

Box 1

Reel No.	Line No.	Shot Points	Process
SAC 501A	1-South	102-138	FIELD
501C	}	S	}
502A		140-176	
502B			
503B		178-214	
503A		S	
505		182-298	
504B		216-254	
504A		S	
507		223-244	

Box 2

Reel No.	Line No.	Shot Points	Process	
SAC 506	1-South	298-336	FIELD	
508	}	382-404	}	
SAC 501A		1-NORTH		102-140
501		S		
502				
502B		142-180		
503		182-220		
504		222-260		
505		262-300		
506A		302-332		

Box 3

Reel No.	Line No.	Shot Points	Process	
SAC 506B	1-NORTH	302-332	FIELD	
507	}	334-362	}	
508		364-376		
HPF 001A		2		102-140
001B		S		
002		142-176		
003		178-200		
001C		3		101-140
001B		}		}
001A				

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boyer Road COUNTY Choshu STATE Neu LINE NO. 1-N PAGE 2
 SURVEYOR Reiter RODMEN Sartin - Goolishy DATE 5-27-80 CLIENT Sm. Roy

Stadia Distance	Beaman Steps	Rod Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
					3038.3						
88.0		0.0		-0.0		3437.7		121			
99.0		0.1		-0.1		3438.2		122			
110.0	1/2	5.0	+5.0	+4.9		3438.9		123			
121.0	1/2	5.1	+5.1	+4.9		3439.2		124			
132.0	1/2	4.7	+4.7	+4.9		3440.2		125			
143.0	1/2	4.6	+4.6	+4.5		3440.9		126			
154.0	1/2	4.8	+4.8	+4.29		3441.2		127			
165.0	1/2	4.9	+4.9	+4.33		3441.6		128			
176.0	1/2	4.9	+4.9	+4.0		3442.3		129			
187.0	1/2	5.2	+5.2	+4.1		3442.4		130			
198.0	1/2	5.0	+5.0	+4.5		3443.2		131			
209.0	1/2	5.1	+5.1	+4.4		3443.7		132			
220.0	1/2	4.8	+4.8	+4.6		3444.5		133			
231.0	1/2	5.3	+5.3	+4.6		3444.5		134			
242.0	1/2	5.0	+5.0	+4.7		3445.4		135			
253.0	1/2	4.8	+4.8	+4.78		3446.1		136			Ro
264.0	1/2	4.7	+4.7	+4.85		3446.8		137			
158.0		5.3		+4.53	3462.1						
147.0		1.47		-1.47		3447.4		138			
136.0		1.42		-1.42		3447.9		139			
125.0		1.37		-1.37		3448.4		140			

FORM-NR-1 KINTZEL'S - CASPER

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boyer Ranch COUNTY Lincoln STATE Wyo LINE NO. 1-N PAGE 3
SURVEYOR Reed RODMEN S. J. ... G. ... DATE 5-27-80 CLIENT Southern

Stadia Distance	Roaman Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
					3462.14						
115.0		127		-127		3449.4		141			
104.0		120		-120		3450.1		142			
93.0		105		-105		3451.6		143			
82.0		109		-109		3451.3		144			
71.0		100		-100		3452.1		145			
60.0		95		-95		3452.6		146			
49.0		83		-83		3453.8		147			
38.0		77		-77		3454.4		148			
27.0		76		-76		3454.5		149			
17.0		66		-66		3455.5		150			
6.0		55		-55		3456.6		151			
5.0		50		-50		3457.1		152			
16.0		37		-37		3458.4		153			
27.0		33		-33		3458.6		154			
38.0	10	22	+38	-22		3459.7		155			
49.0	10	61	+43	+62		3460.9		156			
60.0	10	68	+60	-0.5		3461.6		157			
71.0	10	70	+70	+2.1		3462.2		158			
82.0	10	75	+82	+0.7		3462.8		159			
93.0	10	82	+93	+1.1		3463.2		160			
104.0	10	95	+104	+0.9		3463.0		161			

FORM-NR-1 KINTZEL'S-CASPER

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CASPER, WYOMING

AREA Royal Ranch COUNTY Choshill STATE Wyo. LINE NO. 1-N PAGE 4
SURVEYOR Reeder RODMEN Sorfin - Goolsby DATE 5-27-80 CLIENT En Reg.

Stadia Distance	Beaman Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
					3462.10						
1150	10	10.8	± 115 ± 108	+ 0.7		3462.8		162			
1260	10	11.0	± 126 ± 110	+ 1.6		3463.7		163			
1370	10	11.2	± 137 ± 112	+ 2.5		3464.9		164			
1080	10	12.2	± 108 ± 122	+ 2.6		3464.7		165			
1760		10.2		+ 1.0		3474.9	K				
1650		9.5		- 9.5		3465.4		166			
1560		9.2		- 8.2		3466.7		167			
1430		8.0		- 8.0		3466.9		168			
1320		8.2		- 8.2		3466.7		169			
1210		7.6		- 7.6		3467.3		170			
1100		8.0		- 8.0		3466.9		171			
990		8.0		- 8.0		3466.9		172			
880		7.6		- 7.6		3467.4		173			
770		7.2		- 7.2		3467.7		174			
660		6.8		- 6.8		3468.1		175			
550		6.3		- 6.3		3468.6		176			
420		5.0		- 5.0		3469.5		177			
330		7.0		- 7.0		3467.9		178			
220		5.2		- 5.2		3467.7		179			
110		5.4		- 5.4		3469.5		180			
0		5.5		- 5.5		3469.4		181			

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boyer Road COUNTY Clayton STATE Nev LINE NO. 1-N PAGE 5
 SURVEYOR R. Cecil RODMEN Scott & Paul DATE 5-22-80 CLIENT SR Ry

Stadia Distance	Beam Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd	Shot Point	Bearing	Remarks
					34749						
1.00		43		-43		34706		182			
2.00		40		-40		34709		183			
3.00		36		-36		34711		184			
4.00		31		-31		34719		185			
5.00		23		-23		34726		186			
6.00		20		-20		34729		187			
7.00		18		-18		34737		188			
8.00		0.3		-0.3		34746		189			
9.80		0.1		-0.1		34746		190			
10.90	160	4.1	55	4.14		34763		191		e fence on	
11.00		52		-52	348150						
11.00		65		-65		34750		192			
2.00		60		-60		34747		193			
3.00		7.7		-7.7		34738		194			
4.00		7.1		-7.1		34738		195			
5.00		7.8		-7.8		34737		196			
6.00		8.5		-8.5		34730		197			
7.00		9.3		-9.3		34722		198			
8.00		9.6		-9.6		34719		199			
8.90		10.2		-10.2		34713		200			
11.00		11.0		-11.0		34705		201			

FORM-NR.1-KINTZEL'S-CASPER

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NATURAL ENGINEERING CO.
CASPER, WYOMING

AREA Bone Bend COUNTY Chandler STATE Neu LINE NO. 1-N PAGE 6
 SURVEYOR Rocks RODMEN Sorenson Goodrich DATE 5-27-80 CLIENT See Reg.

Stadia Distance	Beam Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
					3481.50						
12.10		11.2		-11.2		3470.3		202			
13.20		13.1		-13.1		3468.0		203		N 31° 16' E	
2.50	1.0	1.0	$\frac{205}{100}$	-10.5		3457.9					
19.40	1.0	10.2	$\frac{194}{100}$	+9.2		3467.1		204			
16.30	1.0	9.5	$\frac{163}{100}$	+9.5		3466.7		205			
17.20	1.0	9.0	$\frac{172}{100}$	+7.2		3466.1		206			
16.10	1.0	8.4	$\frac{161}{100}$	+7.7		3465.6		207			
15.00	1.0	8.2	$\frac{150}{100}$	+6.6		3464.7		208			
13.90	1.0	8.8	$\frac{139}{100}$	+5.1		3463.0		209			
12.90	1.0	8.7	$\frac{129}{100}$	+4.1		3462.6		210			
11.80	1.0	8.0	$\frac{118}{100}$	+3.8		3461.7		211			
10.70	1.0	7.8	$\frac{107}{100}$	+2.9		3460.8		212			
9.60	1.0	8.5	$\frac{96}{100}$	+1.1		3459.0		213			
8.50	1.0	8.1	$\frac{85}{100}$	+0.1		3458.0		214			
7.40	1.0	7.7	$\frac{74}{100}$	-0.3		3457.6		215			
6.30	1.0	7.5	$\frac{63}{100}$	-1.2		3456.7		216			
5.20		2.0		-2.0		3455.7		217			
4.10		2.5		-2.5		3455.4		218			
3.00		3.1		3.1		3454.8		219			
1.90		3.1		3.1		3454.5		220			
1.0		4.4		-4.4		3453.5		221			

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**NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING**

AREA Boyer Road COUNTY Choshu STATE Ne. LINE NO. 1-N PAGE 7
 SURVEYOR Reese RODMEN Sartin Booth DATE 5-27-80 CLIENT So. Ry.

Stadia Distance	Barman Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd	Shot Point	Bearing	Remarks
					3457.9						
3.0		5.5		-5.5		3452.4		222			
14.0		10.7		-10.7		3441.7		223			
23.0		8.2		-8.2		3447.7		224			
36.0		10.2		-10.2		3447.7		225			
47.0		10.3		-10.3		3447.6		226			
58.0		11.1		-11.1		3446.8		227			
220.0	1/2	13.6	+11.0	+2.6	3449.4						
205.0	1/2	10.5	+10.5	-3.5	3445.9			228			
158.0	1/2	12.8	+12.8	-2.9	3446.5			229			
167.0	1/2	12.6	+12.6	-3.3	3446.1			230			
176.0	1/2	11.5	+11.5	-2.9	3446.5			231			
165.0	1/2	12.1	+12.1	-2.6	3446.8			232			
184.0		11.5		-1.5	3447.9			233			
143.0		2.4		-2.4	3447.0			234			
132.0		2.6		-2.6	3446.8			235			
121.0		2.8		-2.8	3446.6			236			
110.0		3		-3.0	3446.4			237			
100.0		3.2		-3.2	3446.2			238			
89.0		3.6		-3.6	3445.8			239			
78.0		3.7		-3.7	3445.7			240			
67.0		4.2		-4.2	3445.2			241			

FORM-NR-1 RINTZEL'S CASPER

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Bogert Ranch COUNTY Choshill STATE Ne LINE NO. 1-N PAGE 8
 SURVEYOR Kiefer RODMEN Sermon Goulish DATE 5-27-80 CLIENT Ed Ray

Stadia Distance	Beam	Rod Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
					34494						
5.60		4.0		-4.0		34454		242			
4.50		4.5		-4.5		34449		243			
3.90		5.0		-5.0		34444		244			
2.30		5.0		-5.0		34444		245			
1.20		5.1		-5.1		34443	/	246			
1.0		5.2		-5.2		34442		247	463	0.00 S-1	FROM B.M. ADJUST P. 9 LINE 1, ELEV 34441.9 @ STA. 247
						34460					
						-1.8					
											TIE 11

FORM NR-1 KINTZEL & CASPER

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Beaver Park COUNTY Choshill STATE Wyo LINE NO. 1-N PAGE 9
 SURVEYOR Reeves RODMEN SORTIN - G. Fish DATE 5-24-10 CLIENT Sun Roy

Stadia Distance	Boomsman Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd	Shot Point	Bearing	Remarks
					3451.4		3460.3				
200		5.2		-5.2		3456.2		440			
400		10.3		-10.3		3445.9		441			
600		15.3		-15.3		3430.6		442			
2660	400	9.6	4132	-9.6	3455.1	3454.0	B.M.			N 9° 0' E	EL 3454.0 ✓
130		5.4		-5.4		3448.6	444.4	443	247		
240		5.7		-5.7		3442.9	444.6	444	248		
350		6.0		-6.0		3446.9	444.3	445	249		
460		6.7		-6.7		3440.2	445.6	446	250		
570		7.0		-7.0		3433.2	446.3	447	251		
680		7.4		-7.4		3425.8	446.9	448	252		
790		7.5		-7.5		3418.3	447.2	449	253		
900		7.5		-7.5		3410.8	447.5	450	254		
1010		7.6		-7.6		3403.2	447.7	451	255		
1120		7.7		-7.7		3395.5	447.6	452	256		
1230		8.0		-8.0		3387.5	447.3	453	257		
1340		8.0		-8.0		3379.5	447.2	454	258		
1450		8.0		-8.0		3371.5	447.2	455	259		
1560		8.0		-8.0		3363.5	447.3	456	260		
1670		7.6		-7.6		3355.9	447.7	457	261		
1780		7.7		-7.7		3348.2	447.6	458	262		
1890		7.2		-7.2		3340.0	447.1	459	263		

FORM—NR. 1—HINTZEL'S—CASPER

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boggs Road COUNTY Chandell STATE Wyo LINE NO. 1-N PAGE 10
 SURVEYOR K. J. Lee RODMEN Sutton - Emish DATE 5-26-80 CLIENT En. Co.

Stadia Distance	Beam Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd	Shot Point	Bearing	Remarks
					34514						3450.3
2000		75		-75		34439	3442.9	40	264		
2110		75		-75		34439	3442.9	40	265		
2220		77		-77		34437	3442.6	40	266		
2330		75		-75		34439	3442.9	40	267		3450.3
2440		75		-75		34439	3442.9	40	268		
2550		73		-73		34441	3443.0	40	269		
2660		72		-72		34442	3443.1	40	270		
2770		72		-72		34442	3443.1	40	271		3443.1
2720		92		-92	34534						3452.3
2610		70		-70		34444	3443.3	40	272		
2500		83		-83		34451	3444.0	40	273		
2390		83		-83		34451	3444.0	40	274		
2280		81		-81		34453	3444.2	40	275		
2170		83		-83		34451	3444.0	40	276		
2060		80		-80		34453	3444.3	40	277		
1950		80		-80		34454	3444.3	40	278		
1840		81		-81		34453	3444.2	40	279		
1730		72		-72		34453	3445.1	40	280		
1620		70		-70		34460	3445.3	40	281		
1510		70		-70		34464	3445.3	40	282		
1400		67		-67		34477	3445.6	40	283		

FORM—NR-1—KINTZEL'S—CASPER

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Lower Ranch COUNTY Ch. & Hill STATE Wyo LINE NO. 1-N PAGE 33 11
SURVEYOR Rever RODMEN Sartin - Conley DATE 5-24-80 CLIENT San Roy

Stadia Distance	Beaman Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
					3453.4						3452.3
130		6.2		-6.2		3447.2	3446.1	500	284		
110		6.0		-6.0		3447.4	3446.3	501	285		
108		6.0		-6.0		3447.4	3446.3	502	286		
97		6.0		-6.0		3447.4	3446.3	503	287		
86		6.0		-6.0		3447.4	3446.3	504	288		
73		5.7		-5.7		3447.7	3446.6	505	289		
64		5.7		-5.7		3447.7	3446.6	506	290		
53		6.5		-6.5		3446.9	3445.8	507	291		
42		7.0		-7.0		3446.0	3445.3	508	292		
31		6.2		-6.2		3447.2	3446.1	509	293		
20		6.0		-6.0		3447.4	3446.3	510	294		
9		5.1		-5.1		3448.3	3447.2	511	295		
2		5.3		-5.3		3448.3	3447.1	512	296		
13		0.8		-4.8		3448.6	3447.6	513	297		
24		4.6		-4.6		3448.8	3447.7	514	298		
35		4.4		-4.4		3449.0	3447.9	515	299		
46		4.2		-4.2		3449.2	3448.1	516	300		
57		5.0		-5.0		3449.4	3447.3	517	301		
68		5.5		-5.5		3449.7	3446.8	518	302		
79		4.2		-4.2		3449.3	3448.1	519	303		
90		3.8		-3.8		3449.6	3448.5	520	304		

FORM-NR.1 KINTZEL'S CASPER

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boyer Ranch COUNTY Carbon STATE Wyo LINE NO. 1-N PAGE 5 12
 SURVEYOR Reuter RODMEN Sutton - G. 11/1/64 DATE 5-24-80 CLIENT Southern

