CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

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JOB# 619 LINE# 3B SP 1

CLIENT Mc Intyre

AREA Mineral Hill

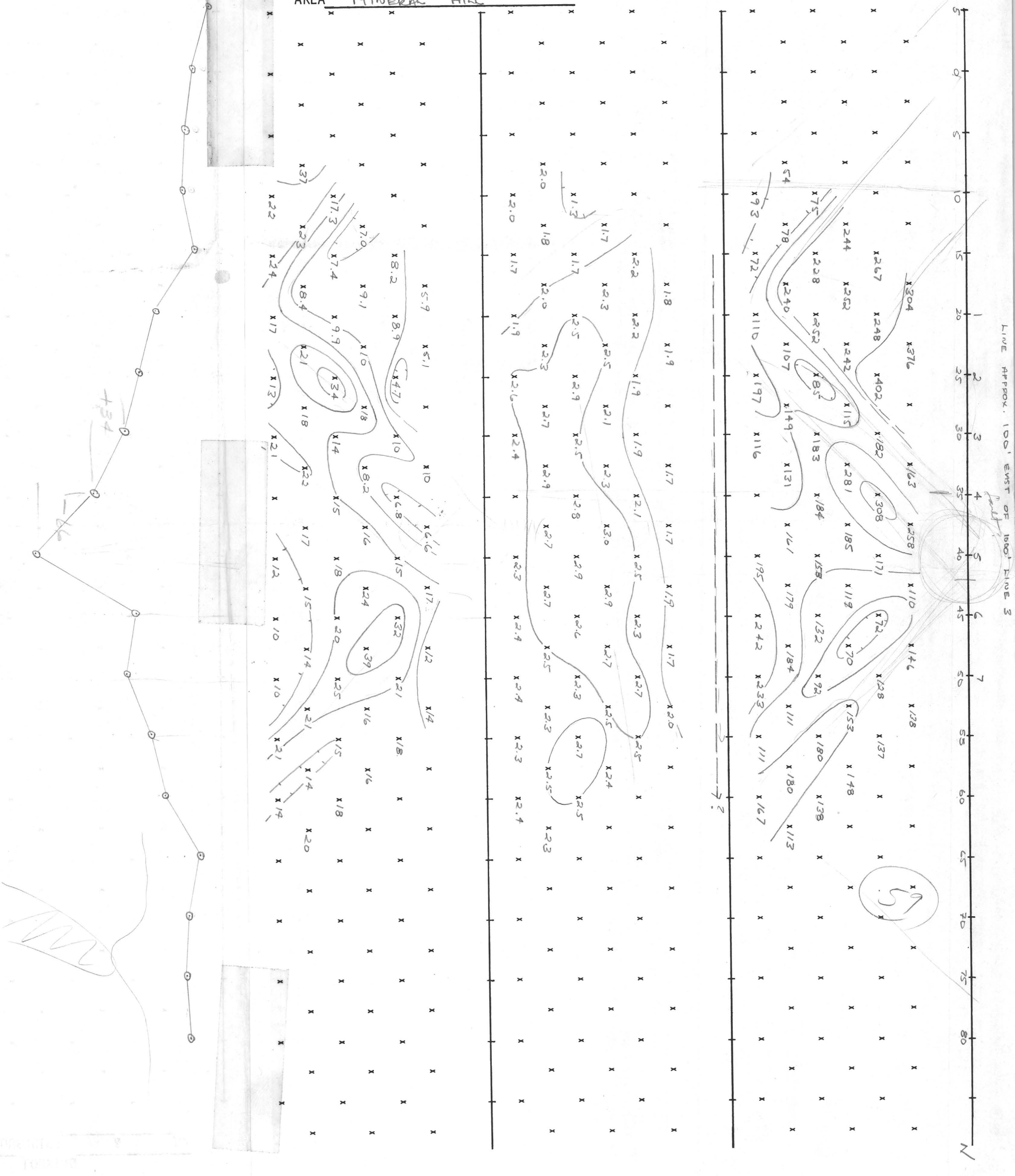
DATE a = 500' LOOKING W

FREQUENCIES 3.0 & 0.3 Hz

JOB# 619 LINE# 3 SP 3 a = 500 LOOKING W

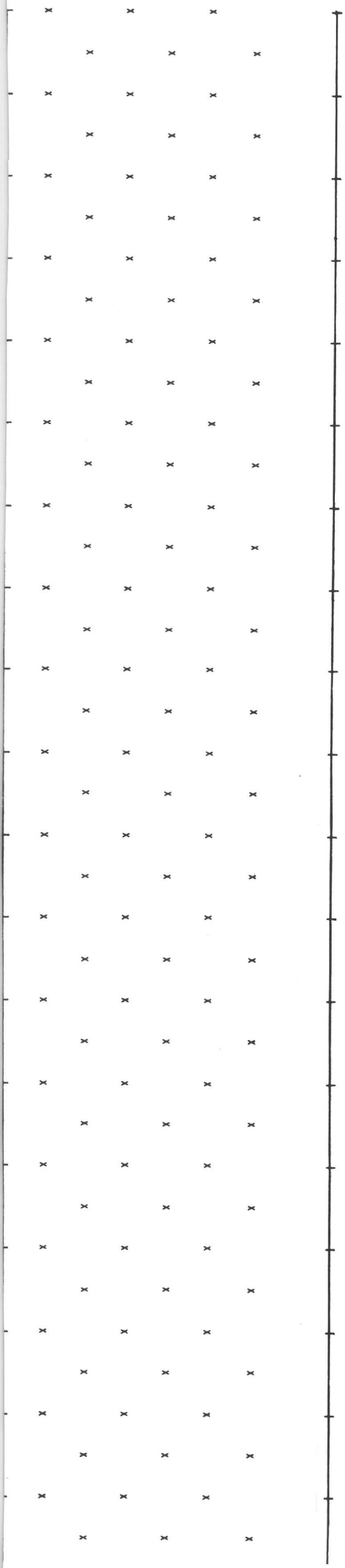
CLIENT Mc Intyre DATE Apr 71 FREQUENCIES 3.0 & 0.3 Hz

AREA Mineral Hill



_____ LOOKING_____

FREQUENCIES_____&_____Hz



JOB# 619 LINE# 3A

CLIENT McINTYRE

AREA MURRAY HILL

SP 1

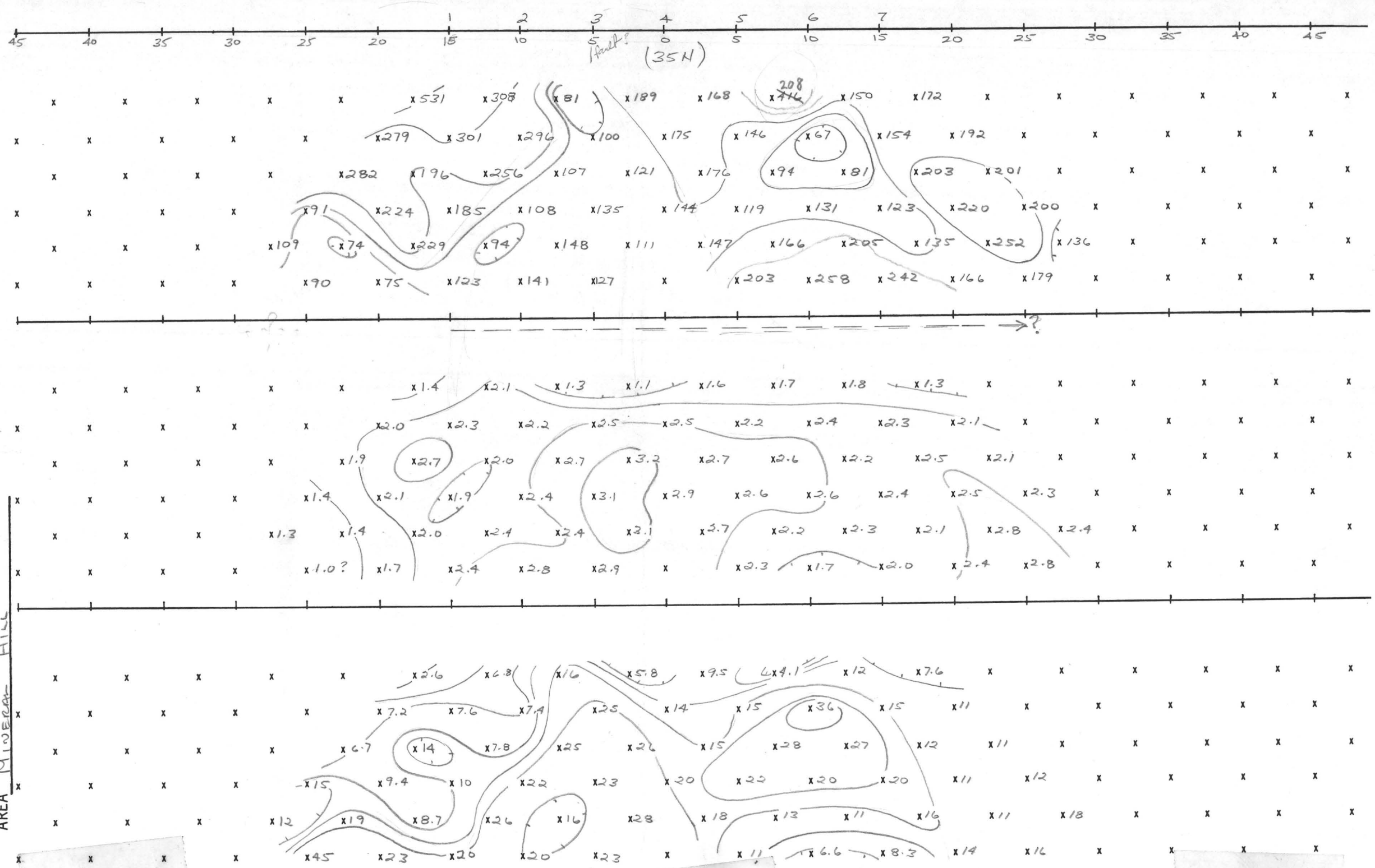
DATE

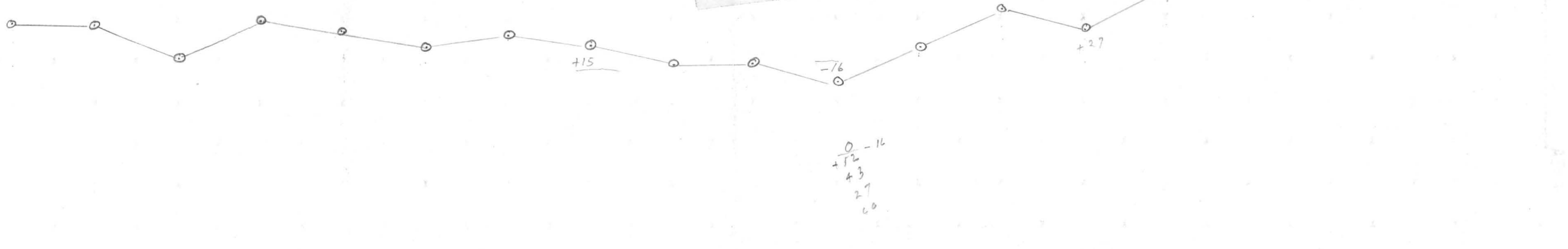
a = 500'

LOOKING W

FREQUENCIES 3.0 & 0.3 Hz

STA 0.0 780' EAST OF STA 35N ON LINE 3





JOB#_____LINE#____

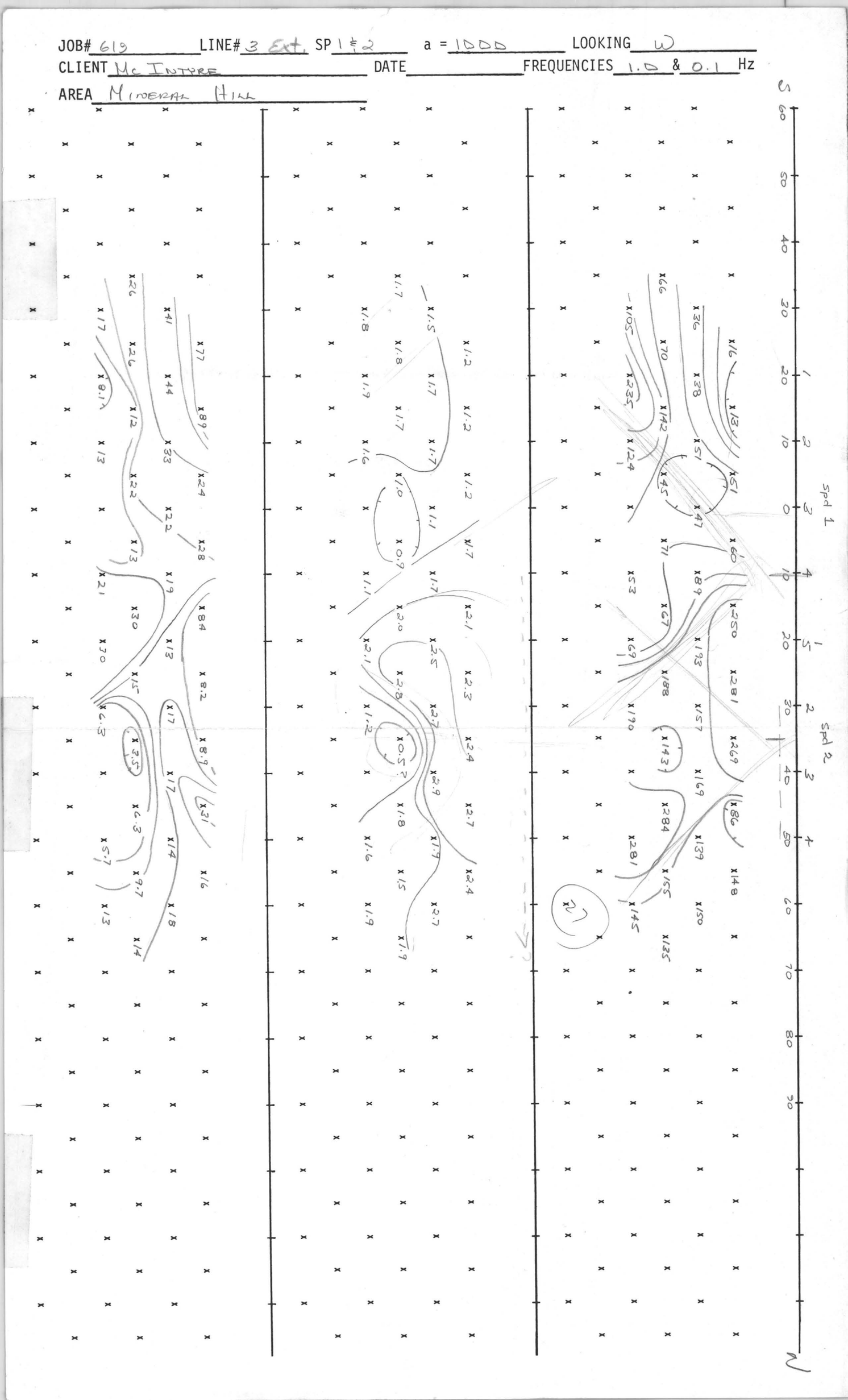
CLIENT_____

AREA_____

JOB# 619 LINE# 3 Ext. SP 1 & 2 a = 1000 LOOKING W

CLIENT McINTYRE DATE FREQUENCIES 1.0 & 0.1 Hz

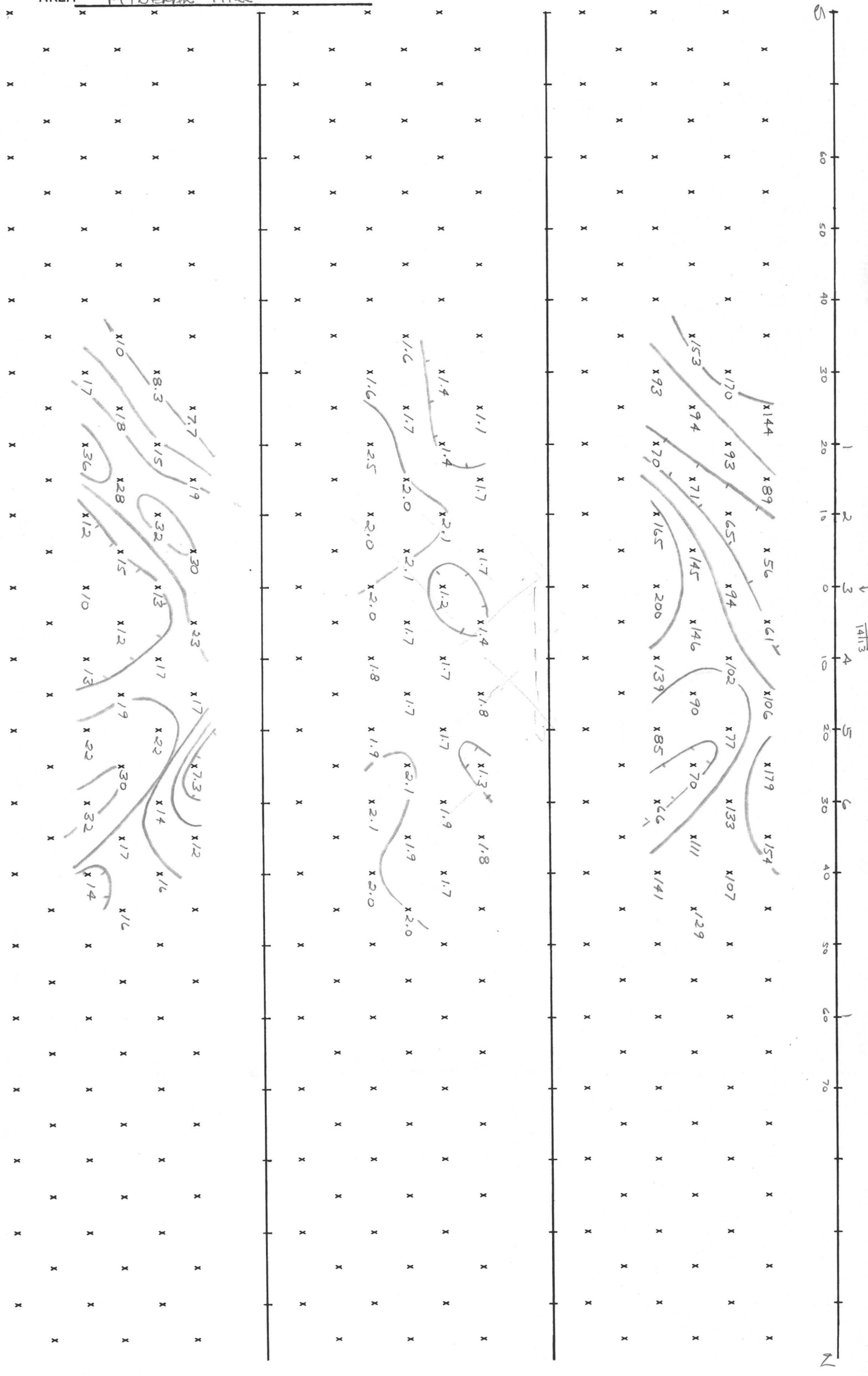
AREA MINERAL HILL



JOB# 619 LINE# 4 SP 1 a = 1000 LOOKING WEST

CLIENT McINTYRE DATE 4-5-71 FREQUENCIES 3.0 & 0.3 Hz

AREA MINERAL HILL



JOB# 619 LINE# 5 SP 1,2,&3 a = 1000 LOOKING West

CLIENT M. Intyre DATE 4-8-71 FREQUENCIES 3.0 & 0.3 Hz

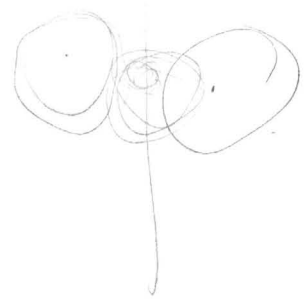
AREA Minerva Hill

Spd 2

Spd 1

Spd 3 Grounded(?) pipeline approximately 200 west of line ↓ Grounded Fence

300' N of water tank



Job 679, Line 1, Spread 1, N+5½, 3/25/71 1000.

CP at NW End C Sight

PAGE 1

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill
LINE 1 HALF S½ SP. 1 DATE 3-24-71

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-10S	10-20S	→	20-30S	→	→	30-40S	→	→	→
RANGE	1.0	1.0	0.1	1.0	0.1	0.1	1.0	1.0	0.1	0.1
DC 1										
DC 2	1.3	1.3	1.3	1.0	1.1	1.4	1.7	1.4	~~1.4~~ 1.3	1.5
DC 3										
DC 4 Cen	0.6	0.6	0.6	1.0	0.6	0.6	1.0	1.0	0.6	0.6
DC 5 #	1	2	3	4	5	6	7	8	9	10
DC 6 n	1	1	2	1	2	3	1	2	3	4
DC 7										
DC 8										
DC AVG.										
AC 1	25.7	23.9	6.87	47.3	6.63	3.04	42.7	14.1	3.18	1.74
AC 2	0.0	—	/	—	—	—	+0.2	/	—	—
AC AVG.										
S.P.				+1.4	→	→	+6.4	→	→	→
AC NOISE							→ 0.08 M	0.3 Hz	0.3	
POT RES.				55K	→	→	54K	→	→	→

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES.

4.32 4.27

PROJECT Mineral Hill
LINE 1 HALF S½ SP. 1 DATE 3-24-71

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		CHL
RECEIVE	40-50S	———	———	——→	50-60S	———	———	——→		
RANGE	0.1	0.1	0.1		0.1					
DC 1						0.1				
DC 2	1.1	0.8	1.0		0.9	0.4?				
DC 3										
DC 4 Pen	1	1	0.6		1	~~1 0.6~~				
DC 5 #	11	12	13		14	15				
DC 6 n	2	3	4		3	4				
DC 7										
DC 8										
DC AVG.										
AC 1	9.25	5.19	1.54		4.32	2.94				
AC 2	—	—	—							
AC AVG.										
S.P.	+29.9	———→								
AC NOISE										
POT RES.	62K	———→								

$\frac{V}{I}$ K

$\frac{3.18}{600} \times \frac{50}{30,000}$ $\frac{25.7}{600}$ $\frac{5}{3000}$

160

25.7
23.5
128.5

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

CP NW END C. SIGHT

PROJECT MINERAL HILL
LINE 1 HALF N SP. 1 DATE 3-25-71

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-10N	10-20N	→	20-30N	—	→	30-40N	—	—	→
RANGE	1.0	1.0	1.0	1.0	1.0	0.1	1.0	0.1	0.1	0.1
DC 1				1.8						
DC 2	1.4	1.2	1.6	~~2.0~~	1.6	1.8	1.9	1.6	1.5	~~2.4~~ ~~2.2~~
DC 3										2.0
DC 4 (m	1	1.75	1	0.6	1.75	1	0.6	0.6	1.75	1
DC 5 #	16	17	18	19	20	21	22	23	24	25
DC 6 n	1	1	2	1	2	3	1	2	3	4
DC 7										
DC 8										
DC AVG.				47.6						
AC 1	39.6	74.5	11.6	~~47.4~~	27.2	6.32	31.6	7.80	8.46	2.30
AC 2	+0.1	—	—	+0.1	—	—	+0.1	—	—	+0.1 —
AC AVG.										
S.P.				≈0 ?	-10.8	+22.3				→
AC NOISE										
POT RES.				280 K		260K	→	→	→	→

Noise at
30-40 N

0.04-0.06 3.0 Hz
up to 0.09 20 damp

0.04 - 6 Hz damp

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill
LINE 1 HALF N SP. 1 DATE 3-25-71

SEND	4-5	3-4	2-3	4-5	3-4		CAL			
RECEIVE	40-50N	→	→	50-60N	→					
RANGE	0.1	0.1	0.1	0.1	0.1					
DC 1	1.2	2.0	2.0	1.6	~~2.0~~ 1.7					
DC 2							-0.1			
DC 3										
DC 4 Cum	0.6	0.6	1.75	0.6	0.6		1			
DC 5 #	26	27	28	29	30		1			
DC 6 n	2	3	4	3	4					
DC 7										
DC 8										
DC AVG.	7.87									
AC 1	~~7.83~~	3.78	5.40	3.91	2.27					
AC 2	—	+0.2	+0.1	—	—		101			
AC AVG.							+0.1			
S.P.	14.1 +	→	→	+14.8	→					
AC NOISE							3.0			
POT RES.	60K	→	→	78K	→	→	0.3			

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mineral Hill

LINE 1 HALF 5 1/2 SP. 1 DATE 3/24

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-10s	10-20s	—	20-30	—	—	30-40	—		
RANGE										
VOLTAGE	750	630	750	490	630	750	806	490	630	730
CURRENT	0.6	0.6	.6	1.0	0.6	0.6	1.0	1.0	0.6	0.6
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		cal
RECEIVE	40-50	—	—	—	50-60	—	—	—		
RANGE										
VOLTAGE	800	480	620		800	490				
CURRENT	1.0	1.0	0.6		1.0	1.0				

FREQUENCIES 3.0 0.3

SENDER NO. 1769

OPERATOR BH

RECEIVER NO.

OPERATOR

COMMENTS: NW END CENTER of SITE = #3 = 0.0

HENRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT _____

LINE _____ HALF _____ SP _____ DATE _____

SEND											
RECEIVE											
RANGE											
VOLTAGE											
CURRENT											
SEND											
RECEIVE											
RANGE											
VOLTAGE											
CURRENT											

FREQUENCIES _____

SENDER NO. _____

OPERATOR _____

RECEIVER NO. _____

OPERATOR _____

COMMENTS:

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT _____

LINE ____ HALF ____ SP. ____ DATE ____

PAGE

SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES ____ ____

SENDER NO.

OPERATOR

RECEIVER NO.

OPERATOR

COMMENTS:

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mineral Hill

LINE 1 HALF N SP. 1 DATE 3/25

PAGE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-10N	10-20N	——	20-30N	——	——	30-40	——	——	——
RANGE										
VOLTAGE	740	490	740	620	750	740	730	620	750	740
CURRENT	1.0	1.75	1.0	0.6	1.75	1.0	0.6	0.6	1.75	1.0
SEND	4-5	3-4	2-3	4-5	3-4					Cal
RECEIVE	40-50	——	——	50-10						1-2
RANGE										
VOLTAGE	720	620	740	720	620					740
CURRENT	0.6	0.6	1.75	0.6	0.6					1.0

FREQUENCIES ____ ____

SENDER NO.

OPERATOR

RECEIVER NO.

OPERATOR

COMMENTS:

JOB 619 LINE 1 SPREAD 1 NORTH AND SOUTH 1/2 3/25/71 1000 FEET=DIPOLE LENGTH
CAL GROUP NO. 1

CAL CUR	PFE	AC1	AC2	AC FREQ	DC FREQ	PFE CAL	RHO CAL
1.000	-.10	101.000	.10	3.00	.30	-.1500	.9896

	COMPUTED DATA								FIELD DATA					
POINT NO.	N	RHO	PFE	MCF	CCPFE	CCMCF	CPFE		PFE	CUR	PT.	N	AC1	AC2
1	1	-129.01	1.45	11.2	1.45	11.2	0.00	**	1.30	.60	1	1	25.700	0.00
2	1	-119.97	1.45	12.1	1.45	12.1	0.00	**	1.30	.60	2	1	23.900	0.00
3	2	137.94	1.45	10.5	1.28	9.2	.17	**	1.30	.60	3	2	6.870	0.00
4	1	142.04	1.15	8.1	1.15	8.1	0.00	**	1.00	1.00	4	1	47.300	0.00
5	2	132.86	1.25	9.4	1.07	8.0	.18	**	1.10	.60	5	2	6.630	0.00
6	3	152.75	1.55	10.1	1.20	7.8	.35	**	1.40	.60	6	3	3.040	0.00
7	1	129.12	1.75	13.6	1.75	13.6	0.00	**	1.70	1.00	7	1	42.700	.20
8	2	170.04	1.55	9.1	1.42	8.3	.13	**	1.40	1.00	8	2	14.100	0.00
9	3	159.63	1.45	9.1	1.12	7.0	.33	**	1.30	.60	9	3	3.180	0.00
10	4	175.03	1.65	9.4	1.10	6.3	.55	**	1.50	.60	10	4	1.740	0.00
11	2	111.22	1.25	11.2	1.01	9.1	.24	**	1.10	1.00	11	2	9.250	0.00
12	3	155.55	.95	6.1	.60	3.9	.35	**	.80	1.00	12	3	5.190	0.00
13	4	154.15	1.15	7.5	.49	3.2	.66	**	1.00	.60	13	4	1.540	0.00
14	3	129.60	1.05	8.1	.61	4.7	.44	**	.90	1.00	14	3	4.320	0.00
15	4	292.54 x.6 = 175.5	.55	~~1.9~~	.28	.9	.27	**	.40	.60	15	4	2.940	0.00
16	1	119.39	1.50	12.6	1.50	12.6	0.00	**	1.40	1.00	16	1	39.600	.10
17	1	128.09	1.35	10.5	1.35	10.5	0.00	**	1.20	1.75	17	1	74.500	0.00
18	2	140.16	1.75	12.5	1.58	11.3	.17	**	1.60	1.00	18	2	11.600	0.00
19	1	240.12	1.90	7.9	1.90	7.9	0.00	**	1.80	.60	19	1	47.600	.10
20	2	187.81	1.75	9.3	1.64	8.7	.11	**	1.60	1.75	20	2	27.200	0.00
21	3	191.29	1.95	10.2	1.69	8.8	.26	**	1.80	1.00	21	3	6.320	0.00
22	1	159.56	2.00	12.5	2.00	12.5	0.00	**	1.90	.60	22	1	31.600	.10
23	2	157.08	1.75	11.1	1.60	10.2	.15	**	1.60	.60	23	2	7.800	0.00
24	3	145.89	1.65	11.3	1.27	8.7	.38	**	1.50	1.75	24	3	8.460	0.00
25	4	139.50	2.15	15.4	1.40	10.0	.75	**	2.00	1.00	25	4	2.300	0.00
26	2	157.87	1.35	8.6	1.21	7.6	.14	**	1.20	.60	26	2	7.870	0.00
27	3	191.06	2.05	10.7	1.79	9.4	.26	**	2.00	.60	27	3	3.780	.20
28	4	187.16	2.10	11.2	1.59	8.5	.51	**	2.00	1.75	28	4	5.400	.10

29	3	196.85	1.75	8.9	1.50	7.6	.25	**	1.60	.60	29	3	3.910	0.00
30	4	228.80	1.85	8.1	1.47	6.4	.38	**	1.70	.60	30	4	2.270	0.00

Job 619, Line 1, Spread 2, N½S½, 3/26/71 1000.

