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I.P. RECEIVER NOTES DEVILS CANYON

PAGE 1

HEINRICHS GEOEXPLORATION CO. PROJECT NORTH

LINE _____ BEARING _____ HALF _____ SP. _____ DATE 2-2-73

SEND I	6000							→	8000	→
RECEIVE	3000'	2500'	2000'	1500'	1000'	750	500	300	200	100
MULT.		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
PFE 1.93		5.6	4.2	~~3.7~~ 3.6	2.8	2.2	2.0	1.3	0.4	0.3
.3		7.0	5.5	4.6	3.7	3.0	2.6	1.8	1.6	0.7
		7.6	5.9	~~5.0~~ 4.6	4.1	3.3	2.8-3.2	2.3		
										1.2 1.5
										0.8 1.5
										1.4 1.6
									0.8 4.0	1.1
								(1.7)	0.8 3.2	(0.9)
									0.8 4.0	
PFE Avg.		12.4	25.6						326	
AC				34.4	49.7	68.2	98.4	220		589
DRIFT				+0.4				+0.2		-0.2
S.P.										
AC NOISE									1.0	
POT RES.								3.0	←	→
		8.08	8.53	8.6	8.28	8.53	8.2	11.0	8.15	7.36

I.P. RECEIVER NOTES

DEVILS CANYON

PAGE 1

HEINRICHS GEOEXPLORATION CO. **PROJECT** NORTH

LINE _____ BEARING _____ **HALF** _____ **SP.** _____ **DATE** _____

SEND FI	6000								8000	
RECEIVE	3000'	2500	2000'	1500'	1000'	750	500	300	200	100
MULT.		1.0	1.0	1.0	1.0	1.0	1.0	1	10	1.0
PFE 1.3		5.6	4.2	3.6	2.8	2.2	2.0	1.3	0.4	0.3
1.3		7.0	5.5	4.6	3.7	3.0	2.6	1.8	1.6	0.7
		7.6	5.9	4.6	4.1	3.3	2.8-3.2	3		
										1.2 1.5
										0.8 1.5
										1.4 1.6
									0.8 4.0	1.1
									0.3 3.2	
									0.0 4.0	
PFE Avg.		11.4	2.26						3.2	
AC				34.4	49.7	68.2	78.4	220		589
DRIFT				10.4				+0.2		-0.2
S.P.										
AC NOISE									1.0	
POT RES.										

I.P. RECEIVER NOTES DEVILS CANYON

PAGE 2

HEINRICHS GEOEXPLORATION CO. PROJECT South

LINE _____ BEARING _____ HALF _____ SP. _____ DATE 2-2-73

SEND	200	300	500	750	1000	1500	2000			CAL
~~RECEIVE~~	6000	→					→		I	
MULT.	10	10	1.0	1.0	1.0	1.0	1.0			
PFE/10	0.9	1.6	1.9	2.4	3.0?	2.5	1.0		1kg	??
0.3	1.4	2.0	2.4	2.8	4.0?	3.4	≈2.8			0.0
0.1	2.1	2.6	2.7	3.4	3.8	≈5.0	≈3.0			0.1
0.5	8.2 -2.6	7.6 -0.2	1.6 6.8		Goofy					-0.1 1.1
	8.3 -2.6	5.6 1.4								-0.1
		4.7 1.6								~~2.5~~
PFE Avg.					41.8					
AC	245	160	90.6	62.9	~~42.2~~	30.5	23.4			299
DRIFT	-	+0.2	-	-						
S.P.										
AC NOISE										
POT RES.	8.17	8.00	7.55	7.86	6.97	7.63	7.80			

I.P. RECEIVER NOTES

Devils Canyon

PAGE 2

HEINRICHS GEOEXPLORATION CO. PROJECT South

LINE _____ BEARING _____ HALF _____ SP. _____ DATE _____

SEND	200	300	500	750	1000	1500	2000			GRZ
RECEIVE	6000						→		I	
MULT.	10	10	1.0	1.0	1.0	1.0	1.0			
PFE	0.9	1.6	1.9	3.4	3.0	5.5	1.0			
0.3	1.4	2.0	2.4	2.8	4.2	3.4	3.8			1.0
0.1	2.1	2.6	2.7	3.4	3.5	5.0				
0.5	8.2-2.6	2.6-2.4	1.6-1.8							
	8.3-2.6	2.8-1.9								
		4.1-2.6								
PFE Avg.					41.8					
AC	245	160	30.6	22.7	42.2	30.5	23.9			
DRIFT		22.2								
S.P.										
AC NOISE										
POT RES.	8.17	8.00	7.55	7.86	6.57	7.63	7.80			

HACKBERRY CANYON

I.P. RECEIVER NOTES

PAGE 1

HEINRICHS GEOEXPLORATION CO. PROJECT DEVILS CANYON

LINE 1 BEARING S HALF S SP. 1 DATE 1-26

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-155	15-305	→	30-455	→	→	45-605	→	→	→
MULT.	1.0	1.0	0.1	1.0	1.0	0.1	1.0	1.0	1.0	0.1
PFE (.1)	0.4	0.6	0.3	0.1	0.4	0.4	-0.2	0.4	0.6	0.6
.3	0.2	0.3	0.2	0.0	0.2	0.3				
.04	1.9 0.2	0.4 2.1		grounded E-W fence				grounded fence E-W		
	2.1 0.4	0.4 1.6		at 4000' south				at approx 5000' south		
		1.2 0.7								
ρa	18.8	2.0183	19	17.3	31	30.4	44	47	61	51
MCF	26	39	21	12	16	17	-2.3	11	11	14
PFE Avg.	0.5	0.7	0.4	0.2	0.5	0.5	-0.1	0.5	0.7	0.7
AC	36.8	35.9	9.18	34.0	15.2	5.96	86.0	230	12.0	5.03
DRIFT	-0.1	-	-	-	-0.1	-				
S.P.										
AC NOISE	4.5	4.5	18	4.5	18	45	4.5	18	45	90
POT RES.	9000									

HACKBERRY CANYON

I.P. RECEIVER NOTES

PAGE 1

HEINRICHS GEOEXPLORATION CO. **PROJECT** DEVILS CANYON

LINE 1 BEARING S **HALF** S **SP.** 1 **DATE** [illegible]

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-15s	15-30s →		30-45s	→		45-60s			
MULT.	1.0	1.0	0.1	0	1.0	0.1	1.0	1.0	1.0	0.1
PFE	0.4	0.6	0.3	0.1	0.4	0.4	-0.2	0.4	0.6	0.6
.3	0.2	0.3	0.2	0.0	0.2	0.3				
.05	1.9 0.2	0.4 2.1		grounded E-W lance				grounded	[illegible]	
	2.1 0.4	0.4 1.6		at 4000' south				at approx	5000	
	—	1.4 0.7								
ρ_a	18.8	2.0 18.3	19	17.3	31	30.4	44	47	61	51
MCF	26	39	21	12	16	17	-2.3	11	11	14
PFE Avg.	0.5	0.7	0.4	0.2	0.5	0.5	-0.1	0.5	0.7	0.7
AC	36.8	35.9	9.18	34.0	15.2	5.96	86.0	23.0	[illegible]	5.03
DRIFT	-0.1	-	-	-	-0.1	-				
S.P.										
AC NOISE	4.5	4.5	10	4.5	15	4.5	4.5	15	4.5	50
POT RES.	[illegible]									

I.P. RECEIVER NOTES

HEINRICHS GEOEXPLORATION CO. **PROJECT** DEVILS CANYON

LINE 1 BEARING S **HALF** S **SP.** 1 **DATE** 1-26

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3
RECEIVE	60-75S	→	→	→	75-90S	→	→	→	90-105S	→
MULT.	1.0	1.0	1.0	0.1	1.0	1.0	1.0	0.1	0.1	0.1
PFE 0.1	0.3	0.6	0.6	0.6	0.8	1.2	1.4	1.1	1.7	1.6?
0.3						0.6	0.5	0.6	0.7?	
	line bent ≈7° west of south at									
	this station.									
P_a	93	122	139	108	192	229	243	181	62	85
MCF	4.3	5.7	5.0	6.5	4.7	5.7	6.2	6.6	29	20
PFE Avg.	0.4	0.7	0.7	0.7	0.9	1.3 1.5	1.5 2.1	1.2 1.3	1.8 2.3	1.7
AC	45.4	23.9	13.6	6.06	37.6	22.4	13.6	6.33	6.12	4.76
DRIFT	–	–	–	–	checked a.s.	–	↗ –	–	–	–
S.P.	+19.8									
Ki AC NOISE	18	45	90	157.5	45	90	157.5	252	90	157.5
I POT RES.	9000	→	→	→	→	→	→	→	→	→

I.P. RECEIVER NOTES

PAGE 2

HEINRICHS GEOEXPLORATION CO. **PROJECT** DEVILS CANYON

LINE 1 BEARING S **HALF** S **SP.** 1 **DATE** 1-26

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3
RECEIVE	60-75S	—	—	—	75-90S	—	—	—	90-105S	—
MULT.	1.0	1.0	1.0	0.1	1.0	1.0	1.0	0.1	0.1	0.1
PFE 0.1	0.3	0.6	0.6	0.6	0.8	1.2	1.4	1.1	1.7	1.6?
2-3						0.6	0.5	0.6	0.7	
	line bent ≈ 7° west of width of									
	this section									
Pa	93	122	139	108	192	229	243	181	62	85
MCF	4.3	5.7	5.0	6.5	4.7	5.7	6.2	6.6	29	20
PFE Avg.	0.4	0.7	0.7	0.7	0.9	1.3	1.5	1.2	1.8	1.7
AC	45.4	23.3	13.6	6.06	37.6	22.4	13.6	6.33	6.12	4.76
DRIFT	—	—	—	—	—	—	—	—	—	—
S.P.	+19.3									
AC NOISE	18	45	90	157.5	[illegible]	90	157.5	[illegible]	90	157
POT RES.	90.3									

I.P. RECEIVER NOTES

PAGE 3

HEINRICHS GEOEXPLORATION CO. **PROJECT** DEVILS CANYON

LINE 1 BEARING S **HALF** S **SP.** 1 **DATE** 1-26

SEND	3-4			CAL						
RECEIVE	90-1055			4-5	4-5					
MULT.	0.1									
PFE .1	≈2-2.5									
.3				0.0	-0.1					
				+0.3	00					
.05				0.2 1.4	-0.2 1.0					
	noise			0.2 1.4	-0.2 1.0					
	.05-.08									
Pa	95									
	23									
PFE Avg.	2.2									
AC	3.32			292	294					
DRIFT										
S.P.										
AC NOISE	252									
POT RES.	9000									

I.P. RECEIVER NOTES

PAGE

HEINRICHS GEOEXPLORATION CO.

PROJECT DEVILS CANYON

LINE 1 BEARING S

HALF S SP. 1 DATE

SEND	3-4			CAL						
RECEIVE	30-1055			4-5	4-5					
MULT.	0.1									
PFE .1	2.2-2.5									
.3				0.0, 0.1	0.1					
				+0.3	0.0					
.05				0.2-1.4	-0.2 1.0					
	noise			0.2/1.4	-0.2 1.0					
	.05-.08									
Pa	95									
	23									
PFE Avg.	2.2									
AC	3.32			2.92	2.94					
DRIFT										
S.P.										
AC NOISE	25									
POT RES.	2000									

I.P. RECEIVER NOTES

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HEINRICHS GEOEXPLORATION CO. **PROJECT** DEVILS CANYON

LINE 1 BEARING ≈N **HALF** N **SP.** 1 **DATE** 1-29

SEND	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
RECEIVE	30-45N	→	→	45-60N	→	→	→	60-75N	→	→
MULT.	1.0	1.0	0.1	1.0	1.0	0.1	0.1	0.1	0.1	0.1
PFE 0.1	0.6	0.9	1.2	0.6	0.9	1.1	1.3	0.8	1.2	1.2
0.3			0.6				0.8		0.8	
ρ_a	17	22	20	15	21	31	26	17	25	31
MCE	41	45	65	47	48	39	54	53	52	42
PFE Avg.	0.7	1.0	1.3 1.5	0.7	1.0	1.2	1.4 1.3	0.9	1.3 1.0	1.3
AC	32.9	10.6	3.99	30.2	10.3	6.06	2.57	8.53	4.81	3.06
DRIFT	–	–	–	–	–	–	–	–	–	–
S.P.										
AC NOISE	4.5	18	45	1.5	18	45	90	18	45	90
POT RES.	9000	→	→	→	→	→	→	→	→	→

I.P. RECEIVER NOTES

PAGE 4

HEINRICHS GEOEXPLORATION CO.

PROJECT DEVILS CANYON

LINE 1 BEARING EN HALF N SP. 1 DATE 1-23

SEND	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
RECEIVE	30-45N	—	—	45-60N	—			60-75N		
MULT.	1.0	1.0	0.1	1.0	1.0	0.1	0.1	0.1	0.1	0.1
PFE 0.1	0.6	0.9	1.2	0.6	0.9	1.1	1.3	0.8	1.2	1.2
0.3			0.6				0.8		0.8	
ρ_a	17	22	20	15	21	31	26	17	25	31
MCF	41	45	65	47	48	39	54	53	52	42
PFE Avg.	0.7	1.0	1.3	0.7	1.0	1.2	1.4	0.9	1.3	1.2
AC	32.9	10.6	3.99	30.2	10.3	6.06	2.57	8.53	4.81	3.06
DRIFT	—	—	—	—	—	—	—	—	—	—
S.P.										
AC NOISE	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
POT RES.	2000									

I.P. RECEIVER NOTES

HEINRICHS GEOEXPLORATION CO. PROJECT DEVILS CANYON

LINE 1 BEARING N HALF N SP. 1 DATE 1-29

SEND	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3		
RECEIVE	60-75N	75-90N	→	→	→	90-105N	→	→		
MULT.	0.1	0.1	0.1	0.1	0.01	0.1	0.1	0.01		
PFE 0.1	1.2	1.3	1.6	1.7	1.6	1.7 ?	2.8	2.5	??	
0.3			1.0		–		1.9	1.8		
					generator about to pack up					
P_G	23	20	28	32	23	14	22	26		
MCF	57	70	61	56	74	129	132	100		
PFE Avg.	1.3	1.4	1.75	1.8	1.7	1.8	2.9	2.6		
AC	1.31	3.88	2.70	1.80	0.801	1.42	1.25	0.902		
DRIFT	–	–	–	–	–	–	–			
S.P.										
Kh AC NOISE	157.5	45	90	157.5	252	90	157.5	252		
I POT RES.	9000									

I.P. RECEIVER NOTES

PAGE

HEINRICHS GEOEXPLORATION CO.

PROJECT DEVILS CANYON

LINE 1 BEARING N

HALF N SP. DATE 1-27

SEND	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3		
RECEIVE	60-75N	75-90N			→	90-105N				
MULT.	0.1	0.1	0.1	0.1	0.01	0.1	0.1	0.01		
PFE	1.2	1.3	1.6	1.7	1.6	1.7	2.8	[illegible]		
			1.0		–		1.3	1.8		
					generator about to peak up					
	23	20	28	32	23	14	22	26		
MCF	57	70	61	56	74	129	132	100		
PFE Avg.	1.3	1.4	1.7	1.8	1.7	1.8	2.3	2.2		
AC	1.31	3.88	2.70	1.60	0.801	1.42	1.25	0.702		
DRIFT	–	–	–	–	–	–	–			
S.P.										
AC NOISE	[illegible]		20	157.5	252	28	157.5	–		
POT RES.	[illegible]									

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PAGE 1

PROJECT Devils Canyon

LINE 1 HALF S SP. 1 DATE 1-26 1-29

SEND		3-4	4-5	*2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-15S	15-30S	→	30-45S	→	→	45-60S	→	→	→
RANGE		30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300
VOLTAGE		270	400	280	270	390	320	260	280	400
CURRENT		9000	9000	9000	9000	9000	9000	9000	9000	9000

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3
RECEIVE	60-75S	→	→	→	75-90S	→	→	→	90-105S	→
RANGE	30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300
VOLTAGE	340	280	280	400	340	260	280	400	340	260
CURRENT	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000

FREQUENCIES	.1 1.0 .3 3.0
SENDER NO.	8661-S
OPERATOR	UPIlAM
RECEIVER NO.	25705 R
OPERATOR	Matthews

COMMENTS: * 30X200

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PAGE 1

PROJECT Devil's Canyon

LINE 1 HALF S SP. 1 DATE 1-29 1-26

SEND		3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-15S	15-30S	→	30-45S	→	→	45-60S			
RANGE		30X300	30X300	30X300	30X300	30X300	30X300	30X300	20X300	30X300
VOLTAGE		270	400	280	270	390	320	260	280	400
CURRENT		9000	9000	9000	9000	9000	9000	9000	9000	9000
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3
RECEIVE	60-75S	→	→	→	75-90S	→	→	→	90-105S	→
RANGE	30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300
VOLTAGE	340	280	280	400	340	260	280	400	340	260
CURRENT	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000

FREQUENCIES .1 1.0 3 3.0

SENDER NO. 8661 S

OPERATOR William

RECEIVER NO. 25 A 5 F

OPERATOR Matthews

COMMENTS: * 30X200

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Devils Canyon

LINE 1 HALF 5 SP. 1 DATE 24 JAN

PAGE 2

SEND	3-4									
RECEIVE	90-105S									
RANGE	30x300									
VOLTAGE	270									
CURRENT	9000									
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 3.0 .3 .1 1.0

SENDER NO. 8661-5

OPERATOR UPHAM

RECEIVER NO. 25705 R

OPERATOR ~~Upte~~ Matthews

COMMENTS:

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Devils Canyon

LINE ____ HALF ____ SP. ____ DATE ____

PAGE 2

SEND	3-4										
RECEIVE	10-105 S										
RANGE	50x300										
VOLTAGE	270										
CURRENT	9000										
SEND											
RECEIVE											
RANGE											
VOLTAGE											
CURRENT											

FREQUENCIES 2.5 2.10

SENDER NO. [illegible]

OPERATOR [illegible]

RECEIVER NO. [illegible]

OPERATOR [illegible]

COMMENTS:

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Devils Creek

LINE 1 HALF N SP. 1 DATE 29 JM

PAGE 1

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4
RECEIVE	cal	30-45N	→	→	45-60N	→	→	→	60-75N	→
RANGE	30X100	30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300
VOLTAGE	110	260	260	340	400	280	260	340	400	280
CURRENT	3000	9000	9000	9000	9000	9000	9000	9000	9000	9000
SEND	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3	
RECEIVE	→	→	75-90N	→	→	→	90-105N	→	→	
RANGE	30X300	30X300	30X300	30X300	30X300	30X300	30X300	3X300	3X300	
VOLTAGE	260	340	400	280	260	340	400	280	260	
CURRENT	9000	9000	9000	9000	9000	9000	9000	9000	9000	

FREQUENCIES 3.0, 3 1.0.1

SENDER NO. 8661-S

OPERATOR UPHAM

RECEIVER NO. 25705R

OPERATOR Matthews

COMMENTS:

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Devils Creek

LINE ____ HALF ____ SP. ____ DATE ____

PAGE

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4
RECEIVE	cal	30-45N	→	→	45-60N	—	—	→	60-75N	—
RANGE	30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300	30X300
VOLTAGE	110	260	260	340	400	280	260	340	400	280
CURRENT	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000
SEND	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3	
RECEIVE	—	→	75-90N	—	—	→	90-105N	—	—	
RANGE	30X300	30X300	30X300	30X300	30X300	30X300	30X300	3X300	3X300	
VOLTAGE	260	340	400	280	260	340	400	280	260	
CURRENT	9000	9000	9000	9000	9000	9000	9000	9000	9000	

FREQUENCIES 3.3 / 0.1

SENDER NO. [illegible]

OPERATOR [illegible]

RECEIVER NO. [illegible]

OPERATOR [illegible]

COMMENTS:

I.P. RECEIVER NOTES

PAGE 1

HEINRICHS GEOEXPLORATION CO. PROJECT Oak Canyon

LINE 3 BEARING N HALF N SP. 1 DATE 2-5-73

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-15N	15-30N	→	30-45N	→	→	45-60N	→	→	→
MULT.	1.0	1.0	1.0	1.0	1.0	0.1	1.0	1.0	0.1	0.1
PFE 0.3	0.3	0.4	0.4	0.3	0.6	0.6	0.3	0.5	1.2	0.6
0.1	0.5	0.7	0.7	0.5	0.9	0.7	0.7	0.7	1.4	0.9
0.5-0.1 x2	0.2	0.4	0.2	0.2	0.4	0.0	0.6	0.2	0.2	0.4
ρ_a	21	18	26	16	24	22	29	21	24	24
MCF	19	33	23	25	33	27	21	29	54	33
PFE Avg.	0.4	0.6	0.6	0.4	0.8	0.6	0.6	0.6	1.3	0.8
AC	40.7	35.2	12.6	31.1	11.9	4.30	51.2	10.3	468	2.36
DRIFT	—	—	—	—	—	—	—	—	—	—
S.P.		-15.7	→	+7.4		→	+3.8			—
AC NOISE	4.5	4.5	18	4.5	18	45	4.5	18	45	90
I POT RES.	9	9	9	9	9	9	8	9	9	9