Stadia Distance	Beam Steps	Rod Reading	Product	Difference Elevation	H. I.	Elevation	Station Occur.	Station Obs'd	Shot Point	Bearing	Remarks
					3453.4						3452.3
10.10		3.5		-3.5		3449.9	3448.9	521	305		
11.20		3.7		-3.7		3450.1	3449.0	522	306		
12.30		3.2		-3.2		3450.2	3449.1	523	307		
13.40		3.0		-3.0		3450.4	3449.3	524	308		
14.50		2.8		-2.8		3450.6	3449.6	525	309		
15.60		2.7		-2.7		3450.7	3449.4	526	310		
16.70		2.6		-2.6		3450.8	3449.7	527	311		
17.80		2.5		-2.5		3450.9	3449.8	528	312		
18.90		2.5		-2.5		3450.9	3449.8	529	313		
20.0		2.6		-2.6		3450.8	3449.6	530	314		
21.10		1.6		-1.6		3451.0	3450.7	531	315		
22.20		1.4		-1.4		3452.0	3450.9	532	316		
23.30		1.2		-1.2		3452.2	3451.1	533	317		
24.40		1.8		-1.8		3451.6	3450.5	534	318		
25.50		2.1		-2.1		3451.3	3450.2	535	319		
26.60		1.7		-1.7		3451.7	3450.6	536	320		
27.60	60	15.0	^{+1.78} _{+1.60}	-1.2		3452.2	3451.1	537	321		3451.1
28.0		1.3		-1.3	3462.5						3462.4
22.90		1.0		-1.0		3453.5	3452.4	538	322		
21.80		1.0		-1.0		3452.5	3451.4	539	323		
20.70		1.0		-1.0		3452.7	3451.6	540	324		

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Bogert Ranch COUNTY Choshu STATE NeV LINE NO. 1-N PAGE 13
 SURVEYOR Rever RODMEN W. H. - Cowley DATE 5-24-70 CLIENT SW Roy

Stadia Distance	Beam Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
					3463.5						3462.4
19.60		1.02		-1.02		3453.3	3452.7	547	325		
11.50		1.04		-1.04		3453.1	3452.7	542	326		
17.40		.96		-.96		3453.9	3452.8	543	327		
16.30		1.00		-1.00		3453.7	3452.0	544	328		
15.20		.91		-.91		3453.7	3452.6	545	329		
14.10		.92		-.92		3453.3	3453.2	546	330		
13.00		.90		-.90		3453.5	3453.3	547	331		
11.90		1.00		-1.00		3453.5	3452.4	548	332		
10.80		.89		-.89		3453.7	3453.6	549	333		
9.70		.85		-.85		3453.0	3453.0	550	334		
8.60		.80		-.80		3453.9	3453.9	551	335		
7.50		.85		-.85		3453.0	3453.9	552	336		
6.40		.83		-.83		3453.2	3454.1	553	337		
5.30		.81		-.81		3453.4	3454.3	554	338		
4.20		.80		-.80		3453.5	3454.4	555	339		
3.10		.76		-.76		3453.9	3454.9	556	340		
2.00		.73		-.73		3453.2	3455.1	557	341		
.90		.61		-.61		3453.4	3456.3	558	342		
.20		.62		-.62		3453.3	3456.2	559	343		
13.00		.73		-.73		3453.2	3455.1	560	344		
2.40		.70		-.70		3453.5	3455.4	561	345		

FORM-NR-1 KINTZEL & CASPER

NATURAL RESOURCES ENGINEERING CO
CASPER, WYOMING

AREA Beaver Bend COUNTY Cheyenne STATE WY LINE NO. 1-A PAGE 14
 SURVEYOR Kevin RODMEN Justin DATE 5-21-10 CLIENT SW Co.

Station Distance	Bearing Sight	Red Reading	Product	Difference Elevation	H.I.	Elevation	Station Occup.	Station On I.	Stad Palm	Bearing	Remarks
					3463.5						
370		7.0		7.0		3462.5					3462.4
42.0		1.5		6.6		3455.9					
57.0		6.6		6.6		3449.3					
68.0		5.9		5.7		3443.6					
79.0		1.2		5.0		3438.6					
90.0		5.0		5.0		3433.6					
101.0		4.2		4.2		3429.4					
112.0		2.5		2.5		3426.9					
123.0		3.6		3.6		3423.3					
134.0		4.2		4.2		3419.1					
145.0		1.5		2.7		3416.4					
156.0		3.3		3.3		3413.1					
167.0		2.1		2.1		3411.0					
178.0		2.6		2.6		3408.4					
189.0		4.4		2.4		3406.0					
200.0		1.6		2.8		3403.2					
211.0		1.5		1.5		3401.7					
222.0		7.1		2.8		3398.9					
233.0		3.0		3.0		3395.9					
244.0		2.6		2.6		3393.3					
255.0		2.3		2.3		3391.0					

FORM NR. 1 MINUTEMAN CASPER

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NATURAL RESOURCES ENGINEERING CO. CASPER, WYOMING

AREA Beulah Road COUNTY Cheyenne STATE WY LINE NO. 1-N PAGE 21
 SURVEYOR Kevin RODMEN Survey DATE 5-20-80 CLIENT S&W/R

Station Distance	Partial Slope	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Initial Obj. #	Shot Point	Barred	Remarks
2772		2.0		2.0	3465.5	3466.1		ST3	367		3467.4
1120		1.0		1.0	3462.5	3463.1		ST3	368		3461.4
1018		2.0		2.0	3460.6	3462.4		ST3	365		3467.7
904		1.5		1.5	3463.3	3464.2		ST3	370		
790		1.1		1.1	3462.0	3460.9		ST3	371		
676		1.3		1.3	3462.5	3461.4		ST3	372		
570		1.2		1.2	3461.6	3460.5		ST3	373		
460		1.1		1.1	3462.3	3461.2		ST3	374		
340		1.2		1.2	3462.6	3463.5		ST3	375		
240		1.0		1.0	3463.0	3462.1		ST3	376		
130		1.0		1.0	3462.4	3461.3		ST3	377		
20		1.2		1.2	3465.6	3468.5		ST3	377		3458.5
2228		4.3		4.3	3466.3	3465.2		ST3	378		3465.2
1120		1.1		1.1	3460.2	3460.2		ST3	379		3459.1
					3458.0	3458.0		ST3	379		


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APPROVED K. L. L.
 DATE 6/2/80



NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Lower Sand COUNTY Cherokee STATE Nebr LINE NO. 1-N PAGE 1
 SURVEYOR Koch RODMEN Sullivan Booth DATE 5-27-80 CLIENT See Key

Stadia Distance	Barman Steps	Red Reading	Product	Difference Elevation	M. I.	Elevation	Station Occup.	Station Obs'd	Shot Point	Bearing	Remarks
						34294		2.5			2-1-5
1436		8.9		+8.9	34383		A				
1320		11.2		-11.2		34271		10.2		S 25° 00' W	
1310		10.8		-10.8		34275		10.2			
1100		10.2		-10.2		34281		10.7			
780		9.3		-9.3		34270		10.4			
890		8.8		-8.8		34295		10.5			
770		8.2		-8.2		34301		10.6			
660		7.7		-7.7		34306		10.7			
580		7.3		-7.3		34310		10.7			
490		6.8		-6.8		34315		10.9			
330		6.2		-6.2		34321		11.0			
220		5.8		-5.8		34325		11.0			
110		5.5		-5.5		34328		11.2			
50		5.2		-5.2		34331		11.3			Continued on 3-2 4-1-5
110		4.8		-4.8		34335		11.4			
220		4.0		-4.0		34343		11.5			
330		3.3		-3.3		34350		11.6			
440		2.9		-2.9		34355		11.7			
550		2.2		-2.2		34361		11.8			
660		2.3		-2.3		34360		11.9			
770		0.8		-0.8		34375		12.0			

MS

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boyer, Laramie COUNTY Carbon STATE WY LINE NO. 1-5007 PAGE 1
 SURVEYOR Reiter RODMEN Carlson DATE 5-23-80 CLIENT Ed Ely

Stadia Distance	Bearing Slope	Red Reading	Product	Difference Elevation	HI	Elevation	Station Occup.	Station Obj'd	Shot Point	Bearing	Remarks
						3420.4					
62		53		4.53	3422.57						
14.2		53		5.3	3422.4			172			
72.8		54		5.4	3422.4						
33.0		56		5.6	3422.4			171			
42.0		51		5.1	3422.4			170			
55.0		51		5.1	3422.4			169			
66.0		52		5.2	3422.4			168			
77.0		51		5.1	3422.4			167			
88.0		56		5.6	3422.4			166			
99.0		65		5.50	3422.4			165			
110.0		58		5.8	3422.4			164			
121.0		55		5.5	3422.4			163			
132.0		60		5.6	3422.4			162			
143.0		51		5.1	3422.4			161			
154.0		42		4.2	3422.4			160			
165.0		48		4.8	3422.4			159			
176.0		50		5.0	3422.4			158			
187.0		44		4.4	3422.4			157			
198.0		48		4.8	3422.4			156			
209.0		46		4.6	3422.4			155			
220.0		46		4.6	3422.4			154			
231.0		48		4.8	3422.4			153			

FORM-NR-1-MINTELL'S-CASPER

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boyer Road COUNTY Chubb STATE WY DATE 5-23-80 CLIENT Mr. Roy

PAGE 2 LINE NO. 1-5

Stadia	Beam	Red	Product	Difference	H. I.	Elevation	Station	Station	Station	Shot	Remarks
Distance	Stops	Reading	Product	Elevation	M. I.	Elevation	Occup.	Obs'd.	Point	Beamng	
230	1/20	58	F. 115	4.57	3439	3425.7					
241.0	1/20	68	F. 120	4.52	3430.5	3422.7					
267.0	1/20	118		+118	3422.7	3422.7					
287.0	1/20	120		-120	3430.7	3430.7					
296.0	1/20	120		-120	3430.7	3430.7					
295.0	1/20	122		-122	3430.5	3430.5					
294	1/20	120		-120	3430.7	3430.7					
213.0	1/15	115		-115	3431.2	3431.2					
222.0	1/20	120		-120	3430.7	3430.7					
191.0	1/28	128		-128	3429.9	3429.9					
181.0	1/28	128		-128	3429.9	3429.9					
178.0	1/28	129		-129	3429.8	3429.8					
167.0	1/28	127		-127	3429.9	3429.9					
156.0	1/18	118		-118	3430.9	3430.9					
147.0	1/20	120		-120	3430.7	3430.7					
137.0	1/20	120		-120	3430.7	3430.7					
128.0	1/20	120		-120	3430.7	3430.7					
119.0	1/13	113		-113	3431.4	3431.4					
109.0	1/12	112		-112	3431.5	3431.5					
99.0	1/11	111		-111	3432.5	3432.5					
89.0	1/10	110		-110	3432.7	3432.7					
79.0	1/10	110		-110	3432.7	3432.7					
69.0	1/10	110		-110	3432.7	3432.7					
59.0	1/10	110		-110	3432.7	3432.7					
49.0	1/10	110		-110	3432.7	3432.7					
39.0	1/10	110		-110	3432.7	3432.7					
29.0	1/10	110		-110	3432.7	3432.7					
19.0	1/10	110		-110	3432.7	3432.7					
9.0	1/10	110		-110	3432.7	3432.7					

FORM-NM-1 KINTZLE-CASPER

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Brown Rock COUNTY Cheyenne STATE WY LINE NO. 1-5 PAGE 3
 SURVEYOR Scott RODMEN Scott DATE 5-23-80 CLIENT SDR

Stadia Distance	Bench Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obj'd	Shot Point	Bearing	Remarks
6.5		6.1		6.1	3442.7	3435.9		1.32			
4.9		4.3		4.3	3442.7	3438.4		1.31			
3.8		6.4		4.4	3442.7	3436.3		1.30			
2.7		6.3		6.3	3442.7	3436.4		1.29			
1.6		5.5		6.5	3442.7	3437.2		1.28			
5.0		5.2		5.2	3442.7	3437.5		1.27			
6.0		5.1		5.1	3442.7	3437.6		1.26			
1.7		4.5		4.5	3442.7	3437.2		1.25			
2.8		4.2		4.2	3442.7	3438.5		1.24			
3.9		4.5		4.5	3442.7	3438.2		1.23			
5.2		5.9		5.9	3442.7	3437.0		1.22			
6.5		5.6		5.6	3442.7	3437.1		1.21			
7.1		5.8		5.8	3442.7	3436.9		1.20			
8.2		5.5		5.5	3442.7	3437.2		1.19			
9.3		5.7		5.7	3442.7	3437.0		1.18			
10.4		6.4		6.4	3442.7	3437.3		1.17			
11.5		6.0		6.0	3442.7	3438.5		1.16			
12.6		4.0		4.0	3442.7	3438.7		1.15			
13.7		4.0		4.0	3442.7	3438.7		1.14			
14.8		4.0		4.0	3442.7	3438.7		1.13			
15.9		3.4		3.4	3442.7	3439.1		1.12			

FORM NR. 1 - MINTEL'S CASPER

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

PAGE 4

AREA: Boyer Lookout COUNTY: Chandell STATE: WY LINE NO: 1-5
SURVEYOR: RODMEN DATE: 5-22-80 CLIENT: En Roy

FORM NM-1 KINTNER-CASPER

Station	Distance	Beaman	Reading	Red	Product	Difference	M.I.	Elevation	Station	Occp.	Station	Obs'd	Shot	Bearing	Remarks
1700		40	138	+90		-40		3438.7	111						
1810		40	138	+90		-40		3437.9	110						
1920		40	82	+55		-43		3441.0							
910		48	78	-48		-48		3436.2	109						
800		47	77	-47		-47		3436.3	108						
650		47	77	-47		-47		3436.4	107						
580		49	49	-49		-49		3436.1	106						
470		48	48	-48		-48		3436.2	105						
360		47	47	-47		-47		3436.3	104						
250		46	46	-46		-46		3436.4	103						
140		48	48	-48		-48		3436.5	102						
30		52	52	-52		-52		3436.8	101						
970		40	112	+112				3442.2	B.M.						NOTE: BEAMER MARK MISSING
970		40	112	+112				3442.2	B.M.						INT. TO BE B.M. 115
															BEAMER TO GO
								3449.7	2 L.M. 3						LINE 3-3
								3453							



AS

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boysen Road COUNTY Chubb STATE WV LINE NO. 1-5 PAGE 5
 SURVEYOR Walter RODMEN Walter DATE 5-23-80 CLIENT SA Roy

Station Distance	Bearing Slope	Read Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd	Shot Pit	Bearing	Remarks
121		3.0		4.36	3423.4	3420.4	✓	173			Common Station
117.6		3.8		5.36	3419.6	3419.6	✓	172			WELL
106.6		4.0		4.0	3419.4	3419.4		175			
91.0		3.2		-3.2	3420.2	3420.2		176			
84.4		4.2		4.2	3415.2	3415.2		175			
73.8		4.5		4.5	3418.5	3418.5		174			
62.4		4.1		4.1	3411.6	3411.6		173			
51.8		5.0		5.0	3411.2	3411.2		172			
40.2		5.3		5.3	3417.1	3417.1		171			
29.0		5.2		5.2	3417.2	3417.2		172			
15.0		7.2		7.2	3418.5	3418.5		183			
7.0		5.0		5.0	3418.4	3418.4		164			
4.0		5.2		5.2	3418.2	3418.2		165			
1.5		5.0		5.0	3418.2	3418.2		166			
2.0		5.0		5.0	3418.9	3418.9		167			
3.7		5.2		5.2	3418.0	3418.0		168			
4.8		5.5		5.5	3417.5	3417.5		169			
9.0		5.8		5.8	3417.6	3417.6		190			
7.0		6.2		6.2	3417.2	3417.2		191			
8.0		7.4		7.4	3417.0	3417.0		192			
9.2		7.0		7.0	3417.8	3417.8		193			

FORM-NR-1, SINTERS CASPER

W

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boon Road COUNTY Choshill STATE Wyo LINE NO. 1-5 PAGE 5
 SURVEYOR Rever RODMEN Sorrie & Goshy DATE 5-23-80 CLIENT Stv Roy

Stadia Distance	Beam Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
					3423.4						
1030		6.8		-6.8		3416.6		194			
1140		7.0		-7.0		3416.4		195			
1250		7.1		-7.1		3416.3		196			
1360		7.0		-7.0		3416.4		197			
1500		7.8		-7.8	3418.2						
2390		2.4		-2.4		3415.8		199			
2280		2.8		-2.8		3415.4		198			
2170		4.0		-4.0		3414.2		200			
2060		4.1		-4.1		3414.1		201			
1950		4.1		-4.1		3414.1		202			
1840		4.5		-4.5		3413.7		203			
1730		5.4		-5.4		3412.8		204			
1620		5.0		-5.0		3413.2		205			
1510		5.1		-5.1		3413.1		206			
1400		5.1		-5.1		3413.1		207			
1290		6.0		-6.0		3412.2		208			
1180		6.2		-6.2		3412.0		209			
1070		6.0		-6.0		3412.2		210			
960		6.0		-6.0		3412.2		211			
850		6.3		-6.3		3411.9		212			
740		6.0		-6.0		3412.2		213			

FORM-NR.1 KINTZEL'S-CASPER

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Bacon Ranch COUNTY Cheyenne STATE Wyo LINE NO. 1-5 PAGE 6
SURVEYOR Heckes RODMEN SOSTINE GOSWAMI DATE 5-23-80 CLIENT En. Ry.