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

@ 7000 S

PROJECT Mineral Hill

LINE 1 HALF N SP. 2 DATE 3-26-7

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	70-60S	60-50S	→	50-40S	→	→	40-30S	→	→	→
RANGE	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.1	
DC 1	\									
DC 2	1.2	1.2	1.3	1.5	1.2	1.4	1.4	1.8	1.4	1.5
DC 3										
DC 4 Cm	1	1	1	1	1	2	1	1	1	2
DC 5 #	1	2	3	4	5	6	7	8	9	10
DC 6 n	1	1	2	1	2	3	1	2	3	4
DC 7										
DC 8										
DC AVG.										
AC 1	79.2	40.0	15.9	65.9	15.4	16.7	55.5	19.5	7.02	9.87
AC 2	—	—	—	—	—	—	+0.1	+0.1	—	—
AC AVG.										
S.P.				-14.8	→	→	-5.1	→	→	→
AC NOISE										
POT RES.				28K	→	→	17K	→	→	→

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill
LINE 1 HALF N SP. 2 DATE 3-26-71

SEND	4-5	3-4	2-3	4-5	3-4		CAL			
RECEIVE	30-20B	→	→	20-10S	→		4-5			
RANGE	1.0	0.1	0.1	0.1	0.1		1 AMP.			
DC 1										
DC 2	~~1.8~~						-0.2			
DC 3	1.8	1.5	0.8	1.2	1.3					
DC 4										
DC 5 Gain	1	1	1	1	1		1			
DC 6 #	11	12	13	14	15		1			
DC 7 n	2	3	4	3	4					
DC 8										
DC AVG.										
AC 1	-14.0	8.60	3.88	4.28	4.13	—	101.5			
AC 2	—	—	-0.2	—	—		—			
AC AVG.										
S.P.	+9.6	→	→	-22.0	→		3.0			
AC NOISE							0.3			
POT RES.	23K	→	→	78K	→					

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill
LINE 1 HALF S SP. 2 DATE 3-26-71

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	70-80S	80-90S	→	90-100S	→	→	100-110	→	→	→
RANGE				1.0	1.0	0.1	1.0	1.0	0.1	0.1
DC 1										
DC 2				1.0	1.5	1.3	1.2	1.3	1.7	1.8
DC 3										
DC 4 Cur				1	1	1	2	1	1	1
DC 5 #				16	17	18	19	20	21	22
DC 6 "				1	2	3	1	2	3	4
DC 7										
DC 8										
DC AVG.										
AC 1				59.3	23.6	6.90	94.6	13.4	8.26	2.79
AC 2				—	—	—	—	—	—	—
AC AVG.										
S.P.	+			49.5+	→	→	29.6+			
AC NOISE										
POT RES.				30K	→	→	30K	→	→	→

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill
LINE 1 HALF S SP. 2 DATE 3-26-71

SEND	1-2	2-3	3-4	1-2	2-3		CAN			
RECEIVE	110-120	→	→	120-1305	→					
RANGE	1.0	0.1	0.1	1.0	0.1					
DC 1										
DC 2	1.2	1.2	1.3	1.1	~~0~~ 0.8					
DC 3										
DC 4 Pair	2	1	1	2	1					
DC 5 #	23	24	25	26	27					
DC 6 #	2	3	4	3	4					
DC 7										
DC 8										
DC AVG.										
AC 1	33.1	7.18	5.24	11.8	2.98					
AC 2	—	—	—	—						
AC AVG.										
S.P.	+4.4	→	→	+7.2	→					
AC NOISE										
POT RES.	12K	→	→	60K	→					

66 + 300
1000

50
30 606
60000

10 + 1200
2000

27
1150

27
139

50

9
175 1200
1225
5

CP at 7000 S

INDUCED POLARIZATION SENDER NOTES

N½

project: Mineral Hill Line: 1 Sp. 2 Date: 3-26-71

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
Receive	70-60S	60-50S	→	50-40S	→	→	40-30S	→	→	→		
Time												
Range	400	770	400	770	680	690	680	750	670	690		
Current	1.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	2.0		
Send	4-5	3-4	2-3	4-5	3-4		CAL					
Receive	30-20S	→	→	20-10S	→		4-5					
Time												
Range	680	730	650	680	710		690					
Current	1.0	1.0	1.0	1.0	1.0		1.0					

S½ @7000S

INDUCED POLARIZATION SENDER NOTES

project: Mineral Hill Line: 1 Sp 2 Date: 3-26-71

Send	1-5	3-4	1-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Receive	70-80S	80-90S	→	90-100S	→	→	100-110S	→	→	→		
Time												
Range				610	680	670	670	590	680	670		
Current				1.0	1.0	1.0	2.0	1.0	1.0	1.0		
Send	1-2	2-3	3-4	1-2	2-3							
Receive	110-120S	→	→	120-130S	→							
Time												
Range	660	590	670	670	590							
Current	2.0	1.0	1.0	2.0	1.0							

JOB 619 LINE 1 SPREAD 2 NORTH AND SOUTH 1/2 3/26/71 1000 FEET=DIPOLE LENGTH
CAL GROUP NO. 1

CAL CUR	PFE	AC1	AC2	AC FREQ	DC FREQ	PFE CAL	RHO CAL
1.000	-.20	101.500	0.00	3.00	.30	-.2000	.9852

	COMPUTED DATA							FIELD DATA					
POINT NO.	N	RHO	PFE	MCF	CCPFE	CCMCF	CPFE		PFE	CUR	PT.	N	AC1	AC2
1	1	237.37	1.40	5.9	1.40	5.9	0.00	**	1.20	1.00	1	1	79.200	0.00
2	1	119.88	1.40	11.7	1.40	11.7	0.00	**	1.20	1.00	2	1	40.000	0.00
3	2	190.80	1.50	7.9	1.39	7.3	.11	**	1.30	1.00	3	2	15.900	0.00
4	1	198.09	1.70	8.6	1.70	8.6	0.00	**	1.50	1.00	4	1	65.900	0.00
5	2	184.62	1.40	7.6	1.28	7.0	.12	**	1.20	1.00	5	2	15.400	0.00
6	3	250.75	1.60	6.4	1.42	5.7	.18	**	1.40	2.00	6	3	16.700	0.00
7	1	166.67	1.55	9.3	1.55	9.3	0.00	**	1.40	1.00	7	1	55.500	.10
8	2	235.15	1.95	8.3	1.87	7.9	.08	**	1.80	1.00	8	2	19.500	.10
9	3	210.81	1.60	7.6	1.37	6.5	.23	**	1.40	1.00	9	3	7.020	0.00
10	4	296.68	1.70	5.7	1.43	4.8	.27	**	1.50	2.00	10	4	9.870	0.00
11	2	168.83	2.00	11.8	1.87	11.1	.13	**	1.80	1.00	11	2	14.000	0.00
12	3	258.51	1.70	6.6	1.53	5.9	.17	**	1.50	1.00	12	3	8.600	0.00
13	4	231.65	1.10	4.7	.72	3.1	.38	**	.80	1.00	13	4	3.880	-.20
14	3	128.27	1.40	10.9	.95	7.4	.45	**	1.20	1.00	14	3	4.280	0.00
15	4	247.80	1.50	6.1	1.16	4.7	.34	**	1.30	1.00	15	4	4.130	0.00
16	1	177.37	1.20	6.8	1.20	6.8	0.00	**	1.00	1.00	16	1	59.300	0.00
17	2	283.76	1.70	6.0	1.70	6.0	0.00	**	1.50	1.00	17	2	23.600	0.00
18	3	207.00	1.50	7.2	1.27	6.1	.23	**	1.30	1.00	18	3	6.900	0.00
19	1	141.76	1.40	9.9	1.40	9.9	0.00	**	1.20	2.00	19	1	94.600	0.00
20	2	160.80	1.50	9.3	1.36	8.5	.14	**	1.30	1.00	20	2	13.400	0.00
21	3	248.78	1.90	7.6	1.72	6.9	.18	**	1.70	1.00	21	3	8.260	0.00
22	4	168.22	2.00	11.9	1.42	8.4	.58	**	1.80	1.00	22	4	2.790	0.00
23	2	198.40	1.40	7.1	1.30	6.5	.10	**	1.20	2.00	23	2	33.100	0.00
24	3	215.19	1.40	6.5	1.18	5.5	.22	**	1.20	1.00	24	3	7.180	0.00
25	4	314.40	1.50	4.8	1.25	4.0	.25	**	1.30	1.00	25	4	5.240	0.00
26	3	176.65	1.30	7.4	1.01	5.7	.29	**	1.10	2.00	26	3	11.800	0.00
27	4	177.92	1.00	5.6	.46	2.6	.54	**	.80	1.00	27	4	2.980	0.00

Job 619, Line 2, Spread 1, S+N½ partial, 3/30/71 1000.

partial line only

CP 5000' N of Spd 2

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Mineral Hill 619

LINE 2 HALF S SP. 1 DATE 3-30?

PAGE 1

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	1.0 50-40N	1.0 40-30N	0.1	1.0 30-20N	1.0	0.1	20-10N		0.1	0.1
RANGE										
DC 1	1.4	1.5	1.7	1.2	1.3	1.2 ?			1.8 ?	1.4 ??
DC 2						noisy ??			noisy	
DC 3										
DC 4 Cm	1	1	1	0.9	0.9	1	CM=45		1	1
DC 5 #	1	2	3	4	5	6			9	10
DC 6 n	1	1	2	1	2	3	-0.2		3	4
DC 7										
DC 8										
DC AVG.										
AC 1	29.4	52.7	7.29	44.2	14.6	3.61	101		6.50	1.89
AC 2	—	—	—	—	—	—	—		+0.1	—
AC AVG.										
S.P.										
AC NOISE										
POT RES.										

	3-4	2-3	1-2
RNG	1.0	0.1	0.1
DFR	~~2.0~~ 1.8	1.6	1.6
	Bad Noise		
AC1 2	46.7 ? —	~~2.16~~ 6.51 ? —	3.04 ? —
S.P	+19.1		
POT	30K		

Sp I 1 and 2
N ½

CH2 N ½

-0.2

101

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill
LINE 2 HALF N SP. 1 DATE 3-31-7

SEND	3-4	2-3	1-2		CAL					
RECEIVE	1.0 70-80N	0.1	0.1							
RANGE										
DC 1	1.8	1.6	1.6		-0.2					
DC 2										
DC 3										
DC 4 Gain	1	0.9	0.9		1					
DC 5 #	12	13	14		1					
DC 6 n	1	2	3							
DC 7										
DC 8										
DC AVG.										
AC 1	46.7	6.51	3.04		101.					
AC 2	—	—	—		—					
AC AVG.										
S.P.	+19.1	→	→		3.0					
AC NOISE					0.3					
POT RES.	30K	→	→							

#619

INDUCED POLARIZATION SENDER NOTES

project: Mineral Hill Line: 2 sp 1 S½ Date: 3/30/71

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Receive	50-40	40-30	—	30-20			10-20					
Time												
Range	730	730	730	840	650	780	}	}	710	700		
Current	1.0	1.0	1.0	0.9	0.9	1.0			1.0	1.0		
Send												
Receive												
Time												
Range												
Current												

center #3 at 50 N
in pit

INDUCED POLARIZATION SENDER NOTES

project: Mineral Hill Line: 2 Fig 1 N½ Date: 3/31/71

Send	4-5	~~3-4~~	2-3	1-2	3-4							
Receive	40-50N	70-80			Repeat							
Time												
Range	700	730	810	860	730							
Current	1.0	1.0	0.9	0.9	1.0							
Send												Cal
Receive												3-4
Time												
Range												730
Current												1.0

JOB 619 LINE 2 SPREAD 1 SOUTH AND NORTH 1/2 PARTAIL 3/30/71 1000 FEET=DIPOLE LENGTH
CAL GROUP NO. 1

CAL CUR	PFE	AC1	AC2	AC FREQ	DC FREQ	PFE CAL	RHO CAL
1.000	-.20	101.000	0.00	3.00	.30	-.2000	.9901

		COMPUTED DATA							FIELD DATA					
POINT NO.	N	RHO	PFE	MCF	CCPFE	CCMCF	CPFE		PFE	CUR	PT.	N	AC1	AC2
1	1	88.72	1.60	18.0	1.51	17.0	.09	**	1.40	1.00	1	1	29.400	0.00
2	1	159.20	1.70	10.7	1.70	10.7	0.00	**	1.50	1.00	2	1	52.700	0.00
3	2	88.26	1.90	21.5	1.58	17.8	.32	**	1.70	1.00	3	2	7.290	0.00
4	1	147.92	1.40	9.5	1.40	9.5	0.00	**	1.20	.90	4	1	44.200	0.00
5	2	195.63	1.50	7.7	1.39	7.1	.11	**	1.30	.90	5	2	14.600	0.00
6	3	108.73	1.40	12.9	.84	7.7	.56	**	1.20	1.00	6	3	3.610	0.00
9	3	196.93	1.95	9.9	1.70	8.6	.25	**	1.80	1.00	9	3	6.500	.10
10	4	114.07	1.60	14.0	.62	5.4	.98	**	1.40	1.00	10	4	1.890	0.00
12	1	141.49	2.00	14.1	2.00	14.1	0.00	**	1.80	1.00	12	1	46.700	0.00
13	2	87.49	1.80	20.6	1.47	16.8	.33	**	1.60	.90	13	2	6.510	0.00
14	3	102.14	1.80	17.6	1.19	11.6	.61	**	1.60	.90	14	3	3.040	0.00

Job 619, Line 2, Spread 2, S+N½, 3/29/71 1000.

CP = SW cor RED 14

PAGE 1

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 2 HALF S SP. 2 DATE 3-29-71

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-10S	10-20S	→	20-30S	→	→	30-40S	→	→	→
RANGE	1.0	1.0	0.1	1.0	1.0	0.1	1.0	1.0	0.1	0.1
DC 1										
DC 2	1.2	0.9	0.9	1.1	1.1	1.3	1.2	1.3	1.3	1.5
DC 3										
DC 4 Cur	0.8	→	→	→	→	0.5	0.8	→	→	0.5
DC 5 #	1	2	3	4	5	6	7	8	9	10
DC 6 n	1	1	2	1	2	3	1	2	3	4
DC 7										
DC 8										
DC AVG.										
AC 1	44.3	29.5	8.66	55.2	11.9	3.65	41.4	19.0	7.25	2.59
AC 2	—	—	—	+0.1	—	+0.2	—	—	—	—
AC AVG.										
S.P.				→			+5.7	→	→	→
AC NOISE										
POT RES.				12K	→	→	20K	→	→	→

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Mineral Hill 619

LINE 2 HALF S SP. 2 DATE 3-29-71

PAGE 2

SEND	1-2	2-3	3-4	1-2	2-3		CAL			
RECEIVE	40-505	→	→	50-605	→		1-2			
RANGE	1.0	0.1	0.1	0.1	0.1		800 mk			
DC 1										
DC 2	1.2	0.8	~~0.6~~	0.9	1.0		≠0.0			
DC 3			0.8							
DC 4 Cm	0.8	→	→	→	→		0.8			
DC 5 #	11	12	13	14	15		1			
DC 6 n	2	3	4	3	4					
DC 7										
DC 8										
DC AVG.			4.21							
AC 1	11.5	8.45	~~4.15~~	7.71	6.49		80.7			
AC 2	+0.1	—	—	—	-0.1		—			
AC AVG.										
S.P.	25.1			+10.3	→		3.0			
AC NOISE							0.3			
POT RES.	8K	→	→	14K	→					

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 2 HALF N SP. 2 DATE 3-30-71

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-10N	10-20N	→	20-30N	→	→	30-40N	→	→	→
RANGE				1.0	1.0	0.1	1.0	0.1	0.1	0.1
DC 1										
DC 2				1.3	1.3	1.3	1.5	1.4	1.5	1.7
DC 3										
DC 4 Am				0.8	→	→	→	→	→	→
DC 5 #				16	17	18	19	20	21	22
DC 6 n				1	2	3	1	2	3	4
DC 7										
DC 8										
DC AVG.										
AC 1				30.9	13.2	4.54	37.5	9.30	6.03	2.44
AC 2				—	—	—	+0.2	—	—	—
AC AVG.										
S.P.				+1.6	→	→	+4.4	→	→	→
AC NOISE										
POT RES.				56K	→	→	24K	→	→	→

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 2 HALF N SP. 2 DATE 3-30-71

SEND	4-5	3-4	2-3	1-5	1-4					
RECEIVE	40-50N	→	→	50-60N	→					
RANGE	1.0	0.1	0.1	0.1	0.1					
DC 1										
DC 2	1.5	~~1.3~~ 1.4	~~1.6~~ 1.5	1.4	1.5					
DC 3										
DC 4 Ma	0.8	0.8	0.5	0.8	0.8					
DC 5 #	23	24	25	26	27					
DC 6 n	2	3	4	3	4					
DC 7										
DC 8										
DC AVG.										
AC 1	10.8	4.84	2.32	5.26	2.98					
AC 2	+0.1	—	—	—	—					
AC AVG.										
S.P.	+23.5	→	→	+62.4	→					
AC NOISE										
POT RES.	24K	→	→	19K	→					

Center 0.0 at #3 SW Cor Red 14

619

INDUCED POLARIZATION SENDER NOTES

project: Mineral Hill Line: 2 Sp 2 N 1/2 Date: March 30, 71

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
Receive				20-30N	—	—	30-40	—	—	—		
Time												
Range				640	680	810	760	630	690	820		
Current				0.8	0.8	0.8	0.8	0.8	0.8	0.8		
Send	4-5	3-4	2-3	4-5	3-4							
Receive	40-50	—	—	50-60	—							
Time			ok									
Range	760	630	610	760	640							
Current	0.8	0.8	0.5	0.8	0.8							

#619

INDUCED POLARIZATION SENDER NOTES

project: Mineral Hill Line: 2 - Sp 2 5½ Date: 3/29/71

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Receive	0-105	10-20	——	20-30	——	——	30-40	——	——	——		
Time	3x2466					3x1666						
Range	860	720	860	690	690	590	860	670	690	590		
Current	0.8	0.8	0.8	0.8	0.8	0.5	0.8	0.8	0.8	0.5		
Send	1-2	2-3	3-4	1-2	2-3							Cal
Receive	40-50	——	——	50—	60							2-3
Time												
Range	880	680	680	860	680							
Current	0.8	0.8	0.8	0.8	0.8							0.8

JOB 619 LINE 2 SPREAD 2 SOUTH AND NORTH 1/2 3/29/71 1000 FEET=DIPOLE LENGTH
CAL GROUP NO. 1

CAL CUR	PFE	AC1	AC2	AC FREQ	DC FREQ	PFE CAL	RHO CAL
.800	0.00	80.700	0.00	3.00	.30	0.0000	.9913

COMPUTED DATA								FIELD DATA					
POINT NO.	N	RHO	PFE	MCF	CCPFE	CCMCF	CPFE	PFE	CUR	PT.	N	AC1	AC2
1	1	166.66	1.20	7.2	1.20	7.2	0.00 **	1.20	.80	1	1	44.300	0.00
2	1	110.65	.90	8.1	.84	7.6	.06 **	.90	.80	2	1	29.500	0.00
3	2	129.93	.90	6.9	.71	5.5	.19 **	.90	.80	3	2	8.660	0.00
4	1	207.46	1.05	5.1	1.05	5.1	0.00 **	1.10	.80	4	1	55.200	.10
5	2	178.90	1.10	6.1	.98	5.5	.12 **	1.10	.80	5	2	11.900	0.00
6	3	219.93	1.20	5.5	.99	4.5	.21 **	1.30	.50	6	3	3.650	.20
7	1	155.75	1.20	7.7	1.20	7.7	0.00 **	1.20	.80	7	1	41.400	0.00
8	2	286.20	1.30	4.5	1.30	4.5	0.00 **	1.30	.80	8	2	19.000	0.00
9	3	273.02	1.30	4.8	1.14	4.2	.16 **	1.30	.80	9	3	7.250	0.00
10	4	312.73	1.50	4.8	1.25	4.0	.25 **	1.50	.50	10	4	2.590	0.00
11	2	173.06	1.15	6.6	1.02	5.9	.13 **	1.20	.80	11	2	11.500	.10
12	3	316.64	.80	2.5	.67	2.1	.13 **	.80	.80	12	3	8.450	0.00
13	4	315.52	.80	2.5	.55	1.8	.25 **	.80	.80	13	4	4.210	0.00
14	3	289.20	.90	3.1	.75	2.6	.15 **	.90	.80	14	3	7.710	0.00
15	4	487.35	1.05	2.2	.92	1.9	.13 **	1.00	.80	15	4	6.490	-.10
16	1	116.36	1.30	11.2	1.30	11.2	0.00 **	1.30	.80	16	1	30.900	0.00
17	2	198.83	1.30	6.5	1.20	6.0	.10 **	1.30	.80	17	2	13.200	0.00
18	3	170.97	1.30	7.6	1.00	5.8	.30 **	1.30	.80	18	3	4.540	0.00
19	1	141.50	1.40	9.9	1.40	9.9	0.00 **	1.50	.80	19	1	37.500	.20
20	2	140.23	1.40	10.0	1.23	8.8	.17 **	1.40	.80	20	2	9.300	0.00
21	3	227.53	1.50	6.6	1.30	5.7	.20 **	1.50	.80	21	3	6.030	0.00
22	4	184.50	1.70	9.2	1.18	6.4	.52 **	1.70	.80	22	4	2.440	0.00
23	2	163.00	1.45	8.9	1.31	8.0	.14 **	1.50	.80	23	2	10.800	.10
24	3	182.44	1.40	7.7	1.12	6.2	.28 **	1.40	.80	24	3	4.840	0.00
25	4	280.12	1.50	5.4	1.21	4.3	.29 **	1.50	.50	25	4	2.320	0.00
26	3	198.28	1.40	7.1	1.15	5.8	.25 **	1.40	.80	26	3	5.260	0.00
27	4	224.88	1.50	6.7	1.11	4.9	.39 **	1.50	.80	27	4	2.980	0.00

Job 619, Line 3, Spread 1, S+N½, 4/1/71 1000.

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 3 HALF S SP. 1 DATE 4-1-71

Pt 600N 11/12 #13 1/4 S 13/14 95N of 1 Hz

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-10S	10-20S	→	20-30S	→	→	30-40S	→	→	→
RANGE	1.0	1.0	0.1	0.1	0.1	0.01	0.1	0.1	0.1	0.1
DC 1	1.4	0.9	0.8	1.7 (0.9)		(0.7)				
DC 2	.3			1.2	1.4	0-1.4	0.9	1.4	1.4	1.3
DC 3 Cm	0.6	2	0.6	2	2	0.6	1	2	2	0.6
DC 4 #	1	2	3	4	5	6	7	8	9	10
DC 5 n	1Hz 1	1	2	0.6 1	2	3	1	2	3	4
DC 6 Kn	3	3	12	3	12	30	3	12	30	60
DC 7 I	600	2000	600	2000	2000	600	1000	2000	2000	600
DC 8 Po										
DC AVG.										
AC 1	12.0	33.9	2.34	8.93 8.98	8.48	0.910	5.17	6.35	9.40	1.23
AC 2	—	—	+0.1	— —	—	—	—	—	—	—
AC AVG.										
S.P.				-32.3 →	→	→	+48.6 →	→	→	→
AC NOISE										
POT RES.				18K →	→	→	4K →	→	→	→

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 3 HALF 5 SP. 1 DATE 4-1-71

PAGE 2

SEND	1-2	2-3	3-4	1-2	2-3		CAL			
RECEIVE	40-50S	→	→	50-60S	→		2-3			
RANGE	0.1	0.1	0.1	0.1	0.1		10			
DC 1	(1.2)	(1.5)		(1.4)	(1.5)					
DC 2	1.0-1.4	1.4-1.6	1.6	1.2-1.6	1.2-1.8		-0.2			
DC 3 Gain	1	2	2	1	2		1			
DC 4 #	11	12	13	14	15		1			
DC 5 n	2	3	4	3	4					
DC 6 Hz	12	30	60	30	60					
DC 7 I	1000	2000	2000	1000	2000					
DC 8	✓	✓	✓							
DC AVG.										
AC 1	3.01	4.65	7.77	2.20	3.49		10%			
AC 2	/	/	—	—	—		+0.2			
AC AVG.										
S.P.	2.K+	→	→	+3.6	→		-0.1			
AC NOISE							1.0			
POT RES.	6 K	→	→	3 K	→		0.1			

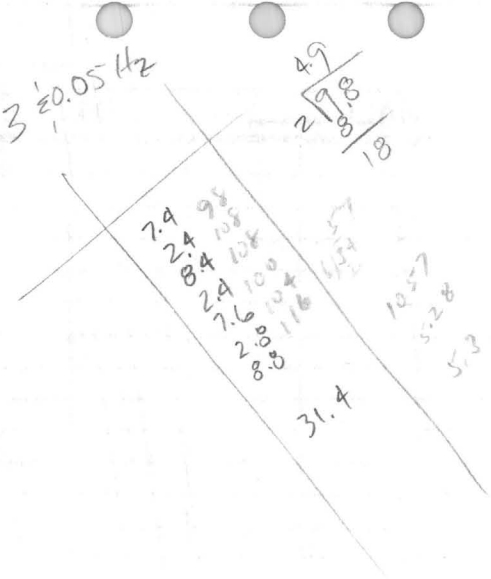
$\frac{31.7}{2000}$ 12 $\frac{3000}{}$ (13) $\frac{165}{1000}$ 30

$\frac{9}{2000}$ $\frac{22}{44}$ $\frac{44}{88}$

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 3 HALF N SP. I DATE 4-1-71

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-10N	10-20N	→	20-30N	→	→	30-40 N	→	→	→
RANGE				10	1.0	0.1	1.0	1.0	0.1	0.01
DC 1										0.8
DC 2				1.8	1.4	0.6	2.0	2.2	1.7	0=1.5
DC 3									??	
DC 4 Cm				2	2	1	0.6	2	noisy 2	1
DC 5 #				16	17	18	19	20	21	22
DC 6 n				1	2	3	1	2	3	4
DC 7			I	2000	2000	1000	600	2000	2000	1000
DC 8			km	3	12	30	3	12	30	60
DC AVG.				✓	✓	✓	✓	✓	✓	
AC 1				165.	14.8	2.38	55.6	31.7	4.43	0.886
AC 2				—	—	—	—	—	—	—
AC AVG.										
S.P.				→	→	→	-43	→	→	→
AC NOISE										
POT RES.				4K	→	→	12K	→	→	→


3 ± 0.05 Hz
7.4
2.4
8.4
2.4
7.6
2.8
8.8
31.4
4.9
2 9.8
8
18

Φ ≈ 600' N. of 11/12 / 14/13

PAGE 4

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill
LINE 3 HALF N SP. 1 DATE 4-1-71

SEND	4-5	3-4	2-3	4-5	3-4		cm			
RECEIVE	40-50N	———	→	50-60N	→		NASE			
RANGE	0.1	1.0	0.1	0.1	0.1					
DC 1						1 Hz	0.2-0.5	6 deep		
DC 2	2.4	2.5	~~1.6-2.0~~	0.2 ≈	0.9		0.2-0.7	20 deep	0.1 low	
DC 3			(1.8)							
DC 4 Cm	0.6	2	2	0.6	2	0.1 Hz	0.07	60 deep		
DC 5 #	23	24	25	26	27	d.c.	0-1 mil plus			
DC 6 n	2	3	4	3	4					
DC 7 I	600	2000	2000	600	2000					
DC 8 Ch	120 ✓	30 ✓	60 ✓	30	60					
DC AVG.										
AC 1	7.74	12.3	2.29	2.88	6.33					
AC 2	—	—	—							
AC AVG.										
S.P.	+40	———	→	35.2	→					
AC NOISE										
POT RES.	7K	———	→	36K	→					

#619 INDUCED POLARIZATION SENDER NOTES

Project: Mineral Hill Line: 3 Sp 1 N½ Date: April 1, 1971

Send	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Rep X 3-4				
Receive	20-30N	—	—	30-40				30-P				
Time								3.0-.05				
Range	700	730	640	650	700	730	650	700				
Current	2.0	2.0	1.0	0.6	2.0	2.0	1.0	2.0				
Send	4-5	3-4	2-3	45	3-4							
Receive	40-50	—	—	50-60	—							
Time												
Range	650	690	730	650	690							
Current	0.6	2.0	2.0	0.6	2.0							


1 2 3 4 5
X X X X X
1 1 1 1
70 60 50 40
1 2 3 4 5
1 X X X X X
30 20 10 0

#619

INDUCED POLARIZATION SENDER NOTES

project: Mineral Hill Line: 3 sp 1 5½ Date: April 1, 1971

Send	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4	1-2 ~~4-5~~	2-3
Receive	20-30s	—	—	30-40s	—	—	—	40-50	—	—	~~50-60~~	—
Time	3.1.0.3.1	1.0 0.1	→									
Range	740	700	690	~~640~~ ~~540~~	740	700	690	640	740	700	640	740
Current	2.0	2.0	0.6	~~1.0~~ ~~0.9~~	2.0	2.0	0.6	1.0	2.0	2.0	1.0	2.0
Send	4-5	3-4	4-5									cgl
Receive	0-10s	10-20	—									2-3
Time												1.0 0.1
Range	640	700	640									240
Current	0.6	2.0	0.6									1.0

