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INDUCED POLARIZATION INVESTIGATION
OF THE GOLD BELL MINE
PINAL COUNTY, ARIZONA

for

NORTH AMERICAN MINES INC.

November 1973

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

Job# 877-73

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INTRODUCTION

The Gold Bell Mine area was recommended to Mr. Quincy Shaw of North American Mines, Inc. as a potential IP target area on 2 October 1973. Mr. Wm. Hovey Smith of Heinrichs GEOEXploration Co. and Mr. Shaw visited the property on 20 October, and authorization was obtained for reconnaissance IP coverage. Field work was started 31 October and completed 6 November 1973.

The exploration hypothesis which was tested by this investigation was that the copper bearing veins at the Gold Bell Mine might be related to a porphyry copper deposit concealed under Precambrian or shallow alluvial cover. The formation of secondary biotite around the quartz veins along with argillic alteration was a hint that these particular veins might be related to an unexposed porphyry copper deposit.

The mine workings are located along the section line between Sections 13 and 24, Township 8 South, Range 9 East (see IP Location and Plan Map). Three IP lines were run using dipole dipole electrode arrays with an "a" spacing of 1,000 feet. Dual frequency IP data using 1.0 and 0.1 hz was obtained to a "n" separation of 6. The lines were located to take advantage of terrain and access. Line 1, closest to the mine workings, extended 8,000 feet both east and west of center. Lines 2 and 3 were shorter because the steep and in places, vertical terrain prohibited progress except at an unacceptable cost for this type of reconnaissance investigation. In any case, the coverage is sufficient to test the exploration hypothesis.

CONCLUSIONS AND RECOMMENDATIONS

No sulfide related anomalism was identified by the IP survey and no further work on the property is recommended.

DISCUSSION OF RESULTS

The resistivity pattern developed on all three lines indicates an abrupt change from shallow depth to bedrock on the west to very deep alluvium on the east. We show this to be a fairly linear feature oriented almost north south and passing through 0.0 on Line 1. (See Sectional Data Sheets Lines 1, 2 and 3). A basin and range frontal fault is likely the geologic feature causing this resistivity change.

The above background PFE values occurring on all three lines are apparently intimately related to this resistivity change. Although the frequency effects do form a well devined anomalous pattern, particularly on Line 2, we suspect that the particular geometry and resistivity materials in the area caused a non-sulfide frequency response.

Respectfully submitted,
Heinrichs GEOEXploration Co.

Wm. Hovey Smith
Geologist

Paul A. Head
Senior Geophysicist

13 November 1973
P. O. Box 5964
Tucson, AZ 85703

November 7, 1973

Mr. Quincy A. Shaw, President
North American Mines Inc.
50 Congress Street, Room 920
Boston, Mass 02109

Re: GEOEX #887

Dear Mr. Shaw:

Today we completed the IP work at the Gold Bell Mine. Unfortunately our work did not turn up any anomalies of potential interest, although, we did have a slight response on the eastern ends of the lines caused by the boundary fault. I think we have done sufficient work to eliminate anything of real importance.

I will prepare a brief report in the near future.

Best regards,
Heinrichs GEOEXploration Co.

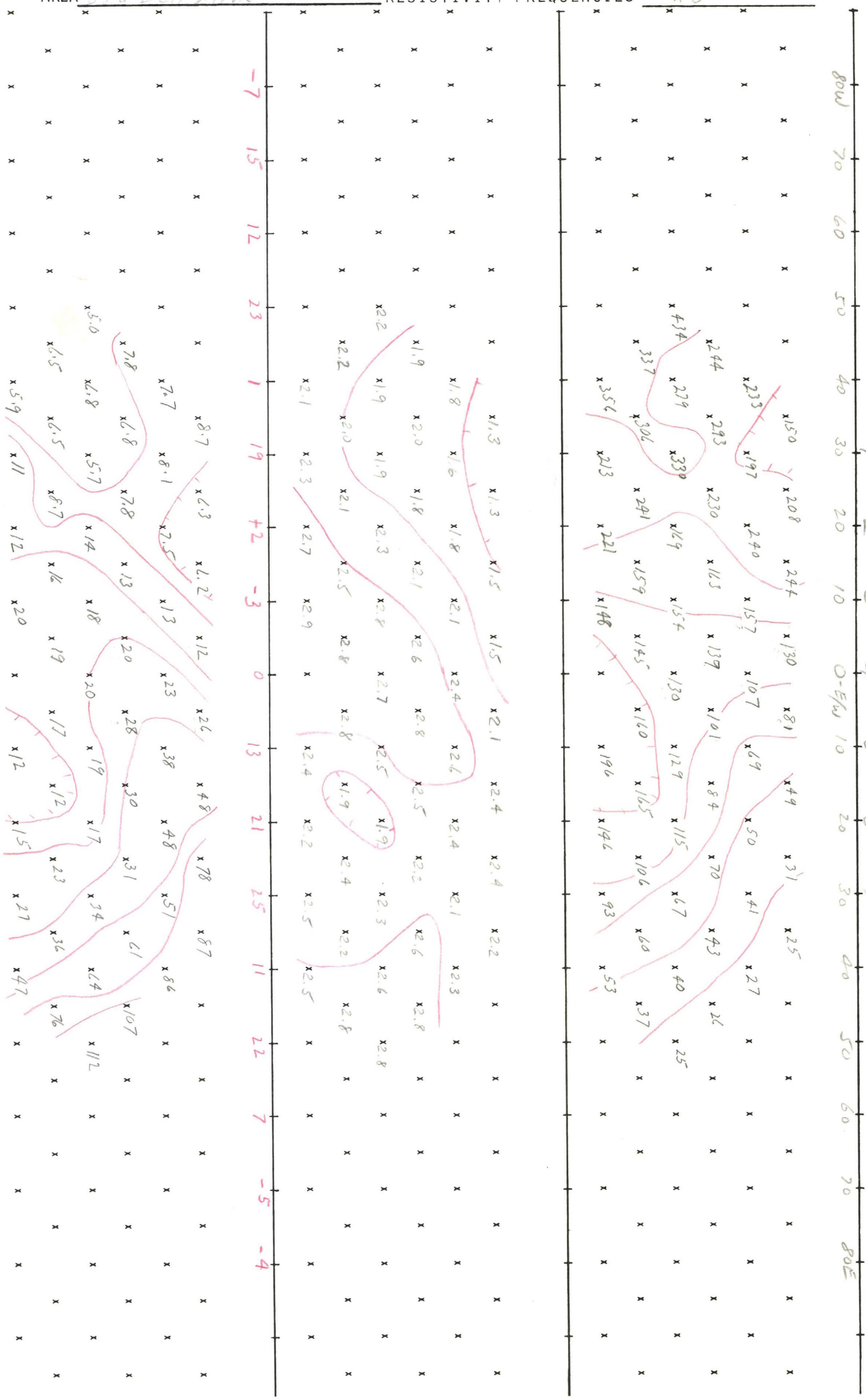
Wm. Hovey Smith
Geologist

WHS:jh

JOB# 877 LINE# 1 SP 1 a = 1000' BEARING E-W Line

CLIENT N.A.M. DATE October 1973 FREQUENCIES 0.1 & 1.0 Hz

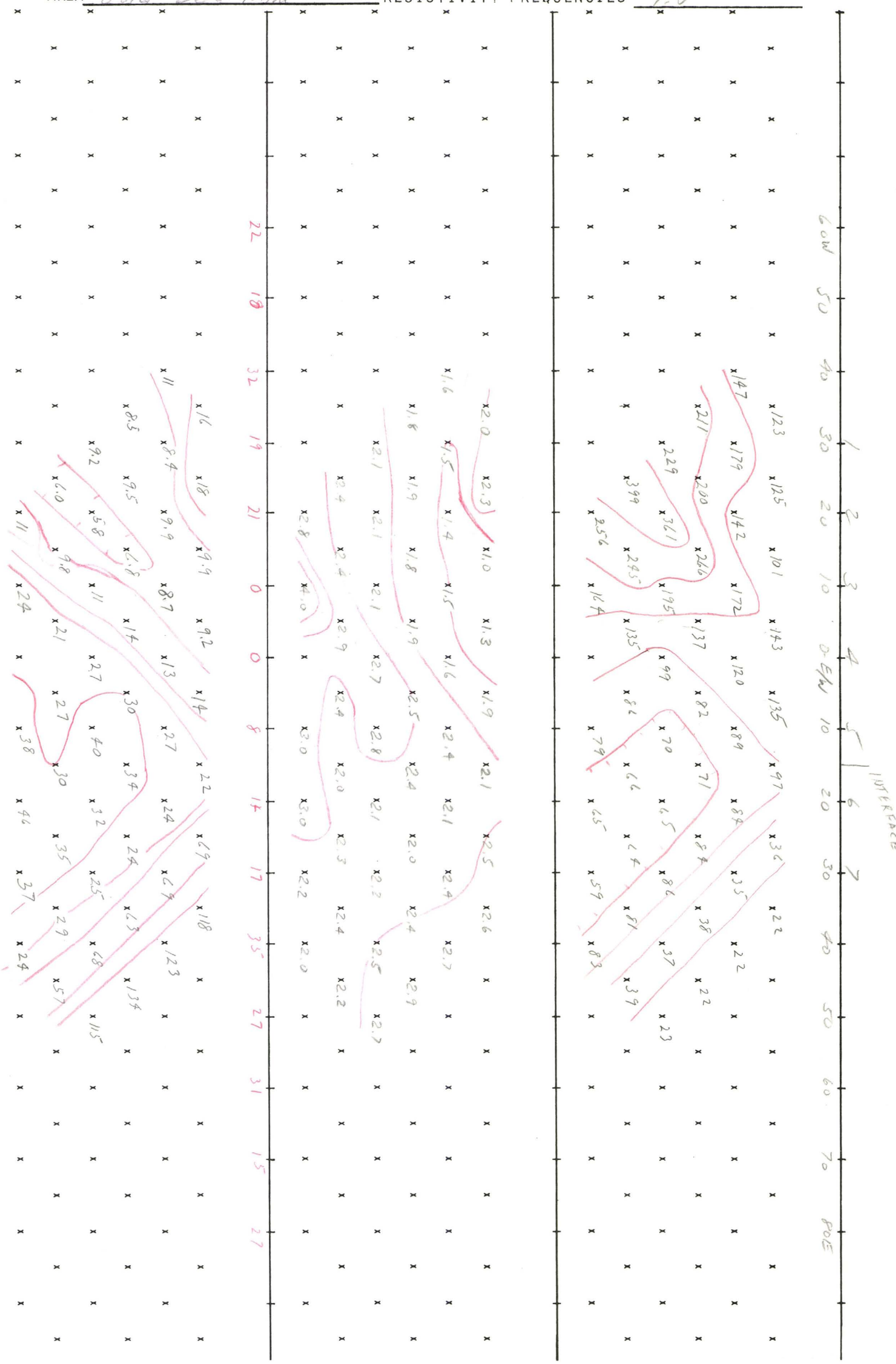
AREA Gold Bell Mine RESISTIVITY FREQUENCIES 1.0



