

30-015-44963



Company: Mesquite Job Number: 03-1-18-2253 Calculation Method Minimum Curvature
Well: VAL SWD #1 Mag (Grid): 6.79 Proposed Azimuth 0.0
Location: Eddy County, NM Dir Driller: R. Drake Depth Reference 22'
Rig: Patriot 5 FST: B. Dabney Tie Into: Assumed Vertical
Job Date: 8/1/18 - 9/20/18

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth			
Tie In	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0			
1	379	3.60	146.40	379	378.75	-9.91	9.91 S	6.59 E	11.90	146.40	0.95	0.95	38.63
2	669	3.90	148.00	290	668.13	-25.86	25.86 S	16.85 E	30.87	146.91	0.11	0.10	0.55
3	837	3.60	142.90	168	835.77	-34.91	34.91 S	23.06 E	41.84	146.55	0.27	-0.18	-3.04
4	946	1.00	168.90	109	944.67	-38.58	38.58 S	25.31 E	46.14	146.73	2.51	-2.39	23.85
5	1067	0.80	165.30	121	1065.66	-40.43	40.43 S	25.73 E	47.92	147.53	0.17	-0.17	-2.98
6	1190	1.10	169.10	123	1188.64	-42.42	42.42 S	26.17 E	49.84	148.33	0.25	0.24	3.09
7	1314	1.40	174.10	124	1312.61	-45.10	45.10 S	26.55 E	52.33	149.51	0.26	0.24	4.03
8	1438	1.10	170.70	124	1436.58	-47.78	47.78 S	26.90 E	54.83	150.62	0.25	-0.24	-2.74
9	1559	1.50	129.60	121	1557.55	-49.93	49.93 S	28.30 E	57.40	150.45	0.82	0.33	-33.97
10	1652	2.10	148.90	93	1650.51	-52.17	52.17 S	30.12 E	60.24	150.00	0.91	0.65	20.75
11	1810	3.20	137.00	158	1808.34	-57.87	57.87 S	34.63 E	67.44	149.11	0.77	0.70	-7.53
12	2001	1.90	137.00	191	1999.15	-64.09	64.09 S	40.42 E	75.77	147.76	0.68	-0.68	0.00
13	2095	3.40	147.80	94	2093.04	-67.58	67.58 S	42.97 E	80.09	147.55	1.67	1.60	11.49
14	2285	3.30	163.30	190	2282.72	-77.59	77.59 S	47.54 E	91.00	148.50	0.48	-0.05	8.16
15	2384	1.60	160.10	99	2381.63	-81.62	81.62 S	48.83 E	95.11	149.11	1.72	-1.72	-3.23
16	2502	1.00	107.40	118	2499.60	-83.48	83.48 S	50.38 E	97.50	148.89	1.08	-0.51	-44.66
17	2686	1.40	80.70	184	2683.56	-83.59	83.59 S	54.13 E	99.59	147.08	0.37	0.22	-14.51
18	2831	1.00	108.80	145	2828.53	-83.72	83.72 S	57.07 E	101.32	145.72	0.48	-0.28	19.38
19	2929	1.40	120.30	98	2926.51	-84.59	84.59 S	58.91 E	103.09	145.15	0.47	0.41	11.73
20	3022	1.60	108.50	93	3019.48	-85.58	85.58 S	61.13 E	105.17	144.46	0.39	0.22	-12.69
21	3118	1.00	85.00	96	3115.45	-85.93	85.93 S	63.23 E	106.69	143.65	0.82	-0.63	-24.48
22	3213	0.80	111.10	95	3210.44	-86.10	86.10 S	64.68 E	107.69	143.09	0.47	-0.21	27.47
23	3307	0.80	104.50	94	3304.43	-86.50	86.50 S	65.92 E	108.76	142.69	0.10	0.00	-7.02
24	3403	1.20	100.10	96	3400.42	-86.84	86.84 S	67.56 E	110.03	142.12	0.42	0.42	-4.58
25	3498	1.10	92.00	95	3495.40	-87.05	87.05 S	69.45 E	111.36	141.41	0.20	-0.11	-8.53
26	3593	0.30	104.30	95	3590.39	-87.14	87.14 S	70.61 E	112.16	140.98	0.85	-0.84	12.95
27	3688	0.60	131.70	95	3685.39	-87.54	87.54 S	71.22 E	112.85	140.87	0.38	0.32	28.84
28	3783	0.90	92.60	95	3780.38	-87.90	87.90 S	72.34 E	113.84	140.55	0.61	0.32	-41.16
29	3878	0.70	84.80	95	3875.37	-87.88	87.88 S	73.66 E	114.67	140.03	0.24	-0.21	-8.21
30	4068	0.90	100.40	190	4065.35	-88.05	88.05 S	76.28 E	116.49	139.09	0.15	0.11	8.21
31	4163	0.80	123.30	95	4160.34	-88.54	88.54 S	77.57 E	117.72	138.78	0.37	-0.11	24.11
32	4258	0.50	59.30	95	4255.34	-88.70	88.70 S	78.48 E	118.43	138.50	0.77	-0.32	-67.37
33	4448	0.40	122.60	190	4445.33	-88.63	88.63 S	79.75 E	119.23	138.02	0.25	-0.05	33.32
34	4641	0.60	91.50	193	4638.33	-89.02	89.02 S	81.33 E	120.58	137.58	0.17	0.10	-16.11
35	4831	0.60	196.00	190	4828.32	-90.00	90.00 S	82.05 E	121.79	137.65	0.50	0.00	55.00
36	5022	0.30	182.90	191	5019.31	-91.46	91.46 S	81.75 E	122.67	138.21	0.17	-0.16	-6.86