Stadia Distance	Beam Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
					34162						
630		57		-57		34125		214			
530		55		-55		34127		215			
420		52		-52		34130		216			
320		52		-52		34130		217			
210		55		-55		34127		218			
100		50		-50		34132		219			
00		52		-52		34130		220			
110		47		-47		34135		221			
220		42		-42		34140		222			
330		38		-38		34147		223			
440		27		-27		34155		224			
550		22		-22		34160		225			
660		21		-21		34161		226			
770	1/2	47	+35	0.8		34173		227			
880	1/2	50	+40	0.9		34176		228			
990	1/2	40	+50	1.0		34182		229			
1100	1/2	39	+55	1.6		34198		230			
1200	1/2	00	+60	2.0		34202		231			
1310	1/2	28	+65	3.7		34219		232			
1400	1/2	20	+70	5.0		34233		233			
1500	1/2	14	+75	6.2		34244		234			

M

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boxed Bend COUNTY Cherokee STATE Neu LINE NO. 1-5 PAGE 7
SURVEYOR Reeves RODMEN Sorwin - Gm/sb DATE 5-23-80 CLIENT S.W.R.

Stadia Distance	Beamman Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
					34182						
16.60	1/2	112	± 82 12	+70		34252		235			
17.50	1/2	105	± 75 10	+73		34255		236			
18.60	1/2	115	± 86 10	+71		34253		237			
19.70	1/2	122	± 92 10	+75		34257		238			
20.70	1/2	138	± 107 10	+69		34251		239			
24.0	1/2	120	± 90 10	+24.7	34498		X				
23.50	1/2	130	± 100 10	24.1		34250		240			
22.50	1/2	128	± 98 10	24.0		34258		241			
21.40	1/2	124	± 94 10	24.0		34257		242			
20.70	1/2	114	± 84 10	24.1		34257		243			
19.70	1/2	105	± 75 10	24.1		34257		244			
18.70	1/2	107	± 77 10	24.1		34257		245			
17.0	1/2	95	± 65 10	24.5		34253		246			
16.0	1/2	80	± 50 10	24.6		34252		247			
14.90	1/2	93	± 63 10	24.2		34256		248			
13.80	1/2	92	± 62 10	23.0		34268		249			
12.70	1/2	58	± 27 10	22.5		34288		250			
11.60	1/2	102	± 62 10	21.8		34280		251			
10.60	1/2	110	± 66 10	21.6		34282		252			
9.50	1/2	110	± 66 10	20.5		34293		253			
8.40	1/2	103	± 63 10	19.4		34306		254			

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Dryden Ranch COUNTY Ch. & Hill STATE Nebr. LINE NO. 1-5 PAGE 8
 SURVEYOR Recess RODMEN Ennis - G. / 100 DATE 5-23-50 CLIENT En. Ry.

Stadia Distance	Barman Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
					3449.8						
730	1/20	122	-32	-189		3430.9		255			
1200	1/20	148	-168	-180		3431.8		256			
510	1/20	130	-135	-155		3434.2		257			
400		122	142			3435.6		258			
290		131		-131		3436.7		259			
181		98		-98		3440.0		260			
70		65		-65		3443.3		261			
40		56		-56		3444.2		262			
150		37		-37		3446.1		263			
260		12		-12		3448.6		264			
370		05		-05		3449.3		265			
480	1/20	28	+24	-20		3449.4		266			
590	1/20	27	+30	+08		3450.6		267			
700	1/20	41	+35	-05		3453		268			
800	1/20	52	+40	12		3456.6		269			
910	1/20	38	+48	+07		3450.5		270			
1020	1/20	28	+58	+03		3450.1		271			
1130	1/20	50	+50	-07		3450.2		272			Note Aborted 040 L-1 At 272
1230	1/20	73	+61	-07		3448.6		273			
		125		+125		3467.1					
		122				3467.7					

RG

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boyer Ranch COUNTY Chubbuck STATE NEV LINE NO. 1-5 PAGE 9
 SURVEYOR Roevo RODMEN SORTINO DATE 5-27-80 CLIENT So. Ry.

Stadia Distance	Beamen Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obj. I.	Shot Point	Beamng	Remarks
						3450.1		271			
00		50		-45.0	3455.1						
100		73		-73.0		3447.8		272			
200		121		-121.0		3443.0		273			
300	20	150		-150.0		3439.5		274			RD
400	10	150		-150.0		3435.7		275			
500	20	113		-113.0		3432.6		276			
600	30	110		-110.0		3430.9		277			
700	30	105		-105.0		3429.2		278			
800	20	88		-88.0		3428.7		279			
900	20	75		-75.0		3427.8		280			
1000	20	50		-50.0		3428.1		281			
1200	20	36		-36.0		3427.3		282			
1300	10	50		-50.0		3426.9		283			
1400	10	44		-44.0		3426.6		284			
1500	15	105		-105.0		3429.6		285			
1600	10	90		-90.0		3429.6		286			
1700	10	76		-76.0		3429.9		287			
1800	10	56		-56.0		3430.8		288			
1900	10	35		-35.0		3431.8		289			
2000	10	20		-20.0		3433.1		290			
2200	10	13.7		-13.7		3430.4		291			

FORM-NR-1, KINTZEL & CASPER

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Baywood Road COUNTY Chandell STATE NEV LINE NO. 1-5 PAGE 10
 SURVEYOR Reed RODMEN SORTIN DATE 5-27-80 CLIENT En Roy

Stadia Distance	Beam Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd	Shot Point	Bearing	Remarks
					3455.11						
2310	1/20	115	=115	-22.7		3432.4		295			
2420	1/20	105	=105	-22.6		3432.5		295			
2530	1/20	98	=98	-22.4		3432.7		295			
2640	1/20	78	=78	-21.0		3434.1		295		N. 90.0 E.	
2750	1/20	61	=61	-18.2	3452.3						
2860	1/20	52	=52	-16.7		3435.6		296			
2970	1/20	42	=42	-17.2		3435.1		297			
3080	1/20	60	=60	-16.5		3435.8		296			
3190	1/20	63	=63	-16.2		3436.1		299			
3300		148		-14.8		3437.5		300			
3410		140		-14.0		3438.3		301			
3520		135		-13.5		3438.8		302			
3630		137		-13.7		3438.6		303			
3740		125		-12.5		3439.8		304			
3850		118		-11.8		3440.5		305			
3960		105		-10.5		3441.8		306			
4070		107		-10.7		3441.6		307			
4180		102		-10.2		3442.1		308			
4290		95		-9.5		3441.8		309			
4400		90		-9.0		3443.3		310			
4510		88		-8.8		3443.5		311			

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA B... COUNTY ... STATE WY LINE NO. 1-5 PAGE 11
 SURVEYOR R. V. ... RODMEN S. ... DATE 5-27-80 CLIENT ...

Station	Beam	Red	Product	Difference	H. I.	Elevation	Station	Station	Shot	Beam	Remarks
Distance	Steel	Reading		Elevation			Occup.	Obj. V.	Point		
376		3.7		8.7	3452.5	3443.6		0.2			
420		7.7		7.7		3444.6		0.3			
354		7.0		7.0		3445.5		0.4			
279		6.6		6.6		3445.7		0.5			
180		6.0		6.0		3446.3		0.6			
22		5.5		5.5		3447.0		0.7			
90		5.2		5.2		3447.1		0.8			
200		5.0		5.0		3447.3		0.9			
360		4.9		4.9		3448.3		0.0			
40		3.7		3.7		3449.2		0.2			
52		3.2		3.2		3449.1		0.2			
68		3.0		3.0		3449.3		0.2			
79		2.8		2.8		3449.5		0.2			
85		2.4		2.4		3449.9		0.2			
96		1.8		1.8		3450.5		0.2			
101		1.0		1.0		3451.3		0.3			
119		0.2		0.2		3452.1		0.4			
180		5.5		5.5		3453.3		0.9			
140		6.0		6.0		3453.3		0.0			
152		6.5		6.5		3453.4		0.0			
170		7.0		7.0		3453.4		0.0			

FORM NR. 1 - NATURAL RESOURCES ENGINEERING CO.

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NATURAL RESOURCES ENGINEERING CO.

CASPER, WYOMING

AREA Boyer Road COUNTY Lincoln STATE WY LINE NO. 1-3 PAGE 12
 SURVEYOR Richard RODMEN Richard DATE 5-27-80 CLIENT SRP

Stadia Distance	Bearing	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd	Start Point	Bearing	Remarks
173.0	N 60	7.7	1.356	1.01	34523	34532		333			
164.0	N 60	9.8	1.644	0.2	34523	34527		334			
190.0		9.2		0.2	34523	34528		335			
188.0		9.6		0.2	34523	34527		336			
166.0		9.2		0.2	34523	34528		337			
156.0		9.2		0.2	34523	34527		338			
120.0		9.2		0.2	34523	34527		339			
118.0		9.2		0.2	34523	34527		340			
110.0		9.2		0.2	34523	34527		341			
100.0		9.2		0.2	34523	34527		342			
90.0		9.2		0.2	34523	34527		343			
80.0		9.2		0.2	34523	34527		344			
70.0		9.2		0.2	34523	34527		345			
60.0		9.2		0.2	34523	34527		346			
50.0		9.2		0.2	34523	34527		347			
40.0		9.2		0.2	34523	34527		348			
30.0		9.2		0.2	34523	34527		349			
20.0		9.2		0.2	34523	34527		350			
10.0		9.2		0.2	34523	34527		351			
0.0		9.2		0.2	34523	34527		352			

FORM NR. 1 KINZEL'S CASPER

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Red Rock COUNTY Lincoln STATE Wyo LINE NO. 1-5 PAGE 13
 SURVEYOR Robert RODMEN Robert DATE 5-27-80 CLIENT SWP

Stadia Distance	Bearing	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station	Station	Shot	Bearing	Remarks
	Steps						Occup.	Out of	Point		
26.0		7.0		7.0	3446.3	3449.3					
107.0		7.1		7.1	3448.7	3448.7					
118.0		7.7		7.7	3448.6	3448.6					
12.8		8.0		8.0	3448.3	3448.3					
151.0		8.8		8.8	3447.7	3447.7					
162.0		9.2		9.2	3447.1	3447.1					
173.0		10.0		10.0	3446.3	3446.3					
184.0		10.5		10.5	3445.8	3445.8					
195.0		10.2		10.2	3446.1	3446.1					
206.4		10.1		10.1	3445.5	3445.5					
217.6		11.5		11.5	3444.8	3444.8					
228.0		11.2		11.2	3445.1	3445.1					
239.0		11.7		11.7	3444.6	3444.6					
250		12.1		12.1	3443.8	3443.8					
260		12.1		12.1	3443.2	3443.2					
270		12.1		12.1	3442.6	3442.6					
280		12.1		12.1	3442.1	3442.1					
290		12.1		12.1	3441.6	3441.6					
300		12.1		12.1	3441.1	3441.1					
310		12.1		12.1	3440.6	3440.6					
320		12.1		12.1	3440.1	3440.1					
330		12.1		12.1	3439.6	3439.6					
340		12.1		12.1	3439.1	3439.1					
350		12.1		12.1	3438.6	3438.6					
360		12.1		12.1	3438.1	3438.1					
370		12.1		12.1	3437.6	3437.6					
380		12.1		12.1	3437.1	3437.1					
390		12.1		12.1	3436.6	3436.6					
400		12.1		12.1	3436.1	3436.1					
410		12.1		12.1	3435.6	3435.6					
420		12.1		12.1	3435.1	3435.1					
430		12.1		12.1	3434.6	3434.6					
440		12.1		12.1	3434.1	3434.1					
450		12.1		12.1	3433.6	3433.6					
460		12.1		12.1	3433.1	3433.1					
470		12.1		12.1	3432.6	3432.6					
480		12.1		12.1	3432.1	3432.1					
490		12.1		12.1	3431.6	3431.6					
500		12.1		12.1	3431.1	3431.1					

FORM-NRI-1 UNITS-8-2-68-77

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NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Rock COUNTY Choke STATE Wyo LINE NO. 1 PAGE 1/4
 SURVEYOR A.C.C. RODMEN FORVIN DATE 5-27-60 CLIENT SO

Station	Distance	Bearing	Station	Obs'd	Shot	Bearing	Remarks
			Occup.	Point			
120	1.5			3422.1			
121	1.5			3422.1			
122	1.5			3422.1			
123	1.5			3422.1			
124	1.5			3422.1			
125	1.5			3422.1			
126	1.5			3422.1			
127	1.5			3422.1			
128	1.5			3422.1			
129	1.5			3422.1			
130	1.5			3422.1			
131	1.5			3422.1			
132	1.5			3422.1			
133	1.5			3422.1			
134	1.5			3422.1			
135	1.5			3422.1			
136	1.5			3422.1			
137	1.5			3422.1			
138	1.5			3422.1			
139	1.5			3422.1			
140	1.5			3422.1			
141	1.5			3422.1			
142	1.5			3422.1			
143	1.5			3422.1			
144	1.5			3422.1			
145	1.5			3422.1			
146	1.5			3422.1			
147	1.5			3422.1			
148	1.5			3422.1			
149	1.5			3422.1			
150	1.5			3422.1			
151	1.5			3422.1			
152	1.5			3422.1			
153	1.5			3422.1			
154	1.5			3422.1			
155	1.5			3422.1			
156	1.5			3422.1			
157	1.5			3422.1			
158	1.5			3422.1			
159	1.5			3422.1			
160	1.5			3422.1			
161	1.5			3422.1			
162	1.5			3422.1			
163	1.5			3422.1			
164	1.5			3422.1			
165	1.5			3422.1			
166	1.5			3422.1			
167	1.5			3422.1			
168	1.5			3422.1			
169	1.5			3422.1			
170	1.5			3422.1			
171	1.5			3422.1			
172	1.5			3422.1			
173	1.5			3422.1			
174	1.5			3422.1			
175	1.5			3422.1			
176	1.5			3422.1			
177	1.5			3422.1			
178	1.5			3422.1			
179	1.5			3422.1			
180	1.5			3422.1			
181	1.5			3422.1			
182	1.5			3422.1			
183	1.5			3422.1			
184	1.5			3422.1			
185	1.5			3422.1			
186	1.5			3422.1			
187	1.5			3422.1			
188	1.5			3422.1			
189	1.5			3422.1			
190	1.5			3422.1			
191	1.5			3422.1			
192	1.5			3422.1			
193	1.5			3422.1			
194	1.5			3422.1			
195	1.5			3422.1			
196	1.5			3422.1			
197	1.5			3422.1			
198	1.5			3422.1			
199	1.5			3422.1			
200	1.5			3422.1			

FORM NR-1 SURVEYOR CASPER

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NATURAL RESOURCES ENGINEERING CO. CASPER, WYOMING

AREA Bear Creek COUNTY Carbon STATE Wyo LINE NO. 1-5 PAGE 11
 SURVEYOR Devin Brown RODMEN Steve Goetts DATE 5-27-80 CLIENT SULL

Stadia Distans	Bearing Stops	Red Reading	Project	Difference Elevation	M. I.	Elevation	Station Occup	Station Obs'd	Stial Point	Bearing	Remarks
52.0		8.6		6.6	3482.6	3483.0		329			
53.5		1.1		1.1		3482.8		384			
0.410		9.2		9.2		3482.0		315			
11.50		9.7		9.1		3482.5		376			
12.65		10.2		10.2		3481.2		377			
13.76		11.6		11.6		3480.6		378			
14.74		11.1		11.1		3480.5		379			
15.50		11.3		11.3		3480.3		440			
17.7		12.4		12.4		3429.6		408			
18.0		12.6		12.6		3429.6		408			
18.25		12.9		12.9		3429.6		413			
20.15		12.1		12.1		3429.5		411			
21.4		12.2		12.2		3429.7		405			

FORM NR-1 RIMMEL'S CASPER

APPROVED [Signature]
 DATE 6/2/80


FIELD TO 2-12-80

[Signature]

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Bowl Road COUNTY Chadron STATE WY LINE NO. 2 PAGE 1
 SURVEYOR Reid RODMEN Sutton DATE 5-22-80 CLIENT SW No.