JOB# 877 LINE# 2 SP 1 a = 1000' BEARING E-W dip

CLIENT N.A.M. DATE November 1977 FREQUENCIES 0.1 & 1.0 Hz

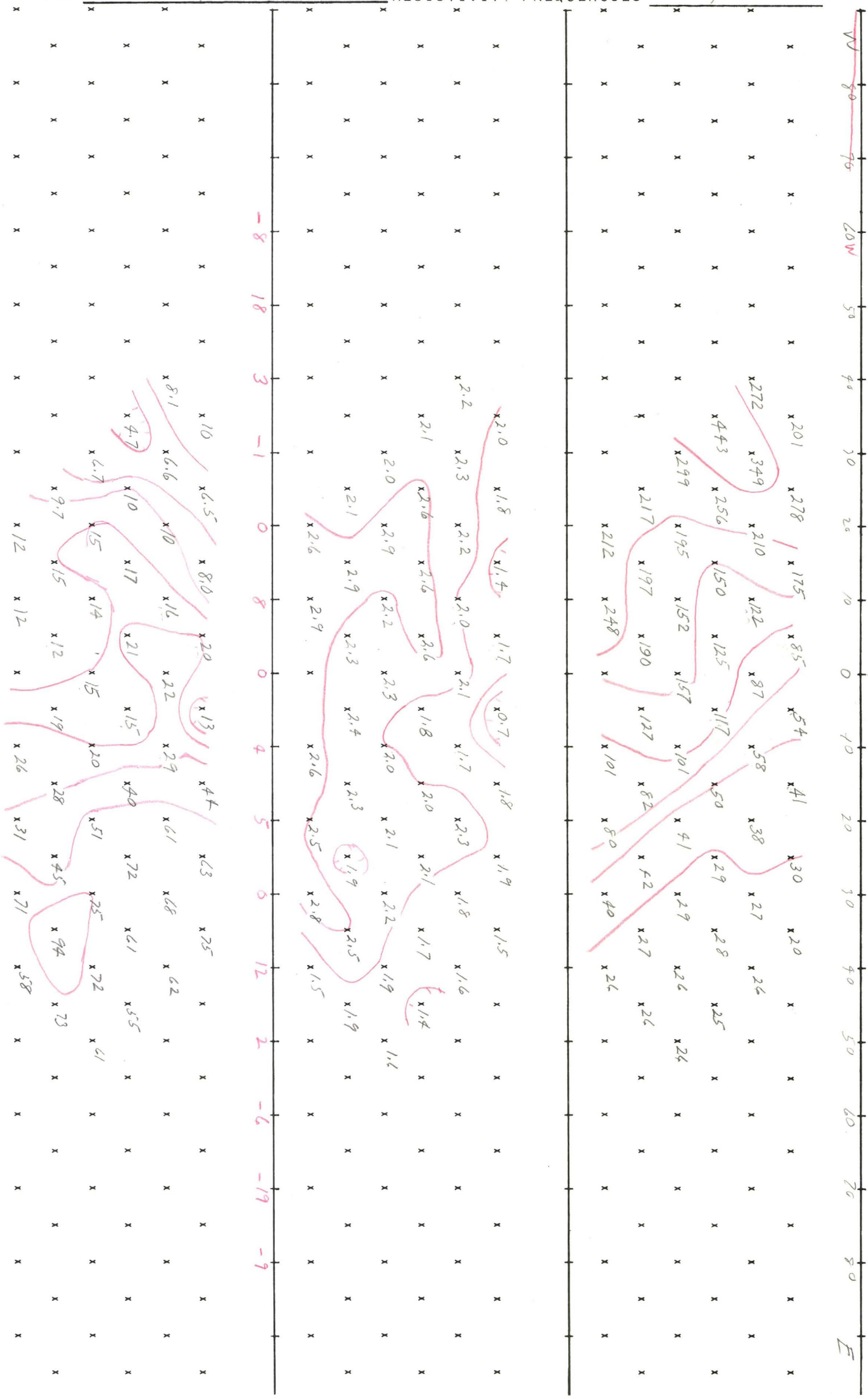
AREA Gold Bell Mine RESISTIVITY FREQUENCIES 1.0



JOB# 877 LINE# 3 SP 1 a = 1000 BEARING E-W

CLIENT North American Mines DATE 11/6/73 FREQUENCIES 1.0 & 0.1 Hz

AREA Gold Bell RESISTIVITY FREQUENCIES 1.0



I. P. RECEIVER NOTES, JOB NO. 877, AREA Gold Bell

LINE A, HALF W, SP. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE NO. 4, DATE 10-31-73

PAGE 1

HEINRICHS GEOEX

SEND	CAL	5-6	6-7	4-5	5-6	6-7	3-4	4-5	5-6	6-7
RECEIVE	4-5	0-10 W →		10-20 W →			20-30 W →			
MULTIPLIER	10.	10.	1.0	10.	1.0	1.0	10.	1.0	1.0	0.1
PFE	+0.2 | 0.1	2.2	2.8	2.0 | 1.6	2.8	3.0	1.7	2.1	3.1 | 2.9	2.4
CUR. (AMPS)		4.0								
POINT NO.										
SEP. (n)										
H. F. MV	202 | 202	109.	23.2	168 | 170	35.0	13.4	328.	52.8	18.5 | 18.5	8.78
DRIFT	+0.2 | 0.0	0.0	+0.2	+0.6 | 0.0	0.0	0.0	+0.2	0.0	0.0 | 0.0	0.0
1.0 PFE K_n/1000		3	12	3	12	30	3	12	30	60
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c		2.1	2.6	1.5	2.7	2.9	1.5	2.0	2.9	2.3
3.0 MV $\rho/2\pi$		80	69	125	104	100	244	157	137	130
DRIFT MCF		26	38	12	26	29	6.2	13	21	18
S. P.	-2.6 →			+5.0			16.8 +			
NOISE										
POT RES.	300k →			300k			90k			
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 877, AREA Gold Bell

LINE A, HALF W, SP. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE No. 4, DATE 10-31-73

HEINRICHS GEOEX

PAGE 2

SEND		2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6
RECEIVE		30-40W				→	40-50W				
MULTIPLIER		10.	1.0	1.0	1.0	0.1	10.	1.0	1.0	1.0.	0.1
PFE		1.4	1.9	2.2	2.9	2.2 & 3.8 2.9	1.4	1.7	1.9	2.4	2.7
CUR. (AMPS)		4.0					3.0	4.0			
POINT NO.											
SEP. (n)											
H. F. MV		280.	80.7	22.0	10.4	5.59	151.	66.2	31.0	11.4	6.10
DRIFT		0.0	0.0	0.0	0.0	± 0.2	0.0	0.0	0.0	0.0	+0.2
1.0 PFE	K_n/1000	3	12	30	60	105	3	12	30	60	105
0.3 PFE	P_{CAL}										
0.1 PFE	PFE_c	1.3	1.8	2.1	2.8	2.8	1.3	1.6	1.8	2.3	2.5
3.0 MV	$\rho/2\pi$	208	240	163	154	145	150	197	230	169	159
DRIFT	MCF	6.3	7.5	13	18	19	8.7	8.1	7.8	14	16
S. P.		-18.3					+23.9				
NOISE											
POT RES.		150 K					100k				
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 877, AREA Gold bell

LINE A, HALF W, SP. 1, a = 1000', BEARING E-W ≠

SENDER STA. 0.0 = ELECTRODE NO. 40, DATE 10-31-73

PAGE 3

HEINRICHS GEOEX

SEND	6-7	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5
RECEIVE	40-50W	50-60W	→			→	60-70W	→		→
MULTIPLIER	0.1	1.0	1.0	1.0	1.0	0.1	1.0	1.0	1.0	0.1
PFE	3.0 2.0 3.8	2.0	2.1	2.0	2.2	2.8	2.1	2.0	2.1	2.4
CUR. (AMPS)	4	3	5	5	5	5	3	5	5	5
POINT NO.										
SEP. (n)										
H. F. MV	3.57	58.9	49.3	27.8	11.6	6.65	24.6	23.5	14.7	6.40
DRIFT	±0.2	+0.2	0.0	0.0	0.0	0.0	+0.2	0.0	0.0	0.0
1.0 PFE / K_n/1000	168	12	30	60	105	168	30	60	105	168
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c	2.9	1.8	2.0	1.9	2.1	2.7	1.9	1.9	2.0	2.3
3.0 MV / $\rho/2\pi$	148	233	293	330	241	221	244	279	306	213
DRIFT / MCF	20	7.7	6.8	5.7	8.7	12	7.8	6.8	6.5	11
S. P.	—	-10.4					+3.1			
NOISE										
POT RES.		60K					200K			
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 877, AREA Gold Bell

LINE A, HALF W, SP. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE No. 4, DATE 10-31-73

PAGE 4

HEINRICHS GEOEX

SEND		1-2	2-3	3-4	CAL						
RECEIVE		70-80W	———	——→	4-5						
MULTIPLIER		1.0	1.0	1.0	10.						
PFE		2.3	2.2 2.4 3.6	2.2	+0.2/0.1						
CUR. (AMPS)		3	5	5							
POINT No.											
SEP. (n)											
H. F. Mv		14.6	16.2	10.7	201/202						
DRIFT		0.0	+0.2	0.0	+0.2/0.0						
1.0 PFE	K_n/1000	60	105	168							
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c	2.2	2.2	2.1							
3.0 MV	$\rho/2\pi$	434	337	356							
DRIFT	MCF	5.0	6.5	5.9							
S. P.		-21.9									
NOISE											
POT RES.		80K									
CULT & CMTS											