Directional Survey
does not go to
Total Depth of
15420 -

Provide Signature Page for
Directional Survey



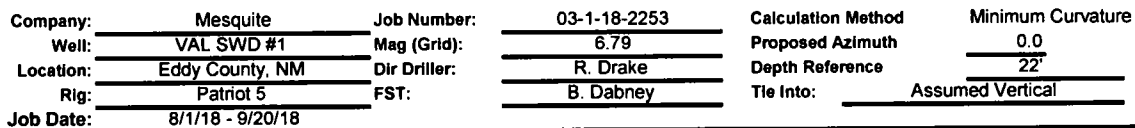
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Well: VAL SWD #1 Mag (Grid): 6.79 Proposed Azimuth 0.0
Location: Eddy County, NM Dir Driller: R. Drake Depth Reference 22'
Rig: Patriot 5 FST: B. Dabney Tie Into: Assumed Vertical
Job Date: 8/1/18 - 9/20/18

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth			
37	5115	0.30	169.80	93	5112.31	-91.95	91.95 S	81.78 E	123.05	138.35	0.07	0.00	-14.09
38	5210	0.70	219.80	95	5207.31	-92.64	92.64 S	81.45 E	123.35	138.68	0.59	0.42	52.63
39	5306	0.60	210.80	96	5303.30	-93.52	93.52 S	80.82 E	123.60	139.17	0.15	-0.10	-9.38
40	5402	0.70	232.90	96	5399.30	-94.30	94.30 S	80.10 E	123.73	139.66	0.28	0.10	23.02
41	5496	0.70	232.80	94	5493.29	-95.00	95.00 S	79.18 E	123.67	140.19	0.00	0.00	-0.11
42	5591	0.70	201.40	95	5588.28	-95.89	95.89 S	78.51 E	123.93	140.69	0.40	0.00	-33.05
43	5687	0.40	197.90	96	5684.28	-96.75	96.75 S	78.19 E	124.40	141.06	0.31	-0.31	-3.65
44	5782	0.20	139.90	95	5779.28	-97.20	97.20 S	78.19 E	124.75	141.18	0.36	-0.21	-61.05
45	5877	0.50	186.50	95	5874.27	-97.73	97.73 S	78.25 E	125.20	141.32	0.41	0.32	49.05
46	6067	1.10	221.90	190	6064.26	-99.92	99.92 S	76.94 E	126.11	142.40	0.40	0.32	18.63
47	6247	1.00	221.30	180	6244.23	-102.38	102.38 S	74.75 E	126.77	143.87	0.06	-0.06	-0.33
48	6332	0.90	207.20	85	6329.21	-103.53	103.53 S	73.96 E	127.23	144.46	0.30	-0.12	-16.59
49	6449	0.90	238.70	117	6446.20	-104.83	104.83 S	72.75 E	127.60	145.24	0.42	0.00	26.92
50	6629	0.90	270.50	180	6626.18	-105.55	105.55 S	70.13 E	126.72	146.40	0.27	0.00	17.67
51	6724	0.50	237.30	95	6721.17	-105.77	105.77 S	69.03 E	126.30	146.87	0.58	-0.42	-34.95
52	6831	0.80	155.40	107	6828.17	-106.70	106.70 S	68.95 E	127.04	147.13	0.82	0.28	-76.54