Station Distance	Bearing	Red Reading	Product	Difference Elevation	M. I.	Elevation	Station Occup.	Station Obs'd	Shot point	Bearing	Remarks
250	40	55	116	8.1	3834.6	✓	101				
180	30	10	150	1.0	3835.6		102				
70		0.2		0.2	3835.4		103				
40		9.2		9.2	3825.4		104				
150	40	14.1	6.6	20.7	3814.5		105				
260	40	13.0	14.0	23.4	3811.2		106				
370	50	7.2	18.5	27.7	3802.5		107				
280	60	13.6	28.8	42.6	3792.0		108				
590	60	14.3	35.4	50.1	3784.5		109				
450	70	14.9	42.2	59.2	3772.9		110				
600	70	15.5	56.5	67.3	3762.7		111				
910	70	16.8	63.7	74.5	3752.0		112				
600	70	9.3	71.4	81.7	3743.9		113				
1130	70	11.0	79.1	90.7	3724.5		114				
1250	70	11.5	88.1	97.6	3737.0		115				
1320	70	10.2	93.9	100.0	3730.6		116				
1450	70	8.5	99.5	108.8	3722.6		117				
560	70	7.7	109.2	116.5	3709.7		118				
1120	70	8.0	116.7	124.9	3742.7		119				
1180	70	9.3	124.8	131.2	3755.7		120				

FORM NR-1 AMT-16-CASPER

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Lower Pond COUNTY Carbon STATE WY LINE NO. 2 PAGE 2
 SURVEYOR Rever RODMEN Swain DATE 5-22-80 CLIENT S&W Key

Station Distance	Bearing Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obj. I.	Shot Point	Bearing	Remarks
2050	70	5.1	140.8	147.5	3534.6	3534.6	/	132.5	7		
2110	75	8.1	147.2	155.9	3538.7	3538.7	/	123			
2250	70	10.8	145.4	165.4	3545.2	3545.2	/	125			
2310	70	5.1	143.7	172.6	3546.2	3546.2	/	125			
2470	70	6.8	149.8	171.6	3555.0	3555.0	/	126			
2540	70	11.6	177.8	189.4	3555.2	3555.2	/	127			
2600	70	5.2	173.5	194.8	3530.4	3530.4	/	127			
1891	70	4.6	172.4	190.8	3530.0	3530.0	/	126			
1711	70	5.3	169.6	190.6	3534.0	3534.0	/	125			
1670	60	1.5	160.3	187	3525.1	3525.1	/	120			
1568	60	1.3	153.6	182.6	3520.6	3520.6	/	121			
1450	60	3.4	142.9	180.5	3513.9	3513.9	/	120			
1360	60	5.2	136.9	175.6	3505.9	3505.9	/	120			
1250	70	2.1	127.3	167.6	3498.0	3498.0	/	124			
1130	60	6.0	115.3	161.2	3491.6	3491.6	/	125			
1020	60	1.6	106.3	154.2	3485.0	3485.0	/	126			
910	60	1.2	95.4	147.4	3477.8	3477.8	/	127			
800	60	1.6	84.8	140.4	3470.6	3470.6	/	128			
690	60	7.0	74.5	134.4	3464.4	3464.4	/	128			
580	60	5.1	64.8	128.4	3458.5	3458.5	/	128			
470	60	5.8	55.3	123.4	3452.5	3452.5	/	129			

TOM AND JENNIFER CASPER

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Case COUNTY Carbon STATE WV SURVEYOR James RODMEN James DATE 5-22-89 CLIENT St. Regis

Station	Distance	Station	Reading	Product	Difference	H. I.	Elevation	Station	Station	Station	Bearing	Remarks
					in feet			Occup.	On 4	Point		
76	5.1	76	1.2	1.08	1.6 F	3530.4	3547.2		1.2			
250	6.2	250	2.0	1.16	1.16	3540.9	3540.9		1.2			
77	4.0	77	1.2	2.56	1.38	3534.3	3534.3		1.2			
20		20	3.3		-3.1	3522.1	3522.1		1.2			
290	3.0	290	1.3	5.4	4.1	3516.5	3516.5		1.2			
42	3.0	42	1.6	2.0	1.5	3511.0	3511.0		1.2			
10	1.0	10	1.6	2.4	1.0	3499.4	3499.4		1.2			
620	1.4	620	1.1	3.4	1.7	3483.3	3483.3		1.2			
33	1.0	33	1.2	2.2	1.0	3473.2	3473.2		1.2			
14	1.1	14	1.1	1.4	1.1	3463.3	3463.3		1.2			
650	1.0	650	1.6	1.0	1.2	3457.8	3457.8		1.2			
2160	5.0	2160	5.2	5.0	5.8	3447.8	3447.8		1.2			
1170	5.0	1170	3.1	3.5	2.3	3426.4	3426.4		1.2			
1280	5.0	1280	2.6	4.0	1.4	3412.2	3412.2		1.2			
1390	4.0	1390	1.8	5.6	1.6	3405.8	3405.8		1.2			
1500	4.0	1500	1.2	6.0	2.4	3405.5	3405.5		1.2			
1600	1.4	1600	1.3	4.4	2.8	3405.2	3405.2		1.2			
1710	1.4	1710	1.3	4.1	2.8	3405.2	3405.2		1.2			
1820	1.4	1820	1.2	3.8	2.6	3405.2	3405.2		1.2			

FORM - NR-1 KIMZEL'S CASPER

NATURAL RESOURCES ENGINEERING CO
CASPER, WYOMING

AREA 2 COUNTY Ch. Co. STATE Wyo LINE NO. 2 PAGE 4
 SURVEYOR W. L. ... RODMEN S. F. ... DATE 5-23-60 CLIENT ...

Stadia Distance	Bearing Slope	Red Reading	Product	Difference Elevations	H. I.	Elevation	Station Occup	Station Obj. I.	Shot Point	Bearing	Remarks
113.0	45	10.5	775	87.7	3524.2	3442.7		163			
204.0	40	9.5	874	90.4		3435.1		164			
211.0	45	6.2	946	94.2		3432.8		165			
224.6	45	6.0	946	96.4		3432.0		166			
239.0	40	5.0	958	98.6		3429.8		167			
247.0	40	0.7	988	98.5		3430.9		168			
26.0	70	5.7	1154	117.7	3427.0		✓	169			
85.0	70	6.8	1381	117.7		3426.7		170			
73.0	70	0.3		0.3		3426.7		171			
63.0		2		2.3		3425.0		172			
52.0		4.0		4.0		3423.0		173			
41.0		5.7		5.7		3420.9		174			
30.0		6.6		6.6		3419.6		175			
19.0		7.4		7.4		3418.8		176			
8.0		9.0		9.0		3422.0		177			
2.0		5.4		5.0		3417.8		178			
13.0		15.2		13.2		3415.2		179			
24.0		12.8		12.8		3415.2		180			
35.0		16.5		16.2		3415.8		181			
45.0		13.0		13.1		3409.7		182			
54.0		15.0		17.6		3409.2		183			

FORM-NR-1-UNITED STATES

NATURAL RESOURCES ENGINEERING CO
CASPER, WYOMING

AREA Upper Grand COUNTY Ch. Hill STATE Wyo LINE NO. 2 PAGE 5
 SURVEYOR W. C. ... RODMEN S. ... DATE 5-22-80 CLIENT S. ...

Stadia Distance	Bearing Slope	Ref. Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd	Sta. Point	Bearing	Remarks
66.0	1.0	126	-1.66	1.88	3427.0	3408.2		105			
71.0	1.0	125	-1.77	2.0	3406.8	3406.8		110			
68.0	1.0	124	-1.82	2.10	3404.0	3404.0		152			
99.4	1.0	123	-1.98	2.2	3402.9	3402.9		186			
110.0	1.0	122	-2.10	2.30	3400.3	3400.3		187			
125.0	1.0	121	-2.25	2.36	3400.3	3400.3		188			
131.0	1.0	120	-2.31	2.42	3402.2	3402.2		189			
146.0	1.0	119	-2.42	2.5	3401.6	3401.6		150			
157.0	1.0	118	-2.53	2.6	3400.1	3400.1		191			
164.0	1.0	117	-2.64	2.73	3399.2	3399.2		192			
175.0	1.0	116	-2.75	2.75	3399.5	3399.5		153			
186.0	1.0	115	-2.84	2.8	3398.3	3398.3		154			
199.0	1.0	114	-2.93	2.90	3398.0	3398.0		155			
208.0	1.0	113	-3.01	2.96	3397.4	3397.4		156			
219.0	1.0	112	-3.08	2.98	3397.1	3397.1		157			
229.0	1.0	111	-3.14	3.0	3396.5	3396.5		158			
244.0	1.0	110	-3.20	3.0	3396.0	3396.0		159			
251.0	1.0	109	-3.25	3.0	3396.4	3396.4		200			
262.0	1.0	108	-3.29	3.0	3396.4	3396.4		201			
273.0	1.0	107	-3.32	3.0	3396.0	3396.0		202			
284.0	1.0	106	-3.34	3.0	3395.6	3395.6		203			

FORM NR. 1 - LIMITED - CASPER

Station	Distance	Bearing	Read	Product	Difference	M. I.	Elevation	Station	Occup.	Station	Obj'd	Shot	Bearing	Remarks
2950	120	120	2950	315	2950								204	
3060	100	100	3060	318	3060								201	
3170	150	150	3170	319	3170								206	
3280	120	120	3280	320	3280								207	
3390	100	100	3390	316	3390								208	
3500	100	100	3500	320	3500								209	
3610	100	100	3610	320	3610								210	
3720	100	100	3720	320	3720								211	
3830	100	100	3830	327	3830								212	
3940	100	100	3940	322	3940								213	
4050	100	100	4050	327	4050								214	
4160	100	100	4160	320	4160								215	
4270	100	100	4270	320	4270								216	
4380	100	100	4380	320	4380								217	
4490	100	100	4490	316	4490								218	
4600	100	100	4600	318	4600								219	
4710	100	100	4710	319	4710								220	
4820	100	100	4820	315	4820								204	
4930	100	100	4930	315	4930								204	
5040	100	100	5040	315	5040								204	
5150	100	100	5150	315	5150								204	
5260	100	100	5260	315	5260								204	
5370	100	100	5370	315	5370								204	
5480	100	100	5480	315	5480								204	
5590	100	100	5590	315	5590								204	
5700	100	100	5700	315	5700								204	
5810	100	100	5810	315	5810								204	
5920	100	100	5920	315	5920								204	
6030	100	100	6030	315	6030								204	
6140	100	100	6140	315	6140								204	
6250	100	100	6250	315	6250								204	
6360	100	100	6360	315	6360								204	
6470	100	100	6470	315	6470								204	
6580	100	100	6580	315	6580								204	
6690	100	100	6690	315	6690								204	
6800	100	100	6800	315	6800								204	
6910	100	100	6910	315	6910								204	
7020	100	100	7020	315	7020								204	
7130	100	100	7130	315	7130								204	
7240	100	100	7240	315	7240								204	
7350	100	100	7350	315	7350								204	
7460	100	100	7460	315	7460								204	
7570	100	100	7570	315	7570								204	
7680	100	100	7680	315	7680								204	
7790	100	100	7790	315	7790								204	
7900	100	100	7900	315	7900								204	
8010	100	100	8010	315	8010								204	
8120	100	100	8120	315	8120								204	
8230	100	100	8230	315	8230								204	
8340	100	100	8340	315	8340								204	
8450	100	100	8450	315	8450								204	
8560	100	100	8560	315	8560								204	
8670	100	100	8670	315	8670								204	
8780	100	100	8780	315	8780								204	
8890	100	100	8890	315	8890								204	
9000	100	100	9000	315	9000								204	
9110	100	100	9110	315	9110								204	
9220	100	100	9220	315	9220								204	
9330	100	100	9330	315	9330								204	
9440	100	100	9440	315	9440								204	
9550	100	100	9550	315	9550								204	
9660	100	100	9660	315	9660								204	
9770	100	100	9770	315	9770								204	
9880	100	100	9880	315	9880								204	
9990	100	100	9990	315	9990								204	

FORM-NM-1 NITZEL-B-CASPER



NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Beaver Road COUNTY Carbon STATE W.V. LINE NO 3 PAGE 1
 SURVEYOR Richard RODMEN Boyer DATE 5-21-64 CLIENT SA 89

Stake Distance	Bearing	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup	Station Obs'd	Stake Point	Bearing	Remarks
1.920	26.0	6.0	+1.280	55.0	540.90	345.40		13.0		50.5	
2800	110	8.5	+1.210	211.5	372.08			10.1			
1.990	110	12.5	+1.201.9	191.2	370.34			10.2			
1.770	110	15.5	+1.150	180.4	368.94			10.3			
1.670	110	18.5	+1.037	169.9	367.85			10.4			
1.560	110	21.5	+1.150	150.9	365.98			10.5			
1.460	110	24.5	+1.460	138.8	364.75			10.6			
1.350	110	27.5	+1.350	127.7	363.66			10.7			
1.250	110	30.5	+1.240	116.8	362.75			10.8			
1.150	110	33.5	+1.130	106.1	361.04			10.9			
1.050	110	36.5	+1.020	95.4	359.94			11.0			
950	110	39.5	+90.8	85.2	358.92			11.1			
850	110	42.5	+80.7	75.2	357.86			11.2			
750	110	45.5	+70.6	65.5	356.85			11.3			
650	110	48.5	+60.5	55.5	355.89			11.4			
550	110	51.5	+50.4	45.7	354.98			11.5			
450	110	54.5	+40.3	35.3	354.16			11.6			
350	110	57.5	+30.2	25.8	353.68			11.7			
250	110	60.5	+20.1	16.4	353.54			11.8			
150	110	63.5	+10.0	7.2	353.87			11.9			
50	110	66.5	+0.0	2.8	354.65			12.0			
0	110	69.5		0.0	355.02			12.1			

FORM NR. 1 MINTEL'S CHART

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Bozeman COUNTY Chandlerville STATE Mo. LINE NO. 3 PAGE 2
 SURVEYOR Robert RODMEN CA DATE 5-22-84 CLIENT SE

Station Distance	Bozeman Strip	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
140.0	2.0	12.1	5.0	1.1	350.90	349.69		1.1			
250.0	2.0	12.1	5.0	1.1	349.05	348.42		1.1			
320.0	3.0	12.0	1.08	1.48	348.42	347.42		1.1			
470.0	4.0	12.0	1.88	3.38	347.42	344.04		1.1			
580.0	4.0	12.1	2.12	3.78	344.04	341.26		1.1			
690.0	4.0	12.0	2.16	4.32	342.68	340.52		1.1			
800.0	4.0	11.8	2.28	4.58	340.52	336.52		1.1			
900.0	4.0	12.1	2.40	4.84	338.05	335.05		1.1			
1000.0	4.0	12.1	2.44	4.92	335.93	335.93		1.1			
1100.0	4.0	12.0	2.44	5.12	345.78	345.78		1.1			
1200.0	4.0	12.0	2.44	5.24	345.69	345.69		1.1			
1300.0	4.0	12.0	2.44	5.49	345.41	345.41		1.1			
1400.0	4.0	12.0	2.44	5.64	345.26	345.26		1.1			
1500.0	4.0	12.1	2.44	5.92	344.98	344.98		1.1			
1600.0	4.0	12.1	2.44	5.96	344.94	344.94		1.1			
1700.0	4.0	12.1	2.44	6.03	344.87	344.87		1.1			
1800.0	4.0	12.0	2.44	6.09	344.81	344.81		1.1			
1900.0	4.0	12.0	2.44	6.14	344.76	344.76		1.1			
2000.0	4.0	12.0	2.44	6.27	344.53	344.53		1.1			
2100.0	4.0	12.0	2.44	6.27	344.65	344.65		1.1			
2200.0	4.0	12.0	2.44	6.27	344.65	344.65		1.1			
2300.0	4.0	12.0	2.44	6.30	344.60	344.60		1.1			

FORM NM-1 MINTEL 9 CASPER



NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boyer Road COUNTY Blaine STATE Wyo LINE NO. 3 PAGE 3
 SURVEYOR Reeds RODMEN SEITE DATE 5-21-81 CLIENT SR Co.