I.P. RECEIVER NOTES

PAGE

HEINRICHS GEOEXPLORATION CO. PROJECT

LINE 3 BEARING N HALF N SP. DATE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-15N	15-30N	→	30-45N	→	→	45-CON	→	→	→
MULT.	1.0	1.0	1.0	1.0	1.0	0.1	1.0	1.0	0.1	0.1
PFE 0.3	0.3	0.4	0.4	0.3	0.6	0.6	0.3	0.5	1.2	0.6
0.1	0.5	0.7	0.7	0.5	0.9	0.7	0.7	0.7	1.4	0.9
ρ	21	18	26	16	24	22	29	21	24	24
MCF	19	33	23	25	33	27	21	29	54	33
PFE Avg.	0.4	0.6	0.6	0.4	0.8	0.6	0.6	0.6	1.3	0.8
AC	40.7	35.2	12.6	31.1	11.9	4.30	51.2	10.3	4.8	2.36
DRIFT	—	—	—	—	—	—	—	—	—	—
S.P.		15.7	→	+7.4		→	+3.8			
AC NOISE	4	4	14	4	18	45	4	13	5	5
POT RES.	2	2	2	2	7	2	5	2	2	7

I.P. RECEIVER NOTES

PAGE 2

HEINRICHS GEOEXPLORATION CO. PROJECT Ome Canyon

LINE 3 BEARING N HALF N SP. 1 DATE 2-5

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4
RECEIVE	60-75N			→	75-90N			→	90-105N	
MULT.	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.01	0.01	0.01
PFE 0.3	0.8	0.8	1.4?	1.2?	1.1	1.1	1.8??	1.6?		
5.1	1.2	1.2	1.6?	1-1.6?	1.4	1-2	2.2??	2.4??		
	0.6	0.6	0.2	0.2	0.4	0.6	0.6?	1.5?		
ρ_a	20	19	25	21	19	19	24	19	15	15
MCF	55	58	60	67	68	79	75	121	—	—
PFE Avg.	1.1	1.1	1.5	1.42	1.3	1.5	1.8	2.3	—	—
AC	3.91	3.82	2.45	1.18	3.26	1.83	1.37	0.675	0.924	0.857
DRIFT	—	—	—	—	—	—	—	—		
S.P.	+11.8			→	+8.6			→		
AC NOISE	18	45	90	157.5	45	90	157.5	252	90	157.5
POT RES.	8	9	9	9	8	9	9	9	8	9

I.P. RECEIVER NOTES

PAGE 2

HEINRICHS GEOEXPLORATION CO. **PROJECT** Oak Canyon

LINE 3 BEARING N **HALF** N **SP.** 1 **DATE** 2-5

SEND	4-5	3-1	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4
RECEIVE	60-75N	→	→	→	75-90N	→	→	→	90-105N	→
MULT.	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.01	0.01	0.01
PFE 0.3	0.8	0.8	1.4?	1.2?	1.1	1.1	1.8??	1.6?	/	/
0.1	1.2	1.2	1.6?	1-1.6?	1.4	1-2	2.2??	2.42?	/	/
ρ_a	20	19	25	21	18	19	24	19	15	15
MCF	55	58	60	67	68	77	75	121	—	—
PFE Avg.	1.1	1.1	1.5	1.42	1.3	1.5	1.8	2.3	—	—
AC	EE 8.91	3.82	2.45	1.18	3.26	1.83	1.37	0.675	0.934	0.857
DRIFT	—	—	—	—	—	—	—	—		
S.P.	+11.8	→	→	→	+86	→	→	→		
AC NOISE	18	45	90	157	45	90	157	252	[illegible]	[illegible]
POT RES.	8	9	9	9	8	9	9	9	8	9

I.P. RECEIVER NOTES

PAGE 3

HEINRICHS GEOEXPLORATION CO. PROJECT Oak Canyon

LINE 3 BEARING N HALF N SP. 1 DATE 2-5-73

SEND	2-3			CH-							
RECEIVE	90-105			3 4							
MULT.	0.01										
PFE 0.3				0.0							
0.1				+0.1							
ℓ_2	11										
MCF	–										
PFE Avg.	—										
AC	0.375			286							
DRIFT											
S.P.											
AC NOISE	252										
POT RES.	9										

I.P. RECEIVER NOTES

PAGE 3

HEINRICHS GEOEXPLORATION CO. PROJECT Oak Control

LINE 3 BEARING N HALF N SP. 1 DATE [illegible]

SEND	2-3			CHL						
RECEIVE	20-100			3-4						
MULT.	0.01									
PFE 0.3				0.0						
0.1				+0.1						
ρ_a	11									
MCF	—									
PFE Avg.	—									
AC	0.375			2.86						
DRIFT										
S.P.										
AC-NOISE	252									
POT RES.	9									

I.P. RECEIVER NOTES

PAGE 4

HEINRICHS GEOEXPLORATION CO. PROJECT Oak Canyon

LINE 3 BEARING S HALF S SP. 1 DATE 2-6-75

SEND	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
RECEIVE	30-45S	→	→	45-60S	→	→	→	60-75S	→	→
MULT.	1.0	1.0	0.1	1.0	1.0	1.0	0.1	1.0	1.0	1.0
PFE 0.3	0.2	0.7	1.4	0.3	0.1	0.6	1.2	0.4	0.9	1.2
0.1	1.1	1.9	1.6	0.7	0.6	0.8	1.4	0.6	1.3	2.0?24
	1.6?	2.5?	0.2	0.6	0.8	0.2	0.2	0.2	0.6	1.9
Pa	17	29	26	39	63	78	65	103	126	142
MCF	59	62	58	15	7.9	9.0	20	4.9	9.5	15
PFE Avg.	1.0	1.8	1.5	0.6	0.5	0.7	1.3	0.5	1.2	2.1
AC	34.2	14.2	4.54	76.8	31.3	15.4	5.72	50.7	24.8	14.0
DRIFT	—	-0.2	—	—	—	—	—	—	—	—
S.P.	-22.1	→	→	+5.0	→	→	→	+25	→	→
AC NOISE	4.5	18	45	4.5 on lime stone 18		45	90	18	45	90
POT RES.	9	9	8	9	9	9	8	9	9	9

I.P. RECEIVER NOTES

PAGE 4

HEINRICHS GEOEXPLORATION CO. **PROJECT** Oak Canyon

LINE 3 BEARING S **HALF** S **SP.** 1 **DATE** 2-6-7

SEND	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
RECEIVE	30-45S	→	→	45-60S	→	→	→	60-75S	→	→
MULT.	1.0	1.0	0.1	1.0	1.0	1.0	0.1	1.0	1.0	1.0
PFE 0.2	0.2	0.7	1.4	0.3	0.1	0.6	1.2	0.4	0.9	1.2
0.1	1.1	1.9	1.6	0.7	0.6	0.8	1.4	0.6	1.3	2.0 [illegible]
Pa	17	29	26	39	63	78	65	103	126	142
MCE	59	62	58	15	7.9	9.0	20	4.9	9.5	15
PFE Avg.	1.0	1.8	1.5	0.6	0.5	0.7	1.3	0.5	1.2	2.1
AC	34.2	14.2	4.54	76.8	31.3	15.4	5.72	50.7	24.8	14.6
DRIFT	-	-0.2	-	-	-	-	-	-	-	-
S.P.	-22.1	→	→	+50	→	→	→	+25	→	→
AC NOISE	45	18	45	[illegible]	18	45	[illegible]	10	45	[illegible]
POT RES.	9	9	8	9	9	9	8	9	9	9

I.P. RECEIVER NOTES

PAGE 2-5

HEINRICHS GEOEXPLORATION CO. **PROJECT** Oak Canyon

LINE 3 BEARING S **HALF** S **SP.** 1 **DATE** 2-8-72

SEND	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4		
RECEIVE	60-75	75-90	→	→	→	90-105	→	→		
MULT.	0.1	1.0	1.0	0.1	0.1	1.0	0.1	0.1		
PFE .3	1.0?	0.6?	1.0?	0.8?	1.4?	0.0	0.6	0.4	grounded	fence
.1	/	1.4?	1.4?	1.2?	2.6	0.0	0.8	/	at ≈	3800'
					maybe				North	Mes North
			1.5?	0.6?	2.3	—	0.2	—		
				noise	95		noise			
				1.0 =	.02 - 0.2		1.0 =	0.02 - 0.04		
				0.3 =	.05 - 0.12		0.3 =	0.03 - 0.05		
Pa	97	107	116	0.1 123	.06 - 0.3	144	0.1 = 137	0.05 - 0.	149	
MCF	—	12	11	8.9	26	0.69	5.1	pulled wire at	—	
PFE Avg.	~~0.9~~	0.3	1.3	1.1	2.5	-0.1?	0.7	—		
AC	5.49	21.1	11.4	6.92	2.98	14.2	7.72	5.25		
DRIFT	—	—	—	—	—	—	—	—		
S.P.	→	+00.4				+2.3				
AC NOISE	157.5	45	90	157.5	252	90	157.5	252		
POT RES.	8	9	9	9	82	9	9	9		

I.P. RECEIVER NOTES

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HEINRICHS GEOEXPLORATION CO. **PROJECT** Oak Canyon

LINE 3 BEARING S **HALF** S **SP.** 1 **DATE** 2-Feb

SEND	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4		
RECEIVE	60-75S	75-90S	→	→	→	90-105S	→	→		
MULT.	0.1	1.0	1.0	0.1	0.1	1.0	0.1	0.1		
PFE .3	1.02	0.6?	1.0?	0.8?	1.4?	0.0	0.6	0.4	grounded	from
.1	/	1.4?	1.4?	1.2?	2.6	0.0	0.8	/	at 8	3800'
					maybe				North	[illegible]
				noise	95		noise			
				1.0 =	.02-0.2		1.0 =	0.8-0.04		
				0.3 =	.05-0.12		0.3 =	.08-0.05		
Pa	97	107	116	0.1 12.3	.06-0.3	144	0.1 = 137	0.05-0.	149	
MCF		12	11	8.9	26	0.69	5.1	pulled	wire at	—
PFE Avg.	~~0.9~~	0.3	1.2	1.1	2.5	-0.12	0.7	—		
AC	5.49	21.1	11.4	6.72	2.98	14.2	7.72	5.25		
DRIFT	—	—	—	—		—	—	—		
S.P.		60.4	—			12.3				
AC NOISE	157.5	4.5	90	157.5	252	90	157.5	252		
POT RES.	8	9	9	9	8.8	9	9	9		

$V = \frac{1}{R}$ Col: 30 AMPS : 40 Volts
30 X 100

PAGE 1

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Devils Canyon

LINE 3 HALF N SP. 1 DATE 2-4-73

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-15N	15-30N	→	30-45N	→	→	45-60N	→	→	→
RANGE	30 X 300	30 X 300	30 X 300	30 X 300	30 X 300	30 X 300	30 X 266.6	30 X 300	30 X 300	30 X 300
VOLTAGE	60	~~80~~ 75	60	220 V	80 V	60 V	220 V	220 V	80 V	60 V
CURRENT	9 AMPS	9 AMPS	9 AMPS	9 AS	9 AS	9 AS	8 AS	9 AS	9 AS	9 AS
SEND	4-5	3-4	2-3	~~4-5~~	~~3-4~~	1-2	4-5	3-4	2-3	1-2
RECEIVE	60-85N	→	→	~~100-115N~~	~~→~~	→	115-130	→	→	→
RANGE	30 X 266.6	30 X 300	30 X 300			30 X 300	30 X 266.6	30 X 300	30 X 300	30 X 300
VOLTAGE	320 V	220 V	80 V			60 V	300 V	220 V	100 V	80 V
CURRENT	8 AS	9 AS	9 AS			9 AS	8 AS	9 AS	9 AS	9 AS

FREQUENCIES 1 - .3 - .1

SENDER NO. 866 153

OPERATOR MJM

RECEIVER NO.

OPERATOR ~~MJM~~ JPM

COMMENTS: 1-2 30 x 300 = 9 AMPS
2-3 " " "
3-4 " " "
4-5 - 30 x 266.6 = 8 AMPS

Col: 3 AMPS : 4000 LBS
30 X 100

PAGE 1

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Devil Canyon

LINE 3 HALF D SP. 1 DATE [illegible]

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-15N	15-30N	→	30-45N	→	→	45-60N	→	→	→
RANGE	30 X 300	30 X 300	30 X 300	30 X 300	30 X 300	30 X 300	30 X 266.6	30 X 300	30 X 300	[illegible]
VOLTAGE	60	75	60	220 V	80 V	60 V	220 V	220 V	80 V	60 V
CURRENT	9 AMPS	9 AMPS	9 AMPS	9 AS	9 AS	9 AS	8 AS	9 AS	9 AS	9 AS
SEND	4-5	3-4	2-3	2-5	3-4	1-2	4-5	3-4	2-3	1-2
RECEIVE	60-85N	→	→	100-[illegible]	→	→	115-130	→	→	→
RANGE	30 X 266.6	30 X 300	30 X 300			30 X 300	30 X 266.6	30 X 300	30 X 300	30 X 300
VOLTAGE	220 V	220 V	80 V			60 V	300 V	220 V	100 V	80 V
CURRENT	8 AS	9 AS	9 AS			9 AS	8 AS	9 AS	9 AS	9 AS

FREQUENCIES 1 - .3 - .1

SENDER NO. 866 158

OPERATOR MJH

RECEIVER NO.

OPERATOR ~~MJH~~ JRM

COMMENTS: 1-2 30 X 300 = 9 AMPS
2-3 " " "
3-4 " " "
4-5 30 X 266.6 = 8 AMPS

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PAGE 2

PROJECT Devils Canyon

LINE 3 HALF N SP. 1 DATE 2-5-73

SEND	4-5	3-4	2-3	1-2						
RECEIVE	130-145	→	→	→						
RANGE	30X266.6	30X300	30X300							
VOLTAGE	300	200	100							
CURRENT	8A S	9A S	9A S							
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 , 3.1

SENDER NO. 866 1-5

OPERATOR MJM

RECEIVER NO.

OPERATOR JPM

COMMENTS: 1-2 30X300 at 9 AMPS
2-3 " " "
3-4 " " "
4-5 30X266.2 at 8 AMPS

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Devils Canyon

LINE 3 HALF U SP. 1 DATE 2-5-93

PAGE 2

SEND	4-5	3-4	2-3	1-2						
RECEIVE	130-145	→	→	→						
RANGE	30X266.6	30X300	30X300							
VOLTAGE	300	200	100							
CURRENT	8AS	9AS	9AS							
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 3.1

SENDER NO. 8606 1-5

OPERATOR MJM

RECEIVER NO.

OPERATOR JPM

COMMENTS: 1-2 30X300 at 9 AMPS
3-3 " " "
3-4 " " "
4-5 30X266.2 at 8 AMPS

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT DEVILS CANYON (OAK CREEK)

LINE 3 HALF S SP. 1 DATE 2/5/73

PAGE 3

SEND	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
RECEIVE	30-45S	———	——→	45-60S	———	———	——→	60-75S	———	———
RANGE	30X300	30X300	30X266.6	30X300	30X300	30X300	30X266.6	30X300	30X300	30X300
VOLTAGE	80	200	300	70	80	200	300	70	80	210
CURRENT	9 amps	9 amps	8 amps	9 amps	9 amps	9 amps	8 amps	9 amps	9 amps	9 amps
SEND	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4		
RECEIVE	——→	75-90S	———	———	——→	90-105S	———	——→		
RANGE	30X266.6	30X300	30X300	30X300	30X266.6	30X300	30X300	30X300		
VOLTAGE	310	60	80	210	310	60	80	210		
CURRENT	8 amps	9 amps	9 amps	9 amps	8 amps	9 amps	9 amps	9 amps		

FREQUENCIES 1. 0.3 0.1

SENDER NO. 8661-S

OPERATOR A.V.M.

RECEIVER NO.

OPERATOR J.P.M.

COMMENTS:

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT DEVILS CANYON [illegible]

LINE 3 HALF 5 SP. 1 DATE [illegible]

PAGE 3

SEND	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
RECEIVE	20-45S	→	→	45-60S			→	60-75S		
RANGE	30X300	30X300	30X266.6	30X300	30X300	30X300	30X266.6	30X300	30X300	30X300
VOLTAGE	80	200	300	70	80	200	300	70	80	210
CURRENT	9 amps	9 amps	8 amps	9 amps	9 amps	9 amps	8 amps	9 amps	9 amps	9 amps
SEND	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4		
RECEIVE	→	75-90S			→	90-105S		→		
RANGE	30X266.6	30X300	30X300	30X300	30X266.6	30X300	30X300	30X300		
VOLTAGE	310	60	80	210	310	60	80	210		
CURRENT	8 amps	9 amps	9 amps	9 amps	8 amps	9 amps	9 amps	9 amps		

FREQUENCIES 1 0.3 0.1

SENDER NO. 8661-S

OPERATOR A.V.M.

RECEIVER NO.

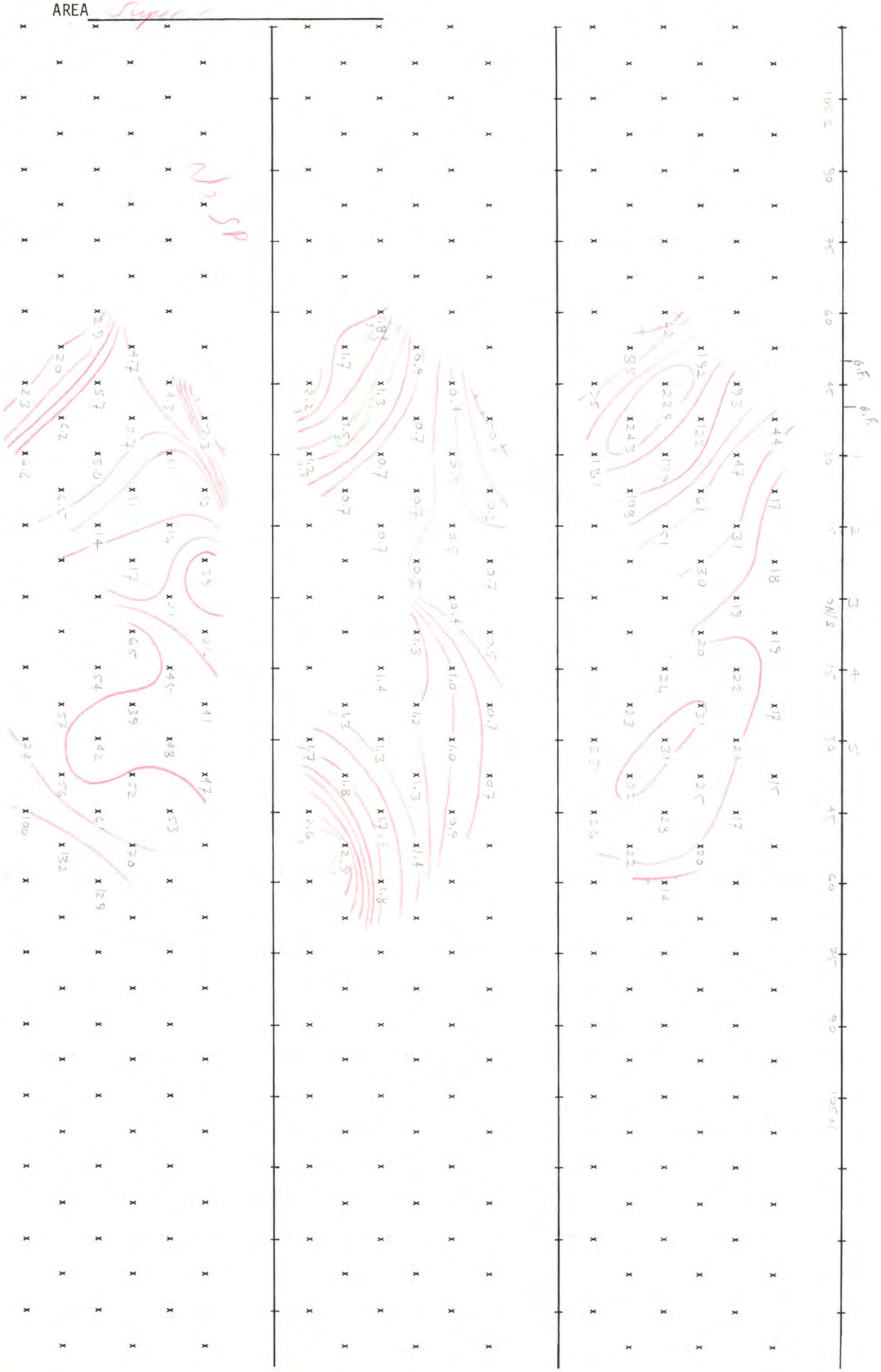
OPERATOR J.P.M.