53	7021	1.00	155.20	190	7018.14	-109.41	109.41 S	70.20 E	129.99	147.31	0.11	0.11	-0.11
54	7117	1.10	135.50	96	7114.13	-110.83	110.83 S	71.20 E	131.73	147.28	0.39	0.10	-20.52
55	7305	1.10	90.50	188	7302.10	-112.13	112.13 S	74.27 E	134.49	146.48	0.45	0.00	-23.94
56	7499	1.70	137.90	194	7496.04	-114.28	114.28 S	78.06 E	138.40	145.67	0.65	0.31	24.43
57	7592	2.20	131.80	93	7588.99	-116.50	116.50 S	80.31 E	141.50	145.42	0.58	0.54	-6.56
58	7689	2.10	114.10	97	7685.92	-118.46	118.46 S	83.32 E	144.83	144.88	0.69	-0.10	-18.25
59	7886	1.00	141.50	197	7882.85	-121.28	121.28 S	87.69 E	149.66	144.13	0.66	-0.56	13.91
60	8069	0.30	251.70	183	8065.84	-122.68	122.68 S	88.23 E	151.11	144.28	0.62	-0.38	60.22
61	8162	0.40	236.10	93	8158.84	-122.94	122.94 S	87.73 E	151.03	144.49	0.15	0.11	-16.77
62	8256	0.40	224.80	94	8252.84	-123.35	123.35 S	87.22 E	151.08	144.74	0.08	0.00	-12.02
63	8351	0.40	283.10	95	8347.83	-123.51	123.51 S	86.67 E	150.89	144.94	0.41	0.00	61.37
64	8447	0.40	281.80	96	8443.83	-123.37	123.37 S	86.01 E	150.39	145.12	0.01	0.00	-1.35
65	8561	0.80	316.40	114	8557.83	-122.71	122.71 S	85.08 E	149.32	145.27	0.46	0.35	30.35
66	8741	1.70	332.60	180	8737.78	-119.43	119.43 S	82.98 E	145.43	145.21	0.53	0.50	9.00
67	8836	2.00	330.60	95	8832.73	-116.74	116.74 S	81.52 E	142.38	145.07	0.32	0.32	-2.11
68	9019	1.50	352.30	183	9015.65	-111.58	111.58 S	79.63 E	137.08	144.49	0.45	-0.27	11.86
69	9113	1.30	359.80	94	9109.62	-109.30	109.30 S	79.46 E	135.13	143.98	0.29	-0.21	7.98
70	9208	1.30	1.30	95	9204.60	-107.14	107.14 S	79.48 E	133.40	143.43	0.04	0.00	-377.37
71	9303	1.30	344.30	95	9299.57	-105.03	105.03 S	79.21 E	131.55	142.98	0.40	0.00	361.05
72	9398	1.10	349.50	95	9394.55	-103.09	103.09 S	78.76 E	129.73	142.62	0.24	-0.21	5.47
73	9493	1.00	15.60	95	9489.54	-101.40	101.40 S	78.81 E	128.42	142.14	0.51	-0.11	-351.47
74	9683	0.50	25.90	190	9679.52	-99.05	99.05 S	79.62 E	127.09	141.21	0.27	-0.26	5.42