Stadia Distance	Station Slaps	Red Reading	Product	Difference Elevations	H. I.	Elevation	Station Occup.	Station Obj. I.	Shot Point	Remarks
2422.8	24.0	5.6	-50.5	1.6	3509.6	3443.5		1.02		
253	2.0	1.5	-50.6	6.5		3443.3		1.01		
263.0	2.1	1.0	-51.5	6.7		3443.4		1.02		
272		3.0		1.1	3446.8		✓			
282		3.6		3.5		3445.3		2.05		
293.8		3.6		3.6		3445.2		1.02		
308		4.0		4.0		3442.8		1.01		
320		4.1		4.1		3442.7		1.01		
330		4.2		4.2		3442.6		1.01		
340.8		4.2		4.6		3442.2		1.0		
350		4.0		4.0		3442.8		1.1		
364		4.4		4.0		3442.4		1.02		
378.0		4.6		4.5		3442.3		1.03		
388		4.6		4.6		3442.2		1.04		
398		4.8		4.8		3442.0		1.05		
408		5.0		5.0		3441.6		1.06		
425		5.1		5.0		3441.5		1.07		
448		5.0		5.0		3441.0		1.01		
467		5.0		5.0		3441.5		1.05		
478		5.7		5.7		3441.5		1.06		
488		5.8		5.8		3441.3		1.08		

FORM-NM17-NINTZELS-CASPER

1/21/81

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Boone COUNTY Lincoln STATE Wyo SURVEYOR Reed RODMEN Scott DATE 5-21-80 CLIENT SDC Corp
 LINE NO 3 PAGE 4

Station Number	Station Type	Ref. Reading	Height Elevation	M. I.	Station Elev.	Station O.C.S.	Station O.H. I.	Shot Point	Bearing	Remarks
740		6.5	6.5	3441.8	3440.3		162			
741		6.2	6.2		3441.6		163			
53		6.1	6.1		3441.5		164			
420		5.1	5.1		3441.6		165			
370		5.3	5.3		3441.5		166			
220		5.3	5.3		3441.5		167			
90		5.0	5.0		3441.8		168			
3		5.1	5.1		3441.6		169			
121		5.0	5.0		3441.5		170			
240		5.2	5.2		3441.6		171			
216		5.1	5.1		3441.6		172			
570		5.7	5.7		3441.6		173			
576		5.7	5.7		3441.6		174			
180		5.2	5.2		3441.6		175			
190		5.3	5.3		3441.5		176			
900		5.4	5.4		3441.8		177			
155		5.3	5.3		3441.6		178			
110		5.7	5.7		3441.6		179			
122		5.4	5.4		3441.2		180			
133		5.7	5.7		3441.1		181			
241		5.8	5.8		3441.0		182			

FORM - NR 1 - AMFIELD - CASPER

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Parsons Road COUNTY Carbon STATE WY LINE NO. 3 PAGE 3
 SURVEYOR Parsons RODMEN Smith DATE 5-21-80 CLIENT So. E.

Station Distance	Bearing Sight	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd	Shot Point	Bearing	Remarks
1.640		6.0		6.0	3442.8	3442.8		1.64			
1.650		6.2		6.2	3440.6	3440.6		1.65			
1.660		1.0		1.0	3440.6	3440.6		1.66			
1.670		5.1		5.1	3441.7	3441.7		1.67			
1.675		4.2		4.2	3442.6	3442.6		1.67			
2.020		4.6		4.6	3442.2	3442.2		1.68			
1.950		5.7		5.7	3441.5	3441.5		1.88			
1.840		5.8		5.8	3441.4	3441.4		1.85			
1.750		6.4		6.4	3441.2	3441.2		1.90			
1.620		6.9		6.8	3440.4	3440.4		1.91			
1.570		5.7		5.7	3441.5	3441.5		1.92			
1.500		5.8		5.8	3441.4	3441.4		1.93			
1.200		5.2		5.2	3442.0	3442.0		1.94			
1.200		5.2		5.2	3442.0	3442.0		1.95			
1.490		5.1		5.1	3441.7	3441.7		1.96			
1.6		5.8		5.8	3441.4	3441.4		1.97			
1.60		6.0		6.0	3441.2	3441.2		1.98			
1.6		5.8		5.8	3441.4	3441.4		1.99			
1.6		5.8		5.8	3441.4	3441.4		2.00			
1.6		5.8		5.8	3442.0	3442.0		2.01			
1.6		5.8		5.8	3441.8	3441.8		2.02			

FORM - NR-1 - REVISED - CASPER

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Beech Grove COUNTY Choshu STATE WV LINE NO 3 PAGE 6
 SURVEYOR James Jones RODMEN Scott DATE 5-21-80 CLIENT Southern

Station Distance	Backsight Stops	Red Reading	Product	Difference Elevation	U. I.	Elevation	Station Occup.	Station Obj. 4.	Shot Point	Bearing	Remarks
					3447.2						
38.0		52		-52		3442.0		207			
35.0		52		52		3442.0		204			
140.0		50		-50		3442.2		205			
30.0		50		-50		3442.2		206			
8.0		50		-50		3442.2		207			
15.0		50		-50		3442.1		208			
37.0		52		-52		3442.0		209			
40.0		50		50		3442.2		210			
87.0		40		-40		3442.2		211			
62.0		31		-31		3440.4		212			
72.0		36		-36		3443.2		213			
247.0		106		-106	3445.2						
230.0		110		-110	3444.8			214			
220.0		97		-97	3440.5			216			
207.0		92		-92	3440.5			216			
157.0		91		-91	3445.1			217			
187.0		90		-90	3445.2			218			
176.0		88		-88	3445.4			219			
120.0		55		-55	3445.7			220			
150.0		64		-64	3445.6			221			
143.0		80		-80	3442.2			222			

FORM-NR-1 MINTEL-CASPER

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Bogus Road COUNTY Chubbuck STATE NeV LINE NO. 3 PAGE 7
SURVEYOR Reeder RODMEN Section - Grubbs DATE 5-21-80 CLIENT SW Key

Stadia Distance	Beamers Steps	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obs'd.	Shot Point	Bearing	Remarks
					3454.2						
1320		8.0		-8.0		3446.2		223			
1210		7.5		-7.5		3446.7		224			
1100		7.0		-7.0		3446.9		225			
990		7.0		-7.0		3447.2		226			
880		7.0		-7.0		3447.2		227			
770		6.5		-6.5		3447.7		228			
670		6.6		-6.6		3447.6		229			
560		6.2		-6.2		3448.0		230			
450		6.0		-6.0		3448.2		231			
340		5.7		-5.7		3448.5		230			
230		5.4		-5.4		3448.8		233			
120		5.2		-5.2		3449.0		234			
10		5.2		-5.2		3449.0		235			
100		4.8		-4.8		3449.7		236			
210		4.2		-4.2		3450.0		237			
320		4.0		-4.0		3450.2		238			
430		3.8		-3.8		3450.4		239			
540		3.5		-3.5		3450.7		240			
640		4.0		-4.0		3450.2		241			
750		3.5		-3.5		3450.4		242			
860		3.7		-3.7		3450.5		243			

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA 122 Rock COUNTY WYO STATE WYO LINE NO. 3 PAGE 8
 SURVEYOR Neil Kintzel RODMEN S. J. B. B. B. DATE 5-22-80 CLIENT SCG

Station Distance	Bearing	Red Reading	Product	Difference Elevation	H. I.	Elevation	Station Occup.	Station Obj. I.	Shot	Bearing	Remarks
96.1		3.0		-3.0	3454.2	3457.2		244			
107.0		2.5		-2.5	3451.7	3454.2		245			
118.3	1/20	6.1	-4.32	-2.0	3451.9	3453.9		246			
129.0	1/60	1.6	-1.65	-2.1	3452.1	3454.2		247			
140.0	1/2	5.1	-1.79	-2.1	3452.1	3454.2		248			
150.0	1/2	9.5	-1.68	-2.0	3452.2	3454.2		249			
161.0	1/20	9.6	-1.82	-1.4	3452.6	3454.2		250			
172.0	1/60	10.0	-1.86	-1.2	3453.0	3454.2		251			
183.0	1/20	10.0	-1.91	-0.9	3453.3	3454.2		252			
194.0	1/20	10.2	-1.92	-0.5	3453.7	3454.2		253			
205.0	1/20	10.7	-1.92	-0.5	3453.7	3454.2		254			
216.0	1/20	10.8	-1.93	-0.0	3454.2	3454.2		255			
227.0	1/20	10.5	-1.93	-0.8	3454.0	3454.2		256			
238.0	1/20	10.3	-1.93	-1.4	3453.6	3454.2		257			
249.0	1/20	9.3	-1.93	-1.2	3453.8	3454.2		258			
		15.1		-1.5	3454.3	3454.2		259			
		12.6		-1.2	3454.1	3454.2		260			
		12.2		-1.2	3453.9	3454.2		261			
		11.5		-1.5	3454.4	3454.2		262			
		11.0		-1.0	3454.9	3454.2		263			

FORM - NR-1 KINTZEL & CASPER

NATURAL RESOURCES ENGINEERING CO.
CASPER, WYOMING

AREA Hayes Parcel COUNTY Chadwell STATE WY LINE NO. 5 PAGE 10
 SURVEYOR Paul RODMEN Simon DATE 5-21-80 CLIENT WPA

Stadia Distance	Bearing	Red Reading	Product	Difference Elevation	M. I.	Elevation	Station Occup.	Station Obj. H.	Shot Point	Bearing	Remarks
1690		104		104	3471.9	3461.5		2.64			
1650		100		100		3461.5		2.63			
1400		98		98		3462.1		2.66			
1210		96		96		3462.3		2.67			
1250		92		92		3462.7		2.69			
1150		84		84		3463.1		2.65			
1130		81		81		3463.8		2.70			
920		75		75		3464.4		2.71			
870		72		72		3464.7		2.72			
760		75		73		3464.6		2.73			
550		55		65		3465.4		2.74			
580		58		56		3466.1		2.75			
370		56		56		3466.3		2.76			
260		55		55		3466.4		2.77			
110		54		54		3466.9		2.78			
40		52		52		3466.7		2.75			
530		28		28		3469.1		2.80			
						34650					
						40.1					

APPROVED [Signature]
 DATE May 28, 1980



TIE 401

FORM NM 1 RINTZEL'S CASPER

VIBROSEIS OPERATORS REPORT

Client SOUTHWAND ROYALTYS County CHURCHILL State NEVADA Party No. #302 Sheet No 5 of 5 Date 5-22-80
 Area DIXIE VALLEY Operator RIKIE HARNISH Line No #3 Instrument Type LDX IV DFS V Vibrator Pattern INLINE Reel No. #004 005
 Record Length 16 SEC REC 4 LIS Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280'-440'-440'-5280'
 Weather NICE Detector Type L-21-A Freq 10 HZ Dets. Per Trace 12 Det. Spacing 9' INLINE Det. Pattern INLINE Group Int. 110' Trip Select _____
 Sample rate 2 Alias Filtr 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filtr	Parity count	OD count	Time	Remarks
		N ¹ -W	S ⁹⁶ -E			low	high							
63	254	203-250	258-277	47	182	8	128		IFP	IN	0	0	4:45	RECORDER 000-221
65	256	205-252	260-279	48	183									REEL #005 VP 258 FILE 184
67	258	207-254	262-279	49	184								5:30	VIBS STUCK "2"
69	260	209-256	264-279	50	185									
71	262	211-258	266-279	51	186									
73	264	213-260	268-279	52	187									
75	266	215-262	270-279	53	188									
77	268	217-264	272-279	54	189									
79	270	219-266	274-279	55	190									
81	272	221-268	276-279	56	191									
83	274	223-270	278-279	57	192									
85	276	225-272	279	58	193									279 Dead
87	278	227-274	279	59	194									279 Dead

E.O.L. LINE 3

VIBROSEIS OPERATORS REPORT

Client SOUTHLAND ROYALTY County CHURCHILL State NEVADA Party No. #302 Sheet No 4 of 5 Date 5-22-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No #3 Instrument Type DES V Vibrator Pattern INLINE Reel No. 003 004
 Record Length 16 SEC SWEEP 4115 Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280'-440'-440'-5280'
 Weather NICE Detector Type L-21-A Freq 10 Hz Dets. Per Trace 12 Det. Spacing 9' INLINE Det. Pattern INLINE Group Int. 110' Trip Select _____
 Sample rate 2 Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 fil	Parity count	OD count	Time	Remarks
		N-W	S-E			low	high							
18	209	158-205	213-260	24	159	8	128		1FP	IN	0	0	2:30	RECORDER 220-221
19	210	159-206	214-261	25	160									
21	212	161-208	216-263	26	161									
23	214	163-210	218-265	27	162									
25	216	165-212	220-267	28	163									
27	218	167-214	222-269	29	164									
29	220	169-216	224-271	30	165								3:00	REEL #004 VP. 220 FILE 165
31	222	171-218	226-273	31	166									
33	224	173-220	228-275	32	167									
35	226	175-222	230-277	33	168									
37	228	177-224	232-279	34	169									
39	230	179-226	234-279	35	170									
41	232	181-228	236-279	36	171								3:30	
43	234	183-230	238-279	37	172									
45	236	185-232	240-279	38	173									
47	238	187-234	242-279	39	174									
49	240	189-236	244-279	40	175									
51	242	191-238	246-279	41	176								4:00	
53	244	193-240	248-279	42	177									
55	246	195-242	250-279	43	178									
57	248	197-244	252-279	44	179									
59	250	199-246	254-279	45	180									
61	252	201-248	256-279	46	181								4:30	

VIBROSEIS OPERATORS REPORT

Client SOUTHLAND ROYALTY County CHURCHILL State NEVADA Party No. # 302 Sheet No 3 of 5 Date 5-22-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No # 3 Instrument Type COX IV DEF V Vibrator Pattern INLINE Reel No # 002 # 003
 Record Length 16 SEC REC Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-440-5280
 Weather NICE Detector Type L-21-A Freq 10HZ Dets. Per Trace 12 Det. Spacing 9' INLINE Det. Pattern INLINE Group Int. 110 Trip Select _____
 Sample rate 2m Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		N-W	S-E			low	high							
19	162	111-158	166-213	1	135	8	128		IFP	IN	0	0	11:00	REORDER 172-173 12 SEC SWEEP 16 SEC REC. 4 SEC LIS. CHECK STATIONS - REPLACE BAD CABLE 2 1/2 HOUR DRIVE TIME TO FIELD
21	164	113-160	168-215	2	136									
23	166	115-162	170-217	3	137									
25	168	117-164	172-219	4	138									
27	170	119-166	174-221	5	139								11:30	
29	172	121-168	176-223	6	140									VIB STUCK 5 MIN.
31	174	123-170	178-225	7	141									
33	176	125-172	180-227	8	142								12:00	
35	178	127-174	182-229	9	143									
37	180	129-176	184-231	10	144									
39	182	131-178	186-233	11	145									REEL # 003 V.P. 182 FILE # 145
40	183	132-179	187-234	12	146									
45	184 186	137-184	192-239	13	147								12:30	184 FOR 186 WELL SITE UNDER SHOT
43	190 188	135-182	190-237	14	149									VOID FILE # 148 WRONG COP SWITCH POSITION 190 FOR 188
48	191	140-187	195-242	15	150									
49	192	141-188	196-243	16	151									
51	194	143-190	198-245	17	152								1:00	
53	196	145-192	200-247	18	153									
8	199	148-195	202-250	19	154								1:30	MOVE RECORDER 200-221
9	200	149-196	204-251	20	155								2:00	
11	202	151-198	206-253	21	156									
13	204	153-200	208-255	22	157									
13	208 206	153-200	208-255	23	158								2:20	V.P. 208 FOR 206

VIBROSEIS OPERATORS REPORT

Client SOUTHLAND ROYALTY County CHURCHILL State NEVADA Party No. 302 Sheet No 2 of 5 Date 5-21-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No #3 Instrument Type LDX 111 DFS V Vibrator Pattern INLINE Reel No. #002
 Record Length 12 SEC SWE 16 SEC REC 4 LIS Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-440-5280
 Weather NICE Detector Type L21-A Freq 10HZ Dets. Per Trace 12 Det. Spacing 9' Det. Pattern INLINE Group Int. 110' Trip Select _____
 Sample rate 2 Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks	
		N-W	S-E			low	high								
1	144	101-140	148-195	22	126	8	128		IFP	1X	0	0	5:00	12-60 HZ SWEEP 12 SEC SWEEP 16 SEC REC 4 LIS RECORDER 172-173 GOOD ROLLING 6:30 END OF DAY 3 HOUR DRIVE TO FIELD	
3	146	101-142	150-197	23	127										
5	148	101-144	152-199	24	128										
7	150	101-146	154-201	25	129										
9	152	101-148	156-203	26	130										
11	154	103-150	158-205	27	131										
13	156	105-152	160-207	28	132								5:45		
15	158	107-154	162-209	29	133										
17	160	109-156	164-211	30	134										

VIBROSEIS OPERATORS REPORT

Client SOUTHLAND ROYALTY County CHURCHILL State NEVADA Party No. # 302 Sheet No 1 of 5 Date 5-21-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No # 3 Instrument Type LDX IV Vibrator Pattern INLINE Reel No. # 001
 Record Length 12 SEC SWEEP 16 SEC REL 4 US Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-440-5280
 Weather NICE Detector Type L-21-A Freq 10 HZ Dets. Per Trace 12 Det. Spacing 9' Det. Pattern INLINE Group Int. 110' Trip Select _____
 Sample rate 2 Alias Filt 128 Op Mode 1FP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		N-W	S-E			low	high							
					101									12-60 ↑ SWEEP 12 SEC SWEEP 16 SEC REL 4 LIS
					102-104									PULSE TEST LAY OUT LINE
					105									DRD 20.48 MV - 5 MV - 0 3 1/2 HOUR DRIVE
199	102		106-153	1	105	8	128		1FP	IN	0	0	2:00	REEL #001 VP 102 FILE 105 FROM TOWN
201	104		108-155	2	106									
203	106	101-102	110-157	3	107									CHECK LINE 1 1/2 hours
205	108	101-104	112-159	4	108									
207	110	101-106	114-161	5	109									
209	112	101-108	116-163	6	110									
211	114	101-110	118-165	7	111									
213	116	101-112	120-167	8	112								3:00	
215	118	101-114	122-169	9	113									50' OFFSET WEST
217	120	101-116	124-171	10	114									70' OFFSET WEST
219	122	101-118	126-173	11	115									100' OFFSET WEST
221	124	101-120	128-175	12	116									150' OFFSET WEST
223	126	101-122	130-177	13	117									75' OFFSET WEST
225	128	101-124	132-179	14	118									
227	130	101-126	134-181	15	119								4:00	
229	132	101-128	136-183	16	120									
231	134	101-130	138-185	17	121									
233	136	101-132	140-187	18	122									
235	138	101-134	142-189	19	123									
237	140	101-136	144-191	20	124									
239	142	101-138	146-193	21	125								4:40	REEL #002 VP 142 FILE 125