JOB 619 LINE 3 SPREAD 1 SOUTH AND NORTH 1/2 4/1/71 1000 FEET=DIPOLE LENGTH
CAL GROUP NO. 1

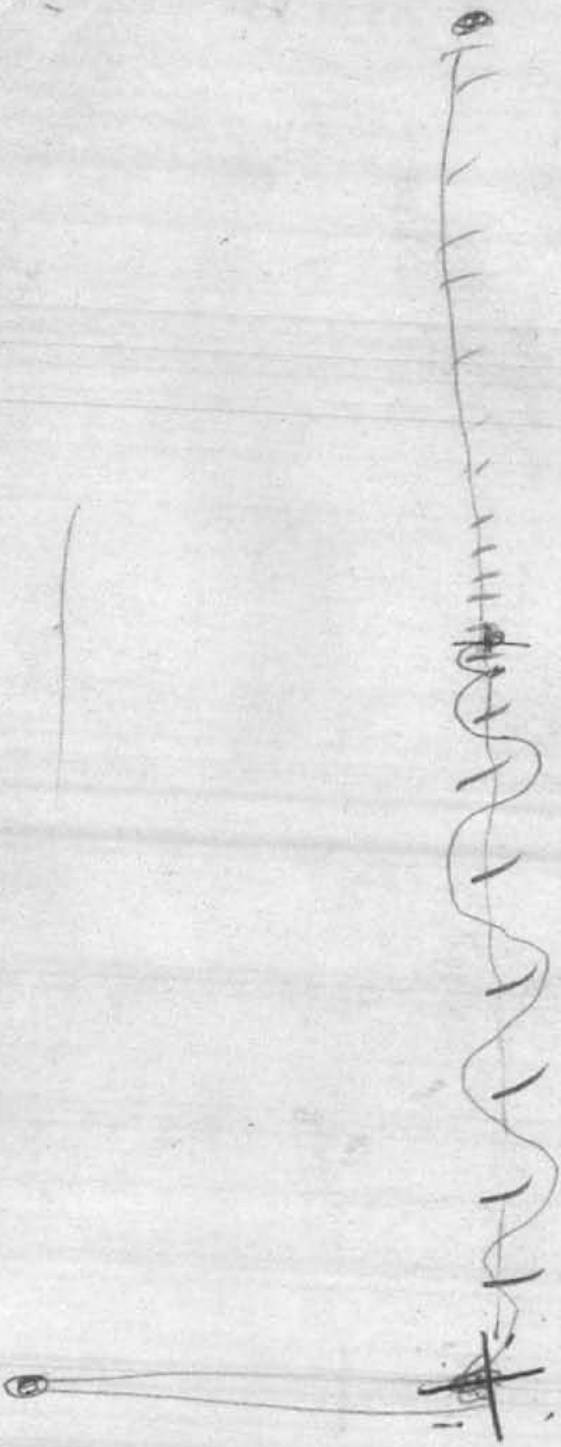
CAL CUR	PFE	AC1	AC2	AC FREQ	DC FREQ	PFE CAL	RHO CAL
1.000	-.20	101.000	.20	1.00	.10	-.3000	.9891

		COMPUTED DATA							FIELD DATA					
POINT NO.	N	RHO	PFE	MCF	CCPFE	CCMCF	CPFE		PFE	CUR	PT.	N	AC1	AC2
1	1	60.36	1.70	28.2	1.70	28.2	0.00	**	1.40	.60	1	1	12.000	0.00
2	1	50.90	1.20	23.6	1.20	23.6	0.00	**	.90	2.00	2	1	33.900	0.00
3	2	46.80	1.05	22.4	.88	18.8	.17	**	.80	.60	3	2	2.340	.10
4	1	13.48	1.20	89.0	.94	69.4	.26	**	.90	2.00	4	1	8.980	0.00
5	2	51.18	1.70	33.2	1.55	30.3	.15	**	1.40	2.00	5	2	8.480	0.00
6	3	45.45	1.00	22.0	.59	12.9	.41	**	.70	.60	6	3	.910	0.00
7	1	15.53	1.20	77.3	.98	63.3	.22	**	.90	1.00	7	1	5.170	0.00
8	2	38.33	1.70	44.4	1.47	38.5	.23	**	1.40	2.00	8	2	6.350	0.00
9	3	141.84	1.70	12.0	1.62	11.4	.08	**	1.40	2.00	9	3	9.400	0.00
10	4	123.61	1.60	12.9	1.40	11.4	.20	**	1.30	.60	10	4	1.230	0.00
11	2	36.26	1.50	41.4	1.26	34.7	.24	**	1.20	1.00	11	2	3.010	0.00
12	3	70.23	1.80	25.6	1.57	22.4	.23	**	1.50	2.00	12	3	4.650	0.00
13	4	234.94	1.90	8.1	1.82	7.7	.08	**	1.60	2.00	13	4	7.770	0.00
14	3	66.39	1.70	25.6	1.45	21.9	.25	**	1.40	1.00	14	3	2.200	0.00
15	4	105.42	1.80	17.1	1.55	14.7	.25	**	1.50	2.00	15	4	3.490	0.00
16	1	249.95	2.10	8.4	2.10	8.4	0.00	**	1.80	2.00	16	1	165.000	0.00
17	2	89.33	1.70	19.0	1.70	19.0	0.00	**	1.40	2.00	17	2	14.800	0.00
18	3	71.26	.90	12.6	.68	9.5	.22	**	.60	1.00	18	3	2.380	0.00
19	1	281.30	2.30	8.2	2.30	8.2	0.00	**	2.00	.60	19	1	55.600	0.00
20	2	192.83	2.50	13.0	2.50	13.0	0.00	**	2.20	2.00	20	2	31.700	0.00
21	3	67.04	2.00	29.8	1.76	26.2	.24	**	1.70	2.00	21	3	4.430	0.00
22	4	53.16	1.10	20.7	.47	8.9	.63	**	.80	1.00	22	4	.886	0.00
23	2	157.25	2.70	17.2	2.70	17.2	0.00	**	2.40	.60	23	2	7.740	0.00
24	3	187.60	2.80	14.9	2.80	14.9	0.00	**	2.50	2.00	24	3	12.300	0.00
25	4	69.38	2.10	30.3	1.66	24.0	.44	**	1.80	2.00	25	4	2.290	0.00
26	3	143.14	.50	3.5	.42	2.9	.08	**	.20	.60	26	3	2.880	0.00
27	4	190.09	1.20	6.3	1.09	5.7	.11	**	.90	2.00	27	4	6.330	0.00

Job 619 EXT, Line 3A, Sq 1 5½, 5/3/71

500.

17 x 8½ x 14 deep



I.P. RECEIVER NOTES

HEINRICHS GEOEXPLORATION CO. PROJECT Mineral Hill 619

LINE 3A BEARING N-S HALF S SP. / DATE 5-3-11

SEND	CAL	S.P.	S.P.	S.P.	2-3	3-4	4-5	5-6	6-7	1-2
RECEIVE	4-5	0-5S	5-10S	10-15S	15-20	———	———	———	——→	20-25
MULT.	10				10	1.0	1.0	1.0	0.1	10
PFE	0.0				2.1	2.2	2.7	3.1	3.1	1.4
CUR	2				1	———	3	———	2	———
#	2				1	2	3	4 to 6	6	6
n					1	2	3	4	5	1
PFE Avg.										
AC	200.				201.	48.2	20.8	13.1	4.10	698.
DRIFT	0.0				0	0	0	0	0	0
S.P.		+0.0	+15.0	+8.0	-8.9					+12.7
AC NOISE	3.0									
POT RES.	0.1	60K	45K	45K	80K					75K

I.P. RECEIVER NOTES

PAGE 6

HEINRICHS GEOEXPLORATION CO. PROJECT Mineral Hill 619

LINE 3A BEARING N-S HALF S SP. / DATE 5-3-11

SEND	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6
RECEIVE	20-25	→	→	→	→	25-30	→	→	→	→
MULT.	1.0	1.0	1.0	0.1	0.1	1.0	1.0	0.1	0.1	0.1
PFE	2.3	2.0	2.4	2.4	2.9	2.0	2.7	1.9	2.4	2.8
					2 to 4					
CoR	1	→	3	→	2	→	1	→	3	→
#	7	8	9	10	11	12	13	14	15	16
n	2	3	4	5	6	2	3	4	5	6
PFE Avg.										
AC	49.0	16.7	10.5	8.25	2.93	91.1	12.7	6.05	5.23	4.89
DRIFT	0.0	ø	ø	ø	ø	ø	ø	ø	ø	ø
S.P.						+8.9	→	→	→	→ -4.0
AC NOISE								monitor	S.P.	
POT RES.						85k	All	stations	NOISY	45k

Beginning → (3) AC = 20 sec 6.3 DC = 60 sec end

I.P. RECEIVER NOTES

HEINRICHS GEOEXPLORATION CO. PROJECT Minera Hill 619

LINE 3A BEARING N.S HALF S SP. 1 DATE 5-3-71

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	1-2	2-3	
RECEIVE	30-35	—	—	—	35-40	—	—	40-45	—	
MULT.	1.0	0.1	0.1	0.1	0.1	0.1	0.01	0.1	0.1	?
PFE	1.9	2.1	2.0	2.4	1.4	1.4	1.4	1.3	+-	
							0.8 to 2.0		NOISY	'
							NOISY		-2.0 to 4.0	
CUR	2	1	—	3	2	1	—	2	1	
#	17	18	19	20	21	22	23	24	25	
7	3	4	5	6	4	5	6	5	6	
PFE Avg.										
AC	36.9	7.31	4.28	4.28	6.00	1.39	0.876	4.10	1.03	
DRIFT	Ø	Ø	Ø	Ø	Ø	Ø	-0.6	Ø	—	
S.P.	-28.7				+27.3		NOISY	+1.7		
AC NOISE										
POT RES.	50 K				20 K			70 K		

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mineral Hill 619 PAGE 4

LINE 3A HALF S SP. 1 DATE 5-3-71

SEND	4-5	1-2	2-3	3-4	1-2	2-3				
RECEIVE	30-35	35-40	5 →		40-45	→				
RANGE										
VOLTAGE	900	840	640	660	840	640				
CURRENT	3A	2A	1A	1A	2A	1A				
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 3 0.3

SENDER NO. 23706 S

OPERATOR SWANSON

RECEIVER NO. 20693 R

OPERATOR FREEMAN

COMMENTS:

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT MINERAL HILL 619

LINE 3A HALF S SP. 1 DATE 5-3-71

SEND	CAL	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5
RECEIVE	4-5	15-20S	→	→	→	→	20-25S	→	→	→
RANGE										
VOLTAGE	680	640	700	920	940	800	840	640	700	920
CURRENT	2A	1A	1A	3A	3A	2A	2A	1A	1A	3A
SEND	5-6	6-7	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4
RECEIVE	20-25	→	25-30	→	→	→	→	30-35		
RANGE										
VOLTAGE	940	800	840	640	700	920	940	840	640	660
CURRENT	3A	2A	2A	1A	1A	3A	3A	2A	1A	1A

FREQUENCIES 3 0.3

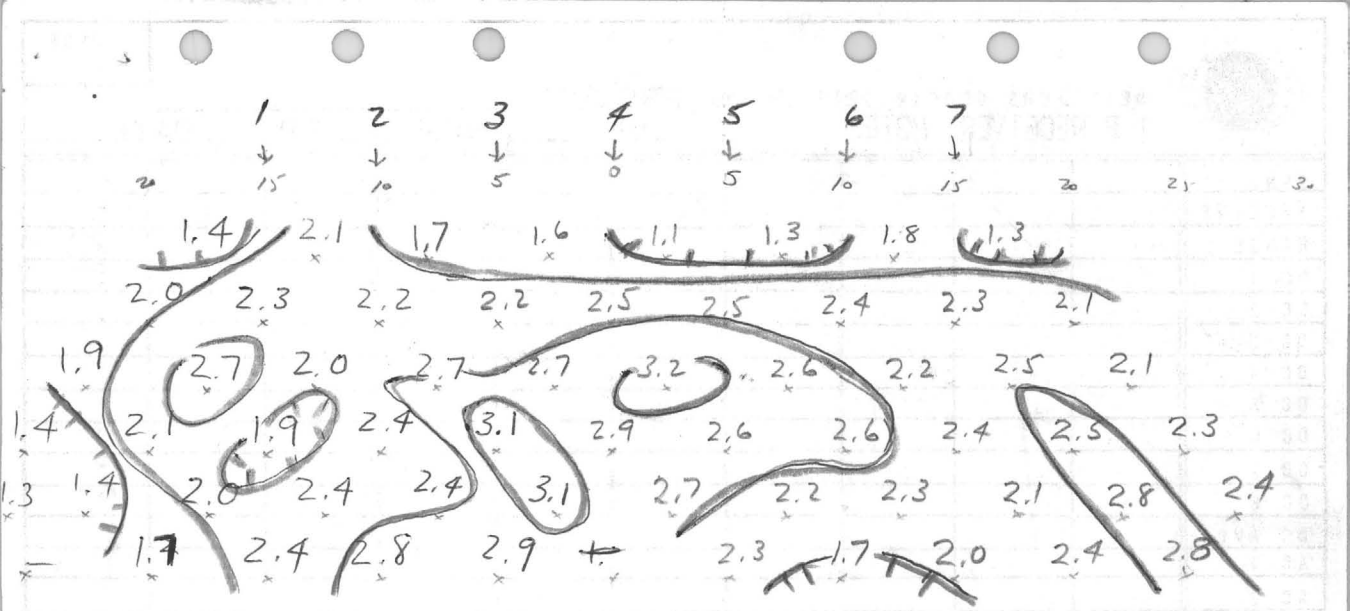
SENDER NO. 23706 S

OPERATOR SWANSON

RECEIVER NO. 20693 R

OPERATOR FREEMAN

COMMENTS:



LINE 3A
~ 780' E of LINE 3

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT _____

LINE ____ HALF ____ SP. ____ DATE ____

PAGE

SEND										
RECEIVE										
RANGE										
DC 1										
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1										
AC 2										
AC AVG.										
S.P.										
AC NOISE										
POT RES.										

Job 619EXT, Line 3A, Sec 1 N½, 5/3/71

500.

I.P. RECEIVER NOTES

PAGE 1

HEINRICHS GEOEXPLORATION CO. PROJECT Mineral Hill 619

LINE 3A BEARING N-S HALF N SP. 1 DATE 5-8-71

SEND	CAL	3-4	4-5	5-6	6-7	4-5	5-6	6-7	5-6	6-7
RECEIVE	3-4	1-2	→	→	→	2-3	→	→	3-4	
MULT.	1.0	10	1.0	1.0	0.1	10	1.0	1.0	10	1.0
PFE	0.0	1.7	2.2	2.7	2.9	1.6	2.5	3.2	1.1	2.5
CUR	0.8	1.	3	→	2	3	→	2	3	2
#	1	1	2	3	4	5	etc	7 →	8	9
n		1	2	3	4	1	2	3	1	2
PFE Avg.										
AC	80.6	275.	72.2	34.5	9.37	334.	86.0	15.8	376.	32.9
DRIFT	0.0	—	—	—	—	0	—	—	—	—
S.P.										
AC NOISE	3.									
POT RES.	0.3									

STA. 5 N TIED INTO OLD I.P. station.

I.P. RECEIVER NOTES

HEINRICHS GEOEXPLORATION CO. PROJECT Mineral Hill 610

LINE 3A BEARING N-S HALF N SP. 1 DATE 5-3-11

PAGE 2

SEND	6-7	S.P.	S.P.	S.P.	5-6	4-5	3-4	2-3	1-2	6-7
RECEIVE	4-5	0-5N	5-10N	10-15N	15-20N	→	→	→	→	20-25
MULT.	10				10	1.0	0.1	0.1	0.1	10
PFE	1.3				1.8	2.4	2.6	2.6	2.7	1.3
CUR	—				3	—	1	—	2	—
#	107				11	→ 12	13	14	15	16
n	1				1	2	3	4	5	1
PFE Avg.										
AC	107.				2961	33.0	6.17	3.90	5.50	228.
DRIFT	—				0	0	0	0	0	0
S.P.		-15.5	+28.4	+31.4	-16.0					+33.3
AC NOISE										
POT RES.		180K	90K	80K	45K					180K

I.P. RECEIVER NOTES

HEINRICHS GEOEXPLORATION CO. PROJECT Mineral Hill 619

LINE 3A BEARING N-S HALF N SP. 1 DATE 5-3-11

SEND	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3
RECEIVE	20-25	→	→	→	→	25-30	→	→	→	→
MULT.	1.0	1.0	0.1	0.1	0.1	1.0	1.0	1.0	0.1	0.1
PFE	2.3	2.2	2.6	2.2	2.3	2.1	2.5	2.4	2.3	1.7
COR	3	→	0.8	1	2	→	3	→	1	→
#	17	18	19	20	21	22	23	24	25	26
n	2	3	4	5	6	2	3	4	5	6
PFE Avg.										
AC	76.0	16.0	3.42	3.11	4.77	63.0	40.0	12.1	3.84	3.04
DRIFT	0	0	0	0	0	0	0	0	0	0
S.P.						+22.9				
AC NOISE	0.8mV									
POT RES.	All	STATIONS	Slightly	NOISY		140K				

I.P. RECEIVER NOTES

HEINRICHS GEOEXPLORATION CO. PROJECT Mineral Hill 619

LINE 3A BEARING N-S HALF N SP. 1 DATE 5-3-11

SEND	6-7	5-6	4-5	3-4	6-7	5-6	4-5	6-7	5-6	
RECEIVE	30-35	→	→	→	35-40	→	→	40-45	→	
MULT.	1.0	1.0	0.1	0.1	1.0	1.0	0.1	0.1	0.1	
PFE	2.1	2.5	2.1	2.0	2.3	2.8	2.4	2.4	2.8	
CUR	2	3 →	→	1	2	3 →	→	2	3	
#	~~27~~	~~28~~	29	~~30~~	31	32	~~33~~	34	35	
n	3	4	5	6	4	5	6	5	6	
PFE Avg.										
AC	26.4	21.6	7.61	2.84	13.1	14.1	5.85	5.09	6.25	
DRIFT	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	
S.P.	+6.1				-9.3			+24.6		
AC NOISE										
POT RES.	60 K				180 K			200 K		

STA 0,0 IS 780' E OF STA. 35N ON LINE 3

PAGE 1

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT MINERAL HILL 619

LINE 3A HALF N SP. 1 DATE 5-3-71

SEND	CAL	3-4	4-5	5-6	6-7	4-5	5-6	6-7	5-6	6-7
RECEIVE	3-4	1-2	→	→	→	2-3	→	→	3-4	→
RANGE										
VOLTAGE	620	720	960	980	840	960	980	820	980	820
CURRENT	800MA	1A	3A	3A	2A	3A	3A	2A	3A	2A
SEND	6-7	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4
RECEIVE	4-5	15-20	→	→	→	→	20-25	→	→	→
RANGE										
VOLTAGE	820	760	740	700	680	880	820	980	740	600
CURRENT	2A	3A	3A	1A	1A	2A	2A	3A	3A	800MA

FREQUENCIES 3 0.3

SENDER NO. 23706S

OPERATOR SWANSON

RECEIVER NO. 20693R

OPERATOR FREEMAN

COMMENTS: STA 0 IS 780' E of Sta 35N ON LINE 3

STA 45S IS ~ 530' E of sta. 45S ON L3-S2

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mineral Hill 619

LINE 3A HALF N SP. 1 DATE 5-3-71

SEND	2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5
RECEIVE	20-25	→	25-30	→	→	→	→	30-35	→	→
RANGE										
VOLTAGE	660	860	820	980	940	700	660	820	980	940
CURRENT	1A	2A	2A	3A	3A	1A	1A	2A	3A	3A
SEND	3-4	6-7	5-6	4-5	6-7	5-6				
RECEIVE	→	35-40	→	→	40-45	→				
RANGE										
VOLTAGE	700	820	960	940	820	960				
CURRENT	1A	2A	3A	3A	2A	3A				

FREQUENCIES 3 0.3

SENDER NO. 23706 S

OPERATOR SWANSON

RECEIVER NO. 70692R

OPERATOR FREEMAN

COMMENTS:

JOB 619 EXT LINE 3 A SPREAD 1 SOUTH 1/2 5/3/71 500 FEET=DIPOLE LENGTH
CAL GROUP NO. 2

CAL CUR	PFE	AC1	AC2	AC FREQ	DC FREQ	PFE CAL	RHO CAL
2.000	0.00	200.000	0.00	3.00	.30	0.0000	1.0000

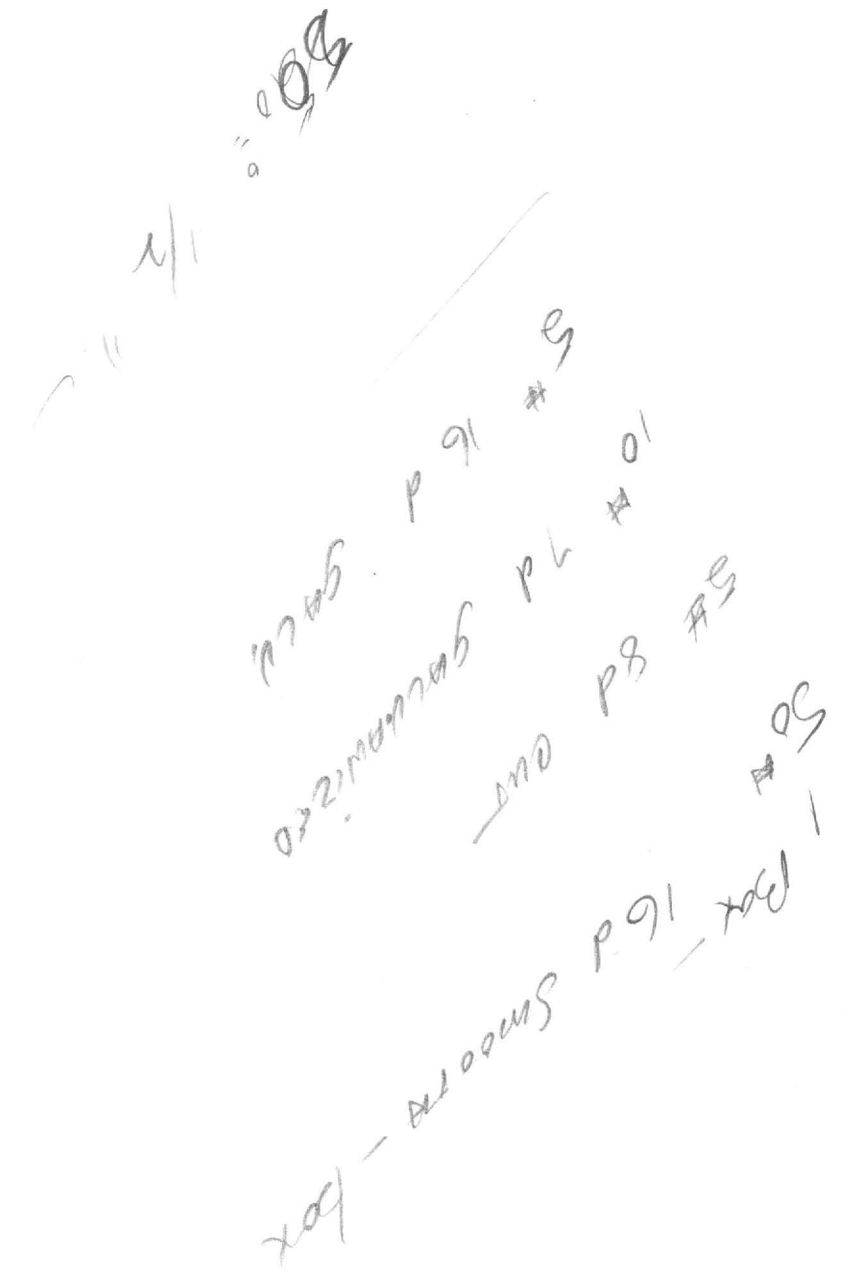
		COMPUTED DATA							FIELD DATA					
POINT NO.	N	RHO	PFE	MCF	CCPFE	CCMCF	CPFE		PFE	CUR	PT.	N	AC1	AC2
1	1	307.83	2.10	6.8	2.10	6.8	0.00	**	2.10	1.00	1	1	201.000	0.00
2	2	295.56	2.20	7.4	2.20	7.4	0.00	**	2.20	1.00	2	2	48.200	0.00
3	3	106.81	2.70	25.3	2.62	24.5	.08	**	2.70	3.00	3	3	20.800	0.00
4	4	135.06	3.10	23.0	2.98	22.1	.12	**	3.10	3.00	4	4	13.100	0.00
5	5	110.96	3.10	27.9	2.84	25.6	.26	**	3.10	2.00	5	5	4.100	0.00
6	1	530.83	1.40	2.6	1.40	2.6	0.00	**	1.40	2.00	6	1	698.000	0.00
7	2	300.76	2.30	7.6	2.30	7.6	0.00	**	2.30	1.00	7	2	49.000	0.00
8	3	255.51	2.00	7.8	2.00	7.8	0.00	**	2.00	1.00	8	3	16.700	0.00
9	4	107.52	2.40	22.3	2.24	20.8	.16	**	2.40	3.00	9	4	10.500	0.00
10	5	147.84	2.40	16.2	2.23	15.1	.17	**	2.40	3.00	10	5	8.250	0.00
11	6	126.63	2.90	22.9	2.57	20.3	.33	**	2.90	2.00	11	6	2.930	0.00
12	2	278.77	2.00	7.2	2.00	7.2	0.00	**	2.00	2.00	12	2	91.100	0.00
13	3	195.64	2.70	13.8	2.70	13.8	0.00	**	2.70	1.00	13	3	12.700	0.00
14	4	184.95	1.90	10.3	1.90	10.3	0.00	**	1.90	1.00	14	4	6.050	0.00
15	5	93.72	2.40	25.6	2.07	22.1	.33	**	2.40	3.00	15	5	5.230	0.00
16	6	140.75	2.80	19.9	2.51	17.9	.29	**	2.80	3.00	16	6	4.890	0.00
17	3	282.01	1.90	6.7	1.90	6.7	0.00	**	1.90	2.00	17	3	36.900	0.00
18	4	223.91	2.10	9.4	2.10	9.4	0.00	**	2.10	1.00	18	4	7.310	0.00
19	5	229.19	2.00	8.7	1.91	8.3	.09	**	2.00	1.00	19	5	4.280	0.00
20	6	122.72	2.40	19.6	2.05	16.7	.35	**	2.40	3.00	20	6	4.280	0.00
21	4	91.26	1.40	15.3	1.20	13.1	.20	**	1.40	2.00	21	4	6.000	0.00
22	5	74.00	1.40	18.9	.95	12.8	.45	**	1.40	1.00	22	5	1.390	0.00
23	6	74.61	1.70	22.8	1.02	13.7	.68	**	1.40	1.00	23	6	.876	-.60
24	5	109.02	1.30	11.9	1.04	9.5	.26	**	1.30	2.00	24	5	4.100	0.00
25	6	89.98	4.00	44.5	3.47	38.6	.53	**	4.00	1.00	25	6	1.030	0.00

JOB 619 EXT LINE 3A SPREAD 1 NORTH 1/2 5/3/71 — 500 FEET=DIPOLE LENGTH
CAL GROUP NO. 1

CAL CUR	PFE	AC1	AC2	AC FREQ	DC FREQ	PFE CAL	RHO CAL
.800	0.00	80.600	0.00	3.00	.30	0.0000	.9926

COMPUTED DATA									FIELD DATA					
POINT NO.	N	RHO	PFE	MCF	CCPFE	CCMCF	CPFE		PFE	CUR	PT.	N	AC1	AC2
1	1	416.39	1.70	4.1	1.70	4.1	0.00	**	1.70	1.00	1	1	275.000	0.00
2	2	146.48	2.20	15.0	2.20	15.0	0.00	**	2.20	3.00	2	2	72.200	0.00
3	3	175.84	2.70	15.4	2.70	15.4	0.00	**	2.70	3.00	3	3	34.500	0.00
4	4	143.55	2.90	20.2	2.79	19.5	.11	**	2.90	2.00	4	4	9.370	0.00
5	1	168.41	1.60	9.5	1.60	9.5	0.00	**	1.60	3.00	5	1	334.000	0.00
6	2	174.99	2.50	14.3	2.50	14.3	0.00	**	2.50	3.00	6	2	86.000	0.00
7	3	121.38	3.20	26.4	3.20	26.4	0.00	**	3.20	2.00	7	3	15.800	0.00
8	1	188.65	1.10	5.8	1.10	5.8	0.00	**	1.10	3.00	8	1	376.000	0.00
9	2	100.41	2.50	24.9	2.50	24.9	0.00	**	2.50	2.00	9	2	32.900	0.00
10	1	80.69	1.30	16.1	1.30	16.1	0.00	**	1.30	2.00	10	1	107.000	0.00
11	1	149.54	1.80	12.0	1.80	12.0	0.00	**	1.80	3.00	11	1	296.000	0.00
12	2	67.08	2.40	35.8	2.40	35.8	0.00	**	2.40	3.00	12	2	33.000	0.00
13	3	94.25	2.60	27.6	2.50	26.5	.10	**	2.60	1.00	13	3	6.170	0.00
14	4	119.15	2.60	21.8	2.46	20.7	.14	**	2.60	1.00	14	4	3.900	0.00
15	5	147.17	2.70	18.3	2.53	17.2	.17	**	2.70	2.00	15	5	5.500	0.00
16	1	171.93	1.30	7.6	1.30	7.6	0.00	**	1.30	2.00	16	1	228.000	0.00
17	2	154.34	2.30	14.9	2.30	14.9	0.00	**	2.30	3.00	17	2	76.000	0.00
18	3	81.15	2.20	27.1	2.08	25.6	.12	**	2.20	3.00	18	3	16.000	0.00
19	4	130.60	2.60	19.9	2.48	19.0	.12	**	2.60	.80	19	4	3.420	0.00
20	5	165.62	2.20	13.3	2.05	12.4	.15	**	2.20	1.00	20	5	3.110	0.00
21	6	203.42	2.30	11.3	2.13	10.5	.17	**	2.30	2.00	21	6	4.770	0.00
22	2	191.53	2.10	11.0	2.10	11.0	0.00	**	2.10	2.00	22	2	63.000	0.00
23	3	203.47	2.50	12.3	2.50	12.3	0.00	**	2.50	3.00	23	3	40.000	0.00
24	4	122.98	2.40	19.5	2.27	18.4	.13	**	2.40	3.00	24	4	12.100	0.00
25	5	204.70	2.30	11.2	2.19	10.7	.11	**	2.30	1.00	25	5	3.840	0.00
26	6	257.77	1.70	6.6	1.58	6.1	.12	**	1.70	1.00	26	6	3.040	0.00
27	3	200.65	2.10	10.5	2.10	10.5	0.00	**	2.10	2.00	27	3	26.400	0.00
28	4	219.75	2.50	11.4	2.50	11.4	0.00	**	2.50	3.00	28	4	21.600	0.00
29	5	134.96	2.10	15.6	1.90	14.1	.20	**	2.10	3.00	29	5	7.610	0.00
30	6	241.52	2.00	8.3	1.87	7.7	.13	**	2.00	1.00	30	6	2.840	0.00
31	4	199.52	2.30	11.5	2.30	11.5	0.00	**	2.30	2.00	31	4	13.100	0.00
32	5	251.77	2.80	11.1	2.72	10.8	.08	**	2.80	3.00	32	5	14.100	0.00
33	6	166.48	2.40	14.4	2.17	13.1	.23	**	2.40	3.00	33	6	5.850	0.00

34	5	135.80	2.40	17.7	2.21	16.2	.19	**	2.40	2.00	34	5	5.090	0.00
35	6	178.56	2.80	15.7	2.59	14.5	.21	**	2.80	3.00	35	6	6.250	0.00



Job 619Ext, Line 3, Sp 3 5½, 4/30/71

500.