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							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth			
75	9810	0.70	38.20	127	9806.51	-97.95	97.95 S	80.34 E	126.68	140.64	0.19	0.16	9.69
76	9967	0.50	10.80	157	9963.50	-96.52	96.52 S	81.06 E	126.05	139.97	0.22	-0.13	-17.45
77	10099	0.80	34.90	132	10095.49	-95.20	95.20 S	81.70 E	125.45	139.36	0.30	0.23	18.26
78	10289	0.70	32.80	190	10285.48	-93.13	93.13 S	83.09 E	124.81	138.26	0.05	-0.05	-1.11
79	10446	0.50	216.90	157	10442.48	-92.88	92.88 S	83.20 E	124.69	138.15	0.76	-0.13	117.26
80	10568	1.00	207.90	122	10564.46	-94.24	94.24 S	82.38 E	125.17	138.84	0.42	0.41	-7.38
81	10728	1.50	197.30	160	10724.43	-97.48	97.48 S	81.10 E	126.80	140.24	0.34	0.31	-6.63
82	10805	1.50	248.00	77	10801.40	-98.82	98.82 S	79.87 E	127.06	141.05	1.67	0.00	65.84
83	10985	2.20	255.70	180	10981.31	-100.55	100.55 S	74.33 E	125.05	143.53	0.41	0.39	4.28
84	11114	1.30	275.20	129	11110.25	-101.03	101.03 S	70.48 E	123.18	145.10	0.83	-0.70	15.12
85	11209	1.30	268.30	95	11205.22	-100.96	100.96 S	68.33 E	121.91	145.91	0.16	0.00	-7.26
86	11303	0.80	230.40	94	11299.21	-101.41	101.41 S	66.76 E	121.41	146.65	0.88	-0.53	-40.32
87	11399	0.80	241.00	96	11395.20	-102.17	102.17 S	65.65 E	121.44	147.27	0.15	0.00	11.04
88	11494	0.60	329.80	95	11490.19	-102.06	102.06 S	64.82 E	120.90	147.58	1.04	-0.21	93.47
89	11592	0.90	288.80	98	11588.19	-101.37	101.37 S	63.84 E	119.79	147.80	0.61	0.31	-41.84
90	11688	0.80	309.00	96	11684.18	-100.70	100.70 S	62.60 E	118.57	148.13	0.33	-0.10	21.04
91	11780	0.70	342.60	92	11776.17	-99.76	99.76 S	61.94 E	117.42	148.17	0.48	-0.11	36.52
92	11876	0.60	11.80	96	11872.16	-98.71	98.71 S	61.86 E	116.49	147.92	0.36	-0.10	-344.58
93	12066	0.90	51.70	190	12062.15	-96.81	96.81 S	63.24 E	115.63	146.85	0.31	0.16	21.00
94	12259	1.20	20.20	193	12255.12	-93.98	93.98 S	65.12 E	114.34	145.28	0.33	0.16	-16.32
95	12352	1.10	3.60	93	12348.10	-92.17	92.17 S	65.52 E	113.08	144.59	0.37	-0.11	-17.85
96	12448	1.10	350.90	96	12444.08	-90.34	90.34 S	65.43 E	111.55	144.09	0.25	0.00	361.77
97	12541	1.70	352.80	93	12537.05	-88.09	88.09 S	65.11 E	109.54	143.53	0.65	0.65	2.04
98	12733	2.50	0.70	192	12728.92	-81.08	81.08 S	64.81 E	103.80	141.36	0.44	0.42	-183.39
99	12905	2.10	346.80	172	12900.78	-74.26	74.26 S	64.14 E	98.12	139.18	0.40	-0.23	201.22
100	13090	1.90	346.80	185	13085.67	-67.97	67.97 S	62.66 E	92.45	137.33	0.11	-0.11	0.00
101	13250	2.30	328.00	160	13245.57	-62.67	62.67 S	60.35 E	87.00	136.08	0.49	0.25	-11.75
102	13370	2.30	327.70	120	13365.47	-58.59	58.59 S	57.79 E	82.30	135.39	0.01	0.00	-0.25
103	13489	1.90	326.30	119	13484.39	-54.93	54.93 S	55.42 E	78.03	134.75	0.34	-0.34	-1.18
104	13584	2.40	343.90	95	13579.32	-51.71	51.71 S	54.00 E	74.76	133.76	0.87	0.53	18.53
105	13679	3.10	340.90	95	13674.21	-47.37	47.37 S	52.60 E	70.79	132.00	0.75	0.74	-3.16
106	13777	3.40	343.40	98	13772.05	-42.08	42.08 S	50.91 E	66.05	129.58	0.34	0.31	2.55
107	13873	2.60	342.40	96	13867.92	-37.28	37.28 S	49.43 E	61.91	127.02	0.84	-0.83	-1.04
108	13968	3.10	340.40	95	13962.80	-32.80	32.80 S	47.92 E	58.07	124.39	0.54	0.53	-2.11
109	14155	4.20	353.00	187	14149.43	-21.24	21.24 S	45.39 E	50.12	115.08	0.72	0.59	6.74
110	14270	5.40	332.50	115	14264.03	-12.26	12.26 S	42.38 E	44.12	106.14	1.80	1.04	-17.83
111	14437	6.00	338.90	167	14430.20	2.85	2.85 N	35.61 E	35.72	85.42	0.52	0.36	3.83
112	14531	5.10	330.10	94	14523.76	11.06	11.06 N	31.76 E	33.63	70.80	1.32	-0.96	-9.36

[illegible]