VIBROSEIS OPERATORS REPORT

Client SOUTHLAND ROYALTY County CHURCHILL State NEVADA Party No. _____ Sheet No 2 of _____ Date 5-24-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No # 2 Instrument Type DFS V Vibrator Pattern INLINE Reel No. 002 # 003
 Record Length 16 SEC SWEEP 4 LIS Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End on 5280-440-440-5280
 Weather COOL, CLOUDY Detector Type L-21-A Freq 10 HZ Dets. Per Trace 12 Det. Spacing 9' INLINE Det. Pattern INLINE Group Int. 110' Trip Select _____
 Sample rate 2 Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		N-W	S-E			low	high							
11	148	101-144	152-199	24	125	8	128		IFP	IN	0	0	1:10	RECORDER 166-167 12-60 HZ SWEEP REEL # 002 VP 142 FILE 122
13	150	101-146	154-201	25	126									
15	152	101-148	156-203	26	127									
17	154	103-150	158-205	27	129									
19	156	105-152	160-207	28	130									VOID FILE # 128
21	158	107-154	162-209	29	131								2:00	
23	160	109-156	164-211	30	132									
25	162	111-158	166-213	31	133									
27	164	113-160	168-215	32	134									
29	166	115-162	170-217	33	135									
31	168	117-164	172-219	34	136									
33	170	119-166	174-221	35	137								3:00	
35	172	121-168	176-223	36	138									
37	174	123-170	178-225	37	139									
39	176	125-172	180-227	38	140									
41	178	127-174	182-229	39	141									REEL # 003 VP 178 - FILE 141
43	180	129-176	184-231	40	142									
45	182	131-178	186-233	41	143								4:00	
47	184	133-180	188-235	42	144									
49	186	135-182	190-237	43	145									
51	188	137-184	192-239	44	146									
53	190	139-186	194-241	45	147									
55	192	141-188	196-243	46	148								4:55	

VIBROSEIS OPERATORS REPORT

Client SOUTHLAND ROYALTY County CHURCHILL State NEVADA Party No. # 302 Sheet No 3 of 3 Date 5-24-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No # 2 Instrument Type DFS V ^{CDX IV} Vibrator Pattern INLINE Reel No. # 003
 Record Length 16 SEC SWEEP ^{12 SEC SWEEP} Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End on 5280-440-440-5280
 Weather COOL, CLOUDY Detector Type L-21-A Freq 10 HZ Defs. Per Trace 12 Det. Spacing 9' INLINE Det. Pattern INLINE Group Int. 110' Trip Select _____
 Sample rate 2 Alias Filt 128 Op Mode 1FP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks	
						low	high								
		<u>N¹W</u>	<u>S²⁶E</u>												
<u>57</u>	<u>194</u>	<u>143-190</u>	<u>198-213</u>	<u>47</u>	<u>149</u>	<u>8</u>	<u>128</u>		<u>1FP IN</u>	<u>0</u>	<u>0</u>	<u>5:00</u>		<u>RECORDER 166-167 12-60 HZ SWEEP</u>	
<u>59</u>	<u>196</u>	<u>145-192</u>	<u>200-213</u>	<u>48</u>	<u>150</u>									<u>VIBS STUCK SALT MARSH</u>	
<u>61</u>	<u>198</u>	<u>147-194</u>	<u>202-213</u>	<u>49</u>	<u>151</u>									<u>TO SOFT FOR VIBS VP 200-213</u>	
<u>63</u>	<u>200</u>	<u>149-196</u>	<u>204-213</u>	<u>50</u>	<u>152</u>										
													<u>6:00</u>		
														<u>E.O.L.</u>	
														<u>LAST FILE 152 VP 200 REEL #003</u>	

VIBROSEIS OPERATORS REPORT

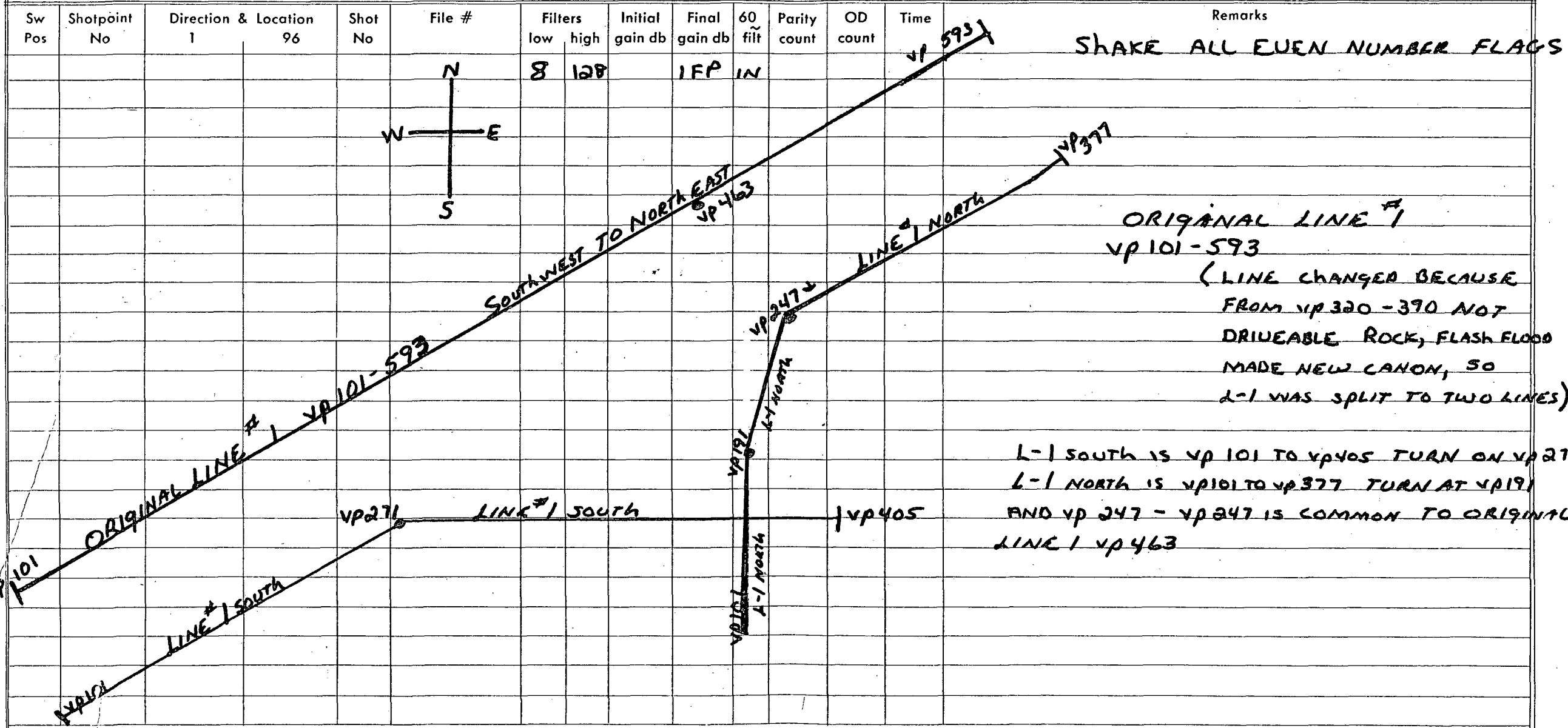
5-23-80 RAINED OUT

Client SOUTHLAND ROYALTY County CHURCHILL State NEVADA Party No. # 302 Sheet No 1 of 3 Date 5-24-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No # 2 Instrument Type CDX IV Vibrator Pattern INLINE Reel No. # 001 # 002
 Record Length 16 SEC REC 4.15 Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-440-5280
 Weather COOL, CLOUDY Detector Type L-21-A Freq 10 Hz Dets. Per Trace 12 Det. Spacing 9' INLINE Det. Pattern INLINE Group Int. 110' Trip Select PRESET
 Sample rate 2 Alias Filter 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		N-W	S-E			low	high							
205	102		106-153	1	102	8	128		IFP	IN	0	0	11:00	RECORDER AT 166-167 12-60 HZ SWEEP VOID FILE 101 REEL #001 VP 102 FILE 102
207	104		108-155	2	103									
209	106	101-102	110-157	3	104									
211	108	101-104	112-159	4	105									"VERY" "ROCKY" VP 102-150
213	110	101-106	114-161	5	106									" " " " ROLL MOST. STACK SUM 4 SWEEPS LESS OK
215	112	101-108	116-163	6	107								11:30	SAGE VP 156-174
217	114	101-110	118-165	7	108									SALT FLATS VP 176-213
219	116	101-112	120-167	8	109									
221	118	101-114	122-169	9	110									
223	120	101-116	124-171	10	111									
225	122	101-118	126-173	11	112								12:00	
227	124	101-120	128-175	12	113									
229	126	101-122	130-177	13	114									
231	128	101-124	132-179	14	115									
233	130	101-126	134-181	15	116									
235	132	101-128	136-183	16	117									
237	134	101-130	138-185	17	118								12:30	REEL #002 FILE 122 VP 142
239	136	101-132	140-187	18	119									90' OFFSET NORTH ROCKS
1	138	101-134	142-189	19	120									90' " " " "
3	140	101-136	144-191	20	121									90' " " " "
5	142	101-138	146-193	21	122									90' " " " "
7	144	101-140	148-195	22	123									70' " " " "
9	146	101-142	150-197	23	124								1:00	70' " " " "

VIBROSEIS OPERATORS REPORT

Client SOUTHLAND ROYALTY County CHURCHILL CO. State NEVADA Party No. #302 Sheet No 1 of 1 Date 5-31-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No #1 South #1 North Instrument Type CDX IV DES V Vibrator Pattern INLINE 110' Reel No. —
 Record Length 12 SEC SWEEP 16 SEC REC 4 LIS Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-440-5280
 Weather COOL, CLOUDY Detector Type L-21-A Freq 10 HZ Dets. Per Trace 12 Det. Spacing 9' Det. Pattern INLINE Group Int. 110' Trip Select —
 Sample rate 2 Alias Filt 128 Op Mode IFP PGC Curve — AGC Speed — AGC Level — Trip time — AGC Sampling Tr. — SPC — ITB —



VIBROSEIS OPERATORS REPORT

Client Southland Royalty County Churchill State NEVADA Party No. 302 Sheet No 1 of 7 Date 5-29-80
 Area Dixie Valley Operator Rick Harnish Line No 1-North Instrument Type CDX IV DFS V Vibrator Pattern inline Reel No. #001 #002
 Record Length 16 Sec. Type Cov. 24 Fold No. Vibrators 2 Sweeps per sta 16 Dist Nr. Tr. Straddle/End on 5280-440-440-5280
 Weather cloudy Detector Type L-21-A Freq 1142 Dets. Per Trace 12 Det. Spacing 9' Det. Pattern inline Group Int. 110' Trip Select _____
 Sample rate ams Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 fil	Parity count	OD count	Time	RECORDED 178-179 REEL #001 FILE # 101 U.P. 102	Remarks	12-60 HZ SWEEP 16 SEC REC. 4 SEC LIS 12 SEC SWEEP
		1	96			low	high									
193	102		106-153	1	101	8	128		11FP	in	0	0	1.00	REEL #001 FILE 101-U.P. 102		
195	104		108-155	2	102									CONSTANTS DATE WRONG ON REEL #001 AND #002 5-29-80 IS RIGHT DATE ON TAPES 5-28-80		
197	106	101-102	110-157	3	103											
199	108	101-104	112-159	4	104											
201	110	101-106	114-161	5	105											
203	112	101-108	116-163	6	106											
205	114	101-110	118-165	7	107											
207	116	101-112	120-167	8	108											
209	118	101-114	122-169	9	109											
211	120	101-116	124-171	10	110											
213	122	101-118	126-173	11	111											
215	124	101-120	128-175	12	112											
217	126	101-122	130-177	13	113											
219	128	101-124	132-179	14	114								2.30			
221	130	101-126	134-181	15	115											
223	132	101-128	136-183	16	116											
225	134	101-130	138-185	17	117											
226	135	101-131	139-186	18	118											
229	138	101-134	142-189	19	119											
231	140	101-36	144-191	20	120											
233	142	101-138	146-193	21	121								3.30			
236	145	101-141	149-196	22	122											
237	146	101-142	150-197	23	123											

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VIBROSEIS OPERATORS REPORT

Client SOUTHLAND ROYALTY County CHURCHILL State NEVADA Party No. #302 Sheet No. 2 of 7 Date 5-29-80
 Area DIXIE VALLEY Operator RICK HARNISIT Line No. #1 NORTH Instrument Type COX IV DFS V Vibrator Pattern INLINE Reel No. #002 #003
 Record Length 16 SEC SWEEP 16 SEC REEL 4 LINES Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/~~End On~~ 5280-440-440-5280
 Weather CLOUDY Detector Type L21-A Freq 10 Hz Dets. Per Trace 12 Det. Spacing 9' Det. Pattern INLINE Group Int. 110' Trip Select _____
 Sample rate 2 Alias Filt 128 Op Mode 1FP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		1	96			low	high							
239	148	101-144	152-199	24	124	8	128		1FP	114	0	0	3:00	RECORDED 178-179
1	150	101-146	154-201	25	125									REEL #002 HAS REEL #001 AS CONSTANTS
3	152	101-148	156-203	26	126									
5	154	103-150	158-205	27	127									
7	156	105-152	160-207	28	128									
9	158	107-154	162-209	29	129									
11	160	109-156	164-211	30	130									
13	162	111-158	166-213	31	131								4:00	
15	164	113-160	168-215	32	132									
17	166	115-162	170-217	33	133									
20	169	118-165	173-220	34	134									
21	170	119-166	174-221	35	135									
23	172	121-168	176-223	36	136									
25	174	123-170	178-225	37	137									
27	176	125-172	180-227	38	138								5:00	
29	178	127-174	182-229	39	139									
31	180	129-176	184-231	40	140									
33	182	131-178	186-233	41	141									REEL #003 v/p 182 FILE 141
35	184	133-180	188-235	42	142									
37	186	135-182	190-237	43	143									
39	188	137-184	192-239	44	144									
41	190	139-186	194-241	45	145								6:00	END OF DAY

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VIBROSEIS OPERATORS REPORT

Client SOUTHLAND ROYALTY County Churchill State NEVADA Party No. 302 Sheet No 3 of 7 Date 5-30-80

Area DIXIE VALLEY Operator RICK HARNISH Line No. 1-N Instrument Type CAX IV DES V Vibrator Pattern INLINE Reel No. 003

Record Length 16 Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End 5280-440-440-5280

Weather CLOUDY Detector Type L-21-A Freq 10HZ Dets. Per Trace 12 Det. Spacing 9' Det. Pattern INLINE Group Int. 110' Trip Select _____

Sample rate 2ms Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	RECORDED AT 214-215 V.P. 182 FILE#141 REEL#003	Remarks 12-60HZ SWEEP 16 SEC REC 4 SEC LIS 12 SEC SWEEP
		1	96			low	high								
7	192	141-188	196-243	1	146	8	128		IFP	IN	0	0	10:30		
9	194	143-190	198-245	2	147										
11	196	145-192	200-247	3	148										
13	198	147-194	202-249	4	149										
15	200	149-196	204-251	5	150										
17	202	151-198	206-253	6	151										
19	204	153-200	208-255	7	152										
21	206	155-202	210-257	8	153										
23	208	157-204	212-259	9	154										
25	210	159-206	214-261	10	155										
27	212	161-208	216-263	11	156								11:30		
29	214	163-210	218-265	12	157										
31	216	165-212	220-267	13	158										
33	218	167-214	222-269	14	159										
35	220	169-216	224-271	15	160									REEL#004 FILE#161 V.P. 222	
37	222	171-218	226-273	16	161										
39	224	173-220	228-275	17	162										
41	226	175-222	230-277	18	163										
43	228	177-224	232-279	19	164										
45	230	179-226	234-281	20	165									RECORDER MOVE TO 256-257	
5	232	181-228	236-283	21	166								1:30	VOID FILE 4006 MISS FILE NUMBERS	
7	234	183-230	238-285	22	167									CDP OFF 2 VP 232 SWITCH #7	
9	236	185-232	240-287	23	168										