Slight cal. change

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HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 3 HALF S SP. 3 DATE 4-30-71

SEND	CAL	S.P.	S.P.	S.P.	2-3	3-4	4-5	5-6	6-7	1-2
RECEIVE	4-5	35-30 N	30-25 N	25-20 N	20-15 N	→	→	→	→	15-10 N
RANGE	10				10	10	1.0	1.0	0.1	10
DC 1 3Hz	201.				1.9	1.9	2.1	2.5	2.9	1.8
DC 2 1Hz	0.0									
DC 3 0.3	(0.0)									
DC 4 0.1	0.1									
DC 5										
DC 6 Dev.	0.0									
DC 7 CUR	2				1	2	4	→	→	1
DC 8 #	2				1	2	3	4	5	4
DC AVG?					1	2	3	4	5	1
AC 1	201				247.	132.	30.1	23.9	9.78	200.
AC 2	0.0				0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	3.	+33.6	+15.4	+17.9	+43.4					−13.6
AC NOISE	0.3									
POT RES.		25 K	40 K	40 K	100 K					100 K

STA 10N ≅ 15 short of old sta 10N

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HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT MINERAL HILL 619
LINE 3 HALF S SP. 3 DATE 4-30-71

SEND	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6
RECEIVE	15-16N	→	→	→	→	16-5N	→	→	→	→
RANGE	1.0	1.0	1.0	1.0	0.1	1.0	1.0	1.0	0.1	0.1
DC 1	2.2	2.5	2.9	2.7	2.4	2.2	2.3	2.5	2.3	2.6
DC 2										
DC 3										
DC 4										
DC 5										
DC 6 CUR	→	2	4	→	→	1	→	2	4	→
DC 7 #	7	8	9	10	11	12	13	14	15	16
DC 8 3	2	3	4	5	6	2	3	4	5	6
DC AVG.										
AC 1	40.7	31.6	11.1	11.1	5.40	43.8	16.5	16.5	8.04	9.19
AC 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.						+3.7				
AC NOISE										
POT RES.						20 K				

STA 0 ≅ 100' EAST OF OLD STA. 0 + ABOUT ON LINE DISTANCE-WISE

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT MINERAL HILL 619

LINE 3 HALF S SP. 3 DATE 4-30-71

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	1-2	2-3	
RECEIVE	5-0N	→	→	→	0-5S	→	→	5-10S	→	
RANGE	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
DC 1	1.7	1.7	2.0	1.9	1.3	1.8	1.7	2.0	2.0	
DC 2									1.3	1 Hz
DC 3									3.1	0.1 Hz
DC 4										
DC 5										
DC 6 CUR	1	→	2	6	1	→	2	→	1	
DC 7 #	17	18	19	20	21	22	23	24	25	
DC 8 #	3	4	5	6	4	5	6	5	6	
DC AVG.										
AC 1	16.1	7.52	8.99	7.74	2.49	1.46	1.70	2.04	1.09	
AC 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AC AVG.										
S.P.	+9.3				+16.3			-6.4		
AC NOISE										
POT RES.	15K				35K			25K		

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mineral Hill 619 PAGE 3

LINE 3 HALF 5 SP. 3 DATE 4-30-7

SEND	CAL	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5
RECEIVE	4-5	15-10N	→	→	→	→	10-5N	→	→	→
RANGE										
VOLTAGE	200	680	800	320	620	820	700	680	800	320
CURRENT	2A	1A	2A	4A	4A	4A	1A	1A	2A	4A
SEND	5-6	6-7	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4
RECEIVE	10-5N	→	5-0N	→	→	→	→	0-5S	→	→
RANGE										
VOLTAGE	620	820	700	680	800	320	620	700	680	800
CURRENT	4A	4A	1A	1A	2A	4A	4A	1A	1A	2A

FREQUENCIES 3 0.3

SENDER NO. 23706 S

OPERATOR SWANSON

RECEIVER NO. 20693 R

OPERATOR FREEMAN

COMMENTS:

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mineral Hill 619 PAGE 4

LINE 3 HALF S SP. 3 DATE 4-30-71

SEND	4-5	1-2	2-3	3-4	1-2	2-3				
RECEIVE	0-5 S	5-10 S	→	→	10-15 S	→				
RANGE						*				
VOLTAGE	820	680	680	800	680	680				
CURRENT	6A	1A	1A	2A	1A	1A				
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 3 0.3

SENDER NO. 23706 S

OPERATOR SWANSON

RECEIVER NO. 20693 R

OPERATOR FREEMAN

COMMENTS: .1 HZ AND 1 HZ ALSO

Job 619EXT, Line 3 Sp 3 N 1/2, 4/30/71

500.

CROSSED WIRE! Look at 1a notes

PAGE 1

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT MINERAL HILL 619
LINE 3 HALF N SP. 3 DATE 4-30-11

SEND	CAL	3-4	4-5	5-6	6-7	4-5	5-6	6-7	5-6	6-7
RECEIVE	3-4	1-2	→	→	→	2-3	→	→	3-4	→
RANGE	10	10	10	1.0	1.0	10	10	10	10	10
DC 1	-0.2	1.5	1.9	2.1	2.3	1.6	1.9	2.1	1.5	1.6
DC 2										
DC 3										
DC 4										
DC 5										
DC 6 CUR	2.									
DC 7 #	1									
DC 8 η										
DC AVG.										
AC 1	200.	868.	196.	75.2	99.2	635.	203.	250.	683.	795.
AC 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	3.0									
AC NOISE	0.3									
POT RES.										

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HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 3 HALF N SP. 3 DATE 4-3-71

SEND	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	
RECEIVE	35-46	→	40-45	—	→	45-50	—	—	→	
RANGE	10	1.0	10	1.0	1.0	10	1.0	1.0	0.1	
DC 1	1.5	1.7	1.5	1.9	2.1	1.7	2.3	2.8	2.6	
DC 2										
DC 3										
DC 4										
DC 5 COM	1.	—	2	1	—	4	2	1	—	
DC 6 #	1	2	3	4	5	6	7	8	9	
DC 7 #	1	2	1	2	3	1	2	3	4	
DC 8										
DC AVG.										
AC 1	107.	29.9	338.	50.2	18.3	288.	55.5	12.0	5.96	
AC 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AC AVG.										
S.P.	-65.8		+113.4			-8.9				
AC NOISE										
POT RES.	120 K		90K			35 K				

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 3 HALF N SP. 3 DATE 4-30-11

SEND	6-7	S.P.	S.P.	S.P.	5-6	4-5	3-4	2-3	1-2	6-7
RECEIVE	4-5	35-40N	40-45N	45-50N	50-55N	→	→	→	→	55-60
RANGE	100				10	1.0	1.0	0.1	0.1	10
DC 1	2.0				1.5	2.1	2.7	2.7	2.5	1.8
DC 2										
DC 3										
DC 4										
DC 5										
DC 6 COR	4				4	→	2	1	→	4
DC 7 #	10				11	12	13	14	15	16
DC 8 η	15				1	2	3	4	5	1
DC AVG.										
AC 1	1280.				382.	47.2	15.4	5.12	2.99	362.
AC 2	0.0				0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.					+27.4					+15.5
AC NOISE										
POT RES.					23K					50K

BLOWN FUSE IN Sender

PAGE 3

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT MINERAL HILL 619
LINE 3 HALF N SP. 3 DATE 7-31-11

SEND	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3
RECEIVE	55-60	—	—	—	7	60-650	—	—	—	3
RANGE	1.0	1.0	0.1	0.1	0.1	1.0	1.0	1.0	0.1	0.1
DC 1	2.5	2.5	2.4	2.5	2.1	2.3	2.3	2.1	2.3	2.2
DC 2										
DC 3										
DC 4										
DC 5 CUR	—	—	2	1	—	4	—	—	2	1
DC 6 #	17	18	19	20	21	22	23	24	25	26
DC 7 #	2	3	4	5	6	2	3	4	5	6
DC 8										
DC AVG.										
AC 1	83.1	18.1	8.55	3.32	2.27	89.1	39.7	12.0	6.85	2.81
AC 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.						+36.6				
AC NOISE										
POT RES.						120 K				

STA 80N ≈ 40' short of old sta 80N

PAGE 4

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 3 HALF N SP. 3 DATE 4-30-11

SEND	6-7	5-6	4-5	3-4	6-7	5-6	4-5	6-7	5-6	
RECEIVE	65-70	→	→	→	70-75	→	→	75-80	→	
RANGE	1.0	1.0	0.1	0.1	1.0	1.0	0.1	0.1	0.1	
DC 1	2.2	2.5	2.1	2.2	2.3	2.3	2.1	2.1	2.2	
DC 2									1.2	1 Hz
DC 3									3.5	0.1 Hz
DC 4										
DC 5										
DC 6 CHA	4	→	→	2	4	→	→	→	→	
DC 7 #	37	38	39	30	31	32	33	34	35	
DC 8 #	3	4	5	6	4	5	6	5	6	
DC AVG.										
AC 1	38.5	23.4	8.30	5.41	17.9	13.4	5.17	8.44	7.76	
AC 2	0.0	6.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	
AC AVG.										
S.P.	-11.9				-2.7			+4.9		
AC NOISE										
POT RES.	120K				30K			50K		

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mineral Hill 619 PAGE 1

LINE 3 HALF N SP. 3 DATE 4-30-71

SEND	CAL	3-4	4-5	5-6	6-7	4-5	5-6	6-7	5-6	6-7
RECEIVE	3-4	1-2	→	→	→	2-3	→	→	3-4	→
RANGE										
VOLTAGE	820	820	760	660	460	760	660	460	640	460
CURRENT	2 A	2 A	4 A	4 A	4 A	4 A	4 A	4 A	4 A	4 A
SEND	6-7	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4
RECEIVE	4-5	50-55N	→	→	→	→	55-60	→	→	→
RANGE										
VOLTAGE	440	640	320	820	700	720	840	640	320	820
CURRENT	4 A	4 A	4 A	2 A	1 A	1 A	4 A	4 A	4 A	2 A

FREQUENCIES 3 0.3

SENDER NO. 23706 S

OPERATOR SWANSON

RECEIVER NO. 20693 R

OPERATOR FREEMAN

COMMENTS: MIXED WIRE #5 ≠ #6

SEND OVER - SEE RECEIVER NOTES FOR OTHER SEQUENCE! SAME I for electrodes

2-3 = 700 V 1-2 = 720 Volts

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mweka Area 619

LINE 3 HALF N SP. 3 DATE 1-30-91

SEND	2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5
RECEIVE	55-60	→	60-65	→	→	→	→	65-70	→	→
RANGE										
VOLTAGE	700	720	840	640	340	820	700	840	640	320
CURRENT	1A	1A	4A	4A	4A	2A	1A	4A	4A	4A
SEND	3-4	6-7	5-6	4-5	6-7	5-6				
RECEIVE	65-70	70-75	→	→	75-80	→				
RANGE						*				
VOLTAGE	820	840	640	320	840	640				
CURRENT	2A	4A	4A	4A	4A	4A				

FREQUENCIES 3 0.3

SENDER NO. 23706 S

OPERATOR SWANSON

RECEIVER NO. FREEMAN

OPERATOR 20693R

COMMENTS: * .1 HZ ◆ 1.0 HZ

JOB 619 EXT LINE 3 SPREAD 3 SOUTH 1/2 4/30/71 500 FEET=DIPOLE LENGTH
CAL GROUP NO. 2

CAL CUR	PFE	AC1	AC2	AC FREQ	DC FREQ	PFE CAL	RHO CAL
2.000	0.00	201.000	0.00	3.00	.30	0.0000	.9950

COMPUTED DATA									FIELD DATA					
POINT NO.	N	RHO	PFE	MCF	CCPFE	CCMCF	CPFE		PFE	CUR	PT.	N	AC1	AC2
1	1	375.66	1.90	5.1	1.90	5.1	0.00	**	1.90	1.00	1	1	247.000	0.00
2	2	401.52	1.90	4.7	1.90	4.7	0.00	**	1.90	2.00	2	2	132.000	0.00
3	3	114.67	2.10	18.3	2.02	17.7	.08	**	2.10	4.00	3	3	30.100	0.00
4	4	182.82	2.50	13.7	2.50	13.7	0.00	**	2.50	4.00	4	4	23.900	0.00
5	5	131.43	2.90	22.1	2.70	20.5	.20	**	2.90	4.00	5	5	9.780	0.00
6	1	303.88	1.80	5.9	1.80	5.9	0.00	**	1.80	1.00	6	1	200.000	0.00
7	2	248.33	2.20	8.9	2.20	8.9	0.00	**	2.20	1.00	7	2	40.700	0.00
8	3	241.72	2.50	10.3	2.50	10.3	0.00	**	2.50	2.00	8	3	31.600	0.00
9	4	85.24	2.90	34.0	2.68	31.4	.22	**	2.90	4.00	9	4	11.100	0.00
10	5	148.88	2.70	18.1	2.53	17.0	.17	**	2.70	4.00	10	5	11.100	0.00
11	6	115.54	2.40	20.8	2.02	17.5	.38	**	2.40	4.00	11	6	5.400	0.00
12	2	267.25	2.20	8.2	2.20	8.2	0.00	**	2.20	1.00	12	2	43.800	0.00
13	3	251.93	2.30	9.1	2.30	9.1	0.00	**	2.30	1.00	13	3	16.500	0.00
14	4	252.43	2.50	9.9	2.50	9.9	0.00	**	2.50	2.00	14	4	16.500	0.00
15	5	107.41	2.30	21.4	2.03	18.9	.27	**	2.30	4.00	15	5	8.040	0.00
16	6	197.02	2.60	13.2	2.42	12.3	.18	**	2.60	4.00	16	6	9.190	0.00
17	3	244.38	1.70	7.0	1.70	7.0	0.00	**	1.70	1.00	17	3	16.100	0.00
18	4	228.29	1.70	7.4	1.70	7.4	0.00	**	1.70	1.00	18	4	7.520	0.00
19	5	239.51	2.00	8.4	1.91	8.0	.09	**	2.00	2.00	19	5	8.990	0.00
20	6	109.87	1.90	17.3	1.50	13.6	.40	**	1.90	6.00	20	6	7.740	0.00
21	4	75.29	1.30	17.3	1.04	13.8	.26	**	1.30	1.00	21	4	2.490	0.00
22	5	77.64	1.80	23.2	1.38	17.8	.42	**	1.80	1.00	22	5	1.460	0.00
23	6	72.25	1.70	23.5	.99	13.7	.71	**	1.70	2.00	23	6	1.700	0.00
24	5	54.35	2.00	36.8	1.32	24.2	.68	**	2.00	2.00	24	5	2.040	0.00
25	6	92.93	2.00	21.5	1.49	16.1	.51	**	2.00	1.00	25	6	1.090	0.00

JOB 619 EXT LINE 3 SPREAD 3 NORTH 1/2 4/30/71 500 FEET=DIPOLE LENGTH
CAL GROUP NO. 1

CAL CUR	PFE	AC1	AC2	AC FREQ	DC FREQ	PFE CAL	RHO CAL
2.000	-.20	200.000	0.00	3.00	.30	-.2000	1.0000

COMPUTED DATA									FIELD DATA					
POINT NO.	N	RHO	PFE	MCF	CCPFE	CCMCF	CPFE		PFE	CUR	PT.	N	AC1	AC2
1	1	163.23	1.70	10.4	1.70	10.4	0.00	**	1.50	1.00	1	1	107.000	0.00
2	2	182.81	1.90	10.4	1.90	10.4	0.00	**	1.70	1.00	2	2	29.900	0.00
3	1	257.81	1.70	6.6	1.70	6.6	0.00	**	1.50	2.00	3	1	338.000	0.00
4	2	307.53	2.10	6.8	2.10	6.8	0.00	**	1.90	1.00	4	2	50.200	0.00
5	3	280.81	2.30	8.2	2.30	8.2	0.00	**	2.10	1.00	5	3	18.300	0.00
6	1	110.05	1.90	17.3	1.90	17.3	0.00	**	1.70	4.00	6	1	288.000	0.00
7	2	170.66	2.50	14.6	2.50	14.6	0.00	**	2.30	2.00	7	2	55.500	0.00
8	3	185.40	3.00	16.2	3.00	16.2	0.00	**	2.80	1.00	8	3	12.000	0.00
9	4	183.81	2.80	15.2	2.80	15.2	0.00	**	2.60	1.00	9	4	5.960	0.00
10	5	17169.60	2.20	.1	2.20	.1	0.00	**	2.00	4.00	10	5	1280.000	0.00 1
11	1	145.69	1.70	11.7	1.70	11.7	0.00	**	1.50	4.00	11	1	382.000	0.00 2
12	2	72.43	2.30	31.8	2.30	31.8	0.00	**	2.10	4.00	12	2	47.200	0.00 3
13	3	118.85	2.90	24.4	2.90	24.4	0.00	**	2.70	2.00	13	3	15.400	0.00 4
14	4	158.05	2.90	18.3	2.81	17.8	.09	**	2.70	1.00	14	4	5.120	0.00 5
15	5	161.21	2.70	16.7	2.55	15.8	.15	**	2.50	1.00	15	5	2.990	0.00 6
16	1	138.46	2.00	14.4	2.00	14.4	0.00	**	1.80	4.00	16	1	362.000	0.00
17	2	128.02	2.70	21.1	2.70	21.1	0.00	**	2.50	4.00	17	2	83.100	0.00
18	3	69.71	2.70	38.7	2.55	36.5	.15	**	2.50	4.00	18	3	18.100	0.00
19	4	131.58	2.60	19.8	2.48	18.8	.12	**	2.40	2.00	19	4	8.550	0.00
20	5	179.01	2.70	15.1	2.57	14.3	.13	**	2.50	1.00	20	5	3.320	0.00
21	6	195.07	2.30	11.8	2.12	10.9	.18	**	2.10	1.00	21	6	2.270	0.00
22	2	136.99	2.50	18.2	2.50	18.2	0.00	**	2.30	4.00	22	2	89.100	0.00
23	3	152.60	2.50	16.4	2.50	16.4	0.00	**	2.30	4.00	23	3	39.700	0.00
24	4	92.07	2.30	25.0	2.10	22.8	.20	**	2.10	4.00	24	4	12.000	0.00
25	5	184.31	2.50	13.6	2.37	12.9	.13	**	2.30	2.00	25	5	6.850	0.00
26	6	241.70	2.40	9.9	2.27	9.4	.13	**	2.20	1.00	26	6	2.810	0.00
27	3	147.84	2.40	16.2	2.40	16.2	0.00	**	2.20	4.00	27	3	38.500	0.00
28	4	180.24	2.70	15.0	2.62	14.6	.08	**	2.50	4.00	28	4	23.400	0.00
29	5	111.44	2.30	20.6	2.04	18.3	.26	**	2.10	4.00	29	5	8.300	0.00
30	6	232.67	2.40	10.3	2.26	9.7	.14	**	2.20	2.00	30	6	5.410	0.00
31	4	137.61	2.50	18.2	2.39	17.3	.11	**	2.30	4.00	31	4	17.900	0.00
32	5	180.27	2.50	13.9	2.37	13.1	.13	**	2.30	4.00	32	5	13.400	0.00
33	6	111.07	2.30	20.7	1.90	17.1	.40	**	2.10	4.00	33	6	5.170	0.00
34	5	113.32	2.30	20.3	2.05	18.1	.25	**	2.10	4.00	34	5	8.440	0.00
35	6	166.87	2.40	14.4	2.17	13.0	.23	**	2.20	4.00	35	6	7.760	0.00

Job 619 EXT, Line 3B, spl 5½, 5/4/71

500.

~820' W. of LINE 3 I.P. RECEIVER NOTES

PAGE 1

HEINRICHS GEOEXPLORATION CO. PROJECT Mineral Hill 69

LINE 3B BEARING N HALF S SP. 1 DATE 5-4-v

SEND	CAL	3-4	4-5	5-6	6-7	4-5	5-6	6-7	5-6	6-7
RECEIVE	3-4	1-2	—	—	→	2-3	—	→	3-4	→
MULT.	1.0	10	1.0	1.0	0.1	10	1.0	1.0	10	1.0
PFE	-0.1	1.6	1.4	1.9	2.2	1.3	1.9	2.5	1.3	2.0
cur	1	—	—	2	—	1	2	—	—	—
#	1	1	2	3	etc 4	5	6	7	8	9
n		1	2	3	4	1	2	3	1	2
PFE Avg.										
AC	100.1	359.	33.0	22.9	7.39	160.	74.0	16.0	531.	48.8
DRIFT	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S.P.										
AC NOISE	3.0									
POT RES.	0.3									

I.P. RECEIVER NOTES

HEINRICHS GEOEXPLORATION CO. PROJECT Mineral Hill 619

LINE 3B BEARING N HALF S SP. 1 DATE 5-4-11

SEND	6-7	S.P.	S.P.	S.P.	2-3	3-4	4-5	5-6	6-7	1-2
RECEIVE	4-5	0-5s	5-10s	10-15s	15-20s	→	→	→	→	20-25s
MULT.	10				10	1.0	0.1	0.1	0.1	10
PFE	1.2				1.3	1.7	1.5	2.3	2.3	1.2
CUR	—				1	→	→	2	→	1.5
#	10				11	12	13	14	15	16
#	1				1	2	3	4	5	1
PFE Avg.										
AC	154.				333.	69.4	9.21	8.12	3.61	402.
DRIFT	0.0				0	0	0	0	0	0
S.P.		+36.9	-2.1	-1.5	+1.0					+41.6
AC NOISE						0.4mm				
POT RES.		80K	120K	90K	200K	@3				100K

I.P. RECEIVER NOTES

PAGE 3

HEINRICHS GEOEXPLORATION CO. PROJECT Mineral Hill 619

LINE 3B BEARING N HALF S SP. / DATE 5-4X

SEND	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6
RECEIVE	20-25 S	→	→	→	→	25-30	S →	→	→	→
MULT.	1.0	1.0	0.1	0.1	0.1	1.0	1.0	1.0	0.1	0.1
PFE	1.4	2.0	1.8	2.6	1.8	1.6	1.8	2.2	1.5	2.3
CUR	→	→	→	2.5	→	1.5 →	→	2 →	→	2.5
#	17 →	18	19	20	21	22	23	24	25	26
n	2	3	4	5	6	2	3	4	5	6
PFE Avg.										
AC	118.	36.1	7.16	7.24	4.19	58.4	28.1	11.8	4.77	4.44
DRIFT	0.10	0	0	0	0	0	0	0	0	0
S.P.						+2.4				
AC NOISE										
POT RES.						50K				

I.P. RECEIVER NOTES

HEINRICHS GEOEXPLORATION CO. PROJECT Mineral Hill 619

LINE 3B BEARING N HALF S SP. / DATE 5-4-11

SEND	1-2	2-3	3-4	4-5						
RECEIVE	30-35	s	—	—	2					
MULT.	1.0	1.0	0.1	0.1						
PFE	1.5	1.6	1.7	1.7						
C&R	1.5	—	—	2						
#	~~27~~	28	29	30						
n	3	4	5	6						
PFE Avg.										
AC	21.0	11.8	5.69	2.68						
DRIFT	~~0~~	~~0~~	~~0~~	~~0~~						
S.P.										
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mineral Hill 619

LINE 3/3 HALF 5 SP. / DATE 5-4-11

SEND	CAL	3-4	4-5	5-6	6-7	4-5	5-6	6-7	5-6	6-7
RECEIVE	3-4	1-2	→	→	→	2-3	→	→	3-4	→
RANGE										
VOLTAGE	720	720	600	800	720	600	800	720	800	720
CURRENT	1A	1A	1A	2A	2A	1A	2A	2A	2A	2A
SEND	6-7	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5
RECEIVE	4-5	15-20s	→	→	→	→	20-25s	→	→	→
RANGE										
VOLTAGE	720	740	680	600	800	720	820	1000	920	800
CURRENT	2A	1A	1A	1A	2A	2A	1½A	1½A	1½A	1½A

FREQUENCIES 3 0.3

SENDER NO. 237065

OPERATOR SWANSON

RECEIVER NO. 20693R

OPERATOR FREEMAN

COMMENTS:

STA 0 IS ~ 830' W OF LINE 3

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mineral Hill

LINE 3B HALF S SP. 1 DATE 5-4-11

SEND	5-6	6-7	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4
RECEIVE	20-25	→	25-30	→	→	→	→	30-35	→	→
RANGE										
VOLTAGE	920	840	800	1000	900	1000	920	800	1000	900
CURRENT	2½A	2½A	1½A	1½A	2A	2A	2½A	1½A	1½A	1½A
SEND	4-5									
RECEIVE	30-35									
RANGE										
VOLTAGE	980									
CURRENT	2A									

FREQUENCIES 3 0.3

SENDER NO. 237065

OPERATOR SWANSON

RECEIVER NO. 20693R

OPERATOR FREEMAN

COMMENTS:

Job 619 EXT, LINE 3B, Sq 1 N½, 5/4/71

500.

I.P. RECEIVER NOTES

PAGE 5

HEINRICHS GEOEXPLORATION CO. PROJECT Mineral Hill 619

LINE 3B BEARING N HALF N SP. 1 DATE 5-4-71

SEND	CAL	S.P.	S.P	S.P.	5-6	4-5	3-4	2-3	1-2	6-7
RECEIVE	3-4	0.5N	5N	10-15N	15-20N					20-25N
MULT.	10				10	1.0	0.1	0.1	0.1	10
PFE	-0.1				1.8	2.0	2.3	2.1	2.1	1.9
CUR	1.5				2.5	2.	1.5			2.5
#	2				1	2	3	4	5	6
"					1	2	3	4	5	1
PFE Avg.										
AC	150.				132.	22.4	9.98	5.34	3.15	163.
DRIFT	0.0				0	0	0	0	0	0
S.P.		-0.7	-0.7	+17.5	+0.0					+17.7
AC NOISE	3.0									
POT RES.	0.3	400 K	400 K	50 K	18 K					100 K

I.P. RECEIVER NOTES

PAGE 6

HEINRICHS GEOEXPLORATION CO. PROJECT Mineral Hill 619

LINE 3B BEARING N HALF N SP. 1 DATE 5-7-71

SEND	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3
RECEIVE	20-25N	—	—	—	→	25-30	—	—	—	→
MULT.	1.0	1.0	0.1	0.1	0.1	1.0	1.0	0.1	0.1	0.1
PFE	1.8	1.8	1.6	1.5	1.9	1.9	1.9	2.1	2.3	2.1
CUR	—	2	1.5	—	—	2.5	—	2.	1.5	—
#	7	8	9	10	11	12	13	14	15	16
3	2	3	4	5	6	2	3	4	5	6
PFE Avg.										
AC	38.2	11.0	6.53	4.12	2.65	61.6	24.1	8.30	5.82	3.94
DRIFT	0	0	0	0	0	0	0	0	0	0
S.P.						+3.6				
AC NOISE										
POT RES.						200K				

I.P. RECEIVER NOTES

PAGE 7

HEINRICHS GEOEXPLORATION CO. PROJECT Minerals Hill 619

LINE 3B BEARING N-S HALF N SP. 1 DATE 5-4-11

SEND	6-7	5-6	4-5	3-4	6-7	5-6	4-5			
RECEIVE	30-35	N	→	→	35-40	→	→			
MULT.	1.0	1.0	0.1	0.1						
PFE	2.1	2.2	2.0	2.3						
				\						
Coil	2.5	—	2.	1.5						
#	17	18	19	20						
3	#3	4	5	6						
PFE Avg.										
AC	25.8	12.6	4.83	3.58						
DRIFT	0	0	0	0						
S.P.	+2.7									
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mineral Hill 619

LINE 3B HALF N SP. 1 DATE 5-7-11

SEND	CAL	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4
RECEIVE	3-4	15-20N	→	→	→	→	20-25N	→	→	→
RANGE										
VOLTAGE	860	900	940	840	940	780	820	900	920	840
CURRENT	1½ A	2½ A	2 A	1½ A	1½ A	1½ A	2½ A	2½ A	2 A	1½ A
SEND	2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5
RECEIVE	20-25	→	25-30	N	→	→	→	30-35	N	→
RANGE										
VOLTAGE	940	780	840	900	920	820	940	820	880	900
CURRENT	1½ A	1½ A	2½ A	2½ A	2 A	1½ A	1½ A	2½ A	2½ A	2 A

FREQUENCIES 3 0.3

SENDER NO. 23706S

OPERATOR SWANSON

RECEIVER NO. 20693R

OPERATOR FREEMAN

COMMENTS:

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mineral Hill 619

LINE 3B HALF N SP. 1 DATE 5-8-11

SEND	3-4	6-7	5-6	4-5						
RECEIVE	30-35N	35-40	→	→						
RANGE										
VOLTAGE	820									
CURRENT	1½A									
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 3 0.3

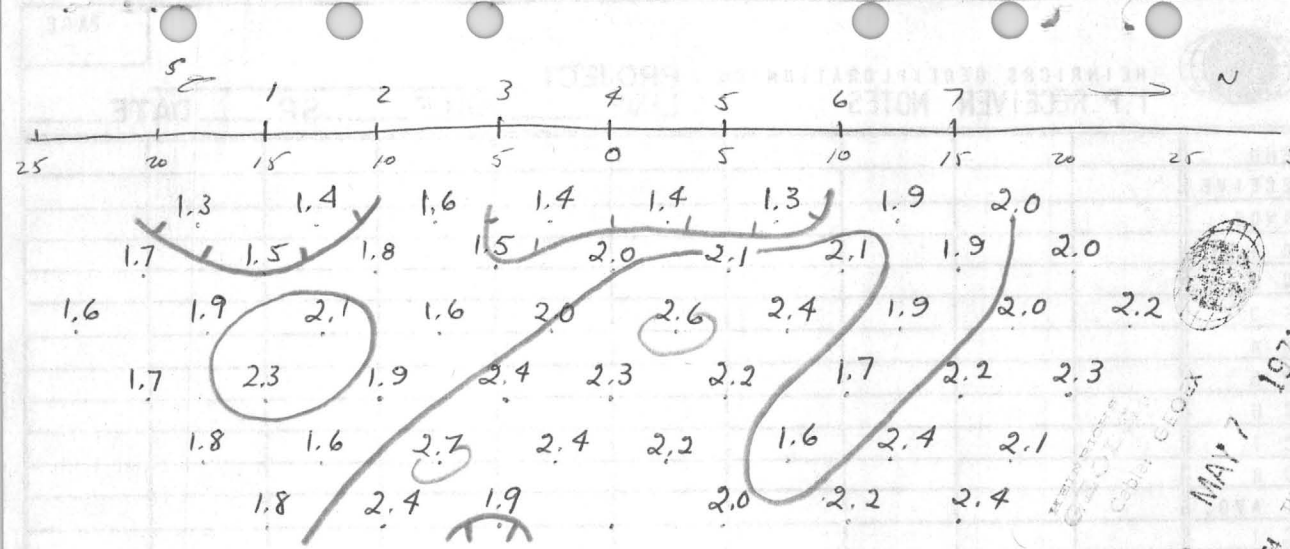
SENDER NO. 23706 S

OPERATOR SWANSON

RECEIVER NO. 20693 R

OPERATOR FREEMAN

COMMENTS:



LINE 3B

~ 820' W of LINE 3

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT _____

LINE ____ HALF ____ SP. ____ DATE ____

PAGE

SEND										
RECEIVE										
RANGE										
DC 1										
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1										
AC 2										
AC AVG.										
S.P.										
AC NOISE										
POT RES.										