COMMENTS:

JOB# 796 LINE# 1 SP 1 a = 1500 LOOKING WEST

CLIENT MARY JOE PROPERTIES DATE 6-26-73 FREQUENCIES 1.0 & 0.1 Hz

AREA

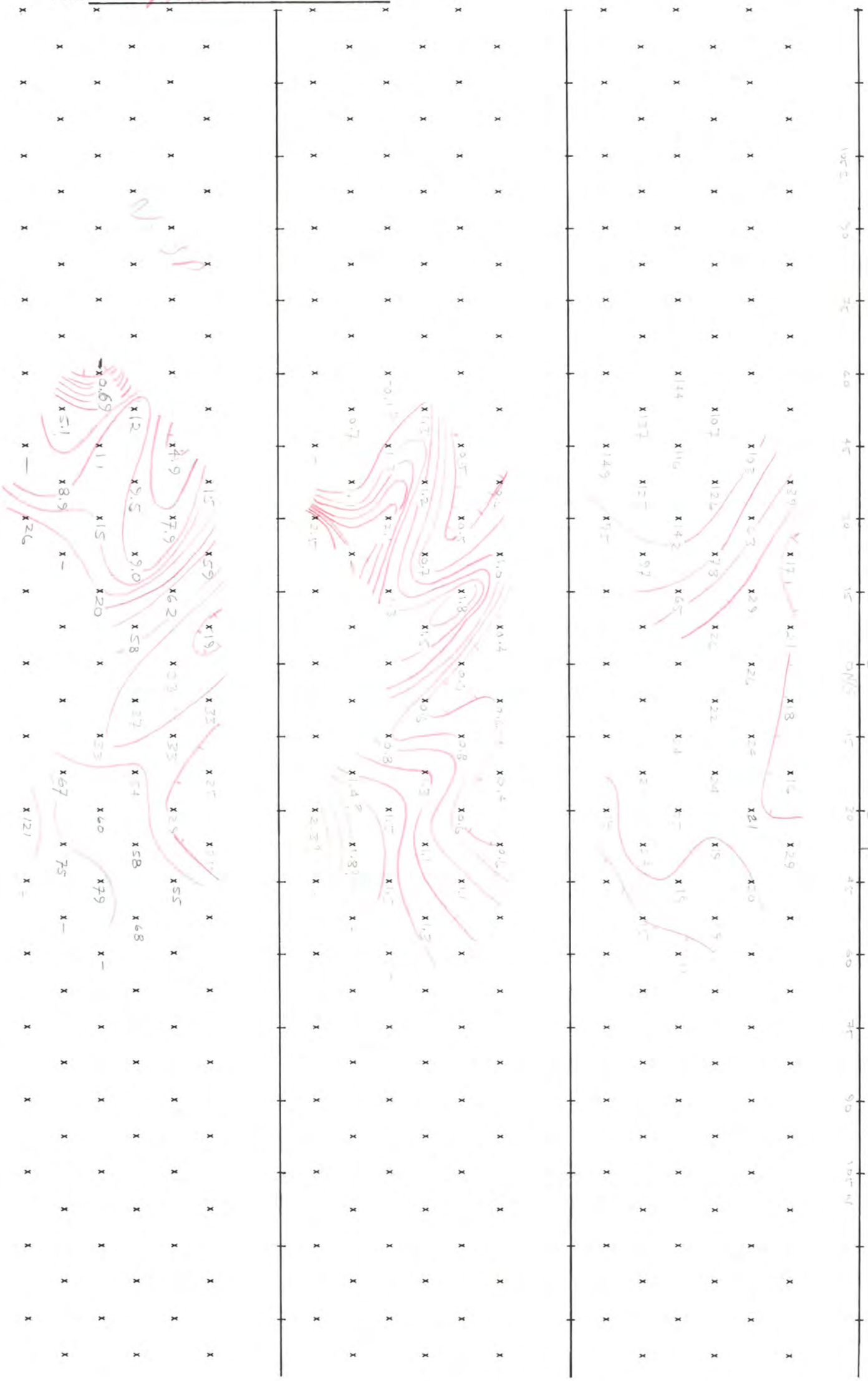


Bearing N-S

JOB# 796 LINE# 3 SP 1 a = 1500' LOOKING WEST

CLIENT MARY JOE PROPERTIES DATE [illegible] FREQUENCIES 1.0 Hz & 0.1 Hz

AREA Superior



Job # 796

2/10/73

Pole - Pole Expander Devils Canyon

$\rho_a/2\pi = a\frac{V}{I}$

I = 6000ma except 8000 ma

North Leg

a	V(mv) @ 3.0 hz	$PFE_{3.0-0.1}$	$\rho_{0.1}/2\pi$	Plot $PFE_{1-0.1}$		$2.096 \times PFE_{0.3-0.1}$	PFE Plot	Norm 0.3-0.1 hz avg PFE
100	589	0.7	7.4	0.4	(0.4)	0.8?	0.4	0.4
200	326	1.5	8.3	1.5	(0.8)	2.3?	0.8	1.1
300	220	2.1	11.2	0.9		0.6	0.6	0.7
500	98.4	2.9	8.4	0.9		0.6	0.6	0.7
750	68.2	3.2	8.8	1.0		0.4	0.4	0.7
1000	49.7	4.0	8.6	1.2		0.6	0.6	0.9
1500	34.4	4.3	9.0	0.7		0.6?	0.6	0.7
2000	25.6	5.8	9.0	1.6		0.6	0.6	1.1
2500	19.4	7.5	8.7	1.9		1.0	1.0	1.4

I = 6000ma

South leg

a	V(mv)	$PFE_{3.0-0.1}$	$\rho_{0.1}/2\pi$	① $PFE_{1-0.1}$		② $2.096 \times PFE_{0.3-0.1}$	PFE avg ①&② ~ best
200	245	2.0	8.3	1.1		1.2	1.1
300	160	2.4	8.2	0.8		0.8	0.8
500	90.6	2.6	7.7	0.7		0.4	0.6
750	62.9	3.3	8.1	0.9		1.0	0.9
1000	41.8	3.7	7.2	0.7		-0.6 ?	0.7
1500	30.5	4.9	8.0	2.4	1-0.3 N 1.7	3.1?	1.7 ?
2000	23.4	2.9	8.0	1.9		0.2 ?	1.0 ?

WT boulders

Sample testing for IP effect	$\rho/2\pi$	PFE	MCF
Native copper bearing? diorite? @ 2774'	4600	6.2	1.4
" " " visible diabase @ 2776'	480	4.9	10
WT pebbles & clayey matrix - decomposed to mud when moistened: mud 2759'	(7.1	2.2	310) ?
Dacite sample surface	160	0.3	1.9
unmineralized WT from 2433' pebbles with sandy matrix	44	0.4	9.0

Check grounded fences all lines - live phil plot

IP line locations on topo maps

W. E. HEINRICHS JR

SUMMARY - 9 September 1948

Globe-Miami District, Arizona

The following specimens were received on 8/31/48 from R. Murphy.

RFL No.	Description and Location	App. Dens.	Resis.	Vol. Susc.	V_1	V_T	V_L
111	Schultz Granite - Bloody Tanks Wash	2.64	$2.6.10^6$	537.10^{-6}	12,300	8,150	12,600
112	Solitude Granite - Warnica Springs	2.63	$1.7.10^6$	5.10^{-6}	12,750	8,050	14,000
113	Dacite - basal phase - Inspiration Property, Live Oak Road	2.48	$6.4.10^4$	757.10^{-6}	10,700	6,670	13,100
114	Dacite - body of flow - Inspiration Property, east of leach plant	2.35	5.10^4	83.10^{-6}	6,800	5,150	6,920
115	Pinal Schist - quartzitic phase - Live Oak Road at railway trestle	2.70	4.10^5	41.10^{-6}	17,570	10,500	-
116	Pinal Schist - micaceous phase - 50' from #115	2.73	$1.3.10^5$	1210.10^{-6}	16,800	9,220	-
117	Madera Diorite - Pinal Peak Road	2.79	$1.5.10^6$	3450.10^{-6}	13,000	8,000	15,550

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IIIIIIII   PPPPPPPPP    GGGGGGGG    000000      000000    EEEEEEEEE     AAAA        IPG00EA
IIIIIIII   PPPPPPPPP    GGGGGGGG    000000      000000    EEEEEEEEE     AAAA        IPG00EA
   II      PP      PP  GG      GG  00    00    00    00  EE           AA  AA       IPG00EA
   II      PP      PP  GG      GG  00    00    00    00  EE           AA  AA       IPG00EA
   II      PPPPPPPPP   GG          00    00    00    00  EEEEEEE     AA    AA      IPG00EA
   II      PPPPPPPPP   GG          00    00    00    00  EEEEEEE     AA    AA      IPG00EA
   II      PP          GG    GGGG  00    00    00    00  EE          AAAAAAAAAA    IPG00EA
   II      PP          GG    GGGG  00    00    00    00  EE          AAAAAAAAAA    IPG00EA
   II      PP          GG      GG  00    00    00    00  EE          AA      AA    IPG00EA
   II      PP          GG      GG  00    00    00    00  EE          AA      AA    IPG00EA
IIIIIIII   PP           GGGGGGGG    000000      000000    EEEEEEEEE   AA      AA    IPG00EA
IIIIIIII   PP           GGGGGGGG    000000      000000    EEEEEEEEE   AA      AA    IPG00EA
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WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWPRINTED ON DEVICE-22
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Whitetail 2.55

$\Delta \rho = 0.17$ g/cc

Beaumont 2.72

Decite 2.33

3+ 76/09

45-613 EYE-EASE 45-713 20/20 BUFF Made in U.S.A. NATIONAL

DEVILS CANYON PROJECT JOB 796 PAGE 1

ALTITUDE CORRECTIONS — GRAVITY SURVEY — SUPERIOR, PINAL COUNTIES

BASE ALT: JJ 12743 REMOTE ALT: JJ 12742 LINE 1

	1		2	3	4	5	6	7	8	9	10	11	12	13
STATION	TIME	MEAN TEMP. WET	MEAN TEMP. DRY	(from Graph) REL HUM. %	REMOTE ALT. READING	(Base − Remote) SET DIFF	CORR. REMOTE 3 ± 4	BASE ALT READING	Δ ALT 5 − 6	X FACTOR (TEMP. & HUM.)	ELEV. DIFF 7X8	UNCORRECTED ELEV.	DRIFT CORR	CORR. ELEVATION	Corr to Known elev
B-6	9 49	35	46	0 20	3818	0	3818	3818	0			4163	-0	4163	4164
1	10 12	37	48	0	3960		3960	3818	142	0.996	141	4304	-0	4304	4305
2	10 32	36	49	0	3945		3945	3818	127	0.998	127	4290	-0	4290	4291
3	10 53	36	47	0	4073		4073	3818	255	0.994	254	4417	-0	4417	4418
4	11 14	37	48	0	4113		4113	3825	288	0.996	287	4450	-0	4450	4451
VABM 4875	12 02	37	45	0	4570		4570	3851	719	0.990	712	4875	-1	4874	+1 4875
B-6	13 04	40	53	25	3878		3872	3871	1		1	4164	-1	4163	4164
B-6	14 00	42	53	36	3885	-2	3883	3883	0			4164			4164
5	14 38	41	54	27	3759	-2	3757	3892	-135	1.008	-136	4028			4028
6	15 00	46	58	37	3723	-2	3721	3904	-183	1.018	-186	3978			3978
7	15 58	43	53	40	3769	-2	3767	3908	-141	1.007	-142	4022	NONE		4022
8	16 30	46	54	53	3456	-2	3454	3910	-456	1.011	-461	3703			3703
B-5	16 43	42	52	40	3335	-2	3333	3913	-580	1.005	-583	3581			3581
9	17 12	42	48	50	3132	-2	3130	3922	-792	0.999	-791	3373			3373
BM 2957	13 35	43	56	30	2987	-4	2983	2983	0		0	2957	0	2957	2957
10	14 05	44	56	34	2975		2971	2991	-20	1.013	-20	2937	-1	2936	2936
11	14 50	44	54	42	2942		2938	3000	-62	1.010	-63	2894	-2	2892	2892
12	15 20	46	55	49	2918		2914	3013	-99	1.012	-100	2857	-3	2854	2854
13	16 12	43	53	40	2912		2908	3034	-126	1.008	-127	2830	-4	2826	2826
BM 2957	16 36	42	52	40	3049		3045	3040	+5	1.006	+5	2962	-5	2957	2957
B-4	9 20	45	47		3352	+2	3354	3354	0		0	3420	0	3420	3420
14 (Drill hole)	9 35	43	48		3393		3395	3352	43	0.997	43	3463	0	3463	3463
15	10 00	45	49		3322		3324	3345	-21	0.999	-21	3399	-1	3398	3398
16	10 54	41	46		3358		3360	3321	39	0.994	39	3459	-2	3457	3457
17	11 25	43	49		3523		3525	3320	205	0.999	205	3625	-2	3623	3623
18	11 44	44	49		3559		3561	3320	241	0.999	241	3661	-2	3659	3659
B8	12 15	43	49		3720		3722	3330	392	0.999	392	3812	-3	3809	3809
B4	14 00				3335		3337	3332	5		5	3425	-5	3420	3420

DEVILS CANYON PROJECT — JOB 796 PAGE 2

ALTITUDE CORRECTIONS — GRAVITY SURVEY — SUPERIOR, PINAL COUNTIES.

BASE ALT.: JJ 12743 REMOTE ALT: JJ12742 LINE 1

	STATION	TIME	1 MEAN TEMP WET	1 MEAN TEMP DRY	2 (from graph) REL. HUM. %	3 REMOTE ALT READING	4 (Base – Remote) SET DIFF	5 Corr. REMOTE 3 ± 4	6 BASE ALT READING	7 Δ ALT 5–6	8 X FACTOR (TEMP+HUM)	9 ELEV. DIFF. 7×8	10 UNCORRECTED ELEV.	11 DRIFT CORR.	12 CORR. ELEV.	13 Corr to Known ELEV.
1																
2	B-4	1400	46	53	58	3332	0	3332	3332	0			3424	0	3424	3420
3	19	1418	48	56	55	3185		3185	3339	-154	1.015	-156	3268	+1	3269	3265
4	20	1441	46	53	58	3057		3057	3339	-282	1.009	-285	3139	+1	3140	3136
5	21	1503	46	51	67	2991		2991	3342	-351	1.005	-353	3071	+2	3073	3069
6	22	1529	46	52	63	2925		2925	3340	-415	1.007	-418	3006	+3	3009	3005
7	23	1542	47	54	58	2853		2853	3339	-486	1.011	-491	2933	+3	2936	2932
8	24	1554	46	53	58	2712		2712	3336	-624	1.009	-630	2794	+4	2798	2794
9	13	1602	46	53	58	2739		2739	3332	-593	1.009	-598	2826	+4	2830 -4	2826
10	B-4	1629	43	50	55	3321		3321	3326	-5	1.001	-5	3419	+5	3424	3420
11																
12																
13	B-1 (Temp (wet + dry)	1248	47	62	28	3609	2	3611	3611	0		0				
14	B-2 taken @ Base	1316	50	62	41	3703		3705	3622	83	1.026	85				3976
15	B-3 rather than	1348	53	65	37	3722		3724	3639	85	1.032	88	BASE LOOP TO BE USED			3979
16	B-4 remote)	1406	52	65	34	3169		3171	3647	-476	1.031	-491	FOR GRAVITY TIES ONLY			
17	B-5	1428	55	67	45	3379		3381	3655	-274	1.038	-284	NOT ELEVATION.			
18	B-6	1450	54	67	41	3955		3957	3661	296	1.037	307				
19	B-1	1509	56	69	43	3670		3672	3663	9	1.041	9				
20																
21																
22	B-1 (Temp (wet + dry)	1529	56	64	60	3677	-6	3671	3671	0		0				
23	B-7 taken @ Base	1544	54	64	51	3971		3965	3670	295	1.031	304	4203 "	"	(4203) "	
24	B-8 rather than	1600	54	64	51	3581		3575	3675	-100	1.031	-103				
25	B-9 remote.)	1627	49	57	55	2762		2756	3680	-924	1.017	-940				
26	B-1	1646	48	52	75	3685		3679	3679	0		0				

45-613 EYE-EASE 45-713 20/20 BUFF NATIONAL Made in U.S.A.

DEVILS CANYON PROJECT — JOB 796 — Page 1

ALTITUDE CORRECTIONS — GRAVITY SURVEY — SUPERIOR, PINAL COUNTIES.

BASE ALT.: JJ 12742 — REMOTE ALT: JJ 12743 — LINE 2

	1	2	3	4	5	6	7	8	9	10	11	12	13
STATION	TIME	MEAN TEMP. WET	MEAN TEMP. DRY	(from graph) Rel. Hum. %	REMOTE ALT. READING	(Base - Remote) Set diff	CORR. REMOTE 3+4	BASE ALT READING	Δ ALT 5-6	X FACTOR (TEMP & HUM.)	ELEV. DIFF. 7X8	UNCORR. ELEV.	DRIFT CORR.	CORR. ELEV.	CORR. TO KNOWN ELEV
B-1	8 48	36	46		3549	+1	3550	3550	0		0	3899	0	3899	
1	9 16	38	47		3755		3756	3535	221	0.995	220	4119	0	4119	⇒
2	9 51	39	47		3792		3793	3516	277	0.995	276	4175	-1	4174	
3	10 12	38	46		3867		3868	3521	347	0.993	345	4249	-1	4243	⇒
B-1	11 04	39	49		3540		3541	3539	2	0.999	2	3901	-2	3899	
B-1	10 09	48	58	46	3522	0	3522	3522	0			3899		3899	
4	10 43	49	60	44	3739		3739	3517	222	1.022	227	4126		4126	
5	11 07	50	61	45	3625		3625	3518	107	1.029	110	4009		4009	
6	12 22	50	62	41	3280		3280	3534	-254	1.026	-261	3638		3638	⇒
7	13 28	52	62	50	3772		3772	3570	202	1.027	207	4106		4106	
B-2 (elev. 3976 - determined from Base loop diff of B-3-B-2)	14 17	52	63	47	3656		3656	3581	75	1.029	77	3976 0	0	3976	
8	14 52	51	63	42	3743		3743	3590	153	1.029	157	4056 +1	+1	4057	
9	15 25	49	61	40	3809		3809	3598	211	1.024	216	4115 +2	+2	4117	⇒
B-2	15 51	50	62	41	3671		3671	3599	72	1.026	74	3973 +3	+3	3976	
B-3	9:18	46	50	74	3663	+3	3665	3665	0		0	3979		3979	
10	9 43	48	51	80	3697		3700	3661	39	1.005	39	4018		4018	→
11	10 27	50	53	94	3821		3824	3661	163	1.010	165	4144		4144	
12	11 09	50	53	94	3708		3711	3661	50	1.010	51	4030		4030	
13	11 50	53	57	77	3138		3141	3670	-529	1.017	-538	3441		3441	
14	13 15	56	62	69	3221		3224	3718	-494	1.029	-508	3471	none	3471	→
15	13 42	56	61	74	3022		3025	3730	-705	1.027	-724	3255		3255	
16	14 05	56	64	60	2742		2745	3730	-985	1.032	-1017	2962		2962	
B-30	14 15	56	63	65	2739		2742	3730	-988	1.030	-1018	2961	0	2961	→
17	14 53	56	63	65	2984		2987	3732	-745	1.030	-767	3212	+1	3213	
18	15 12	56	63	65	3078		3081	3730	-649	1.030	-668	3311	+1	3312	
B-30	15 29	56	63	65	2740		2743	3732	-989	1.030	-1019	2960	+1	2961	
B-3	9 35	48	53	69	3750	0	3750	3750	0			3979	0	3979	
20	10 45	49	53	76	4022		4022	3755	267	1.009	269	4248	0	4248	⇒
21	11 13	51	56	70	3880		3880	3752	128	1.016	130	4109	+1	4110	
22	11 51	50	56	65	4032		4032	3763	269	1.016	273	4252	+1	4253	
23	12 18	50	56	65	3744		3744	3779	-35	1.016	-36	3943	+1	3944	⇒
24	13 23	52	58	66	3977		3977	3802	175	1.020	179	4158	+1	4159	
25	13 48	52	54	88	3958		3958	3819	139	1.012	141	4120	+2	4122	
B-3	14 58	48	56	55	3832		3832	3834	-2	1.015	-2	3977	+2	3979	

45-613 EYE-EASE 45-713 20/20 BUFF NATIONAL Made in U.S.A.

DEVILS CANYON PROJECT — JOB 796 — PAGE 2

ALTITUDE CORRECTIONS — GRAVITY SURVEY — SUPERIOR, PINAL COUNTIES.