160 - 120 Sec

I. P. RECEIVER NOTES, JOB No. 877, AREA Gold Bell

LINE A, HALF E, SP. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE No. 4, DATE 10- -73

PAGE 1

HEINRICHS GEOEX

SEND	CAL	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	3-4	0-10 E →		10-20 E	→		20-30 E	→		
MULTIPLIER	10.	10.	1.0	10.	1.0	1.0				
PFE		1.6	2.1	2.1	2.2	2.5				
CUR. (AMPS)	Reading	3.0	3.0	4.0	4.0	3.0				
POINT No.	pits									
SEP. (n)										
H. F. MV		137.	40.5	111.	37.0	13.9				
DRIFT	→	0.0	0.0	0.0	0.0	0.0				
1.0 PFE K_n/1000		3	12	3	12	30				
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c		1.5	2.0	2.0	2.1	2.4				
3.0 MV $\rho/2\pi$		136	161	83	110	138				
DRIFT MCF		11	12	24	19	8.7				
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 877, AREA Gold bell

LINE A, HALF E, SP. 1, a = 1000, BEARING E-W

SENDER STA. 0.0 = ELECTRODE NO. 4, DATE 1-1-73

PAGE 1

HEINRICHS GEOEX

SEND	CAL	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	3-4	0-10E →		10-20E →			20-30E →			
MULTIPLIER	10.	10.	1.0	10.	1.0	1.0	1.0	1.0	1.0	0.1
PFE	0.0	1.6	2.2	2.2	2.3	2.6	2.5	2.6	2.7	3.0
CUR. (AMPS)		5	3	5	3	3	5	5	5	4
POINT NO.										
SEP. (n)										
H. F. MV	20/.	226.	39.8	138.	27.8	14.1	82.7	29.0	17.1	8.77
DRIFT	0.0	0.0	0.0	0.0	0.0	+0.2	+0.2	0.0	0.0	0.0
1.0 PFE K_n/1000		3	12	3	12	30	3	12	30	160
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c		1.6	2.2	2.2	2.3	2.5	2.4	2.6	2.7	3.0
3.0 MV $\rho/2\pi$		135	158	82	111	140	49	69	102	131
DRIFT MCF		12	14	27	21	18	48	38	26	23
S. P.		+13.0		+7.9			+3.9			
NOISE										
POT RES.		100k		130k			150k			
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 877, AREA Gold bell

LINE A, HALF E, SR. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE NO. 4, DATE 11-1-73

PAGE 2

HEINRICHS GEOEX

SEND		5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3
RECEIVE		30-40 E				→	40-50 E				
MULTIPLIER		1.0	1.0	1.0	1.0	0.1	~~0.1~~ 1.0	1.0	1.0	0.1	0.1
PFE		2.5	2.4	2.5	2.5	2.8	2.2	2.1	2.2	1.9	1.9
CUR. (AMPS)		5.0	5	5	5	4	4	5	5	5	5
POINT NO.											
SEP. (n)											
H. F. MV		51.3	20.9	14.1	10.8	6.13	~~3.74~~ 33.9	17.1	11.8	9.59	7.89
DRIFT		+0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0 PFE	K_n/1000	3	12	30	60	105	3	12	30	60	105
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c	2.4	2.4	2.5	2.5	2.8	2.2	2.1	2.2	1.9	1.9
3.0 MV	$\rho/2\pi$	31	50	84	129	160	25	41	70	115	165
DRIFT	MCF	78	48	30	19	17	87	51	31	17	12
S. P.		-14.3					+11.1				
NOISE											
POT RES.		150K					75K				
CULT & CMTS		100K - 60K									

I. P. RECEIVER NOTES, JOB NO. 877, AREA Gold bell

LINE A, HALF E, SR 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE NO. 4, DATE 11-1-73

PAGE 3

HEINRICHS GEOEX

SEND	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5	3-4
RECEIVE	40-50E	50-60E	←			→	60-70E	→		
MULTIPLIER	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PFE	2.4	2.3	2.6	2.3	2.4	2.2	2.8	2.6	2.2	2.5
CUR. (AMPS)	4	4	5	5	5	5	4	5	5	5
POINT NO.										
SEP. (n)										
H. F. MV	4.70	8.92	7.12	5.64	5.06	4.38	3.51	3.38	2.89	2.78
DRIFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0 PFE K_n/1000	168	12	30	60	105	168	30	60	105	168
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	2.4	2.3	2.6	2.3	2.4	2.2	2.8	2.6	2.2	2.5
3.0 MV $\rho/2\pi$	196	27	43	67	106	146	26	40	60	93
DRIFT MCF	12	86	61	34	23	15	107	64	36	27
S. P.		-14.6					-12.3			
NOISE										
POT RES.		150 K					77K			
CULT & CMTS			60-120							

60-120

I. P. RECEIVER NOTES, JOB No. 877, AREA Gold bell

LINE A, HALF E, SP. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE No. 4, DATE 11-1-73

PAGE 4

HEINRICHS GEOEX

SEND		6-7	5-6	4-5							
RECEIVE		70-80E	→	→							
MULTIPLIER		0.1	0.1	0.1							
PFE		2.8	2.8	2.5							
CUR. (AMPS)		4	5	5							
POINT No.											
SEP. (n)											
H. F. MV		1.65	1.76	1.59							
DRIFT		0.0	0.0	0.0							
1.0 PFE	K_n/1000	60	105	168							
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c	2.8	2.8	2.5							
3.0 MV	$\rho/2\pi$	25	37	53							
DRIFT	MCF	112	76	47							
S. P.		+0.6									
NOISE											
POT RES.		40K									
CULT & CMTS		60-120									

I. P. SENDER NOTES

JOB No. 877 AREA Gold Bell

LINE A, HALF W, SP. 1, DATE 10-31-78

PAGE 1

HEINRICHS GEOEX

SEND	CAL	5-6	6-7	4-5	5-6	6-7	3-4	4-5	5-6	6-7
RECEIVE	4-5	0-10W →		10-20	W →		20-30	W →		
RANGE	200/10	1.333/30	1.333/30	1.333/30	1.333/30	1.333/30	1.333/30	1.333/30	1.333/30	1.333/30
VOLTAGE	400	670	880	680	670	880	500	680	670	875
CURRENT	2.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
SEND	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6
RECEIVE	30-40 W →					40-50 W →				
RANGE	1.333/30	1.333/30	1.333/30	1.333/30	1.333/30	100/30	1.333/30	1.333/30	1.333/30	1.333/30
VOLTAGE	500	500	675	660	870	800	500	495	665	660
CURRENT	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0

FREQUENCIES 1.0 - 0.1

SENDER No. 6644

OPERATOR 42

RECEIVER No. 18691-R

OPERATOR 69

COMMENTS:
6-7 = 1.333 X 30 = 4.0
5-6 = 1.666 X 30 = 5.0
4-5 = 1.666 X 30 = 5.0
3-4 = 1.666 X 30 = 5.0
2-3 = 1.666 X 30 = 5.0
1-2 = 100 X 30 = 3.0

I. P. SENDER NOTES

JOB No. 877 AREA GOLD BELL

LINE A, HALF W, SP. 1, DATE 10-31-73

PAGE 2

HEINRICHS GEOEX

SEND	6-7	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5
RECEIVE	40-50	50-60W →				→	60-70W →			→
RANGE	1.333/30	100/30	1.666/30	1.666/30	1.666/30	1.666/30	100/30	1.666/30	1.666/30	1.666/30
VOLTAGE	865	800	620	615	830	820	795	620	605	820
CURRENT	4.0	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	5.0
SEND	1-2	2-3	3-4	CAL AT 2:50			4-5			
RECEIVE	70-80W →									
RANGE	100/30	1.666/30	1.666/30				200/10			
VOLTAGE	790	615	600				380			
CURRENT	3.0	5.0	5.0				2.0			

FREQUENCIES	1.0 - 0.1
SENDER NO.	6644
OPERATOR	42
RECEIVER NO.	18 691
OPERATOR	64

COMMENTS:

I. P. SENDER NOTES

JOB No. 877 AREA Gold Bell

LINE A, HALF E, SP. 1, DATE 10-1-73

PAGE 1

HEINRICHS GEOEX

SEND	CAL	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	3-4	0-10E →		10-20E →			20-30E →			
RANGE	10X200	1.666 X30	1.000 X30	1.666 X30	1.000 X30	1.000 X30	1.666 X30	1.666 X30	1.666 X30	1.333 X30
VOLTAGE	300	610	730	600	360	730	800	600	600	1000
CURRENT	2	5	3	5	3	3	5	5	5	4
SEND	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3
RECEIVE	30-40	E →				40-50E →				
RANGE	1.666X30	1.666X30	1.666X30	1.666X30	1.333X30	1.333X30	1.666X30	1.666X30	1.666X30	1.666X30
VOLTAGE	820	800	600	600	1000	840	800	800	600	600
CURRENT	5	5	5	5	4	4	5	5	5	5

FREQUENCIES

SENDER No.

OPERATOR

RECEIVER No.