JOB 619 EXT LINE 3B SPREAD 1 NORTH 1/2 5/4/71 500 FEET=DIPOLE LENGTH
CAL GROUP NO. 2

CAL CUR	PFE	AC1	AC2	AC FREQ	DC FREQ	PFE CAL	RHO CAL
1.500	-.10	150.000	0.00	3.00	.30	-.1000	1.0000

COMPUTED DATA									FIELD DATA					
POINT NO.	N	RHO	PFE	MCF	CCPFE	CCMCF	CPFE		PFE	CUR	PT.	N	AC1	AC2
1	1	80.70	1.90	23.5	1.90	23.5	0.00	**	1.80	2.50	1	1	132.000	0.00
2	2	68.61	2.10	30.6	2.10	30.6	0.00	**	2.00	2.00	2	2	22.400	0.00
3	3	102.20	2.40	23.5	2.31	22.6	.09	**	2.30	1.50	3	3	9.980	0.00
4	4	109.15	2.20	20.2	2.04	18.7	.16	**	2.10	1.50	4	4	5.340	0.00
5	5	112.68	2.20	19.5	1.95	17.3	.25	**	2.10	1.50	5	5	3.150	0.00
6	1	99.76	2.00	20.0	2.00	20.0	0.00	**	1.90	2.50	6	1	163.000	0.00
7	2	93.42	1.90	20.3	1.90	20.3	0.00	**	1.80	2.50	7	2	38.200	0.00
8	3	84.07	1.90	22.6	1.78	21.2	.12	**	1.80	2.00	8	3	11.000	0.00
9	4	132.82	1.70	12.8	1.58	11.9	.12	**	1.60	1.50	9	4	6.530	0.00
10	5	146.51	1.60	10.9	1.42	9.7	.18	**	1.50	1.50	10	5	4.120	0.00
11	6	151.37	2.00	13.2	1.74	11.5	.26	**	1.90	1.50	11	6	2.650	0.00
12	2	150.80	2.00	13.3	2.00	13.3	0.00	**	1.90	2.50	12	2	61.600	0.00
13	3	147.49	2.00	13.6	2.00	13.6	0.00	**	1.90	2.50	13	3	24.100	0.00
14	4	127.24	2.20	17.3	2.07	16.3	.13	**	2.10	2.00	14	4	8.300	0.00
15	5	208.59	2.40	11.5	2.29	11.0	.11	**	2.30	1.50	15	5	5.820	0.00
16	6	225.49	2.20	9.8	2.05	9.1	.15	**	2.10	1.50	16	6	3.940	0.00
17	3	158.21	2.20	13.9	2.20	13.9	0.00	**	2.10	2.50	17	3	25.800	0.00
18	4	154.68	2.30	14.9	2.20	14.3	.10	**	2.20	2.50	18	4	12.600	0.00
19	5	129.45	2.10	16.2	1.89	14.6	.21	**	2.00	2.00	19	5	4.830	0.00
20	6	205.29	2.40	11.7	2.23	10.9	.17	**	2.30	1.50	20	6	3.580	0.00

JOB 619 EXT LINE 3B SPREAD 1 SOUTH 1/2 5/4/71 500 FEET=DIPOLE LENGTH
CAL GROUP NO. 1

CAL CUR	PFE	AC1	AC2	AC FREQ	DC FREQ	PFE CAL	RHO CAL
1.000	-.10	100.100	0.00	3.00	.30	-.1000	.9990

COMPUTED DATA | FIELD DATA

****
ERROR, CUR= ZERO
****

1.60 -0.00 1 1 359.000 .20

POINT NO.	N	RHO	PFE	MCF	CCPFE	CCMCF	CPFE		PFE	CUR	PT.	N	AC1	AC2
1	1	547.12	1.60	2.9	1.60	2.9	0.00	**	1.60	1.00	1	1	359.000	.20
2	2	200.77	1.50	7.5	1.50	7.5	0.00	**	1.40	1.00	2	2	33.000	0.00
3	3	175.01	2.00	11.4	2.00	11.4	0.00	**	1.90	2.00	3	3	22.900	0.00
4	4	113.29	2.30	20.3	2.15	19.0	.15	**	2.20	2.00	4	4	7.390	0.00
5	1	243.12	1.40	5.8	1.40	5.8	0.00	**	1.30	1.00	5	1	160.000	0.00
6	2	226.21	2.00	8.8	2.00	8.8	0.00	**	1.90	2.00	6	2	74.000	0.00
7	3	123.00	2.60	21.1	2.60	21.1	0.00	**	2.50	2.00	7	3	16.000	0.00
8	1	403.42	1.40	3.5	1.40	3.5	0.00	**	1.30	2.00	8	1	531.000	0.00
9	2	149.33	2.10	14.1	2.10	14.1	0.00	**	2.00	2.00	9	2	48.800	0.00
10	1	116.88	1.30	11.1	1.30	11.1	0.00	**	1.20	2.00	10	1	154.000	0.00
11	1	505.99	1.40	2.8	1.40	2.8	0.00	**	1.30	1.00	11	1	333.000	0.00
12	2	423.47	1.80	4.3	1.80	4.3	0.00	**	1.70	1.00	12	2	69.400	0.00
13	3	140.22	1.60	11.4	1.60	11.4	0.00	**	1.50	1.00	13	3	9.210	0.00
14	4	124.60	2.40	19.3	2.27	18.2	.13	**	2.30	2.00	14	4	8.120	0.00
15	5	96.94	2.40	24.8	2.09	21.6	.31	**	2.30	2.00	15	5	3.610	0.00
16	1	406.82	1.30	3.2	1.30	3.2	0.00	**	1.20	1.50	16	1	402.000	0.00
17	2	478.60	1.50	3.1	1.50	3.1	0.00	**	1.40	1.50	17	2	118.000	0.00
18	3	368.21	2.10	5.7	2.10	5.7	0.00	**	2.00	1.50	18	3	36.100	0.00
19	4	145.78	1.90	13.0	1.80	12.3	.10	**	1.80	1.50	19	4	7.160	0.00
20	5	155.99	2.70	17.3	2.54	16.3	.16	**	2.60	2.50	20	5	7.240	0.00
21	6	143.32	1.90	13.3	1.62	11.3	.28	**	1.80	2.50	21	6	4.190	0.00
22	2	237.33	1.70	7.2	1.70	7.2	0.00	**	1.60	1.50	22	2	58.400	0.00
23	3	286.05	1.90	6.6	1.90	6.6	0.00	**	1.80	1.50	23	3	28.100	0.00
24	4	180.89	2.30	12.7	2.30	12.7	0.00	**	2.20	2.00	24	4	11.800	0.00
25	5	127.09	1.60	12.6	1.39	10.9	.21	**	1.50	2.00	25	5	4.770	0.00
26	6	152.61	2.40	15.7	2.14	14.0	.26	**	2.30	2.50	26	6	4.440	0.00
27	3	213.15	1.60	7.5	1.60	7.5	0.00	**	1.50	1.50	27	3	21.000	0.00
28	4	239.77	1.70	7.1	1.70	7.1	0.00	**	1.60	1.50	28	4	11.800	0.00
29	5	202.53	1.80	8.9	1.69	8.3	.11	**	1.70	1.50	29	5	5.690	0.00
30	6	114.47	1.80	15.7	1.42	12.4	.38	**	1.70	2.00	30	6	2.680	0.00

Job 619 EXT, LINE 3 SP 2 April 29, 71 1000.

From W. J. Freeman.

Job 619

HEINRICH'S
GEOEX

Cable: GEOEX

BOX 5964 TUCSON, ARIZONA 85703

Phone: (AREA 602) 623-0578

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT MINERAL HILL 619
LINE 3 HALF N SP. 2 DATE 4-29-7

PAGE 1

SEND	CAL	3-4	2-3	1-2	3-4	2-3	1-2	30-4N	2-3	1-2
RECEIVE	2-3	1-2	50-60N	→	60-70N	—	→	70-80	—	→
RANGE	10	10	1.0	1.0	10	1.0	0.1	1.6	1.0	0.1
DC 1	0.1	2.5	2.8	3.1	2.5	1.8	1.9	2.8	1.6	1.7
DC 2										1.0 & 3.0
DC 3										
DC 4										
DC 5										
DC 6 CUR	2.0	4	2	1	4	2	1	4	2	1
DC 7 #	1	1	2	3	4	5	6	7	8	9
DC 8 "		1	1	2	1	2	3	2	3	4
DC AVG.										
AC 1	200.	350.	56.0	13.7	193.	22.8	9.21	48.8	10.2	4.61
AC 2	0.0	0.0	0.0	0.2	0.0	-0.4	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	1.0		+16.0		+32.2			-12.8		
AC NOISE	0.1									
POT RES.			180 K		140 K			30 K		

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 3 HALF N SP. 2 DATE 4-29-71

SEND	3-4	2-3	3-4							
RECEIVE	80-90	→	90-100							
RANGE	1.0	0.1								
DC 1	2.0	2.0								
DC 2		1.0 to 3.0								
DC 3										
DC 4										
DC 5										
DC 6 COR	4	2								
DC 7 #	10	11								
DC 8 n	3	4								
DC AVG.										
AC 1	17.7	4.73								
AC 2	0.0									
AC AVG.										
S.P.										
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Mineral Hill 619

LINE 3 HALF N SP. 2 DATE 7-29-71

SEND	CAL	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2
RECEIVE	2-3	1-2	50-60N	→	60-70N	→	→	70-80	→	→
RANGE				*						
VOLTAGE	840	520	840	800	520	840	800	520	840	800
CURRENT	2A	4A	2A	1A	4A	2A	1A	4A	2A	1A
SEND	3-4	2-3	3-4							
RECEIVE	80-90	→	90-100							
RANGE										
VOLTAGE	520	840								
CURRENT	4A	2A								

FREQUENCIES 1 a1

SENDER NO. 23706 S

OPERATOR SWANSON

RECEIVER NO. 20693R

OPERATOR FREEMAN

COMMENTS: * 3HZ .3HZ

JOB 619 EXT LINE 3 SPREAD 2 4/29/71
CAL GROUP NO. 1

1000 FEET=DIPOLE LENGTH

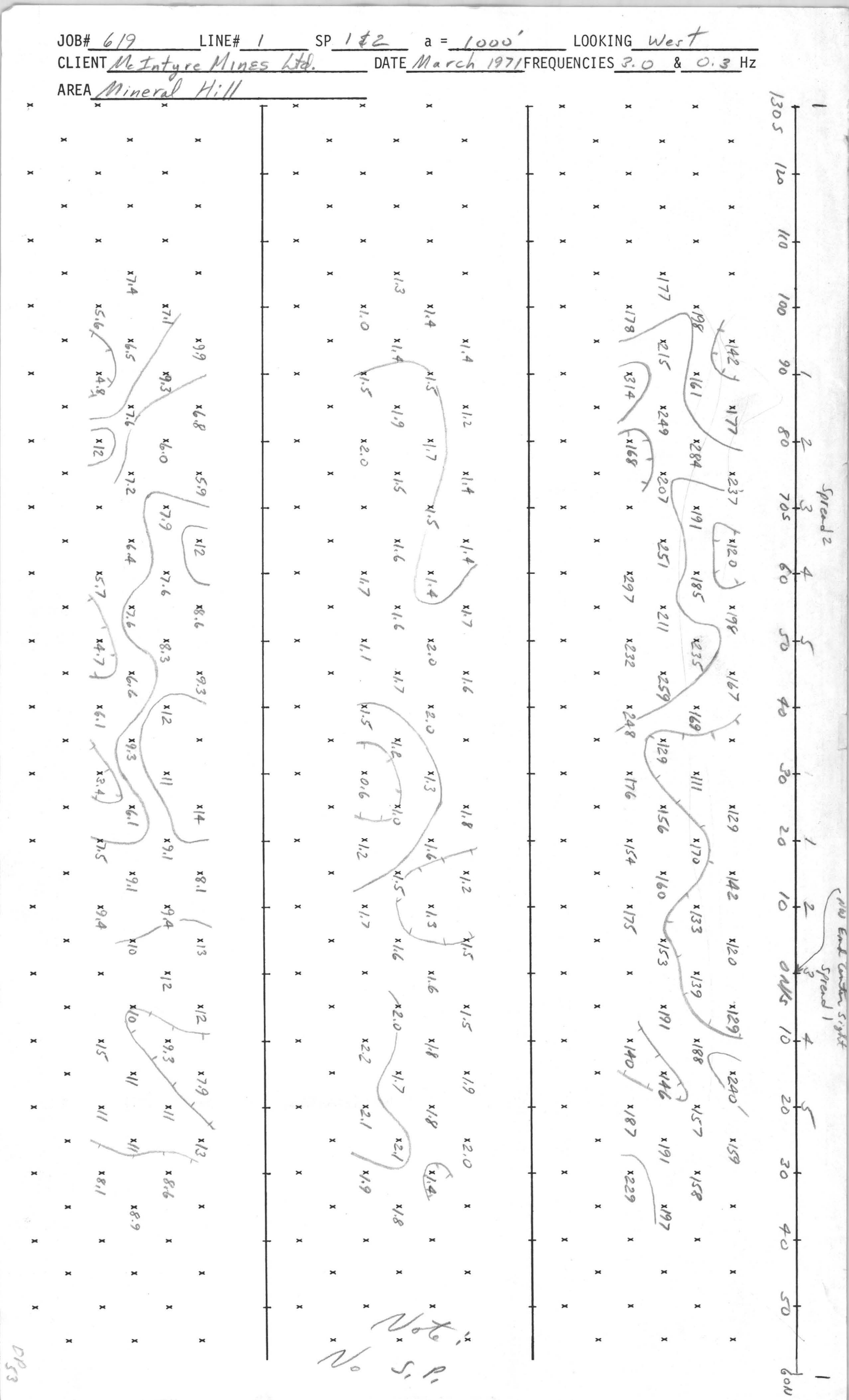
CAL CUR	PFE	AC1	AC2	AC FREQ	DC FREQ	PFE CAL	RHO CAL
2.000	.10	200.000	0.00	1.00	.10	.1000	1.0000

COMPUTED DATA									FIELD DATA					
POINT NO.	N	RHO	PFE	MCF	CCPFE	CCMCF	CPFE		PFE	CUR	PT.	N	AC1	AC2
1	1	268.80	2.40	8.9	2.40	8.9	0.00	**	2.50	4.00	1	1	350.000	0.00
2	1	86.27	2.70	31.3	2.70	31.3	0.00	**	2.80	2.00	2	1	56.000	0.00
3	2	169.34	2.90	17.1	2.90	17.1	0.00	**	3.10	1.00	3	2	13.700	.20
4	1	148.22	2.40	16.2	2.40	16.2	0.00	**	2.50	4.00	4	1	193.000	0.00
5	2	139.12	1.90	13.7	1.90	13.7	0.00	**	1.80	2.00	5	2	22.800	-.40
6	3	284.33	1.80	6.3	1.80	6.3	0.00	**	1.90	1.00	6	3	9.310	0.00
7	2	150.35	2.70	18.0	2.70	18.0	0.00	**	2.80	4.00	7	2	48.800	0.00
8	3	155.29	1.50	9.7	1.50	9.7	0.00	**	1.60	2.00	8	3	10.200	0.00
9	4	281.03	1.60	5.7	1.60	5.7	0.00	**	1.70	1.00	9	4	4.610	0.00
10	3	135.27	1.90	14.0	1.81	13.4	.09	**	2.00	4.00	10	3	17.700	0.00
11	4	144.60	1.90	13.1	1.74	12.0	.16	**	2.00	2.00	11	4	4.730	0.00

JOB# 619 LINE# 1 SP 1&2 a = 1000' LOOKING West

CLIENT McIntyre Mines Ltd. DATE March 1971 FREQUENCIES 3.0 & 0.3 Hz

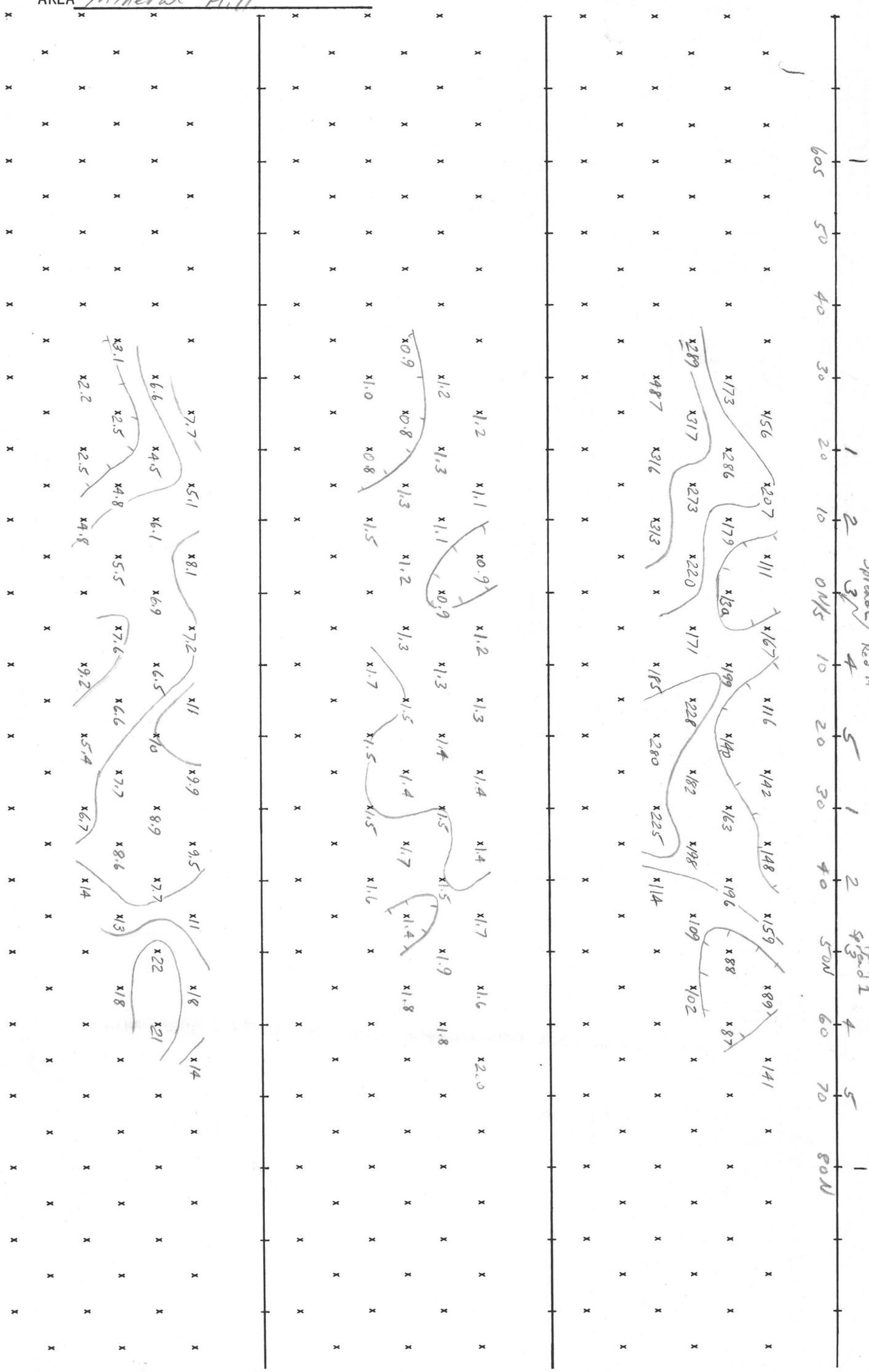
AREA Mineral Hill



JOB# 619 LINE# 2 SP 1+82 a = 1000' LOOKING West

CLIENT McIntyre DATE March 1971 FREQUENCIES 3.0 & 0.3 Hz

AREA Mineral Hill

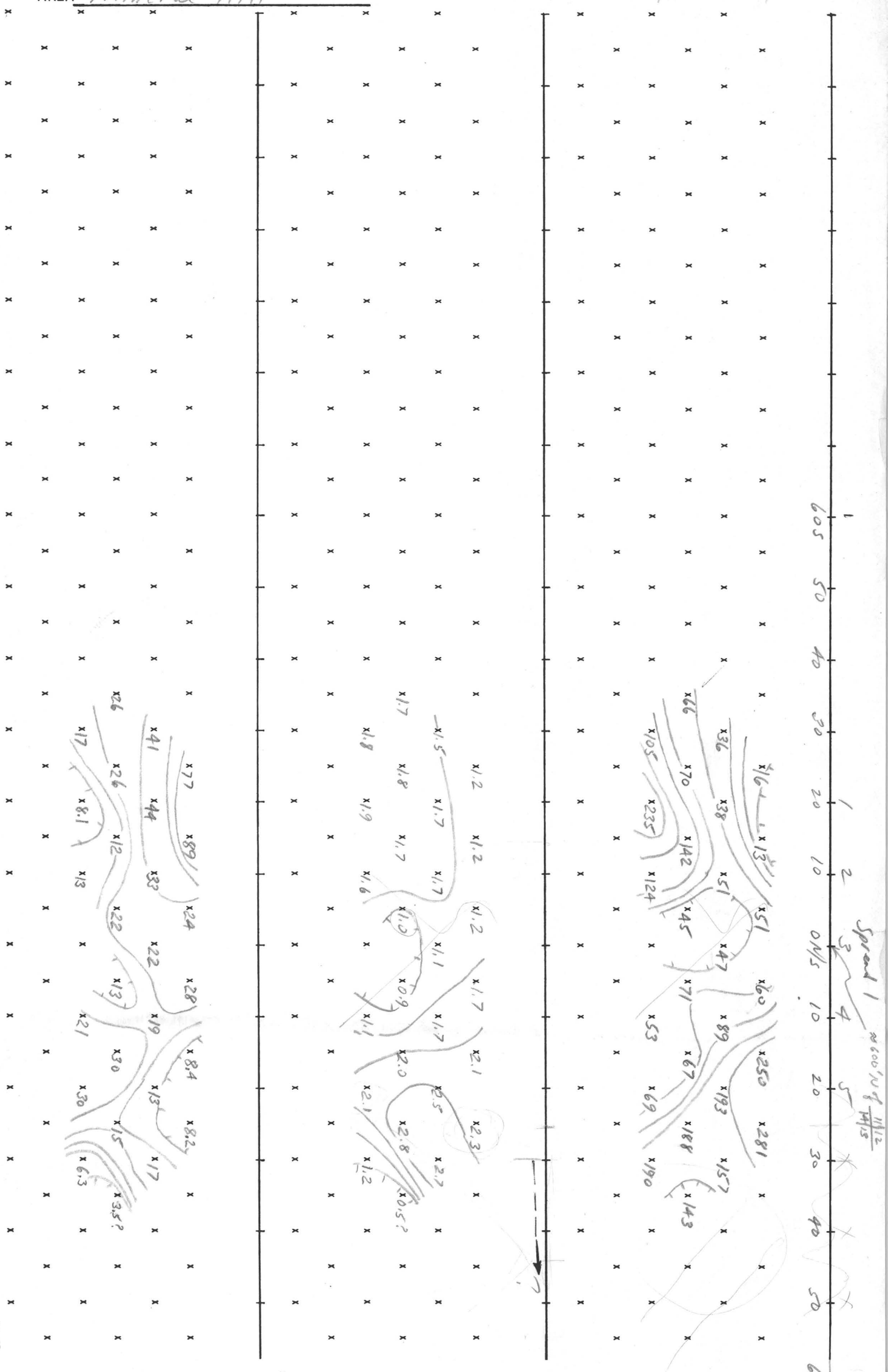


PP 2

JOB# 619 LINE# 3 SP 1 a = 1000' LOOKING West

CLIENT McIntyre DATE April 1971 FREQUENCIES 3.0 & 0.3 Hz

AREA Mineral Hill



Cp ≈ 300 N of water tank 2.3

PAGE 1

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Minerva Hill 619
LINE S HALF N SP. 1 DATE 1-6-71

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-10N	10-20N	→	20-30N	→	→	30-40N	→	→	→
RANGE	1.0	1.0	0.1	1.0	0.1	0.1	1.0	0.1	0.1	0.01
DC 1										
DC 2	1.3	1.6	1.0	2.2	≈ 1.8	≈ 2.0	2.3	2.0	1.8	0.8 little noisy
DC 3										
DC 4 V_p	3	3	12	3	12	30	3	12	30	60 Pot Pol. II
DC 5 I	600	900	600	high noise, 900 read on 100 sensitivity	900	600	600	900	2000	± 0.2 on 3 600
DC 6										
DC 7 ρ_a	138	39	87	100	74	77	70	102	110	88
DC 8 PFE	1.5	1.8	1.2	2.4	2.0	2.2	2.5	2.2	2.1	1.0
DC AVG. MCF	11	46	14	24	27	29	36	22	19	11
AC 1	27.4	11.6	4.32	29.5	5.50	1.52	13.8	7.52	7.22	0.882
AC 2	—	—	+0.1	—	—		—	—	-0.2	—
AC AVG.				steel water pipe line crossed at 30 N on 4						
S.P.				— at angle of approx 20°.						
AC NOISE										
POT RES.				35K	→	→				

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 5 HALF N SP. 1 DATE 4-6-7

SEND	4-5	3-4	2-3	4-5	3-4			CAL 1-2		
RECEIVE	10-50N	→	→	50-60N	→			1-2		
RANGE	0.1	0.1	0.1	0.1	0.1					
DC 1								-0.2		
DC 2	2.2	2.5	2.6	2.3	2.5					
DC 3			reading							
DC 4 kn	12	30	1 ÷ 0.1 60	30	60	T				
DC 5 I	600	900	2000. 4-2.5	600	900					
DC 6										
DC 7 Pa	100	172	114 5.76	123	229					
DC 8 FFE	2.4	2.7	2.8	2.5	2.7					
DC AVG. MCP	24	16	16	20	12					
AC 1	4.89	5.06	5.71	2.42	3.38			101		
AC 2	—	—	—	—	—			—		
AC AVG.										
S.P.	+11.5	→	→	+16.0	→					
AC NOISE										
POT RES.	75K	→	→	32K	→					

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Minerva Hill 610
LINE 5 HALF S SP. 1 DATE 1-7-71

SEND	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
RECEIVE	20-30S	→	→	30-40S	→	→	→	40-50S	→	→
RANGE	1.0	1.0	0.1	1.0	0.1	0.1	0.1	1.0	0.1	0.1
DC 1										
DC 2	1.6	1.5	1.7	1.4	1.2	0.8	1.4?	1.4	1.4	~~1.6~~ 1.7
DC 3										
DC 4 kn	3	12	30	3	12	30	60	12	30	60
DC 5 I	1000	1000	600	600	1000	1000	600	600	1000	1000
DC 6										
DC 7 Ra	99	143	92	143	103	145	89	244	147	184
DC 8 PFE	1.8	1.7	1.9	1.5	1.4	1.1	1.6	1.6	1.6	1.9
DC AVG. MCF	18	12	21	10	14	7.6	18	6.6	11	10
AC 1	32.6	11.8	1.83	28.5	8.52	4.81	0.885	12.1	4.85	3.04
AC 2	—	—	—	+0.2	—	-0.2	-?	+0.1	—	—
AC AVG.										
S.P.				+23.8						
AC NOISE				noisy	-high	Z		+24.2		
POT RES.	8K	→	→	200K	→	→	→	60K	→	→

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT Minerals Hill 619

LINE 5 HALF 5 SP. 1 DATE 4-7-71

SEND		1-2	2-3							
RECEIVE		50-60S	→							
RANGE		0.1	0.1							
DC 1										
DC 2		1.6	1.7							
DC 3										
DC 4 kn		30	60							
DC 5 I		600	1000							
DC 6										
DC 7 Pa		261	147							
DC 8 PFE		1.8	1.9							
DC AVG. MCF		6.9	13							
AC 1		5.18	2.43							
AC 2		—	—							
AC AVG.										
S.P.		+2.8 →								
AC NOISE										
POT RES.		55K →								

#619 **INDUCED POLARIZATION SENDER NOTES**

Project: Mineral Hill **Line:** Line 5 5+1 5½ **Date:** April 7, 71

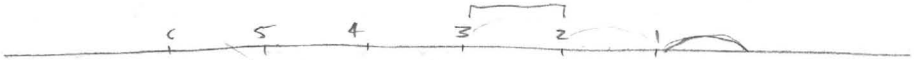
Send	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4	1-2	2-3
Receive	20-30S	—	—	30-40	—	—	—	40-50	—	—	50-60	—
Time												
Range	500	815	720	750	510	815	720	720	500	820	750	500
Current	1.0	1.0	0.6	0.6	1.0	1.0	0.6	0.6	1.0	1.0	0.6	1.0
Send												
Receive												
Time												
Range												
Current												

#619 **INDUCED POLARIZATION SENDER NOTES**

project: Mineral Hill **Line:** Line 5 Sp 1 · N½ **Date:** 4/6/71

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4
Receive	3-4	3-4	4-5	20-30N	—	—	30-40	—	—	—	40-50	—
Time												
Range	815	470	815	840	470	800	780	815	840	780	780	815
Current	0.6	0.9	0.6	0.9	0.9	0.6	0.6	0.9	2.0	0.6	0.6	0.9
Send	2-3	4-5	3-4									Cal
Receive	—	50-60	—									1-2
Time	3.1.0.3 0.1											
Range	840	770	810									500
Current	2.0	0.6	0.9									1.0

2-3 1-2



2-3, 3-4, 4-5, 5-6, 1-2, 2-3 -3-4, 4-5

1-2, 2-3, 3-4, 1-2 -2-3.