BASE ALT: JJ 12742 — REMOTE: JJ 12743 — LINE 2 + LINE 3

	1	2	3	4	5	6	7	8	9	10	11	12	13
STATION	TIME	MEAN TEMP. WET	MEAN TEMP. DRY	(from graph) Rel. Hum. %	REMOTE ALT. READING	(Base - Remote) Set. Diff.	CORR. REMOTE (3)±(4)	BASE ALT. READING	Δ ALT (5) - (6)	X FACTOR (TEMP + HUM.)	ELEV. DIFF. (7) X (8)	UNCORR. ELEV.	DRIFT CORR	CORR. ELEV.	CORR. TO KNOWN ELEV.
13 (elev. 2826 - ref. to BM 2957)	902	37	43	—	2529	0	2529	2529	0		0	2824	0	2824	+2 2826
1	950	42	49	—	2576		2576	2530	46	1.000	46	2870	-1	2869	+2 2871
2 (BM 2894)	1031	43	47	—	2589		2589	2519	70	0.995	70	2894	-1	2893	+2 2895
3	1103	44	48	—	2616		2616	2520	96	0.998	96	2920	-1	2919	+2 2921
B-30	1148	45	52	57	2656		2656	2520	136	1.007	137	2961	-2	2959	+2 2961
13	1224	47	54	59	2530		2530	2528	2	1.011	2	2826	-2	2824	+2 2826
B-30	1330	46	59	34	2680	0	2680	2680	0		0	2961	0	2961	2961
4	1354	47	59	38	2721		2721	2679	42	1.020	43	3004	0	3004	3004
5	1422	54	60	68	2842		2842	2685	157	1.024	161	3122	-1	3121	3121
B-30	1525	49	58	51	2681		2681	2680	1		1	2962	-1	2961	2961
B-30	1522	52	61		2836	-1	2835	2835	0		0	2961	0	2961	2961
4A	1533	50	59	52	2881		2880	2829	51	1.021	52	3013	0	3013	3013
6	1605	50	57	61	3063		3062	2820	242	1.017	246	3207	+1	3208	3208
7	1618	48	55	60	3123		3122	2828	294	1.013	298	3259	+1	3260	3260
6A	1707	48	50	87	3018		3017	2812	205	1.004	206	3167	+2	3169	3169
B-30	1731	48	50	87	2801		2800	2803	-3		-3	2958	+3	2961	2961
B-1	851	33	40	—	3808	+1	3809	3809	0		0	3899	0	3899 ⇒	
DDH (SW¼ Sec 27)	932	35	44	—	4015		4016	3809	207	0.989	205	4104	-1	4103	
B-1	1006	38	46	—	3815		3816	3814	2		2	3901	-2	3899 ⇒	

45-613 EYE-EASE 45-713 20/20 BUFF NATIONAL Made in U.S.A.

DEVILS CANYON PROJECT JOB 796 PAGE 1

GRAVITY CALCULATIONS SUPERIOR, PINAL COUNTIES.

WORDEN GRAVITY METER. LINE 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	
STATION	TIME	METER SCALE DIV.	STEP CORRECTION	DRIFT SCALE DIV.	CORRECTED METER. (S.D.)	(4) X 0.09979 [mgals]	MILES N. of 33°15' LATTITUTE	LAT. CORR. (6) X 1.199 [mgals]	CORR. ELEV. IN FEET. (see attached)	ELEV CORR. (8) X 0.06433 (mgals)	BOUGUER GRAVITY (5)-(7)+(9)	TERRAIN CORRECTION [mgals]	CORRECTED GRAVITY (10)+(11)-80	Uncorrected Gravity (12)-(11)	
			(+545.6)							-240					
B-1	1248	296.0	841.6	0.0 -2	841.4	83.96	1.87	2.24	3899	250.82	92.54	1.58	14.12	12.54	
B-2	1316	206.4	752.0	0.0 -2	751.8	75.02	1.64	1.97	3976	255.78	88.83				
B-3	1348	198.0	743.6	+0.1 -2	743.5	74.19	1.82	2.18	3979	255.97	87.97				
B-4	1406	537.4	1083.0	+0.1 -2	1082.9	108.06	0.51	0.61	3420	220.01	87.46	1.56	9.02	7.46	
B-5	1428	439.2	984.8	+0.1 -2	984.7	98.26	0.43	0.52	3581	230.37	88.11	2.69	10.80	8.11	
B-6	1450	130.4	676.0	+0.2 -2	676.0	67.46	0.50	0.60	4164	267.87	94.73	2.32	17.05	14.73	
B-1	1509	295.8	841.4	+0.2 -2	841.4	83.96									
B-6	949	676.0		0.0	676.0	67.46	0.50	0.60	4164	267.87	94.73 -	2.32	17.05	14.73	B-6
1	1012	587.0	↑	0.4	587.4	58.62	0.57	0.68	4305	276.94	94.88 -	2.32	17.20	14.88	1
2	1032	603.8	NONE	0.7	604.5	60.32	0.48	0.58	4291	276.04	95.78 -	1.89	17.67	15.78	2
3	1053	539.2	↓	0.9	540.1	53.90	0.48	0.58	4418	284.21	97.53 -	2.21	19.74	17.53	3
4	1114	528.0		1.3	529.3	52.82	0.40	0.48	4451	286.33	98.67 -	4.49	23.16	19.67	4
VABM4875	1202	176.9	Set as Low Base	1.8	178.7	17.83	0.88	1.06	4875	313.61	?- 90.38				
B-6	1304	673.3		2.7	676.0	67.46	0.50	0.60	4164	267.87	94.73 -				
		2.7													
B-1	1529	296.0	841.6	0.0	841.6	83.98									
B-7	1544	072.8	618.4	-0.2	618.2	61.69	3.46	4.15	4203	270.38	87.92	1.46	9.38	7.92	B-7
B-8	1600	298.6	844.2	-0.5	843.7	84.19	0.44	0.53	3809	245.03	88.69 -	2.45	11.14	8.69	B-8
B-9	1627	783.2	1328.8	-0.8	1328.8	132.60	0.19	0.23	2959	190.35	82.72	6.99	9.71	2.72	B-9
B-1	1646	297.2	842.8	-1.2	841.6	83.98									
			(+528.5)												
B-6	1400	147.5	676.0	0.0	676.0	67.46	0.50	0.60	4164	267.87	94.73 -				
5	1438	235.3	763.8	-0.3	763.5	76.19	0.48	0.58	4028	259.12	94.73 -	1.75	16.48	14.73	5
6	1500	247.6	776.1	-0.4	775.7	77.41	0.58	0.70	3978	255.90	92.61 -	2.40	15.00	12.60	6
7	1558	202.5	731.0	-0.8	730.2	72.87	0.54	0.65	4022	258.74	90.96 -	2.56	13.52	10.96	7
8	1630	382.0	910.5	-1.1	909.4	90.75	0.46	0.55	3703	238.21	88.41 -	2.86	11.27	8.41	8
B-5	1643	457.4	985.9	-1.2	984.7	98.26	0.43	0.52	3581	230.37	88.11 -				
			89.7												
			1.2												
			(+526.9)												
B-5	1653	457.8	984.7	0.0	984.7	98.26	0.43	0.52	3581	230.37	88.11 -				
9	1712	581.7	1108.6	+0.6	1109.2	110.69	0.41	0.49	3373	216.99	87.19 -	2.54	9.73	7.19	9
B-5	1733	456.4	983.3	+1.4	984.7	98.26	0.43	0.52	3581	230.37	88.11 -				
			1.4												

45-613 EYE-EASE 45-713 20/20 BUFF NATIONAL Made in U.S.A.

DEVILS CANYON PROJECT JOB 796 PAGE 2

GRAVITY CALCULATIONS SUPERIOR, PINAL COUNTIES.

WORDEN GRAVITY METER. LINE 1

	STATION	TIME	1 METER S.D.	2 STEP. CORR.	3 DRIFT S.D.	4 CORRECTED METER S.D.	5 (4)X 0.09979 [mgals]	6 MILES N of 33° 15' LAT.	7 LAT. CORR. (6)X 1.199 [mgals]	8 CORR. ELEV. IN FEET. (see attached)	9 ELEV CORR. 8 X 0.06433 [mgals]	10 BOUGUER GRAVITY (5)-(7)+(9)	11 TERRAIN CORRECTION [mgals]	12 CORRECTED GRAVITY (10)+(11)-80	13 Uncorrected GRAVITY (12)-(11)	
1				(+450.9)								-240				
2	B-4	9 20	632.0	1082.9	-0.0	1082.9	108.06	0.51	0.61	3420	220.01	87.46 E				
3	14	9 35	605.4	1056.3	-0.0	1056.3	105.41	0.41	0.49	3463	222.77	87.69	1.51	9.20	7.69	14
4	15	10 00	641.4	1092.3	-0.0	1092.3	109.00	0.34	0.41	3398	218.59	87.18	1.72	8.9	7.18	15
5	16	10 54	605.1	1056.0	-0.1	1055.9	105.37	0.36	0.43	3457	222.39	87.33	2.00	9.33	7.33	16
6	17	11 25	501.4	952.3	-0.1	952.2	95.02	0.30	0.36	3623	233.07	87.73	2.38	10.11	7.73	17
7	18	11 44	487.3	938.2	-0.2	938.0	93.60	0.31	0.37	3659	235.38	88.61	1.74	10.35	8.61	18
8	B-8	12 15	393.0	843.9	-0.2	843.7	84.19	0.44	0.53	3809	245.03	88.69 W				
9																
10				(+865.2)												
11	B-4	14 00	217.7	1082.9	-0.0	1082.9	108.06	0.51	0.61	3420	220.01	87.46 W				
12	19	14 18	305.7	1170.9	-0.1	1170.8	116.83	0.61	0.73	3265	210.04	86.14	2.53	8.67	6.14	19
13	20	14 41	384.3	1249.5	-0.1	1249.4	124.68	0.56	0.67	3136	201.74	85.75	2.71	8.46	5.75	20
14	21	15 03	433.8	1299.0	-0.2	1298.8	129.61	0.49	0.59	3069	197.43	86.45	2.31	8.76	6.45	21
15	22	15 29	471.7	1336.9	-0.3	1336.6	133.38	0.63	0.76	3005	193.31	85.93	2.51	8.44	5.93	22
16	23	15 42	516.1	1381.3	-0.3	1381.0	137.81	0.62	0.74	2932	188.62	85.69	2.92	8.61	5.69	23
17	24	15 54	592.8	1458.0	-0.4	1457.6	145.45	0.56	0.67	2794	179.74	84.52	3.21	7.73	4.52	24
18	13	16 02	582.4	1447.6	-0.4	1447.2	144.42	0.65	0.78	2826	181.80	85.44 E				
19	B-4	16 29	218.2	1083.4	-0.5	1082.9	108.06	0.51	0.61	3420	220.01	87.46				
20																
21																
22				(+997.0)												
23	BM 2957	13 35	391.7	1388.7	+0.5	1389.2	138.63	0.32	0.38	2957	190.22	88.47 E	2.92	11.39	8.47	BM 23
24	10	14 05	396.9	1393.9	+0.4	1394.3	139.14	0.43	0.52	2936	188.87	87.49	2.99	10.46	7.47	10
25	11	14 50	422.3	1419.3	+0.3	1419.6	141.66	0.52	0.62	2892	186.04	87.08	3.49	10.57	7.08	11
26	12	15 20	434.1	1431.1	+0.2	1431.3	142.83	0.63	0.76	2854	183.60	85.67	3.33	9.00	5.67	12
27	13	16 12	450.2	1447.2	-0.0	1447.2	144.42	0.65	0.78	2826	181.80	85.44 W	2.94	8.38	5.44	13
28	BM 2957	16 36	392.3	1389.3	-0.1	1389.2	138.63	0.32	0.38	2957	190.22	88.47				

45-613 EYE-EASE 45-713 20/20 BUFF NATIONAL Made in U.S.A.

DEVILS CANYON PROJECT — Job 796

GRAVITY CALCULATIONS — SUPERIOR, PINAL COUNTY

WORDEN GRAVITY METER — LINE 2

	Station	Time	1 Meter Scale Div.	2 Step Correction	3 Drift Scale Div	4 Corrected Meter (S.D)	5 (4) X 0.09979 [Mgals.]	6 Miles N. of 33° 15' Latitude	7 Lat. Corr. (6) X 1.199 [Mgals]	8 Corr. Elev in Feet (See attached)	9 Elev. Corr (8) X 0.06433 (Mgals)	10 Bouguer Gravity (5)-(7)+(9)	11 Terrain Correction (Mgals)	12 Corrected Gravity (10)+(11)	13 Uncorrected Gravity (12)-80 (12)-(11)
1				(+) 4100								(-240)			
2	B-1	8 48	4314	8414	00	8414	8396	187	224	3899	25082	92.54			
3	1	9 16	2980	7080	+ 06	7086	7071	200	240	4119	26497	93.28	1.23	14.51	13.28 1
4	2	9 51	2635	6735	+ 22	6757	6743	195	234	4174	26851	93.60	1.20	14.80	13.60 2
5	3	10 12	2309	6409	+ 29	6438	6424	191	229	4293	27295	94.90	1.46	16.36	14.90 3
6	B-1	11 04	4266	8366	+ 48	8414	8396	187	224	3899	25082	92.54			
7															
8				(+) 4058											
9	B-1	10 09	4356	8414	00	8414	8396	187	224	3899	25082	92.54	1.58	14.12	12.54 B-1
10	4	10 43	2911	6969	+ 01	6970	69.55 ~~6976~~	194	233	4126	26542	~~90.85~~ 92.65	1.08	~~11.93~~	13.73 4
11	5	11 07	3527	7585	+ 02	7587	7571	196	235	4009	25790	91.26	1.12	12.38	10.26 5
12	6	12 22	5698	9756	+ 06	9762	9741	207	248	3638	23403	88.96	2.93	11.89	8.96 6
13	7	13 28	2767	6825	+ 09	6834	6820	205	246	4106	26414	89.88	1.23	11.11	9.88 7
14	B-2	14 17	3449	7507	+ 11	7518	7502	164	197	3976	25578	88.83			B-2
15	8	14 52	3001	7059	+ 07	7066	7051	186	223	4057	26099	89.27	1.14	10.41	9.27 8
16	9	15 25	2621	6679	+ 02	6681	6667	213	255	4117	26485	88.97	0.94	9.91	8.97 9
17	B-2	15 51	3459	7517	01	7518	7502	164	197	3976	25578	88.83			B-2
18															
19				(+) 5014											
20	B-3	9 18	2421	7435	00	7435	7419	182	218	3979	25597	87.98			B-3
21	10	9 43	2179	7193	00	7193	7178	207	248	4018	25848	87.78	1.61	9.39	7.78 10
22	11	10 27	1337	6351	- 01	6350	6337	211	253	4149	26658	87.42	2.21	9.63	7.42 11
23	12	11 09	2016	7030	- 02	7028	7013	211	253	4030	25925	86.85	2.42	9.27	6.85 12
24	13	11 50	5678	10692	- 02	10690	10667	192	230	3941	22136	85.73	2.62	8.35	5.73 13
25	14	13 15	5412	10426	- 04	10422	10400	188	225	3971	22329	85.04	1.71	6.75	5.04 14
26	15	13 42	6745	11759	- 04	11755	11730	188	225	3255	20939	84.44	2.47	6.91	4.44 15
27	15	13 43	3235	+(852.47) 11759	- 04	11755	11730	188	225	3255	20939	84.44			(15)
28	16	14 05	4910	13434	- 05	13429	13401	193	231	2962	19054	82.24	3.17	5.41	2.24 16
29	B-30	14 15	4964	13488	- 05	13483	13455	193	231	2961	19048	82.72			B-30
30	17	14 53	3494	12018	- 03	12015	11990	185	222	3213	20669	84.37			17
31	18	15 12	2977	11501	- 01	11500	11476	188	225	3312	21306	85.57			18
32	B-30	15 29	4959	13483	00	13483	13455	193	231	2961	19048	82.72			B-30
33				(+) 2548											
34	B3	9 35	4887	7435	00	7435	7419	182	218	3979	19164	87.98			B-3
35	20	10 45	3085	5633	+ 06	5639	5627	209	251	4248	27327	87.03	2.53	9.56	7.03 20
36	21	11 13	4100	6648	+ 09	6657	6643	204	245	4110	26990	88.38	1.68	10.06	8.38 21
37	22	11 51	3115	5663	+ 12	5675	5663	214	257	4253	27359	87.65	1.97	9.62	7.65 22
38	23	12 18	5079	7627	+ 15	7642	7626	211	253	3944	25372	87.45	1.98	9.43	7.45 23
39	24	13 23	3808	6356	+ 21	6377	6364	213	255	4159	26755	88.64	1.46	10.10	8.64 24
40	25	13 48	4037	6585	+ 23	6608	6594	213	255	4122	26517	88.56	1.06	9.61	8.55 25
	B-3	14 58	4857	7405	+30	7435	7419	182	218	3979	25597	87.98			B-3

NE¼SW¼NE¼ SW¼
AC AC
26 27
33 34

45-613 EYE-EASE 45-713 20/20 BUFF NATIONAL Made in U.S.A.

DEVILS CANYON PROJECT Job 796

GRAVITY CALCULATIONS SUPERIOR, PINAL COUNTY

WORDEN GRAVITY METER LINE 2 & LINE 3

	1	2	3	4	5	6	7	8	9	10	11	12	13	
STATION	TIME	METER SCALE DIV.	STEP CORRECTION	DRIFT SCALE DIV	CORRECTED METER(S.D.)	(4) X 0.09979 [Mgals]	MILES N. OF 33° 15' LATITUDE	LAT. CORR. (6) X 1.199 (Mgals)	CORR. ELEV. IN FEET (SEE ATTACHED)	ELEV. CORR (8) X 0.06433 (Mgals)	BOUGUER GRAVITY (5)-(7)+(9) (-290)	TERRAIN CORR. (Mgals)	CORRECTED GRAVITY (10)+(11)-80	Uncorrected Gravity (12)-(11)	
			(+) 9835	00											
B-13	9 02	4637	14472	00	14472	14492	065	078	2826	18180	8594				
1	9 50	4252	14087	+ 02	14089	14047	100	120	2871	18469	8396				
2	10 31	4110	13945	+ 05	13950	13921	165	198	2895	18623	8396	2.50	5.96	3.46	2
3	11 03	3921	13756	+ 06	13762	13733	196	235	2921	18790	8288				
B-30	11 48	3639	13474	+ 09	13483	13455	196	235	2961	19048	8272				
B-13	12 24	4626	14461	+ 11	14472	14442	065	078	2826	18180	8544				
			(+) 9837												
B-30	13 30	3646	13483	00	13483	13455	193	231	2961	19048	8272				
4	13 54	3484	13321	- 01	13320	13292	203	243	3004	19325	8374	2.72	6.46	3.74	4
5	14 22	2935	12772	- 05	12767	12740	220	264	3121	20077	8553	2.84	8.37	5.53	5
B-30	15 25	3657	13494	- 11	13483	13455	193	231	2961	19048	8272				
			(+) 8398												
B-30	15 22	5085	13483	00	13483	13455	193	231	2961	19048	8272	2.62	5.34	2.72	B-30
4A	15 33	4800	13198	+ 02	13200	13172	206	247	3013	19383	8308	2.80	5.88	3.08	4A
6	16 05	3788	12186	+ 07	12193	12167	251	301	3208	20637	8503	3.31	8.34	5.03	6
7	16 18	3493	11891	+ 10	11901	11876	260	312	3260	20972	8536	3.52	8.88	5.36	7
6A	17 07	4009	12407	+ 18	12425	12399	232	278	3169	20386	8507	3.69	8.76	5.07	6A
B-30	17 31	5063	13461	+ 22	13483	13455	193	231	2961	19048	8272				
			(+) 5296												
B-1	8 51	3118	8414	00	8414	8396	187	224	3899	25082	9254				
→ DDH (SW¼ SEC 27)	9 32	1424	6720	+ 08	6728	6714	405	486	4103	26395	8623	1.59	7.82	6.23	DDH
B-1	10 06	3107	8403	+ 11	8414	8396	187	224	3899	25082	9254				

BASE READINGS

[redacted] 0.09979

-60

JOB No. 79 LINE No. BASE 7A. PAGE 1
AREA DEVILS CANYON DATE 1-25-73
INSTRUMENT GRAVITY & ALT.