OPERATOR

COMMENTS:

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

I. P. SENDER NOTES

JOB No. 877 AREA Gold Bell

LINE A, HALF E, SP. 1, DATE 11-1-73

PAGE 2

HEINRICHS GEOEX

SEND	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5	3-4
RECEIVE	40-50E	50-60	→				60-70	→		
RANGE	1,333X30	1,333X30	1,666X30	1,666X30	1,666X30	1,666X30	1,333X30	1,666X30	1,666X30	1,666X30
VOLTAGE	1000	820	800	800	600	600	820	800	780	580
CURRENT	4	4	5	5	5	5	4	5	5	5
SEND	6-7	5-6	4-5							
RECEIVE	70-80	→								
RANGE	1,333X30	1,666X30	1,666X30							
VOLTAGE	820	800	780							
CURRENT	4	5	5							

FREQUENCIES	
SENDER No.	
OPERATOR	
RECEIVER No.	
OPERATOR	

COMMENTS:

I. P. RECEIVER NOTES, JOB NO. 877, AREA Gold Bell

LINE B, HALF W, SP. 1, a = 1000, BEARING E-W

SENDER STA. 0.0 = ELECTRODE NO. 4, DATE 11-2-73

PAGE 1

HEINRICHS GEOEX

SEND	CAL *	5-6 *	6-7	4-5	5-6	6-7	3-4	4-5	5-6	6-7
RECEIVE	4-5	0-10W →		10-20W →			20-30W →			
MULTIPLIER	10.	10.	1.0	10.	1.0	1.0	10.	1.0	1.0	0.1
PFE	+0.2/+0.1	1.3/4.1	2.4	1.5	1.6	2.5	1.0	1.5	1.9	2.6
CUR. (AMPS)	2.0	5	4	5	5	4	5	5	5	4
POINT NO.										
SEP. (n)										
H. F. MV	202.	231/225.	30.0	241.	50.5	11.1	170.	72.9	23.3	6.68
DRIFT	~~+0.2~~/0.0	-2.0/+2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
1.0 PFE $K_n/1000$		3	12	3	12	30	3	12	30	60
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c		2.5	2.4	1.5	1.6	2.5	1.0	1.5	1.9	2.7
3.0 MV $\rho/2\pi$		134	89	143	120	82	101	173	138	99
DRIFT MCF		18	27	10	13	30	9.9	8.6	14	27
S. P.		+0.2		+20.7			-1.5			
NOISE										
POT RES.		15K		25K			27K			
CULT & CMTS										60-120

I. P. RECEIVER NOTES, JOB No. 877, AREA Gold Bell

LINE 82, HALF W, SP. 1, a = 1000', BEARING E W

SENDER STA. 0.0 = ELECTRODE No. 4, DATE 11-2-73

PAGE 2

HEINRICHS GEOEX

SEND	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6
RECEIVE	30-40W					40-50W				
MULTIPLIER	10.	1.0	1.0	1.0	0.1	10.	1.0	1.0	1.0	1.0
PFE	2.4	1.4	1.8	2.1	3.0	2.0	1.5	1.9	2.1	2.3
CUR. (AMPS)	5	5	5	5	4	5	5	5	5	5
POINT No.										
SEP. (n)										
H. F. MV	210.	59.8	44.8	164	5.18	208.	75.5	33.7	30.4	11.8
DRIFT	+0.2	0.0	0.0	0.0	+0.2	0.0	0.0	0.0	0.0	-0.2
1.0 PFE K_n/1000	3	12	30	60	105	3	12	30	60	105
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	2.3	1.4	1.8	2.1	2.9	2.0	1.5	1.9	2.1	2.4
3.0 MV $\rho/2\pi$	125	142	266	195	135	123	179	200	361	245
DRIFT MCF	18	9.9	6.8	11	21	16	8.4	9.5	5.8	9.8
S. P.	+13.1					-13.9				
NOISE										
POT RES.	90K					77K				
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 877, AREA Gold Bell

LINE 2, HALF W, SR. 1, a = 1000', BEARING E W

SENDER STA. 0+00 = ELECTRODE NO. 4, DATE 11-2-73

PAGE 3

HEINRICHS GEOEX

SEND		6-7	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5
RECEIVE		40-50W	50-60W	→	→	→	→	60-70W	→	→	→
MULTIPLIER		0.1	1.0	1.0	1.0	1.0	0.1				
PFE		4.0	1.7	1.8	2.1	2.4	2.7				
CUR. (AMPS)		4	5	5	5	5	5				
POINT NO.											
SEP. (n)											
H. F. MV		3.95	61.9	35.6	19.3	19.2	7.61				
DRIFT		±0.2	+0.2	0.0	0.0	0.0	-0.2				
1.0 PFE	K_n/1000	168	12	30	60	105	168				
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c	4.0	1.6	1.8	2.1	2.4	2.8				
3.0 MV	$\rho/2\pi$	164	147	211	229	399	256				
DRIFT	MCF	2.4	11	8.5	9.2	6.0	11				
S. P.			+4.2								
NOISE											
POT RES.			140K								
CULT & CMTS		60-120									

I. P. RECEIVER NOTES, JOB No. 877, AREA Gold Bell

LINE 2, HALF W, SP. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE No. 4, DATE 11-2-73

PAGE 4

HEINRICHS GEOEX

SEND	1-2	2-3	3-4					CAL	CAL	5-6
RECEIVE	70-80	W →						4-5	4-5	0-10 W
MULTIPLIER								10.	10.	10. 10
PFE								+0.2	+0.2	4.0 3.0
CUR. (AMPS)										
POINT No.										
SEP. (n)										
H. F. MV								201.	202.	224. 226.
DRIFT								+0.2	+0.2	0.0 -1.0
1.0 PFE $K_n/1000$										
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$										
DRIFT MCF										
S. P.								Erratic Drift on CAL		
NOISE								and in I.P.		
POT RES.										
CULT & CMTS								CAL Resistor heats up at 2.0 Amps		

I. P. RECEIVER NOTES, JOB NO. 877, AREA Goldbell

LINE 2, HALF E, SP. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE NO. 4, DATE 11-2-73

PAGE 5

HEINRICHS GEOEX

SEND		CAL	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE		3-4	0-10E	→	10-20E	→	→	20-30	→	→	→
MULTIPLIER		10. .10	10.	1.0	10.	1.0	1.0	10.	1.0	1.0	0.1
PFE		+0.2/~~0.0~~	1.3	1.5	1.4	1.7	2.0	2.1	2.4	2.6	2.7
CUR. (AMPS)		0.1	5	→	→	→	→	→	→	→	→
POINT NO.											
SEP. (n)											
H. F. MV		~~201~~/202	241.	71.7	229.	50.3	22.9	164.	37.1	13.9	8.24
DRIFT		+0.2/+0.2	+0.2	0.0	+0.2	0.0	0.0	0.0	0.0	0.0	0.0
1.0 PFE	K_n/1000	1.0 = 1990	3	12	3	12	30	3	12	30	60
0.3 PFE	ρ_{CAL}	.6 = 59.7									
0.1 PFE	PFE_c		1.2	1.5	1.3	1.7	2.0	2.1	2.4	2.6	2.7
3.0 MV	$\rho/2\pi$		143	170	136	120	136	97	88	83	98
DRIFT	MCF		8.4	8.8	9.6	14	15	22	27	31	28
S. P.			+8.4		+5.2			+2.8			
NOISE											
POT RES.			35K		61K			98K			
CULT & CMTS											

60 Sec damp. needs 90 Sec to hit PFE.

I. P. RECEIVER NOTES, JOB NO. 877, AREA Goldbell

LINE 2, HALF E, SR. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE NO. 4, DATE 11-2-73

PAGE 6

HEINRICHS GEOEX

SEND	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3
RECEIVE	30-40E	→				40-50E	→			
MULTIPLIER	1.0	1.0	1.0	0.1	0.1	1.0	1.0	1.0	0.1	0.1
PFE	2.5	2.1	2.4	2.8	2.4	2.6	2.4	2.1	2.1	2.0
CUR. (AMPS)	5									
POINT NO.										
SEP. (n)										
H. F. MV	60.9	35.4	12.0	5.88	4.15	36.2	14.7	14.2	5.48	3.16
DRIFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	+0.2	0.0	±0.2
1.0 PFE K_n/1000	3	12	30	60	105	3	12	30	60	105
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	2.5	2.1	2.4	2.8	2.4	2.6	2.4	2.0	2.1	2.0
3.0 MV $\rho/2\pi$	36	84	71	70	86	22	35	84	65	66
DRIFT MCF	69	24	34	40	27	118	69	24	32	30
S. P.	+17.6					-7.7				
NOISE										
POT RES.	88 K					58K				
CULT & CMTS				60-120						

I. P. RECEIVER NOTES, JOB NO. 877, AREA Gold bell

LINE 2, HALF E, SP. 1, a = 1000', BEARING EW

SENDER STA. 0.0 = ELECTRODE NO. 4, DATE 11-2-78

SEND	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5	3-4
RECEIVE	40-50E	50-60E	→				60-70E	→		
MULTIPLIER	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PFE	3.0	2.7	2.4	2.2	2.3	3.0	3.0	2.5	2.4	2.2
CUR. (AMPS)	5	—	—	—	—	—	—	—	—	→
POINT NO.										
SEP. (n)										
H. F. MV	2.37	9.18	6.36	7.27	3.09	1.95	9.65	3.08	3.88	1.77
DRIFT	±0.2	0.0	0.0	0.0	±0.2	±0.2	+0.2	±0.2	±0.2	±0.2
1.0 PFE K_n/1000	168	12	30	60	105	168	30	60	105	168
0.3 PFE P_{CAL}										
0.1 PFE PFE_c	3.0	2.7	2.4	2.2	2.3	3.0	2.9	2.5	2.4	2.2
3.0 MV $\rho/2\pi$	79	22	38	86	64	65	22	37	81	59
DRIFT MCF	38	123	63	25	35	46	134	68	29	37
S. P.		+3.8					-16.1			
NOISE										
POT RES.		18K					25K			
CULT & CMTS	60-120		20-60	20-60	60-120		60-120			

I. P. RECEIVER NOTES, JOB NO. 877, AREA Gold bell

LINE 2, HALF E, SP. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE NO. 4, DATE 11-7-73

PAGE 8

HEINRICHS GEOEX

SEND		6-7	5-6	4-5							
RECEIVE		70-80	E →								
MULTIPLIER		0.1	0.1	0.1							
PFE		3.0	2.5 2.2	2.0							
CUR. (AMPS)		5 →									
POINT NO.											
SEP. (n)											
H. F. MV		1.97	1.87	2.49							
DRIFT		±	±	±							
1.0 PFE	K_n/1000	60	105	168							
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c	2.7	2.2	2.0							
3.0 MV	$\rho/2\pi$	23	39	83							
DRIFT	MCF	115	57	24							
S. P.		+12.2									
NOISE											
POT RES.		22K									
CULT & CMTS		50-120									

I. P. SENDER NOTES

JOB No. 877 AREA GOLD BELL

LINE B, HALF W, SP. 1, DATE 11-2-73

PAGE 1

HEINRICHS GEOEX

SEND	CAL	5-6	6-7	4-5	5-6	6-7	3-4	4-5	5-6	6-7
RECEIVE	4-5	0-10W	→	10-20W	→	→	20-30W	→	→	→
RANGE	200X10	1.666/30	1.333/30	1.666/30	1.666/30	1.333/30	1.666/30	1.666/30	1.666/30	1.333/30
VOLTAGE	210	750	730	495	725	720	545	490	720	705
CURRENT	2.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0	4.0
SEND	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6
RECEIVE	30-40W	→	→	→	→	40-50W	→	→	→	→
RANGE	1.666/30	1.666/30	1.666/30	1.666/30	1.333/30	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30
VOLTAGE	660	540	480	700	695	710	655	535	470	690
CURRENT	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0

FREQUENCIES 1.0 - 0.1

SENDER No. [redacted]

OPERATOR 42

RECEIVER No.