P 7000 ft North of cp Spd 2

PAGE 1

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Minerva Hill 619
LINE 5 HALF S SP. 3 DATE 4-8-71

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	70-60N	60-50N	→	50-40N	→	→	40-30N	→	→	→
RANGE	1.0	1.0	1.0	1.0	0.1	1.0	1.0	0.1	0.1	0.1
DC 1										
DC 2	2.5	1.9	2.3	2.3	1.8	2.6	2.4	2.6	2.2	2.9
DC 3										
DC 4 Kn	3	3	12	3	12	30	3	12	30	60
DC 5 I	1000	600	1000	600	600	1000	1000	600	600	1000
DC 6										
DC 7 Ra	189	105	312	172	157	403	167	181	142	329
DC 8 PFE	2.7	2.1	2.5	2.5	2.0	2.8	2.6	2.8	2.4	3.1
DC AVG. MCF	14	20	8.0	15	13	7.0	16	15	17	9.4
AC 1	61.8	20.8	25.7	3.38	7.76	13.2	54.9	8.90	2.87	5.36
AC 2	—	—	—	—	—	—	—	—	—	—
AC AVG.										
S.P.	→	→	→	+7.8	→	→	+5.5	→	→	→
AC NOISE										
POT RES.	→	→	→	33k	→	→	34k	→	→	→

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 5 HALF S SP. 3 DATE 4-87

SEND		12	2-3	3-4	1-2	2-3			CHK	
RECEIVE		30-20N	→	→	20-10N	→			1-2	
RANGE		0.1	0.1	0.1	0.1	0.1				
DC 1									-0.2	
DC 2		2.0	2.4	2.2	2.1	~~1.6~~				
DC 3										
DC 4 kn		12	30 1on2	60 2-3	30	60				
DC 5 I		1000	600	600	1000	600				
DC 6										
DC 7 Pa		109	136	117	122	152				
DC 8 PFE		2.2	2.6	2.4	2.3	1.9				
DC AVG. HCF		20	19	21	19	13				
AC 1		9.02	2.68	1.18	4.02	1.51			101	
AC 2		—		+6.1	—	-0.2			—	
AC AVG.										
S.P.		0	→	→	+25.5	→				
AC NOISE										
POT RES.		12K	→	→	36K	→				

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

Power Booster sta @ 90 NORTH Ground at fence

PROJECT Minerva Hill 619

LINE 5 HALF N SP. 3 DATE 4-87

SEND	1-2	2-3	1-2	3-4	2-3	1-2				
RECEIVE	70-80N	80-90	→	90-100N	→	→				
RANGE				1.0	0.1	0.1				
DC 1										
DC 2				2.9	3.4	3.3				
DC 3										
DC 4 kΩ				3	12	30				
DC 5 I				600	600	1000				
DC 6										
DC 7 Ωa				73	169	217				
DC 8 MFF				3.1	3.6	3.5				
DC AVG. MCF				43	21	16				
AC 1				14.3	8.24	7.05				
AC 2				—	—	—				
AC AVG.										
S.P.				+15.1	→	→				
AC NOISE										
POT RES.				8K	→	→				

#619

INDUCED POLARIZATION SENDER NOTES

Project: Mineral Hill Line: 5 Sp 3 N½ Date: 4/8/71

Send	3-4	2-3	1-2									
Receive	90-100											
Time												
Range	660	640	550									
Current	0.6	0.6	1.0									
Send												
Receive												
Time												
Range												
Current												

#619

INDUCED POLARIZATION SENDER NOTES

Project: Mineral Hill Line: 5 sp 3 S½ Date: 4/8/71

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3
Receive	70S-60	60-50	—	50-40	—	—	40-30	—	—	—	30-20	—
Time												
Range	730	660	730	660	680	630	570	670	680	640	570	690
Current	1.0	0.6	1.0	0.6	0.6	1.0	1.0	0.6	0.6	1.0	1.0	0.6
Send	3-4	1-2	2-3									Cal
Receive	—	20-10	—									4-5
Time												
Range	680	580	690									630
Current	0.6	1.0	0.6									1.0

CP 7000' S of CP
Spd #1

PAGE 1

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 5 HALF N SP. 2 DATE 4-77

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	80-60S	60-50S	→	50-40S	→	→	40-30S			→
RANGE	1.0	1.0	1.0	1.0	1.0	0.1	1.0	1.0	0.1	0.1
DC 1										
DC 2	1.0	1.0	1.2	1.2	1.0	1.2	0.9	1.0	0.8	1.1
DC 3										
DC 4 kn	3	3	12	3	12	30	3	12	30	60
DC 5 I	1000	—	—	—	—	→	600	1000	→	→
DC 6										
DC 7 Ra	172	121	239	206	153	264	173	191	175	282
DC 8 PPE	1.3	1.3	1.5	1.5	1.3	1.5	1.2	1.3	1.1	1.4
DC AVG. MCF	7.6	11	6.3	7.3	8.5	5.7	6.9	6.8	6.3	5.0
AC 1	57.2	40.1	19.8	68.1	12.7	8.74	34.5	15.9	5.82	4.67
AC 2	—	—	—	+0.1	—	—	—	—	—	—
AC AVG.										
S.P.				-17.0	→	→	+21.2	→	→	→
AC NOISE										
POT RES.				25K	→	→	30K	→	→	→

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Minekan Hill
LINE 5 HALF N SP. 2 DATE 4-7-71

SEND	4-5	3-4	2-3	4-5	3-4			CAL		
RECEIVE	20-30S	→	→	20-10S	→			1-2		
RANGE	1.0	1.0	0.1	0.1	0.1			10		
DC 1										
DC 2	1.8 ±.2	1.9	0-2.0	1.6	1.9			-0.3		
DC 3		±.2	(1.4?)	±.1						
DC 4 Kn	12	30	60	30	60					
DC 5 I	600	1000	→	600	1000					
DC 6										
DC 7 Pa	296	322	251	259	274					
DC 8 PFE	2.1	2.2	1.7	1.8	2.2					
DC AVG. MCF	7.1	6.8	6.8	5,147.0	8.0					
AC 1	14.6	10.6	4.16	~~5.37~~	4.52			101		
AC 2	—	—	≈ —	+0.2	—			—		
AC AVG.										
S.P.	77.5 —	→	→							
AC NOISE				500						
POT RES.	~~10K~~	→	200K	→						

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 610
LINE 5 HALF S SP. 2 DATE 4-8

SEND	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
RECEIVE	90-100S	→	→	100-110S	→	→	→	110-120S	→	→
RANGE	1.0	1.0	0.1	1.0	1.0	0.1	0.1	1.0	0.1	0.1
DC 1										
DC 2	1.3	1.8	1.6	1.3	1.4	1.7	1.4	1.6	1.4	1.6
DC 3										
DC 4 t_n	3	12	30	3	12	30	60	12	30	60
DC 5 I	1000	→	600	1000	→	→	600	1000	→	→
DC 6										
DC 7 P_a	202	235	308	165	203	236	278	220	233	275
DC 8 PFE	1.6	2.1	1.9	1.6	1.7	2.0	1.7	1.9	1.7	1.9
DC AVG. MEF	7.9	8.9	6.2	9.7	8.4	8.5	6.1	8.7	7.3	6.9
AC 1	66.9	19.4	6.10	54.5	16.8	7.79	2.77	18.2	7.70	4.55
AC 2	—	—	—	—	—	—	—	—	—	—
AC AVG.										
S.P.	-17.4	→	→	+15.1	→	→	→	+1.7	→	→
AC NOISE										
POT RES.	22K	→	→	45K	→	→	→	~~44~~ 47K	→	→

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill 619
LINE 5 HALF 5 SP. 2 DATE 4-8-71

SEND			1-2	2-3						
RECEIVE			120-130S	→						
RANGE			0.1	0.1						
DC 1										
DC 2			1.6	1.6						
DC 3										
DC 4 km			30	60						
DC 5 I			1000	→						
DC 6										
DC 7 Pa			269	262						
DC 8 PFE			1.9	1.9						
DC AVG. MCF			7.1	7.3						
AC 1			8.87	4.32						
AC 2			-	-						
AC AVG.										
S.P.			8.4 +	→						
AC NOISE										
POT RES.			20K	→						

#619

INDUCED POLARIZATION SENDER NOTES

project: Mineral Hill Line: 5 5+2 N½ Date: 4/7/71

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4
Receive	3-4 70-60N	60-50	—	50-40	—	—	40-30				30-20	—
Time												
Range	660	760	660	800	700	640	800	800	690	630	800	800
Current	1.0	1.0	1.0	1.0	1.0	1.0	0.6	1.0	1.0	1.0	0.6	1.0
Send	2-3	4-5	3-4									Cal
Receive	—	20-10	—									1-2
Time												
Range	680	790	800									660
Current	1.0	0.6	1.0									1.0

#C19

INDUCED POLARIZATION SENDER NOTES

project: Mineral Hill Line: Line 5 Sp 2 5/2 Date: 4/8/71

Send	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4	1-2	2-3
Receive	90-100	100-110	—	110-120	—	—	—	120-130	—	—	130-140	—
Time												
Range	620	820	780	600	620	810	780	600	820	800	600	610
Current	1.0	1.0	0.6	1.0	1.0	1.0	0.6	1.0	1.0	1.0	1.0	1.0
Send												
Receive												
Time												
Range												
Current												

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Hinkerman Hill 619
LINE 4 HALF N SP. 1 DATE 4-5-71

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-10N	10-20N	→	20-30N	→	→	30-40	→	→	→
RANGE	1.0	1.0	0.1	1.0	0.1	0.1	1.0	0.1	0.1	0.1
DC 1										
DC 2	1.5	1.2	1.0	1.6	1.5	1.5	1.2	1.4	1.5	1.6
DC 3										
DC 4 kn	3	3	12	3	12	30	3	12	30	60
DC 5 I	1000	→	→	→	→	→	→	→	→	→
DC 6 Ra	56	61	94	106	102	146	179	77	90	139
DC 7 PFE	1.7	1.4	1.2	1.8	1.7	1.7	1.3	1.7	1.7	1.8
DC 8 MCF	30	23	13	17	17	12	7.3	22	19	13
DC AVG.										
AC 1	18.6	20.2	7.84	35.2	8.46	4.83	59.4	6.36	2.96	2.29
AC 2	—	—	—	—	—	—	+0.2	-6.2	—	—
AC AVG.										
S.P.							+6.2	→	→	→
AC NOISE										
POT RES.							18K	→	→	→

+0.2 1.2 -1.6

PAGE 2

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill
LINE 4 HALF N SP. 1 DATE 4-5-71

SEND	5-6	4-5	3-4	2-3	5-6	4-5	3-4	5-6	4-5	CAL
RECEIVE	40-50N	———	———	→	50-60N	———	→	60-70 N	———	1-2
RANGE	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10
DC 1										
DC 2	1.6	1.7	1.9	04-3	1.5	1.7	1.9	1.8	1.8	-0.2
DC 3				(1.7)?						
DC 4 Eh	3	12	30	60	12	30	60	30	60	
DC 5 I	1000	———	———	———	———	———	———	———	→	
DC 6 Ia	154	133	70	85	107	111	66	129	141	
DC 7 PFE	1.8	1.9	2.1	1.9?	1.7	1.9	2.1	2.0	2.0	
DC 8 MCF	12	14	30	22	16	17	32	16	14	
DC AVG.										
AC 1	50.9	11.0	2.31	1.40	8.85	3.68	1.08	-4.26	2.33	101
AC 2	+0.1	—	—	—	—	—	-0.1	—	—	—
AC AVG.										
S.P.								0 ———	→	
AC NOISE										
POT RES.					80K			60K	———	→

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

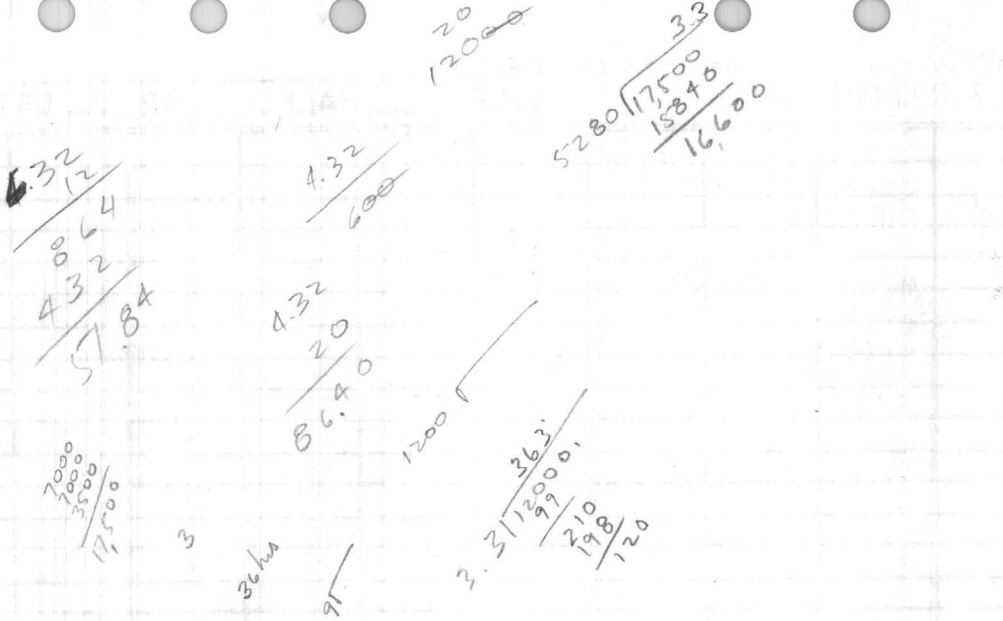
CP 2350' west of 12/12 14/13

PROJECT Mineral Hill

LINE 4 HALF S SP. 1 DATE 4-6-7

PAGE 3

SEND	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5		
RECEIVE	20-30S	→	→	→	30-40S	→	→	→		
RANGE	1.0	0.1	0.1	0.1	1.0	0.1	0.1	0.1		
DC 1										
DC 2	1.5	1.9	1.9	1.8	0.9	1.2	1.8	1.8		
DC 3										
DC 4 kn	3	12	30	60	3	12	30	60		
DC 5 I	1000	→	→	→	→	→	→	→		
DC 6 ~~RFE~~	89	65	145	200	144	93	71	165		
DC 7 PFE	1.7	2.1	2.1	2.0	1.1	1.4	2.0	2.0		
DC 8 MCF	19	32	15	10	7.7	15	28	12		
DC AVG.										
AC 1	29.4	5.31	4.79	3.29	48.0	7.70	2.33	2.72		
AC 2	-	-	-	-	-	-	-	-		
AC AVG.										
S.P.					+9.6	→	→	→		
AC NOISE										
POT RES.	10K	→	→	→	15K	→	→	→		


4.32
12
0 6 4
4 3 2
5 7 8 4
4.32
600
20
1200
4.32
20
8 6.4 0
1200
5280 | 17,500
15840
16,600
33
3.3 | 1200.0
99
210
198
120
363
3
36hrs
7000
3000
3500
17500

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Mineral Hill
LINE 4 HALF S SP. / DATE 4-6-71

SEND		1-2	2-3	3-4	1-2	2-3				
RECEIVE		40-50S	→	→	50-60S	→				
RANGE		1.0	0.1	0.1	0.1	0.1				
DC 1		E								
DC 2		1.2	1.5	2.3	1.4	1.4				
DC 3										
DC 4 Ch		12	30	60	30	60				
DC 5 I		1000	→	→	→	→				
DC 6 Pa		170	94	70	153	93				
DC 7 PFE		1.4	1.7	2.5	1.6	1.6				
DC 8 MCF		8.3	18	36	10	17				
DC AVG.										
AC 1		14.1	3.10	1.14	5.06	1.54				
AC 2		—	—	—	—	—				
AC AVG.										
S.P.		+21.6			+5.5	→				
AC NOISE										
POT RES.		18K	→	→	24K	→				

contr* #3 = 0.0
Loc 350' west of road on sec Line. Monument of Annex #6
also ± 100' from Loc. $10.00

#619

3.0 0.3 cps

INDUCED POLARIZATION SENDER NOTES

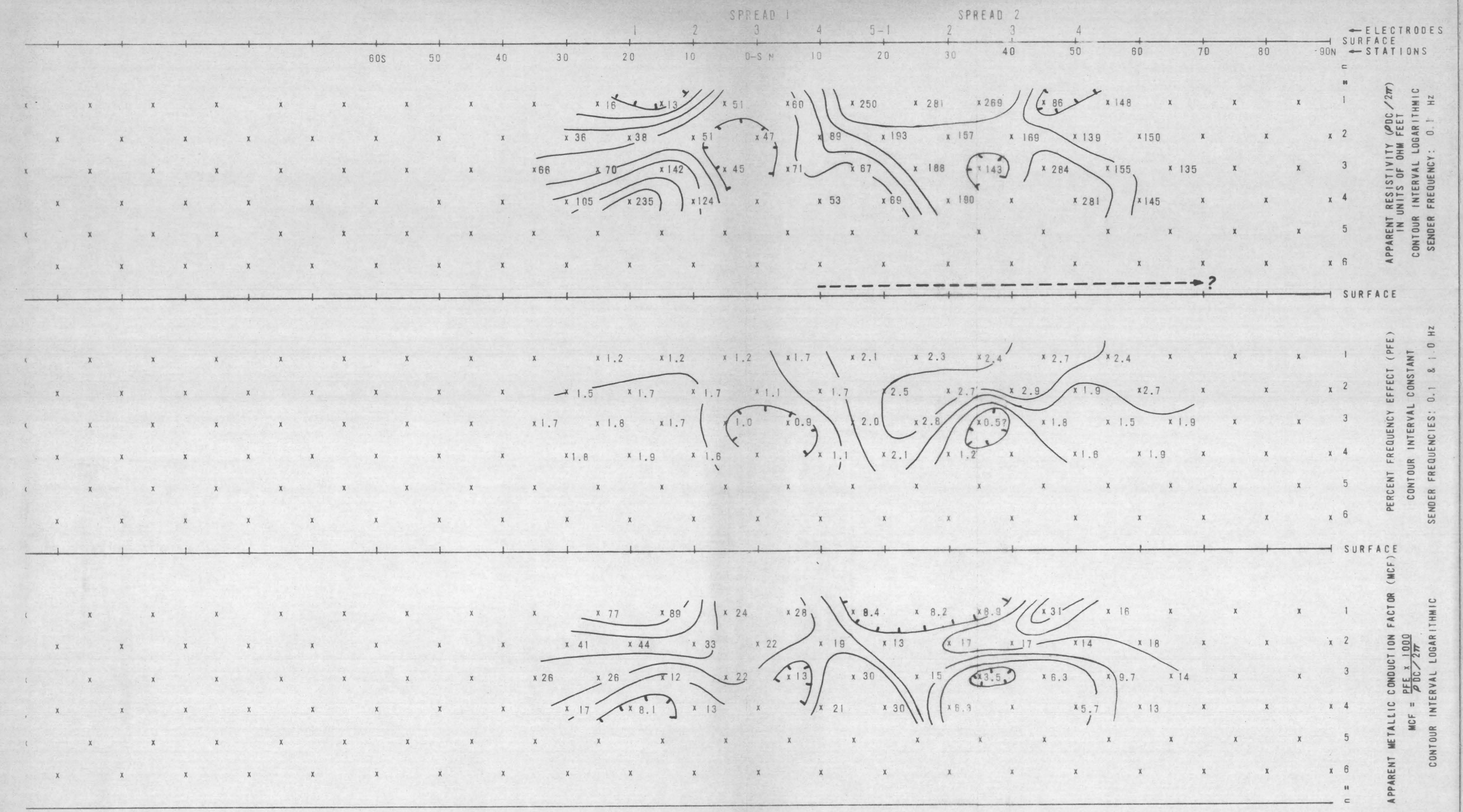
Project: Mineral Hill Line: 4 Sp 1 N½ Date: 4/5/71

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	5-6	4-5
Receive	0-10 & 3-4	4-5	—	5-6	—	—	30-40	—	—	—	40-50	—
Time												
Range	600	760	600	550	760	600	480	540	750	590	670	480
Current	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Send	3-4	2-3	5-6	4-5	3-4	5-6	4-5					Cal
Receive	—	—	50-60	—	—	60-70	—					1-2
Time												
Range	530	740	650	470	530	650	460					600
Current	1.0	1.0	1.0	1.0	1.0 ~~1.0~~	1.0	1.0					1.0

#619 **INDUCED POLARIZATION** **SENDER NOTES**

project: Mineral Hill **Line:** 4 Sp 1 5½ **Date:** 4/6/71

Send	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	1-2	2-3	3-4	
Receive	20-30	—	—	—	30-40	—	—	—	40-50	—	—	
Time												
Range	690	520	450	630	530	690	510	450	540	690	510	
Current	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Send	1-2	2-3										
Receive	50-60	—										
Time												
Range	540	690										
Current	1.0	1.0										



619-71 EXT.

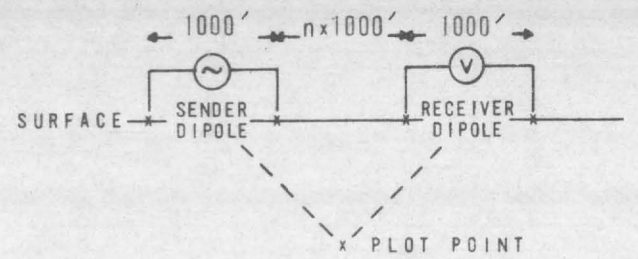
LINE NO. 3
SPREAD(S) 1 & 2

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for McINTYRE MINES LTD.

RELATIVE ANOMALY STRENGTH

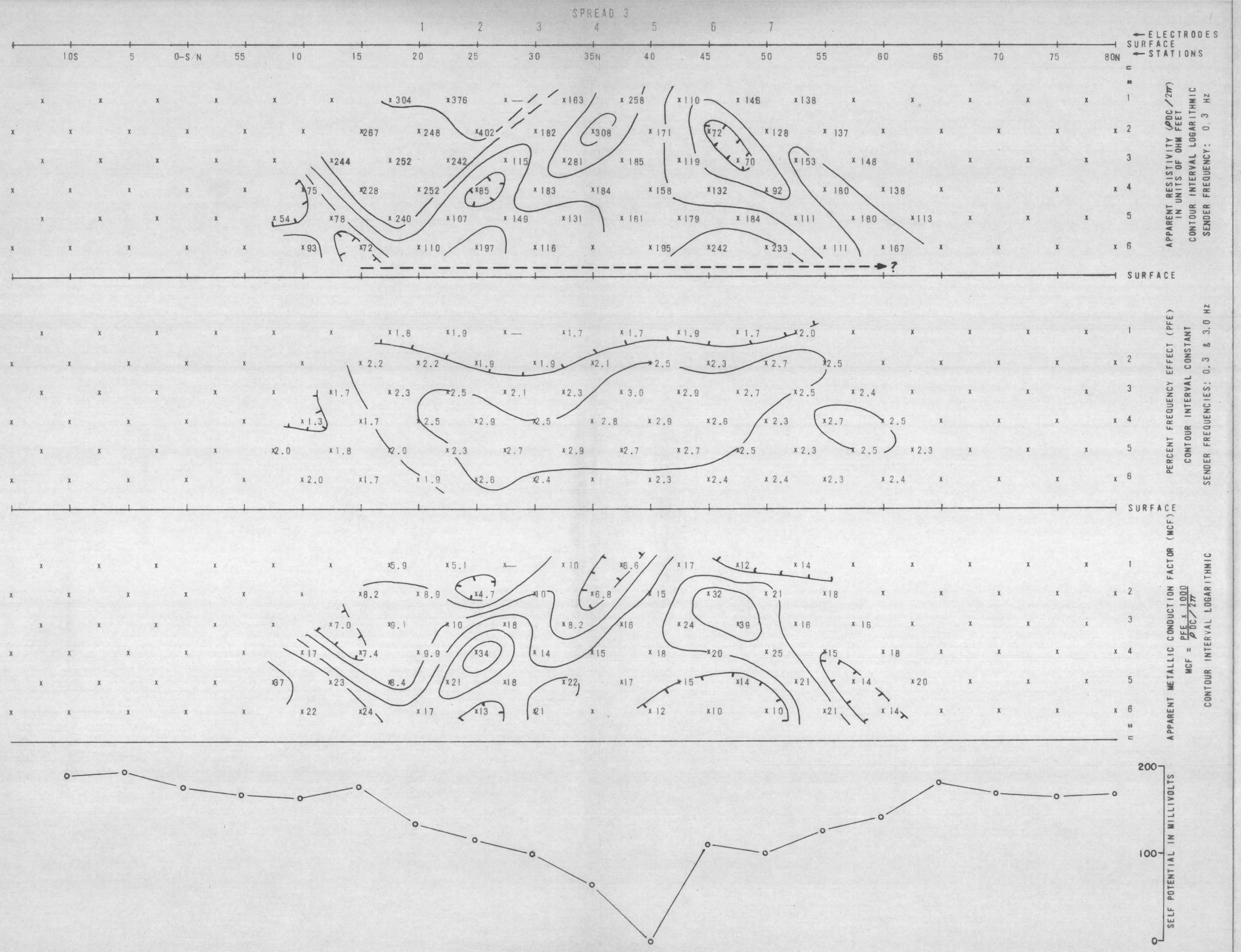
VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



AREA
MINERAL HILL
LOOKING
WEST
DATE
APRIL 1971

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson



619-71 EXT.

LINE NO.
3
SPREAD(S)
3

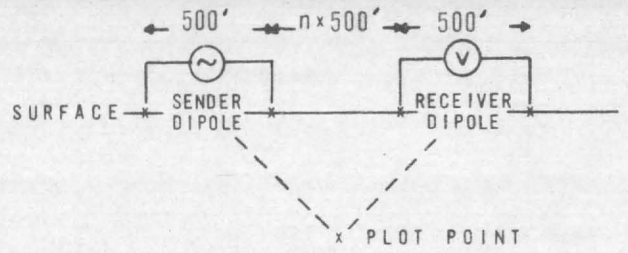
INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for

McINTYRE MINES LTD.

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



AREA
MINERAL HILL

LOOKING
WEST

DATE
APRIL 1971

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
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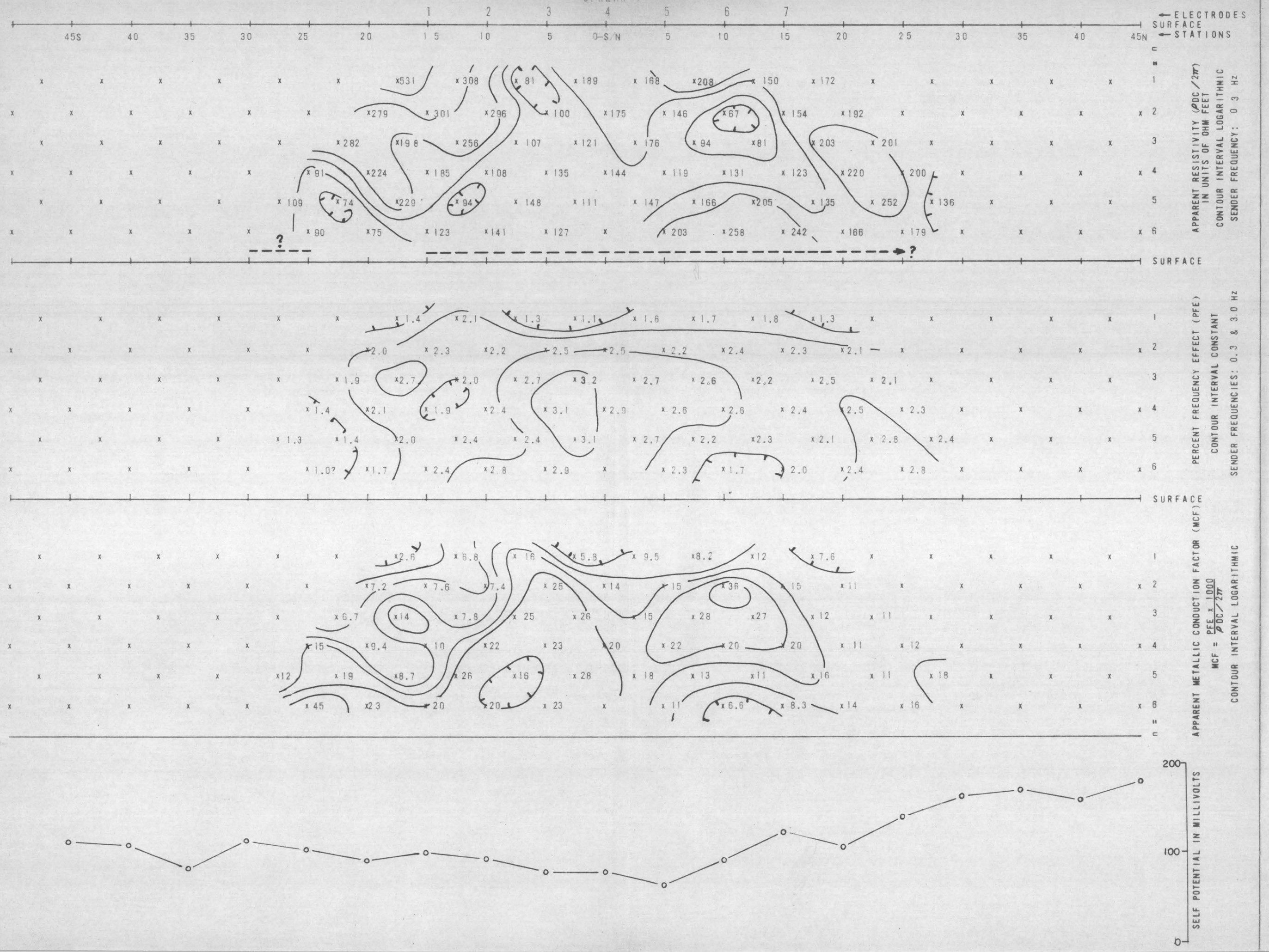


G19-71 EXT.