Topo Elevation	-28 -304	△		STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE ELEVATION	BASE CORR	BASE ELEV	DRIFT	CORR. ELEV
3907	3621 3603	-6 12	1	B-1	1248	296.0	0.0		296.0	3609	0	3609	0	3609
3950	3664 3636	-54 -26	2	B-2	1316	206.4	0.0		206.4	3703	-12	3691	-1	3690
3980	3694 3676	-14 4	3	B-3	1348	198.0	0.1		198.1	3722	-29	3693	-3	3690
3420	3134 3116	-11 7	4	B-4	1406	537.4	0.1		537.5	3169	-38	3131	-4	3127
3580	3294 3271	-57 -34	5	B-5	1428	439.2	0.1		439.3	3379	-46	3333	-5	3328
4190	3904 3886	-11 7	6	B-6	1450	130.4	0.2		130.6	3955	-52	3903	-6	3897
			7	B-1	1509	295.8	+0.2		296.0	3670	-54	3616	-7	3609
			8	B-1	1529	296.0	+0.0		296.0	3677	-62	3615	-6	3609
4190	3904 3886	-18 0	9	B-7	1544	072.8	-0.3		072.5	3971	-61	3910	-6	3904
3820	3534 3516	7 25	10	B-8	1600	298.6	-0.5		298.1	3581	-66	3515	-6	3509
~~3150~~ 286	~~2846~~	161	11	B-9	1627	783.2	-0.9		782.3	2762	-71	2691	-6	2685
			12	B-1	1646	297.2	-1.2		296.0	3685	-70	3615	-6	3609
			13											
			14											
			15											
			16											
			17											
			18											
			19											
			20											
			21											
			22											
			23											
			24											
			25											
			26											
			27											
			28											
			29											
			30											

3797 avg
3880 avg

3493 avg
3594

ALT READINGS – FIXED BASE

JOB No. 796 LINE No. BASE STA'S PAGE 1
AREA BASE READINGS & DEVILS CANYON DATE 1/25/73
INSTRUMENT ALTIMETER JT 12742 (BASE)

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	BASE	TIME	ALT.	WET	DRY		
2	Sec 8	12:43	3609	47	61		
3	B-1	12:49	3611	47	62		
4		12:55	3611	52	63		
5		13:00	3612	51	62		
6		13:05	3617	53	66		
7		13:10	3618	50	67	-10	
8	→	13:15	3621	50	62	-12	
9		:20	3624	50	61	-16	
10		:25	3626	51	61		
11		13:30	3629	52	63		
12		:35	3631	53	65		
13		:40	3635	52	66		
14		:45	3637	51	64	-28	
15	→	:50	3639	54	65	-30	
16		:55	3641	53	65		
17		14:00	3642	53	64		
18		:05	3647	51	65	-38	
19	→	:10	3649	54	65	-40	
20		:15	3649	53	66		
21		:20	3651	54	66		
22		:25	3653	55	66	-44	
23	→	14:30	3657	54	66	-48	
24		:35	3658	54	64		
25		:40	3659	53	64		
26		:45	3659	55	65		
27		:50	3661	54	67	-52	
28		:55	3661	55	64		
29		15:00	3661	55	66		
30							

JOB No. 796 LINE No. PAGE 2
AREA DATE 1/25/73
INSTRUMENT BASE ALT. [illegible]

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	BSE	TIME	ALT.	WET	DRY		
2	SEC 8	15:05	3661	58	69		
3		:10	3663	56	69	-54	
4		:15	3664	53	64		
5		:20	3665	53	63		
6		:25	3669	56	65		
7		15:30	3671	56	64	-62	
8		:35	3672	54	63		
9		:40	3671	54	64		
10		:45	3670	54	64	-61	
11		:50	3674	54	64		
12		15:55	3677	53	64		
13		16:00	3675	54	64	-66	
14		:05	3677	54	63		
15		:10	3679	54	63		
16		:15	3679	53	62		
17		:20	3679	54	61		
18		:25	3680	49	68	-71	
19		16:30	3680	50	56		
20		:35	3680	48	56		
21		:40	3680	49	53		
22		:45	3679	48	52	-70	
23							
24							
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L-1

Job No. 79[illegible] Line No. L-1 Page 1
Area [illegible] Date [illegible]
Instrument [illegible] Dry

	STA.	TIME	READING	BASE CORR.	~~Δt~~	DRIFT CORR.	VALUE
1	B-[illegible]	9:28	6[illegible]3.0	35	45		3815
2	B-6	9:49	[illegible]16.0	35	46	[illegible]	3818
3	1	10:13	5[illegible]2.0	37	48	[illegible]	3960
4	2	10:33	603.8	36	49	[illegible]	3945
5	3	10:52	539.2	36	47		4073
6	4	11:14	528.0	37	48		4113
7	VA[illegible] 4875	12:0[illegible]	1[illegible]6.9	37	45		4570
8	B-6	1[illegible]:04	673.[illegible]	40	[illegible]	[illegible]869	3873
9		[illegible]	[illegible]		center	3871	3872
10			2.7				
11				center		[illegible]819	3897
12	B-6	12:4[illegible]	672.3	42	55		3895
13		[illegible]	—	E half L-1			
14	B-6	1400	147.5	42	53		3885
15	5	1438	235.3	41	54		3759
16	6	1500	[illegible]	[illegible]	58		3723
17	7	1558	202.[illegible]	[illegible]	[illegible]		3769
18	8	1630	38[illegible]	46	54		3956
19	B-5	1643	[illegible]	42	[illegible]		3335
20			[illegible]				
21				ff			
22	B-5	1653	451.8				3340
23	9	1712	581.7	42	48		3133
24	B-5	17[illegible]	456.4	39	46		3355
25			1.5	[illegible]			
26							
27							
28							
29							
30							

Job No. _____ Line No. L-1 [illegible] Page _____
Area _____ Date [illegible]
Instrument GRAVITY

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	GOVT	[illegible]		[illegible]	[illegible]		ALT.
2	BM [illegible]	1335	[illegible]	43	[illegible]		2987
3	10	1425	[illegible]	4[illegible]	57		2975
4	11	1450	422.3	4[illegible]	[illegible]		2942
5	12	[illegible]	43[illegible]	4[illegible]	5[illegible]		29[illegible]8
6	13	16:12	450.[illegible]	43	55		2912
7	BM [illegible]	16:3[illegible]	392.[illegible]	42	54		3040
8							
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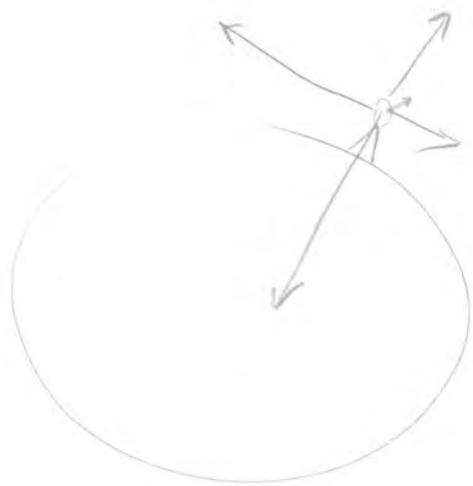

Job No. _____ Line No. _____ Page _____
Area _____ Date 1/30/73
Instrument _____ Wet Dry Base

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B-1	809	310.8	32	39	3805	3804
2	B-1	834	311.3	32	40	3807	3806
3	B-1	851	311.8	33	40	3809	3808
4	DDH	932	142.4	35	44		4015
5	B-1	1006	310.7	38	46	3814	3815
6			(W)				
7							
8							
9							
10		Drill hole					
11		SW 1/4	SW 1/4			Sec 27	
12							
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Traverse L-1 to L-2

Job No. _____ Line No. L-3 Page _____
Area _____ Date _____
Instrument GRAVITY SN ALT [illegible]

	STA.	TIME	READING	~~BASE CORR.~~ WET	~~Δt~~ DRY	DRIFT CORR.	VALUE
1	NORTH FROM BASE 13 TO E						
2			~~ALT~~	WET	DRY		ALT
3	L-1 B13	0902	463.7	37	51		2527
4	L3,1	0950	425.2	42	52		2576
5	2	1031	411.0	43	54		2587
6	3	1103	392.1	44	55		2616
7	L2 B30	1128	363.7	45	57		2656
8	L1 B13	1224	462.6	47	61		2530
9							
10							
11	L2	NE FROM		L2 B30			
12	B30	1330	364.6	46	62		2680
13	L3,4	1364	348.4	47	61		2721
14	L3,5	1422	295.5	54	64		2842
15	B30	1525	365.7	49	61		2681
16							
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east end L-2

L-1

Job No. _____ Line No. [illegible] Page [illegible]
Area _____ Date [illegible]
Instrument [illegible]

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
2				[illegible]	[illegible]		[illegible]
3	B4	[illegible]	535.0	45	47		3355
4	14	1135	[illegible]	45	[illegible]		[illegible]
5	15	1600	541.4	[illegible]	49		[illegible]
6	16	1054	535.1	47	47		3358
7	17	1125	501.4	43	52		3523
8	18	1144	487.3	44	52		3557
9	B-8	1215	393.0	43	52		3720
10			393.2			3732	3735
11			0.2			@ 1400	
12							
13							
14		B-4 going east					
15							
16	B-4	1420	217.7	46	54		[illegible]
17	19	1418	305.7	45	57		3185
18	20	1441	384.3	45	56		3057
19	21	1503	433.8	46	54		2991
20	22	1529	471.7	46	54		2925
21	23	1542	516.1	47	57		2853
22	24	1554	592.8	46	55		2712
23	13	1602	582.4	46	56		2739
24	B-4	1629	218.2	43	52	3325	3321
25			17.7				
26			10.5				
27							
28							
29							
30							

45-613 EYE-EASE 45-713 20/20 BUFF NATIONAL Made in U.S.A.

GEOEX JOB # 796 - MARY JO CLAIMS, SUPERIOR, PINAL COUNTY, ARIZONA 1/27/73

GRAVITY BASE CALCULATIONS

Field Date 1/25/73

0.064

STATION (~~BASE #~~)	1 METER READING S.D.	2 DRIFT CORRECTION S.D.	3 CORRECTED METER READING S.D.	4 mgals = (3)×0.09979 mgals/S.D.	5 MILES N of Baseline (33°15')	6 latitude corr. (5)×1.199 mgals/mile	7 ELEVATION CORRECTED IN FEET	8 ELEVATION FACTOR mgals/ft (7)×0.06433	9 BOUGUER GRAVITY mgals (4)-(6)+(8) -200.00
B-1			296.0	29.54	1.84	2.21	3609	232.17	59.50
B-2			206.41	20.60	1.61	1.93	3690	237.38	56.05
B-3			198.1	19.77	1.80	2.16	3690	237.38	54.99
B-4			537.5	53.64	0.50	0.60	3127	201.16	54.20
B-5	See attached Sheet		439.3	43.84	0.41	0.49	3328	214.09	57.44
B-6			130.6	13.03	0.51	0.61	3897	250.69	63.11
B-7			72.5	7.23	3.47	4.16	3904	251.14	54.21
B-8			298.1	29.75	0.42	0.50	3509	225.73	54.98
B-9	Check map position!		782.3	78.07	0.27	0.32	2685	172.73	50.48
							2674		249.77

				(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Meter reading S.D.	offset S.D.	Drift S.D.	Corr Meter Reading S.D.	mgals = (4)×0.09979 (mgals/S.D.)	Miles N of 33°15' latitude	latitude corr 6×1.199 mgals/mile	corr elev in feet	elevation correction (8)×0.06433 (mgals/ft)	Bouguer Gravity mgals (5)-(7)+(9) -240	Terrain Correction mgals	Terrain corrected Bouguer Gravity mgals (10)+(11)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

UNITED STATES
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

SUPERIOR QUADRANGLE
ARIZONA–PINAL CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PINAL RANCH QUADRANGLE
ARIZONA
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1962. Field checked 1964

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

Fine red dashed lines indicate selected fence lines

UTM GRID AND 1964 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
State Route

QUADRANGLE LOCATION

TEAPOT MOUNTAIN, ARIZ.
N3307.5—W11100/7.5
1964
AMS 3750 II NE—SERIES V

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1962. Field checked 1964

Polyconic projection. 1927 North American datum
10,000-foot grid bases based on Arizona coordinate system, central and east zones
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

UTM GRID AND 1964 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
State Route

QUADRANGLE LOCATION

SONORA, ARIZ.
NW/4 RAY 15' QUADRANGLE
N3307.5—W11052.5/7.5
1964
AMS 3850 III NW—SERIES V898

THE TOPOGRAPHIC MAPS OF THE UNITED STATES

The United States Geological Survey is making a series of standard topographic maps to cover the United States. This work has been in progress since 1882, and the published maps cover more than 47 percent of the country, exclusive of outlying possessions.

The maps are published on sheets that measure about 16½ by 20 inches. Under the general plan adopted the country is divided into quadrangles bounded by parallels of latitude and meridians of longitude. These quadrangles are mapped on different scales, the scale selected for each map being that which is best adapted to general use in the development of the country, and consequently, though the standard maps are of nearly uniform size, the areas that they represent are of different sizes. On the lower margin of each map are printed graphic scales showing distances in feet, meters, miles, and kilometers. In addition, the scale of the map is shown by a fraction expressing a fixed ratio between linear measurements on the map and corresponding distances on the ground. For example, the scale $\frac{1}{62,500}$ means that 1 unit on the map (such as 1 inch, 1 foot, or 1 meter) represents 62,500 of the same units on the earth's surface.

Although some areas are surveyed and some maps are compiled and published on special scales for special purposes, the standard topographic surveys and the resulting maps have for many years been of three types, differentiated as follows:

1. Surveys of areas in which there are problems of great public importance—relating, for example, to mineral development, irrigation, or reclamation of swamp areas—are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{31,680}$ (1 inch = one-half mile) or $\frac{1}{62,500}$ (1 inch = 2,000 feet), with a contour interval of 1 to 100 feet, according to the relief of the particular area mapped.

2. Surveys of areas in which there are problems of average public importance, such as most of the basin of the Mississippi and its tributaries, are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{62,500}$ (1 inch = nearly 1 mile), with a contour interval of 10 to 100 feet.

3. Surveys of areas in which the problems are of minor public importance, such as much of the mountain or desert region of Arizona or New Mexico, and the high mountain area of the northwest, are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{125,000}$ (1 inch = nearly 2 miles) or $\frac{1}{250,000}$ (1 inch = nearly 4 miles), with a contour interval of 20 to 250 feet.

The aerial camera is now being used in mapping. From the information recorded on the photographs, planimetric maps, which show only drainage and culture, have been made for some areas in the United States. By the use of stereoscopic plotting apparatus, aerial photographs are utilized also in the making of the regular topographic maps, which show relief as well as drainage and culture.

A topographic survey of Alaska has been in progress since 1898, and nearly 44 percent of its area has now been mapped. About 15 percent of the Territory has been covered by maps on a scale of $\frac{1}{250,000}$ (1 inch = nearly 4 miles). For most of the remainder of the area surveyed the maps published are on a scale of $\frac{1}{125,000}$ (1 inch = nearly 2 miles). For some areas of particular economic importance, covering about 4,300 square miles, the maps published are on a scale of $\frac{1}{62,500}$ (1 inch = nearly 1 mile) or larger. In addition to the area covered by topographic maps, about 11,300 square miles of southeastern Alaska has been surveyed, and the resulting maps are published on a scale of $\frac{1}{62,500}$.

The Hawaiian Islands have been surveyed, and the resulting maps are published on a scale of $\frac{1}{62,500}$.

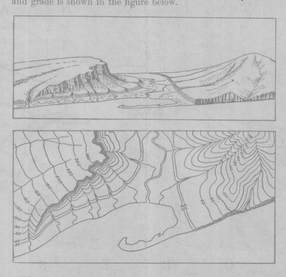
A survey of Puerto Rico is now in progress. The scale of the published maps is $\frac{1}{30,000}$.

The features shown on topographic maps may be arranged in three groups—(1) water, including seas, lakes, rivers, canals, swamps, and other bodies of water; (2) relief, including mountains, hills, valleys, and other features of the land surface; (3) culture (works of man), such as towns, cities, roads, railroads, and boundaries. The symbols used to represent these features are shown and explained below. Variations appear on some earlier maps, and additional features are represented on some special maps.

All the water features are represented in blue, the smaller streams and canals by single blue lines and the larger streams by double lines. The larger streams, lakes, and the sea are accentuated by blue water lining or blue tint. Intermittent streams—those whose beds are dry for a large part of the year—are shown by lines of blue dots and dashes.

Relief is shown by contour lines in brown, which on a few maps are supplemented by shading showing the effect of light thrown from the northwest across the area represented, for the purpose of giving the appearance of relief and thus aiding in the interpretation of the contour lines. A contour line represents an imaginary line on the ground (a contour) every part of which is at the same altitude above sea level. Such a line could be drawn at any altitude, but in practice only the contours at certain regular intervals of altitude are shown. The datum or zero of altitude of the Geological Survey maps is mean sea level. The 20-foot contour would be the shore line if the sea should rise 20 feet above mean sea level. Contour lines show the shape of the hills, mountains, and valleys, as well as their altitude. Successive contour lines that are far apart on the map indicate a gentle slope, lines that are close together indicate a steep slope, and lines that run together indicate a cliff.

The manner in which contour lines express altitude, form, and grade is shown in the figure below.



The sketch represents a river valley that lies between two hills. In the foreground is the sea, with a bay that is partly enclosed by a hooked sand bar. On one side of the bay is a terrace into which small streams have cut narrow gullies. The hill on the right has a rounded summit and gently sloping spurs separated by ravines. The spurs are truncated at their lower ends by a sea cliff. The hill at the left terminates abruptly at the valley in a steep scarp, from which it slopes gradually away and forms an inclined tableland that is traversed by a few shallow gullies. On the map each of these features is represented, directly beneath its position in the sketch, by contour lines.

The contour interval, or the vertical distance in feet between one contour and the next, is stated at the bottom of each map. This interval differs according to the topography of the area mapped: in a flat country it may be as small as 1 foot; in a mountainous region it may be as great as 250 feet. In order that the contours may be read more easily certain contour lines, every fourth or fifth, are made heavier than the others and are accompanied by figures showing altitude. The heights of many points—such as road intersections, summits, surfaces of lakes, and benchmarks—are also given on the map in figures, which show altitudes to the nearest foot only. More precise figures for the altitudes of benchmarks are given in the Geological Survey's bulletins on spirit leveling. The geodetic coordinates of triangulation and transit-traverse stations are also published in bulletins.

Lettering and the works of man are shown in black. Boundaries, such as those of a State, county, city, land grant, township, or reservation, are shown by continuous or broken lines of different kinds and weights. Public roads suitable for motor travel the greater part of the year are shown by solid double lines; poor public roads and private roads by dashed double lines; trails by dashed single lines. Additional public road classification if available is shown by red overprint.

Each quadrangle is designated by the name of a city, town, or prominent natural feature within it, and on the margins of the map are printed the names of adjoining quadrangles of which maps have been published. More than 4,100 quadrangles in the United States have been surveyed, and maps of them similar to the one on the other side of this sheet have been published.

Geologic maps of some of the areas shown on the topographic maps have been published in the form of folios. Each folio includes maps showing the topography, geology, underground structure, and mineral deposits of the area mapped, and several pages of descriptive text. The text explains the maps and describes the topographic and geologic features of the country and its mineral products. Two hundred twenty-five folios have been published.

Index maps of each State and of Alaska and Hawaii showing the areas covered by topographic maps and geologic folios published by the United States Geological Survey may be obtained free. Copies of the standard topographic maps may be obtained for 10 cents each; some special maps are sold at different prices. A discount of 40 percent is allowed on an order amounting to $5 or more at the retail price. The discount is allowed on an order for maps alone, either of one kind or in any assortment, or for maps together with geologic folios. The geologic folios are sold for 25 cents or more each, the price depending on the size of the folio. A circular describing the folios will be sent on request.

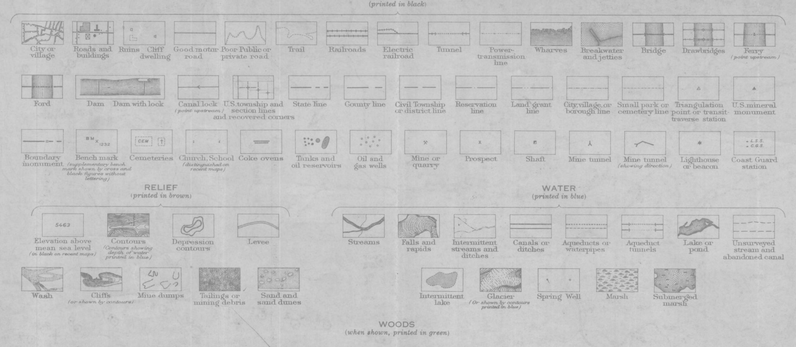
Applications for maps or folios should be accompanied by cash, draft, or money order (not postage stamps) and should be addressed to

THE DIRECTOR,
United States Geological Survey,
Washington, D. C.

November 1937.

NOTE.—Effective on and after October 4, 1946, the price of standard topographic quadrangle maps will be 20 cents each, with a discount of 20 percent on orders amounting to $10 or more at the retail rate.