OPERATOR

COMMENTS:

I. P. SENDER NOTES

JOB No. 877 AREA GOLD BELL

LINE B, HALF W, SP. 1, DATE 11-2-73

PAGE 2

HEINRICHS GEOEX

SEND	6-7	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5
RECEIVE		50-60W	→	→	→	→	60-70W	→	→	→
RANGE	1.333/30	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30				
VOLTAGE	680	705	650	525	470	680				
CURRENT	4.0	5.0	5.0	5.0	5.0	5.0				
SEND	1-2	2-3	3-4							
RECEIVE	70-80W	→	→							
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 — 0.1

SENDER No.

OPERATOR 42

RECEIVER No.

OPERATOR

COMMENTS:

I. P. SENDER NOTES

JOB No. 877 AREA Gold Bell

LINE 2, HALF E, SP. 1, DATE Nov 2 '73

PAGE 1

HEINRICHS GEOEX

SEND	CAL	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	3-4	6-10E →		10-20E		→	20-30E			
RANGE 100X10	200X10	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30
VOLTAGE/100	210	640	700	520	640	700	430	520	640	700
CURRENT/1	2	5	5	5	5	5	5	5	5	5
SEND	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3
RECEIVE	30-40E	→				40-50E				→
RANGE	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30
VOLTAGE	480	460	520	620	680	720	580	440	500	620
CURRENT	5	5	5	5	5	5	5	5	5	5

FREQUENCIES 1.0 - 0.1

SENDER No. 6694-S

OPERATOR 92

RECEIVER No.

OPERATOR

COMMENTS:

I. P. SENDER NOTES

JOB No. 877 AREA Gold Bell

LINE 2, HALF E, SP. 1, DATE Nov. 2 '73

PAGE 2

HEINRICHS GEOEX

SEND	40-50E	50-60E →						60-70E →		
RECEIVE	1-2	6-7	6-5	4-5	3-4	2-3	1-2	6-7	5-6	4-5
RANGE	1.666X30	1.666X30	1.666X30	1.666X30	1.666X30	1.666X30		1.666X30	1.666X30	1.666X30
VOLTAGE	680	720	530	440	500	620		720	560	440
CURRENT	5	5	5	5	5	5		5	5	5
SEND	60-70 E		70-80E →							
RECEIVE	3-4	2-3	6-7	5-6	4-5	3-4				
RANGE	1.666X30		1.666X30	1.666X30	1.666X30					
VOLTAGE	500		700	540	440					
CURRENT	5		5	5	5					

FREQUENCIES .1-1

SENDER No. 6644-S

OPERATOR 92

RECEIVER No.

OPERATOR

COMMENTS:

I. P. RECEIVER NOTES, JOB No. 877, AREA Gold Bell

LINE 3(C), HALF W, SP. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE No. 74, DATE 11-6-73

PAGE 1

HEINRICHS GEOEX

SEND	CAL	5-6	6-7	4-5	5-6	6-7	3-4	4-5	5-6	6-7
RECEIVE	4-5	0-10W →		10-20W →			20-30W →			
MULTIPLIER	10.	1.0	1.0	10.	1.0	1.0	10.	1.0	1.0	1.0
PFE	+0.2	0.8	1.7	1.8	2.1	1.9	1.4	2.0	2.7	2.6
CUR. (AMPS)	2.0	5. →								
POINT NO.		1	2	3	4	5	6	7	8	9
SEP. (n)										
H. F. MV	20.	90.8	24.3	142.	36.6	19.7	293.	51.4	21.0	13.2
DRIFT	+0.1	+0.2	0.0	+0.2	0.0	0.0	0.0	0.0	+0.2	+0.2
1.0 PFE K_n/1000		3	12	3	12	30	3	12	30	60
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_C		0.7	1.7	1.7	2.1	1.9	1.4	2.0	2.6	2.5
3.0 MV $\rho/2\pi$		54.	58.	85	87.	118.	175	123	125	158
DRIFT MCF		13	29	20.	22	15	8.0	16	21	16
S. P.	+7.5			-7.3			-1.1			
NOISE										
POT RES.	65K			40K			25K			
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. B77, AREA Gold Bell

LINE 3·(C), HALF W, SP. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE No. 4, DATE 11-6-73

PAGE 2

HEINRICHS GEOEX

SEND	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6
RECEIVE	30-40E	→	→	→	→	40-50	→	→	→	→
MULTIPLIER	10.	1.0	1.0	1.0	0.1	10.	10.	1.0	1.0	0.1
PFE	1.8	2.2	2.6	2.2	2.3	2.0	2.3	2.6	2.9	2.6 ⇒ 3.2 2.9
CUR. (AMPS)	5.0	→	→	→	→	→	→	→	→	→
POINT No.										
SEP. (n)										
H. F. MV	466.	88.0	25.2	12.8	9.10	336.	146.	42.8	16.3	9.44
DRIFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0 PFE K_n/1000	3	12	30	60	105	3	12	30	60	105
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	1.8	2.2	2.6	2.2	2.3	2.0	2.3	2.6	2.9	2.9
3.0 MV $\rho/2\pi$	278	210	150	152	190	201	349	256	195	197
DRIFT MCF	6.5	10	17	14	12	10	6.6	10	15	15
S. P.	+3.5					+4.8				
NOISE										
POT RES.	25K					90K				
CULT & CMTS					60-120					

I. P. RECEIVER NOTES, JOB No. 877, AREA Gold Bell

LINE 3(C), HALF W, SP. 1, a = 100d, BEARING E-W

SENDER STA. 0.0 = ELECTRODE No. 4, DATE 11-6-73

PAGE 3

HEINRICHS GEOEX

SEND		6-7	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5
RECEIVE		40-50E	50-60E	→				60-70	→		
MULTIPLIER		0.1	10.	1.0	1.0	1.0	0.1				
PFE		2.4 ~~3.6~~ 3.6	2.3	2.1	2.0	2.1	2.1 ~~3.1~~ 2.6				
CUR. (AMPS)		5.0									
POINT No.											
SEP. (n)											
H. F. MV		7.41	114.	74.3	25.0	10.4	6.33				
DRIFT		+0.2	+0.2	0.0	0.0	0.0	±0.2				
1.0 PFE	K_n/1000	168	12	30	60	105	168				
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c	2.9	2.2	2.1	2.0	2.1	2.6				
3.0 MV	$\rho/2\pi$	278	272	443	299	217	212				
DRIFT	MCF	12	8.1	4.7	6.7	9.7	12				
S. P.			-26.0								
NOISE											
POT RES.			125K								
CULT & CMTS		60+20									

I. P. RECEIVER NOTES, JOB No. 877, AREA Gold Bell

LINE 3(c), HALF E, SP. 1, a = 1000', BEARING E-W

SENDER STA. 0.0 = ELECTRODE No. 21, DATE 11-6-73

PAGE 4

HEINRICHS GEOEX

SEND	CAL	2-3	1-2	5-9	4-5	3-4	2-3	1-2		
RECEIVE	3-4	0-10E →		10-20E	20-30E →					
MULTIPLIER	10.	10.	0.1		1.0	1.0	1.0	1.0		
PFE	~~20~~ 0.0	1.6	2.0		1.8	1.8	1.6	2.0		
CUR. (AMPS)	2.0	5 →								
POINT NO.										
SEP. (n)										
H. F. Mv	202.	141.	50.4		68.6	24.5	19.6	13.1		
DRIFT	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
1.0 PFE K_n/1000		3	12		3	12	30	60		
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c		1.6	2.0		1.8	1.8	1.6	2.0		
3.0 MV $\rho/2\pi$		84	120		41	58	116	156		
DRIFT MCF		19	17		44	31	14	13		
S. P.		+4.1		+1.3	-5.2					
NOISE										
POT RES.		50K		50K	44K					
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 877, AREA Gold Bell

LINE 3, HALF E, SP. 1, a = 1000, BEARING E-W

SENDER STA. 0.0 = ELECTRODE No. 4, DATE 11-6-73

PAGE 5

HEINRICHS GEOEX

SEND	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3
RECEIVE	30-40	→				40-50E				
MULTIPLIER	1.0	1.0	0.1	0.1	0.1	1.0	1.0	0.1	0.1	0.1
PFE	2.0	2.3	2.0	2.0	2.4	1.6	1.8	2.1	2.1	2.3
CUR. (AMPS)	5									
POINT NO.										
SEP. (n)										
H. F. MV	50.5	15.8	8.48	8.49	6.12	33.6	11.2	4.90	3.44	3.94
DRIFT	+0.2	0.0	0.0	0.0	0.0	+0.2	0.0	0.0	0.0	0.0
1.0 PFE / K_n/1000	3	12	30	60	105	3	12	30	60	105
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c	1.9	2.3	2.0	2.0	2.4	1.5	1.8	2.1	2.1	2.3
3.0 MV / $\rho/2\pi$	30.	38	50	101	127	20	27	29	41	82
DRIFT / MCF	63	61	40	20	19	75	68	72	51	28
S. P.	+12.2					-9.6				
NOISE										
POT RES.	160K					100K				
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 877, AREA Gold Bell