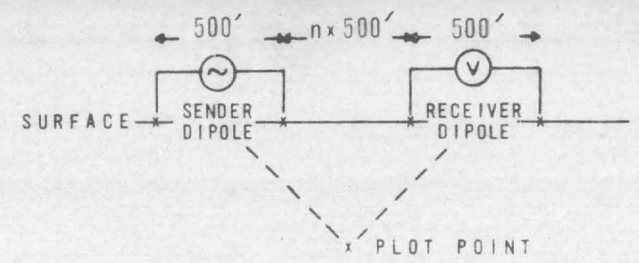
LINE NO.
3A
SPREAD(S)
1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET
for
McINTYRE MINES LTD.

RELATIVE ANOMALY STRENGTH

VERY WEAK | WEAK | MODERATE | STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



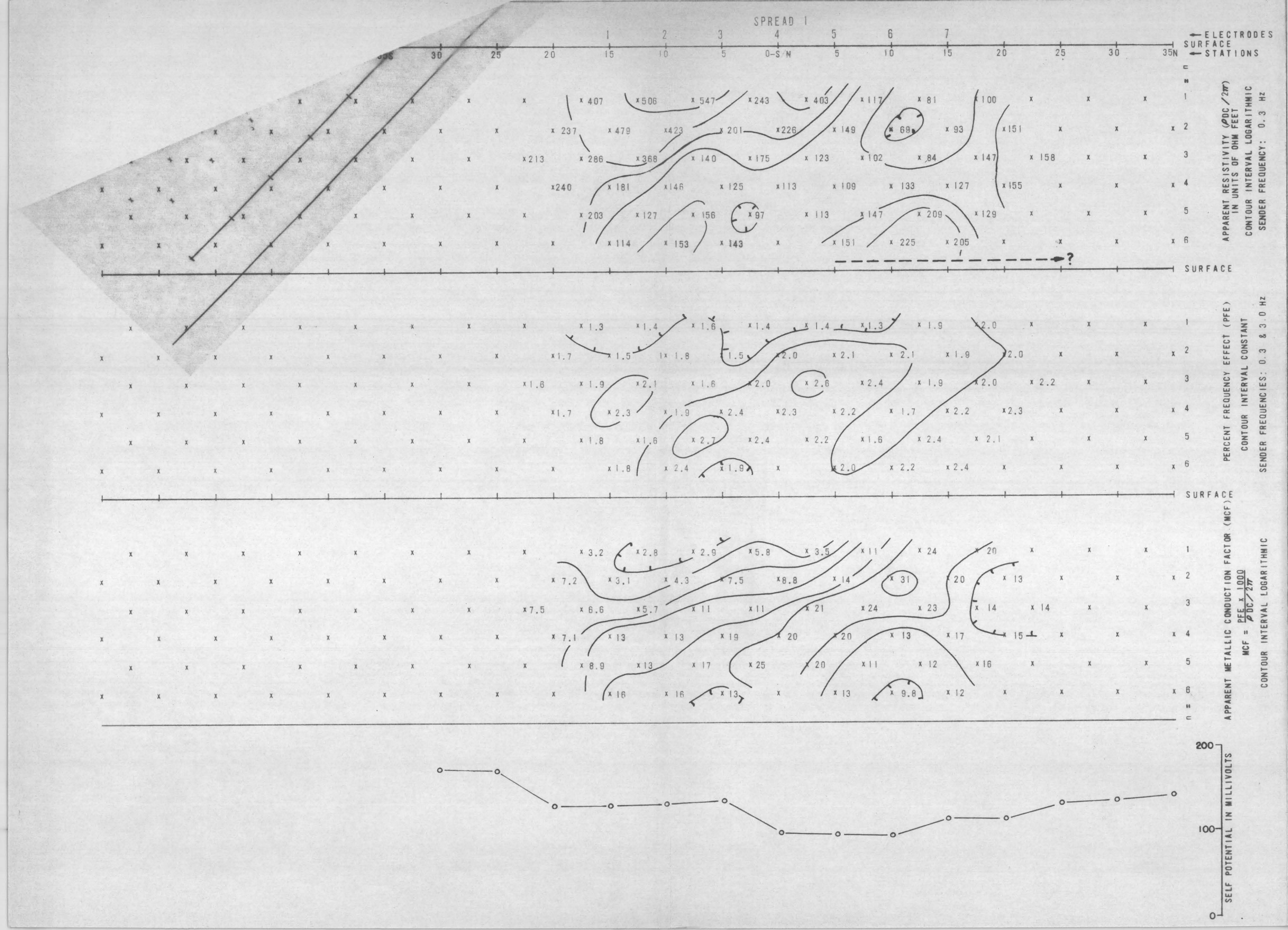
AREA
MINERAL HILL
LOOKING
WEST
DATE
APRIL 1971

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson

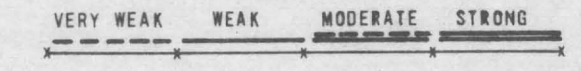
619-71 EXT.

LINE NO.
3R
SPREAD(S)
1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for McINTYRE MINES LTD.



RELATIVE ANOMALY STRENGTH



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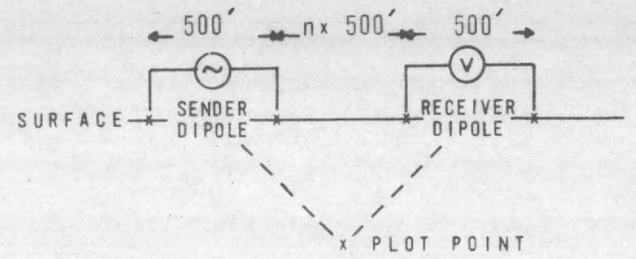

AREA
MINERAL HILL
LOOKING
WEST
DATE
APRIL 1971

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS

AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793

U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson

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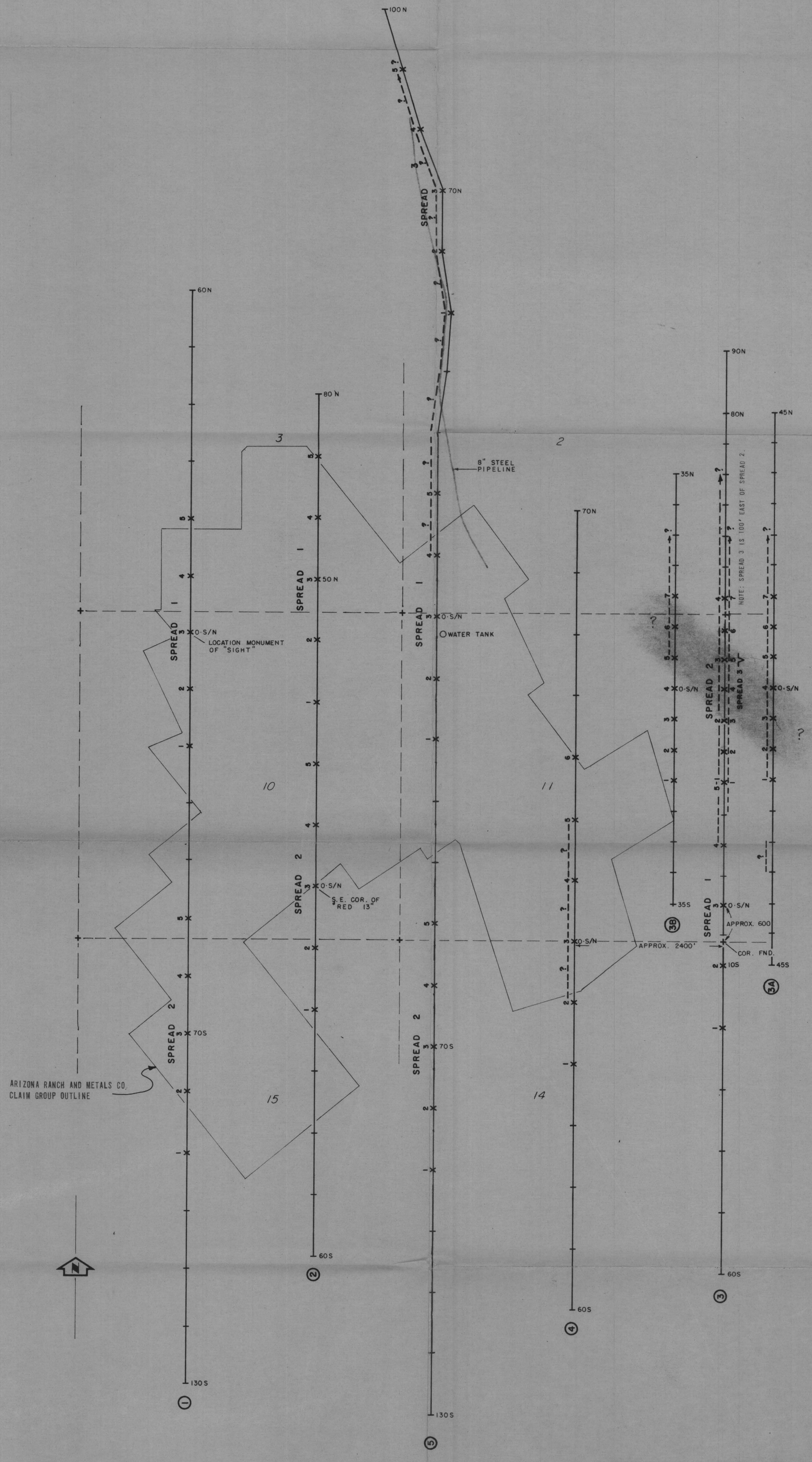

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

EXPLANATION

- (5) I. P. LINE NUMBER
- I. P. ELECTRODE
- I. P. STATION
- SECTION LINE
- SECTION CORNER
- 15 SECTION NUMBER
- SELF POTENTIAL LOW

HEINRICHS GEOEXPLORATION COMPANY

619-71

POST OFFICE BOX 5964 TUCSON, ARIZONA, 85703

Phone: 602/623-0578 Cable: GEOEX, Tucson

geophysical engineers — vancouver sydney

PHASE I & II
INDUCED POLARIZATION LOCATION AND INTERPRETATION PLAN
of
MINERAL HILL AREA
YUMA COUNTY, ARIZONA

FOR
McINTYRE MINES LTD.

UPDATED MAY 1971

SCALE: 1" = 1000' | DRAWN BY: JAY DOWNS | DATE: APRIL 1971

PHASE II

INDUCED POLARIZATION SURVEY

OF

MINERAL HILL AREA

NEAR

PARKER DAM, YUMA COUNTY, ARIZONA

FOR

McINTYRE MINES LTD.

May 1971

By

HEINRICHS GEOEXPLORATION COMPANY
P.O. Box 5964, Tucson, Arizona 85703

GEOEX Job # 619 EXT.

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In map pocket	
Induced Polarization Location and Interpretation Plan (Phase II) Actually (Phase I and II)	

INTRODUCTION

During the interim April 28, 1971 and May 4, 1971, Heinrichs GEOEXploration Company, at the request of Mr. William Laughlin, Of McIntyre Mines Ltd., completed Phase II of the Induced Polarization Survey in the Mineral Hill Area. This survey was an extension of work previously done in the area by GEOEX. The general job assignment of this additional work was to further define the I.P. effects noted in the Phase I report and if possible, to locate the best available drill target. This report and drawings are intended to be bound into the same binder used for the Phase I Mineral Hill report in order that the entire job be available under one cover.

A total of four spreads on three lines were completed. Line 3 was extended to the north, using 1,000 foot dipoles, in an attempt to close off the anomaly to the north. Following this, the anomalous portion of Line 3 was rerun using 500 foot dipoles. Line 3A was run approximately 780 feet east of station 35.0N on Line 3, using 500 foot dipoles. Line 3B was run approximately 820 feet west of station 35.0N on Line 3, also using 500 foot dipoles. All lines were oriented generally north-south as in the previous survey. Total surface coverage was 28,000 feet, of which 18,500 feet is "subsurface" plotted data.

CONCLUSIONS AND RECOMMENDATIONS

The detail I.P. surveying along and adjacent to Line 3 has confirmed a broad zone of very weak frequency effects. This polarization anomaly appears to be cutoff to the south, but the anomalism has not been completely surrounded on the north, east or west. Line 3A, near 2.5S, shows the strongest frequency effects noted in this survey, however, they are only marginally higher than the rest of the anomalous zone. Other zones are indicated by the metallic conduction factor, but these are caused mainly by anomalously low resistivity zones without significantly greater PFE values. These are likely due to fault zones and to a lesser degree topographic effects. The I.P. anomalism appears to be rather widespread probably indicating small quantities of polarizable material within a particular rock type. The top of this zone may be on the order of 200 feet beneath the surface and also is depth limited somewhere near 500 feet, ± 50%. Total sulfides are probably less than 1 - 2% by volume. A close inspection of the data indicates that there may be some correlation between maximum I.P. values and a poorly defined zone of resistivity contrasts, which are likely caused by steeply dipping rock formations of alternating zones of high and low electrical resistivity. This zone strikes roughly N45°W crossing Line 3A near 5S, Line 3 near 35-40N and Line 3B near 5N. Additionally there is a strong correlating self potential low near 40N on Line 3. All of this suggests the possibility of a fault zone or contact, which may have some associated mineralization.

Drilling, programmed to a minimum depth of 750 feet, will be necessary to test the zone of very weak polarization effects located in the vicinity of Line 3. An initial drill site should be located at or near 2.5S on Line 3A, depending on local conditions of topography and access. Alternative drilling possibilities are located at or near 7.5N on Line 3A and at 40.0N on Line 3.

As the anomalous zone is open on three sides, the total area of mineralization could have considerable areal extent, particularly to the north and east. Therefore, if the initial test drilling indicates the presence of interesting but sub-economic mineralization, we recommend further drilling of the anomalous area for possible zones of ore grade mineralization.

INTERPRETATION

Line 3 500 foot and 1,000 foot dipoles Spreads 1, 2 and 3

Both the 500 foot and the 1,000 foot data indicate a zone of very weak anomalism extending from 15N beyond the northern end of the line. These frequency effects increase slightly and then decrease with depth, probably indicating both a top and bottom to the source. Strong resistivity contrasts are noted near 37.5N and are also accompanied by a strong self potential low near 40N.

Line 3A 500 foot dipoles

Very weak I.P. values continue from 15S beyond the northern end of the line. A slight high appears near 2.5S, which likely represents an interference high resulting from two merging anomalous patterns. The slight increase and subsequent decrease in PFE values with depth indicate a rather definite top and bottom to the polarizable material. The resistivity picture is somewhat complex, probably due to structural and topographic changes. A resistivity interface is probably located near 5S. The self potential profile is essentially flat.

Line 3B 500 foot dipoles

A zone of very weak PFEs extends from 5N beyond the northern end of the line. Although the frequency effects increase initially with depth the later decrease is not as pronounced as on the other two lines. The resistivity plot indicates an interface near 10N with lower values to the north which correspond with the higher PFEs. The self potential profile is essentially flat.

Respectfully submitted,
HEINRICHS GEOEXPLORATION COMPANY

John P. Matthews, Jr.
Geophysicist

Paul A. Head
Geophysicist

Box 5964
Tucson, Arizona 85703
May 1971

GEOEX Job # 619 EXT

INDUCED POLARIZATION SURVEY
OF
MINERAL HILL AREA
NEAR
PARKER DAM, YUMA COUNTY, ARIZONA
FOR
MC INTYRE MINES LTD.

GEOEX Job # 619

April 1971

April 26, 1971

McIntyre Mines Ltd.
2030 East Speddway
Tucson, Arizona 85716

Gentlemen:

Enclosed herewith is an original and two copies of our report "Induced Polarization Survey of Mineral Hill Area near Parker Dam, Yuma County, Arizona". Also included are reproducible sepias of the sectional data sheets.

If you have any questions please feel free to contact us.

Very truly yours,
Heinrichs GEOExploration Company

John P. Matthews, Jr.
Geophysicist

JPM:dm

INDUCED POLARIZATION SURVEY

OF

MINERAL HILL AREA

NEAR

PARKER DAM, YUMA COUNTY, ARIZONA

FOR

McINTYRE MINES LTD.

April 1971

By

HEINRICHS GEOEXPLORATION COMPANY
P.O. Box 5964, Tucson, Arizona 85703

GEOEX Job # 619

GENERAL LOCATION
of
MINERAL HILL AREA
for
McINTYRE MINES LTD.

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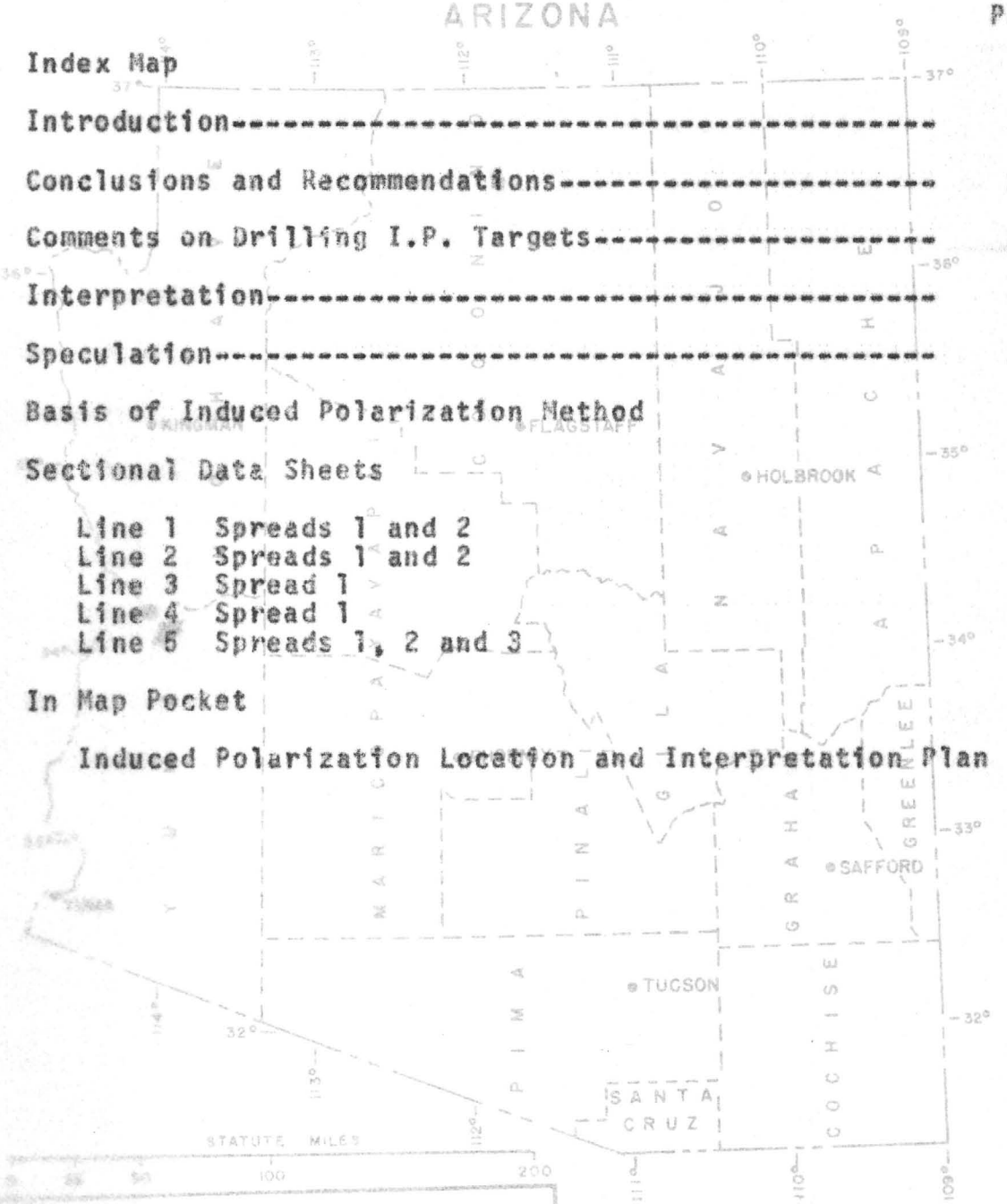

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HEINRICHS GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
U.S.A.
Post Office Box 5564
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson

INTRODUCTION

At the request of Mr. William Laughlin, of McIntyre Mines Ltd., Heinrichs GEOEXploration Company completed five induced polarization lines in the Mineral Hill Area near Parker Dam, Yuma County, Arizona. The field work was performed during the interim from March 23, 1971 through April 9, 1971.

The purpose of this survey was to ascertain if subsurface concentrations of sulfide mineralization are associated with the surface, and relatively near surface, copper and iron oxides concentrated near the Norma Fault, and seen over much of the property in general. The recent past production has been confined to mining of the copper oxides associated with the Norma Fault. Abundant specular hematite occurs throughout most of the area, with relatively large concentrations associated with the copper mineralization. There was some concern expressed by McIntyre that this hematite would adversely affect the I.P. data, giving rise to non-sulfide anomalism. As will be noted later in this report, no strong frequency effects due to either sulfides or other minerals were noted. It should also be pointed out that since the oxide copper is apparently intimately related to massive hematite, an I.P. response from hematite in this area might have been quite significant.

A total of nine spreads on five lines were completed, all using a 1000 foot dipole spacing. All lines were oriented north-south and spaced from 1500' to 2400' apart as determined by vehicular access to the different lines. Total surface coverage was 81,000 feet of which 58,000 feet, or approximately 11 miles is "subsurface" plotted data.

The multi-frequency I.P. technique was utilized on all lines using the collinear dipole-dipole electrode array. The effective subsurface volume explored with this configuration is typically within a zone from a minimum depth of one-fourth to a maximum depth of one and one-half times the dipole spacing, which in the case of 1000' dipoles, would be from roughly 250 feet to 1500 feet deep. These depths are only typical and are dependent on such factors as resistivity and degree of homogeneity of the subsurface material. On all lines except Line 3, sending frequencies of 3.0 and 0.3 Hz were utilized. Due to the possibility of very low resistivity material near Line 3, lower frequencies ie; 1.0 and 0.1 Hz, were used to minimize any electromagnetic coupling effects.

The data are presented on sectional data sheets, herewith attached, one for each line, showing apparent resistivity, percent frequency effect (PFE) and metallic conduction

factor (MCF), contoured in pseudo-vertical section. Also included is an "Induced Polarization Location and Interpretation Plan" at a scale of 1"=1000' showing the relation of these I.P. lines to existing claims and section corners.

Additional information concerning theory, interpretation and presentation is given in the "Basis of the Induced Polarization Method" in the appendix of this report.

GEOEX personnel who conducted the field work were: Paul Head and Phil Matthews, geophysicists; Frank Seward, technical assistant. Report and interpretation are by Phil Matthews, Geophysicist, assisted by the GEOEX staff in Tucson, Arizona. The help of Mr. Dallas Davis during the field operations is greatly appreciated.

CONCLUSIONS AND RECOMMENDATIONS

The results of the I.P. Survey do not indicate any strong polarization effects within the area covered. Nor is there any resistivity or I.P. feature that can be traced from line to line. In general, the frequency effects are less than two percent, merely reflecting normal background response due to rocks containing little or no polarizable material.

Very weak polarization effects are noted on Line 5 from approximately 10N to the end of the line, with a definite anomalous increase at the northernmost station. Although a portion of this anomaly is located near an area which was mined in the past, it appears that the probability of encountering large economic concentrations of sulfides at the indicated depth of exploration is rather remote. Furthermore, there is a reasonable possibility that the effects noted are not "real" (due to sulfide mineralization), but instead caused by a variety of interfering artificial effects. These include the presence of a long grounded steel pipeline crossing the I.P. line at about 10 degrees near station 32N. The I.P. line was then carried in a random northerly direction along the east side of Mineral Wash at least 200 feet away from the pipe at all times. The pipe was crossed in such a fashion that there was never any wire actually crossing the pipe by means of using a double station at 30N. In addition, several steel culverts at the Bill Williams River and a grounded metal fence may have contributed to the polarization values noted. Additional I.P. work would be necessary to completely resolve the cause of these polarization effects. Based upon the very marginal nature of anomalism, and the objectives of the present program, further geophysical work to resolve its cause does not seem warranted at this time.

Line 3 shows a weak I.P. anomaly at the northern end of the line. The values obtained thus far are not very strong, but it does appear that a pattern is developing and that a reasonable drill target might be located with some further work. Inasmuch as the anomaly is open ended to the north, the 1000' dipole I.P. data should be extended to find the center of anomalism, followed by a 500 foot dipole survey in the anomalous center for better definition and ultimate interpretation. The latter work should be carried out to an n=6 separation. Because the possibility exists that the anomaly is due to edge effects from a body lying on either side of Line 3, it is recommended that at least one line be placed on each side, 750 feet away and parallel to Line 3.

If a drill hole must be located based only upon the data to date, it should be placed near 25N on Line 3, realizing that the actual body could lie somewhat to the north or to either side of the present line.

COMMENTS ON DRILLING I.P. TARGETS

To maximize the probability that a recommended drill hole will intersect the source of an induced polarization anomaly, the following points should be considered:

1. The anomaly has been caused by some physical property, hopefully a polarizable body containing economically interesting metallic mineralization, and this property should be determined before abandoning the anomaly.

2. Location of drill holes should be made relative to the actual sending and receiving electrode positions as they exist on the ground.

3. Due to inherent limitations in the I.P. method, depth interpretations are only approximate and the determination of dip is severely limited, particularly for angles greater than 45°. Also, targets can generally be laterally resolved no finer than the station spacing (dipole length). Because of these limitations, targets less than one dipole spacing in width, particularly when steeply dipping or deeper than the dipole length, may be difficult to intersect. In these cases, several drill holes in a fence line should be considered. For the steeply dipping cases, angle drilling may also prove advantageous, mainly where the direction of dip can be geologically inferred and the drill hole oriented such that an optimum intersection of the zone of interest is obtained.

4. An observed anomaly can be the effect of a polarizable body laterally offset to the side of a line and therefore if practical, drilling should be confined to those portions of the anomalous zones well defined by several lines. Also, it should be noted that a single line cannot define the strike direction of an elongate anomalous zone - another reason for utilizing several parallel lines.

5. Logging of the drill core must be done with special care to note the quantity of all possible polarizable material such as pyrite, graphite, magnetite, manganese oxides and clay minerals as well as the polarizable ore minerals. The anomalous source could conceivably be overlooked if the core is not carefully logged.

6. Typical sections of core representing the gross physical properties of material encountered in the drilling should be tested in the laboratory for their I.P. parameters, if there is some doubt about confirmation of the anomalous source.

INTERPRETATION

Line 1 The I.P. values along the entire line are restricted to background with a slight increase at the north end of the line. The changes in background value are probably due to slightly different amounts of polarizable material contained in the different rock types.

The resistivities are fairly high along the entire length of the line, although the near surface data is somewhat lower, possibly due to weathering of the upper layer. The resistivity picture in general seems to be somewhat random with little or no definite pattern developed. This is due, at least in part, to the rather complex small scale structure of the area which is not well resolved using the large dipole spacings. The topography in some areas also contributes to the somewhat random appearance of the resistivity data.

Line 2 Frequency effects are restricted to background as on Line 1, with a slight increase to the north. The resistivity is somewhat lower near surface with values generally increasing with depth.

Line 3 The I.P. values increase at the northern end of this line suggesting the presence of a possible polarizable body.

If this is a valid anomaly, its pattern seems to suggest a near surface, depth limited body somewhere near or to the north of 25N. Additional I.P. coverage would be needed to the north to better determine the location of the anomaly. Additional parallel lines east and west of Line 3 would help determine if the body is localized on Line 3 or if it lies to one side or the other,

Line 4 The frequency effects on this line, although rather low, appear to be very slightly above the background values observed elsewhere in the area. This is likely due to minor amounts of sulfide mineralization contained in and along the Norma Fault System which is located on and roughly parallel to this line. The resistivities are mainly dominated by the effects of crossing the canyon containing Mineral Wash, which may be at least related to the Norma Fault System.

Line 5 I.P. effects along this line are in the background range from the southern end of the line to approximately 10N. From 10N the values seem to increase very slightly to about 90N at which point somewhat stronger values are observed. These increased values coincide rather well with the presence of a long grounded steel pipeline, a grounded metal fence line and other artificial interference. These effects are possibly the cause of these somewhat higher I.P. values.

The resistivity is quite high along most of the line with a probable low resistivity zone coming in the north end of the line, coinciding with the Bill Williams River.

SPECULATION

The reported geologic evidence of this region suggests considerable glide or over thrust faulting of the mineralized rocks exposed in the area. Mr. Davis expressed the thought that the roots of these mineralized rocks may lie a considerable distance from Mineral Hill. We concur in this idea and further speculate that a fairly comprehensive program of reconnaissance geologic mapping, coupled with some broad and deep magnetics and I.P., and broad geochemical prospecting, would be in order as a future method of attack to consider for this area.