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VIBROSEIS OPERATORS REPORT

Client SOUTHLAND ROYALTY County Churchill State NEVADA Party No. 302 Sheet No. 4 of 7 Date 5-30-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No. 1-11 Instrument Type DFS 5 ^{CDX 4} Vibrator Pattern INLINE Reel No. 004 005
 Record Length 16 Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-440-5280
 Weather CLOUDY Detector Type L-21-A Freq 10 HZ Dets. Per Trace 12 Det. Spacing 9' Det. Pattern INLINE Group Int. 110' Trip Select _____
 Sample rate 2ms Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		1	96			low	high							
11	238	187-234	242-289	24	169	8	128		IFP	IN	0	0		RECORDER AT 214-215 REEL # 004 FILE 161 V.P. 222
13	240	189-236	244-291	25	170									12-60 HZ ↑ SWEEP 16 SEC REC 4 SEC LIS 12 SEC SWEEP
15	242	191-238	246-293	26	171								3:00	
17	244	193-240	248-295	27	172									
19	246	195-242	250-297	28	173									
21	248	197-244	252-299	29	174									
23	250	199-246	254-301	30	175									
25	252	201-248	256-303	31	176									
27	254	203-250	258-305	32	177									
29	256	205-252	260-307	33	178									
31	258	207-254	262-309	34	179									
33	260	209-256	264-311	35	180									
35	262	211-258	266-313	36	181									REEL # 005 FILE 181 V.P. 262
37	264	213-260	268-315	37	182									
39	266	215-262	270-317	38	183									
41	268	217-264	272-319	39	184									
43	270	219-266	274-321	40	185									
45	272	221-268	276-323	41	186									
47	274	223-270	278-325	42	187									
49	276	225-272	280-327	43	188									
27	278	227-274	282-329	44	189									RECORDER MOVE TO 280-281
29	280	229-276	284-331	45	190									
31	282	231-278	286-333	46	191								4:30	

VIBROSEIS OPERATORS REPORT

Client Southland Royalty County Churchill State Nevada Party No. 302 Sheet No. 5 of 7 Date 5-30-80
 Area Dixie Valley Operator Rick Harnish Line No. 1-N Instrument Type CDX 4 DES 5 Vibrator Pattern Inline Reel No. 005
 Record Length 16 Sec. Type Cov. 24 fold No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End on 5280-440-440-5280
 Weather Cloudy Detector Type L-21-A Freq 10HZ Dets. Per Trace 12 Det. Spacing 9' Det. Pattern Inline Group Int. 110' Trip Select _____
 Sample rate 2 ms Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	REMARKS	
		1	96			low	high							RECORDER AT 280-281	Remarks
33	284	233-280	288-335	47	192	8	128		IFP	IN	0	0			12-60 HZ ↑ SWEEP
35	286	235-282	290-337	48	193										16 SEC. REC. 4 SEC. 45
37	288	237-284	292-339	49	194										12 SEC SWEEP
39	290	239-286	294-341	50	195										
41	292	241-288	296-343	51	196								5:00	Void file 198-199-200-201	
43	294	243-290	298-345	52	197	561								Dead traces pass cable break Reel # 006 V.P. 302 file # 201 END OF DAY	

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VIBROSEIS OPERATORS REPORT

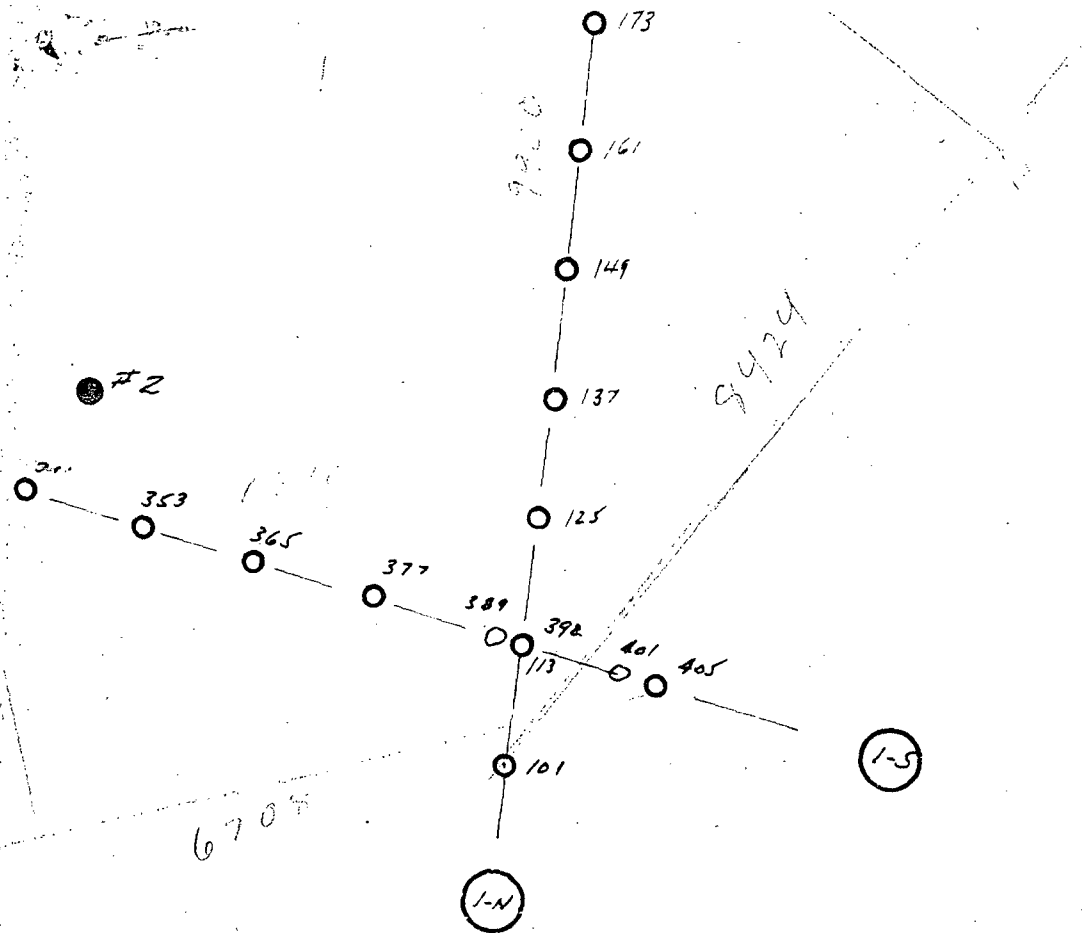
Client SOUTHLAND ROYALTY County CHURCHILL State NEVADA Party No. # 302 Sheet No. 6 of 7 Date 5-31-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No. #1 NORTH Instrument Type DFS V Vibrator Pattern INLINE Reel No. #006
 Record Length 13 SEC SWEEP 16 SEC REC Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/~~End On~~ 5280-440-440-5280
 Weather COOL Detector Type L-31-A Freq 10 Hz Dets. Per Trace 12 Det. Spacing 9' INLINE Det. Pattern INLINE Group Int. 110 Trip Select _____
 Sample rate 2 Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		1	96			low	high							
9	296	245-292	300-347	1	202	8	128		IFP	IN	0	0	10:00	RECORDS 318-319 REEL #006 VP 302 FILE 201
11	298	247-294	302-349	2	203									VOID FILES 198-201 DEAD TRACES
13	300	249-296	304-351	3	204									PAST CABLE BREAK,
15	302	251-298	306-353	4	205									
17	304	253-300	308-355	5	206									
19	306	255-303	310-357	6	207									
21	308	257-304	312-359	7	208									
23	308	259-306	314-361	8	209									
25	312	261-308	316-363	9	210								11:00	
27	314	263-310	318-365	10	211									
29	316	265-312	320-367	12	212									
31	318	267-314	322-369	13	213									
33	320	269-316	324-371	14	214									
35	322	271-318	326-373	15	215									
37	324	273-320	328-375	16	216									
39	326	275-322	330-377	17	217									
41	328	277-324	332-377	18	218									
43	330	279-326	334-377	19	219									
45	332	281-328	336-378	20	220								12:00	
47	334	283-330	338-377	21	221									REEL #007 VP 334 FILE 221
49	336	285-332	340-377	22	222									
51	338	287-334	342-377	23	223									
53	340	289-336	344-377	24	224									

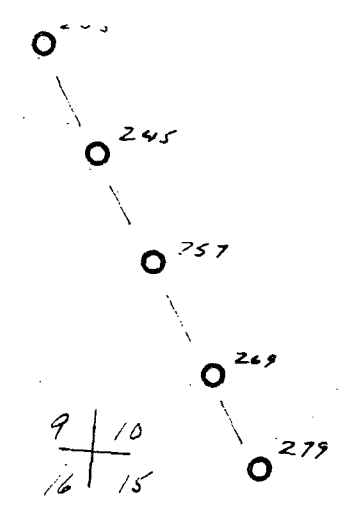
VIBROSEIS OPERATORS REPORT

Client SOUTHLAND ROYALTY County CHURCHILL State NEVADA Party No. #302 Sheet No 7 of 7 Date 5-31-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No #1 NORTH Instrument Type CDX IV DFS V Vibrator Pattern INLINE Reel No. #007
 Record Length 12 SEC SWEEP 16 SEC REC 4 LIS Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-440-5280
 Weather COOL Detector Type L-91-A Freq 10 Hz Dets. Per Trace 12 Det. Spacing 9' Det. Pattern INLINE Group Int. 110' Trip Select _____
 Sample rate 2 Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

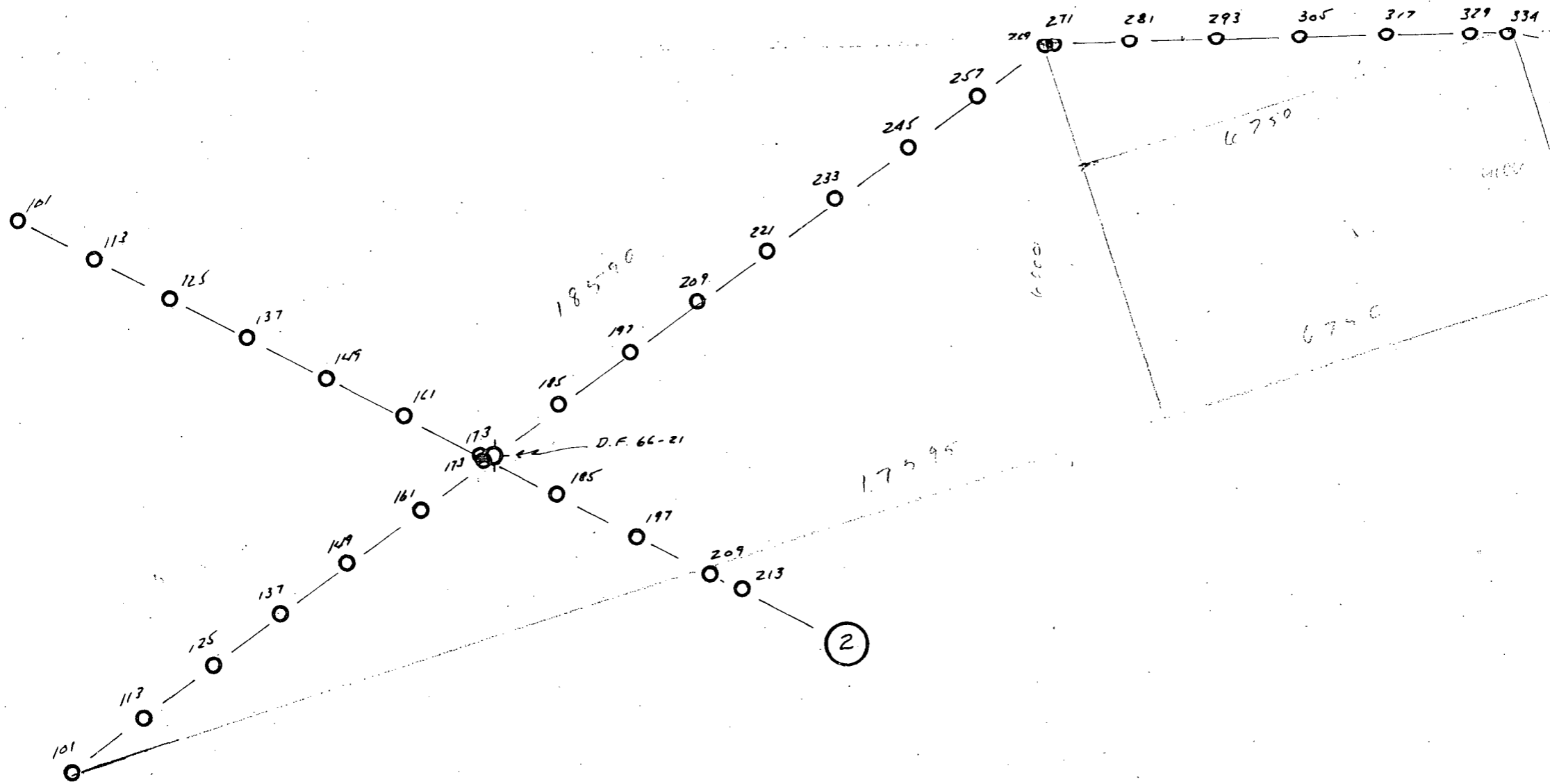
Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks	
		1	96			low	high								
55	342	291-338	346-377	25	225	8	128		IFP	16	0			12-60 Hz SWEEP 12 SES SWEEP 16 SEC REC 4 SEC LIS	
57	344	293-340	348-377	26	226										
59	346	295-342	350-377	27	227										
61	348	297-344	352-377	28	228							1:00			
63	350	299-346	354-377	29	229										
65	352	301-348	356-377	30	230										
67	354	303-350	358-377	31	231										
69	356	305-352	360-377	32	232										
71	358	307-354	362-377	33	233										
73	360	309-356	364-377	34	234										
75	362	311-358	366-377	35	235									REEL #008 vp 364 FILE 236	
77	364	313-360	368-377	36	236										
79	366	315-362	370-377	37	237										
81	368	317-364	372-377	38	238										
83	370	319-366	374-377	39	239										
85	372	321-368	376-377	40	240										
87	374	323-370		41	241										
89	376	325-372		42	242							2:00			
															E.O.L.