STANDARD SYMBOLS



Hutton Pk
Oak Flat
Rawhide Canyon
Devils Canyon
Iron Canyon
Lost Horse Spr
Henderson Ranch
Ellis Ranch
Black Rock Mine
Spitfire Mine
Mud Spr
Goatwater Spr
Cornwater Spr
Red Rock Mine
Lyons Canyon
Black Rock Spr
Sixty Six Ranch
Hale Tank
Copper Vault Tunnel
Government Spr
Hagen Ranch
Captain Trap Spr
Government Mtn
Grapevine Spring
Tillmans Wash
Tillman Spring
Laguna Spring
Cedar Creek
Walnut Canyon
Walnut Spring
Cottonwood Spring
Hot Tamale Peak
Monitor Mine
Indian Spring
Chimney Spring
Prospect
Woodchopper Spring
Lookout Tank
Siash S Ranch
Big Tank
Potters Wash
Hot Tamale Wash
Mineral Creek
Lakel Flat
Sleeping Beauty Mountain
Arnett Creek
Grandy Pacific Mine
Oak Creek
Hackberry
Ranchero Rio
Dry Wash
Lyons Fork
Mill Creek
Tank
Pond
Reservoir
Spring
Prospect
Gulch
Dripping
Gila Co
Pinal Co
Forest Boundary
National Forest Boundary
Current Fire
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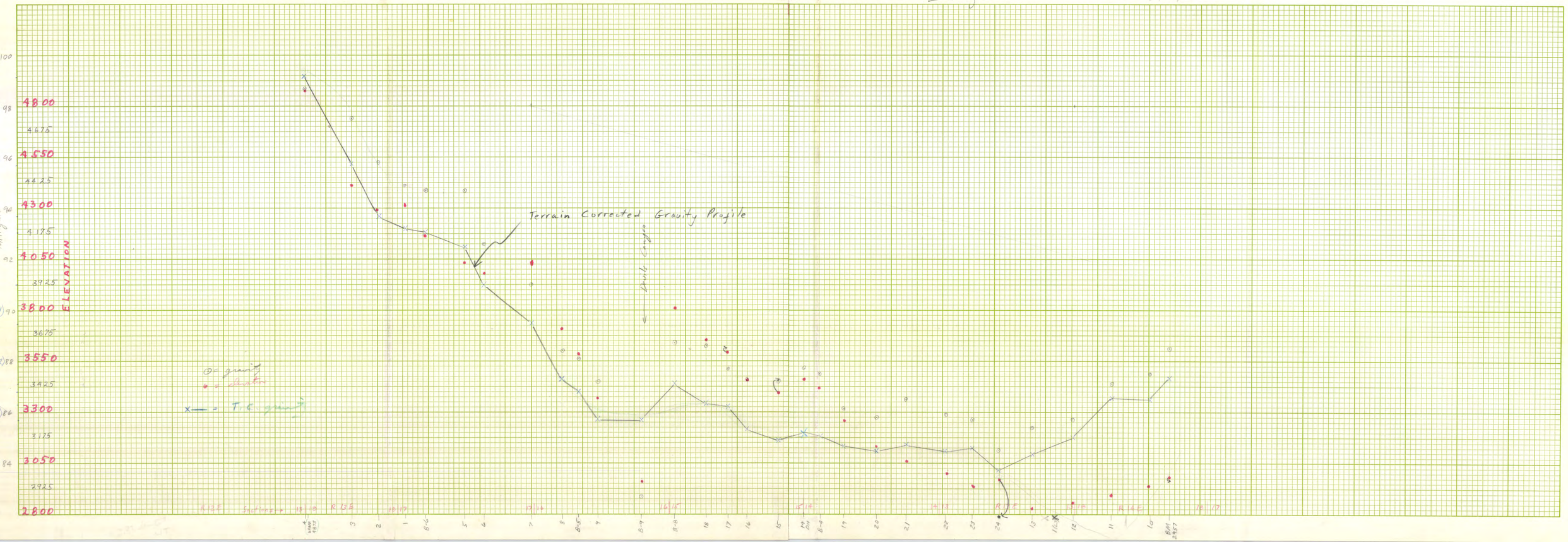
LINE 1 Job# 796 1" = 2000' 111°00' Looking North 2/15/73



LINE 2

111° 00'

2/15/73

JOB No. 796 LINE No. L-1 PAGE 1
AREA DEVILS CANYON DATE 11/26/73
INSTRUMENT GRAV. & ALT.

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B-6	10.17	810.1				
2			808.5				40.51
3							
4	B-6	12.00	677.8				41.88
5	1W	13.35	590.0				41.99
6							
7		Light bulb failure					
8							
9							
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JOB NO. _____ LINE NO. L-1 E½ PAGE _____

AREA _____ DATE 1/30/23

INSTRUMENT GRAVITY

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	GOVT	SPRINGS.		WET	DRY		ALT.
2	BM 2987	1335	391.7	43	56		2987
3	10	1405	396.[illegible]	44	57		297[illegible]
4	11	1450	422.3	44	56		294[illegible]
5	12	[illegible]	[illegible]	4[illegible]	57		29[illegible]
6	13	16:12	4[illegible].2	43	55		2912
7	BM 2987	16:36	392.3	42	54		3044
8							
9							
10							
11							
12							
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HEINRICHS GEOEXPLORATION COMPANY

JOB No. _____ LINE No. L-1 E 1/2 PAGE 1
AREA _____ DATE 1/31/73
INSTRUMENT GRAVITY

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1		West from B-4 to B-8					
2				WET	DRY		ALT
3	B4	[illegible]	[illegible].0	45	47		[illegible]
4	JOB 14	935	[illegible]	43	47		[illegible]
5	15	1000	641.4	45	49		[illegible]
6	16	1054	605.1	41	47		3358
7	17	1125	501.4	43	52		3523
8	18	1144	487.3	44	52		3559
9	B-8	1215	393.0	43	52		3720
10			393.2			3332	3335
11			0.2			@ 1400.	
12							
13							
14		B-4 going east					
15							
16	B-4	1400	217.7	46	54		3332
17	19	1418	305.7	48	57		3185
18	20	1441	384.3	46	56		3057
19	21	1503	433.8	46	54		2991
20	22	1529	471.7	46	54		2925
21	23	1542	516.1	47	57		2853
22	24	1554	592.8	46	55		2712
23	13	1602	582.4	46	56		2739
24	B-4	1629	218.2	43	52	3325	3321
25			177				
26			0.5				
27							
28							
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HEINRICHS GEOEXPLORATION COMPANY

14 - 3 NE

JOB No. 796 LINE No. L-1 PAGE 1
AREA DEWCS (CANADA) DATE 1/29/73
INSTRUMENT GRAVITY

	STA.	TIME	READING	BASE CORR.	~~Δt~~ Wet Dry	DRIFT CORR.	VALUE
1	B-6	9:28	676.0	35	45		3815
2	B-6	9:49	676.0	35	46	3815	3818
3	1	10:12	587.0	37	48	3818	3960
4	2	10:32	603.8	36	49	3818	3945
5	3	10:53	539.2	36	47		4073
6	4	11:14	528.0	37	48		4113
7	VA2791 4975	12:02	476.9	37	45		4570
8	B-6	12:24	673.3	40	53	3869	3875
9		(3:14	centerline time)	center		3871	3872
10			2.7	low			
11				center		3879	3880
12	B-6	13:40	673.3	42	55		3885
13	readjust. — E half L-1						
14	B-6	1400	147.5	42	53		3895
15	5	1438	235.3	41	54		3759
16	6	1500	247.6	46	58		3723
17	7	1558	202.5	43	53		3769
18	8	1630	382.0	46	54		3456
19	B-5	1643	457.4	42	52		3375
20			456.3				
21			1.1	H.			
22	B-5	1653	457.5				3340
23	9	1712	581.7	42	48		3132
24	B-5	1733	456.4	39	46		3355
25			1.4	low			
26							
27							
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HEINRICHS GEOEXPLORATION COMPANY

JOB No. 78 LINE No. L-1 E 1/2 PAGE
AREA DEVILS CANYON DATE 11/30/73
INSTRUMENT BASE ALT JJ 12743

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1				TEMP (DRY)			
2	BM 2957	1335	2983	56			
3		1344	2980	56			
4		1348	2982	57			
5		1352	2983	58			
6		1356	2984	59			
7		1400	2990	58			
8		1405	2991	55			
9		1410	2992	55			
10		1415	3000	54			
11		1420	3000	55			
12		1425	3000	54			
13		1430	3002	54			
14		1435	3005	53			
15		1440	3005	52			
16		1445	3008	52			
17		1450	3000	52			
18		1455	3005	52			
19		1500	3011	52			
20		1505	3015	51			
21		1510	3017	51			
22		1515	3015	52			
23		1520	3013	52			
24		1525	3016	53			
25		1530	3019	53			
26		1535	3019	53			
27		1542	3028	52			
28		1546	3030	52			
29		1550	3033	52			
30							

HEINRICHS GEOEXPLORATION COMPANY

[illegible]

JOB NO. _____ LINE NO. L-1 E½ PAGE 2
AREA _____ DATE 11/30/72
INSTRUMENT BASE ACT

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1				TEMP (Dry)			
2	BM 2957	1555	3032	51			
3		1600	3031	51			
4		1605	3032	51			
5		1610	3031	51			
6		1615	3038	51			
7		1620	3035	51			
8		1625	3037	50			
9		1635	3040	49			
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JOB No. 796 LINE No. L-1 PAGE 1
AREA DEVILS CANYON DATE 1/29/73
INSTRUMENT BASE ALT. GTJ 12743

	STA.	TIME	READING ALT.	~~BASE CORR.~~	~~Δt~~	~~DRIFT CORR.~~	~~VALUE~~
1	B-6	9:28	3817			2:00	3883
2		9:35	3818			2:10	3888
3		9:40	3818			2:20	3888
4		9:45	3818			2:30	3888
5		9:50	3818	West 1/2 Line 1 Sec's. 16 & 17.	—	2:40	3893
6		9:55	3818			2:50	3904
7		10:00	3818			2:55	3904
8		10:10	3818			3:00	3904
9		10:20	3818			3:10	3904
10		10:30	3818			3:20	3904
11		10:40	3818			3:30	3904
12		10:50	3818			3:40	3904
13		11:00	3822			3:50	3904
14		11:10	3822			4:00	3910
15		11:20	3847			4:10	3910
16		11:30	3850			4:20	3910
17		11:35	3850			4:30	3910
18		11:40	3848			4:40	3910
19		11:45	3850			4:50	3919
20		11:50	3850			4:55	3919
21		12:00	3853			5:00	3919
22		12:10	3853			5:10	3922
23		12:20	3853			5:15	3922
24		12:30	3853			5:20	3931
25		12:40	3860			5:25	3932
26		12:50	3860			5:30	3935
27		1:00	3866			5:35	3936
28		1:10	3869			5:45	3928
29						5:50	3929
30						5:55	3929

JOB NO. _____ LINE NO. _____ PAGE 2
AREA _____ DATE 1/29/73
INSTRUMENT _____

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B-6						
2							
3	6:00	3931					
4	6:05	3936					
5	6:10	3938					
6	6:15	3940	Closed				
7							
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JOB No. _____ LINE No. L-1 E½ PAGE _____
AREA _____ DATE 1/31/73
INSTRUMENT BASE ALT

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1							
2		E-4	west	to E-8			
3		/	ALT.	TEMP			
4	E4	9:20	3354	47			
5		25	3353	47			
6		30	3352	47			
7		35	3352	48			
8		40	3352	48			
9		45	3350	48			
10		50	3348	48			
11		55	3347	47			
12		10:00	3345	48			
13		05	3343	48			
14		10	3341	47			
15		15	3339	47			
16		20	3338	48			
17		25	3332	49			
18		30	3329	48			
19		35	3328	49			
20		40	3326	48			
21		45	3321	46			
22		50	3321	45			
23		55	3321	45			
24		11:00	3320	44			
25		05	3319	45			
26		10	3319	45			
27		15	3319	44			
28		20	3320	44			
29		25	3320	45			
30		30	3320	45			

JOB NO. _____ LINE NO. _____ PAGE _____
AREA _____ DATE _____
INSTRUMENT _____

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1		3					
2							
3	1-9	1135	3320	45			
4		40	3322	45			
5		45	3320	45			
6		50	3320	45			
7		55	3322	45			
8		12:00	3324	45			
9		05	3327	45			
10		10	3330	45			
11		15	3330	45			
12		20	3330	45			
13		25	3330	45			
14		30	3330	45			
15		35	3330	45			
16		40	3330	46			
17		45					
18		50	3331	47			
19		55					
20		13:00	3334	47		end	
21		05					
22		10					
23		15					
24		20					
25		25					
26		30					
27		35					
28		40					
29		45					
30		50					

B-A West to B-8

JOB NO. _____ LINE NO. _____ PAGE _____
AREA _____ DATE _____
INSTRUMENT _____

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1							
2							
3		1353					
4	B-4	14.00	3332	52			
5		05	3334	52		B-4	
6		10	3334	53			
7		15	3339	54			
8		20	3339	54			
9		25	3339	52		East	
10		30	3339	51			
11		35	3339	51			
12		40	3339	50		to	
13		45		51			
14		50	3341	51			
15		55	3344	51		STA	
16		15:00	3341	49			
17		05	3342	48			
18		10	3341	49		B	
19		15	3340	48			
20		20	3340	51			
21		25	3340	51		-	
22		30	3340	50			
23		35	3339	48		LINE	
24		40	3339	50			
25		45	3339	51			
26		50	3335	50		1	
27		55	3336	51			
28		16.00	3332	50			
29		05	3332	50			
30		10	3331	50			

JOB NO. _____ LINE NO. _____ PAGE _____
AREA _____ DATE _____
INSTRUMENT _____

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1							
2							
3	B-4	16:15	3332	51			
4		20	3329	51			
5		25	3328	50			
6		30	3325	48			
7		35					
8		40					
9		45					
10		50					
11		55					
12		17:00					
13		05					
14		10					
15		15					
16		20					
17		25					
18		30					
19		35					
20		40					
21		45					
22		50					
23		55					
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B-4 EAST to STA 13 - LINE 1

JOB No. 796 LINE No. _____ PAGE 2
AREA _____ DATE 1/25/73
INSTRUMENT BASE ALT. - 3 BASE

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	BSE	TIME	ADJ.	WET	DRY		
2	5R-8	15.05	3661	55	64		
3		10	3663	56	67		
4		15	3664	53	64		
5		20	3665	53	63		
6		25	3669	56	65		
7		15:30	3671	56	64		
8		:35	3672	54	63		
9		:40	3671	54	64		
10		:45	3670	54	64		
11		:50	3674	54	64		
12		15:55	3677	53	64		
13		16:00	3675	54	64		
14		:05	3677	54	63		
15		:10	3679	54	63		
16		:15	3679	53	62		
17		:20	3679	54	61		
18		:25	3680	49	68		
19		16:30	3680	50	56		
20		:35	3680	48	56		
21		:40	3680	49	53		
22		:45	3679	48	52		
23							
24							
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28							
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HEINRICHS GEOEXPLORATION COMPANY

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JOB No. 72 LINE No. BASE STA. 5 PAGE 1
AREA DEVILS CANYON DATE 1-25-73
INSTRUMENT GRAVITY & ACT.

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B-1	1248	296.0				3609
2	B-2	1316	206.4				3703
3	B-3	48	198.0				3722
4	B-4	1406	537.4				3169
5	B-5	28	439.2				3379
6	B-6	50	130.4				3955
7	B-1	1509	295.8				3670
8	B-1	29	296.0				3677
9	B-7	44	072.8				3971
10	B-8	1600	298.6				3581
11	B-9	27	783.2				2762
12	B-1	46	297.2				3685
13							
14							
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HEINRICHS GEOEXPLORATION COMPANY

B-2 [illegible] → N

JOB No. 796 LINE No. BASE STA.'S PAGE 1
AREA BASE READINGS (DEVILS CANYON) DATE 1/25/73
INSTRUMENT ALTIMETER JT 12742 (BASE)

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	BASE	TIME	ALT.	WET	DRY		
2	Sec 8.	12:43	3609	47	61		
3	B-1	12:49	3611	47	62		
4		12:55	3611	52	63		
5		13:00	3612	51	62		
6		13:05	3617	53	66		
7		13:10	3619	50	67		
8	→	13:15	3621	50	62		
9		:20	3624	50	61		
10		:25	3626	51	61		
11		13:30	3629	52	63		
12		:35	3631	53	65		
13		:40	3635	52	66		
14		:45	3637	51	64		
15	→	:50	3639	54	65		
16		:55	3641	53	65		
17		14:00	3642	53	64		
18		:05	3647	51	65		
19	→	:10	3649	54	65		
20		:15	3649	53	66		
21		:20	3651	54	66		
22		:25	3653	55	68		
23	→	14:30	3657	54	66		
24		:35	3658	54	64		
25		:40	3659	53	64		
26		:45	3659	55	65		
27		:50	3661	54	67		
28		55	3661	55	64		
29		15:00	3661	55	66		
30							

JOB NO. _____ LINE NO. _____ PAGE 1
AREA _____ DATE 2/2/78
INSTRUMENT ALT. S.N J.J. 12743

	STA.	TIME	READING ALT	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B1	8:48	3550	44			
2		8:53	3543	44			
3		9:00	3541	45			
4		04	3539	46			
5			3539	46			
6			3539	46			
7		9:15	3536	46			
8		9:18	3532	46			
9			3531	46			
10			3530	46			
11			3528	46			
12			3524	46			
13		9:36	3522	46			
14			3519	46			
15			3517	46			
16			3517	46			
17		9:51	3516	46			
18		9:55	3514	46			
19	16		3514	46			
20	17		3514	46			
21	18		3511	46			
22	19	10:09	3514	46			
23	20	10:13	3522	45			
24	21	10:16	3527	42			
25	22	10:19	3528	42			
26	23		3529	44			
27	24		3529	46			
28	25		3534	48			
29	26		3536	49			
30	27		3538	50			

JOB NO. _____ LINE NO. _____ PAGE 2
AREA _____ DATE _____
INSTRUMENT _____

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1							
2							
3	31		3539	50			
4	32		3540	51			
5	33		3541	51			
6	34		3543	51			
7			3541	51			
8		1103	3539	50			
9		05	3539	50			
10							
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JOB No. 796 LINE No. _____ PAGE 1
AREA _____ DATE 2/5/73
INSTRUMENT ALT SN. J.J.12742

	STA.	TIME	READING ALT.	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B1	10:10	3522	56			
2		10:15	3522	56			
3		10:20	3520	56	HIGH SCATTER		
4		10:25	3520	56	[illegible]		
5		10:30	3518	56	[illegible]		
6		10:35	3517	56	MORE HIGH [illegible]		
7		10:40	3517	58	[illegible]		
8		10:45	3517	56			
9		10:50	3519	57			
10		10:55	3519	57			
11		11:00	3520	57			
12		11:05	3520	57			
13		11:10	3515	57			
14		11:15	3518	57			
15		11:20	3519	57			
16		11:25	3520	57			
17		11:30	3520	56			
18		11:35	3521	54			
19		11:40	3520	55			
20		11:45	3522	55			
21		11:50	3526	56			
22		11:55	3530	56			
23		12:00	3528	56			
24		12:05	3529	56			
25		12:10	3530	56			
26		12:15	3532	57			
27		12:20	3531	58			
28		12:25	3540	59			
29		12:30	3546	59			
30							

JOB No. 796 LINE No. _____ PAGE 2
AREA _____ DATE 2/5/73
INSTRUMENT ALT. SN 5512742

	STA.	TIME	~~READING~~ ALT	~~BASE~~ CORR.	Δt	DRIFT CORR.	VALUE
1		12:35	3547	58			
2		12:40	3549	58			
3		12:45	3550	58			
4		12:50	3551	56			
5		12:55	3551	57			
6		1:00	3552	58			
7		1:05	3558	59			
8		1:10	3560	59			
9		1:15	3561	58			
10		1:20	3561	58			
11		1:25	3566	58			
12		1:30	3570	57			
13		1:35	3570	56			
14		1:40	3570	56			
15		1:45	3571	56			
16		1:50	3572	56			
17		1:55	3576	56			
18		2:00	3580	56			
19		2:05	3580	58			
20		2:10	3580	58			
21		2:15	3581	58			
22		2:20	3581	58			
23		2:25	3582	58			
24		2:30	3582	57			
25		2:35	3588	58			
26		2:40	3588	60			
27		2:45	3588	60			
28		2:50	3590	59			
29		2:55	3591	59			
30							

Job No. 796 Line No. _____ Page 3
Area _____ Date 2/5/72
Instrument ALT. S No 5512742

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1		3:00	3592	59			
2		3:05	3592	59			
3		3:10	3598	59			
4		3:15	3600	59			
5		3:20	3600	59			
6		3:25	3598	58			
7		3:30	3598	58			
8		3:35	3598	58			
9		3:40	3599	57			
10		3:45	3599	58			
11		3:50	3599	58			
12		3:55	3599	58			
13		4:00	3598	57			
14							
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27							
28							
29							
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JOB No. 796 LINE No. _____ PAGE 1
AREA _____ DATE 2/6/73
INSTRUMENT ALT SN JJ12742

