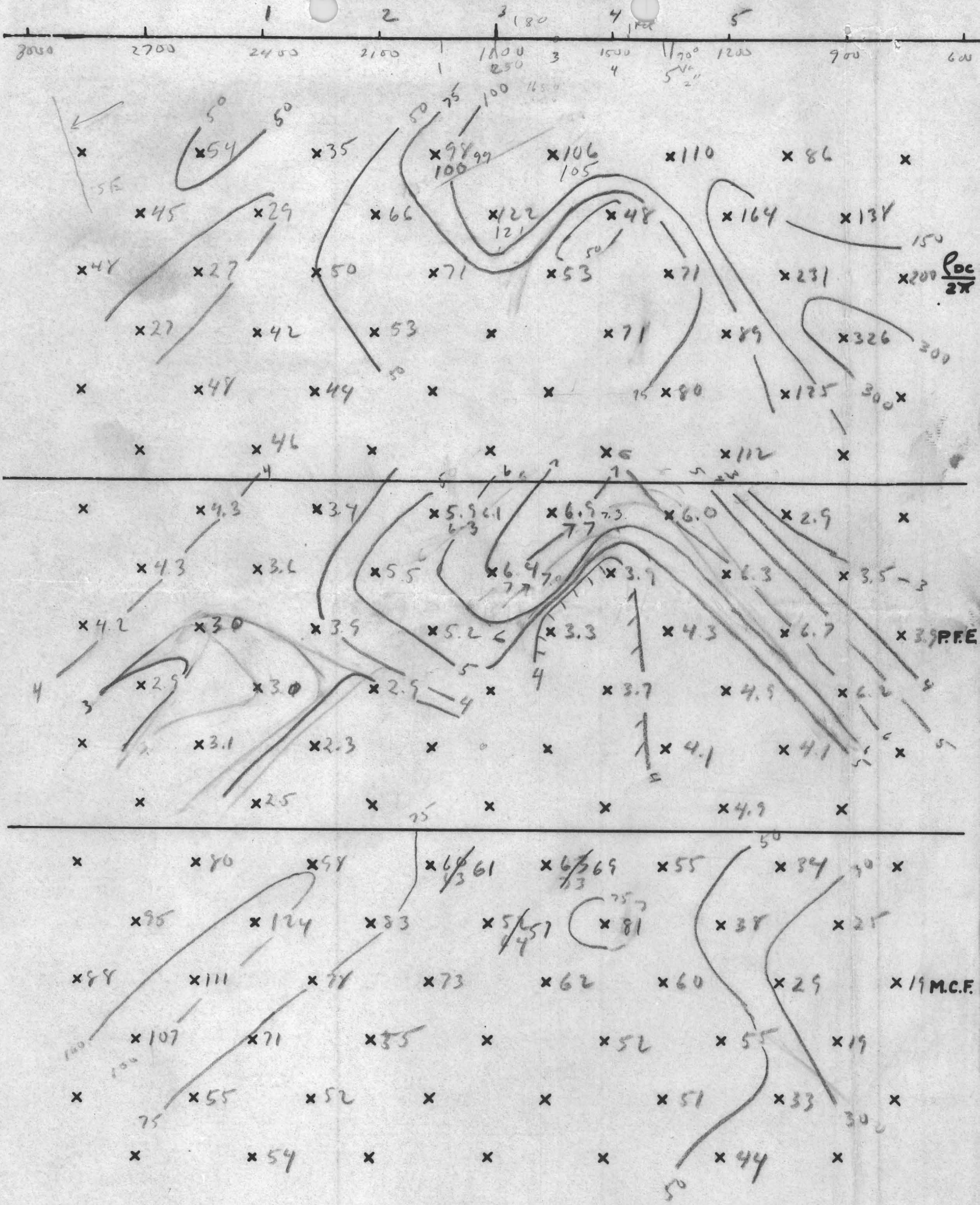
AREA Semineo Mowry LINE 3 a = 300' SCALE: 1" = 300' DATE: June

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING S81W



AREA Seminoe Norris LINE 2 a = 300' SCALE: 1" = 300' DATE: June

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING S 65° W



AREA Simmerson LINE 1-1 a = 300' SCALE: — DATE: 8-22-67

HEINRICHS GEOEXPLORATION COMPANY

806 WEST GRANT ROAD, TUCSON, ARIZONA, 85703. P.O. BOX 5671. PHONE: (AREA CODE 602) 623-0578

August 10, 1967

Mr. Carew McFall
Scientific Exploration & Mining Company
P. O. Box 2297
Nogales, Arizona 85621

U.S. Smelting

Re: Proposed I.P. Surveys
Patagonia Area, Santa
Cruz County, Arizona

Dear Carew:

Confirming recent conversations with Walt, we herewith propose for our mutual understanding and agreement as follows:

Beginning on or about August 21, 1967, Geoex will furnish one two man I.P. crew and equipment as requested by you.