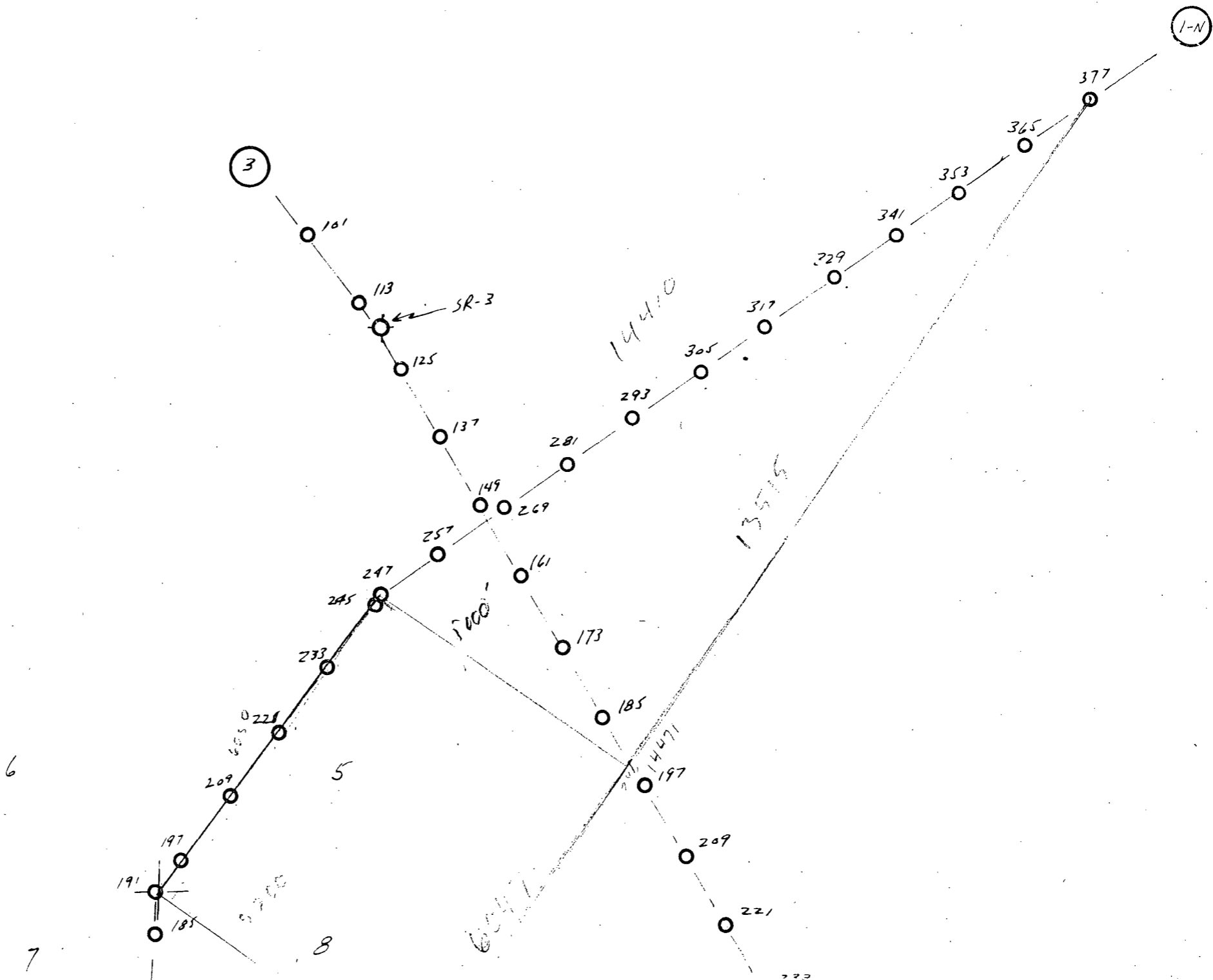


T
24
N
R 37 E



Boyer Ranch Area
Churchill Co., Nev
Scale: 1" = 2000'
110' Intervals
6/2/10
Reeves





VIBROSEIS OPERATORS REPORT

Client SOUTHLAND ROADS County CHURCHILL State NEVADA Party No. # 302 Sheet No 1 of 9 Date 5-25-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No # 1 South Instrument Type CDX IV Vibrator Pattern INLINE Reel No. # 001 # 002
 Record Length 12 SEC REC 4 US Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End 5280-440-440-5280
 Weather NICE Detector Type L-21-A Freq 10 HZ Dets. Per Trace 12 Det. Spacing 9' INLINE Det. Pattern INLINE Group Int. 110' Trip Select _____
 Sample rate 2 Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	REMARKS
		1	96			low	high							
199	102		106-153	1	101	8	128		IFP	IN	0	0	10:30	RECORDER 172-173 REEL # 001 V.P. 102 FILE # 101 12 SEC SWEEP
201	104		108-155	2	102									
203	106	101-102	110-157	3	103									
205	108	101-104	112-159	4	104									
207	110	101-106	114-161	5	105								11:30	Vib went around ditch to muddy
209	112	101-108	116-163	6	106									
211	114	101-110	118-165	7	107									Vib around ditch to muddy
213	116	101-112	120-167	8	109									VOID FILE # 108
215	118	101-114	122-169	9	110									
217	120	101-116	124-171	10	111									
219	122	101-118	126-173	11	112									
221	124	101-120	128-175	12	113									
223	126	101-122	130-177	13	114								12:45	
225	128	101-124	132-179	14	115									
227	130	101-126	134-181	15	116									
229	132	101-128	136-183	16	117									
231	134	101-130	138-185	17	118									
233	136	101-132	140-187	18	119									
235	138	101-134	142-189	19	120									REEL # 002 V.P. 140 - FILE # 121
237	140	101-136	144-191	20	124									VOID FILE # 121 - # 122 - # 123 CDP OFF 2 STATIONS
239	142	101-138	146-193	21	125									
1	144	101-140	148-195	22	126									
3	146	101-142	150-197	23	127									

VIBROSEIS OPERATORS REPORT

Client Southland Royalty County Church Hill State NEVADA Party No. 302 Sheet No 2 of 9 Date 5-25-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No #1 South Instrument Type DF25 Vibrator Pattern inline Reel No. 002 003
 Record Length 16 Sec. Type Cov. 24 Fold No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-460-5280
 Weather cloudy Detector Type L-21A Freq 10 HZ Dets. Per Trace 12 Det. Spacing 9' Det. Pattern inline Group Int. 110' Trip Select _____
 Sample rate 2 ms Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 fil	Parity count	OD count	Time	Remarks
		1	96			low	high							
5	148	101-144	152-199	24	128	8	128		IFP	IN	0	0		REEL 002
7	150	101-146	154-201	25	129									
9	152	101-148	156-203	26	130									
11	154	103-150	158-205	27	131									
13	156	105-152	160-207	28	132									
15	158	107-154	162-209	29	133									
17	160	109-156	164-211	30	134									
19	162	111-158	166-213	31	135									
21	164	113-160	168-215	32	136									
23	166	115-162	170-217	33	137									
25	168	117-164	172-219	34	138									
27	170	119-166	174-221	35	139									
29	172	121-168	176-223	36	140									
31	174	123-170	178-225	37	141									
33	176	125-172	180-227	38	142									
35	178	127-174	182-229	39	143								4:00	REEL # 003 FILE 143 V.P. 178
37	180	129-176	184-231	40	144									
39	182	131-178	186-233	41	145									
41	184	133-180	188-235	42	146									
43	186	135-182	190-237	43	147									
45	188	137-184	192-239	44	148									
47	190	139-186	194-241	45	149									
49	192	141-188	196-243	46	150									

VIBROSEIS OPERATORS REPORT

Client Southland Royalty County Church Hill State NEVADA Party No. 302 Sheet No 3 of 9 Date 5-25
 Area DIXIE VALLEY Operator RICK HARNISH Line No # 1 SOUTH Instrument Type CDX4 SES5 Vibrator Pattern inline Reel No. #003
 Record Length 16 Sec. Type Cov. 24 Fold No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-440-5280
 Weather Cloudy Detector Type L-21A Freq 10 HZ Dets. Per Trace 12 Det. Spacing 9' Det. Pattern inline Group Int. 110' Trip Select _____
 Sample rate 2ms Alias Filt 128 Op Mode IEP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	REMARKS
		1	96			low	high							
51	194	143-190	198-245	47	151	8	128		IEP	IN	0	0	5:00	RECORDER AT 172-173 12-60 1121 SWEEP 16-SEC REC 4 SEC 1'S REEL #003 FILE 143 U.P. 178 12-SEC SWEEP
53	196	145-192	200-247	48	152									
55	198	147-194	202-249	49	153									
57	200	149-196	204-251	50	154									

END OF DAY

VIBROSEIS OPERATORS REPORT

Client Southland Royalty County Churchill State NEVADA Party No. 302 Sheet No 4 of 9 Date 5-27-80
 Area DIXIE VALLEY Operator RICK HAENISH Line No 1 SOUTH Instrument Type SFS 5 ^{CDX 4} Vibrator Pattern inline Reel No. 003 004
 Record Length 16 Sec. Type Cov. 24 Fold No. Vibrators 4 Sweeps per sta 16' Dist Nr. Tr. Straddle/~~End On~~ 5280-440-5286
 Weather nice Detector Type L-21-A Freq 10 Hz Dets. Per Trace 12 Det. Spacing 9' Det. Pattern inline Group Int. 110' Trip Select _____
 Sample rate 2ms Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		1	96			low	high							
11	202	151-198	206-253	1	155	8	128		IFP	in	0	0	11:00	RECORDER AT 120-121 REEL 003 FILE 143 U.P. 178
13	204	153-200	208-255	2	156									
15	206	155-202	210-257	3	157									
17	208	157-204	212-259	4	158									
19	210	159-206	214-261	5	159									
21	212	161-208	216-263	6	160									
23	214	163-210	218-265	7	161									REEL # 004 U.P. 216 FILE 162
25	216	165-212	220-267	8	162									CONSTANTS WRONG REEL 003 FOR 004
27	218	167-214	222-269	9	163									
29	220	169-216	224-271	10	164									
31	222	171-218	226-273	11	165									
33	224	173-220	228-274	12	166									
35	226	175-222	230-277	13	167									
37	228	177-224	232-279	14	168									
39	230	179-226	234-281	15	169									
41	232	181-228	236-283	16	170									
43	234	183-230	238-285	17	171									
45	236	185-232	240-287	18	172									
47	238	187-234	242-289	19	173									RECORDER MOVES TO 156-157
13	240	189-236	244-291	20	174								2:10	
15	242	191-238	246-293	21	175									
17	244	193-240	248-295	22	176									
19	246	195-242	250-297	23	177									

VIBROSEIS OPERATORS REPORT

Client Southland Royalty County Churchill State NEVADA Party No. 302 Sheet No 5 of 9 Date 5-27-80
 Area DIXIE VALLEY Operator RICK HAENISH Line No # 1 SOUTH Instrument Type CDX4 DESS Vibrator Pattern inline Reel No. 004
 Record Length 16 Sec. Type Cov. 24 Fold No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-440-5280
 Weather nice Detector Type L-21-A Freq 10 Hz Dets. Per Trace 12 Def. Spacing 9' Det. Pattern inline Group Int. 110' Trip Select _____
 Sample rate 2ms Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		1	96			low	high							
21	248	197-244	252-299	24	178	8	128		IFP	11	0	0		RECORDED AT 156-157
23	250	199-246	254-301	25	179									12-16 HZ SWEEP
25	252	201-248	256-303	26	180									16 SEC REC 4 SEC 115
27	254	203-250	258-305	27	181									12 SEC SWEEP
29	256	205-252	260-307	28	182									REEL # 005 U.P. 256 FILE 182
31	258	209-256	264-311	30	184									
35	262	211-258	266-313	31	185								4:00	BAD CABLES ONE DEAD TRACE
37	264	213-260	268-315	32	186									
39	266	215-262	270-317	33	187									
41	268	217-264	272-319	34	188									
43	270	219-266	274-321	35	189								5:30	
45	272	221-268	276-323	36	190									
47	274	223-270	278-325	37	191									
49	276	225-272	280-327	38	192									

VIBROSEIS OPERATORS REPORT

Client Southland Royalty County Churchill State NEVADA Party No. 302 Sheet No 6 of Date 5-28-80
 Area DIXIE VALLEY Operator RICK HAENISH Line No #1 SOUTH Instrument Type CDXIV DRS 5 Vibrator Pattern inline Reel No. #005-006
 Record Length 16 Sec. Type Cov. 24 Fold No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-440-5280
 Weather NICE Detector Type L-21-A Freq 1012 Dets. Per Trace 12 Det. Spacing 9' Det. Pattern inline Group Int. 110' Trip Select
 Sample rate 2MS Alias Filt 128 Op Mode IFP PGC Curve AGC Speed AGC Level Trip time AGC Sampling Tr. SPC ITB

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		1	96			low	high							
3	278	227-274	282-329	1	193	8	128		1FP	10	0	0		REEL 005 FILE 182 U.P. 256 RECORDER 304-305 Remarks 12-60 142 SWEEP 16-SEC REC 4SEC LIS 12 SEC SWEEP
5	280	229-276	284-331	2	194									
7	282	231-278	286-333	3	195									
9	284	233-280	288-335	4	196									
11	286	235-282	290-337	5	197									
13	288	237-284	292-339	6	198									
15	290	239-286	294-341	7	199									
17	292	241-288	296-343	8	200									
19	294	243-290	298-345	9	201									
21	296	245-292	300-347	10	202									
23	298	247-294	302-349	11	203									
25	300	249-296	304-351	12	204									
27	302	251-298	306-353	13	205								12:00	
29	304	253-300	308-355	14	206									
31	306	255-302	310-357	15	207									
33	308	257-304	312-359	16	208									
35	310	259-306	314-361	17	209									
37	312	261-308	316-363	18	210									
39	314	263-310	318-365	19	211									
41	316	265-312	320-367	20	212									
43	318	267-314	322-369	21	213									
45	320	269-316	324-371	22	214									
47	322	271-318	326-373	23	215									

REEL #006 U.P. 298 FILE #203

RECORDER MOVIE 340-341

Petroleum Geophysical Company

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VIBROSEIS OPERATORS REPORT

Client Southland Royalty County Churchill State NEVADA Party No. 302 Sheet No 7 of 9 Date 5-28-80
 Area DIXIE VALLEY Operator Rick Harnish Line No # 1 South Instrument Type CDT II SFS II Vibrator Pattern inline Reel No. #006-007
 Record Length 16 Sec. Type Cov. 24Fold No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-440-5280
 Weather NICE Detector Type L21-A Freq 10 HZ Dets. Per Trace 12 Det. Spacing 9' Det. Pattern inline Group Int. 110' Trip Select _____
 Sample rate 2ms Alias Fill 128 Op Mode I/P PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		1	96			low	high							
13	324	273-320	328-375	24	216	8	128		I/P	in	0	0	2:00	RECORDER 140-141 REEL #006 FILE #203 UP, 298
15	326	375-322	330-377	25	217									12-60 HZ SWEEP 16 SEC REC 4 SEC L/S 12 SEC SWEEP
17	328	277-324	332-379	26	218									
19	330	279-326	334-381	27	219									
21	332	281-328	336-383	28	220									
23	334	283-330	338-385	29	221									
25	336	285-332	340-387	30	222									
27	338	287-334	342-389	31	223									→ File 223 missing
29	340	289-336	344-391	32	224									REEL #007 V.P. 338 FILE 223 missing
31	342	291-338	346-393	33	225									
33	344	293-340	348-395	34	226									
35	346	295-342	350-397	35	227									
37	348	297-344	352-399	36	228								4:00	
39	350	299-346	354-401	37	229									
41	352	301-348	356-403	38	230									
43	354	303-350	358-405	39	231									
45	356	305-352	360-405	40	232									
47	358	307-354	362-405	41	233									
49	360	309-356	364-405	42	234								4:30	
51	362	311-358	366-405	43	235									
53	364	313-360	368-405	44	236									
55	366	315-362	370-405	45	237									
57	368	317-364	372-405	46	238									

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VIBROSEIS OPERATORS REPORT

Client Southland Royalty County Churchill State NEVADA Party No. 302 Sheet No. 8 of 9 Date 5-28-80
 Area DIXIE VALLEY Operator Rick Hamish Line No. #1 SOUTH Instrument Type CD 55 Vibrator Pattern inline Reel No. 007 #008
 Record Length 16 Sec. Type Cov. 24 Fold No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-5280
 Weather nice Detector Type L-21-A Freq 10Hz Dets. Per Trace 12 Det. Spacing 9' Det. Pattern inline Group Int. 110' Trip Select _____
 Sample rate 2ms Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		1	96			low	high							
59	307	319-346	374-405	47	239	8	128		1FP	11	0	0		RECORDER # 140-141 REEL # 007 FILE # 223 U.P. 338
61	372	321-368	376-405	48	240									12-60 HZ SWEEP 16 SEC. REG 4 SEC. 1.5
63	374	323-370	378-405	49	241									12 SEC. SWEEP
65	376	325-372	380-405	50	242								5:30	
67	378	327-374	382-405	51	243									
69	380	329-376	384-405	52	244									REEL # 008 FILE 245 U.P. 382
71	382	331-378	386-405	53	245									
73	384	333-380	388-405	54	246									
75	386	335-382	390-405	55	247								6:00	
														END OF DAY

VIBROSEIS OPERATORS REPORT

Client Southland Royalty County Cherokee State NEVADA Party No. 302 Sheet No 9 of 9 Date 5-29-80
 Area DIXIE VALLEY Operator RICK HARNISH Line No #1 SOUTH Instrument Type CDX IV GFS V Vibrator Pattern inline Reel No. #008
 Record Length 16 Sec. Type Cov. 24 FOLD No. Vibrators 4 Sweeps per sta 16 Dist Nr. Tr. Straddle/End On 5280-440-440-5280
 Weather Cloudy Detector Type L-21-A Freq 10 Hz Dets. Per Trace 12 Det. Spacing 9' Det. Pattern inline Group Int. 110' Trip Select _____
 Sample rate 2ms Alias Filt 128 Op Mode IFP PGC Curve _____ AGC Speed _____ AGC Level _____ Trip time _____ AGC Sampling Tr. _____ SPC _____ ITB _____

Sw Pos	Shotpoint No	Direction & Location		Shot No	File #	Filters		Initial gain db	Final gain db	60 filt	Parity count	OD count	Time	Remarks
		1	96			low	high							
77	388	337-389	392-405	1	248	8	28		1FP	in	0	0	11:00	RECORDER # 340-0341 REEL # 008 FILE 223 VP382 12-60Hz SWEEP 16-SEC REC 4-SEC INT 12-SEC SWEEP
79	390	339-386	394-405	2	249									
81	392	341-388	396-405	3	250									
85	394	343-390	398-405	4	251									VOID FILE # 252-253
87	396	345-392	400-405	5	254									
89	398	347-394	402-405	6	255									
91	400	349-396	404-405	7	256									
93	402	351-398		8	257									
95	404	353-400		9	258									end of line one Going south