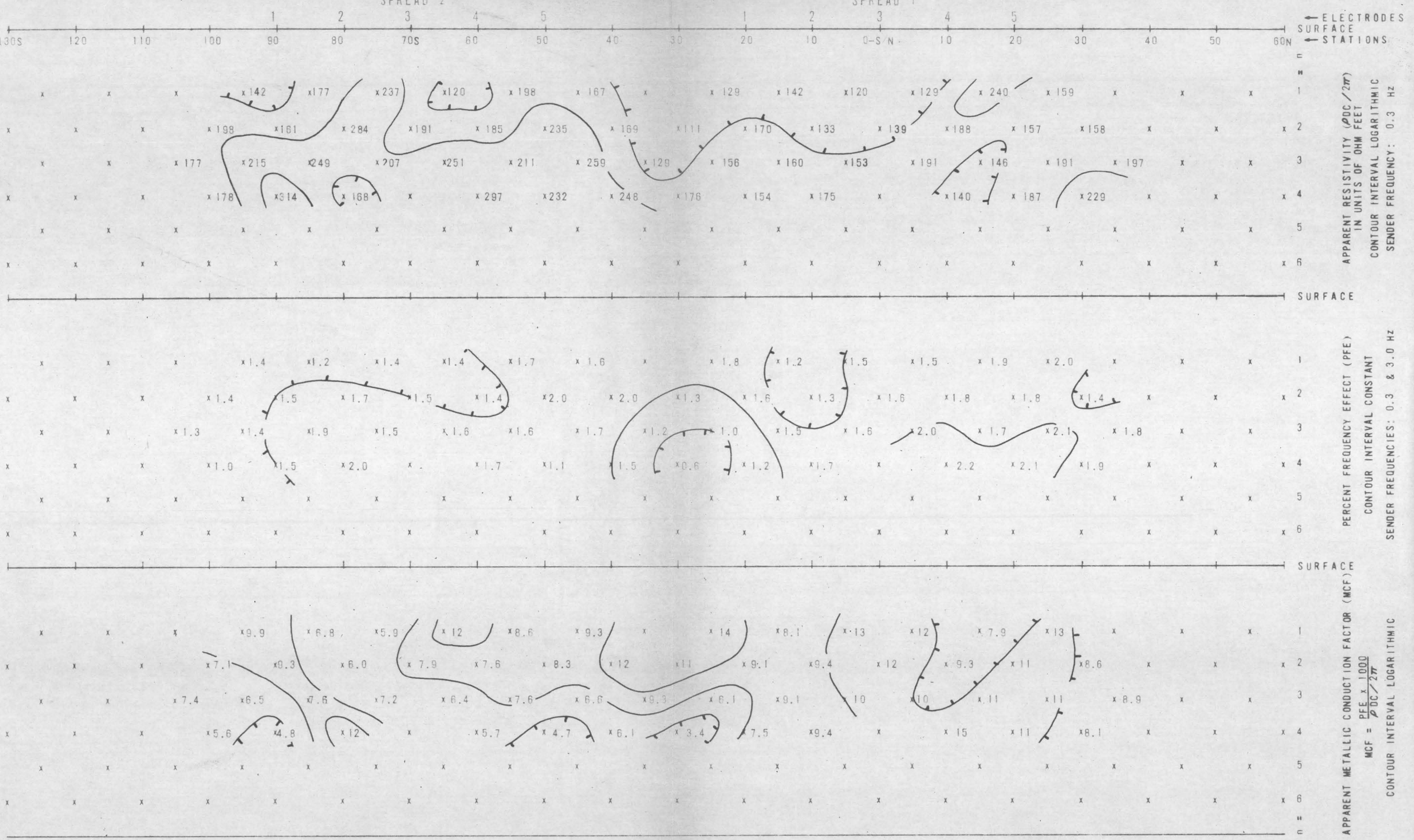
Respectfully submitted,
HEINRICHS GEOEXPLORATION COMPANY

John P. Matthews, Jr.
Geophysicist

Paul A. Head
Geophysicist

Box 5964
Tucson, Arizona 85703
April 1971

GEOEX Job # 619



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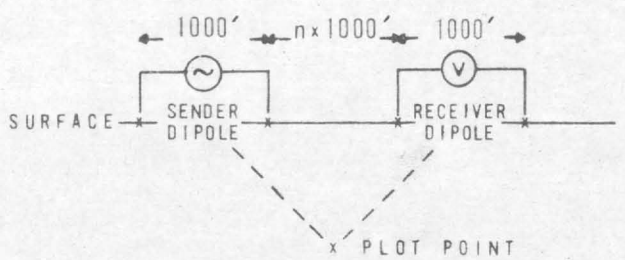
LINE NO. 1

SPREAD(S) 1 & 2

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for McINTYRE MINES LTD.

RELATIVE ANOMALY STRENGTH

DIPOLE DIPOLE ELECTRODE ARRAY



AREA
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DATE
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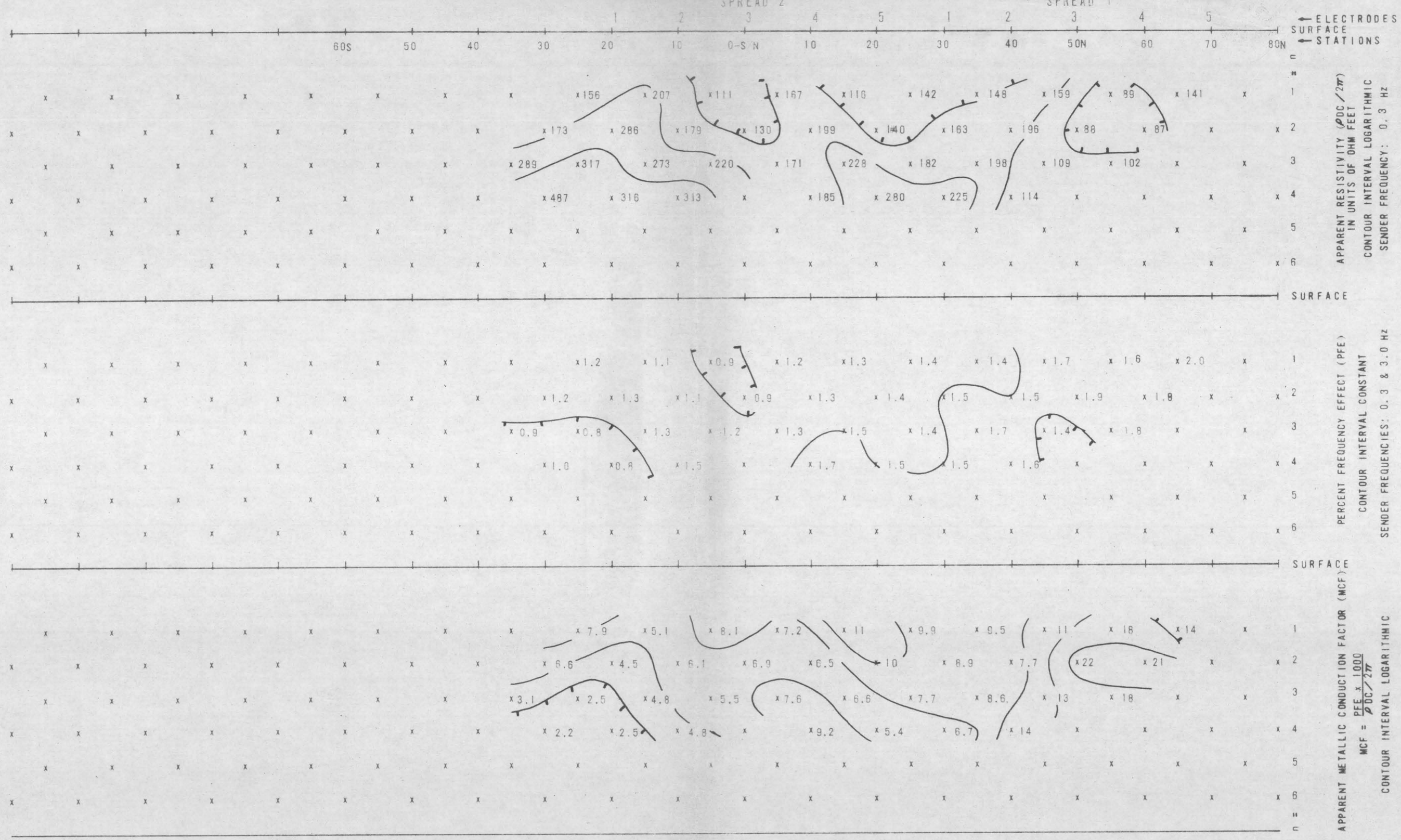
HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson



619-71

LINE NO. 2

SPREAD(S) 1 & 2

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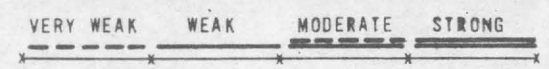

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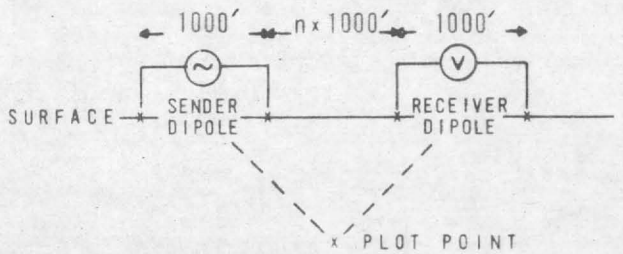

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HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest., NSW
Phone: 439-1793
U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson

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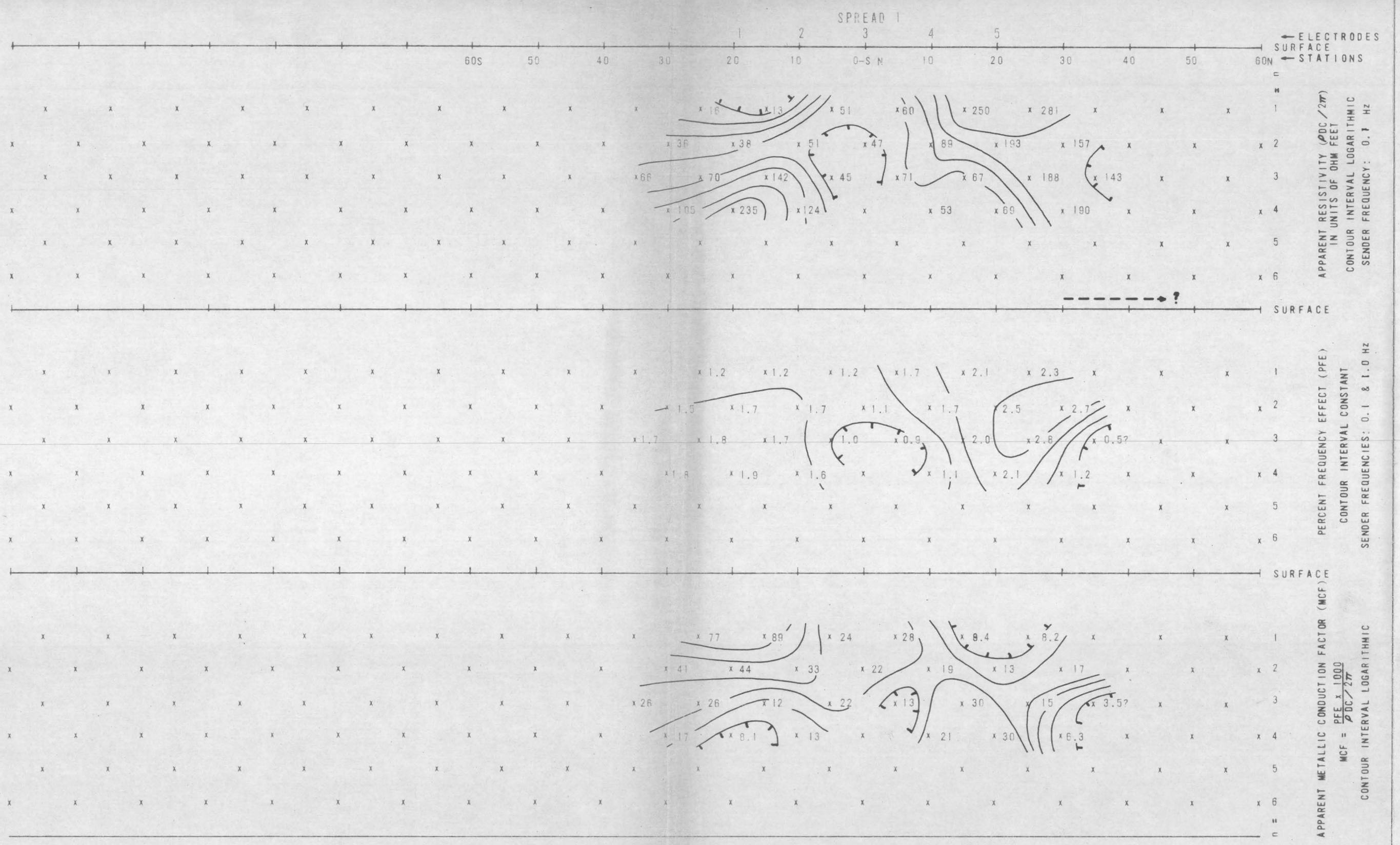
LINE NO.
3
SPREAD(S)
1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for McINTYRE MINES LTD.



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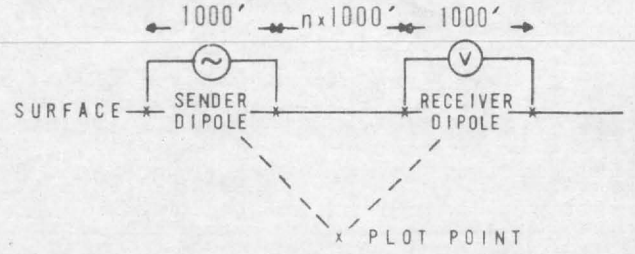

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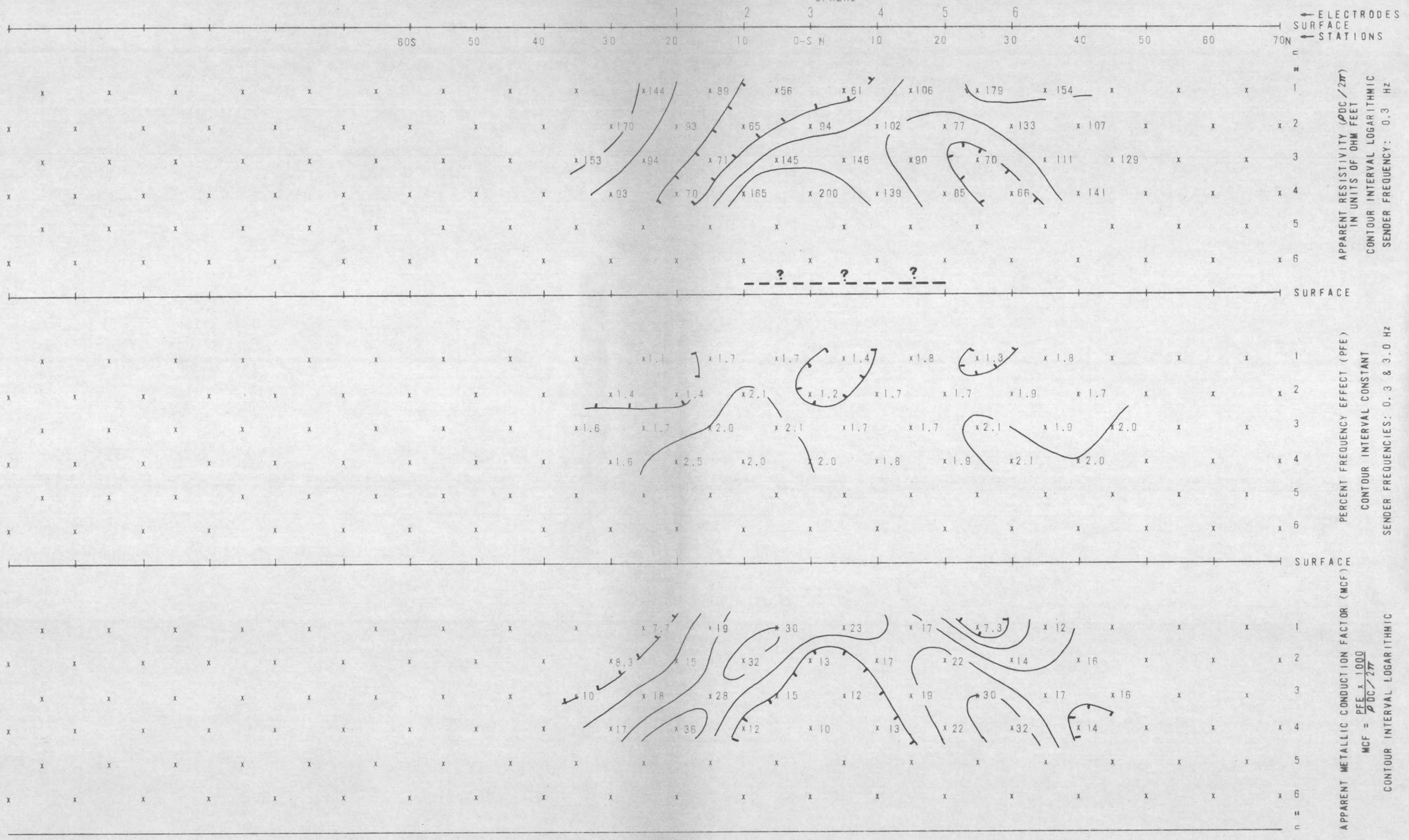
HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS

AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793

U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson



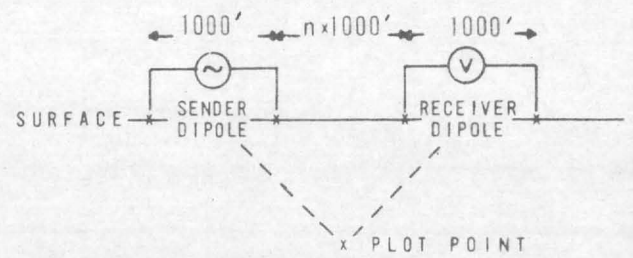
619-71

LINE NO. 4
SPREAD(S) 1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for McINTYRE MINES LTD.

RELATIVE ANOMALY STRENGTH

DIPOLE DIPOLE ELECTRODE ARRAY



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HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
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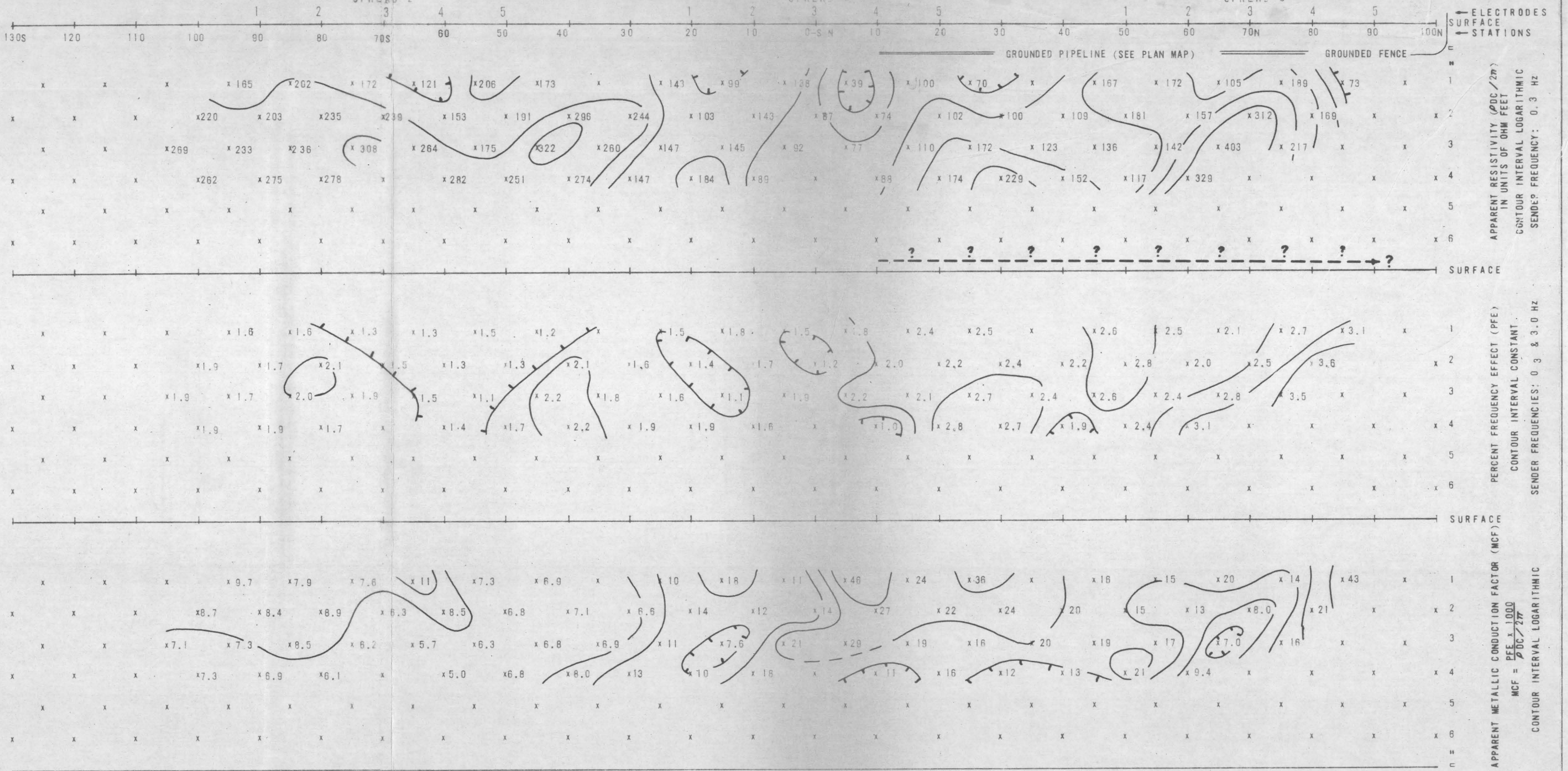


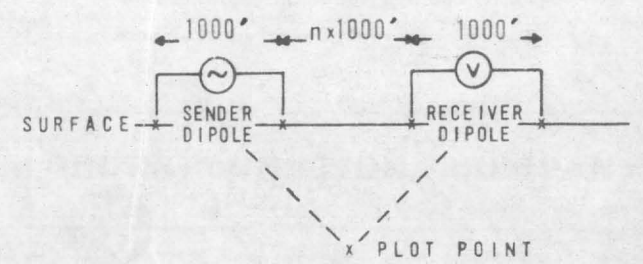
619-71

LINE NO. 5
SPREAD(S) 1, 2 & 3

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for McINTYRE MINES LTD.

RELATIVE ANOMALY STRENGTH

DIPOLE DIPOLE ELECTRODE ARRAY



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HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
U.S.A.
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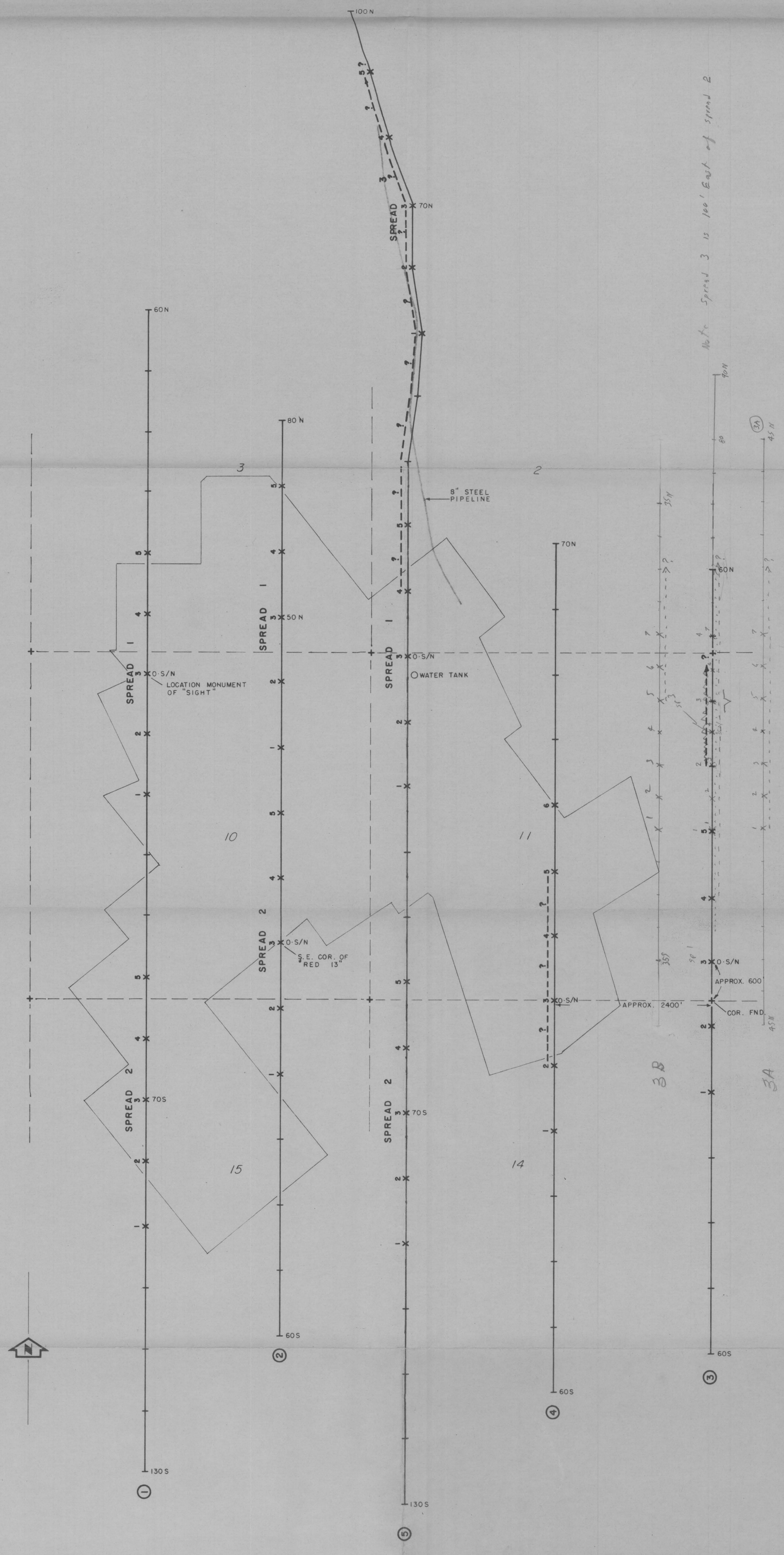

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

EXPLANATION

- (5) I. P. LINE NUMBER
- I. P. ELECTRODE
- I. P. STATION
- SECTION LINE
- SECTION CORNER
- 15 SECTION NUMBER

HEINRICHS GEOEXPLORATION COMPANY

619-71

POST OFFICE BOX 5964 TUCSON, ARIZONA, 85703

Phone: 602/623-0578 Cable: GEOEX, Tucson

geophysical engineers vancouver sydney

PHASE II

INDUCED POLARIZATION LOCATION AND INTERPRETATION PLAN of MINERAL HILL AREA YUMA COUNTY, ARIZONA

FOR McINTYRE MINES LTD.

SCALE: 1" = 1000' | DRAWN BY: JAY DOWNS | DATE: APRIL 1971

DUVAL
CORPORATION

5357 EAST PIMA TUCSON ARIZONA 85712

April 4, 1972

HEINRICHS
GEOEX
Cable: GEOEX

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

REC'D APR 6 1972 REC'D

Mr. Walter E. Heinrichs
Heinrichs Geoexploration Co.
808 West Grant Road
Tucson, Arizona

Dear Mr. Heinrichs:

This letter will serve to grant permission to Mr. Laughlin of McIntyre-Porcupine Mines Ltd. to review all data in your files concerning geophysical work that your organization did for Duval Corporation on the B.S.& K. property near Silverbell, belonging to the Kalaf brothers.

Sincerely yours,

F. H. Howell
Vice President-Exploration

FHH:apl

Job file.
copy to McIntyre corres file

PODESTA, MEYERS, ROMINGER AND CLIFT, INC.

Mining and Petroleum Geologists
4747 NORTH 16TH STREET
PHOENIX, ARIZONA 85016

PHONES: (602) 277-7736
(602) 277-7991
CABLE: POMECO

April 8, 1971

Henrichs Geoexploration Company
806 W. Grant Road
Tucson, Arizona 85703

Gentlemen:

Attached is a reverse line sepia of the Mineral Hill's claim map that Mr. Dallas Davis of McIntyre Porcupine requested I send to you.

Very truly yours,

Donald J. Podesta

Donald J. Podesta, President
PODESTA, MEYERS, ROMINGER and CLIFT, INC.

DJP:pp
encl.
cc. Mr. W. Laughlin

HEINRICHS GEOEXPLORATION COMPANY

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

March 22, 1971

McIntyre Mines Ltd.
2030 E. Speedway
Tucson, Arizona 85716

Attn: Ms. Laughlin and Davis

Gentlemen:

This letter contract is a confirmation of our phone conversation on Saturday March 21, 1971 concerning your proposed I. P. survey near Parker Dam, Arizona. In order to adequately process the area outlined, the survey will consist of approximately seven parallel I. P. lines spaced 2,000 ft. apart, giving coverage over a four square mile area centered in Section 11, R. 17 W., T. 10 N.

The expected target depth is on the order of 1,000 ft. and indicates that 1,000 ft. dipole-dipole electrode arrays are the best for the initial coverage. Based upon past experience in the vicinity, resistivities should generally be relatively high, allowing us to routinely use operating frequencies of 3.0 and 0.3 Hertz, giving maximum speed during the survey. Should actual data indicate the necessity of using lower frequencies to minimize electromagnetic coupling this can be done with a slight increase in operating time.

A mobilization-demobilization fee of $350.00 will be charged for the round trip from Tucson to Parker Dam and back. This may be somewhat reduced if additional work is obtained in the near vicinity. Our total daily contract rate for this survey will be $300.00 per field day, which includes all direct job expenses and the final report. A field day is defined as eight hours plus up to two hours travel to and from the field from Parker Dam; the work week is considered to be 40 hours plus up to ten hours travel time (exclusive of mobilization). Overtime beyond this schedule will be charged at $32.50 per hour only if the client specifically requests the GEOEX crew chief in writing and he agrees to the extra work.

Equipment malfunction exceeding one hour per day will be made up or not charged. Standby time requested by the client or as caused by bad weather will be charged at half the daily rates quoted above.

All property permits, brushing and trespass-liability and related costs which are incurred on behalf of the client will be chargeable to the 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.

Payments are due on presentation. Billings may be submitted periodically with final payment due on presentation of the 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

John P. Matthews, Jr.
Geophysicist - Project Manager

Date: Mar. 24, 1971

Accepted by: [signature]

Title: Geologist

JPM:jh

cc: Extra Encl.