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B3	9:15	3665	54			
2		9:20	3665	51	CHANGE		
3		9:25	3665	49	IN BASE		
4		9:30	3662	49			
5		9:35	3662	50			
6		9:40	3662	49			
7		9:45	3660	52			
8		9:50	3661	51			
9		9:55	3661	51			
10		10:00	3662	52			
11		10:05	3661	52			
12		10:10	3661	51			
13		10:15	3661	51	CLEARING		
14		10:20	3662	51			
15		10:25	3661	51			
16		10:30	3661	51			
17		10:35	3661	51			
18		10:40	3661	51			
19		10:45	3661	51			
20		10:50	3661	51			
21		10:55	3660	51			
22		11:00	3661	51			
23		11:05	3661	51			
24		11:10	3661	51			
25		11:15	3662	52			
26		11:20	3669	52			
27		11:25	3670	53			
28		11:30	3670	53			
29		11:35	3670	54			
30							

JOB No. 796 LINE No. _____ PAGE 2
AREA _____ DATE 2/6/72
INSTRUMENT ALT SN J512742

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B3	11:40	3670	54			
2		11:45	3670	54			
3		11:50	3670	54			
4		11:55	3672	54			
5		12:00	3678	54			
6		12:05	3680	55			
7		12:10	3681	55			
8		12:15	3688	56			
9		12:20	3690	56			
10		12:25	3691	57			
11		12:30	3692	56			
12		12:35	3700	57			
13		12:40	3700	57			
14		12:45	3699	58			
15		12:50	3706	59			
16		12:55	3707	59			
17		1:00	3710	59			
18		1:05	3711	59			
19		1:10	3714	59			
20		1:15	3718	59			
21		1:20	3721	59			
22		1:25	3720	59			
23		1:30	3722	59			
24		1:35	3723	59			
25		1:40	3730	58			
26		1:45	3731	58			
27		1:50	3730	58			
28		1:55	3729	59			
29		2:00	3730	59			
30							

Job No. 796 Line No. _____ Page 3
Area _____ Date 2/6/72
Instrument ALT SNJJ 12742

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B3	2:05	3730	59			
2		2:10	3729	59			
3		2:15	3730	59			
4		2:20	3730	59			
5		2:25	3731	59			
6		2:30	3733	59			
7		2:35	3739	59			
8		2:40	3740	59			
9		2:45	3738	59			
10		2:50	3735	59			
11		2:55	3730	59			
12		3:00	3728	58			
13		3:05	3730	58			
14		3:10	3730	58			
15		3:15	3730	58			
16		3:20	3729	58			
17		3:25	3730	58			
18		3:30	3732	57			
19		3:35	3739	57			
20		3:40	3738	57			
21		3:45	3744	58			
22		3:50	3745	57			
23		3:55	3745	57			
24		4:00	3741	56			
25		4:05	3740	57			
26		4:10	3746	57			
27		4:15	3746	57			
28		4:20	3742	57			
29		4:25	3745	56			
30		4:30	3745	56			

Job No. 796 Line No. _____ Page 1
Area _____ Date 2/7/23
Instrument ALT SN JJ 12742

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B3	9:30	3749	55			
2		9:35	3750	53			
3		9:40	3749	52			
4		9:45	3750	52	Tie-in Check		
5		9:50	3750	52			
6		9:55	3749	52			
7		10:00	3749	52			
8		10:05	3750	52			
9		10:10	3750	52			
10		10:15	3755	52			
11		10:20	3752	53			
12		10:25	3751	54			
13		10:30	3752	54			
14		10:35	3752	54			
15		10:40	3752	54			
16		10:45	3755	53			
17		10:50	3753	53			
18		10:55	3751	53			
19		11:00	3750	54			
20		11:05	3755	54			
21		11:10	3751	54			
22		11:15	3753	55			
23		11:20	3755	56			
24		11:25	3754	57			
25		11:30	3759	56			
26		11:35	3760	56			
27		11:40	3760	55			
28		11:45	3761	55			
29		11:50	3762	55			
30		11:55	3767	59			

JOB No. 786 LINE No. _____ PAGE 2
AREA _____ DATE 2/7/73
INSTRUMENT ALT SN 3512742

	STA.	TIME	READING	BASE CORR	Δt	DRIFT CORR.	VALUE
1	B.3	12:20	3770	54			
2		12:25	3772	54			
3		12:15	3773	56			
4		12:15	3778	56			
5		12:20	3779	55			
6		12:25	3779	55			
7		12:30	3780	55			
8		12:35	3780	55			
9		12:40	3782	55			
10		12:45	3787	55			
11		12:50	3790	54	Begin [illegible]		
12		12:55	3790	54			
13		1:00	3792	54			
14		1:05	3797	55			
15		1:10	3797	54			
16		1:15	3800	55			
17		1:20	3800	55			
18		1:25	3804	56			
19		1:30	3809	57			
20		1:35	3809	56			
21		1:40	3811	54	[illegible]		
22		1:45	3817	54			
23		1:50	3821	55			
24		1:55	3821	56			
25		2:00	3821	56			
26		2:05	3822	56			
27		2:10	3829	57			
28		2:15	3830	57			
29		2:20	3830	56			
30							

JOB No. 796 LINE No. _____ PAGE 3
AREA _____ DATE 2/7/73
INSTRUMENT ALT SN JJ 12742

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B3	2:25	3[illegible]	55			
2		[illegible]	3[illegible]	55			
3		[illegible]	3833	54			
4		[illegible]	3836	54			
5		[illegible]	3836	54			
6		[illegible]	3834	54			
7		[illegible]	3834	54			
8		[illegible]	3834	54			
9							
10							
11	B30	4:20	2836	62			
12		4:25	2833	60			
13		30	2830	59			
14		35	2829	58			
15		40	2830	57			
16		45	2829	57			
17		50	2828	57			
18		55	2828	57			
19		5:00	2822	56			
20		:05	2820	55			
21		10	2820	54			
22		15	2827	54			
23		20	2828	~~54~~ 53			
24		25	2828	54			
25		30	2828	53			
26		35	2820	53			
27		40	2817	53			
28		45	2819	53	RAIN		
29		50	2821	51			
30		55	2821	50			

JOB NO. _____ LINE NO. _____ PAGE _____
AREA _____ DATE _____
INSTRUMENT _____

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1							
2	~~6:00~~	6:00	2820	49.			
3		05	2812	48			
4		10	2811	49			
5		15	2809	49			
6		20	2805	49			
7		25	2803	49			
8		30	2803	48			
9							
10							
11							
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JOB No. _____ LINE No. L-3 PAGE _____

AREA _____ DATE _____

INSTRUMENT GRAVITY S.N(ALT) JJ12743

	STA.	TIME	READING	~~BASE CORR.~~ WET	~~Δt~~ DRY	DRIFT CORR.	VALUE
1	NORTH FROM BASE 13 TO B						
2			~~ALT~~	WET	DRY		ALT
3	B13	0902	463.7	37	51		252[illegible]
4	L3,1	0950	425.2	42	52		2576
5	2	1031	411.0	43	54		2589
6	3	1103	392.1	44	55		[illegible]
7	L2B30	1108	363.9	45	57		2656
8	L1B13	1224	462.6	47	61		2530
9							
10							
11	L2	NE FROM		L2 B30			
12	B30	1330	364.6	46	62		2680
13	134	1354	348.4	47	61		2721
14	L3,5	1422	293.5	54	64		2842
15	B30	1526	365.7	49	61		2681
16							
17							
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JOB NO. _____ LINE NO. L1 PAGE 1
AREA _____ DATE 2/1/73
INSTRUMENT BASE ALT

	STA.	TIME	READING ALT	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	BSE (13)						
2	L1	9:00	2529	34			
3		:05	2529	36			
4		:10	2529	36			
5		:15	2529	37			
6		:20	2529	38			
7		:25	2530	38			
8		:30	2531	40			
9		:35	2532	40			
10		:40	2532	41			
11		:45	2530	42			
12		:50	2530	46			
13		:55	2530	49			
14		10:00	2528	50			
15		:05	2523	49			
16		:10	2521	48			
17		:15	2520	47			
18		:20	2520	47			
19		:25	2520	48			
20		:30	2519	47			
21		:35	2517	46			
22		:40	2518	47			
23		:45	2519	48			
24		:50	2518	48			
25		:55	2519	48			
26		11:00	2519	48			
27		:05	2521	48			
28		:10	2520	49			
29		:15	2521	50			
30		:20	2521	50			

JOB NO. _____ LINE NO. _____ PAGE 2
AREA _____ DATE 2/1/73
INSTRUMENT _____

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1							
2		1125	2522	49			
3		30	2523	50			
4		35	2520	50			
5		40	2521	52			
6		45	2521	52			
7		50	2520	52			
8		55	2519	52			
9		1200	2522	52			
10		05	2522	52			
11		10	2522	52			
12		15	2523	52			
13		20	2524	53			
14		25	2529	55			
15		30					
16							
17	B50	1332	2680	56			
18		1340	2679	56			
19		45	2678	56			
20		50	2679	56			
21		55	2679	56			
22		1400	2682	56			
23		05	2682	56			
24		10	2684	56			
25		15	2683	56			
26		20	2685	56			
27		25	2684	56			
28		30	2686	56			
29		35	2688	56			
30		40	2683	56			

JOB NO. _____ LINE NO. _____ PAGE 3
AREA _____ DATE 2-1-73
INSTRUMENT _____

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	L2	1445	2687	56			
2	B30	50	2686	56			
3		55	2687	56			
4		1500	2683	56			
5		05	2682	56			
6		10	2680	56			
7		15	2679	54			
8		20	2682	54			
9		25	2680	54			
10		30	2678	54			
11		35					
12		40					
13		45					
14		50					
15		55					
16		1600					
17							
18							
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JOB NO. _____ LINE NO. 3 PAGE _____
AREA _____ DATE 3/7/73
INSTRUMENT GRAVITY ALT (S.N. J.J. 12 743)

	STA.	TIME	READING S.D.	BASE CORR.	Δt	DRIFT CORR.	VALUE Alt.
1	B3	09:35	488.7	48	52		3750
2	STA 20	10:45	308.5	49	54		4022
3	21	11:13	410.0	51	57		3880
4	22	11:51	311.5	50	56		4032
5	23	12:18	507.9	50	57		3744
6	24	13:23	380.8	52	60		3977
7	25	13:48	403.7	52	60		3958
8	B3	14:58	485.7	48	58		3832
9							
10							
11	B30	15:22	508.5	52	61		2836
12	4A	15:33	480.0	50	60		2881
13	6	16:05	378.8	50	58		3063
14	7	16:18	399.3	48	56		3123
15	6A	17:07	400.9	48	59		3018
16	B30	17:31	506.3	48	52		2801
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JOB NO. _____ LINE NO. 2 PAGE 1
AREA _____ DATE 3/6/7
INSTRUMENT GRAVITY, ALT (S.N. U.T 12743)

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B 3	09:18	242.1	46	49		3663
2	STA 10	09:43	217.9	48	50		3697
3	* 11	10:27	133.7	50	54		38.21
4	12	11:09	201.6	50	54		3708
5	13	11:50	567.8	53	60		3138
6	14	13:15	541.2	56	65		3221
7	15	13:42	674.5	56	69		3022
8	"	"	"	"	"		
9	15	13:43	323.5				
10	16	14:05	491.0	56	68		2742
11	B 30	14:15	496.4	56	66		2739
12	17	14:53	349.4	56	66		2984
13	18	15:12	297.7	56	67		3078
14	B 30	15:29	495.9	56	69		2740
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JOB NO. _____ LINE NO. 2 PAGE 1
AREA _____ DATE 2/2/73
INSTRUMENT GRAV. ALT.

	STA.	TIME	READING	BASE ~~WORK~~ CORR.	Δt DRY	DRIFT CORR.	VALUE ALT
1	B1	8:48	431.4	36	47		35.49
2	L2, 1	9:16	298.0	38	42		37.5
3	L2, 2	9:51	263.5	39	47		37.93
4	3	10:12	330.9	38	46		38.6
5	B1	11:04	426.6	34	47		35.46
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HEINRICHS GEOEXPLORATION COMPANY

435.6 344.1

B1 276.0 B2 206.4

139.6 139.5

JOB NO. _____ LINE NO. 1-2 PAGE 1
AREA [illegible] DATE 1/29/13
INSTRUMENT [illegible] Wet Dry BASE

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B-1	809	310.8	32	39	3805	3809
2	B-1	834	[illegible]	32	40	3807	3825
3	B-1	851	311.8	32	40	3809	3808
4	DDH	932	322.8	35	44		4315
5	B-1	1005	310.7	38	46	3814	3815
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HEINRICHS
GEOEXPLORATION COMPANY

JOB No. _____ LINE No. 2 PAGE 1
AREA _____ DATE 2/5/72
INSTRUMENT CAVITY METER ALT JJ12743

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B1	10:09	435.6	48	60		3522
2	12.4	10:43	291.1	49	62		3739
3	5	11:07	352.7	50	64		3625
4	6	12:22	569.8	50	66		3280
5	7	13:28	276.7	52	66		3772
6	B2	14:17	344.9	52	68		3656
7	8	14:52	300.1	51	66		3743
8	9	15:25	262.1	49	64		3809
9	B2	1551	345.9	50	66		3671
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JOB No. 796 LINE No. 1-2 PAGE 1
AREA [illegible] DATE 1/30/[illegible]
INSTRUMENT BASE ALTIMETER JJ 12743

	STA.	TIME	READING	BASE CORR.	Δt	DRIFT CORR.	VALUE
1	B1	8:39	3805				
2		8:4[illegible]	[illegible]				
3		8:1	3809				
4		9:00	3805				
5		:05	" 05				
6		:11	" 09	Setting of BASE			
7		:16	" 09	@ DDH in			
8		:22	" 05	SW1/4 SW1/4			
9		:28	" 08	Sec 27			
10		:34	3809				
11		:39	" 11				
12		:45	" 09				
13		:50	" 05				
14		:56	" 09				
15		10:00	3811				
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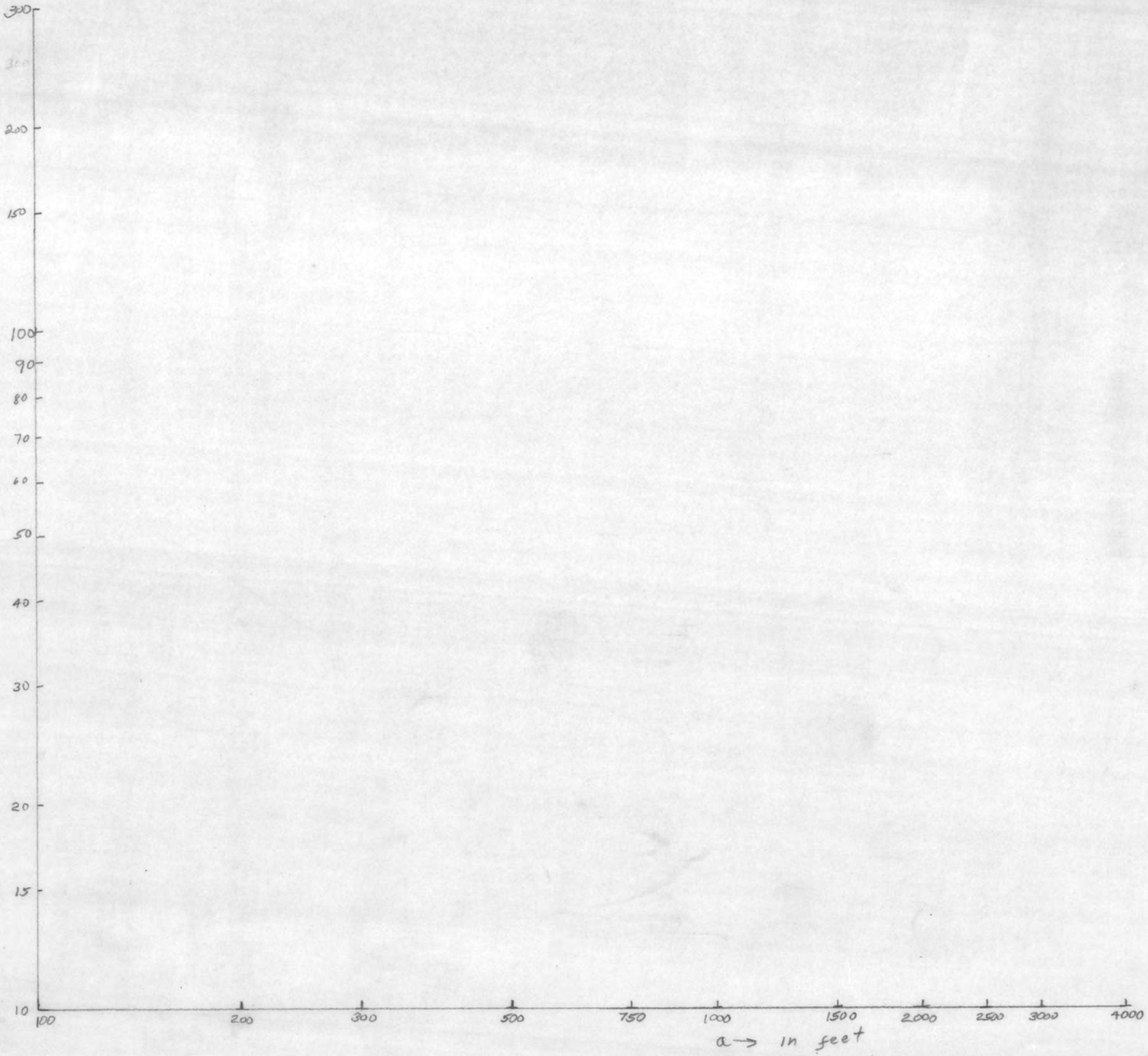
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750
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a → in feet

R 13 E

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L 1

R 13 E

R 13 E | R 14 E

R 13 E | R 14 E

T 1 S
T 2 S

L 2

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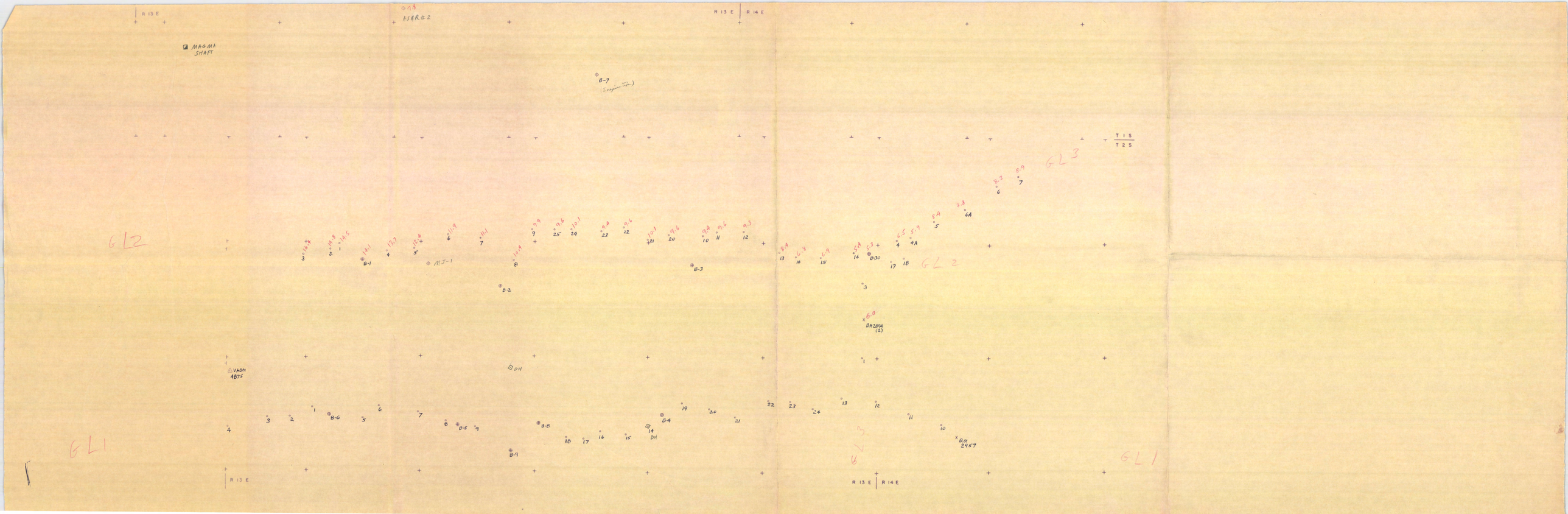
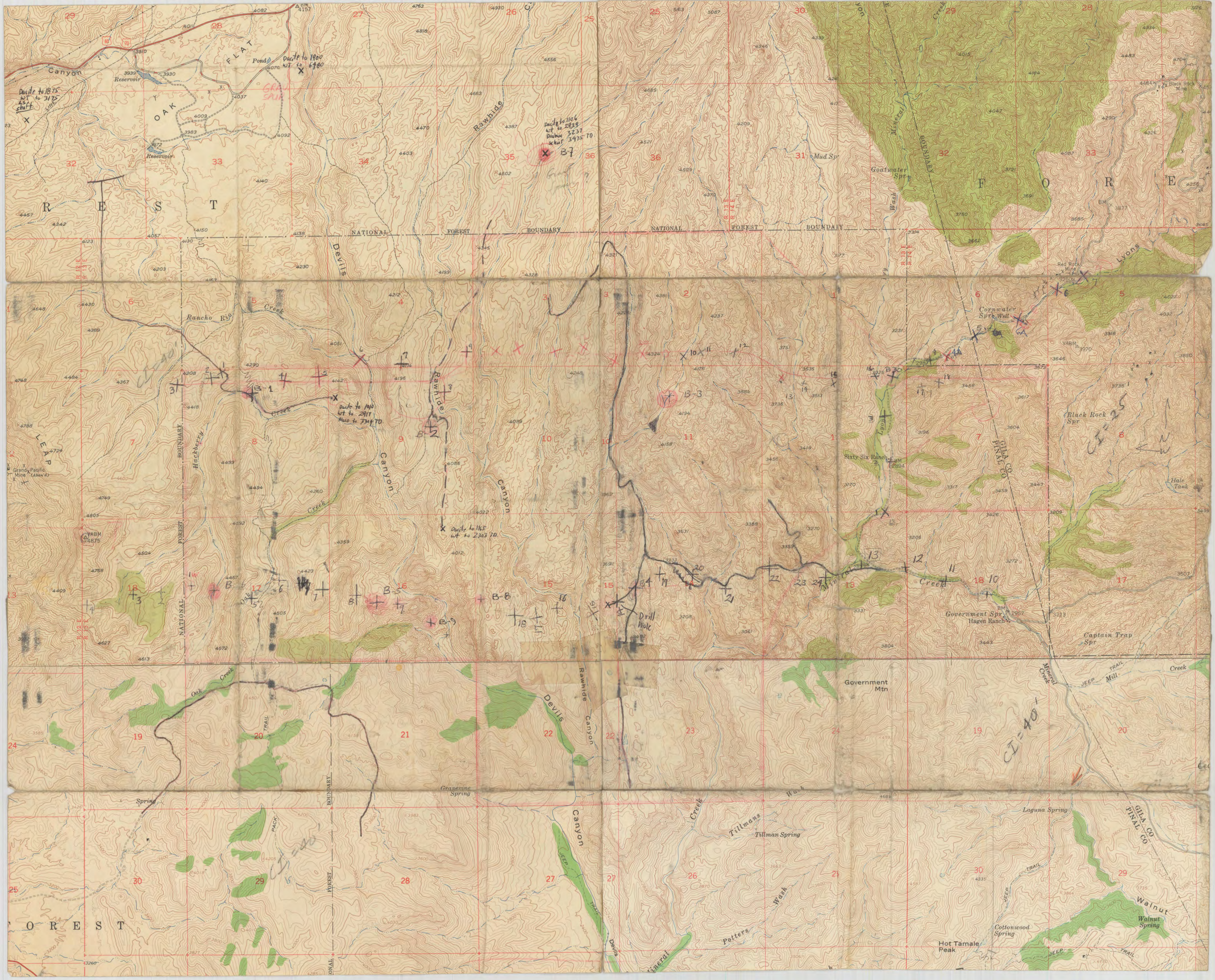