LINE 3, HALF E, SP. 1, a = 100', BEARING E-W

SENDER STA. 0,0 = ELECTRODE No. 4, DATE 11-6-73

PAGE 6

HEINRICHS GEOEX

SEND	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5	3-4
RECEIVE	40-50E	50-60	E →				60-70	→		
MULTIPLIER	0.1	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PFE	2.6	1.6	1.7	2.3	1.6 ⇔ 2.8 / 2.0	2.2 ⇔ 3.0 / 2.6	1.4	1.9	1.6 ⇔ 3.0 / 2.5	1.8 ⇔ 3.4 / 2.8
CUR. (AMPS)	5	→								
POINT NO.										
SEP. (n)										
H. F. MV	3.05	10.8	4.73	2.46	2.01	2.41	4.27	2.21	1.28	1.19
DRIFT	0.0	0.0	0.0	+0.2	±0.2	+0.2	0.0	0.0	0.0	±0.2
1.0 PFE K_n/1000	168	12	30	60	105	168	30	60	105	168
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	2.6	1.6	1.7	2.2	1.9	2.5	1.4	1.9	2.5	2.8
3.0 MV $\rho/2\pi$	101	26	28	29	42	80	25	26	27	40
DRIFT MCF	26	62	61	75	45	31	55	72	94	71
S. P.		-8.1					-13.1			
NOISE										
POT RES.		15.K					<10K			
CULT & CMTS									60-120	

I. P. RECEIVER NOTES, JOB NO. 877, AREA Gold Bell

LINE 3, HALF E, SP. 1, a = 1000, BEARING E-W

SENDER STA. 0.0 = ELECTRODE NO. 4, DATE 11-6-73

PAGE 7

HEINRICHS GEOEX

SEND		6-7	5-6	4-5							
RECEIVE		70-80	→	→							
MULTIPLIER		0.1	0.1	.01							
PFE		1.6	1.6 ⇒ 3.3 1.9	1.2 ⇒ 2.6 1.5							
CUR. (AMPS)		5	→	→							
POINT NO.											
SEP. (n)											
H. F. MV		2.21	1.24	.773							
DRIFT		0.0	±0.2	±0.2							
1.0 PFE	K_n/1000	60	105	168							
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c	1.6	1.9	1.5							
3.0 MV	$\rho/2\pi$	26	26	26							
DRIFT	MCF	61	73	58							
S. P.		+10.3									
NOISE											
POT RES.		15K									
CULT & CMTS		60-120									

I. P. SENDER NOTES

JOB No. 877 AREA Gold Bell

LINE 3, HALF E, SP. 1, DATE 11-6-73

PAGE 3

HEINRICHS GEOEX

SEND	CAL	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	3-4	0-10 E →		10-20 E →			20-30 E →			
RANGE	200X10	1,666X30	1,666X30	← S.P. →			1,666X30	1,666X30	1,666X30	1,666X30
VOLTAGE	400	540	620				740	680	540	620
CURRENT	20	5	5				5	5	5	5
SEND	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3
RECEIVE	30-40	→				40-50	→			
RANGE	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30	1,666X30
VOLTAGE	780	740	680	540	620	620	760	720	640	520
CURRENT	5	5	5	5	5	5	5	5	5	5

FREQUENCIES 1.0 - 0.1

SENDER No. 6644

OPERATOR 92

RECEIVER No.

OPERATOR 64

COMMENTS:

I. P. SENDER NOTES

JOB No. 877 AREA Gold Bell

LINE 3, HALF E, SP. _____, DATE Nov 6 '73

PAGE _____

HEINRICHS GEOEX

SEND	1-2	6-7				2-3	6-7			
RECEIVE	40-50	50-60	→	→	→	→	60-70	→	→	→
RANGE	1.666X30	1.666X30	1.666X30	1.666X30	1.666X30	1.666X30	1.666X30	1.666X30	1.666X30	1.666X30
VOLTAGE	580	620	760	720	640	520	620	740	700	640
CURRENT	5	5	5	5	5	5	5	5	5	5
SEND	6-7		4-5							
RECEIVE	70-80	→	→							
RANGE	1.666X30	1.666X30	1.66X30							
VOLTAGE	620	740	700							
CURRENT	5	5	5							

FREQUENCIES 1.0 – 0.1

SENDER No. 6644

OPERATOR 92

RECEIVER No.

OPERATOR

COMMENTS:

I. P. SENDER NOTES

JOB No. 877 AREA Gold Bell

LINE 3 (C), HALF W, SP. 1, DATE 11-6-73

PAGE 1

HEINRICHS GEOEX

SEND	CAL	5-6	6-7	4-5	5-6	6-7	3-4	4-5	5-6	6-7
RECEIVE	4-5	0-10 W	→	10-20 W	→	→	20-30 W	→	→	→
RANGE	200/10	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30
VOLTAGE	480	960	720	830	890	710	715	820	870	700
CURRENT	2.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
SEND	2-3	3-4	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6
RECEIVE	30-40 W	→	→	→	→	40-50	→	→	→	→
RANGE	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30
VOLTAGE	555	715	810	855	690	630	560	705	790	840
CURRENT	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

FREQUENCIES 1.0 - 0.1

SENDER No. 6644

OPERATOR 42

RECEIVER No.

OPERATOR

COMMENTS:

I. P. SENDER NOTES

JOB No. 877 AREA Gold Belt

LINE 3 (C), HALF W, SP. 1, DATE 11-6-73

PAGE 2

HEINRICHS GEOEX

SEND	6-7	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5
RECEIVE	40-50	50-60W	→			→	60-70	→		
RANGE	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30	1.666/30				
VOLTAGE	680	630	560	700	780	820				
CURRENT	5.0	5.0	5.0	5.0	5.0	5.0				
SEND	~~70-80~~	→		1-2	2-3	3-4				
RECEIVE	70-80	→		70-80	→					
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 – 0.1

SENDER No.

OPERATOR 42

RECEIVER No.

OPERATOR

COMMENTS:

BLM	26.00
ST. BOB. LANDS	40.00
PARKING	1.50
	$ 67.50

OWED W.H.S.

#877

RECEIPT AND/OR NOTICE OF REFUND

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

In reply refer to:
AC 216530

DATE	AMOUNT	Remittance received for:		REMARKS
10-24-73	Received $ 26.00	Patents	$	
		Extracts	$	
	Applied $ 26.00	Plats	$ 26.00	
		Field Notes	$	
	Refund $ .00	Microfilm	$	ACCT 1441109MLR
		Other	$	

Received from

William H. Smith
Box 5964
Tucson, AZ

CHECK APPROPRIATE BLOCK

☐ Cash ☒ Check ☐ Money order
☐ Other *(specify)*

Form 1370–17 (May 1971)

☆GPO 781-187

REMITTER - TO ACCOMPANY CHECK

Heinrichs Geoexploration Co. Inc
808 W. Grant Rd
P.O. Box 5964, Tucson, AZ
85703

STATE OF ARIZONA
STATE LAND DEPARTMENT
STATE OFFICE BUILDING – PHOENIX, ARIZONA

RECEIPT – PAYEE

SECTION	TOWNSHIP	RANGE

KIND ENTRY	LEASE-REFERENCE NO.

ACCOUNT NO. GRANT FUND	ACCOUNT NO. SUB	CARRYING CAPACITY OR STATIC WATER LEVEL	SEE OTHER SIDE FOR CODE DESCRIPTION: LAND CODE	CROP CODE	WATER CODE	BILLING DESCRIPTION	RATE	ACRES	$ AMOUNT
						4 P.P. Apls.			100.00

CERTIFICATE OF PURCHASE UNPAID BALANCE $	BILLING PERIOD FROM MO.	FROM DAY	FROM YR	TO MO.	TO DAY	TO YR	DATE BILLED MO.	DAY	YR.	DATE DUE MO.	DAY	YR.	TOTAL ACRES	TOTAL AMOUNT $
							10	24	73					100.00

IF PAYMENT IS MADE ON OR BEFORE THIS DATE → PAY THIS AMOUNT

SEE OTHER SIDE FOR LAW PERTAINING TO PENALTY AND INTEREST – A. R. S. SEC. 37-288.

RENTAL AMOUNT SUBJECT TO PENALTY AND INTEREST IF NOT PAID ON OR BEFORE DATE DUE ($)

5% PENALTY OF RENTAL AMOUNT - - - - - - - - - - - - $

TOTAL RENTAL AMOUNT PLUS PENALTY - - - - - - - - ($) TOTAL PENALTY AND INTEREST

10% INTEREST PER ANNUM OF RENTAL AMOUNT AND PENALTY – NUMBER OF DAYS DELINQUENT ( ) $ $

TOTAL AMOUNT DUE INCLUDING PENALTY AND INTEREST - - - - - - - - - - - - - $

CASH RECEIVED $

BALANCE DUE OR OVERPAYMENT $

PENALTY AND INTEREST DISTRIBUTION			$

PAYEE: DETACH THIS STATEMENT BEFORE DEPOSITING CHECK

HEINRICHS GEOEXPLORATION COMPANY

DATE	INVOICE NO.	DESCRIPTION	AMOUNT	DISCOUNT OR DEDUCTION	NET AMOUNT
		477			
10-24-73		A101			
Ck #5187		Mineral Prospecting Permits Sections 13, 18, 19, 24 - Pinal County			$60.00

A. R. SHIRLEY
DIRECTOR

Georgia Forestry Commission

P.O. Box 576
Davisboro, Georgia 31018

June 7, 1973

Miss Virginia Smith
Sandersville, Georgia 31082

Dear Miss Smith:

George Spires and I recently spent some time on your Jordan Mill tract of land in Washington County; and attached you will find a plan which I believe your woodlands can best be managed. I depended rather greatly on Mr. Spires thoughts and suggestions concerning this plan, in view of the fact that his knowledge of the tract far exceeded mine and the evidence that past forestry practices that he has recommended have proved successful.

I think you will find that the plan will be rather simple to follow as a result from the excellent past management practices. I would like to suggest that strong emphasis be placed on getting area 3 into better production and that a net work of fire lines be established through out the tract this fall. Further, I would like to suggest that as much prescribe burning be done as possible each winter.

It was a pleasure preparing the plan for you and I sincerely hope that it proves helpful.