Charges will be at the rate of $200.00 per two man crew day for estimated 11 days; total job cost will be approximately $3,600.00. Vehicle charges will be $12.00 per day plus $0.12 per mile per vehicle and one vehicle will be used. Directly related supplies, communications, living and other directly incidental charges at our cost. Final compilation, interpretation and report is $125.00 per Tucson staff day.

Mobilization and demobilization, travel, excessive weather delay and standby charges are one-half the daily rate. Breakdown of our equipment in excess of one hour per day will be made up or not charged.

All property permits, brushing and trespassing-liability and related costs incurred on behalf of client assumed by client. Charges for extra equipment and personnel employed if mutually desired, are extra.

Geoex will save client harmless from all Workmen's Compensation, public liability and property damage liability incurred by Geoex employees.

Preliminary reports or copies of rough field plotting sheets will be available as work progresses.

An advance of $1,500.00 will be required to mobilize the crew, and payments are due on presentation. Billings may be submitted periodically with final statement after completion of final report.

Indication of your understanding and approval of the above by executing as provided below on the attached copy of this letter and returning it to us, will be most appreciated.

Sincerely yours,

HEINRICHS GEOEXPLORATION COMPANY

E. Grover Heinrichs
Vice President

Date: Sept. 2, 1967

Accepted by: C. Carew McFall

Title: Gen. Manager

EGH:jc
cc: Extra enclosure

SEMINCO

SCIENTIFIC EXPLORATION AND MINING COMPANY

P. O. Box 2297
Nogales, Ariz. 85621
August 15, 1967

Mr. Chris Ludwig
Senior Geophysicist
Heinrichs Geoexploration Company
P. O. Box 5671
Tucson, Arizona 85703

Dear Chris:

I sent the map showing planned I. P. lines for Phase II of work at the Mowry to U. S. Smelting, keeping only a tracing. As I can not seem to locate the tracing, I have put on the enclosed map the lines as I remember them. The alternate for line 2-4, shown in ordinary pencil may be better in that it goes over the Olive Mine shaft and near a shaft north of the Mowry Mine.

I will try to call you Friday morning to discuss further lines 2-1, 2-2, and 2-3. Perhaps a combination of I. P. and magnetometer work will give us a more precise drill site for this anomaly picked up in Phase I (our Nellie Prospect).

Yours truly,

C. Carew McFall

C. Carew McFall
General Manager

3538 El Grande Drive, San Jose, California 95132, Tel: 408 251-7340, Cable: Seminco, Sanjose, Calif.

August 10, 1967

Mr. Carew McFall
Scientific Exploration & Mining Company
P. O. Box 2297
Nogales, Arizona 85621

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Patagonia Area, Santa
Cruz County, Arizona

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E. Grover Heinrichs
Vice President