R 13 E
R 13 E
R 14 E
MAGMA SHAFT
ASAR #2
B-7
T 1 S
T 2 S
GL3
GL2
GL1
MJ-1
B-1
B-2
B-3
B-30
B-4
B-5
B-6
B-8
B-9
DH
VABM 4875
BM 2894 (2)
BM 2957
R 13 E
R 13 E
R 14 E



Canyon
OAK
FLAT
Reservoir
Pond
Rawhide
Devils
NATIONAL FOREST BOUNDARY
Rancho Rio
Creek
Hackberry
Canyon
Mud Sp
Goatwater Spr
Mineral
Wash
Lyons
Red Rock Mine
Cornwater Spr
Well
Black Rock Spr
Sixty Six Ranch
GILA CO
PINAL CO
Hale Tank
Government Spr
Hagen Ranch
Captain Trap Spr
Drill hole
Government Mtn
Mill
Creek
JEEP TRAIL
Oak Creek
Grapevine Spring
Tillmans
Tillman Spring
Laguna Spring
Potters
Wash
Walnut
Walnut Spring
Cottonwood Spring
Hot Tamale Peak
Grand Pacific Mine
LEAP
FOREST

0.09979 mgal/scale division

0.06 – 0.07 mgal/ft

~ 0.6 – 0.7 $\frac{\text{scale divisions}}{\text{ft. elev.}}$

1000' elev → 600-700 scale divisions – nearly full range of inst.

6 Amp P25 1.7 mv n = 4

n = 4

1 Hz < 1 PFE > 85

2 PFE > 50

.3 1 PFE > 25

.1 2 PFE > 15

Cos 90° = 0

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

JPM

PINAL RANCH QUADRANGLE
ARIZONA
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by multiplex methods
Aerial photographs taken 1943. Field check 1948

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, east and central zones

Unchecked elevations are shown in brown

TRUE NORTH
MAGNETIC NORTH
14°
APPROXIMATE MEAN DECLINATION, 1948

SCALE 1:24000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 25 FEET
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, FEDERAL CENTER, DENVER, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

HARD-SURFACE ALL WEATHER ROADS		DRY WEATHER ROADS
Heavy-duty	4 LANE / 6 LANE	Improved dirt
Medium-duty	4 LANE / 6 LANE	Unimproved dirt
Loose-surface, graded, or narrow hard-surface		

U. S. Route State Route

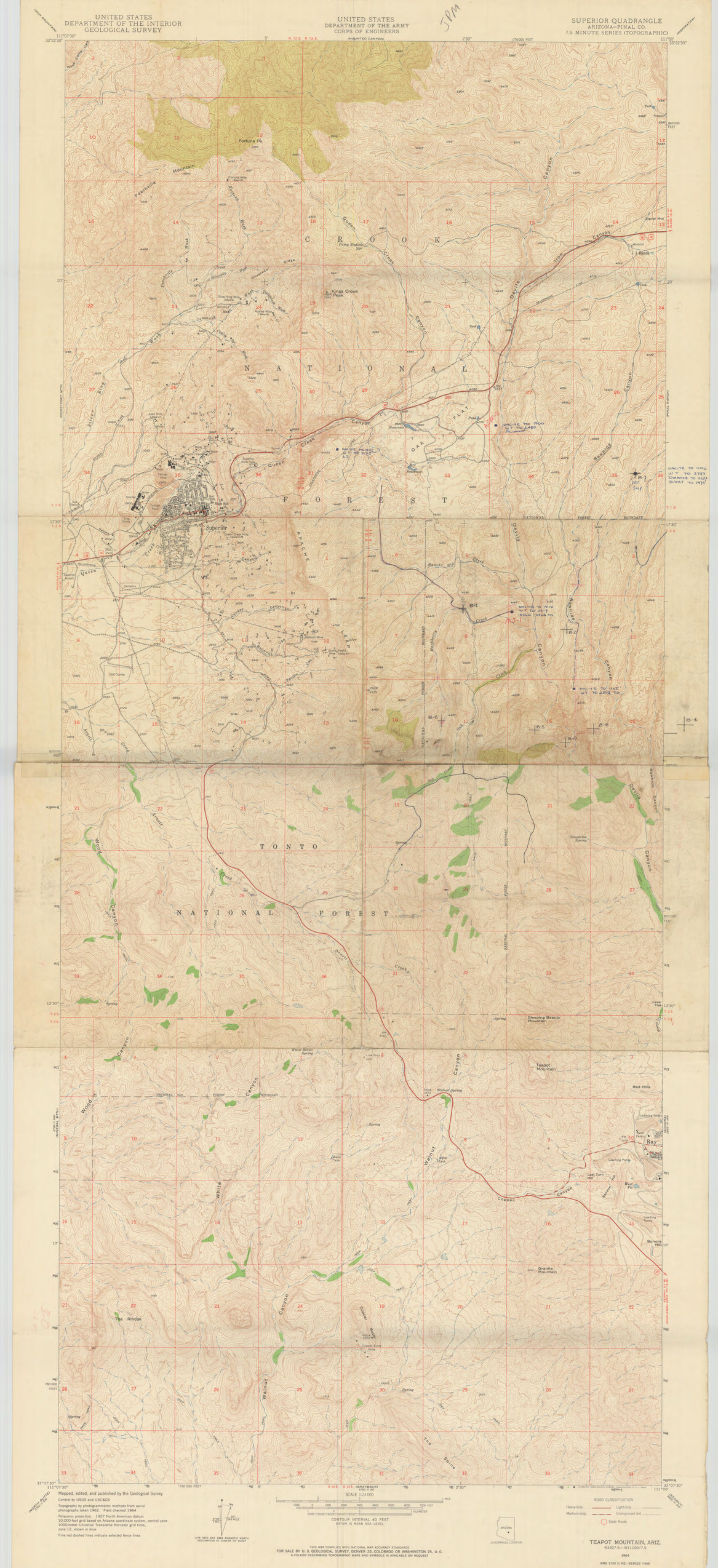
INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D.C. 1955
M-R 0148

PINAL RANCH, ARIZ.
N3315—W11052.5/7.5
1948

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

UNITED STATES
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

SUPERIOR QUADRANGLE
ARIZONA—PINAL CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



THE TOPOGRAPHIC MAPS OF THE UNITED STATES

The United States Geological Survey is making a series of standard topographic maps to cover the United States. This work has been in progress since 1882, and the published maps cover more than 47 percent of the country, exclusive of outlying possessions.

The maps are published on sheets that measure about 16½ by 20 inches. Under the general plan adopted the country is divided into quadrangles bounded by parallels of latitude and meridians of longitude. These quadrangles are mapped on different scales, the scale selected for each map being that which is best adapted to general use in the development of the country, and consequently, though the standard maps are of nearly uniform size, the areas that they represent are of different sizes. On the lower margin of each map are printed graphic scales showing distances in feet, meters, miles, and kilometers. In addition, the scale of the map is shown by a fraction expressing a fixed ratio between linear measurements on the map and corresponding distances on the ground. For example, the scale $\frac{1}{62500}$ means that 1 unit on the map (such as 1 inch, 1 foot, or 1 meter) represents 62,500 of the same units on the earth's surface.

Although some areas are surveyed and some maps are compiled and published on special scales for special purposes, the standard topographic surveys and the resulting maps have for many years been of three types, differentiated as follows:

1. Surveys of areas in which there are problems of great public importance—relating, for example, to mineral development, irrigation, or reclamation of swamp areas—are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{20000}$ (1 inch = one-half mile) or $\frac{1}{24000}$ (1 inch = 2,000 feet), with a contour interval of 1 to 100 feet, according to the relief of the particular area mapped.

2. Surveys of areas in which there are problems of average public importance, such as most of the basin of the Mississippi and its tributaries, are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{62500}$ (1 inch = nearly 1 mile), with a contour interval of 10 to 100 feet.

3. Surveys of areas in which the problems are of minor public importance, such as much of the mountain or desert region of Arizona or New Mexico, and the high mountain area of the northwest, are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{125000}$ (1 inch = nearly 2 miles) or $\frac{1}{250000}$ (1 inch = nearly 4 miles), with a contour interval of 20 to 250 feet.

The aerial camera is now being used in mapping. From the information recorded on the photographs, planimetric maps, which show only drainage and culture, have been made for some areas in the United States. By the use of stereoscopic plotting apparatus, aerial photographs are utilized also in the making of the regular topographic maps, which show relief as well as drainage and culture.

A topographic survey of Alaska has been in progress since 1898, and nearly 44 percent of its area has now been mapped. About 15 percent of the Territory has been covered by maps on a scale of $\frac{1}{250000}$ (1 inch = nearly 4 miles). For most of the remainder of the area surveyed the maps published are on a scale of $\frac{1}{125000}$ (1 inch = nearly 2 miles). For some areas of particular economic importance, covering about 4,300 square miles, the maps published are on a scale of $\frac{1}{62500}$ (1 inch = nearly 1 mile) or larger. In addition to the area covered by topographic maps, about 11,200 square miles of southeastern Alaska has been covered by planimetric maps on scales of $\frac{1}{125000}$ and $\frac{1}{250000}$.

The Hawaiian Islands have been surveyed, and the resulting maps are published on a scale of $\frac{1}{62500}$.

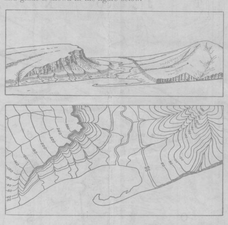
A survey of Puerto Rico is now in progress. The scale of the published maps is $\frac{1}{20000}$.

The features shown on topographic maps may be arranged in three groups—(1) water, including seas, lakes, rivers, canals, swamps, and other bodies of water; (2) relief, including mountains, hills, valleys, and other features of the land surface; (3) culture (works of man), such as towns, cities, roads, railroads, and boundaries. The symbols used to represent these features are shown and explained below. Variations appear on some earlier maps, and additional features are represented on some special maps.

All the water features are represented in blue, the smaller streams and canals by single blue lines and the larger streams by double lines. The larger streams, lakes, and the sea are accentuated by blue water lining or blue tint. Intermittent streams—those whose beds are dry for a large part of the year—are shown by lines of blue dots and dashes.

Relief is shown by contour lines in brown, which on a few maps are supplemented by shading showing the effect of light thrown from the northwest across the area represented, for the purpose of giving the appearance of relief and thus aiding in the interpretation of the contour lines. A contour line represents an imaginary line on the ground (a contour) every part of which is at the same altitude above sea level. Such a line could be drawn at any altitude, but in practice only the contours at certain regular intervals of altitude are shown. The datum or zero of altitude of the Geological Survey maps is mean sea level. The 20-foot contour would be the shore line if the sea should rise 20 feet above mean sea level. Contour lines show the shape of the hills, mountains, and valleys, as well as their altitude. Successive contour lines that are far apart on the map indicate a gentle slope, lines that are close together indicate a steep slope, and lines that run together indicate a cliff.

The manner in which contour lines express altitude, form, and grade is shown in the figure below.



The sketch represents a river valley that lies between two hills. In the foreground is the sea, with a bay that is partly enclosed by a hooked sand bar. On each side of the valley is a terrace into which small streams have cut narrow gullies. The hill on the right has a rounded summit and gently sloping spurs separated by ravines. The spurs are truncated at their lower ends by a sea cliff. The hill at the left terminates abruptly at the valley in a steep scarp, from which it slopes gradually away and forms an inclined tableland that is traversed by a few shallow gullies. On the map each of these features is represented, directly beneath its position in the sketch, by contour lines.

The contour interval, or the vertical distance in feet between one contour and the next, is stated at the bottom of each map. This interval differs according to the topography of the area mapped: in a flat country it may be as small as 1 foot; in a mountainous region it may be as great as 250 feet. In order that the contours may be read more easily certain contour lines, every fourth or fifth, are made heavier than the others and are accompanied by figures showing altitude. The heights of many points—such as road intersections, summits, surfaces of lakes, and benchmarks—are also given on the map in figures, which show altitudes to the nearest foot only. More precise figures for the altitudes of benchmarks are given in the Geological Survey's bulletins on spirit leveling. The geodetic coordinates of triangulation and transit-traverse stations are also published in bulletins.

Lettering and the works of man are shown in black. Boundaries, such as those of a State, county, city, land grant, township, or reservation, are shown by continuous or broken lines of different kinds and weights. Public roads suitable for motor travel the greater part of the year are shown by solid double lines; poor public roads and private roads by dashed double lines; trails by dashed single lines. Additional public road classification if available is shown by red overprint.

Each quadrangle is designated by the name of a city, town, or prominent natural feature within it, and on the margins of the map are printed the names of adjoining quadrangles of which maps have been published. More than 4,100 quadrangles in the United States have been surveyed, and maps of them similar to the one on the other side of this sheet have been published.

Geologic maps of some of the areas shown on the topographic maps have been published in the form of folios. Each folio includes maps showing the topography, geology, underground structure, and mineral deposits of the area mapped, and several pages of descriptive text. The text explains the maps and describes the topographic and geologic features of the country and its mineral products. Two hundred twenty-five folios have been published.

Index maps of each State and of Alaska and Hawaii showing the areas covered by topographic maps and geologic folios published by the United States Geological Survey may be obtained free. Copies of the standard topographic maps may be obtained for 10 cents each; some special maps are sold at different prices. A discount of 40 percent is allowed on an order amounting to $5 or more at the retail price. The discount is allowed on an order for maps alone, either of one kind or in any assortment, or for maps together with geologic folios. The geologic folios are sold for 25 cents or more each, the price depending on the size of the folio. A circular describing the folios will be sent on request.

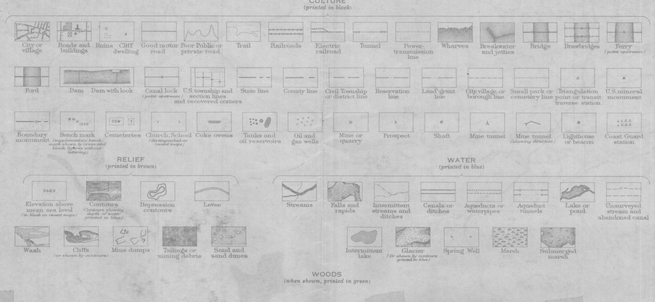
Applications for maps or folios should be accompanied by cash, draft, or money order (not postage stamps) and should be addressed to

THE DIRECTOR,
United States Geological Survey,
Washington, D. C.

November 1937.

NOTE.—Effective on and after October 1, 1946, the price of standard topographic quadrangle maps will be 20 cents each, with a discount of 20 percent on orders amounting to $10 or more at the retail rate.

STANDARD SYMBOLS



HEINRICHS GEOEXPLORATION COMPANY

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

January 22, 1973

Mr. Kirby C. Coryell
Mary Jo Properties, Limited
5140 East Burns Street
Tucson, Arizona 85711

Re: I.P.-Gravity Survey
near Superior, Arizona
GEOEX Job #796

Dear Mr. Coryell:

Persuant to our initial discussions last week, GEOEX herewith submits this proposal-contract letter for your approval to conduct a combined I.P.-gravity survey near Superior, Pinal County, Arizona.

We understand that the majority of the work will be used in partial fulfillment of state work requirements involving prospecting permits on Sections 16 and 17, T.2S., R.13E. The survey area consists of a variable thickness of Whitetail conglomerate, capped by dacite flows, covering crystalline basement - apparently Naco limestone to the west and Pinal schist and Laramide intrusive material to the east.

The I.P. coverage will be directed towards the detection and delineation of sulfide zones at depth within the basement rocks. A massive sulfide replacement environment with preferred easterly-westerly strike orientation is expected at depth in Section 17 whereas a porphyry copper sulfide environment may be involved at depth in Section 16.

The I.P. coverage is to apply to Sections 16 and 17 and will be run to obtain information down to at

least 2,000 feet in depth across the Sections. Various spacings and arrays will be used as necessary and practical to obtain the desired depth information. Our high power Mark 4 I.P. System equipment will be used.

Advantage will be taken of the N-S trending canyons to help depth penetration and accessability. At least one N-S line or expander will be run in each section. Additional coverage will be run within and/or across both Section 16 and 17 if time allows. A total of $4,400.00 worth of I.P. coverage will be obtained on each of the two sections and will include office computations, interpretation, and report.

Helicopter support may be used if deemed expedient, efficient, and beneficial to optimize the coverage, cost, and time considerations. The I.P. crew will consist of three or more men plus all necessary equipment including one or more vehicles, as the situation demands.

The gravity work will consist of two easterly-westerly traverses each about 6 miles long across the area of interest with the western third of the southerly line to pass through Sections 16 and 17. The station spacing will be roughly 1/4 mile as terrain and access considerations allow. This coverage will be directed towards defining the sub-Whitetail basement topography. Several short cross ties to existing drill holes will also be run for additional control.

The gravity field crew will consist of at least two men, one vehicle, and a suitable gravity meter. Elevations will be obtained with an altimeter and reference to the 7.5 minute U.S.G.S. topographic quadrangle maps of the area. Survey stakes will be left at the gravity stations in case more precisely surveyed elevations are needed in the future.

A total of $2,000.00 worth of gravity coverage will be obtained on these traverses apportioned so as to expend at least $200.00 on each of Section 16 and Section 17 and will include office computations, interpretation, and report. Laboratory density testing of several representative samples will also be included.

We understand that the field work must be completed by February 7, 1973. The total project cost for the above described work will be $10,800.00 except for contingencies as noted in the following paragraph.

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

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

The field work will be initiated within two days of contract acceptance. Rough field plots and preliminary field interpretations will be available during the project as needed.

Your understanding and acceptance of the above may be indicated by signing as provided below on the attached copy of this letter and returning it to us.

Sincerely yours,

Heinrichs GEOEXploration Co.

Chris S. Ludwig

Chris S. Ludwig
Chief Geophysicist

Date: January 23, 1973

Accepted by: Kirby C. Coryell

Title: General Partner Sucan Ltd., which is General Partner of Mary To Properties Ltd.

CSL:oek
Enclosure: cc