Yours very truly,

George

George B. Turk
Forester

GBT/gl

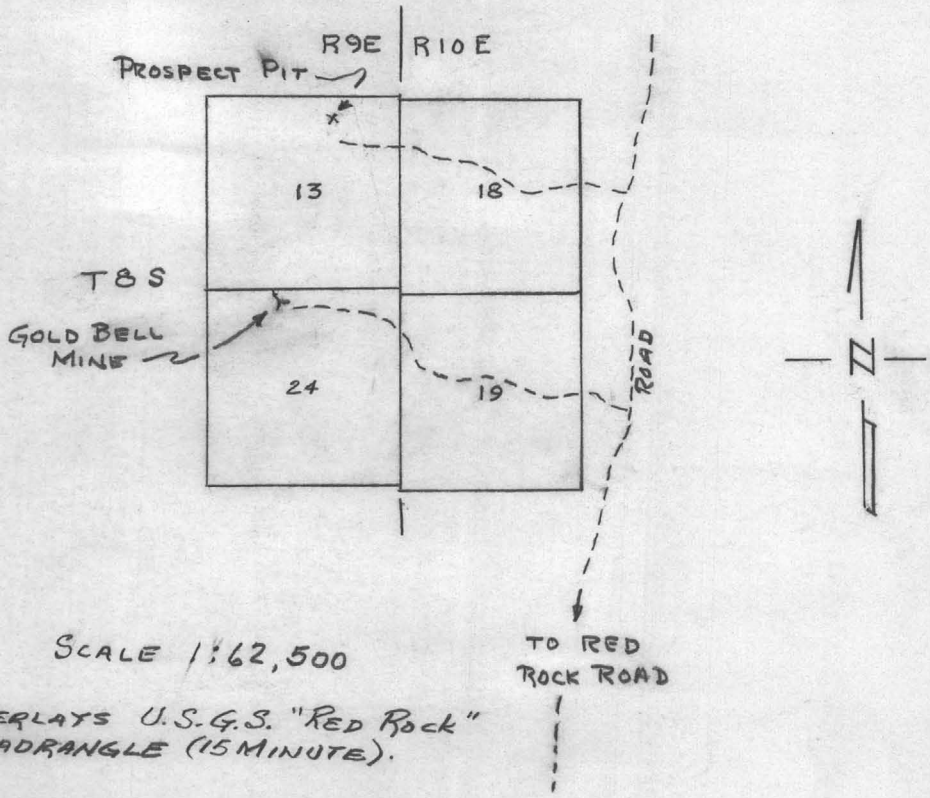
CC: Ranger Womack
District Forester Millians

FOREST MANAGEMENT PLAN

Miss Virginia Smith
Washington County

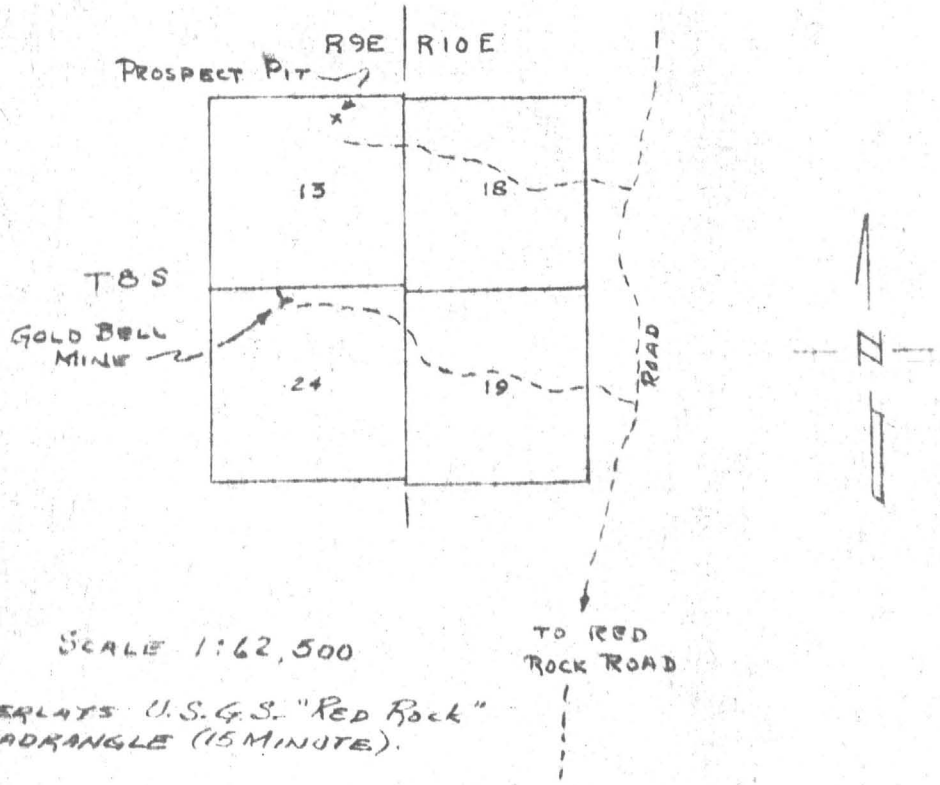
Area No.	Acreage*	Area Description	Recommended Practices
1	470	Planted pine 4-7 years old with some scattered pine pulpwood	Protect from wildfire until prescribe burning can be accomplished (probably 3 more years). Utilize pulpwood with thinnings in area 2 when feasible.
2	430	Planted pine approx. 15 yrs. some row thinning completed, some prescribe burning completed.	Continue with prescribe burning during winter months, complete within 2 year period. Selective thin areas where rows were removed and row thin other areas. Remove approximately 1/3 of present volume. Complete within 2 years.
3	255 (140 acres really pressing)	Mixed hardwood pulp and sawtimber. Scattered pine in spots.	Remove all merchantable wood, site prepare and plant at earliest possible time.
4	60	Planted pine 1-3 years.	Fire protection next 7-10 years.

* All acreage approximate



SCALE 1:62,500

OVERLAYS U.S.G.S. "RED ROCK" QUADRANGLE (15 MINUTE).



SCALE 1:62,500

OVERLAYS U.S.G.S. "RED ROCK" QUADRANGLE (15 MINUTE).

P. P. No. _____

INSTRUCTIONS

1. This application must be accompanied by $15.00 filing fee.
2. Application must not cover more than one section.
3. All questions must be answered.
4. Attach scale drawing or plat to show detail for questions 4, 5, 7, 8 and 9.

STATE LAND DEPARTMENT
400 Arizona State Office Building
Phoenix 7, Arizona

APPLICATION FOR MINERAL PROSPECTING PERMIT

The State Land Commissioner:

I/We Heinrichs GEOEXploration Company, Inc.
(Name)

of 808 West Grant Road; P.O. Box 5964, Tucson, Arizona 85703
(Address)

do hereby make application for a mineral exploration or prospecting permit on the State lands hereinafter described, in accordance with the provisions of Title 27, Chapter 2, Article 4, Arizona Revised Statutes, such rules and regulations as the Commissioner may prescribe and the terms of the permit.

Subdivision	Section	Township	Range	Acres	County	Grant
ALL	24	T8S	R9E	640	PINAL	SS 18

1. State whether individual, partnership or corporation CORPORATION

2. If an individual, are you a citizen of the United States? N/A

3. Age N/A Married N/A Single N/A

4. Are there valid mineral locations, claims or leases on this section? _____
NONE KNOWN
(describe and locate on attached plat)

5. Are there any abandoned workings on this section? YES
(describe and locate on attached plat)

6. Will it be necessary to cross other state lands to reach the land under application?
cation? Yes X No _____

7. Are there improvements or crops on the land described in No. 6 above? NO
(describe and locate on attached plat)

8. Are there improvements or crops on the land under application Yes ___ No NO

9. Describe proposed routes of ingress and egress to land under application.

BY UNIMPROVED DIRT ROADS, NORTH AND NORTHWEST FROM RED ROCK ROAD.

CERTIFICATION:

I/WE hereby certify under penalty of perjury that the information contained and statements herein made are to the best of (my or our) knowledge and belief true, correct and complete.

Dated this 24th day of October, A.D. 1973.

Heinrichs GEOEXploration Company, Inc.
(Applicant)

By Fred Heinrichs
Frederick W. Heinrichs - Assistant to the Pres.

Address 808 West Grant Road

Tucson, Arizona 85705

THE FOLLOWING IS NOT TO BE FILLED IN BY APPLICANT

Fee Received _____ Amount _____ Receipt No. _____

Approved for the period of _____ Beginning _____ Expiring _____

Recorded by _____ Approved or Denied by _____ Date _____

If Denied, Cause: _____

Special provisions to be added to permit _____

1973 OCT 24 AM 11 23 7
DEPARTMENT

5-12-61
2-16

P. P. No. _____

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400 Arizona State Office Building
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Subdivision	Section	Township	Range	Acres	County	Grant
All	13	T8S	R9E	640	Pinal	SS18

1. State whether individual, partnership or corporation Corporation

2. If an individual, are you a citizen of the United States? N/A

3. Age N/A Married N/A Single N/A

4. Are there valid mineral locations, claims or leases on this section? _____

NONE KNOWN

(describe and locate on attached plat)

5. Are there any abandoned workings on this section? YES

(describe and locate on attached plat)

6. Will it be necessary to cross other state lands to reach the land under application?
cation? Yes X No _____

7. Are there improvements or crops on the land described in No. 6 above? NO

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Dated this 24th day of October, A.D. 19 73.

Heinrichs GEOEXploration Company, Inc.
(Applicant)

By Fred Heinrichs
Frederick W. Heinrichs-Assistant to the Pres.

Address 808 West Grant Road

Tucson, Arizona 85705

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Recorded by _____ Approved or Denied by _____ Date _____

If Denied, Cause: _____

Special provisions to be added to permit _____

5-12-61
2-16

P. P. No. _____

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STATE LAND DEPARTMENT
400 Arizona State Office Building
Phoenix 7, Arizona

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(Address)

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Subdivision	Section	Township	Range	Acres	County	Grant
ALL	19	T8S	R10E	595.49	PINAL	SX2

1. State whether individual, partnership or corporation CORPORATION

2. If an individual, are you a citizen of the United States? N/A

3. Age N/A Married N/A Single N/A

4. Are there valid mineral locations, claims or leases on this section? NONE KNOWN
(describe and locate on attached plat)

5. Are there any abandoned workings on this section? NO
(describe and locate on attached plat)

6. Will it be necessary to cross other state lands to reach the land under application?
cation? Yes X No _____

7. Are there improvements or crops on the land described in No. 6 above? NO
(describe and locate on attached plat)

8. Are there improvements or crops on the land under application Yes ___ No NO

9. Describe proposed routes of ingress and egress to land under application.

~~BY UNIMPROVED DIRT ROADS, NORTH AND NORTHWEST FROM RED ROCK~~ ROAD.