Date:_____

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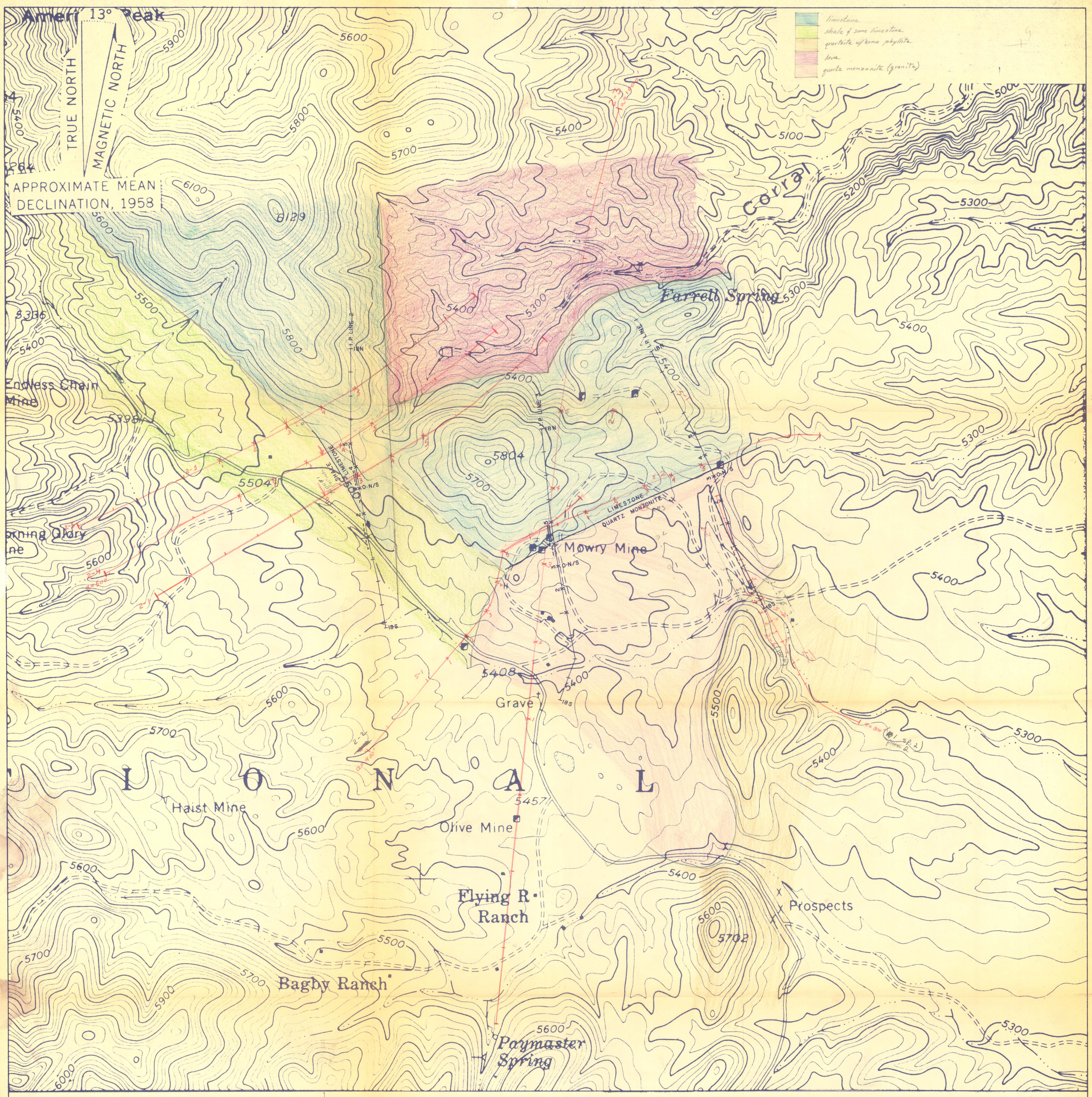

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG — I.P. LINE

STATIONS — INTERFACE — ELECTRODES

HEINRICHS
GEOEXPLORATION COMPANY
POST OFFICE BOX 5671, TUCSON, ARIZONA, 85703
Phone: 602/623-0578 Cable: GEOEX, Tucson
vancouver sydney
geophysical engineers

INDUCED POLARIZATION LOCATION
AND INTERPRETATION PLAN
MOWRY AREA
SANTA CRUZ COUNTY, ARIZONA

FOR
SEMINCO

SCALE 1" = 500'	DRAWN BY J. C. D.	DATE JUNE 1967


13°
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN
DECLINATION, 1958
5900
5600
5800
5700
5400
6100
6129
5500
5336
5100
5000
Corral
5200
5300
Farrell Spring
I.P. LINE 2
I.P. LINE 3
I.P. LINE 1
18N
18S
Endless Chain
Mine
5398
5504
SHALE
LIMESTONE
0-N/S
5804
LIMESTONE
QUARTZ MONZONITE
Mowry Mine
5408
Grave
I O N A L
Haist Mine
5457
Olive Mine
Flying R
Ranch
Prospects
5702
Bagby Ranch
Paymaster
Spring
6000
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER
RELATIVE ANOMALY STRENGTH
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