CERTIFICATION:

I/WE hereby certify under penalty of perjury that the information contained and statements herein made are to the best of (my or our) knowledge and belief true, correct and complete.

Dated this 24th day of October, A.D. 1973.

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(Applicant)

By Fred Heinrichs
Fred W. Heinrichs - Assistant to the President

Address 808 West Grant Road

Tucson, Arizona 85705

THE FOLLOWING IS NOT TO BE FILLED IN BY APPLICANT

Fee Received _____ Amount _____ Receipt No. _____

Approved for the period of _____ Beginning _____ Expiring _____

Recorded by _____ Approved or Denied by _____ Date _____

If Denied, Cause: _____

Special provisions to be added to permit _____

1973 OCT 24 AM 11 23 3
STATE LAND DEPARTMENT

5-12-61
2-16

P. P. No. _____

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400 Arizona State Office Building
Phoenix 7, Arizona

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The State Land Commissioner:

X/We Heinrichs GEOEXploration Company, Inc.
(Name)

of 808 West Grant Road; P.O. Box 5964, Tucson, Arizona 85703
(Address)

do hereby make application for a mineral exploration or prospecting permit on the State lands hereinafter described, in accordance with the provisions of Title 27, Chapter 2, Article 4, Arizona Revised Statutes, such rules and regulations as the Commissioner may prescribe and the terms of the permit.

Subdivision	Section	Township	Range	Acres	County	Grant
ALL	18	T8S	R10E	594.04	PINAL	SX2

1. State whether individual, partnership or corporation CORPORATION

2. If an individual, are you a citizen of the United States? N/A

3. Age N/A Married N/A Single N/A

4. Are there valid mineral locations, claims or leases on this section? _____

NONE KNOWN

(describe and locate on attached plat)

5. Are there any abandoned workings on this section? NO

(describe and locate on attached plat)

6. Will it be necessary to cross other state lands to reach the land under application?
cation? Yes X No _____

7. Are there improvements or crops on the land described in No. 6 above? NO

(describe and locate on attached plat)

8. Are there improvements or crops on the land under application Yes ___ No NO

9. Describe proposed routes of ingress and egress to land under application.

BY UNIMPROVED DIRT ROADS, NORTH AND NORTHWEST FROM RED ROCK ROAD

CERTIFICATION:

I/WE hereby certify under penalty of perjury that the information contained and statements herein made are to the best of (my or our) knowledge and belief true, correct and complete.

Dated this 24th day of October, A.D. 19 73.

Heinrichs GEOEXploration Co. Inc.
(Applicant)

By Fred Heinrichs
Frederick W. Heinrichs - Assistant to the Pres.

Address 808 West Grant Road

Tucson, Arizona 85705

THE FOLLOWING IS NOT TO BE FILLED IN BY APPLICANT

Fee Received _____ Amount _____ Receipt No. _____

Approved for the period of _____ Beginning _____ Expiring _____

Recorded by _____ Approved or Denied by _____ Date _____

If Denied, Cause: _____

Special provisions to be added to permit _____

1973 OCT 24 AM 11 23 4

5-12-61
2-16

S	S	T	R	A	C	G
All	13	T8S	R9E	640	Primal	SS18
All	24	T8S	R9E	"	"	SS18
All	18	T8S	R10E	594.04	"	SX2
All	19	T8S	R10E	595.49	"	SX2

480

SUNDAY
Job No. 877

Bill,

ENCLOSED IS THE FILE ON THE GOLD BELL I.P. PROJECT FOR NAM. SINCE I LOST A DAY AND A half, I AM GOING TO RETURN TO THE OFFICE LATE TUESDAY AFTERNOON OR WEDNESDAY MORNING.

I HAD PLANNED TO GO UP TO LAKESIDE FOR SOME PIEGON SHOOTING AND THAT IS TO MUCH OF A TRIP FOR ONE DAY'S SHOOTING.

WITH THE PRESENT BUDGET OF $2,500.00 WE should obtain prospect permits on SEC 13 & 24 T8S R9E, AND SECTIONS 18 & 19 T8S R10E. Three lines of 1000' DIPOLE could be RUN EW (& 1 N.S.?) along THE ROADS SHOWN IN SECTIONS 13 & 18 AND SECTION 24 & 19 AND ANOTHER ROAD NOT SHOWN ON THE MAP NEAR THE SECTION LINE~~S~~ BETWEEN 19 & 30 AND 24 & 25.

THE APPLICATIONS FOR PROSPECT PERMITS, I THINK, CAN BE FILED by MAIL OR I WILL DO IT PERSONALLY WEDNESDAY. You CAN CALL THE BLM IN PHEONIX 1-261-3706 AND OBTAIN APPLICATIONS IF WE DO NOT HAVE ANY IN OUR FILES.

10/12/73

LAST Entry of Record

T8S R9E Sec 13 - 620 acres James A Woolsey Rejected 4/15/70
(N2; N2SW; SWSW
N2 SESW; SE) P.P. Non Completion.

" Sec 24, 600 Acres; NE; S2 N2NW; S2NW; S2 "

T8S R10E Sec 18 - ASARCO: PP, 297.25 acres; Lots 3-4 E2SW, SE
296.79 " Lot 1-2, E2NW, NE
(Rejected 6/19/68 per request)
" 5/27/68 non completion
Gulf Oil Corp; 594.04 acres Oil Permit 8/11/72 - 5/21/77

" Sec 19 - ASARCO { 297.63 acres - Lot 1-2, E2NW, NE Rejected 6/19/68 per request
297.93 " - Lot 3-4 E2SW, SE " 5/27/68 non completion
Gulf Oil Oil Permit 595.56 acres 8/11/72 - 5/21/77

" Sec 31: ASARCO: 150.63 acres Lot 6, 7, N2SE
" NE 429.75 NE " 145 2NW NESW } Same as above
Gulf 580.35 " " "

Sec 6
T9S, 10E Woolsey 320.81 315.08 } Rejected 4/15/70 non completion

Apparently all open for mineral lease and prospecting.

[signature]

STATE LAND DEPT.

ARE THERE ANY ACTIVE MINERAL LEASES OR PROSPECT PERMITS IN SECTIONS 13 & 24 T 8S R 9E; SECTIONS 18, 19, 31 T 8S R 10E; SEC 6 T 9S R 10E.

BLM.

PICK UP ONE OR MORE COPIES OF A PAMPHLET DESCRIBING SYMBOLS USED ON BLM LAND STATUS TOWNSHIP PLATS.

BLM
WDL MINIMUM ENTRY ACT OF CONGRESS 10/5/62
T 12S R 13E
SECTION 25

4515 N. 7th. Oil & Gas Comm.

N. Central DRPAD 12 ft Fd.

October 2, 1973

Mr. Quincy A. Shaw, President
North American Mines, Inc.
50 Congress Street, Room 920
Boston, Mass. 02109

Dear Mr. Shaw:

In response to your recent inquiries to Walt, I think that now is probably the optimum time to sell the Jeep. It is in good mechanical condition at the present time, but it will shortly need new tires and possibly replacement of the throw-out bearing. This is also the early part of hunting season when 4-wheel drive vehicles are in demand. It appears that the Jeep will probably bring from $1,200 to possibly $1,400.

There is an area at and surrounding the Gold Bell Mine on the eastern flank of the Picacho Mountains that I would like to recommend to you as a potential IP target. The Gold Bell Mine itself is an old copper-gold vein prospect. A quartz vein containing common malachite with some chalcocite was explored by a shaft and a series of trenches. While hunting quail, I made a quick visit to the mine; and traced the main vein a distance of 1,000 feet where it is lost under alluvial cover. Several smaller quartz veins were also observed.

The veins are in Precambrian gneiss which may have been intruded by later monzonite as is the case further north at the North Star Mine. The exploration would be designed to detect a mineralized Tertiary intrusive at depth beneath shallow Precambrian cover and/or concealed on the eastern pediment.

The sections surrounding the mine along the eastern pediment of the mountains are state land on which we would be able to obtain prospect permits. If we applied for ten sections at a cost of $150.00 we would have 45 days in which

to run the IP and interpret the results before any rental payment came due. If an anomalous zone were found we could complete the permit by paying $2.00 an acre and ultimately obtain a state lease.

The timing for such a program is critical, and we would not apply for the permit until we had a crew available in Tucson which would probably be about a month.

Sincerely yours,
Heinrichs GEOEXploration Co.

Wm. Hovey Smith
Senior Geologist

WHS:jh

October 12, 1973

Mr. Q. A. Shaw, President
North American Mines, Inc.
50 Congress Street, Room 920
Boston, Mass. 02109

Dear Quinny:

Walt asked me to drop you a line to tell you that he and I will be in Mexico City while you are visiting Tucson and we are both sorry we will miss you. However, you will be in good hands with Hovey Smith and the rest of the staff.

Hovey asked me to remind you that it gets a bit chilly here in the evenings and early mornings now and if you plan to go for a few quail, he suggests you bring some warm clothes for the early hours.

Best personal regards,

Sincerely,

(Mrs. Walter E. Heinrichs, Jr.)

j

GEOEX

GEOPHYSICAL ENGINEERS
TUCSON, ARIZONA

HEINRICHS GEOEXPLORATION COMPANY

808 WEST GRANT ROAD PH. 623-0578
MAILING ADDRESS: P.O. BOX 5964
TUCSON, ARIZONA 85703
CABLE: GEOEX, TUCSON

91-101
1121

№ 5192

PAY

DATE 10-25-73

AMOUNT $ 67.50

TO THE ORDER OF Hovey Smith

HEINRICHS GEOEXPLORATION COMPANY

NON-NEGOTIABLE

UNION BANK
120 NORTH STONE AVE.
4733 EAST BROADWAY
945 EAST GRANT ROAD
TUCSON, ARIZONA

⑆1121⑈0101⑆ 30⑈4894⑈6⑈

PAYEE: DETACH THIS STATEMENT BEFORE DEPOSITING CHECK

HEINRICHS GEOEXPLORATION COMPANY

DATE	INVOICE NO.	DESCRIPTION	AMOUNT	DISCOUNT OR DEDUCTION	NET AMOUNT
10-25-73		A718 J 877			
Ck #5192					67.50